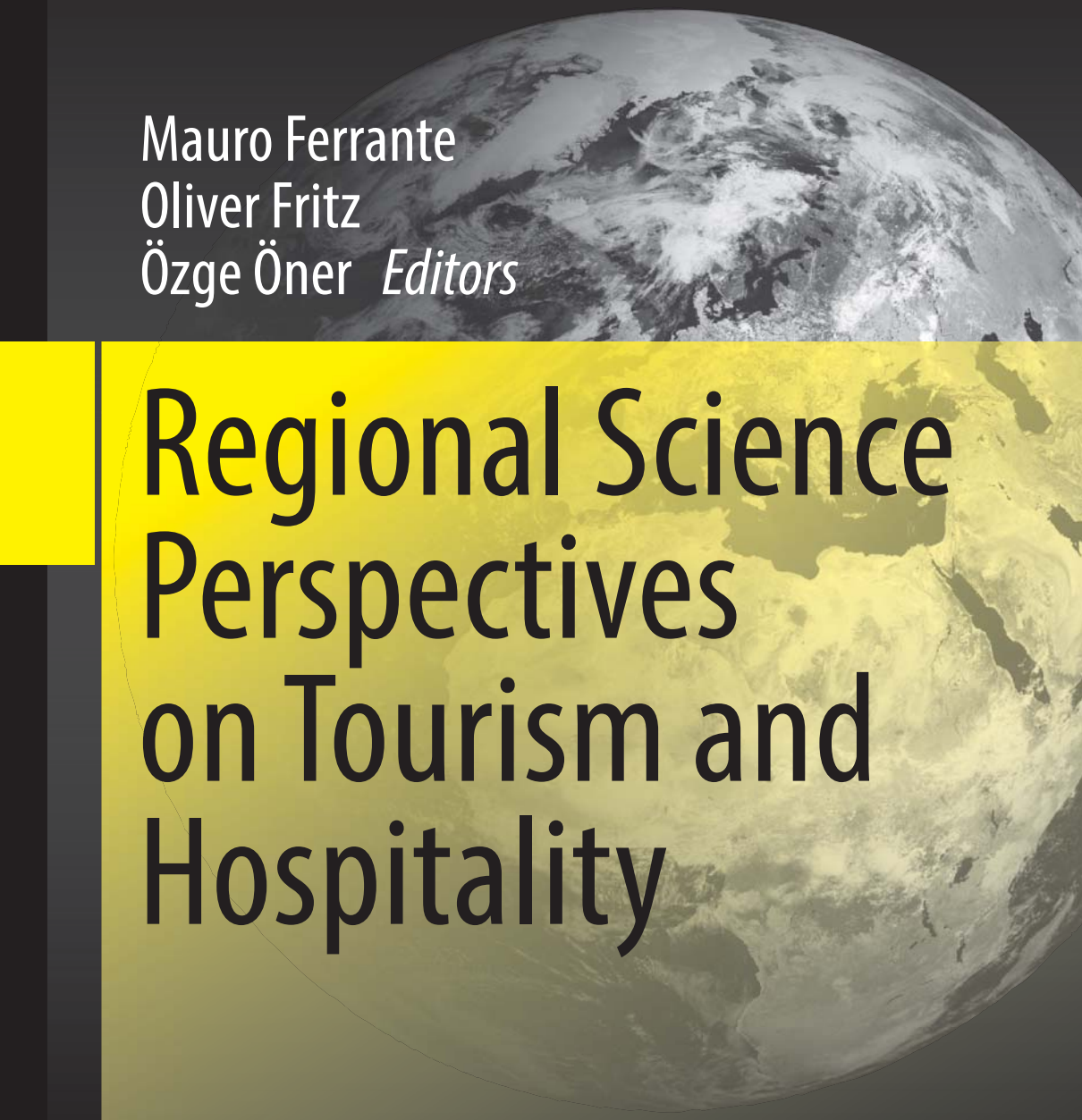
Advances in Spatial Science



Mauro Ferrante
Oliver Fritz
Özge Öner *Editors*

Regional Science Perspectives on Tourism and Hospitality

Springer

Advances in Spatial Science

The Regional Science Series

This series contains scientific studies focusing on spatial phenomena, utilising theoretical frameworks, analytical methods, and empirical procedures specifically designed for spatial analysis. Advances in Spatial Science brings together innovative spatial research utilising concepts, perspectives, and methods relevant to both basic science and policy making. The aim is to present advances in spatial science to an informed readership in universities, research organisations, and policy-making institutions throughout the world. The type of material considered for publication in the series includes: Monographs of theoretical and applied research in spatial science; state-of-the-art volumes in areas of basic research; reports of innovative theories and methods in spatial science; tightly edited reports from specially organised research seminars.

The series and the volumes published in it are indexed by Scopus.

More information about this series at http://www.springer.com/series/3302

Mauro Ferrante · Oliver Fritz · Özge Öner
Editors

Regional Science Perspectives on Tourism and Hospitality

Springer

Editors
Mauro Ferrante
University of Palermo
Palermo, Italy

Özge Öner
University of Cambridge
Cambridge, UK

Oliver Fritz
WIFO—Austrian Institute of Economic Research
Wien, Austria

ISSN 1430-9602 ISSN 2197-9375 (electronic)
Advances in Spatial Science
ISBN 978-3-030-61273-3 ISBN 978-3-030-61274-0 (eBook)
https://doi.org/10.1007/978-3-030-61274-0

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

This book is dedicated to our dear friend and mentor, "Il padrino" Prof. Geoffrey J. D. Hewings, founder and erstwhile Director of the Regional Economics Applications Laboratory at the University of Illinois, Urbana-Champaign. Over many years, Geoff inspired numerous students and scholars all around the world. Our debt to him is considerable: not only in encouraging our devotion to the pursuit of knowledge but also in inculcating a team spirit. Whilst spending parts of their academic lives at REAL in different periods of time, the three Co-editors of this book have been able to forge a friendship which has nurtured a long-lasting collaborative effort: the dedication of a true mentor.

Foreword

Regional science (RS) has evolved and developed into a rigorous area since the seminal study by Isard (1956) that is often cited as one of the foundation stones upon the area was built. From a geographical perspective, Tomaney (2020: 231) highlighted the changing features of RS in the late 1960s and early 1970s, particularly in response to the criticisms of the positivism tradition posed by behavioural scientists (Johnston and Sidaway 2015). Vaz (2020) described these distinctive features of RS arguing that 'as a positivist approach, regional science uses spatial analysis as a proxy to validate spatial findings' (Vaz 2020: 359). Yet the unifying focus of RS—*the region*, is no longer just the preserve of geographers and economists, despite the rich history of scholarly endeavour since antiquity focused on regional description and analysis (Johnston and Sidaway 2015). RS' focus on the region has a preoccupation with administrative boundaries and the use of data at different spatial scales to address spatial problems in a regional setting although we must also recognize that many boundaries are exogenously determined and so the researcher has to work with the data generated for this purpose. The analysis of spatial phenomena at different scales within the region has implicitly meant 'regional science is positivist in its epistemological orientation, mathematical and statistical in its methods, and displays a proclivity to model and forecast data to better understand spatial interactions, locational dynamics and regional processes and trends' (Vaz 2020: 358). Despite the shifts in the 1970s away from positivism in spatial research as a dominant paradigm, the academy maintained an active commitment to regional science scholarship in journals such as *Papers in Regional Science* (which is the official journal of the Regional Science Association International that published its first issue in 1955), *Regional Studies*, the *Journal of Regional Science* and the *Annals of Regional Science*. A number of newer journals have also been established illustrating the continued academic health of the subject. But how has this tradition of RS research impacted upon tourism and hospitality?

A sustained interest in RS within the broader domain of leisure and tourism can be discovered from the 1970s onwards, with reference to Tourism in the journal Regional Studies in the very early issues in the late 1960s and early 1970s, for example. As a geographer, I have always taken the RS perspective for granted in over 20 years of tracing the evolution of the geography of tourism and recreation (Hall

and Page 1999, 2014). When one looks at the seminal studies such as Coppock's (1977) edited collection—*Tourism: A Tool for Regional Development*, it was an important milestone as were the early texts on tourism geography (e.g. Pearce 1981; Mathieson and Wall 1982) which demonstrated the rich tradition of regional spatial analysis of tourism and recreation. These studies embraced the regional analytical approach, using spatial data to depict tourism and leisure phenomena and to derive generalisations from the findings. Indeed, this book represents the ongoing trajectory of RS applications to tourism and hospitality, which is evident in the top-rated tourism journals (e.g. *Tourism Management*, *Annals of Tourism Research* and *Journal of Travel Research*). New theoretical perspectives have also given the subject a boost together with greater multidisciplinary team contributions within a RS paradigm. In geography, this has been facilitated by the growth of geographical information system (GIS) research since the 1970s, pioneered in tourism by Coppock and latterly with the growing availability of GIS software making it more accessible to a wider audience. Alongside, this has been the wider use of GIS in the public and private sector, giving RS a renewed focus in planning to address spatial problems. Vaz (2020) reviewed these new directions with the emergence of Regional Science 2.0, facilitated by the rise of new opportunities to integrate big data into research activities alongside artificial intelligence (e.g. with the application of neural networks) alongside the more conventional approaches of the geographer (e.g. land use change, gravity models and spatial interactions) and economist (e.g. input/output analysis, general equilibrium models and stochastic modelling).

Many of the contributions in this book demonstrate that the ongoing relevance of a RS paradigm to tourism and hospitality remains a central strand of understanding the dynamics and effects of tourism phenomena. Tourist travel occurs within a spatial context, and tourist activities at a destination are typically regional in focus; therefore, their interactions and impacts have a regionally contingent effect at various spatial scales. Similarly, the wider visitor economy within which the hospitality sector is located is associated with spatial fixity of supply (i.e. it tends to be fixed at given points in time and space). The editors have assembled a wide range of examples of the RS application to tourism and hospitality in this volume that demonstrates the principles and practice of regional analysis. The editors are to be congratulated on demonstrating that RS is alive and well in the regional analysis of the visitor economy. The field has come a long way since the contributions of scholars in the 1950s, 1960s and 1970s. I am sure this book will become a welcomed resource for the academy and continue the advocacy role of RS in the analysis of tourism and hospitality phenomena.

Stephen J. Page
Hertfordshire Business School, Hatfield, UK
e-mail: spage2@herts.ac.uk

References

Coppock, J. T. (Ed.) (1977). *Tourism: A tool for regional development, tourism and recreation research unit*. Leisure Studies Association: University of Edinburgh.

Hall, C. M. & Page, S. J. (1999). *The geography of tourism and recreation: Environment, place and space*. Routledge: London.

Hall, C. M. & Page, S. J. (2014). *The geography of tourism and recreation: Environment, place and space* (4th ed.). Taylor & Francis: Abingdon.

Isard, W. (1956). *Location and space economy: A general theory relating to industrial location, market areas, land use, trade, and urban structure*. MIT Press: Cambridge, MA.

Johnston, R. & Sidaway, J. D. (2015). *Geography and geographers: Anglo-American human geography since 1945*. Taylor & Francis: Abingdon.

Mathieson, A. & Wall, G. (1982). *Tourism: Economic, physical, and social impacts*. Harlow: Longman Scientific & Technical.

Pearce, D. G. (1981). *Tourist development*. Harlow: Longman Scientific & Technical.

Tomaney, J. (2020). Region. In A. Kobayashi (Ed.), *International encyclopedia of human geography* (2nd ed., pp. 229–241). Oxford: Elsevier.

Vaz, E. (2020). Regional science. In A. Kobayashi (Ed.), *International encyclopedia of human geography* (2nd ed., pp. 357–361). Oxford: Elsevier.

Stephen J. Page is Associate Dean (Research) and Professor of Business and Management in Hertfordshire Business School, University of Hertfordshire. He is editor of the *Journal Tourism Management*. He is author and editor of 46 books on tourism, leisure and events.

Preface

More than 20 years after the publication of the book *The Economic Geography of the Tourist Industry: A Supply-Side Analysis* by Ioannides and Debbage (1998), the strong link between the field of tourism and regional science is well accepted in the research community. Nowadays, almost all regional science conferences include at least one session dedicated to tourism and tourism-related topics, acknowledging the important role tourism plays in regional development. At the same time, tourism scholars increasingly make use of regional science methods to understand and analyse the dynamics of the industry in a given regional context.

From the moment when Christaller analysed tourism through the lens of regional science (Christaller 1964), dramatic structural changes, mainly induced by technological innovations, have greatly influenced the characteristics of the tourism and hospitality industries, but also of tourist behaviour in space. Consequently, adding a spatial dimension to the analysis of tourism and the tourism industry and thus explicitly recognizing the locations where tourism-related activities are produced and consumed offer significant added value to both branches of economic research.

The aim of this book is to reinforce the interface between regional science and tourism research by collating diverse contributions which all focus on new challenges for the tourism and hospitality industry from a regional science perspective, making use of appropriate methodological approaches. This compilation of studies relating to hospitality and tourism not only contributes to the tourism and regional science literature jointly but will also assist tourism experts and policy-makers alike in enhancing their understanding of the impact and dynamics of current developments in the field. Challenges, from both a scientific and policy perspective, such as migration, new types of accommodation, segmentation of tourism demand and the potential derived from tracking technology in tourism research are only a few of the topics addressed in this book.

The book comprises five parts and 22 chapters. In the first part, *Firms in the Tourism Industry*, Power, Doran and Ryan analyse the impact of agglomeration economies on the dynamics of births and deaths or firms in the tourism sector. The impact of location on the survival of tourism firms is analysed in the chapter written by Cracolici, Espa, Giuliani and Piacentino, whereas the chapter by Öner and Larsson considers the determinants of restaurant location at a sub-city level. All these

contributions make use of geo-coded data related to tourism and hospitality firms and thus reveal the power of regional science approaches and theories in the analysis of spatial-referenced data in the context of tourism, whereas Backman and Klaesson analyse the assimilation process of foreign-born workers in the Swedish hospitality industry. They provide evidence on the importance of the hospitality sector with respect to the prospects of employment and integration for foreign-born individuals.

The second part is dedicated to *Temporal and Spatial Variability in the Analysis of Tourism*. Here, some important analytical regional science tools are applied in an analysis of air traffic flows by Reynolds and of the spatial distribution of Airbnb throughout the USA by Akhtari. Fernández-Morales offers a regional perspective for the analysis of the tourism seasonality of hotel demand in the region of Andalusia, whereas Martin and Delmelle propose the application of a spatial interaction model for an analysis of the attractiveness of wine tourism in North Carolina. In a different vein, Fagence's contribution reflects on the process of 'thinking geographically' in the analysis of stories. By deploying an Australian story, the spatial and the semiotic characteristics of 'space' inherent in heritage-based tourism are revealed.

Much interest among regional scientists is directed at the broader economic and social impact of tourism, which is third part's overall theme. A global, inter-country input–output approach is provided in the contribution by Alsamawi, Fritz and Yamano, who are applying OECD's global inter-country input–output tables to measure how much value added is induced by tourism consumption across a broad range of industries. The impact of tourism on second home markets and agriculture is the issue dealt with in the chapters by Carrascal and Gutiérrez (Spain) and Salihoglu and Gezici (Turkey), respectively. Benefits and limits of commercial gambling as a tourism development strategy are deeply analysed in the chapter by Geisler, whereas the contribution by Kashian, Choton and Samaranayake's focuses on *Country Fairs* and their impact, with applications to the state of Wisconsin (USA).

The heterogeneous nature of the tourism industry is reflected by the contributions contained in the fourth part, *Tourism Segments and Tourist Behaviours*. In this section, specific tourism segments are analysed based on a variety of perspectives. Reid presents a state-of-the-art description of the relationship between craft beer and tourism, presenting opportunities for future growth and destination development. One of the most controversial tourism segments, cruise tourism, is analysed in the chapter by Ferrante, Pavlić and De Cantis, in which new technologies are used to analyse cruise passengers' behaviour at the destination. Theoretical models of tourist behaviour are discussed in the contribution by Birenboim, Anton-Clavé, Russo and Shoval. By virtue of the availability of detailed information relating to tourist behaviour in the PortAventura Theme Park, collected using GPS technologies, structural factors and personal characteristics are analysed as the potential determinants of tourist behaviour in a space-time dimension. An in-depth analysis of tourist behaviour and of the main characteristics of these peculiar tourism niches may assist in destination management and the development of suitable policies and strategies.

The fifth part of the book contains *Environmental Perspectives and Tourism Policy* as one of the greatest challenges of the twenty-first century. The aim of the chapter by Cole is to propose a Global Tourism Destination Model in which the dynamics of

internal and external forces of a given destination are linked to each other; he describes the degree of attractiveness, cluster synergies and congestion at a given destination, with an application to specific Caribbean islands. The initiatives emanating from the World Tourism Organization with regard to the measurement of tourism sustainability are presented in the chapter by Tejada, Moreno and Romero, with an application to the Andalusia region in Spain. The contribution by Tang and Lau includes an analysis of the impact of climate change on demand for tourism services in Malaysia via a dynamic panel data approach. A policy-oriented approach is presented in the chapter by Pezzi and Punziano, which focuses on processes of innovation in the hospitality industry with a focus on hinterland areas in Italy. Finally, the impact of tourism taxation on tourism demand is the focus of the contribution by Biagi, Brandano and Pulina. Causal inference approaches, such as the synthetic control method, are applied, thereby revealing the great potential deriving from the application of such empirical approaches to tourism research.

The editors of this volume hope that all contributions will strengthen the link between regional science and tourism by addressing questions probing to professionals and by advancing into current research frontiers in the regional science field of tourism, thereby also shaping the research agenda for young scholars. A huge variety of challenges in tourism research remains; regional science theories and methods offer a means to tackle these challenges and pave the way for more science and evidence-based tourism policies.

Finally, the editors wish to express their appreciation to Johannes Glaeser for having suggested to collect contributions for a volume of the *Advances in Spatial Science* series by Springer and to Barbara Fess, Senior Editor for Economics and Political Science at Springer, for her invaluable support throughout the compilation process. Our heartfelt gratitude also goes to all authors and reviewers, and we apologize for an editing process which has often been slow and tedious. We never lost sight, however, of our goal to publish a book interesting to regional science and tourism scholars alike. It is left to the readers of this book to judge if this goal was achieved.

Palermo, Italy — Mauro Ferrante
Wien, Austria — Oliver Fritz
Cambridge, UK — Özge Öner
February 2020

References

Christaller, W. (1964). Some considerations of tourism location in Europe: The peripheral regions-under-developed countries-recreation areas. *Papers of the Regional Science Association*, *12*(1), 95–105.

Ioannides, D., & Debbage, K. G. (Eds.) (1998). *The economic geography of the tourist industry: A supply-side analysis*. Psychology Press.

Contents

Introduction 1
Özge Öner, Mauro Ferrante, and Oliver Fritz

Firms in the Tourism Industry

Spatial Effects in Regional Tourism Firm Births and Deaths 17
Bernadette Power, Justin Doran, and Geraldine Ryan

Microgeography of Restaurants: Sub-City Analysis of Restaurant Location and Colocation Using Swedish Geo-Coded Data 41
Özge Öner and Johan P. Larsson

Firm Demography in the Accommodation Industry. Evidence from Italian Insular Regions 65
Maria Francesca Cracolici, Giuseppe Espa, Diego Giuliani, and Davide Piacentino

The Importance of the Hospitality Sector in Integrating Foreign-Born Individuals in Sweden 79
Mikaela Backman and Johan Klaesson

Temporal and Spatial Perspectives in the Analysis of Tourism

The Role of Air Transport in Tourism Market Access: A Framework for Capturing Spatial, Temporal and Industry Variability in Air Traffic Flows 103
Aisling Reynolds-Feighan

Tourism Seasonality Across Markets 125
Antonio Fernández-Morales

Using a Qualitative Science Approach to Reveal the Tourism Potential of a Story from History: Where Regional Science Meets Heritage-Based Tourism 143
Michael Fagence

Proximity to Hotels and Airbnb Home Sharing Accommodations 165
Mitra Akhtari

Modeling Spatial Attractiveness to Wine Tourism in North Carolina, U.S.A. 181
Miriam E. Martin and Eric M. Delmelle

The Impacts of Tourism

Measuring Economic Impacts of International Tourism Activities: A Global Inter-Country Input–Output Approach 211
Ali Alsamawi, Oliver Fritz, and Norihiko Yamano

Exploring the Spatial Link Between Tourism and Construction: How Touristic Landmarks Affect the Second-Home Market in Spain 233
André Carrascal-Incera and Diana Gutiérrez-Posada

The Impact of the County Fair—Building an Economic Toolbox 259
Russ Kashian, Suvojit Choton Basu, and Pasan Samaranayake

Using Casinos for Growth: The Benefits and Limits of Commercial Gambling as an Economic Development Strategy 277
Karl R. Geisler

Linkages Between Tourism and Agriculture: The Case of Turkey 293
Güliz Salihoglu and Ferhan Gezici

Tourism Segments and Tourist Behaviours

Craft Beer Tourism: The Search for Authenticity, Diversity, and Great Beer 317
Neil Reid

Individual and Contextual Determinants of Cruise Passengers' Behavior at Their Destination: A Survival Approach 339
Mauro Ferrante, Ivana Pavlić, and Stefano De Cantis

Structure Versus Agency: Which Best Explains Tourist Activity in a Destination? 355
Amit Birenboim, Salvador Anton-Clavé, Antonio Paolo Russo, and Noam Shoval

Environmental Perspectives and Tourism Policy

Innovation, Competitiveness, and Sustainability in Tourism Clusters: An Empirical Model of Caribbean Destinations 377
Sam Cole

Exploring the Impact of Political Stability and Climate Change on Inbound Tourism Demand: Evidence from Dynamic Panel Data Analysis 403
Chor Foon Tang and Evan Lau

Measuring Tourism Sustainability: The Case of Andalusia 421
Pilar Tejada, Isidoro Romero, and Pilar Moreno

Tourism Planning and Tourism Development in the Italian Inner Areas: Assessing Coherence in Policy-Making Strategies 447
Daniele Mantegazzi, Maria Giulia Pezzi, and Gabriella Punziano

Tourism Taxation: Good or Bad for Cities? 477
Bianca Biagi, Maria Giovanna Brandano, and Manuela Pulina

Concluding Remarks 507

References 511

Introduction

Özge Öner, Mauro Ferrante, and Oliver Fritz

1 Worlds Collide: Regional Science and Tourism Research

Although the relevance of regional hierarchies for the analysis of tourism activities has early historical roots (see, e.g. Christaller 1964), service sector at large and tourism activities in particular did not gain much momentum within the regional science literature until the mid-80 s. Similarly, tourism studies have been around for almost half a century following its establishment as an independent domain of inquiry following post-World War II era (Butler 2015). However, the relevance of regional hierarchies for tourism activities has not been an integral part of this strand of literature (Cole 2007). With this book, we aim at contributing to the existing efforts[1] to bridge these two extensively related strands of literature where we compiled several individual contributions that present how tourism researchers can integrate regional thought into their analysis and at the same time how regional scientists consider tourism as a vital part of the regional economic systems. The book by no means is a complete depiction of how these two strands of literature collide or draw parallel to one another, but rather an attempt to contribute to the existing efforts of tourism

[1] See e.g. a recent detailed review by Calero and Turner (2020) on regional economic development and tourism.

Ö. Öner
Department of Land Economy, University of Cambridge, Cambridge, UK
e-mail: oo263@cam.ac.uk

M. Ferrante (✉)
Department of Culture and Society, University of Palermo, Viale delle Scienze, building 15, 90133 Palermo, Italy
e-mail: mauro.ferrante@unipa.it

O. Fritz
WIFO - Austrian Institute of Economic Research, Wien, Austria
e-mail: oliver.fritz@wifo.ac.at

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_1

researchers and regional scientists to marry these two strands of literature for a better understanding of the sector and its significance for regional economies.

Tourism, both in terms of the individual economic activities nested within and as a sector at large, has attracted attention from within the various branches of social sciences, with each discipline approaching tourism from a different perspective and utilizing different tools for analysis. Gyr (2010) states: *"Today, tourism studies mean the multi-disciplinary bundle of academic approaches in the sense of an undisguised "transdiscipline", which can find different applications."* (Gyr 2010, p. 1). The fact that there exists very little to no integration of the different disciplines that deal with tourism certainly has some advantages, but also the *transdisciplinary* nature of tourism research imposes many challenges. In fact, there exists several academic accounts that cover some of these challenges in tourism research (see, e.g. Singh 2015; Liburd 2012; Cole 2007). The particular challenge we hope to shed some light onto by way of this book is the consideration of geography and in particular the limited attention paid to interaction between different levels of geography in tourism research.

Despite its common use, it is difficult to argue for the existence of a single *tourism industry*. Tourism rather refers to a set of multifaceted economic activities and many industries operating simultaneously in a complex ecosystem, forming what could better be defined as *tourism industries* (Leiper 2008). All the activities, agents, and many industries' compilation of which corresponds to tourism have a strong spatial feature attached to them. There is no shortage of empirical evidence that shows how economic activity is not randomly distributed across space. Depending on the nature of the economic activity, some first-nature and second-nature geographical features dictate the presence as well as the performance of different economic activities (Brakman et al. 2001). There are, however, two aspects of tourism that distinguishes it from other sectors. First is the nature and extent of spatial dependence we observe for tourism activities. As Middleton and Clarke (2012, p. 291) puts, *"location, location, location"* has been the mantra for profitable tourism businesses and for tourism ecosystems. The spatial dependence in tourism is unique to the extent that the services offered by the individual actors of the sector chiefly cannot be carried away by the consumers, making both the production and the consumption of tourism services more spatially sticky than some other sectors, such as manufacturing or traditional retail. At times, tourism sector emerges in certain places as a by-product of exogenous amenities (i.e. first-nature geography) that are inherent to the place, such as the number of sunny days, access to coast, or beautiful mountains. In other, mostly urban places, we see its emergence as a function of endogenous features of the geography (i.e. man-made amenities) such as clustering of retailing, art, businesses, and recreational activities. These two sets of geographical features, the endogenous and the exogenous, cannot be thought of orthogonal to one another for the presence and prominence of tourism in a particular geography. In fact, the success and the failure of tourism in a region itself feed back into some of the features that leads to its emergence in a particular location in the first place. This type of simultaneity relates to the emergence of path dependencies between the performance of the sector itself and features of the geography it occupies, which makes it methodologically and

conceptually challenging to address the impact on and from tourism in a particular region. Here we once again see the emergence of parallels between tourism research and regional science, where both strands of literature devote increasing attention to address evolutionary pathways through which the dependence between spatial features of a region and its tourism sector can be addressed (see, e.g. Boschma and Frenken 2006; Martin and Sunley 2007; Brouder and Eriksson 2013; Brouder 2014; Brouder and Ioannides 2014; Sanz-Ibáñez and Clavé 2014).

Such spatially sticky features of a geography and its relevance for tourism are often discussed within the context of tourism destinations; a term exhaustively used in tourism literature. Despite being a rather established term, there exists some debate around its definition. What is considered to be a *tourism destination* differs dramatically depending on the particular disciplinary tradition, as well as the institutions and actors that are in the focus of a particular study. Saraniemi and Kylänen (2011) offer four categories under which they nest different discussions on and considerations for tourism destination; (i) economic geography-oriented, (ii) marketing management oriented, (iii) customer oriented, and last but not the least (iv) cultural dimension. Particularly relevant to the book at hand, although the economic geography-oriented approach traditionally considered destinations as rather static geographical entities with fixed set of features and resources, more recent literature increasingly recognizes the feedback effect; that is how the very act of tourists choosing to travel to a particular destination shapes what could initially be considered a fixed feature of the destination. This type of dynamic thought for understanding what tourism destination means implies not only that the local economy and local culture will be influences by tourism itself, but also there is an increasing attention paid to the fact that even first-nature geographical features are subject to change as a result of tourism, which constitutes the interest for the environment- and sustainability-related questions within the literature.

Second, and an equally important feature of tourism that differentiates the sector from others is that its very existence depends on the ability to bundle a number of economic and cultural activities; from various branches of the hospitality sector to transportation. The fortune of one economic activity becomes dependent on the fortune of the other in tourism ecosystems. Such dependencies vary across different types of tourism activities and locations vastly. As Leiper (2004, 2008) promotes, it is in fact quite unfortunate to call it *the tourism industry* as it is problematic to establish a theoretical foundation or identify empirical regularities for one giant industry. Whereas *tourism industries* as a term could more accurately encompass the multifaceted nature of many economic activities and agents, we consider to be a part of the greater tourism ecosystem. The multi-sectoral nature of tourism has several implications and covered by a diverse body of literature. One way to address the dependencies across different economic activities that are related to tourism is by way of studying the production chains and value creation. Analysing production processes by fractionalizing its components in a sequential manner is central in economics literature that uses input–output approach, which is also used as a useful tool for understanding value chain in tourism activities, although to a lesser extent (Romero and Tejeda 2011; Clancy 1998, 2002).

Another aspect of multi-sectoral nature of tourism relates to the governance of the value chain; complementarities, collaborative efforts, as well as tensions between the stages of the production and the actors involved in the governance of these stages (Song et al. 2013; Bush et al. 2015). Neither the different sectors involved in the production process nor the governance of tourism value chain is independent of *space*. With regards to production chain, the geographical reach of industries involved in the production chain differs, so modelling efforts have to take into consideration the specificity of the geographical aggregation for each economic activity related to tourism. The governance of value chains, likewise, is heavily dependent on the geography. Different actors and subsectors involved in tourism value chain are governed by institutions operating at different geographical levels, most of which function in interaction with one another; from regional (e.g. municipalities and city councils) to national (e.g. ministries to national sector organizations), and even the supra-national (e.g. EU commission, international tourism organizations, multi-national firms). Understanding the multi-level governance in tourism, both for its presence and its performance, requires understanding the spatial dependencies likewise.

2 Structural Changes and Tourism

Consecutive structural changes, from globalization to urbanization, and more recently digitalization rapidly changed the consumer behaviour, as well as the means and methods of production globally. Post-industrial era brought about the triumph of services economy, which shifted—at least partially—the focus of the literature from initially agriculture and later manufacturing towards the knowledge economy and consumer services. Today we are experiencing yet another phase that can roughly be referred to as the experience economy where more value than ever is derived from the experience of consuming a product compared to the traditional ways we measure the value of the commodities and services (Pine et al. 1999; Andersson 2007; Oh et al. 2007). An integral part of this shift is the way tourism is consumed; in particular the democratization of travel and wider access to means to travel further distances. In the context of rapidly rising collaborative economy, digital sharing platforms enabled individual agents take part both in the supply and the demand of tourism and related services. Today, we see what initially was experimental means of tourism as established and significant elements within the tourism supply chain, such as Couchsurfing and AirBnB (Dredge and Gyimóthy 2015). Particularly, over the course of past few decades, the debate on the importance of leisure and tourism services by both scholars and local and national policymakers gained momentum (Clark 2004; Grodach 2011; Markusen and Schrock 2006; Mellander et al. 2011; Sharpley and Telfer 2015). Participation in leisure, recreation, and cultural activities

is tightly linked to individual well-being and overall life satisfaction,[2] from travelling to time spent in restaurants and cafés.

As much as we consider tourism as a part of modernity, with dramatic expansion particularly following World War II, its historical roots date back to classical world. Early forms of travel can be found in ancient Egypt, where a handful of privileged would visit famous monuments and relics. We see the records of similar journeys in Greece, where some but extremely limited number of individuals would travel to participated in the sporting competitions or the early Olympic Game (Gyr 2010). Tourism becoming a global phenomenon, however, corresponds to structural changes in the economy following rapid industrialization. Two things in particular happened that are tightly linked to rise of tourism; increasing wages and the emergence of a middle class, and a stark decline in number of hours worked, hence a notable increase in leisure time. According to the data collected by Maddison (1988) for a number of OECD countries,[3] the number of hours worked annually is nearly halved (from roughly 2900 h to 1600) over the period of 1870–1979. While most people in labour had virtually no time to allocate what we would consider to be vacation in modern times in 1900, roughly hundred years later workers in most European countries have approximately 30 vacation days per year, and this is excluding the weekends.[4] According to Eurostat, in 2017 alone, EU residents spent an estimated EUR 467 billion on tourism trips, more than half of which was allocated to trips abroad.[5]

Globalization has probably been the most eminent structural change for tourism, and globalization itself is in fact shaped by tourism. It extends beyond internationalization of tourism activities and actors. In his much-debated book "The World is Flat", Thomas Friedman (2005) argued for a new era of globalization that he called Globalization 3.0. Unlike 80s and 90s where globalization could largely be defined as global integration led by multi-national companies, in the 2000s, he argued that we have experienced a rapid global convergence in technology. One the one hand, distance is dead considering the ease of travel. On the other, distance has never played a more important role considering the ever-increasing disparities across different regions within the countries.

Computational advancement and IT revolution becoming an integral part of a complex global supply chain is of particular importance for tourism and emergence of mass tourism. Tourism researchers during this period discussed at length the implications of globalization for tourism and how tourism in turn influences globalization itself (see, e.g. Knowles et al. 2004). However, globalization in the context of tourism is a double edge sword. On the one hand, it led to overall economic growth, with the

---

[2] European Commission, Eurofound, Quality of life in Europe, Subjective well-being, 3rd European quality of life survey (2013).

[3] Selected countries in Maddison (1988) Australia, Belgium, Canada, Denmark, France, Germany, Netherlands, Norway, Sweden, United Kingdom, United States.

[4] See Andersson and Andersson (2006) for a detailed discussion.

[5] See Eurostat: https://ec.europa.eu/eurostat/statistics-explained/index.php/Tourism_statistics_-_expenditure.

result of global poverty having decreased over the years. While in industrialized countries its relative importance became more notable over traditional economic activities like manufacturing, in a number of the developing countries tourism superseded the agrarian economic structure where the industrialization is bypassed altogether (see Eadington and Smith 1992). On the other hand, globalization in tourism activities came with negative externalities with significant regional implications; first and foremost, related to physical environment. Tourism research has dealt with sustainability in a large body of literature (see, e.g. May 1991; Williams and Shaw 1998; Casagrandi and Rinaldi 2002; Sharpley 2009). Looking at the volume of research on sustainable tourism, one may believe that the research is satiated. From a regional perspective, however, we believe that the work just began. Traditional debates on the uneven consequences of economic development (Mowforth and Munt 2015), on the analysis of the relationship between tourism and poverty (Blake et al. 2008; Saayman et al. 2012), and on the impact of tourism in ethnic communities (Van den Berghe 1994), are nowadays enriched by the current discussion on the potential dramatic consequences of climate change, and on the more adequate policy responses, as one of the greatest challenges of our century (Scott et al. 2012).

Another notable trend that reshaped tourism and gave way to alternative tourism models is rapid *urbanization.* Today, more than half of the global population is living in cities. Story of urbanization can in fact be told as the story of modern civilization. In regional science literature, urban growth is commonly attributed to microfoundations of agglomeration economies. These are typically described as the positive externalities associated with sharing (e.g. sharing of infrastructure and intermediary services), matching (e.g. between labour and potential employees), and learning effects (i.e. knowledge-spillovers) (Duranton and Puga 2004). A significant body of research within urban and regional economics tried to nail down the extent to which these positive externalities arise due to specialization vs. diversity of economic activities in space. The concept of specialization is often outlined by localization economies in Marshall, Arrow, and Romer (MAR) tradition, where an area benefits from the clustering of economic activities of similar nature. Industrial zones or regions that are specialized in one or few economic activities are often marked as the examples of such agglomerations. In the context of diversity, however, it is argued that the lion share of agglomeration externalities arises due to urbanization economies, as outlined by the seminal work of Jacobs (1970, 1984). The basic argument is that the positive externalities associated with agglomeration can largely be realized thanks to cross-pollination of ideas and activities in a diverse economic milieu, typically found in large metropolitan areas.

There is somewhat controversy concerning the actual nature and sources of these two forces; diversity and specialization. In the context of tourism, it is somewhat challenging to differentiate between what could be considered a specialized or diverse tourism milieu. On the one hand, we see "tourist cities", representing an unusual form of urbanization where cities or system of cities are built primarily for consumption (Mullins 1991, p. 326), which could put them in the category of "specialized cities". On the other, tourism as an economic activity almost certainly requires a sufficient

degree of diversification of economic activities, which puts tourism within the context of diversity.

More recently, the urban and regional science literature began to move away from what is seemingly a false dichotomy between specialization and diversity in urban space, and increasingly argue that these two forces coexist in space but in different spatial aggregations. Recent empirical work finds that while localization economies appear to be bound to the immediate neighbourhood level within cities, urbanization externalities grow stronger at larger spatial scales (Andersson et al. 2019). At the heart of this debate lies spatial systems and dependence of different spatial aggregations on one another once again. This debate is far from being satiated and its paramount relevance for tourism. Studying different aspects of tourism at the right level of geographical aggregation not only would provide the possibility to understand different mechanisms through which certain positive externalities can be capitalized on but also helps us understand how negative externalities can be mitigated.

Urbanization and its implication for tourism on one hand, a parallel literature has emerged the past few decades investigating alternative tourism models associated with rural space. Rapid urbanization brought about challenges and opportunities linked to rural tourism (Lane 1994). The literature presents arguments for tourism's potential to stimulate economic and social development in rural places that are battling economic decline due to structural shift away from agrarian industries (Sharpley 2002). At the same time, the ever-increasing interest in touristic activities in rural and peripheral places brings about the need to take sustainability into account (Bramwell 1994).

3 Regional Science and Tourism

The importance of tourism on the performance of a local economy is manifold. First, leisure and hospitality services often represent a significant share of the total economic activity in a region. Such characteristic of tourism makes it important for employment and economic growth. Second, services offered by the actors in the tourism sector are recognized as essential for the attractiveness of a region. Tourism and leisure services can be thought of as regional amenities because they make available a range of possibilities for consumption, experiences, and recreational activities. The most notable aspect of tourism, however, is its spatial dependence and the importance of geography.

Geography matters! Empirical regularities show that economic activity is not distributed randomly nor evenly across space. Over time, and across countries we see a clustering of people and firms. Certainly, such clustering has more than one reason. For one, people like to interact with one another, thus, spatial proximity between them matters. They may actively choose to live in or visit a place simply because they like the *atmosphere* and the natural amenities. Regional science explores the economic

motives behind the spatial patterns of economic activity and economic agents but does so in a way that is cautious of hierarchies across different geographical levels.

There are several aspects of regional science as a field that are of value for tourism research. First, the importance of geographical aggregation and the interaction between different levels of geography. What is the right level of geography for tourism analysis? Is it the neighbourhood, or parts of a neighbourhood we are interested in? Perhaps the city itself, or even the region it is located in? Maybe we are interested in the larger European regions? Geography can be aggregated to larger units or disaggregated into smaller units. One can study a phenomenon at the neighbourhood level, at the city level, at the regional level, at the national level, or event at the global level. But doing so, the choice of geographical aggregation can neither be trivial, nor should be done arbitrarily. When choosing the right level of geographical aggregation, one must be cautious about which mechanisms operate at which level. For example, when studying a policy intervention at the municipal level that is designed to boost the rate of start-ups within the tourism sector, one must carefully consider the economic and institutional structure of the municipality and the region, but more importantly how the two interacts. What would higher start-up rate in a particular locality within the region imply for the region at large or the neighbouring regions? Winners and losers of such policy intervention may look dramatically different once different geographical levels, as well as spillover across borders are considered. Whereas, for example, studying peer-effects among the tourism actors such as restaurateurs, we may need to focus on a much more disaggregated level of geographical unit such as a neighbourhood, and dwell into the microgeography of cities. As obvious as it may sound, we see that in much of the economics and also partly in tourism literature, a careful consideration of the right geographical aggregation is secondary at best.

Such multi-level feature of tourism supply and demand can be addressed by way of regional science theories and methods that explicitly model regional hierarchies and the relevant market reach for different subsectors and agents. Despite some of its shortcomings,[6] New Economic Geography (NEG) tradition is one such example which can help identify a home-market effect for the many industries that constitute tourism industries altogether; that is for which subsector of the greater tourist ecosystem the demand extends beyond the borders of the region and for which it is predominantly local (Öner and Klaesson 2017).

A related matter is the endogeneity of production factors and how regional science literature at large considers production factors. Resources, such as capital and labour, as well as institutions and the entrepreneurial capital are determined by the very characteristics of the geography. In turn, they shape the local economy itself. Such simultaneous causality is of great importance. Since economic agents, i.e. individuals, optimize their location and the location of their ventures continuously, they move, and when they move, they change with the move itself. An individual actor, all else equal, is a different once it is considered in another local market. The features of the new market do not just add on to the individual characteristics but alter them. The

[6] See Martin and Sunley (2001) for a critique.

same logic applies to the different goods and services sold in the market as a part of the tourism bundle. The basic notion of regional science is that *"a good at a certain location and the same good at another location are different economic objects, and the specification of the location at which it will be available is essential"* (Debreu 1959, pp. 29–30).

At the heart of regional science, we also see the interaction between the agglomeration and dispersion forces which once again deals with spatial aggregation and spatial dependencies. Price competition, high transportation costs, and land use foster the dispersion of production and consumption, therefore, firms are likely to cluster within large metropolitan areas—particularly when they sell differentiated products—where transportation costs (particularly to the end customer) is low and land use is efficient (due to building height as well as urban transportation networks). Cities nested within regions provide a wide array of final goods and specialized market that make them attractive to consumers and workers. Agglomerations are the outcome of cumulative processes involving both supply and demand sides. It takes a long time for them to emerge, and often they emerge through evolutionary pathways, i.e. path dependence. In other words, they are extremely difficult to "create" by intervention. Consequently, they are quite persistent. Originating from the arguments of Myrdal (1957), the notion of cumulative causation was used to explain how regional convergence may not be realized as regional disparities may not be persist. However, by the way of exogenous shocks, paths can be rapidly weakened or altered. These events are referred as path-breaking events. Such shocks, such as a global financial crises or pandemic, to a larger extent effect industries and entrepreneurs operating in tourism-specialized markets. The shocks may happen at the macro level but their effects at the local level vary dramatically. If we consider the country as a unit of analysis that is built up of many differentiated local markets, while the country itself may be in equilibrium, most of the regions will not likely to be in one. As some of these regions will be benefiting from agglomerative (centripetal) forces, the others will suffer from dispersion (centripetal forces). This rather inevitable outcome also implies that while some local markets prosper, others will fall. Regional science is not only interested in how these two opposing forces operate in different levels of aggregation, but also in their potential implications, and what can be done about it—if anything should be done about it.

Second, and equally important aspect of regional science literature that is of great value for tourism research, is the tools by which impact analyses is performed. Tourism is seen as a sector that promises economic benefits to many lagging and peripheral regions with a low degree of industrialization and unfavourable conditions to attract manufacturing industries. For this reason, the (positive) effects of tourism on regional growth have received a lot of attention—not at least promoted (and funded) by regional and local tourism organizations which aim to demonstrate that public funds for tourism companies result in significant economic benefits. A key issue when assessing the economic impact of tourism concerns its wider economic impact, i.e. its indirect and induced effects. It is argued that it is not only the tourism sector (hotels, restaurants, museums, etc.) but numerous other sectors benefiting from visitor spending.

Macroeconomic-oriented impact analyses, however, are mostly performed outside the academic world by private consulting firms but also universities keen to attract additional funds. In the academic literature, this topic is hardly present anymore—impact analysis mostly based on input–output-type models is not on the frontier of regional science anymore even though it is still present in journals in the field of tourism economics (see, e.g. Tohmo 2018; Ribeiro et al. 2017; Kim et al. 2017; do Val Simardi Beraldo Souza et al. 2019; Khoshkhoo et al. 2017; Mazumder et al. 2017). This also implies that less attention is being paid to scientific standards neither with respect to models applied nor regarding methodological standards for the analysis conducted.

Besides (regional or multi-regional) input–output models, by far the most common type of models applied for assessing the economic impact of tourism, CGE models have been used as well (see, e.g. Allan et al. 2017; Blake 2009; Frent 2018; Fritz et al. 2019; Li et al. 2011; Mahadevan et al. 2017; Sacco and Cassar 2019). Tourism is not an industry separately listed in the system of national (regional) accounts; instead tourism-related goods and services are produced by companies of various industries. The economic contribution of tourism is therefore often estimated via a tourism satellite account (TSA) which is added to the existing systems of national accounts. TSA are available mostly on a national scale but sometimes for regions as well. The United Nation's World Tourism Organization (UNWTO) provides a methodological framework for such accounts to ensure comparability across countries and regions (see United Nations 2008). This framework accounts for direct effects of tourism only; many TSAs, however, are extended to include estimates of indirect/induced effects as well (see, e.g. the Austrian Tourism Satellite Account).

With regards to impact analysis in tourism research, we also see the increasing use of experiments and quasi-experimental designs that allow for causal inference. A spillover from mainstream economics literature, regional scientists are increasingly interested in data work that builds on empirical designs which particularly targets a cause-and-effect relationship. The benefit of such approaches for tourism and hospitality is undeniable (Viglia and Dolnicar 2020).

4 Conclusion

As Cole (2007) highlights: *"A major challenge of contemporary tourism studies is to comprehend the systemic interaction between the smallest entities and regions and the largest"* (p.183). To this end alone, tourism research has much to gain from regional science. Likewise, regional science literature should evolve further to account for the significance of tourism for regional development, and also take into consideration alternative ways to examine tourism activities both in terms of methods used and also by allowing for more flexibility for approaches on a neoclassical to normative spectrum (Calero and Turner 2020). Today, regional science literature at large is moving away from dichotomies such as urban–rural, central–peripheral,

national–local. Instead, a spectrum of locations is considered when economic activities and their relevance for the local context are examined. This is a fortunate development considering the multi-level nature of tourism supply and demand. Likewise, overemphasis on the importance of tourism for regional economic growth is increasingly balanced by new models of tourism, their relevance for local elements, as well as methodological advancements that can allow for identifying both the impact of tourism on local economy, but also the mechanisms through which it operates.

This book provides a collection of papers which combine aspects of regional science and tourism research and look at specific issues from both angles. It thus attempts to demonstrate how these two fields can be merged to gain valuable insights into local and regional economic systems which feed on tourism and the hospitality industry as important business activities but also how tourism is shaped by spatial characteristics. Its strength lies in the variety of different topics offered to readers as appetizers and motivation to engage in further explorations along these lines. We dearly hope many will accept and enjoy this offer.

References

Allan, G. J., Lecca, P., & Swales, K. (2017). The impacts of temporary but anticipated tourism spending: An application to the glasgow 2014 commonwealth games. *Tourism Management, 59,* 325–337.

Andersson, M., Larsson, J. P., & Wernberg, J. (2019). The economic microgeography of diversity and specialization externalities–firm-level evidence from Swedish cities. *Research Policy, 48*(6), 1385–1398.

Andersson, T. D. (2007). The tourist in the experience economy. *Scandinavian Journal of Hospitality and Tourism, 7*(1), 46–58.

Blake, A. (2009). The dynamics of tourism's economic impact. *Tourism Economics, 15*(3), 615–628.

Blake, A., Arbache, J. S., Sinclair, M. T., & Teles, V. (2008). Tourism and poverty relief. *Annals of Tourism Research, 35*(1), 107–126.

Boschma, R. A., & Frenken, K. (2006). Why is economic geography not an evolutionary science? Towards an evolutionary economic geography. *Journal of Economic Geography, 6*(3), 273–302.

Brakman, S., Garretsen, H., & Van Marrewijk, C. (2001). *An introduction to geographical economics: Trade, location and growth.* Cambridge University Press.

Bramwell, B. (1994). Rural tourism and sustainable rural tourism. *Journal of Sustainable Tourism, 2*(1–2), 1–6.

Brouder, P. (2014). Evolutionary economic geography and tourism studies: Extant studies and future research directions. *Tourism Geographies, 16*(4), 540–545.

Brouder, P., & Eriksson, R. H. (2013). Tourism evolution: On the synergies of tourism studies and evolutionary economic geography. *Annals of Tourism Research, 43,* 370–389.

Brouder, P., & Ioannides, D. (2014, December). Urban tourism and evolutionary economic geography: Complexity and co-evolution in contested spaces. *Urban Forum*, 25(4), 419–430.

Bush, S. R., Oosterveer, P., Bailey, M., & Mol, A. P. (2015). Sustainability governance of chains and networks: A review and future outlook. *Journal of Cleaner Production, 107,* 8–19.

Butler, R. (2015). The evolution of tourism and tourism research. *Tourism Recreation Research, 40*(1), 16–27.

Calero, C., & Turner, L. W. (2020). Regional economic development and tourism: A literature review to highlight future directions for regional tourism research. *Tourism Economics, 26*(1), 3–26.

Casagrandi, R., & Rinaldi, S. (2002). A theoretical approach to tourism sustainability. *Conservation Ecology, 6*(1), 13.

Christaller, W. (1964). Some considerations of tourism location in Europe: The peripheral regions-under-developed countries-recreation areas. *Papers of the Regional Science Association, 12*(1), 95–105.

Clancy, M. (1998). Commodity chains, services and development: Theory and preliminary evidence from the tourism industry. *Review of International Political Economy, 5*(1), 122–148.

Clancy, M. (2002). The globalization of sex tourism and Cuba: A commodity chains approach. *Studies in Comparative International Development, 36*(4), 63–88.

Clark, T. N. (Ed.). (2004). *The city as an entertainment machine.* Boston, MA: Elsevier/JAI.

Cole, S. (2007). The regional science of tourism: An overview. *Journal of Regional Analysis and Policy*, 37(1100-2016-90094), 183–192.

Debreu, G. (1959). *Theory of Value.* An Axiomatic Analysis of Economic Equilibrium: Yale University Press, New Heaven and London.

do Val Simardi Beraldo Souza, T., Thapa, B., Rodrigues, C. G. D. O., & Imori, D. (2019). Economic impacts of tourism in protected areas of Brazil. *Journal of Sustainable Tourism, 27*(6), 735–749.

Dredge, D., & Gyimóthy, S. (2015). The collaborative economy and tourism: Critical perspectives, questionable claims and silenced voices. *Tourism Recreation Research, 40*(3), 286–302.

Duranton, G., & Puga, D. (2004). Micro-foundations of urban agglomeration economies. In V. Henderson & J. F. Thisse, (Eds.) *Handbook of regional and urban economics*, Vol. 4, pp. 2063–2117. Elsevier.

Eadington, W. R., & Smith, V. L. (1992). Introduction: The emergence of alternative form of tourism. In W. R. Eadington, & V. L. Smith, (Eds.) *Tourism Alternatives: Potentials and Problems in Development of Tourism.* University of Pennsylvania Press Philadelphia.

Frenţ, C. (2018). Informing tourism policy with statistical data: The case of the icelandic tourism satellite account. *Current Issues in Tourism, 21*(9), 1033–1051.

Friedman, T. L. (2005) *The World is Flat: A Brief History of the Twenty-first Century* . Farrar Straus and Giroux.

Fritz, O. Laimer, P. Ostertag-Sydler, J. & Weiß, J., (2019). Bericht über die Bedeutung, Entwicklung und Struktur der österreichischen Tourismus- und Freizeitwirtschaft im Jahr 2018. Austrian Institute of Economics Research and Statistics Austria.

Grodach, C. (2011). Art spaces in community and economic development: Connections to neighborhoods, artists, and the cultural economy. *Journal of Planning Education and Research, 31*(1), 74–85.

Gyr, U. (2010). The history of tourism: structures on the path to modernity. *European History Online*, published by the Institute of European History (IEG), Mainz 2010–12–03. https://www.ieg-ego.eu/gyru-2010-en

Jacobs, J. (1970). *The economies of cities.* Jonathan Cape.

Jacobs, J. (1984). *The wealth of nations: Principles of economic life.* New York: Vintage.

Khoshkhoo, M. H., Alizadeh, V., & Pratt, S. (2017). The economic contribution of tourism in Iran: An input–output approach. *Tourism Analysis, 22*(3), 435–441.

Kim, M. K., Kim, S. K., Park, J. A., Carroll, M., Yu, J. G., & Na, K. (2017). Measuring the economic impacts of major sports events: The case of Formula One Grand Prix (F1). *Asia Pacific Journal of Tourism Research, 22*(1), 64–73.

Knowles, T., Diamantis, D., & El-Mourhabi, J. B. (2004). The globalization of tourism and hospitality: A strategic perspective. Cengage Learning EMEA.

Lane, B. (1994). What is rural tourism? *Journal of Sustainable Tourism, 2*(1–2), 7–21.

Leiper, N. (2004). *Tourism management* (3rd ed.). Australia: Pearson Education.

Leiper, N. (2008). Why 'the tourism industry' is misleading as a generic expression: The case for the plural variation, 'tourism industries.' *Tourism Management, 29*(2), 237–251.

Li, S., Blake, A., & Cooper, C. (2011). Modelling the economic impact of international tourism on the Chinese economy: A CGE analysis of the Beijing 2008 Olympics. *Tourism Economics, 17*(2), 279–303.

Liburd, J. J. (2012). Tourism research 2.0. *Annals of Tourism Research, 39*(2), 883–907.

Maddison, A. (1998). Measuring the performance of a communist command economy: An assessment of the CIA estimates for the USSR. *Review of Income and Wealth, 44*(3), 307–323.

Mahadevan, R., Amir, H., & Nugroho, A. (2017). Regional impacts of tourism-led growth on poverty and income inequality: A dynamic general equilibrium analysis for Indonesia. *Tourism Economics, 23*(3), 614–631.

Markusen, A., & Schrock, G. (2006). The artistic dividend: Urban artistic specialisation and economic development implications. *Urban Studies, 43*(10), 1661–1686.

Martin, R., & Sunley, P. (2001). Rethinking the "economic" in economic geography: Broadening our vision or losing our focus? *Antipode, 33*(2), 148–161.

Martin, R., & Sunley, P. (2007). Complexity thinking and evolutionary economic geography. *Journal of Economic Geography, 7*(5), 573–601.

May, V. (1991). Tourism, environment and development: Values, sustainability and stewardship. *Tourism Management, 12*(2), 112–118.

Mazumder, M. N. H., Su, Z., Bhuiyan, A. B., Rashid, M., & Al-Mamun, A. (2017). Economy-wide Impact of Tourism in Malaysia: An Input–output Analysis. *Tourism Analysis, 22*(3), 429–433.

Mellander, C., Pettersson, L., & Öner, Ö. (2011). Culture city. *Journal of Town and City Management, 2*(3), 246–262.

Middleton, V. T., & Clarke, J. R. (2012). Distribution channels in travel and tourism: creating access. In *Marketing in Travel and Tourism* (pp. 302–322). Routledge.

Mowforth, M., & Munt, I. (2015). *Tourism and sustainability: Development, Globalisation and new tourism in the third world*. Routledge.

Mullins, P. (1991). Tourism urbanization. *International Journal of Urban and Regional Research, 15*(3), 326–342.

Myrdal, G. (1957). *Economic Theory and Under-Developed Regions*. Washington, DC: International Bank for Reconstruction and Development.

Oh, H., Fiore, A. M., & Jeoung, M. (2007). Measuring experience economy concepts: Tourism applications. *Journal of Travel Research, 46*(2), 119–132.

Öner, Ö., & Klaesson, J. (2017). Location of leisure: The new economic geography of leisure services. *Leisure Studies, 36*(2), 203–219.

Pine, B. J., Pine, J., & Gilmore, J. H. (1999). *The experience economy: Work is theatre and every business a stage*. Harvard Business Press.

Ribeiro, L. C. D. S., Da Silva, E. O. V., Andrade, J. R. D. L., & De Souza, K. B. (2017). Tourism and regional development in the Brazilian Northeast. *Tourism Economics, 23*(3), 717–727.

Romero, I., & Tejada, P. (2011). A multi-level approach to the study of production chains in the tourism sector. *Tourism Management, 32*(2), 297–306.

Saayman, M., Rossouw, R., & Krugell, W. (2012). The impact of tourism on poverty in South Africa. *Development Southern Africa, 29*(3), 462–487.

Sacco, B., & Cassar, I. P. (2019). Measuring the economic impact of tourism in Malta using the Tourism Satellite Account. *European Journal of Tourism Research, 23,* 86–111.

Sanz-Ibáñez, C., & Anton Clavé, S. (2014). The evolution of destinations: Towards an evolutionary and relational economic geography approach. *Tourism Geographies, 16*(4), 563–579.

Saraniemi, S., & Kylänen, M. (2011). Problematizing the concept of tourism destination: An analysis of different theoretical approaches. *Journal of Travel Research, 50*(2), 133–143.

Scott, D., Hall, C. M., & Stefan, G. (2012). *Tourism and climate change: Impacts, adaptation and mitigation*. Routledge.

Sharpley, R. (2002). Rural tourism and the challenge of tourism diversification: The case of Cyprus. *Tourism Management, 23*(3), 233–244.

Sharpley, R. (2009). *Tourism development and the environment: Beyond sustainability?*. Earthscan.

Sharpley, R., & Telfer, D. J. (Eds.). (2015). *Tourism and development: concepts and issues* (Vol. 63). Channel view publications.

Singh, T. V. (Ed.). (2015). *Challenges in tourism research* (Vol. 70). Channel View Publications.

Song, H., Liu, J., & Chen, G. (2013). Tourism value chain governance: Review and prospects. *Journal of Travel Research, 52*(1), 15–28.

Tohmo, T. (2018). The economic impact of tourism in Central Finland: A regional input–output study. *Tourism Review, 73*(4), 521–547.

United Nations. (2008). Tourism satellite account: Recommended Methodological Framework.

Van den Berghe, P. L. (1994). *The quest for the other: Ethnic tourism in San Cristóbal*. Mexico: University of Washington Press, Seattle.

Viglia, G., & Dolnicar, S. (2020). A review of experiments in tourism and hospitality. *Annals of Tourism Research, 80,* 102858.

Williams, A., & Shaw, G. (1998). Tourism and the environment: Sustainability and economic restructuring. In C. M. Hall & A. A. Lew (Eds.), *Sustainable tourism: A geographical perspective* (pp. 49–59). Harlow: Addison Wesley Longman Ltd.

Firms in the Tourism Industry

Spatial Effects in Regional Tourism Firm Births and Deaths

Bernadette Power, Justin Doran, and Geraldine Ryan

1 Introduction

Tourism is one of the largest and fastest growing economic sectors in the world, providing 292 million jobs and accounting for 1 in 10 jobs in the global workforce (WTTC 2017). While traditionally the sector was considered to be stable with little innovation (Hjalager, 2002, 2010; Sundbo et al. 2007), this is no longer the case (Walsh et al. 2011). Shifts in the global economy along with changing consumer demands mean that the industry has become extremely competitive and is now characterised by continuous transformation (Buhalis and Costa 2006; Camisón and Monfort-Mir 2012; Cooper and Wahab 2005; Martínez-Román et al. 2015). Entrepreneurship is receiving increased attention within tourism research (Carmichael and Morrison 2011; Solvoll et al. 2015) largely due to the vital role entrepreneurs, firm start-ups and business failures play within the tourism industry.

Since 2000, growth in the travel and tourism sector has outpaced that of the global economy. In 2016, for example, this sector contributed 3.1% to direct GDP growth while the global growth rate was lower at 2.5% (WTTC 2017) thus prompting researchers and policy makers to explore the idea of tourism as a tool for regional development (Briedenhann and Wickens 2004; Keeble and Wever 2016; Mose 2007; Müller and Jansson 2006; OECD 2016). In the context of a

B. Power (✉)
Department of Economics, University College Cork, Cork, Ireland
e-mail: b.power@ucc.ie

J. Doran
Spatial and Regional Economics Research Centre, Department of Economics, University College Cork, Cork, Ireland
e-mail: justin.doran@ucc.ie

G. Ryan
Department of Accounting and Finance, University College Cork, Cork, Ireland
e-mail: g.ryan@ucc.ie

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_2

depressed national economy, tourism growth is regarded as a reasonable choice for regional economic development (Hohl and Tisdell, 1995), allowing peripheral and/or marginalised areas to take advantage of their unique tourism-related resource endowments. Tourism-led development plans, however, might not be entirely successful in these regions, as tourism growth is heavily reliant on agglomeration economies rather than mere resource endowments (Capone and Boix 2008). By opening up regions to market forces and globalisation tourism can generate economic benefits resulting in increased wealth and opportunities, however, it can also exacerbate inequalities, increase competition and lead to firm failure (Sharpley and Telfer 2014). Policy formation requires an understanding of how tourism agglomeration impacts entrepreneurship within regions. In this chapter, we focus on how agglomeration economies impact enterprise birth and death rates within the tourism sector.

Agglomeration economies describe the benefits that firms obtain when they locate close to one another (Cortinovis and Van Oort 2015; Glaeser 2010; Gouveia et al. 2017; Neffke et al. 2011). These economies result from internal economies of scale within a firm (Krugman 1991) and from external economies resulting from network benefits. We focus on the latter which are spatial in nature. Frenken et al. (2007) and others such as Rosenthal and Strange (2003), Beaudry and Schiffauerova (2009) examine external economies like localisation, diversification and urbanisation economies. Localisation economies occur when firms benefit from the presence of other firms within the same industry, diversification economies occur when firms benefit from the clustering of a large variety of industries (either related or unrelated), while positive urbanisation economies occur when firms benefit from the size and density of an urban centre. In the latter case, the benefit is from the scale of the entire urban economy rather than the scale of the industry.

The empirical application of our research refers to the Irish economy. Tourism has become one of Ireland's greatest economic success stories. European Union funds, along with public and private sector investments have helped to improve and develop infrastructure, accommodation and visitor attractions (Hurley et al. 1994), while increased competition in the airline industry along with technological innovation has dramatically improved access (ITIC 2013). The period under investigation, 2007 to 2009, was a dynamic period in the Irish economy. During this period, tourism receipts fell from €6.45 billion to €5.36 billion, even though they continued to account for a relatively constant share of gross national product (accounting for 3.7% in 2007 and 3.8% in 2009). Travers (2003) argues that tourism is a powerful instrument of national and regional development in Ireland. It is a particularly important source of economic activity in rural areas (ITIC 2010). Scenic rural areas in Ireland tend to be areas of agricultural disadvantage and look towards tourism as a source of supplementing income and as a source of direct and indirect employment (Gorman 2005). Many areas have developed strong tourism industries and particular places have become synonymous with the word tourism. Following the financial crisis, demand from the domestic market proved to be resilient while international visitors, particularly from the United Kingdom fell sharply (ITIC 2010). In this chapter, we use a comprehensive dataset to examine the effect of spatial agglomeration economies on firm births and deaths in the Irish tourism industry. For comparative purposes, we

also present the results for all firms in Ireland. Our results are estimated at electoral division level. There are over 3,000 electoral divisions in Ireland, each having a low geographical size (average = 23 km) thus making them ideal for comparing regions. Agglomeration economies have been studied in the area of regional economic growth and prosperity (Capone and Boix 2008; Frenken et al. 2007; Hartog et al. 2012; Yang 2012; Yang and Fik 2014), but less is known about the extent to which spatial agglomeration economies affect regional firm births and deaths, particularly in the tourism sector (Hjalager 2010; Yang 2012).

The rest of this chapter is organised as follows: Sect. 2 describes recent literature about the effects of agglomeration on firm births and deaths; Sect. 3 outlines our data and methods; Sect. 4 presents and discusses the empirical results and Sect. 5 concludes.

2 Literature Review

While a large body of tourism literature has examined the demand for tourism and the factors contributing to tourist flows and revenues, few have considered the supply side and issues such as infrastructure, agglomeration and market access (Yang and Fik 2014). Those papers that have examined the issue are complex and cover a diverse range of topics from the firm level to the industry and market level (Song et al. 2012). Early studies considered whether tourism, when studied from a supply perspective, is an industry or a market (see Leiper (2008) for an overview). Nowadays it is commonly recognised that tourism is neither a single industry nor a single market (Dwyer et al. 2010; Stabler et al. 2009), and it is a composite product that involves a combination of a variety of goods and services provided by different sectors, such as transport, accommodation, tour operators, travel agencies, visitor attractions, and retailing. Since local and regional factors play a role in determining the potential success of tourism in any given region (Yang and Fik 2014) further supply side investigations are needed so as to help governments identify the destination-specific attributes that explain regional variability in tourism growth.

Unquestionably, the birth of tourism firms contributes to the economic and social well-being of a community. Tourism entrepreneurs are responsible for the birth of these firms (Koh and Hatten 2002), and without these entrepreneurs, beautiful landscapes, waterways, buildings and cities might not be viewed as tourism resources. Some authors argue that since entrepreneurs stimulate entrepreneurship, the presence of entrepreneurs can lead to a certain level of tourism development even without government intervention or a development plan (Barr 1990; Victurine 2000).Without these entrepreneurs, it is likely that even the most sophisticated development plans will fail (Koh and Hatten 2002). The most common routes into tourism entrepreneurship are to start a new business from scratch or to purchase an existing business. One of the key ingredients for a successful business is location (Romanelli and Schoonhoven 2001). Romo and Schwartz (1995), Saxenian (1994), amongst others, contend that

firm location is influenced by an array of factors such as access to key networks, resources and an educated workforce.

Agglomeration provides notable cost savings and convenience for tourists, thereby enhancing regional tourism growth. Examining the Italian market, Capone and Boix (2008) and Lazzeretti and Capone (2009) find evidence that agglomeration is a crucial driver of regional tourism growth. As noted earlier, these economies can be divided into localisation [economies derived from the concentration of companies that develop the same economic activity in a specific area or region (Marshall 1920)], urbanisation [economies derived from the concentration of companies that develop various economic activities in a particular area or region (Jacobs 2016)] and diversification [economies derived from the co-location of related or unrelated industries, see Frenken et al. (2007)].

Many authors have examined the impact of agglomeration on the development of the tourism industry. A number of these papers focused on the impact of tourism agglomeration on innovation (Go and Williams 1994; Jackson and Murphy 2002, 2006; Novelli et al. 2006; Saxena 2005). Since information flows more easily between firms in a spatially proximate agglomeration, it was expected that the spill-overs of tacit knowledge would be common within a tourism cluster as spatial proximity facilitates social and economic networks. Jackson and Murphy (2002, 2006) and Sørensen (2007) found that when knowledge diffuses quickly, it enhances tourism innovation and contributes to tourism development. While this has been recognised in other tourism sectors, detailed empirical studies remain limited (Yang, 2012).

Saxena (2005) stresses that the importance of localised economies as the main characteristic of tourism destinations and development. Similarly, Capone and Boix (2008) note that the growth rate of local tourism depends more on the strength of localisation economies than it does on the availability of natural resources. Hall (2004), on the other hand, in a study of food and wine firms in New Zealand, notes that networks and cluster relationships between firms are the primary "drivers" of a region's economy. Similarly, Tinsley and Lynch (2001), in a study of networks between small tourism businesses in West Scotland, note the importance of cooperation between businesses. This is not surprising given the nature of the tourism industry and the buyer's market that exists today for tourism products and services. Firms must work together to create a unique regional identity, they must offer sufficient product variety to meet the diverse customer requirements, and they must stay current and respond to changing tourist demands (Page 2003). Novelli et al. (2006) suggests that tourism agglomeration is the result of the co-location of complementary firms which collectively deliver a bundle of attributes to make up a specialised regional product experience.

Michael (2006) notes that by developing cooperative and complementary interactions, tourism firms are able to exploit synergies and create comparative advantage. Van Laere and Heene (2003) identify the capacity to work with others as a core competence of organisations. They argue that many of the skills and resources leading to a firm's success exist outside of the firm. The desirability of small tourism firms working together in a form of "co-opetition" (Nalebuff et al. 1996) is seen in a number of studies as well as in tourism economic policy initiatives. Lazzeretti and

Capone (2009) comment on how embedded tourism firms are within their community and how this can have advantages and disadvantages. In particular, it can help firms to maintain a line of differentiation between one another thus enabling each to survive and grow. Tinsley and Lynch (2008) note that if the fine balance between cooperation and competition is disturbed, then the cooperative spirit can quickly disappear amongst those concerned, resulting in a break-down of business and social networks. At the extreme, this can lead to intense competition and can result in some business failures.

Agglomeration economies play a critical role in explaining how spatial concentration comes about. The bigger the agglomeration, the more firms may benefit from a wider range of business services, a greater variety of potential suppliers and more specialised buyers, a larger and more diversified pool of (skilled and low-cost) labour, etc. Few have examined the impact of agglomeration economies on firm births or deaths (see Basile et al. 2017; Cainelli et al. 2014; Ferragina and Mazzotta 2015), and this issue is under explored for the tourism industry. Localisation externalities impact firm birth and death rates by increasing/decreasing local competition and input prices. Huiban (2011) and Pe'er and Keil (2013) note that negative localisation externalities increase firm death rates, while positive localisation externalities lower death rates. Basile et al. (2017), Renski (2011), and Cainelli et al. (2014) find evidence that positive localisation externalities dominate the market. Greater related variety through sector knowledge spillovers is argued to positively influence the innovativeness, growth and performance and consequently, the survival chances of the firm, see Basile et al. (2017), Brunelle and Dubé (2013) and Renski (2011). Greater unrelated variety also promotes the survival of a firm as the regional economy is less disturbed by sector specific shocks, see Basile et al. (2017). While urbanisation externalities may increase tourism firm births through accessibility to a greater range of services and higher local demand, greater congestion costs (such as higher commercial lease rates, land prices, etc.) may counteract this. Agglomeration economies have been studied in the area of regional economic growth and prosperity (Capone and Boix 2008; Frenken et al. 2007; Hartog et al. 2012; Yang 2012; Yang and Fik 2014) but less is known about the extent to which spatial agglomeration economies affect regional firm births and deaths, particularly in the tourism sector (Hjalager 2010; Li 2008; Yang 2012).

3 Data and Methods

3.1 Data

Business demography data (2007–2009) produced by the central statistics office (CSO) in Ireland is used in our analysis. This business demography data is collected from administrative sources including business registers, tax sources and statistical surveys. Active enterprises, enterprise births and enterprise deaths are identified for

inclusion in this dataset in agreement with the methodological approach delineated by the OECD and Eurostat for international comparability. Enterprises are defined as the smallest grouping of units generating goods and services which benefit administratively from some autonomy over their decision making like the allocation of resources. The enterprise is the sole legal unit. It can perform activities at one or more locations. Enterprises are classified as *active enterprises* if they pay indirect sales tax, referred to as value added taxation (VAT) in Ireland, have registered employees or filed a corporation/income tax return (with over €50,000 turnover) in the reference year. *Enterprise births* involve the new formation of a combination of production factors. No other enterprise, however, can be involved in the event. Enterprise births, therefore, do not comprise of entries into the stock of businesses due to mergers, breakups, split-offs or the restructuring of a set of enterprises. Entries into the stock of businesses resulting from a change in activity are also not seen as an enterprise birth. In addition, reactivated enterprises (enterprises returning to the sample within two calendar years of registering as inactive) are not recorded as births. In contrast, *enterprise deaths* involve the cessation of a combination of factors of production and the deletion of the enterprise from the business register. Enterprise deaths exclude exits from the stock of businesses due to mergers, acquisitions, divestments or the restructuring of a set of enterprises or enterprises which reactivated within two years (see Eurostat 2007).

The business demography data is the most complete source of data on the stock of active enterprises, enterprise births and enterprise deaths in Ireland. It provides data on the employment and NACE Revision 2 classification of active enterprises, enterprise births and enterprise deaths from 2006. For the sub period 2007–2009, this database provides data on the location of a large proportion of the stock of active enterprises, enterprise births and enterprise deaths. The geographical location of each enterprise for this period is known to district electoral division (DED) level.[1] As stated earlier, there are over 3,000 EDs in Ireland of low geographical size (average = 23 km). Of the 272,303 active enterprises in Ireland in 2009, 190,615 (70%) are geocoded to electoral division (ED) level. Aggregating the enterprise data to ED regions allows for an analysis of the effects of agglomeration on regional enterprise deaths and enterprise births.

The tourism sector is complex to measure. It is difficult to classify tourism activity if you have different types of tourists (e.g. inbound, outbound and domestic tourists, business and leisure, etc.). MacFeely et al. (2013) refer to the tourism sector as the invisible sector given its fragmented and heterogeneous nature. Nonetheless, MacFeely et al. (2013) put forth a classification of tourism sectors based on 4 digit NACE Revision 2 codes following the (United Nations Statistics Division 2010, p. 42) definition of tourism activities. Table 1 details the NACE Revision 2 sectors included in the classification of this sector. We aggregate tourism enterprise data to ED regions

[1] DEDs are the second smallest legally defined administrative areas in Ireland for which small area population statistics are published from the Census. The matching of firms to the lowest level of spatial disaggregation, the small area population statistics division, is not possible. For confidentiality reasons the CSO will not provide this information.

Table 1 A map of tourism industries to NACE Rev. 2 codes

Activity	NACE Rev. 2	Activity	NACE Rev. 2
1 Accommodation services for visitors		**7 Transport equipment rental services**	
Hotels and similar accommodation	55.10	Renting and leasing of cars and light vehicles	77.11
Holiday and other collective accommodation	55.20		
Recreational vehicle parks, trailer parks and camping grounds	55.30	**8 Travel agencies and other reservation services**	
Other accommodation	55.90	Travel agency activities	79.11
		Tour operator activities	79.12
2 Food and beverage serving services		Other reservation service and related activity	79.90
Restaurants and mobile food service activities	56.10		
Event catering activities	56.21	**9 Cultural services**	
Other food services	56.29	Performing arts	90.01
Beverage serving activities	56.30	Support activities to performing arts	90.02
		Artistic creation	90.03
3 & 4 Railway & Road passenger transport services		Operation of arts facilities	90.04
Passenger rail transport, interurban	49.10	Library and archives activities	91.01
Urban and suburban passenger land transport	49.31	Museums activities	91.02
Taxi operation	49.32	Operation of historic sites and buildings and similar visitor attractions	91.03
Other passenger land transport n.e.c	49.39	Botanical and zoological gardens and nature reserves activities	91.04
5 Water passenger transport services		**10 Sports and recreational services***	
Inland passenger water transport	50.10	Operation of sports facilities	93.11
Inland passenger water transport	50.30	Fitness facilities	93.13
		Other sports activities	93.19

(continued)

Table 1 (continued)

Activity	NACE Rev. 2	Activity	NACE Rev. 2
6 Air passenger transport services		Activities of amusement parks and theme parks	93.21
Passenger air transport	51.10	Other amusement and recreation activities	93.29
		Renting and leasing of personal and household goods	77.21

* Activities of sports clubs (93.12) excluded. Source: Adapted from MacFeely et al. (2013)

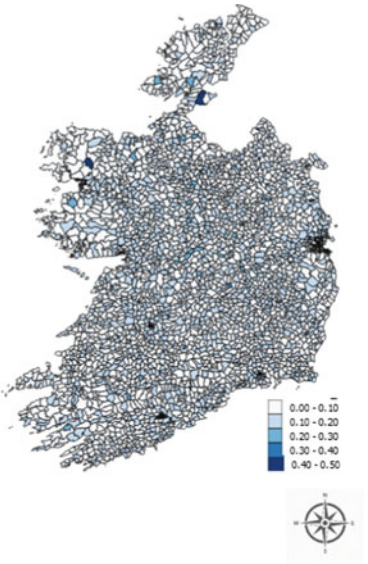
based on this classification to enable an analysis of the effects of agglomeration on regional tourism firm births and deaths. Note MacFeely et al. (2013) admit that this classification is not perfect as not all consumption of these products in these industries is by tourists and tourists may purchase products not included in this sectorial classification, however, it is a useful classification for analysis using large business administrative data.

We also aggregate enterprise data for all sectors of the economy to enable us to identify differences if any of agglomeration measures on regional tourism enterprise births and deaths as opposed to their influence on births and deaths of all enterprises within each ED. The average annual tourism enterprise birth rate b_j in region j is the average proportion of tourism enterprise births in each ED in year $t = 2007$ to 2009. The average annual tourism enterprise death rate $d_j$in region j is the average proportion of tourism enterprise deaths in each ED in year $t = 2007$ to 2009. Figure 1 shows that higher rates of tourism enterprise births and tourism enterprise deaths are not just concentrated around urban centres. This pattern reflects that of higher rates of enterprise births and enterprise deaths across all sectors. Table 2 describes the demography data examined in the analysis below for the sub period 2007 to 2009 for which we have detailed data on the location of the enterprises. It shows that the tourism enterprise birth rate and death rate from 2007 to 2009 also mirrored these rates across all sectors of the economy with the tourism death rate slightly lower in the tourism sector than in the overall economy.

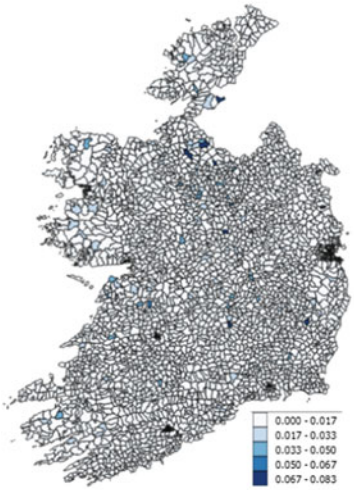
3.2 Measures of Agglomeration

Common measures of agglomeration economies employed by Basile et al. (2017), Alkay and Hewings (2012) and Frenken et al. (2007) are used to approximate localisation, diversification and urbanisation economies. Localisation economies occur when firms in a region profit from the presence of other local firms within the same industry (Boschma and Iammarino, 2009; Frenken et al., 2007). We use location quotients to capture localisation economies, entropy measures like related and unrelated variety to measure diversification economies and population density as a proxy for urbanisation economies. A location quotient relates the concentration of a sector

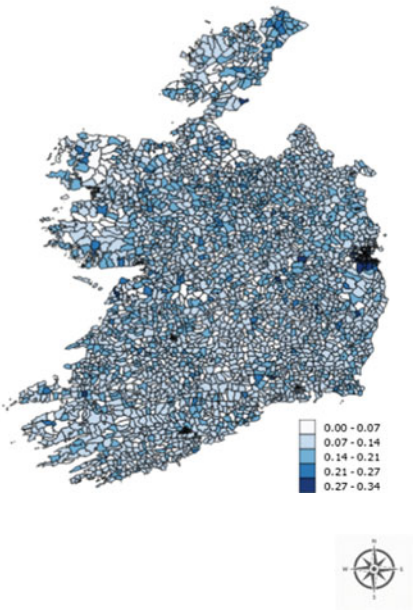
(a) Tourism Enterprise Birth Rates



(b) All Sectors Enterprise Birth Rates



(c) Tourism Enterprise Death Rates



(d) All Sectors Enterprise Death Rates

Fig. 1 Average Irish tourism enterprise birth and deaths rates 2007–2009 by electoral district

Table 2 Business demography in Ireland (*NACE Rev. 2 Sectors A-U*)

Year	2007	2008	2009	Average (2007–2009)
Active enterprises	292,794	293,247	272,303	286,099
Active tourism enterprises	23,084	32,197	32,162	29,147
Enterprise births	31,195	26,955	28,525	28,892
Birth rate (%)	10.7%	9.2%	10.5%	10.1%
Tourism enterprise births	2,401	2,646	2,995	2,680
Tourism birth rate (%)	7.7%	9.8%	9.3%	8.9%
Enterprise deaths	30,585	36,723	36,741[a]	34,683
Death rate (%)	10.4%	12.5%	13.5%	12.1%
Tourism enterprise deaths	2,283	2,411	3,030	2,574
Tourism death rate (%)	9.8%	7.5%	9.4%	8.9%

Source: Business demography in Ireland (*NACE Rev. 2 Sectors A-U*), Central Statistics Office, Ireland

in an ED to the concentration of the same sector nationally. We use the share of sectorial employment in the relevant spatial unit to capture concentration following Antonietti and Cainelli (2011) and Basile et al. (2017). Thus, the location quotient (LQ) of sector s (four-digit NACE classification code) in ED j is approximated by:

$$LQ_{s,j} = \frac{E_{s,j}/E_j}{E_{s,n}/E_n} \tag{1}$$

where $E_{s,j}$ is the employment in sector s in ED j and $E_{s,n}$ is the employment in sector s nationally (n). Location quotients greater than 1 suggest that there is a bigger share of employment in the ED than there is in that sector nationally. They indicate a regional concentration or specialisation or strength in that particular sector. Location quotients less than 1 indicate a potential opportunity to develop businesses in the local area to meet area demand.

Diversification externalities arise from the clustering of a large variety of sectors in the local economy (Jacobs 1969). To capture diversity, we follow Frenken et al. (2007) method, where related variety is approximated by the weighted sum of the entropy at the four-digit NACE classification system within each two-digit NACE classification system. If all four-digit NACE sectors s fall solely under a two-digit NACE sector i, the two digit shares P_i in ED j can be calculated by adding the four-digit shares p_s in each EDj as follows:

$$P_{i,j} = \sum_{s \in (i,j)} p_s \tag{2}$$

Unrelated variety in ED j (UV_j) or entropy at the two-digit NACE classification level using Eq. (2) is given by:

$$UV_j = \sum_{i=1}^{I} P_{i,j} \log_2 \left(1/P_{i,j}\right) \tag{3}$$

Related variety (RV_j) is calculated by the weighted sum of entropy within each two-digit NACE code in Eq. (3) which is approximated by:

$$RV_j = \sum_{i=1}^{I} P_{i,j} H_{i,j} \tag{4}$$

where

$$H_{i,j} = \sum_{s \in (i,j)} \frac{P_s}{P_{i,j}} \log_2 \left(\frac{1}{P_s/P_{i,j}} \right)$$

Urbanisation effects tourism firm births through accessibility to a greater range of services (e.g. airports, institutions and government support bodies) and higher local demand. However, greater congestion costs (e.g. higher commercial lease rates, land prices, etc.) may counteract this. Urbanisation externalities (UE_j) are captured by the population density in each ED. Urbanisation externalities (UE_j) are calculated as follows in accordance with Antonietti and Cainelli (2011), Alkay and Hewings (2012):

$$UE_j = \frac{POP_j}{Area_j} \tag{5}$$

where $Area_j$ is the area of the ED (Km^2). Figure 2 graphs these agglomeration measures by ED. Figure shows that higher location quotients are more spread out throughout the country. Greater related variety and unrelated variety are concentrated in urban centres such as Dublin, Cork and Limerick, etc. These urban centres are more densely populated and thus greater diversity, captured by related and unrelated variety, is evident.

3.3 Control Variables

We also include firm-specific variables such as firm size and firm age at the ED level through computing the proportion of enterprises in different size and age categories in each ED. For industry-specific variables, like the sectoral growth rate or concentration approximated using the Herfindahl Index, we include an average estimate of these measures across all enterprises within the ED over the period 2007 and 2009. These variables are defined and summarised in Table 3.

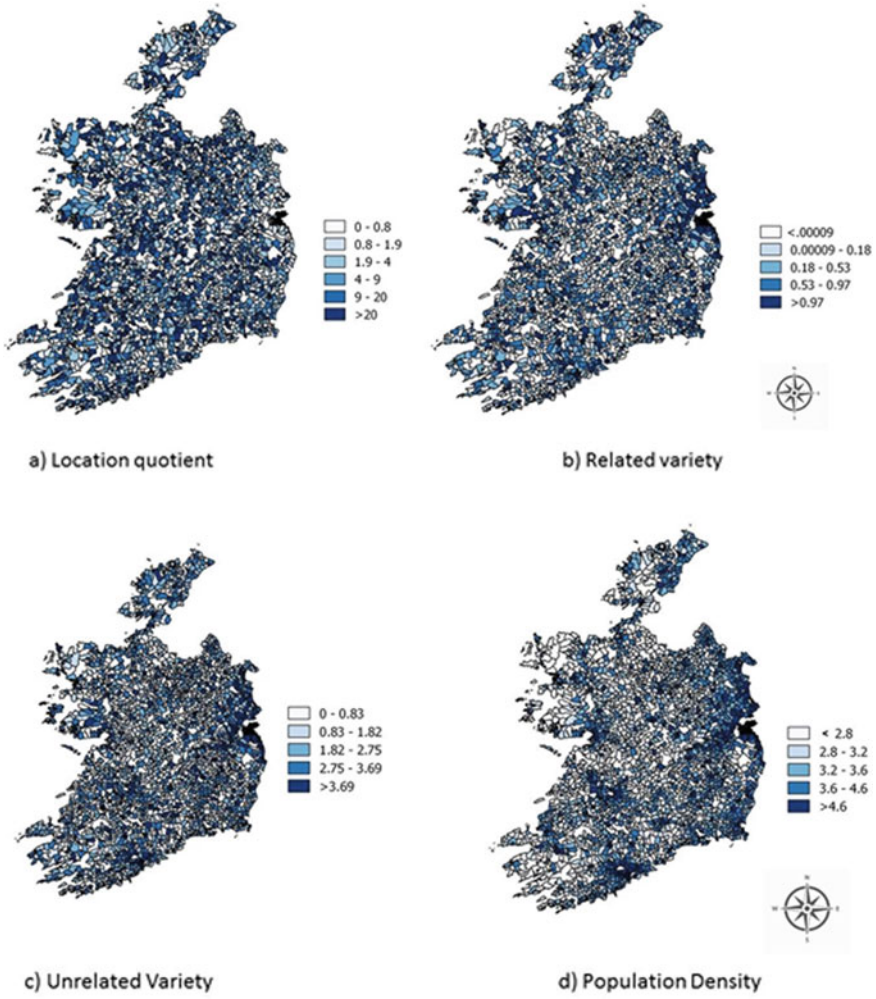


Fig. 2 Average annual Irish agglomeration measures 2007–2009 by electoral district

3.4 Methods

The impact of agglomeration on regional tourism enterprise births and deaths is investigated using a cross-sectional spatial autoregressive model of the following

Table 3 Descriptive statistics of variables

Variables	Tourism enterprises		All enterprises	
	Mean	Standard deviation	Mean	Standard deviation
Proportion of firms in ED with zero employees	0.0769	0.1527	0.0916	0.0657
Proportion of firms in ED with 1–4 employees	0.6823	0.2885	0.7887	0.1013
Proportion of firms in ED with 5–9 employees	0.1351	0.2107	0.0676	0.0564
Proportion of firms in ED with 10–49 employees (reference)	0.0464	0.0443	0.0461	0.0441
Proportion of firms in ED with 50+ employees	0.0141	0.0602	0.0057	0.0152
Proportion of firms in ED age less than 2 years	0.2578	0.2704	0.2365	0.0922
Proportion of firms in ED age 3 to 5 years	0.1002	0.1800	0.1413	0.0832
Proportion of firms in ED age 6 to 10 years (reference)	0.1988	0.0914	0.1985	0.0914
Proportion of firms in ED age 11 to 20 years	0.2772	0.2778	0.2569	0.1017
Proportion of firms in ED age 21 to 30 years	0.1957	0.2613	0.1505	0.0921
Proportion of firms in ED age 30+ years	0.2247	0.0937	0.0176	0.0264
Sectorial growth rate	-0.3432	1.9403	-0.81144	2.2539
Herfindahl index	0.4729	0.4145	0.4607	0.4106
Location quotient	3.2243	9.4005	6.2895	40.7656
Related variety	0.4701	0.3773	0.4304	0.3735
Unrelated variety	2.6309	0.8499	2.4707	0.9220

(continued)

Table 3 (continued)

Variables	Tourism enterprises		All enterprises	
	Mean	Standard deviation	Mean	Standard deviation
Population density	4.2805	1.9977	4.0440	1.9434

Note [a] Sectorial growth rate is measured by logarithmic difference in industry employment in each NACE Rev. 2 4 digit sector code in each ED between 2007 and 2009

[b]TheHerfindahl Index as measured by $\sum_{i=1}^{N} z_i^2$ where z_i is the number of employees in each firm divided by total employment in its NACE Rev. 2 four digit sector code in each ED averaged over the period 2007 to 2009 and N is the number of establishments within the industry similar to Pe'er and Keil (2013)

[c]ED is an acronym for Electoral District

form[2]:

$$b_j = \alpha_0 + \lambda_1 W b_j + \alpha_1 x_j + \varepsilon_{1j} \tag{6a}$$

$$\varepsilon_{1j} = \rho_1 M \varepsilon_{1j} + \mu_{1j} \tag{6b}$$

$$d_j = \beta_0 + \lambda_2 W d_j + \beta_1 x_j + \varepsilon_{2j} \tag{6c}$$

$$\varepsilon_{2j} = \rho_2 M \varepsilon_{2j} + \mu_{2j} \tag{6d}$$

[2] Using a Cliff-Ord model (or Manski model) of the following form:

$$y = \lambda W y + X\beta + WX\gamma + \mu$$

$$\mu = \rho W \mu + \varepsilon$$

we imposed restrictions on this model test the appropriateness of alternative spatial models. The following alternative models were examined.

$\gamma = 0$, $\rho = 0$, $\lambda \neq 0$ - > Spatial Lag Model.

$\gamma = 0$, $\rho \neq 0$, $\lambda = 0$ - > Spatial Error Model.

$\gamma = 0$, $\rho \neq 0$, $\lambda \neq 0$ - > Spatial Autoregressive Model with Autoregressive Disturbances.

$\gamma \neq 0$, $\rho = 0$, $\lambda \neq 0$ - > Spatial Durbin Model.

For tourism births, the robust Lagrange multiplier test shows both a spatial error process (LM statistic = 7.289, df = 1, p-value = 0.0007) and a spatial lag (LM statistic = 4.532, df = 1, p-value = 0.033) implying that our SARAR model is robust. For tourism deaths, the Lagrange multiplier test also shows both a spatial error process (LM statistic = 8.673, df = 1, p-value = 0.003) and a spatial lag (LM statistic = 17.052, df = 1, p-value = 0.0001) implying that our SARAR model is robust. We conduct these estimations at the higher level regional aggregation (e.g. local electoral area) due to the high level of computations required with 2,856 DEDs. Note as there are only 128 of these in our sample for Ireland this simplifies the computation techniques considerably.

Spatial dependence, also referred to as regional spillovers, is captured by an endogenous spatial lag ($\lambda_1 Wb_j$ in the birth equation and $\lambda_2 Wd_j$ in the death equation). A spatial autoregressive error term is present in both models (ε_{1j} and ε_{2j}) and is included to capture nuisance spatial dependence in unobserved factors. Our first dependent variable b_j in Eq. (6a) is a vector of the average tourism enterprise birth rate in electoral district j over the period 2007–2009 and analogously our second dependent variable d_j in Eq. (6c) is a vector of the average death rate in electoral district j over the same period. α_0 and β_0 represent the vectors of intercept coefficients, x_j is the matrix of independent variables (which is constant across both the birth and death equations), α_1 and β_1 are the associated coefficients and ε_{1j} and ε_{2j} are the respective error terms in Eqs. (6a) and (6c). W and M are spatial weighting matrices of dimensions $N*N$. They are calculated using the row normalised inverse of distance between the centroid of each region. The W matrix is row standardised so that the rows sum to 1. The values Wb_j and Wd_j are therefore a spatially weighted value of b_j and d_j. The spatial error process represented in Eq. (6b) and (6d) infers that shocks to a region proliferates this effect through the error term to other regions. In Eq. (6b) and (6d), ρ_j is a spatial autoregressive coefficient and μ_j is a standard spherical error term. We estimate our spatial model using the method developed by Kelejian and Prucha (1998) where M = W.

3.5 Results

The results of the spatial autoregressive estimations are presented in Table 4 for tourism enterprise births and deaths (Columns I and II, respectively) and for comparison purposes enterprise births and deaths across all sectors of the economy (Columns III and IV, respectively). We find that tourism enterprise births and deaths at the ED level exhibit positive spatial dependence.[3] This implies that bordering regions experience similar patterns in tourism enterprise birth and death rates. Our estimates of lambda (λ_j) in Eqs. (6a) and (6c) are positive and significant for all the estimations presented in Table 4, Columns 1 to IV. Consequently, increased tourism enterprise births, and analogously tourism enterprise deaths lead to further tourism enterprise births and enterprise deaths in neighbouring regions. This positive spatial dependence in tourism enterprise births and enterprise deaths is evident after we control for measures of agglomeration economies such as localisation economies, related and unrelated variety, urbanisation economies and other factors such as the characteristics of firms in the ED and the industries in which they operate in. It is

[3] Positive spatial dependence was found in tourism births and deaths using the Moran (1950) I test at local electoral area level confirming the findings of positive spatial dependence in the cross-sectional spatial autoregressive estimations found at ED level above. We estimated Moran's I at local electoral area level which are larger spatial units for ease of computation. There are 128 of these in our sample for Ireland. For tourism births Moran's I was 0.308 with a Z value of 5.440 and an associated p-value less than 0.0001. For tourism deaths Moran's I was 0.519 with a Z value of 9.130 and an associated p-value less than 0.0001.

Table 4 Cross-sectional spatial autoregressive estimates

Variables	Tourism enterprises		All enterprises	
	Births	Deaths	Births	Deaths
Proportion in ED with zero employees	0.0090 (0.0137)	0.0724*** (0.0129)	0.0193 (0.0153)	0.1400*** (0.0193)
Proportion in ED with 1–4 employees	0.0376*** (0.0096)	0.0346*** (0.0092)	0.0278** (0.0129)	0.0895*** (0.0159)
Proportion in ED with 5–9 employees	0.0192* (0.0114)	0.0030 (0.0109)	0.0441*** (0.0163)	-0.0249 (0.0206)
Proportion in ED with 10–49 employees (reference)				
Proportion in ED with 50 + employees	-0.0302 (0.0276)	0.0570** (0.0258)	-0.1954*** (0.0374)	0.2380*** (0.0468)
Proportion in ED age less than 2 years	0.1494*** (0.0085)	0.0011 (0.0079)	0.2168*** (0.007)	0.0523*** (0.0095)
Proportion in ED age 3 to 5 years	0.1400*** (0.0105)	0.0038 (0.0099)	0.0694*** (0.0081)	0.0083 (0.0101)
Proportion in ED age 6 to 10 years (reference)				
Proportion in ED age 11 to 20 years	-0.0057 (0.0081)	-0.0078 (0.0076)	0.0066 (0.0071)	-0.0233*** (0.0086)
Proportion in ED age 21 to 30 years	-0.0108 (0.0083	-0.0249*** (0.0079)	-0.0002 (0.0076)	-0.0453*** (0.0090)
Proportion in ED age 30 + years	-0.0041 (0.0176)	-0.0406*** (0.0166)	0.0030 (0.0212)	-0.0397 (0.0261)
Herfindahl index	-0.0081* (0.0042)	-0.0048 (0.0040)	-0.0043*** (0.0014)	-0.0038** (0.0016)
Related variety	0.0124 (0.0137)	0.0528*** (0.0127)	-0.0049 (0.0047)	0.0136** (0.0056)
Unrelated variety	0.0175** (0.0082)	0.0382*** (0.0078)	-0.0088*** (0.0024)	0.0078*** (0.0029)
Location quotient	0.0005 (0.0004)	-0.0006* (0.0004)	-1.91e-06 (3.09e-05)	-2.71e-05 (3.87e-05)
Related variety squared	-0.0104 (0.0103)	-0.0208** (0.0094)	-0.0019 (0.0037)	-0.0020 (0.0042)
Unrelated variety squared	-0.0016 (0.0016)	-0.0062*** (0.0015)	0.0014*** (0.0005)	-0.0018*** (0.0006)
Location quotient squared	-3.91e-06 (3.63e-06)	3.31e-06 (3.43e-06)	-3.95e-09 (2.33e-08)	-3.50e-08 (2.91e-08)
Population density	0.0221*** (0.0058)	0.0031 (0.0047)	0.0111*** (0.0020)	0.0016 (0.0019)
Population density squared	-0.0021*** (0.0005)	0.0004 (0.0004)	-0.0012*** (0.0002)	0.0000 0.0002

(continued)

Table 4 (continued)

Variables	Tourism enterprises		All enterprises	
	Births	Deaths	Births	Deaths
Sectorial growth rate	0.0015* (0.0008)	-0.0062*** (0.0008)	0.0021*** (0.0002)	-0.0029*** (0.0003)
Constant	-0.0770*** (0.0186)	-0.0700*** (0.0167)	-0.0105 (0.0146)	-0.0677*** (0.0172)
Lambda (λ_j)	0.0938* (0.0532)	0.5101*** (0.0405)	0.0987*** (0.0383)	0.7138*** (0.0193)
Rho (ρ_j)	-0.0280 (0.0586)	-0.3814*** (0.0575)	0.0687* (0.0417)	-0.5981*** (0.0410)
N	2856	2856	3390	3390

[a]Standard errors in parentheses. [b]***p < 0.01, ** p < 0.05, * p < 0.1

reflective of a pattern of positive spatial dependence in enterprise births and enterprise deaths across all sectors of the economy and highlights how tourism enterprise births in one region present opportunities for further tourism enterprise births and tourism development in neighbouring regions. However, a spate of tourism enterprise deaths in one ED can also propagate further tourism enterprise deaths throughout neighbouring regions. Thus, there are positive externalities for local tourism firms and those in neighbouring regions in recognising this dependency and an onus to act cooperatively in supporting, growing and developing their tourism product and associated tourism enterprise births.

Turning now to the impact of agglomeration economies on tourism enterprise births, we find that the coefficients on population density and local diversity more specifically unrelated variety were positive and significant in explaining regional tourism enterprise births. Thus, population density and greater local diversity (or unrelated variety) significantly raise regional tourism enterprise births. While greater tourism enterprise births are expected in urban centres, diseconomies set in with increasing levels of population density providing some evidence of nonlinearities in urbanisation economies supporting arguments put forth by De Silva and McComb (2012). It is likely that congestion effects and higher land and property prices, commercial lease rates, etc. can inhibit tourism enterprise births in these circumstances. We also find that a more varied industry composition promotes greater regional tourism enterprise births providing suggestive evidence that knowledge spillovers through local collaborations and networks across a more diverse set of local businesses foster greater tourism enterprise births. The findings for the effects of spatial agglomeration economies on tourism enterprise births were reflective of enterprise births for urbanisation externalities. However, greater diversity captured by unrelated variety has a negative and significant effect on enterprise births across all sectors of the economy. Thus, there is a difference in the effect of diversity on tourism enterprise births in comparison with enterprise births across all sectors of

the economy. Policy measures which support diversity assist the development of the tourism industry but do not encourage enterprise births in general.

Counterintuitively but similar to regional enterprise deaths across all sectors local diversity (this time related and unrelated) significantly raise regional tourism enterprise deaths. Thus, greater diversity facilitating knowledge spillovers and the cross-fertilisation of knowledge does not shield regions and tourism enterprises operating in those regions against idiosyncratic demand shocks. While there was no evidence that regional specialisation has an impact on tourism enterprise births there is evidence that greater local specialisation lowers regional tourism enterprise deaths. The coefficient on the location quotient was negative and significant. The benefits of regional specialisation in tourism were, therefore, found to outweigh the associated diseconomies (vis. costs of local inputs, tougher competition) increasing the survival rate of tourist firms during a macroeconomic shock. This is consistent with other evidence which explores the impact of localisation economies on regional enterprise deaths rates, see Cainelli et al. (2014) and Ferragina and Mazzotta (2015). This effect is negative and significant after controlling for industry concentration in the region. Positive spatial dependence transmits this effect across proximate regions. The effect of agglomeration economies on regional enterprise deaths across all sectors was largely similar to that on regional tourism enterprise deaths except the effect of localisation economies though negative in sign was not significant for regional enterprise deaths across all sectors.

We find regions with a higher proportion of micro-enterprises (1–4 or 5–9 employees) relative to the proportion of small enterprises (10–49 employees) had higher regional tourism enterprise birth rates and higher regional enterprise birth rates across all sectors. Comparatively, regions with a higher proportion of large firms (50+ employees) relative to the proportion of small firms (10–49 employees) had lower regional enterprise birth rates across all sectors; however, this effect was not significant for regional tourism enterprise birth rates. We also find regions with a higher proportion of younger enterprises (firms trading less than two years and between 3 to 5 years) relative to the proportion of more established enterprises (trading for 6–10 years) had higher regional tourism enterprise birth rates and higher regional enterprise birth rates across all sectors. Thus, it seems that developing regions with a higher proportion of younger and smaller enterprises lead to greater tourism enterprises birth rates. This effect then proliferates through neighbouring regions.

Regions with a higher proportion of micro-enterprises (zero or 1–4 employees) and large firms (50 + employees) relative to the proportion of small firms (10–49 employees) had higher regional tourism enterprise deaths rates and higher regional enterprise death rates across all sectors. We also find regions with a higher proportion of older enterprises (11 + years in the case of all enterprises deaths and 20+ years in the case of tourism deaths) relative to the proportion of established enterprises (6–10 years trading) had significantly lower regional tourism enterprise death rates and lower regional enterprise death rates across all sectors.

Examining structural features of the region, we find greater average sectoral growth raises regional tourism enterprise birth rates and lowers regional tourism death rates. The coefficient on the Herfindhl index is negative and significant suggesting

that a higher concentration within the sector in the region reduces the proportion of enterprise births and deaths in the region (tourism or otherwise) in line with expectations from the literature (Strotmann 2007; Tveteräs and Eide 2000).

4 Conclusions and Discussion

This study finds clear evidence of positive spatial dependence in regional tourism enterprise births and deaths. Like Yang (2012) across Chinese provinces, we find that the provincial tourism industry exerts a significant influence on the further development of this industry. Tourism enterprise births in local regions present opportunities for further tourism enterprise births and tourism development in neighbouring regions. Tourism enterprise deaths in local regions lead to further tourism enterprise deaths in neighbouring regions. Given the proliferation of these effects, it is important that tourism enterprises recognise the complementary nature of their services and their independency. Tourist destinations should take complete advantage of positive regional spill-over effects in tourism births through collaborative marketing.

We find support also for the co-location of a diverse set of complementary enterprises like Novelli et al. (2006). Knowledge spillovers through local collaborations and networks across a more diverse set of local complementary businesses foster greater tourism enterprise births. Michael (2003) argues that mutually complementary enterprises generate a collectively specialised regional tourism product or experience enhancing the local tourism industry's competitiveness and development. It is also in line with Porter's (1998) definition of tourism agglomeration as "geographic concentrations of interconnected tourism enterprises, firms in related industries and associated institutions in related fields that cooperate but also compete".

Greater local specialisation rather than greater diversity lowers regional tourism enterprise deaths. Benefits from such regional specialisation in tourism can derive from shared or complementary resources, knowledge and institutions. For example, access to larger, mobile, and dedicated labour, cost reductions from the sharing of inputs and spatial proximity to customers and the creation of specialised suppliers assist enterprises in overcoming scale disadvantages raising their productivity and increasing their survival chances relative to similar firms lacking access to such externalities in other regions, see Basile et al. (2017). It also enhances knowledge transfer between different tourism firms and therefore encourages tourism innovation.

Indeed the use of tourism as a tool for regional development in rural and peripheral regions is common in recent years (e.g. Brouder and Eriksson 2013; OECD 2014). The revealed spatial effects support local policymakers in understanding the localised pattern of tourism enterprise births and deaths and offer more appropriate suitable and targeted strategic plans for local tourism development. Proximate regions to tourist destinations should internalise the spill-over to catch up with their neighbours through supporting new tourism births and local development and marketing plans.

References

Alkay, E., & Hewings, G. J. D. (2012). The determinants of agglomeration for the manufacturing sector in the Istanbul metropolitan area. *the Annals of Regional Science, 48*(1), 225–245. https://doi.org/10.1007/s00168-010-0370-z.

Antonietti, R., & Cainelli, G. (2011). The role of spatial agglomeration in a structural model of innovation, productivity and export: A firm-level analysis. *the Annals of Regional Science, 46*(3), 577–600.

Barr, T. (1990). From quirky islanders to entrepreneurial magnates: The transition of the Whitsundays. *Journal of Tourism Studies, 1*(2), 26–32.

Basile, R., Pittiglio, R., & Reganati, F. (2017). Do agglomeration externalities affect firm survival? *Regional Studies, 51*(4), 548–562.

Beaudry, C., & Schiffauerova, A. (2009). Who's right, Marshall or Jacobs? The localization versus urbanization debate. *Research Policy, 38*(2), 318–337.

Boschma, R., & Iammarino, S. (2009). Related variety, trade linkages, and regional growth in Italy. *Economic Geography, 85*(3), 289–311.

Briedenhann, J., & Wickens, E. (2004). Tourism routes as a tool for the economic development of rural areas—vibrant hope or impossible dream? *Tourism Management, 25*(1), 71–79.

Brouder, P., & Eriksson, R. H. (2013). Staying power: What influences micro-firm survival in tourism? *Tourism Geographies, 15*(1), 125–144.

Brunelle, C., & Dubé, J. (2013). *Does Proximity Increase the Survival of Firms in Remote Areas?*, Working Papers Series from Swedish Entrepreneurship Forum. https://entreprenorskapsforum.se/wp-content/uploads/2013/09/WP_26.pdf.

Buhalis, D., & Costa, C. (2006). *Tourism management dynamics: trends, management and tools.* Routledge.

Cainelli, G., Montresor, S., & Marzetti, G. V. (2014). Spatial agglomeration and firm exit: A spatial dynamic analysis for Italian provinces. *Small Business Economics, 43*(1), 213–228.

Camisón, C., & Monfort-Mir, V. M. (2012). Measuring innovation in tourism from the Schumpeterian and the dynamic-capabilities perspectives. *Tourism Management, 33*(4), 776–789.

Capone, F., & Boix, R. (2008). Sources of growth and competitiveness of local tourist production systems: An application to Italy (1991–2001). *The Annals of Regional Science, 42*(1), 209–224. https://doi.org/10.1007/s00168-007-0133-7.

Carmichael, B. A., & Morrison, A. (2011). *Tourism entrepreneurship research.* Taylor: Francis.

Cooper, C., & Wahab, S. (2005). *Tourism in the Age of Globalisation.* Routledge.

Cortinovis, N., & Van Oort, F. (2015). Variety, economic growth and knowledge intensity of European regions: A spatial panel analysis. *The Annals of Regional Science, 55*(1), 7–32.

De Silva, D. G., & McComb, R. P. (2012). Geographic concentration and high tech firm survival. *Regional Science and Urban Economics, 42*(4), 691–701.

Dwyer, L., Forsyth, P., & Dwyer, W. (2010). *Tourism economics and policy* (Vol. 3). Channel View Publications.

Eurostat. (2007). Eurostat—OECD Manual on Business Demography Statistics. Retrieved from https://ec.europa.eu/eurostat/ramon/statmanuals/files/KS-RA-07-010-EN.pdf.

Ferragina, A. M., & Mazzotta, F. (2015). Agglomeration economies in Italy: Impact on heterogeneous firms' exit in a multilevel framework. *Economia E Politica Industriale, 42*(4), 395–440.

Frenken, K., Van Oort, F., & Verburg, T. (2007). Related variety, unrelated variety and regional economic growth. *Regional Studies, 41*(5), 685–697.

Glaeser, E. L. (2010). *Agglomeration economics.*w University of Chicago Press.

Go, F. M., & Williams, A. P. (1994). Competing and cooperating in the changing tourism channel system. *Journal of Travel and Tourism Marketing, 2*(2–3), 229–248.

Gorman, C. (2005). Cooperative marketing structures in rural tourism: The Irish case. *Rural Tourism and Sustainable Business, 26,* 121.

Gouveia, A., Santos, S., & Fernandes, M. (2017). *The empirics of agglomeration economies: the link with productivity*. Retrieved from GEE Papers 0067, Gabinete de Estratégia e Estudos, Ministério da Economia.

Hall, C. M. (2004). Small firms and wine and food tourism in New Zealand: Issues of collaboration, clusters and lifestyles *Small firms in tourism* (pp. 167–181).

Hartog, M., Boschma, R., & Sotarauta, M. (2012). The Impact of related variety on regional employment growth in Finland 1993–2006: High-Tech versus Medium/Low-Tech. *Industry and Innovation, 19*(6), 459–476. https://doi.org/10.1080/13662716.2012.718874.

Hjalager, A.-M. (2002). Repairing innovation defectiveness in tourism. *Tourism Management, 23*(5), 465–474.

Hjalager, A.-M. (2010). A review of innovation research in tourism. *Tourism Management, 31*(1), 1–12.

Hohl, A. E., & Tisdell, C. A. (1995). Peripheral tourism: Development and management. *Annals of Tourism Research, 22*(3), 517–534.

Huiban, J.-P. (2011). The spatial demography of new plants: Urban creation and rural survival. *Small Business Economics, 37*(1), 73–86.

Hurley, A., Archer, B., & Fletcher, J. (1994). The economic impact of European community grants for tourism in the Republic of Ireland. *Tourism Management, 15*(3), 203–211. https://doi.org/10.1016/0261-5177(94)90106-6.

ITIC. (2010). *A Changed World For Irish Tourism - facing up to the challenges of recovery*. Retrieved from Dublin: https://www.itic.ie/wp-content/uploads/2015/05/PRINT-A_Changed_World_for_Irish_Tourism-Exec_Summary_July_2010_01.pdf.

ITIC. (2013). *An Integrated Irish Aviation Policy*. Retrieved from Irish Tourist Industry Confederation: https://www.itic.ie/wp-content/uploads/2015/05/Final_ITIC_Submission_-_Aviation_Policy_100713.pdf.

Jackson, J., & Murphy, P. (2002). Tourism destinations as clusters: Analytical experiences from the New World. *Tourism and Hospitality Research, 4*(1), 36–52.

Jackson, J., & Murphy, P. (2006). Clusters in regional tourism An Australian case. *Annals of Tourism Research, 33*(4), 1018–1035. https://doi.org/10.1016/j.annals.2006.04.005.

Jacobs, J. (1969). *The Economies of Cities*. New York: Random House.

Jacobs, J. (2016). *The economy of cities*: Vintage.

Keeble, D., & Wever, E. (2016). *New firms and regional development in Europe* (Vol. 9). Routledge.

Kelejian, H., & Prucha, I. (1998). A generalized spatial two-stage least squares procedure for estimating a spatial autoregressive model with autoregressive disturbances. *Journal of Real Estate Finance and Economics, 17*(1), 99–121.

Koh, K. Y., & Hatten, T. S. (2002). The tourism entrepreneur: The overlooked player in tourism development studies. *International Journal of Hospitality and Tourism Administration, 3*(1), 21–48.

Krugman, P. (1991). Increasing returns and economic geography. *Journal of Political Economy, 99*(3), 483–499.

Lazzeretti, L., & Capone, F. (2009). Spatial spillovers and employment dynamics in local tourist systems in Italy (1991–2001). *European Planning Studies, 17*(11), 1665–1683. https://doi.org/10.1080/09654310903230616.

Leiper, N. (2008). Why 'the tourism industry' is misleading as a generic expression: The case for the plural variation, 'tourism industries.' *Tourism Management, 29*(2), 237–251.

Li, L. (2008). A review of entrepreneurship research published in the hospitality and tourism management journals. *Tourism Management, 29*(5), 1013–1022.

MacFeely, S., Delaney, J., & O'Donoghue, F. (2013). Using business registers to conduct a regional analysis of enterprise demography and employment in the tourism industries: Learning from the Irish experience. *Tourism Economics, 19*(6), 1293–1316. https://doi.org/10.5367/te.2013.0242.

Marshall, A. (1920). Principles of economics: An introductory volume. (8 edn) London: The Macmillan Press.(First edition published 1890).

Martínez-Román, J. A., Tamayo, J. A., Gamero, J., & Romero, J. E. (2015). Innovativeness and business performances in tourism SMEs. *Annals of Tourism Research, 54,* 118–135.
Michael, E. (2003). Tourism micro-clusters. *Tourism Economics, 9*(2), 133–145.
Michael, E. J. (2006). Micro-clusters in Tourism. *Micro-Clusters and Networks*, p. 33.
Moran, P. A. (1950). Notes on continuous stochastic phenomena. *Biometrika, 37*(1/2), 17–23.
Mose, I. (2007). *Protected areas and regional development in Europe: Towards a new model for the 21st century*: Ashgate Publishing, Ltd.
Müller, D. K., & Jansson, B. (2006). *Tourism in peripheries: perspectives from the far north and south*: Cabi.
Nalebuff, B. J., Brandenburger, A., & Maulana, A. (1996). *Co-opetition*: HarperCollinsBusiness London.
Neffke, F., Henning, M., & Boschma, R. (2011). How do regions diversify over time? Industry relatedness and the development of new growth paths in regions. *Economic Geography, 87*(3), 237–265.
Novelli, M., Schmitz, B., & Spencer, T. (2006). Networks, clusters and innovation in tourism: A UK experience. *Tourism Management, 27*(6), 1141–1152.
OECD. (2014). *OECD Tourism Trends and Policies 2010.* Retrieved from Industry and entrepreneurship report.
OECD. (2016). *Tourism Trends and Policies 2016*. Retrieved from https://doi.org/10.1787/tour-2016-en.
Page, S. J. (2003). Evaluating research performance in tourism: The UK experience. *Tourism Management, 24*(6), 607–622.
Pe'er, A., & Keil, T. (2013). Are all startups affected similarly by clusters? Agglomeration, competition, firm heterogeneity, and survival. *Journal of Business Venturing, 28*(3), 354–372.
Porter, M. E. (1998). *Clusters and the new economics of competition* (Vol. 76): Harvard Business Review Boston.
Renski, H. (2011). External economies of localization, urbanization and industrial diversity and new firm survival. *Papers in Regional Science, 90*(3), 473–502.
Romanelli, E., & Schoonhoven, C. B. (2001). *The local origins of new firms* (pp. 40–67). The entrepreneurship dynamic: Origins of entrepreneurship and the evolution of industries.
Romo, F. P., & Schwartz, M. (1995). The structural embeddedness of business decisions: The migration of manufacturing plants in New York State, 1960 to 1985. *American sociological review*, (pp. 874–907).
Rosenthal, S. S., & Strange, W. C. (2003). Geography, industrial organization, and agglomeration. *Review of Economics and Statistics, 85*(2), 377–393.
Saxena, G. (2005). Relationships, networks and the learning regions: Case evidence from the Peak district national park. *Tourism Management, 26*(2), 277–289.
Saxenian, A. (1994). Regional networks: industrial adaptation in Silicon Valley and route 128.
Sharpley, R., & Telfer, D. J. (2014). *Tourism and development: concepts and issues* (Vol. 63). Channel View Publications.
Solvoll, S., Alsos, G. A., & Bulanova, O. (2015). Tourism entrepreneurship–Review and future directions. *Scandinavian Journal of Hospitality and Tourism, 15*(sup1), 120–137.
Song, H., Dwyer, L., Li, G., & Cao, Z. (2012). Tourism economics research: A review and assessment. *Annals of Tourism Research, 39*(3), 1653–1682. https://doi.org/10.1016/j.annals.2012.05.023.
Sørensen, F. (2007). The geographies of social networks and innovation in tourism. *Tourism Geographies, 9*(1), 22–48. https://doi.org/10.1080/14616680601092857.
Stabler, M. J., Papatheodorou, A., & Sinclair, M. T. (2009). *The economics of tourism*. Routledge.
Strotmann, H. (2007). Entrepreneurial survival. *Small Business Economics, 28*(1), 87–104.
Sundbo, J., Orfila-Sintes, F., & Sørensen, F. (2007). The innovative behaviour of tourism firms—Comparative studies of Denmark and Spain. *Research Policy, 36*(1), 88–106.
Tinsley, R., & Lynch, P. (2001). Small tourism business networks and destination development. *International Journal of Hospitality Management, 20*(4), 367–378.

Tinsley, R., & Lynch, P. A. (2008). Differentiation and tourism destination development: Small business success in a close-knit community. *Tourism and Hospitality Research, 8*(3), 161–177.

Travers, J. (Ed.). (2003). *New horizons for Irish tourism: An agenda for action.* Dublin: The Stationery Office.

Tveterås, R., & Eide, G. E. (2000). Survival of new plants in different industry environments in norwegian manufacturing: AS semi-proportional cox model approach. *Small Business Economics, 14*(1), 65–82. https://doi.org/10.1023/a:1008189411442.

United Nations Statistics Division. (2010). *International Recommendations for Tourism Statistics 2008*. Retrieved from Department of Economic and Social Affairs, Statistics Division, Series M No. 83/Rev.1 New York.: https://unstats.un.org/unsd/publication/Seriesm/SeriesM_83rev1e.pdf.

Van Laere, K., & Heene, A. (2003). Social networks as a source of competitive advantage for the firm. *Journal of Workplace Learning, 15*(6), 248–258.

Victurine, R. (2000). Building tourism excellence at the community level: Capacity building for community-based entrepreneurs in Uganda. *Journal of Travel Research, 38*(3), 221–229.

Walsh, M., Lynch, P., & Harrington, D. (2011). A capability-based framework for tourism innovativeness. *Irish Journal of Management, 31*(1), 21.

WTTC. (2017). *Travel and tourism global economic impact and issues 2017*. Retrieved from United Kingdom: https://www.wttc.org/-/media/files/reports/economic-impact-research/2017-documents/global-economic-impact-and-issues-2017.pdf.

Yang, Y. (2012). Agglomeration density and tourism development in China: An empirical research based on dynamic panel data model. *Tourism Management, 33*(6), 1347–1359.

Yang, Y., & Fik, T. (2014). Spatial effects in regional tourism growth. *Annals of Tourism Research, 46,* 144–162. https://doi.org/10.1016/j.annals.2014.03.007.

Microgeography of Restaurants: Sub-City Analysis of Restaurant Location and Colocation Using Swedish Geo-Coded Data

Özge Öner and Johan P. Larsson

1 Introduction

Restaurant branch within the hospitality sector is a heavily spatially bounded economic activity, that is, services provided by restaurants supplied and consumed the majority of the time simultaneously. Restaurants require a critical mass of demand within a certain proximity, which dictates them to be located centrally in their respective local market, may that be a local central market catering a residential cluster, the business district, or the downtown (Parsa et al. 2005). Restaurants also dramatically vary in a number of aspects, from size to type of cuisine they offer. One particular aspect that differentiates restaurants from other service branches is the way customers patronize them. Quite often, the typical consumer would bundle the experience of eating out with a number of other activities such as shopping going to the movies or an art exhibition, and the consumer would regularly eat out as a part of her daily routine, making the establishment at close proximity to work or residence more favourable. Such consumption behaviour means that restaurants are found to be colocated with

Ö. Öner (✉) · J. P. Larsson
Department of Land Economy, University of Cambridge, Cambridge, UK
e-mail: oo263@cam.ac.uk

J. P. Larsson
e-mail: jpl66@cam.ac.uk

Ö. Öner
Institutet för Näringslivsforskning (Research Institute of Industrial Economics), Stockholm, Sweden

Centre for Entrepreneurship and Spatial Economics, Jönköping International Business School, Jönköping, Sweden

J. P. Larsson
Swedish Entrepreneurship Forum, Stockholm, Sweden

Jönköping International Business School, Jönköping, Sweden

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_3

other services, workplaces, as well as residential clusters in an urban setting. Identification of such colocation patterns, however, is a problematic empirical task as data at a micro-geographical level is often limited. There is some but limited work on microgeography of restaurants. In the absence of data at a high resolution, the use of city level or the district level is common. However, at aggregates levels as such, everything will be colocated with everything else, making it cumbersome to identify specific location and colocation patterns for the restaurant branch alone. An alternative is to conduct case studies, which then may give a clear picture of the location at hand, but not necessarily about the general micro-geographical location patterns for the branch itself.

In this chapter, we offer an exploratory empirical analysis that captures the general location and colocation patterns for restaurants using Swedish geo-coded data for the year 2015, which allows us to exogenously partition all urban areas in Sweden[1] into two different aggregations of neighbourhoods, i.e. 250-by-250 m and 1-by-1 km grid cells. The data not only allows us to observe the full population of restaurants in the whole country, but also provides information on all other related services as well as features of the urban market related to demand and centrality.

Sweden is an interesting country to study over and above the availability of rich geo-coded data. Eating out is an integral part of Swedish culture even though exact figures are hard to come by. We know that in Nordic countries at large, the frequency at which people eat out has increased over time (Lund et al. 2017). In a survey, conducted with representative samples of the populations in Denmark, Finland, Norway, and Sweden in 2012, more than 40% of the Swedish respondents stated that they eat out 2–3 times a month or more often, a figure significantly higher than comparable Nordic countries (Lund et al. 2017). Also, Swedish cities that are subject to our investigation are all monocentric in their built-up, making the controlling for centrality for any given establishment rather straightforward.

We contribute to the literature by proposing an empirical framework that can be used to examine colocation patterns in the hospitality sector, not least the restaurant branch in other countries provided with the data availability. Such an analytical approach can provide not only sector actors, but also planners and policymakers with a useful tool to employ may they desire to plot sub-city-level location and colocation patterns for hospitality.

Our analysis indicates some but limited strategic complementarities between retail and consumer branches and restaurants. Any significant probability of finding a restaurant in the neighbourhood with respect to the presence of a service establishment attenuates with distance or entirely dissipates, indicating a highly localized spatial dependence. Employment and population density matters significantly, and their importance extends beyond the very immediate neighbourhood.

[1] An urban area has contiguous buildings with no more than 200 m between houses and at least 200 residents. Source: Statistics Sweden (https://www.scb.se/en/finding-statistics/statistics-by-subject-area/environment/land-use/localities-and-urban-areas/).

2 Restaurant Location and Colocation

There exists a large and complex body of research on location theory in general as well as retail location in particular. Partovi (2006) suggests a new analytic model for the determination of facility location considering both external (customer wants, the status of the competition, and characteristics of location) and internal (critical internal processes) criteria that are critical for success. This model combines concepts as quality function deployment (QFD), the analytic hierarchy process (AHP), and the analytic network process (ANP) in order to develop a tool for locating facilities that provide long-term strategic advantages to management (Partovi 2006). The traditional view of marketing that location is one of the most critical and long-term strategic decisions for a business is still valid today (Prayag et al. 2012; Timor and Sipahi 2005). While the literature on location generally is rich, published research directed at the spatial distribution of specific hospitality businesses is comparatively small and academic literature on the location of restaurants is rather scarce. Foodservice marketing is often only viewed as generalized hospitality or dealt with as part of tourism (Johns and Pine 2002). Most of the research on restaurants that have been conducted under contract for particular restaurant chains/franchises is therefore proprietary (Pillsbury 1987) and for confidential reasons not accessible for academic use. This is why Smith (1983, p. 545) sees a need for "publicly available guidelines for restaurant location and success". Smith (1985) argues that geographic and economic forces form location patterns for restaurants. The location of a restaurant is considered as one of the essential success factors (Tzeng et al. 2002).

According to Pillsbury (1987), the geographic distribution is the result of a complex interplay of traditional and non-traditional location factors as accessibility, locational ambience, the demographic character of the population as well as perceptual, psychological, and spatial elements. A large-scale study in Atlanta describes the restaurant landscape. The location of different restaurants was found to be highly dependent on their category. For example, speciality American restaurants were concentrated in the CBD while Chinese restaurants are mainly found in poor, blue-collar neighbourhoods. Moreover, regional malls were a new target of speciality restaurants. Fast-food stores are found to be along major traffic roads. An interesting finding is related to restaurant clusters.

Assuming that every business wants to be profitable and restaurants make their money by serving customers, a reasonable conclusion is that restaurants are located where demand is sufficiently high. Naturally, customer preferences should play a significant role in dictating the location of restaurants. Restaurants offer dining opportunities as well as a place where guests conduct parties and other social events. Therefore, they should pay attention to both; the service delivered to individual guests (Yun and Hing 1995), as well as the required service characteristics (e.g. location, size, convenience of transportation, and parking capacity) to the customers as a whole as those service factors directly affect the sources of customers and the future success of a restaurant. When evaluating different locations, both perspectives, from customers (lifestyles and convenience) and management (cost and management problems),

should be considered. (Tzeng et al. 2002). It can be distinguished between two kinds of restaurant guests, tourists, and those guests coming from the same community. The latter form of dining out is also defined as "paratourism" by Jafari (1982).

One of the early papers (Smith 1985) examines the location patterns of urban restaurants in Ontario to identify spatial regularities. The study distinguishes between five types of restaurants and considers the following determinants for patterns of agglomeration and dispersion: restaurants of the same category, different types of restaurants, spatial correlations with other uses of land, varying traffic levels, population size. The study reveals significant variation across different types of restaurants. For example, while pizzarias act like monopolists which are tied to residential neighbourhoods and busy streets, fast-food outlets are clustered along major thoroughfares.

Tzeng et al. (2002) develop a multi-criteria decision-making method which they use to rank alternative restaurant locations in Tapei. They argue that while the set of criteria should be adapted to each case, their approach has a rather general applicability. Their study is based on an analytic hierarchy process (AHP) to develop a ranking of locations using five aspects and eleven criteria used to develop a location evaluation hierarchy for a restaurant. The aspects included are transportation, commercial area, economic, competition, and environment. The criteria are rent cost, transportation cost, convenience to mass transportation system, size of parking space, pedestrian volume, number of competitors, the intensity of competition, size of the commercial area where the restaurant is located, extent of public facilities, convenience of garbage disposal, and sewage capacity (Tzeng et al. 2002).

The value of a location is heavily influenced by associated linkages, which exist due to the need to move people and goods between locations (Barnett and Okoruwa 1993). For site selections and location analysis, geographic information system (GIS) is often applied. They determine the ability of a specific location's physical and geographic characteristics to fulfil the operational and functional goals of the use of the site. Prayag et al. (2012) highlight the usefulness of geo-coded data to identify clustering effects. They analyse the evolution of restaurant locations in the city of Hamilton between 1996 and 2008 using GIS and drawing on the work of Muller and Inman (1994) which uses demographic and geographic information in order to analyse restaurant density patterns and then identify locations for restaurants. They have three underlying principles in their framework:

> "(1) restaurants are dispersed in retail areas and are customer focused; (2) clusters of restaurants are formed through external and market forces, and physical and geographical constraints, of which town planning policies are significant; and (3) restaurant unit clusters constitute a broad central place system linked to other forms of clustering such as retail patterns and residential zones." (Prayag et al. 2012, p. 431).

Another work by Jalis et al. (2012) identifies two cluster factors for standalone restaurant concept selection. They argue that internal (e.g. menu, financial support, staff) and external factors (e.g. location, market segment, competitor, and economic status) are essential to restaurant planning.

The previous research has shown that the location of restaurants is determined by two forms of factors, internal and external. Internal factors can be defined as

characteristics of the restaurant management (Guerrier and Deery 1998), which we do not consider in our study. Moreover, attributes of restaurant experience vary between different outlets and dining occasions which makes it hard to draw general conclusions (Johns and Pine 2002).

Simons' (1992) review of the literature on restaurant location factors resulted in the following five main determinants: access, visibility, traffic counts, centre size, and presence of complementary stores. Our empirical framework is akin to this line of thinking where the location of restaurants in an urban set-up is considered as a function of the location of other services, such as retailers and leisure services.

Timor and Sipahi (2005) evaluate fast-food site selection factors using the analytical hierarchy process (AHP). Their findings reveal that "costs" is the most important factor followed by location. It is onerous to find specific data on each restaurants cost structure. However, location, particularly proximity to the central business district in a local market, should proxy for cost to a large extent if one can standardize the size of the area subject to study the way we do in our framework.

Another issue that comes across in the literature is the type of restaurants, or rather the variability within the restaurant branch. Muller and Woods (1994) develop an expanded restaurant typology and examine the segments of the multiunit-restaurant industry, highlighting common and contrasting attributes. They distinguish between quick service, midscale, moderately upscale, upscale, business dining, and generic characteristics of multiunit restaurants. Regarding the choice of location, they suggest that fine dining often goes along with particular locations (e.g. waterfront, scenic views, historic buildings), while business dining places need to be in a convenient distance to the workplace. One of the limitations in our empirical work is our inability to identify the specific type of restaurants in our data, which justifies the need for further empirical work given the availability of data. This type of limitation is the product of a standard trade-off between using specifically collected data on restaurant branch itself versus using secondary data (i.e. registry data in our case) that provides us with information on the full population of restaurants alongside other economic activities and demand.

2.1 Demand

The population density of urban areas affects the availability of restaurant locations in different ways. The number and diversity of restaurants have been found to increase with larger populations. In addition, the relative proportions of the three categories of restaurants serving meals, in the central business district (CBD), differ. Smaller towns, for example, generally have a lower percentage of regular restaurants and a higher percentage of pizza parlours and fast-food outlets in their CBDs compared to bigger cities. However, regular restaurants are still predominant in the CBD (Smith 1985). Moreover, the population density of metropolitan areas has a higher effect on the demand for fast food than demographic and income differences (Binkley 1998; Johns and Pine 2002).

Another matter related to demand is the rate of employment in an area. One would expect that rate of employment (or the number of employed) in the area is to be positively correlated with the number of restaurants in the vicinity. An extension to the expectation of such a relationship is that the two, employment and restaurant availability, should be highly localized, meaning the effect of employment on the number of restaurants should attenuate sharply with distance. There is limited work studying the relationship between the two. Although Simons (1992) finds no relationship between the unemployment rate of the area and the sales of the studied fast-food chain, such investigation should be very sensitive to the level of geographical aggregation subject to study.

Another aspect related to the structure of demand is the total personal income and further characteristics of the people occupying the local market. Income was found to be the single most relevant market-area geographic important to the fast-food chain shops in Simons' (1992). Meltzer and Schuetz (2012) analyse the variation of retail services across New York City neighbourhood and found that neighbourhoods with lower income and minorities have a higher number of *unhealthy* restaurants, along with less diversity across retail subsectors.

Block et al. (2004) analyse the geographic distribution of fast-food restaurants with respect to neighbourhood sociodemographics in Louisiana. They find a link between fast-food restaurants and the African-American population and low income in neighbourhoods. The density of fast-food restaurants in shopping areas with 1-mile buffers is found to be independently correlated with the median household income and percentage of black residents. They find that neighbourhoods that are predominantly black have 2.4 fast-food restaurants per square mile compared to 1.5 restaurants in predominantly white areas. Another study on neighbourhood characteristics in Mississippi reveals that all kinds of foodservice places are more prevalent in racially mixed and predominately white neighbourhoods (except bars and taverns) compared to predominately black neighbourhoods. Moreover, the number of full-service restaurants is two times higher in white neighbourhoods and three times higher in racially mixed areas. Also, fast-food places and carryout eating places were found to be twice as common in white and racially mixed neighbourhoods (Morland et al. 2002).

2.2 Colocation and Clustering

The colocation of restaurants with other firms and industries within a cluster may benefit the customer as it can create greater value through bundling, which allows them to optimize time spent in consumption and comparison. However, also such clustering and colocation are crucial for the restaurants, survival of which is mainly dependent on the availability of demand in close proximity. Using tourism as an example, the visitor experience is not only built by the attraction but complemented by the restaurant service, transportation, and other services, making different parts of the local economy mutually dependent (Porter 2000). Thus, restaurant visitors

may favour locations with close access to other recreational offers, shopping, etc., depending on the purpose of dining. There is very limited work on the colocation of restaurants with other types of services on a large scale. To that end, our work is unique. There is, however, similar work that investigates the colocation patterns within the retail sector using the same data and empirical framework as we employ in this chapter (i.e. Larsson and Öner 2014; Öner and Larsson 2014).

For restaurants, Adam and Mensah (2014) assess the perceived spatial agglomeration effects and hotel location choice in Ghana. They find a desire to locate close to tourism-related businesses, among which they considered restaurants. Restaurants and other attractions nearby are usually perceived as catalysts that may attract hotel guests (Adam 2012). Timmermanns (1986) reports that the retailer's location preferences are impacted by accessibility, the size of the shopping centre, and the presence of magnet stores. According to Brown (1994), magnet stores can be department stores in city centres, supermarkets in shopping complexes, and restaurants in malls all influencing people's circulation patterns and generating customers.

Zeller et al. (1980) argue that fast-food outlet locations are selected based on proximity to a residential population. Similarly, based on geo-coded data of restaurant and school addresses, Austin et al. (2005) examine the degree of spatial dependence of fast-food restaurants on school locations in Chicago. They find that fast-food restaurants are statistically significantly clustered in areas within a short walking distance from schools. They estimate three to four times as many fast-food restaurants within 1.5 km from compared to a distribution throughout the city which was unrelated to school locations.

The competitive environment has a significant impact on the success or failure of a restaurant (Parsa et al. 2005). According to Smith (1985), food restaurants locate close together with the intention to create "highly visible fast-food strips" which allows them to generate larger volumes of total business compared to dispersed locations. He explains this clustering as a result of media advertising that is based on differentiation from other fast-food chains. Chain restaurant may benefit from their ability to outspend independent restaurants due to economies of scale to gain greater market share and may hence be found more often in such clusters (Parsa et al. 2005).

Although the existing work is seemingly theory void, restaurant location and colocation patterns can, in fact, be explained based on some of the location theories, which are traditionally used to explain the location of retailers, such as the use of "Central Place Theory", to understand the spatial organization of retailing, which is based on the tradition of von Thünen (1826), Christaller (1933), and Lösch (1940). Empirical regularities strongly suggest that the economic activities that are clustered in the urban core are interaction intensive between buyers and sellers, which naturally dictates the allocation of the central part of a local market to be allocated to economic activities such as retailing, leisure services, business services, and restaurants. Following the basic notion of centrality, New Economic Geography (NEG) framework explains the agglomeration economies and location choices of firms and individuals as a function of transportation costs (Alonso 1964; Fujita 1988; Krugman 1991), and the further work on the micro-foundation of urban spatial structures explains the land-use patterns in urban space (Alonso 1960, 1964; Muth 1961, 1969; Mills 1970).

The Principle of Minimum Differentiation is another concept that deals with the clustering effect. It suggests that the distance to competitors in a geographic area indicates the attractiveness and competitiveness of an area (Brown 1989). It is based on Harold Hotelling's (1929) law in economics, which states that relative proximity to other locations of the same product or service (proximity to competitors) was more influential than access to the entire market in determining site choice. This principle has been applied to various types of marketing phenomena and been termed "affinity" in the hospitality literature (Schaefer et al. 1996). Similarly, based on extensive surveys of consumer shop-to-shop movement, Nelson (1958) suggests that stores offering the similar goods will do more business when located close to each other instead of widely scattered, also, later on, referred to as the "principle of cumulative attraction" (Litz and Rajaguru 2008).

Retail agglomerations and restaurant clusters can be commonly found. Restaurant clusters facilitate the comparison of restaurants; enhance both, the attractiveness of individual restaurants and the area as a whole; enable economies of scale and synergistic effects; costs for facilities and promotion can be shared; and restaurateurs' shared interest with local government bodies can be represented more easily (Prayag et al. 2012). For customers, the clustering of restaurants offers increased utilitarian and hedonic consumption values, as they lead to a wider choice in a restricted area, as well as reduced costs for search, lower uncertainty, and shorter trips to an area (Brown 1989; Oppewal and Holyoake 2004; Teller and Reutterer 2008).

3 Data and Empirical Design

The empirical design in this chapter builds on the work by Larsson and Öner (2014), which investigates the colocation patterns within retailing in Sweden at the sub-city level using a probabilistic framework. Among other concepts and theories, one particular line of the literature stands out in our work that motivates the use of a probabilistic empirical set-up to investigate the location and colocation patterns for restaurants: multipurpose shopping. The vast body of the literature on multipurpose shopping behaviour suggests that a multipurpose shopping trip is preferable to a single-purpose shopping trip because it reduces the cost of time and travel and allows customers to patronize distant and larger marketplaces with more variety (Johnston and Rimmer 1967; Craig et al. 1984). Multipurpose shopping is an important concept in the retail literature because it provides for an understanding of why a hierarchy exists between various retail centres, e.g. the clustering of similar types of retail stores and planned or unplanned retail clusters, and links it to the store survival in part (Ghosh 1986; Ghosh and McLafferty 1987). Parr and Denike (1970) argue that, even when multipurpose shopping trips do not occur, producers (retailers) might still prefer to be located centrally and close to each other to inhibit the effect of distance on demand.

Larsson and Öner (2014) model the probability of a specific type of retail unit to be established in a 250 by 250 m^2 as a function of the presence of other similar

retail establishments, the presence of stores that belong to other branches within retail sector, as well as the characteristics and the extent of demand in the pertinent urban landscape. Departing from this empirical design, we argue that the location of restaurants can also be modelled at a micro-geographical level as a function of other available services, as their location will be dependent on services that can be bundled in consumption, and possibly some more than others depending on the type of consumption. As discussed and provided evidence for in the previous literature, the frequency of consumption dictates the variation in the location patterns of different retailers and services in the urban landscape (see, e.g. Dicken and Lloyd 1990; Klaesson and Öner 2014; Öner and Klaesson 2017).

3.1 Data and Geographical Aggregation

The data source used in this study is a geo-coded data set, maintained by Statistics Sweden. By aggregating over common geo-codes, the structure of the data is a square grid, covering the entire nation. The idea is to represent "neighbourhoods" at two different aggregation levels, i.e. 250-by-250 m and 1-by-1 km^2. Each such square with economic activity becomes an observational unit in the regression analysis. There are a total of 65,500 250-by-250 m and a total of 13,321 1-by-1 km^2 in our analysis that covers areas with a specific population density that allows for an "urban classification" based on the definition by Statistics Sweden (i.e. tätort).

There are several advantages associated with using geo-coded data for this type of analysis. First, our definition of neighbourhoods does not depend on the administrative boundaries, and path-dependent definitions of neighbourhoods as the grids are exogenously assigned. Second, the physical standardization of the neighbourhoods eliminates the need to normalize the variables. Any difference in, for example, employees between any two squares is the exact difference in employment density between those squares, which simplifies the interpretation tremendously, but also makes the results comparable across the two different geographical scales we use. This particular feature of the data and use of standardized micro-geographical units is previously addressed within the literature that discusses the caveats associated with modifiable area unit problem (MAUP) (see e.g. Fotheringham and Wong 1991). Most of the administrative units not being standardized in physical size imply that results are sensitive to the variations in geographical units used in the analysis, whereas standardization by way of geo-coding eliminates this type of aggregation problem.

Use of microgeography is particularly important for the type of inquiry we have. If we are to model the probability of finding a restaurant in a particular area with respect to other services, an exessively aggregated geographical unit may cause an aggregation bias where potentially things that are not colocated with one another may appear to be so. Also working with highly aggregated spatial units may lead to loss of information on the relevant colocation patterns due to noise.

Another important feature of the data and empirical design is the use of two aggregation levels, which allows us to capture if and to what extent the spatial dependence

between different service establishments attenuate by distance by comparing the size of the coefficients obtained at the lower aggregation level to those obtained at the higher level.[2] To that end, the effect of having a particular service establishment on the probability of having an additional restaurant at the neighbourhood level should look, we expect, weaker at the higher level or potentially may completely dissipate.

3.2 Variables

We consider two sets of variables in our model, (i) number of establishments that belong to other sectors in the neighbourhood and (ii) variables that capture the extent and nature of demand in the vicinity. For the first set of variables, we consider all types of retailers except food stores. We then bundle these retailers under five categories based on the previous work that establishes a consistent typology for retailers (see Klaesson and Öner 2014). These are specialized stores (specialized in selling one or few types of goods such as opticians and flower shops), clothing stores (including footwear), high-order retailing (such as furniture stores, stores selling electronic goods, or stores selling office supplies), second-hand stores (including large charity shops). Based on the literature above, we also consider the number of arts, entertainment, sports establishments, as well as other consumer services (such as dry cleaners, and repair chops), health establishments (such as spas and gyms), and beauty establishments (such as nail salons and hairdressers). A distinct colocation pattern is expectedly observed between hotels and restaurants, which is omitted from the analysis due to the geographical scale we work with to capture the within-city micro-geographical patterns[3] for restuarants. Such colocation between hotels and restaurants should ideally be investigated at a slightly larger geographical scale, since a significant number of hotels are large to the extent that they occupy an entire grid we use as a unit of observation. Thus, we leave a potential study of the colocation patterns within the hospitality sector to future studies.

For neighbourhood characteristics, we have employment as well as population density (both log-transformed), share of population between 20 and 64 of age (i.e. working age), average wage (log-transformed) to capture average purchasing power, wage difference relative to the municipality to capture the pull effect for demand originating from other neighbourhoods, human capital (measured in terms of share of neighbourhood population with a college degree) to capture the degree of attractiveness in the neighbourhood, as well as lifestyle dictated location patterns for services in vicinity. As an extension to lifestyle-related variables, we also have the average age in the neighbourhood, the age difference relative to the municipality, as well

[2] Given that they are statistically significantly different from each other.

[3] Size and location of hotels and other forms of accommodation is excessively variable across the Swedish cities, e.g. some significant number of hotels are located at the periphery of cities and rural places, with population density below the treshold of a *tätort*, which means the data is not available at 250 by 250 m aggregation.

Table 1 Descriptive statistics of variables at the neighbourhood (250-by-250 m^2) level

Variable	Mean	Std. Dev	Min	Max
Number of establishments				
No. restaurants (dependent variable)	0.25	1.19	0	48
Department stores	0.00	0.06	0	4
Specialized stores	0.13	0.99	0	42
Clothing stores	0.10	1.18	0	115
High-order retailing	0.05	0.28	0	14
Arts	0.20	1.09	0	46
Second-hand stores	0.01	0.13	0	7
Entertainment	0.05	0.30	0	14
Museums and libraries	0.01	0.13	0	8
Sports	0.08	0.40	0	43
Consumer services	0.03	0.20	0	12
Beauty	0.37	1.29	0	37
Health	0.31	1.13	0	43
Control variables				
Employment density (ln)	2.34	1.49	0.69	10.67
Population density (ln)	3.86	1.26	0.69	8.15
Share of population 20–64 y/o	0.69	0.15	0.01	1.00
Average wage (ln)	7.87	0.47	– 1.70	10.81
Wage difference relative to municipality	0.01	0.45	−9.44	2.80
Average age	48.75	7.19	18.17	87.00
Age difference relative to municipality	6.68	7.02	−23.73	45.22
Share single households	0.28	0.22	0	1
Share of inhabitants with college degree	0.09	0.10	0	1
Distance to central business district	19.41	16.61	0	136.84
Distance to local employment centre	11.70	11.35	0	137.28

N = 65,500

as the share of single households. Last but not the least, we have two variables to capture centrality in the immediate local market and the greater local market (i.e. municipality and region): distance to the central business district in the greater local market, as well as the distance to the local employment centre. Descriptive statistics for all the variables, at the two different spatial aggregations, can be found in Table 1 and Table 2, respectively.[4]

[4] Bivariate correlations can also be found in the appendix at the the two different spatial aggregation.

Table 2 Descriptive statistics of variables at the neighbourhood (1-by-1 km^2) level

Variable	Mean	Std. Dev	Min	Max
Number of establishments				
No. restaurants (dependent variable)	1.36	6.80	0	314
Department stores	0.03	0.20	0	6
Specialized stores	0.74	4.33	0	227
Clothing stores	0.59	5.02	0	374
High-order retailing	0.32	1.18	0	43
Arts	1.02	6.95	0	288
Second-hand stores	0.07	0.45	0	14
Entertainment	0.28	1.44	0	100
Museums and libraries	0.07	0.37	0	11
Sports	0.48	1.52	0	57
Consumer services	0.15	0.65	0	25
Beauty	1.85	6.97	0	186
Health	1.62	6.60	0	262
Control variables				
Employment density (ln)	3.81	2.02	0.69	11.41
Population density (ln)	5.12	1.58	0.69	9.95
Share of population 20–64 y/o	0.68	0.11	0.08	1
Average wage (ln)	7.87	0.32	−0.69	9.98
Wage difference relative to municipality	0.03	0.30	−8.57	1.46
Average age	49.14	5.16	22	81.09
Age difference relative to municipality	6.84	4.90	−18.72	40.83
Share single households	0.28	0.15	0	1
Share of inhabitants with college degree	0.07	0.07	0	1
Distance to central business district	22.10	17.41	0	137.19
Distance to local employment centre	15.40	14.18	0	141.21

N = 13,321

3.3 Method

The distribution of our independent variables resembles a lower mean Poisson distribution. However, the standard Poisson regression model has the weakness that it has one free parameter and hence does not allow the variance to be independent of the mean. So it assumes that the mean values are equal to the variances, which in our case is not always the case. A common alternative is the negative binomial model, where the mean is thought of as a random variable, allowing us with the possibility of modelling overdispersion in a Poisson framework (see Larsson and Öner 2014). As can be seen in the equation below, the probability of finding an additional restaurant in a square is explained by the two sets of variables explained above.

$$\Pr\left(Y_i = y_i \middle| x_i, \varphi_i = \frac{\left(e^{x_i'\beta}e^{\varphi_i}\right)e^{-ex_i'\beta e^{\varphi_i}}}{y_i!}\right)$$

For colocation patterns, we expect to find the following: for retailer, retailers that are patronized by consumers less frequently, i.e. high-order retailers, retailers selling specialized selling particular goods, as well as clothing stores should positively relate to the probability of finding an additional restaurant in the neighbourhood, although this effect should attenuate or entirely dissipate by distance. Given the variability in physical establishment sizes for arts, entertainment, and sports facilities (including health facilities such as gyms), we expect ambiguous signs. Most museums and libraries should have a restaurant in the vicinity, so we expect to find a positive relationship between their presence and the probability of having an additional restaurant in the neighbourhood. Most consumer services and beauty services are clustered in central parts of the market, making their location very likely with restaurants.

4 Results: Microgeography of Restaurants

Table 3 presents the results from negative binomial estimations we run at the two spatial aggregation levels for neighbourhoods. An interesting but equally expected result that emerges from Table 3 is that, in excess of demand—and scale-driven factors, i.e. keeping employment density, local purchasing power, and geographical location relative to the city centres constant, any significant colocation pattern observed between restaurants and other services is highly localized. Except for department stores, in cases where we observe a statistically significant colocation patter, the effect attenuates or entirely dissipates when we go from 250 m^2 grids to 1 m^2 grids, such as specialized stores high-order retailers, museum and libraries, consumer services, as well as beauty establishments. The likely case for the department store and restaurant colocation is that most department stores would occupy a significant share of a smaller grid, making the colocation between the two a more likely outcome at the higher aggregation level.

A somewhat unexpected result, we see, with the clothing stores and entertainment establishments. We see no statistically significant relationship between their presence at the neighbourhood and the probability of finding more restaurants. This result should be treated with caution, as clothing nests many subcategories within (which could potentially be presented as separate categories), and entertainment facilities likewise are rather broad category hosting some establishments size of which would extend well above the scale we work with, which could potentially explain the insignificant results. The same logic may very well apply to arts and sports establishments, making them perhaps redundant at the micro-spatial context when observing colocation patterns. Nevertheless, we see no statistically significant colocation pattern between second-hand stores, arts, entertainment, and sports facilities, as well as second-hand stores, as their presence at the neighbourhood does

Table 3 Neighbourhood-level determinants of number of restaurants

Neighbourhood size (square b*h)	250 m	1000 m
Number of establishments		
Department stores	0.0584 (0.0831)	0.110** (0.0375)
Specialized stores	0.0534** (0.00873)	0.0136** (0.00488)
Clothing stores	−0.00781 (0.00556)	−0.00243 (0.00353)
High-order retailing	0.164** (0.0230)	0.0685** (0.00866)
Arts	−0.00281 (0.00507)	−0.000577 (0.00128)
Second-hand stores	0.0141 (0.0443)	−0.0284 (0.0198)
Entertainment	0.0145 (0.0197)	−0.00220 (0.00852)
Museums and libraries	0.325** (0.0403)	0.149** (0.0192)
Sports	0.0177 (0.0176)	−0.00586 (0.00635)
Consumer services	0.183** (0.0290)	0.0466** (0.0153)
Beauty	0.0823** (0.00598)	0.0148** (0.00244)
Health	−0.0110 (0.00583)	−0.0186** (0.00260)
Neighbourhood characteristics		
Employment density (ln)	0.508** (0.00830)	0.525** (0.0117)
Population density (ln)	0.319** (0.00951)	0.376** (0.0123)
Share of population 20–64 y/o	0.464** (0.136)	0.244 (0.302)
Average wage (ln)	−0.568** (0.0856)	−0.356** (0.108)
Wage difference relative to municipality	0.431** (0.0864)	0.0845 (0.108)
Average age	0.00949 (0.00970)	0.0200 (0.0128)
Age difference relative to municipality	−0.0214* (0.00939)	−0.00912 (0.0116)
Share single households	0.968** (0.0583)	1.125** (0.106)

(continued)

Table 3 (continued)

Neighbourhood size (square b*h)	250 m	1000 m
Share of inhabitants with college degree	0.257 (0.148)	1.352** (0.262)
Distance to central business district	0.000972 (0.000792)	0.00324** (0.000872)
Distance to local employment centre	0.00124 (0.00105)	−0.00103 (0.00105)
Constant	−1.419 (0.794)	−4.078** (1.003)
Observations	65 500	13 321
Pseudo R2	0.25	0.33

Note: observational unit is a square drawn from a uniform grid. Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$

not seem to alter the probability of finding an additional restaurant. We observe the strategical complementarities between restaurants and department stores, specialized stores, high-order retailers, museums and libraries, quite strongly with consumer and beauty services. Another interesting result is that health establishments, that is gyms and spas, we see no statistically significant result at the 250-by-250 m neighbourhood level, and even a negative and significant association at the larger neighbourhood level.

The case for "strategic complementarities" is an interesting one. Imagine the following hypothetical scenario: a potential customer needs to optimize his time throughout the day to accomplish a few tasks, say, dropping off his son at the library, purchasing a gift for a friend's birthday party, and picking up some dinner from a restaurant. It can then be shown that the profit-maximizing behaviour of firms is to co-locate. In this way, the customer saves time and effort, while the stores, the library, and the restaurants are looking at a broader customer/user base through these complementarities. This is a consistent explanation for why we observe the patterns in the table.

In this way may sound straightforward to conclude that "everything is scale driven", when in fact quite a lot is not. The fact that the regressions hold local demand, distance to the centre, and employment density constant actually tells the opposite story: if scale was everything, all other effects would be zero. The fact that they are not means that we can talk about clustering in a very real sense of the word. Further, the difference between columns (A)-(B), and (C)-(D) confirms that this phenomenon holds true, even as we disaggregate the "retail" typology.

Variables that define and control for the extent and the nature of demand in neighbourhood presents some interesting and some expected results likewise. Employment density and population density matter significantly and notably, but what is more interesting is that its impact on probability to find a restaurant in the neighbourhood does not seem to attenuate with distance, on the contrary marginally increases

going from smaller neighbourhood aggregation to larger one, suggesting that the relevant demand extends beyond the very immediate block. Employment density matters more than population density. When we look at the share of the population within working age, there is a significant effect on having a higher fraction of the population at working age on the probability to find a restaurant. However, the effect dissipates entirely going from smaller aggregation to larger, implying a very localized effect. The average wage in the neighbourhood is an interesting variable. A higher average age in the neighbourhood is associated negatively with the probability to find a restaurant in the immediate neighbourhood, likewise at the larger area although the magnitude declines with distance. One interpretation could be that consumers with higher wage levels do not appreciate excessive proximity to restaurants. Another potential interpretation is that high wage levels signal high property prices, implying a costly site for the restaurant business—over and above centrality. A neighbourhood relatively more prosperous than the larger local market it is nested under, measured by wage difference relative to the municipality, suggests a positive effect on the probability to find restaurants.

The average age in the neighbourhood has no significant effect on the probability to find a restaurant. However, age difference with respect to the municipality has a negative effect on the probability, signalling that younger neighbourhoods are more likely to have restaurants, holding the average age constant, making it an expected result. Controlling for employment and population density, we do not see further effects from centrality, captured by distance to the central and local employment centre although there is some but somewhat marginal effect from distance to central business district on the probability to find a restaurant at the larger neighbourhood level.

Share of single households matters at both aggregation levels, although, at the larger area, it marginally matters more. Share of human capital, however, does not statistically significantly increase the probability of finding more restaurants at the block level (250-by-250 m^2) but at the larger area (1-by-1 km).

5 Concluding Remarks

In this chapter, we offer an exploratory empirical analysis that captures the general location and colocation patterns for restaurants using Swedish geo-coded data for the year 2015, which allows us to exogenously partition all urban areas in Sweden into two different aggregations of neighbourhoods, i.e. 250-by-250 m and 1-by-1 km grid cells. The data not only allows us to observe the full population of restaurants in the whole country but also provides information on all other related services as well as features of the urban market related to demand and centrality.

We use negative binomial regressions to estimate the probability to find a restaurant in a neighbourhood with respect to two sets of variables: (i) number of establishments that belong to other sectors in the neighbourhood and (ii) variables that capture the extent and nature of demand in the vicinity. For the first set of variables, we

consider all types of retailers except food stores. We then bundle these retailers under five categories based on the previous work that establishes a consistent typology for retailers (see Klaesson and Öner 2014). These are specialized stores (specialized in selling one or few types of goods such as opticians and flower shops), clothing stores (including footwear), high-order retailing (such as furniture stores, stores selling electronic goods, or stores selling office supplies), second-hand stores (including large charity shops). We also consider the number of arts, entertainment, sports establishments, as well as other consumer services (such as dry cleaners and repair chops), health establishments (such as spas and gyms), and beauty establishments (such as nail salons and hairdressers).

We find that, except with department stores, in cases where we observe a statistically significant colocation pattern, the effect attenuates or entirely dissipates when we go from 250 m^2 grids to 1 square metre grids, such as specialized stores high-order retailers, museum and libraries, consumer services, as well as beauty establishments. Such a result means a strong spatial dependence between these services at the immediate neighbourhood. We also find that employment density matters more than population density, and the effect of both on the probability to find a restaurant at the neighbourhood does not seem to attenuate with distance. On the contrary, such dependence marginally increases going from the smaller neighbourhood aggregation to the larger one, suggesting the relevant demand extending beyond the very immediate block. Share of single households matters at both aggregation levels, although, at the larger area, it marginally matters more. Share of human capital, however, does not statistically significantly increase the probability of finding more restaurants at the block level (250-by-250 m^2) but at the larger area (1-by-1 km).

There are obvious limitations to our analysis. First, and possibly, the most obvious limitation is that we do not model the microgeography of restaurants dynamically, but instead, we take a snapshot of the existing urban landscape. If we follow "movers and stayers" over time, the picture may look different, as the very presence of restaurants would also dictate the probability of other establishments being in the vicinity. Second, we are not able to distinguish between different types of restaurants, so our analysis should be understood as average effects for the branch that may or may not apply to each and every type of restaurant. Third, further research, provided with the data availability, could also incorporate features of the built environment into account. Finally, as we wanted to study the sub-city-level location and colocation patterns at a very high resolution, it came with a trade-off and meant that we could not investigate the colocation patterns between all the branches of the hospitality sector explicitly. Use of different aggregation levels in future research can potentially present a complementing analysis.

Appendix

Tables 4 and 5

Table 4 Bivariatie correlations, 250 by 250 m^2

		1	2	3	4	5	6	7	8	9	10	11	12
1	No. restaurants												
2	No. est: department stores	0.20											
3	No. est: specialized stores	0.68	0.30										
4	No. est: clothing stores	0.57	0.29	0.82									
5	No. est: high-order retailing	0.39	0.14	0.38	0.33								
6	No. est: arts	0.45	0.05	0.23	0.16	0.22							
7	No. est: second-hand stores	0.28	0.06	0.20	0.14	0.18	0.27						
8	No. est: entertainment	0.44	0.08	0.33	0.28	0.25	0.32	0.17					
9	No. est: museums and libraries	0.19	0.04	0.16	0.11	0.09	0.09	0.07	0.10				
10	No. est: sports	0.26	0.04	0.18	0.14	0.13	0.24	0.12	0.18	0.08			
11	No. est: consumer services	0.35	0.11	0.32	0.22	0.20	0.22	0.16	0.19	0.09	0.14		
12	No. est: beauty	0.68	0.17	0.58	0.44	0.37	0.45	0.28	0.38	0.16	0.27	0.36	
13	No. est: health	0.62	0.13	0.49	0.39	0.32	0.46	0.26	0.43	0.16	0.25	0.30	0.61
14	Employment density (ln)	0.38	0.12	0.28	0.21	0.26	0.26	0.15	0.25	0.17	0.22	0.21	0.37
15	Population density (ln)	0.23	0.03	0.14	0.08	0.09	0.27	0.10	0.15	0.06	0.14	0.15	0.32
16	Share of population 20–64 y/o	0.05	0.01	0.02	0.02	0.02	0.07	0.01	0.04	−0.02	0.03	0.01	0.04
17	Average wage (ln)	−0.04	−0.02	−0.02	−0.01	−0.03	0.04	−0.01	0.00	−0.02	0.00	−0.02	−0.01
18	Wage difference rel. to municipality	−0.05	−0.02	−0.03	−0.02	−0.03	0.01	−0.01	−0.02	−0.02	−0.01	−0.03	−0.03
19	Average age	−0.06	−0.01	−0.02	−0.02	−0.02	−0.06	−0.01	−0.04	0.01	−0.03	−0.02	−0.05
20	Age difference rel. to municipality	−0.04	0.00	−0.01	−0.01	−0.02	−0.03	0.00	−0.02	0.02	−0.02	−0.01	−0.02
21	Share single households	0.19	0.05	0.13	0.09	0.12	0.12	0.07	0.11	0.08	0.10	0.10	0.19
22	Inhabitants with college degree	0.05	0.00	0.03	0.03	0.01	0.14	0.03	0.06	0.00	0.05	0.02	0.05
23	Distance to region centre	−0.10	−0.03	−0.06	−0.05	−0.04	−0.12	−0.04	−0.08	−0.01	−0.08	−0.05	−0.11
24	Distance to local centre	−0.03	−0.01	−0.02	−0.02	−0.01	−0.03	−0.02	−0.02	0.00	−0.02	−0.02	−0.05

(continued)

Table 4 (continued)

		13	14	15	16	17	18	19	20	21	22	23
1	No. restaurants											
2	No. est: department stores											
3	No. est: specialized stores											
4	No. est: clothing stores											
5	No. est: high-order retailing											
6	No. est: arts											
7	No. est: second-hand stores											
8	No. est: entertainment											
9	No. est: museums and libraries											
10	No. est: sports											
11	No. est: consumer services											
12	No. est: beauty											
13	No. est: health											
14	Employment density (ln)	0.41										
15	Population density (ln)	0.29	0.34									
16	Share of population 20–64 y/o	0.02	0.02	−0.10								
17	Average wage (ln)	0.00	−0.12	0.07	−0.02							
18	Wage difference rel. to municipality	−0.02	−0.14	0.03	−0.05	0.96						
19	Average age	−0.03	−0.04	−0.06	−0.73	0.01	0.05					
20	Age difference rel. to municipality	0.00	0.00	0.00	−0.71	0.03	0.07	0.98				
21	Share single households	0.18	0.38	0.14	−0.01	−0.39	−0.37	0.10	0.10			
22	Inhabitants with college degree	0.12	0.04	0.11	0.11	0.35	0.26	−0.08	−0.03	−0.18		
23	Distance to region centre	−0.12	−0.17	−0.25	−0.11	−0.11	−0.07	0.13	0.05	−0.02	−0.22	
24	Distance to local centre	−0.05	−0.07	−0.15	−0.07	−0.08	−0.04	0.08	0.06	0.04	−0.12	0.16

N = 65 500

Table 5 Bivariatie correlations, 1 by 1 km^2

		1	2	3	4	5	6	7	8	9	10	11	12
1	No. restaurants												
2	No. est: department stores	0.35											
3	No. est: specialized stores	0.88	0.41										
4	No. est: clothing stores	0.81	0.38	0.92									
5	No. est: high-order retailing	0.66	0.40	0.66	0.60								
6	No. est: arts	0.69	0.20	0.50	0.39	0.47							
7	No. est: second-hand stores	0.70	0.23	0.59	0.47	0.51	0.62						
8	No. est: entertainment	0.81	0.24	0.74	0.74	0.61	0.62	0.58					
9	No. est: museums and libraries	0.52	0.19	0.48	0.37	0.38	0.36	0.41	0.38				
10	No. est: sports	0.63	0.25	0.52	0.43	0.48	0.61	0.53	0.57	0.36			
11	No. est: consumer services	0.70	0.29	0.65	0.53	0.59	0.58	0.55	0.61	0.42	0.55		
12	No. est: beauty	0.90	0.33	0.81	0.68	0.65	0.70	0.68	0.73	0.51	0.69	0.77	
13	No. est: health	0.90	0.31	0.81	0.72	0.65	0.73	0.69	0.82	0.49	0.68	0.72	0.91
14	Employment density (ln)	0.36	0.23	0.32	0.24	0.41	0.25	0.27	0.31	0.29	0.42	0.36	0.41
15	Population density (ln)	0.31	0.13	0.26	0.18	0.27	0.27	0.24	0.28	0.24	0.40	0.34	0.41
16	Share of population 20–64 y/o	0.05	0.04	0.03	0.03	0.03	0.08	0.04	0.05	−0.02	0.05	0.04	0.05
17	Average wage (ln)	−0.02	−0.03	−0.01	0.00	−0.02	0.05	0.00	0.02	−0.03	0.02	−0.03	0.00
18	Wage difference rel. to municipality	−0.04	−0.04	−0.03	−0.02	−0.05	0.00	−0.02	−0.01	−0.04	−0.03	−0.05	−0.03
19	Average age	−0.07	−0.05	−0.05	−0.04	−0.05	−0.08	−0.05	−0.06	0.01	−0.08	−0.06	−0.07
20	Age difference rel. to municipality	−0.03	−0.03	−0.02	−0.02	−0.02	−0.03	−0.02	−0.03	0.02	−0.03	−0.02	−0.03
21	Share single households	0.21	0.12	0.18	0.13	0.21	0.14	0.15	0.16	0.18	0.22	0.20	0.23
22	Inhabitants with college degree	0.12	0.03	0.09	0.07	0.07	0.17	0.10	0.14	0.06	0.16	0.09	0.13
23	Distance to region centre	−0.12	−0.09	−0.10	−0.08	−0.12	−0.11	−0.09	−0.11	−0.06	−0.16	−0.12	−0.14
24	Distance to local centre	−0.05	−0.02	−0.04	−0.03	−0.05	−0.06	−0.04	−0.05	−0.02	−0.06	−0.06	−0.07

(continued)

Table 5 (continued)

		13	14	15	16	17	18	19	20	21	22	23
1	No. restaurants											
2	No. est: department stores											
3	No. est: specialized stores											
4	No. est: clothing stores											
5	No. est: high-order retailing											
6	No. est: arts											
7	No. est: second-hand stores											
8	No. est: entertainment											
9	No. est: museums and libraries											
10	No. est: sports											
11	No. est: consumer services											
12	No. est: beauty											
13	No. est: health											
14	Employment density (ln)	0.40										
15	Population density (ln)	0.38	0.67									
16	Share of population 20–64 y/o	0.04	0.02	−0.04								
17	Average wage (ln)	0.03	−0.09	0.08	0.03							
18	Wage difference rel. to municipality	−0.02	−0.14	0.01	−0.04	0.92						
19	Average age	−0.07	−0.11	−0.12	−0.77	−0.01	0.07					
20	Age difference rel. to municipality	−0.02	−0.05	−0.05	−0.73	0.03	0.09	0.97				
21	Share single households	0.21	0.34	0.11	−0.04	−0.44	−0.41	0.12	0.12			
22	Inhabitants with college degree	0.18	0.10	0.17	0.17	0.43	0.29	−0.16	−0.08	−0.18		
23	Distance to region centre	−0.14	−0.22	−0.24	−0.18	−0.13	−0.08	0.20	0.09	0.02	−0.25	
24	Distance to local centre	−0.06	−0.10	−0.14	−0.09	−0.07	−0.02	0.09	0.07	0.04	−0.11	0.13

N = 13 321

References

Adam, I. (2012). Hotel location decision making in the Kumasi Metropolis of Ghana: With whom and why. *African Journal of Hospitality, Tourism and Leisure, 2*(2), 1–12.

Adam, I., & Mensah, E. A. (2014). Perceived spatial agglomeration effects and hotel location choice. *Anatolia: An International Journal of Tourism and Hospitality Research, 25*(1), 49–60.

Alonso, W. (1960). A theory of the urban land market. *Papers and Proceedings of the Regional Science Association, 6,* 149.

Alonso, W. (1964). *Location and land use: Toward a general theory of land rent*. Cambridge University Press.

Austin, S. B., Melly, S. J., Sanchez, B. N., Patel, A., Buka, S., & Gortmaker, S. L. (2005). Clustering of fast-food restaurants around schools: A novel application of spatial statistics to the study of food environments. *American Journal of Public Health, 95*(9), 1575–1581.

Barnett, A. P., & Okoruwa, A. A. (1993). Application of geographic information systems in site selection and location analysis. *Appraisal Journal, 61*(2), 245–253.

Binkley, J. K. (1998). Demand for fast food across metropolitan areas. *Journal of Restaurant and Foodservice Marketing, 3*(1), 37–50.

Block, J. P., Scribner, R. A., & DeSalvo, K. B. (2004). Fast food, race/ethnicity, and income: A geographic analysis. *American Journal of Preventive Medicine, 27*(3), 211–217.

Brown, S. (1989). Retail location theory: The legacy of Harold Hotelling. *Journal of Retailing, 65*(4), 450–470.

Brown, S. (1994). Retail location at the micro-scale: Inventory and prospect. *The Service Industries Journal, 14*(4), 542.

Christaller, W. (1933). *Central places in southern Germany*. English edition (C. W. Baskin by Trans.). NJ: Prentice-Hall, Englewood Cliffs (1966).

Craig, C. S., Ghosh, A., & McLafferty, S. (1984). Models of the retail location process—A review. *Journal of Retailing, 60*(1), 5–36.

Dicken, P., & Lloyd, P. E. (1990). *Location in space: Theoretical perspectives in economic geography*. Prentice Hall.

Fotheringham, A. S., & Wong, D. W. (1991). The modifiable areal unit problem in multivariate statistical analysis. *Environment and Planning a, 23*(7), 1025–1044.

Fujita, M. (1988). A monopolistic competition model of spatial agglomeration: Differentiated product approach. *Regional Science and Urban Economics, 18*(1), 87–124.

Ghosh, A. (1986). The value of a mall and other insights from a revised central place model. *Journal of Retailing, 62*(1), 79–97.

Ghosh, A., & McLafferty, S. L. (1987). *Location strategies for retail and service firms* . Lexington: Lexington Books.

Guerrier, Y., & Deery, M. (1998). Research in hospitality human resource management and organizational behavior. *International Journal of Hospitality Management, 17*(2), 145–160.

Hotelling, H. (1929). Stability in competition. *Economic Journal, 39*(153), 41–57.

Jafari, J. (1982). Paratourlsm and Its Contribution to the Hospitality Industry. In A. Pizam, R.C. Lewis, & P. Manning (Eds.),*Practice of Hospitality Management*. Westport. CT: AVI Publishing.

Jalis, M. H., Kassim, A. R. A., & Mohamad, N. H. (2012). Identification of cluster factors for the standalone restaurant. *Procedia—Social and Behavioral Sciences, 65,* 293–299.

Johns, N., & Pine, R. (2002). Consumer behaviour in the food service industry: A review. *International Journal of Hospitality Management, 21*(2), 119–134.

Johnston, R. J., & Rimmer, P. J. (1967). A note on consumer behaviour in an Urabn Hierarchy. *Journal of Regional Science, 7*(2), 161–166.

Klaesson, J., & Öner, Ö. (2014). Market reach for retail services. *Review of Regional Studies, 44*(2), 153–176.

Krugman, P. R. (1991). *Geography and trade*. Cambridge: MIT press.

Larsson, J. P., & Öner, Ö. (2014). Location and co-location in retail: A probabilistic approach using geo-coded data for metropolitan retail markets. *the Annals of Regional Science, 52*(2), 385–408.

Litz, R. A., & Rajaguru, G. (2008). Does small store location matter? A test of three classic theories of retail location. *Journal of Small Business and Entrepreneurship, 21*(4), 477–492.
Lösch, A. (1940). Die räumliche Ordnung der Wirtschaft [The Economics of Location]. English Edition (J. G. Fischer, Trans.). (1954).
Lund, T. B., Kjaernes, U., & Holm, L. (2017). Eating out in four Nordic countries: National patterns and social stratification. *Appetite, 119,* 23–33.
Meltzer, R., & Schuetz, J. (2012). Bodegas or bagel shops? Neighborhood differences in retail and household services. *Economic Development Quarterly, 26*(1), 73–94.
Mills, E. S. (1970). Urban density functions. *Urban Studies, 7*(1), 5–20.
Morland, K., Wing, S., Diez Roux, A., & Poole, C. (2002). Neighborhood characteristics associated with the location of food stores and food service places. *American Journal of Preventive Medicine, 22*(1), 23–29.
Muller, C. C., & Inman, C. (1994). The geodemographics of restaurant development. *Cornell Hotel and Restaurant Administration Quarterly, 35*(3), 88–95.
Muller, C. C., & Woods, R. H. (1994). An expanded restaurant typology. *The Cornell Hotel and Restaurant Administration Quarterly, 35*(3), 27–37.
Muth, R. F. (1961). Economic change and rural-urban land conversions. *Econometrica: Journal of The Econometric Society*, 1–23.
Muth, R. F. (1969). *Cities and Housing*. Chicago: University of Chicago Press.
Nelson, R. L. (1958). *The Selection of Retail Location.* New York: R. W. Dodge Corp.
Öner, Ö., & Klaesson, J. (2017). Location of leisure: The new economic geography of leisure services. *Leisure Studies, 36*(2), 203–219.
Öner, Ö., & Larsson, J. P. (2014). Which retail services are co-located? *International Journal of Retail and Distribution Management, 42*(4), 281–297.
Oppewal, H., & Holyoake, B. (2004). Bundling and retail agglomeration effects on shopping behavior. *Journal of Retailing and Consumer Services, 11*(2), 61–74.
Parr, J. B., & Denike, K. G. (1970). Theoretical problems in central place analysis. *Economic Geography, 46*(4), 568–586.
Parsa, H. G., Self, J. T., Njite, D., & King, T. (2005). Why restaurants fail. *Cornell Hospitality Quarterly, 46*(3), 304–322.
Partovi, F. Y. (2006). An analytic model for locating facilities strategically. *Omega, 34*(1), 41–55.
Pillsbury, R. (1987). From Hamburger alley to hedgerose heights: Toward a model of restaurant location dynamics. *The Professional Geographer, 39*(3), 326–344.
Porter, M. E. (2000). Location, competition, and economic development: Local clusters in a global economy. *Economic Development Quarterly, 14*(1), 15–16.
Prayag, G., Landré, M., & Ryan, C. (2012). Restaurant location in Hamilton, New Zealand: Clustering patterns from 1996 to 2008. *International Journal of Contemporary Hospitality Management, 24*(3), 430–450.
Schaefer, A. D., Luke, R. H., & Green, J. (1996). Attitudes of restaurant site selection executives towards various people magnets. *Journal of Restaurant and Foodservice Marketing, 1*(3/4), 1–14.
Simons, R. A. (1992). Site attributes in retail leasing: An analysis of a fast-food restaurant market. *Appraisal Journal, 60*(4), 521–531.
Smith, S. L. J. (1983). Restaurants and dining out: Geography of a tourism business. *Annals of Tourism Research, 10*(4), 515–549.
Smith, S. L. J. (1985). Location patterns of urban restaurants. *Annals of Tourism Research, 12*(4), 581–602.
Teller, C., & Reutterer, T. (2008). The evolving concept of retail attractiveness: What makes retail agglomerations attractive when consumers shop at them? *Journal of Retailing and Consumer Services, 15,* 127–143.
Timmermanns, H. (1986). Locational choice behavior of entrepreneurs. *An Experimental Analysis. Urban Studies, 23*(3), 231–240.
Timor, M., & Sipahi, S. (2005). Fast-food restaurant site selection factor evaluation by the analytic hierarchy process. *The Business Review, Cambridge, 4*(1), 161–167.

Tzeng, G.-H., Teng, M.-H., Chen, J.-J., & Opricovic, S. (2002). Multicriteria selection for a restaurant location in Taipei. *International Journal of Hospitality Management, 21*(2), 171–187.
von Thünen, J. H. (1826). The isolated state in relation to agriculture and political economy. Palgrave Macmillan.
Yun, L. L., & Hing, N. (1995). Measuring quality in restaurant operations: An application of the SERVQUAL instrument. *International Journal of Hospitality Management, 14*(3–4), 293–310.
Zeller, R. E., Achabal, D. D., & Brown, L. A. (1980). Market penetration and local conflict in franchise systems. *Decision Sciences, 11,* 58–80.

Firm Demography in the Accommodation Industry. Evidence from Italian Insular Regions

Maria Francesca Cracolici, Giuseppe Espa, Diego Giuliani, and Davide Piacentino

1 Introduction

Tourism is commonly recognized as a sector that makes a major contribution to the economy of countries and may also be a tool to foster regional development (see e.g., Neves Sequeira and Maçãs Nunes 2011; Balaguer and Cantavella-Jordá 2002; Brida et al. 2014).

Several studies have clearly pointed out the instrumental role that the tourism industry plays in facilitating the development of inland and peripheral areas such as islands, where traditional industries such as fishing and farming are in decline or even extinct (see e.g., Buhalis 1999; Fleischer and Felsenstein 2000; MacDonald and Jolliffe 2003; Sharpley and Sharpley 1997).

Furthermore, empirical studies have shown that tourism development in rural and peripheral regions can help to reduce the urban–rural gap within regions (Brau et al. 2007; Liu et al. 2017). However, tourism in inland and peripheral areas may be a costly and risky entrepreneurial challenge since businesses face a number of obstacles relating to high servicing costs, infrastructure deficiencies, lack of adequate training and education programs, and skilled labor, etc. (Bosworth and Farrell 2011; Holh

M. F. Cracolici (✉) · D. Piacentino
Department of Economics, Business and Statistics, University of Palermo, v.le delle Scienze Ed. 13, 90128 Palermo, Italy
e-mail: mariafrancesca.cracolici@unipa.it

D. Piacentino
e-mail: davide.piacentino@unipa.it

G. Espa · D. Giuliani
Department of Economics and Management, University of Trento, via Inama 5, 38122 Trento, Italy
e-mail: giuseppe.espa@unitn.it

D. Giuliani
e-mail: diego.giuliani@unitn.it

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_4

and Tisdell 1995; Jaafar et al. 2015; Lane 1993). These may be a barrier not only to the formation of new businesses but also to their survival.

However, despite the important role of the tourism industry in regional development, the literature has traditionally paid little attention to entrepreneurship (Ateljevic and Li 2009; Li 2008; Solvoll et al. 2015; Thomas et al. 2011) and, in particular, to firm demography analysis in this industry. Existing literature has mainly focused on exploring the main factors influencing post-entry performance (Falk 2013; Gémar et al. 2016; Santarelli 1998; Kaniovski and Peneder 2008), but less is known about the geography of tourism firms (Brouder and Eriksson 2013; Power et al. 2018).

In our opinion, it is of the utmost importance that the dynamics of firms is well investigated to both better understand differences in the spatial patterns of entrepreneurship to be found in developed and less developed regions and to guide policy formation in both traditional and peripheral/remote tourist destinations.

In the light of these considerations, the present study aims to in-crease the knowledge of the geography of the dynamics of firms in tourism by analyzing the accommodation industry in Sardinia and Sicily. These two regions are an interesting case study because of their geographic and development similarities, and also because they have a long tradition in tourism mainly due to their rich natural environment and cultural heritage.

The study focuses on a specific aspect of firm demography analysis that is how long firms survive after they enter the market. There are several reasons why we look at their survival rather than simply at their creation. In the case of lagging regions, as in our investigation, market selection where less productive and innovative firms make way for more productive and innovative ones may be seriously affected by policies. Consequently, we could have a scenario where policies support entry into the market of less productive and less innovative firms with a lower ability to survive or, more dramatically, a scenario where policies put up barriers to the entry of new firms to protect existing ones. In both the cases, we would have only short-term gains in terms of regional development. Exploring the Italian case, for example, Piacentino et al. (2017) found that the lagging regions have higher firm entry rates but also higher firm exit rates. They conclude that, in these cases, it is important to look at the survival of firms to have a more accurate analysis of the effects of firm demography on regional development.

In the light of this evidence, we decided to investigate not only the flow of firms entering the tourism industry but also to extend the analysis to the survival of new firms. Therefore, this study contributes to the literature on the geography of the tourism industry by providing novel evidence on the survival of new firms in peripheral and lagging regions (like Sicily and Sardinia), and also by comparing firms in coastal areas with those located in inland areas (i.e., in the periphery of peripheral regions). We specifically focus on accommodation firms in order to look at hospitality in a strict sense and to isolate, at least in part, the potential influence of local demand.

The aim of this paper is not to investigate the impact of firm demography in the tourism industry on regional development but rather to provide the first evidence on the geography of the tourism industry in the two Italian insular regions. To the best

of our knowledge, our analysis is the first attempt in the tourism field. This evidence may be very useful to policy makers to evaluate whether the tourism industry is well established in both coastal and inland areas.

The analysis will thus address the following questions: (i) How does the geography of the accommodation industry differ across the two regions? (ii) How does the spatial distribution of firms change between coastal and inland areas inside each region? (iii) How does post-entry performance differ across the two regions and across coastal and inland areas?

The study is performed on the internationally comparable and geo-referenced database of the population of firms collected by the Italian Institute of Statistics (ISTAT), in accordance with the OECD and EUROSTAT guidelines. Using descriptive statistics, the study explores the survival of accommodation-related firms which started up between 2010 and 2014.

The paper is structusred as follows. The next section provides an overview of the related literature. Section 3 reports a description of the database and a presentation of the statistical tools used to investigate firm survival. Section 4 presents our results and some final remarks.

2 Related Literature

The aim of the paper is to explore whether and to what extent new firm survival in the accommodation industry differs across space. We specifically focus on the case of the insular regions. Hence, different streams of literature, rarely combined in previous studies, are involved in our research.

A first stream of literature is related to regional business demography. Our focus is on the survival of new firms. As mentioned above, the survival analysis can be considered as more important than simply looking at new business formation in less developed regions like Sardinia and Sicily (see Piacentino et al. 2017).

Schutjens and Wever (2000) assert that '*the survival or success of new firms is more essential to a regional economy than merely the presence of a large number of new firms* ' (p. 136). And Renski (2011) adds that '*while studies of entry have helped to shape our understanding of regional variations in entrepreneurship, they say little about processes that affect the performance of new firms in the critical years following their birth*' (p. 473). This literature mainly looks at the role of external economies of localization, urbanization, and diversity on new firm survival, and the effects of which may depend on characteristics of the firms themselves. For example, Ebert et al. (2019) find that being located in spatial proximity to similar firms, i.e., localization economies, is an important factor in survival performance of less innovative firms, while high-tech new firms are more likely to be affected by diversity economies. Little attention has been paid to the role of geographical location on the survival of new firms. This aspect is relevant when considering insular regions where being located even few a kilometers away from the coast can seriously influence firm survival.

The other stream of literature on which this study is based is related to the tourism industry itself. This literature is still limited, since tourism research has traditionally been more oriented toward investigating the demand side rather than the supply side.

Empirical analyses have mainly focused on exploring the main factors influencing post-entry performance. Using data on Spanish hotels, Gémar et al. (2016) explore the role of financial and non-financial factors on firm survival identifying size, location, and time of firm entry as key factors in firm post-entry performance. Kaniovski and Peneder (2008) focusing on market structure and demographic variables in the Austrian accommodation sector found a positive relationship between survival rate and size, fast market growth, and the share of young firms. More recently, empirical studies have also focused on a geographical perspective of firm demography. Using geo-referenced micro-data on tourism firms in Sweden, Brouder and Eriksson (2013) show that the previous working experience and location of the entrepreneur play a key role in the staying power of new firms. Power et al. (2018) pointed out the role of space in the analysis of firm demography showing significant evidence of positive spatial dependence in regional tourism enterprise births and deaths. An earlier study by Santarelli (1998) focusing on the start-up size/survival relationship in the accommodation sector showed that the survival pattern differs significantly across Italian regions giving insights into the importance of geography in exploring firm demography. In the spirit of this stream of literature, our study explores the spatial survival pattern in the accommodation sector in the two largest Italian islands focusing on differences between them and also within them by comparing coastal and inland areas.

3 Data and Methods

The analysis looks at the population of firms in the accommodation industry in Sicily and Sardinia.[1]

We limit the analysis to the accommodation sector because it is a critical driver of tourism entrepreneurship, and because local demand effects of tourism-related services such as restaurants and transports do not affect it. We use data on firm demography provided by ISTAT and on administrative information collected by the Chambers of Commerce. Our data refer to all firms in the accommodation sector in Sicily and Sardinia which were born during the period 2010–2014, a total of 1273 units.

We examine the spatial patterns of the formation of new businesses in the two islands, and also the geography of the dynamics of firms distinguishing between coastal and inland or rural areas. A firm is classified as coastal if it is less than 10 km from the sea and rural if it is further from the coastline.

[1] We referred to the following NACE codes: I55100, I55201, I55202, I55203, I55204, I55205, I55300, I55902.

A survival analysis has been carried out for the period 2011–2015. The survival probability of firms is estimated non-parametrically from the observed survival times, both censored and uncensored, of each firm using the Kaplan–Meier (1985) (KM)[2] estimation method described as follows. Suppose that k firms cease to operate in the period under observation at distinct times $t_1 < t_2 < t_3 < \cdots < t_k$. As the exit of each firm from the market is assumed to occur independently of one another, the probabilities of surviving from one period to the next may be multiplied together to give the cumulative survival probability. More formally, the probability of still being in the market at time t_j, $S(t_j)$, is calculated from $S(t_{j-1})$ as follows:

$$S(t_j) = S(t_{j-1})\left(1 - \frac{d_j}{n_j}\right)$$

where n_j is the number of firms still being in the market until t_j and d_j represents the number of firm exits at t_j. When $t_0 = 0$, the probability to survive until t_0 will be equal to 1, i.e., $S(0) = 1$. The value of $S(t)$ is constant between the times of firm exits, and hence, the estimated probability is a step function that changes value only at the time of each firm's exit. The KM survival curve, that is the plot of $S(t)$ against t, can provide a useful summary of the exit dynamics of firms.

Moreover, the comparison between the KM curves of two or more different groups of firms, such as class-size groups or region groups, makes possible the identification of the potential determinants of firm survival. The statistical significance of the difference between survival curves can be tested by means of the log-rank test (Peto et al. 1977). This method calculates at each firm's exit time, for each group of firms, the number of firms that should exit under the null hypothesis of no difference between the groups.

These values are then summed over all the firms' exit times to give the total expected number of firms' exits in each group, say E_i for group i. The log-rank test compares the observed number of firm exits, say O_i for the group i, to the expected number by calculating the following test statistic:

$$\chi^2 = \sum_{i=1}^{g} \frac{(O_i - E_i)^2}{E_i}$$

Under the null hypothesis of no difference in survival curves of two or more groups, this test statistic follows a χ^2 distribution with $(g - 1)$ degrees of freedom, where g is the number of groups. Therefore, a p-value can be computed to assess the statistical significance of the differences between the g survival curves.

[2] It is also known as the product-limit estimation method.

4 Empirical Findings

The empirical analysis has been performed on 883 accommodation firms in Sicily and 390 in Sardinia, all of which were born during the period 2010–2014. Figures 1 and 2 show the spatial distribution of firms by year of birth. From an initial visual inspection, we note a higher dispersion of firms in Sardinia. In this region, we only note some evidence of agglomeration of firms in the areas where the cities of Cagliari (in the South), Alghero (in the North-West), and Olbia (in the North-East), are located. In particular, we note a concentration of younger firms (circles in darker color) in the city of Cagliari. As far as Sicily is concerned, there is a clear concentration of accommodation firms in some coastal areas where large size cities are located, such as Palermo (on the North-West coast) and Catania (in the East coast), or some popular tourist destinations like Taormina (on the East coast). Moreover, we note an evident agglomeration of firms in the West coast, where the city of Trapani is located, and in the South-East coast (between the cities of Siracusa and Ragusa) where a number

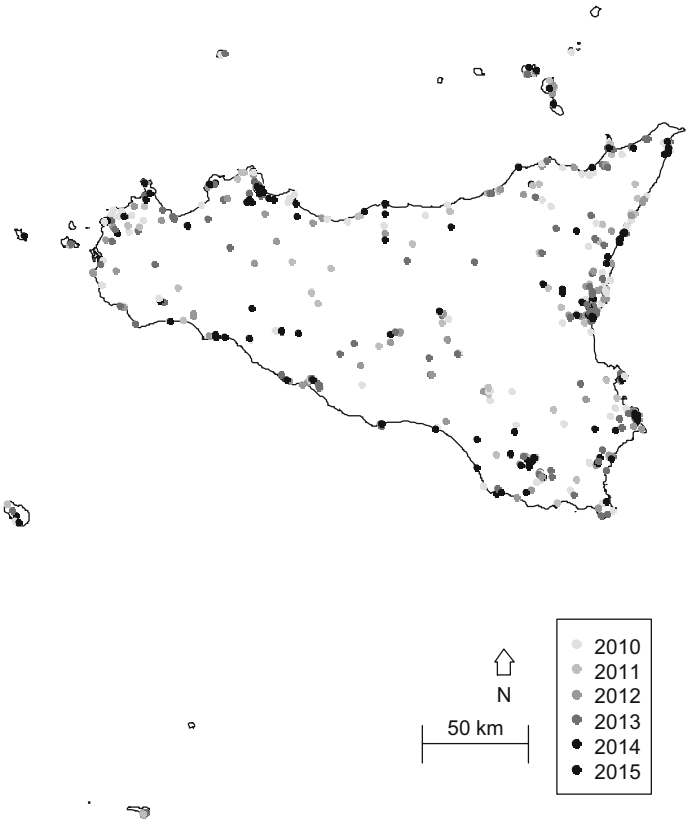


Fig. 1 Distribution of new accommodation firms by year of birth (Sicily)

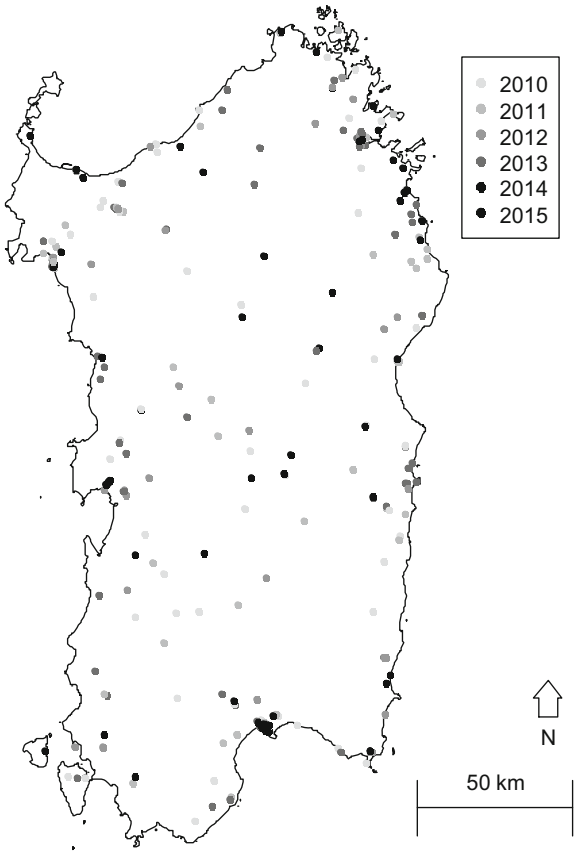


Fig. 2 Distribution of new accommodation firms by year of birth (Sardinia)

of firms were born more recently. We observe 265 out of a total 1273 firms (almost 21%) on both islands that were dead during the period 2011–2015.

Table 1 reports the number of dead firms by entry and exit year. We observe a significant number of firms that did not survive beyond their first year. For example,

Table 1 Frequency distribution of dead accommodation firms by entry (rows) and exit (columns) year in Sicily and Sardinia

	2011	2012	2013	2014	2015	Total
2010	19	26	22	15	11	93
2011		29	17	9	6	61
2012			23	15	7	45
2013				26	19	45
2014					21	21

Table 2 Accommodation firms' survival probability in Sicily and Sardinia

Time	N. risk	N. event	Survival	Standard error	Lower CI	Upper CI
1	1273	118	0.907	0.00813	0.892	0.923
2	904	77	0.830	0.01124	0.808	0.852
3	617	38	0.779	0.01326	0.753	0.805
4	396	21	0.738	0.01531	0.708	0.768
5	202	11	0.697	0.01866	0.662	0.735

looking at all the dead firms in the period 2011–2015 which were born in 2011, 29 of out 61 firms (almost 50%) did not make it past their first year.

In Table 2, using the approach by Kaplan and Meier (1958) on the population of firms born during the period 2010–2014, we find that almost 91% of these firms survive their first year. The probability of survival decreases to almost 70% after five years (see column 4 in Table 2). The results in Table 2 enable us to construct the survival curve for the population of accommodation firms in the two regions (see Fig. 3).

Figure 3 shows that survival probability tends to decrease considerably year by year until the third year, after which the decrease stabilizes. Specifically, survival probability decreases by 7% from the first to the second year (from 90 to 83%), and only by 4% from the fourth to the fifth year (from 73 to 69%). This result confirms that dead firms lasted for a very short time (one or two years).

As far as survival probability by region is concerned (Table 3), we observe that firms in Sardinia have a higher survival probability than those in Sicily until their third year of life. The result is inverted if we look at the fourth and fifth year. However,

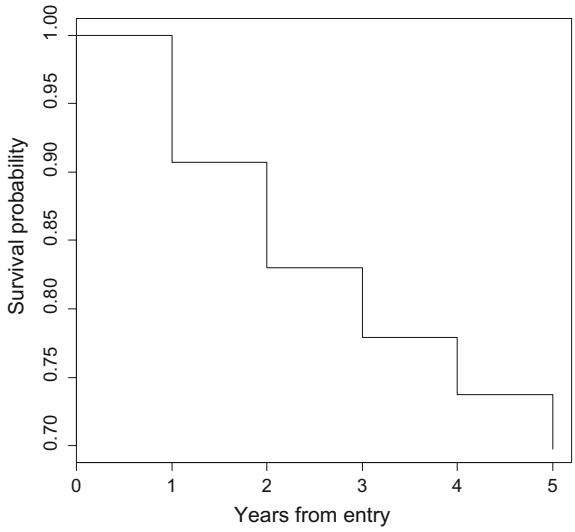


Fig. 3 Survival curve for accommodation firms in Sicily and Sardinia

Table 3 Accommodation firms' survival probability by region

Time	N. risk	N. event	Survival	Standard error	Lower CI	Upper CI
Sicily						
1	883	85	0.904	0.00993	0.884	0.923
2	625	53	0.827	0.01356	0.801	0.854
3	424	26	0.776	0.01597	0.746	0.808
4	265	11	0.744	0.01802	0.71	0.78
5	137	8	0.701	0.02259	0.658	0.746
Sardinia						
1	390	33	0.915	0.0141	0.888	0.943
2	279	24	0.837	0.0201	0.798	0.877
3	193	12	0.785	0.0238	0.739	0.833
4	131	10	0.725	0.0285	0.671	0.783
5	65	3	0.691	0.0331	0.629	0.759

the long-rank test on the survival curves does not indicate a significant difference between the two regions.[3]

In Table 4, we distinguish between firms located in coastal and inland areas. Figures 1 and 2 show a higher agglomeration of firms in coastal areas than in inland areas. In both islands, this is particularly due to the presence of large-size cities in coastal areas, in addition to the high attractiveness of seaside tourism. Hence, accommodation firms located in coastal areas may benefit from agglomeration economies which have a positive effect on their survival probability (see Power et al. 2018). On the other hand, the survival probability of firms in these areas could be negatively affected by greater competition. The analysis shows that, in both islands, firms in coastal areas have higher survival probabilities than firms in inland areas. However, statistically speaking, only in Sicily, we find a significant difference between coastal and inland areas. We also compare the two regional survival curves by typology of area, i.e., coastal areas in Sicily *vs* coastal areas in Sardinia and as the same for the inland areas. We do not find significant differences in either of these comparisons.

Finally, we compare different classes of size, defined in terms of employees, within and between regions. Firms were divided into three groups: (i) firms with only 1 employee; (ii) firms with 2–5 employees, and (iii) firms with more than 5 employees. We observe that for both regions, survival probability increases when we go from smaller to larger firm-size. We find statistically significant differences across sizes within both regions. On the other hand, we do not find significant differences between regions within the same class-size (e.g., firms with 1 employee in Sicily vs firms with 1 employee in Sardinia). However, the very limited number of larger firms suggests caution in the interpretation of these results (Table 5).

[3] For the sake of brevity, we do not report results from the tests of difference on survival curves. These results are available upon request.

Table 4 Accommodation firms' survival probability by region and area

Time	N. risk	N. event	Survival	Standard error	Lower CI	Upper CI
Sicily—coastal area						
1	666	57	0.914	0.0108	0.893	0.936
2	468	43	0.830	0.0157	0.8	0.862
3	315	15	0.791	0.018	0.756	0.827
4	199	8	0.759	0.0205	0.72	0.8
5	103	5	0.722	0.0252	0.674	0.773
Sicily—inland area						
1	144	20	0.861	0.0288	0.806	0.919
2	107	9	0.789	0.0351	0.723	0.861
3	75	10	0.684	0.0434	0.604	0.774
4	45	2	0.653	0.0465	0.568	0.751
5	24	3	0.572	0.06	0.465	0.702
Sardinia—coastal area						
1	258	20	0.922	0.0166	0.89	0.956
2	189	11	0.869	0.0222	0.826	0.913
3	132	9	0.81	0.0281	0.756	0.867
4	83	4	0.771	0.0328	0.709	0.838
5	41	3	0.714	0.0437	0.633	0.805
Sardinia—inland area						
1	73	7	0.904	0.0345	0.839	0.974
2	53	6	0.802	0.0498	0.71	0.906
3	37	2	0.758	0.0558	0.657	0.876
4	28	5	0.623	0.0715	0.498	0.78
5	–	–	–	–	–	–

From this evidence, we obtain some important indicators of potential determinants of firms' survival that could be well useful for future investigation. Geographical location for example has an important role, with distance from the coast being a significant factor in the decrease of the probability of survival of new firms. We also find that firm size makes a difference with smaller firms being more vulnerable. Despite the fact that the analysis at this stage is only descriptive, it does point out some aspects that need more attention in studies on the accommodation industry in the insular regions.

Table 5 Accommodation firms' survival probability by firm size

Time	N. risk	N. event	Survival	Standard error	Lower CI	Upper CI
Sicily—1 employee						
1	522	61	0.883	0.0141	0.856	0.911
2	351	34	0.798	0.0189	0.761	0.835
3	235	16	0.743	0.0219	0.702	0.788
4	147	8	0.703	0.025	0.656	0.754
5	80	7	0.641	0.0318	0.582	0.707
Sicily—2 to 5 employees						
1	296	23	0.922	0.0156	0.892	0.953
2	220	15	0.859	0.0214	0.819	0.902
3	156	5	0.832	0.024	0.786	0.88
4	99	3	0.807	0.0273	0.755	0.862
5	46	1	0.789	0.0318	0.729	0.854
Sicily—more than 5 employees						
1	65	1	0.985	0.0153	0.955	1
2	54	4	0.912	0.0378	0.84	0.989
3	33	5	0.774	0.0653	0.656	0.913
4	–	–	–	–	–	–
5	–	–	–	–	–	–
Sardinia—1 employee						
1	219	16	0.927	0.0176	0.893	0.962
2	158	21	0.804	0.0293	0.748	0.863
3	103	11	0.718	0.0358	0.651	0.792
4	68	8	0.633	0.0423	0.556	0.722
5	35	2	0.597	0.047	0.512	0.697
Sardinia—2 to 5 employees						
1	128	13	0.898	0.0267	0.848	0.952
2	90	3	0.868	0.0309	0.81	0.931
3	–	–	–	–	–	-
4	44	2	0.829	0.0402	0.754	0.912
5	21	1	0.79	0.0543	0.69	0.903
Sardinia—more than 5 employees						
1	43	4	0.907	0.0443	0.824	0.998
2	–	–	–	–	–	–
3	24	1	0.869	0.0563	0.766	0.987
4	–	–	–	–	–	–
5	–	–	–	–	–	–

5 Concluding Remarks

Using geo-referenced micro-data, the study analyzes both the spatial pattern of accommodation firms and their post-entry performance in the two main Italian islands of Sardinia and Sicily. We compare not only the two regions but also look at differences within each region by comparing coastal and inland areas. Our analysis makes use of micro-data collected by ISTAT on the population of firms in the accommodation industry. Specifically, we focus on the firms that were born during the period 2010–2014 and we estimate their probability of survival over time from one year to five years from their inception. Some results are worth mentioning. First, we observe a higher dispersion of firms in Sardinia than in Sicily. In the latter, we note a higher concentration of firms in coastal and urban areas. Second, most of the firms in the analyzed period which did not survive lasted a very short time. Third, we do not find significant differences across the two insular regions in terms of survival probabilities. There were, however, significant differences between coastal and inland areas in Sicily which could be related to the presence of larger size cities. In such areas, agglomeration economies could significantly increase the survival probability of firms.

Finally, the analysis shows that larger size firms have significantly higher probabilities of survival than smaller ones. This evidence is confirmed in both regions. On the other hand, we do not find significant differences in the survival probabilities of similar size firms located in different regions.

In conclusion, the analysis suggests that policy makers should look more carefully at the accommodation firms located in the Sicilian inland areas. These firms have the lowest survival probability at one year from birth of all the firms in this study. This probability could further decrease when a firm is not only located in an inland area, but also is very small in size.

The study provides the basis for future research and further investigation on the role of geographical location could provide additional evidence useful for policy makers and investors who have to decide where to invest resources in tourism. For example, one area of research could be to explore how survival probability decreases for every kilometer away from the coast.

Acknowledgements The authors would like to thank Danila Filipponi, Simonetta Cozzi, and Patrizia Cella of the Italian National Institute of Statistics (Istat) who, according to a protocol between Istat and the University of Trento, provided the data used in Section 3.

References

Ateljevic, J., & Li, L. (2009). Tourism entrepreneurship—Concepts and issues. In S. J. Page & J. Ateljevic (Eds.), *Tourism and entrepreneurship: International perspectives.* Oxford: Elsevier.

Balaguer, J., & Cantavella-Jorda, M. (2002). Tourism as a long-run economic growth factor: The spanish case. *Applied Economics, 34*(7), 877–884.

Bosworth, G., & Farrell, H. (2011). Tourism entrepreneurs in Northumberland. *Annals of Tourism Research, 38*(4), 147–1494.

Brau, R., Lanza, A., & Pigliaru, F. (2007). How fast are small tourism countries growing? Evidence from the data for 1980–2003. *Tourism Economics, 13*(4), 603–614.

Brida, J. G., Cortes-Jimenez, I., & Pulina, M. (2014). Has the tourism-led growth hypothesis been validate? A literature review. *Current Issues in Tourism, 19*(5), 394–430.

Brouder, P., & Eriksson, R. H. (2013). Staying-Power: What influences micro-firm survival in tourism. *Tourism Geographies, 15*(1), 125–144.

Buhalis, D. (1999). Tourism on the Greek Islands: Issues of peripherality, competitivenss and development. *International Journal of Tourism Research, 1,* 341–358.

Ebert, T., Brenner, T., & Brixy, U. (2019). New firm survival: The interdependence between regional externalities and innovativeness. *Small Business Economics, 53*(1), 287–309.

Falk, M. (2013). A survival analysis of ski companies. *Tourism Management, 36,* 377–390.

Fleischer, A., & Felsenstein, D. (2000). Support for rural tourism: Does it make a difference? *Annals of Tourism Research, 27,* 1007–1024.

Gémar, G., Minche, L., & Morales, A. J. (2016). Survival analysis of the Spanish hotel indisutry. *Tourism Management, 54,* 428–438.

Hohl, A. E., & Tisdell, C. A. (1995). Peripheral tourism: Development and management. *Annals of Tourism Research, 22*(3), 517–534.

Jaafar, M., Rasoolomanesh, S. M., & Lonik, K. A. T. (2015). Tourism growth and entrepreneurship: Empirical analysis of development of rural highlands. *Tourism Management Perspectives, 14,* 17–24.

Kaniovski, S., & Peneder, M. (2008). Determinants of firm survival in the Austrian accommodation sector. *Tourism Economics, 14*(3), 527–543.

Kaplan, E. L., & Meier, P. (1958). Nonparametric estimation from incomplete observations. *Journal of the American Statistical Association, 53,* 457–481.

Lane, B. (1993). What is rural tourism? In Bramwell & Lane (Eds.), *Rural Tourism and Sustainable Development*. *Proceeding of the Second International School on Rural Development*, 28 June–9 July, University College Galway, pp. 1–18.

Li, L. (2008). A review of entrepreneurship research published in the hospitality and tourism management journals. *Tourism Management, 29*(5), 1013–1022.

Liu, J., Nijkamp, P., & Lin, D. (2017). Urban-rural imbalance and tourism-led growth in China. *Annals of Tourism Research, 64,* 24–36.

MacDonald, R. M., & Jolliffe, L. (2003). Cultural rural tourism. *Annals of Tourism Research, 30*(2), 307–322.

Neves Sequeira, T., & Maçãs Nunes, P. (2011). Does tourism influence economic growth? A dynamic panel data approach. *Applied Economics, 40*(18), 2431–2441.

Peto, R., Pike, M. C., Armitage, P., Breslow, N. E., Cox, D. R., Howard, S. V., et al. (1977). Design and analysis of randomized clinical trials requiring prolonged observation of each patient. II. Analysis and examples. *British Journal of Cancer, 35,* 1–39.

Piacentino, D., Espa, D., Filipponi, D., & Giuliani, D. (2017). Firm demography and regional development: Evidence from Italy. *Growth & Change, 48*(3), 359–389.

Power, B., Doran, J., & Ryan, G. (2018). Spatial effects in regional tourism firm births and deaths. In *European Regional Science Association 58th Annual Congress*, August 28–31, Cork, Ireland.

Renski, H. (2011). External economies of localization, urbanization and industrial diversity and new firm survival. *Papers in Regional Science, 90,* 473–502.

Santarelli, E. (1998). Start-up size and post-entry performance: The case of tourism services in Italy. *Applied Economics, 30,* 157–163.

Schutjens, V. A. J. M., & Wever, E. (2000). Determinants of new firm success. *Papers in Regional Science, 79,* 135–159.

Sharpley, R., & Sharpley, J. (1997). *Rural tourism: An introduction.* London: International Thomson Business Press.

Solvoll, S., Alsos, G. A., & Bulanova, O. (2015). Tourism entrepreneurship—Reviewand future directions. *Scandinavian Journal of Hospitality and Tourism, 15*(1), 120–137.
Thomas, R., Shaw, G., & Page, S. J. (2011). Understanding small firms in tourism: A perspective on research trends and challenges. *Tourism Management, 32,* 963–976.

The Importance of the Hospitality Sector in Integrating Foreign-Born Individuals in Sweden

Mikaela Backman and Johan Klaesson

1 Introduction

The hospitality sector has traditionally employed a high proportion of people with a foreign background in Sweden, and it continues to do so. There are many underlying factors for this, as hospitality is an industry with low entry costs (e.g., there is generally less need for financial capital and a lower required level of formal knowledge). In addition, in this industry an individual with a foreign background can meet a demand by assisting with authentic food from other cultures, for example. In this chapter, we focus on the employment of individuals with foreign backgrounds in the hospitality sector in Sweden. Because there is a clear pattern in how individuals sort themselves according to where they settle and the sector where they begin working, we also consider whether there are any differences in the employment across different regional categories in Sweden. We use Sweden as a case study because of its history with an open and inclusive immigration policy that has led to a diverse environment both at the firm and regional levels. The chapter highlights the relative importance of the hospitality sector for the integration of foreign-born individuals into the Swedish labor market and society.

To this end, we use employee–employer matched statistics provided by Statistics Sweden. The accessed data are detailed and provides us with information on the characteristics of all employees at all active Swedish firms. The descriptive statistics show that the hospitality industry is a major source of employment for individuals with

M. Backman (✉)
Centre for Entrepreneurship and Spatial Economics (CEnSE), Jönköping International Business School, Jönköping, Sweden
e-mail: mikaela.backman@ju.se

J. Klaesson
Centre for Entrepreneurship and Spatial Economics (CEnSE), Jönköping International Business School, Jönköping, Sweden
e-mail: johan.klaesson@ju.se

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_5

foreign backgrounds, and yet there are large discrepancies within Sweden. Overall, the hospitality industry exceeds other sectors in terms of integrating foreign-born individuals into Swedish society through employment. We perform four different logit estimations capturing the probability of becoming employed for different individuals based on their backgrounds. We distinguish employment in all sectors and within the hospitality sector. We further separate necessity-driven employment (moving from being unemployed to employed) and opportunity-driven employment (moving from already being employed to employment in another sector). The results illustrate that natives in Sweden have overall a higher probability of finding necessity-based employment and opportunity-based employment when analyzing all sectors. However, for the hospitality sector, we observe the opposite pattern where individuals with a foreign background are more likely to be employed, both out of necessity and opportunity. Accounting for the heterogeneity across individuals with foreign backgrounds, we observe that individuals born in the Balkan countries have a higher probability of obtaining employment in the hospitality sector, both out of necessity and opportunity.

2 Foreign Born in the Hospitality Sector, Previous Studies

The tradition of overrepresentation in the hospitality sector by foreign-born individuals is an international trend shared by most advanced countries (Andriotis and Vaughan 2004; Baum 2007; Kim 2009; King 1995; Taylor and Finley 2010). In the analysis by Joppe (2012), which focus on migration in OECD member countries and the hospitality sector, he finds that the share of migrant employees within the hospitality sector is growing rapidly. In addition, hospitality firms in most OECD countries use migrant workers due to seasonal fluctuations and structural challenges that exist in the industry. Hospitality firms mostly use this cheaper workforce to perform simpler jobs of both legal and illegal statuses.

In the UK, several studies have found that immigrants cluster in the hospitality sector. Studies using official data on the hospitality sector (mostly focusing on London) indicate that the hospitality sector has high rates of foreign-born individuals, in some cases reaching 50%, and this sector is thus highly dependent on this group of workers (Church and Frost 2004; Evans et al. 2014). Foreign workers in the UK hospitality sector are overrepresented by young, female employees; many of them overqualified for the tasks they perform. However, many of these workers obtain more prestigious work tasks with time (Hania 2011). May et al. (2007) find that the divisions of labor for immigrants in the hospitality sector are more diverse compared to other sectors that attract a large share of immigrants, such as cleaning the underground, office cleaning, and the care sector. The authors claim that this diversification is a consequence of the changing patterns of immigration to the UK and especially to London. In their sample, two-fifths of the employees are foreign born and non-white. A growing share of the foreign-born employees originates from Central and Eastern Europe, although traditionally a large share originated in Southern Europe.

Furthermore, the authors find that employees within the hospitality sector and those who clean the underground have the worst working conditions and lowest wages, similar to the findings by McDowell et al. (2009).

3 Background on the Hospitality Industry in Sweden

Before moving to the description of Sweden's hospitality sector, it is essential to first clarify how we define this sector in this chapter. There are numerous ways to define the hospitality industry, and here we define it according to Standard Industrial Codes (SIC) defined by Statistics Sweden. For an extensive study on how to define the hospitality industry, see Ottenbacher et al. (2009). According to our definition, the hospitality industry is constructed by firms classified as hotels and accommodations and firms within the restaurant industry. We are aware that some related industries could also be classified as part of the hospitality industry, such as firms in the tourism and entertainment industry. Because those firms are harder to delimit using industry classification codes, we have chosen to make the aforementioned restriction.

To obtain a general understanding of the hospitality sector in Sweden, we use statistics from Statistics Sweden to describe different dimensions of the industry. The statistics we use are based on information collected by Statistics Sweden each year in November. This means that we are unfortunately not able to capture variations that occur over the year, such as changes in the number of employees, where some regions have a greater variety. Table 1 shows basic information about the hospitality industry at large and when divided into restaurants and hotels and accommodations. In addition, we include "other industries" as a reference point. We include the years 1993, 2003, and 2013 to capture variations over time.

Table 1 shows that the hospitality industry is becoming an increasingly important element of the Swedish economy. For example, from 2003 to 2013, the hospitality industry experienced a growth of approximately 37% in terms of the number of employees, compared to other industries that grew by about ten percent during the same period. The same type of outperformance is also observed in terms of the growth of establishments and firms. The hospitality sector is characterized by smaller establishments (in terms of number of employees) compared to the overall economy, with considerable differences within the industry where hotels and accommodations are in general larger than restaurants. Not surprisingly, we observe that employees in the hospitality industry have a lower education level, both regarding the average number of schooling years and the proportion of employees who have studied at least three years at a university, i.e. equivalent to a bachelor degree. This is not a new phenomenon nor is it isolated to Sweden; this perspective has been presented in other studies for other countries and by the industry itself. In the proportion of highly educated employees, the hospitality industry is well below the average in Sweden. However, over time, there has been a significant increase in the education level of those working in the hospitality industry. In other words, the sector is moving towards

Table 1 General information about the hospitality industry in Sweden, divided into subindustries

	Hospitality industry			Restaurants			Hotels and accommodations			All other industries		
	2013	2003	1993	2013	2003	1993	2013	2003	1993	2013	2003	1993
Number of employees	220 306	160 765	119 985	165 339	114 403	79 514	54 967	46 362	40 471	7 778 444	7 096 483	6 892 830
Number of establishments	16 795	10 833	7 856	14 507	9 047	6 350	2 291	1 786	1 506	243 889	217 308	210 224
Number of firms	15 170	9 691	6 979	13 130	8 132	5 648	2 040	1 559	1 331	177 159	154 168	148 256
Average number of employees per establishments	6.576	5.824	6.265	5.723	4.729	4.905	11.655	12.751	13.229	7.136	8.538	8.228
Average number of schooling years of employees	11.102	10.934	10.581	10.968	10.824	10.485	11.503	11.207	10.771	11.818	11.429	10.784
Share of employees with a bachelor education	0.055	0.038	0.020	0.047	0.032	0.014	0.078	0.053	0.024	0.190	0.139	0.086
Share men	0.456	0.431	0.412	0.493	0.469	0.442	0.346	0.335	0.352	0.497	0.493	0.491
Share older (above the age of 55)	0.083	0.071	0.068	0.073	0.062	0.063	0.113	0.093	0.078	0.385	0.378	0.343
Share younger (younger than 25)	0.433	0.455	0.451	0.450	0.472	0.461	0.380	0.413	0.431	0.161	0.139	0.156

more human-capital intensive employees in terms of formal education, even though the industry is lagging and started at a low level.

The hospitality industry in Sweden is characterized by many young employees. This pattern is clearly visible in Table 1 where the proportion of employees who are 55 years of age or older is low and those 25 years of age or younger is high. In 2013, approximately eight percent were at least 55, whereas 43% were younger than 25. Corresponding figures for the overall pattern in Sweden show the opposite pattern, where a larger proportion is over 55 years (approximately 39%) and only 16% are 25 years old or younger. In terms of its development over time, the industry is moving toward a more even distribution. The proportion of older employees has increased, and the proportion of younger employees has fallen. By comparison, in 1993 seven percent of the employees were over the age of 55 and 45% were 25 years or younger.

For a more detailed understanding of the hospitality industry, we also present descriptive statistics for the two subindustries: hotels and accommodations and restaurants. Not surprisingly, there are significant differences that show the hospitality sector's heterogeneity. It is a diversified industry with many different actors facing different challenges and opportunities. By using two subindustries, we can observe that the size distribution differs, whereby hotels and accommodations generally have more employees compared to restaurants. The level of formal education, measured as the number of school years and the proportion of employees with at least three years at a university, is higher for hotels and accommodations. Given the characteristics of those working in the various industries, there are more men working in restaurants. In hotels and accommodations, the age distribution is more even as they have a larger proportion of older employees and a lower proportion of younger employees compared to those working in restaurants.

4 Data and Regional Categories

As previously mentioned, this chapter is based on statistics from Statistics Sweden. The data we examined are based on register data for all individuals (above the age of 16), active establishments and active firms in Sweden from 1993 to 2015. For individuals, we can find details on their age, educational level, sex, occupation and, most important for this chapter, the individual's background. For establishments and firms, we are able to ascertain their location, financial performance, and industry classification codes. The data on individuals are matched to their respective establishments and firms.

To observe patterns across different type of regions, we use a regional taxonomy to divide the Swedish municipalities into six groups following the Swedish Agency for Growth Policy Analysis (Tillväxtanalys). Municipalities are the smallest unit in Sweden that have their own governmental authority. There are 290 municipalities in Sweden. The six groups used are based on size and commuting patterns, described and originating from Tillväxtanalys (2014):

1. **Metropolitan**: This category is defined as municipalities with less than 20% of their population in rural areas and a total population of at least 500,000 in adjacent municipalities. There are only 29 municipalities in this category, but they cover one-third of the population.
2. **Urban, high accessibility**: These municipalities have less than 50% of their population in rural areas, and at least 50% of their population has less than 45 min' journey to an agglomeration with at least 50,000 inhabitants. This is the largest category in terms of number of municipalities (106 municipalities) and in terms of population share (approximately 44% of the Swedish population).
3. **Urban, low accessibility**: These municipalities have less than 50% of their population in rural areas, and less than 50% of their population has less than 45 min' journey to an agglomeration with at least 50,000 inhabitants. A total of 27 municipalities belong to this category. Seven percent of the Swedish population lives in these municipalities.
4. **Rural, high accessibility**: Municipalities with at least 50% of their population in rural areas and at least 50% of their population having less than 45 min' journey to an agglomeration with at least 50,000 inhabitants fall into this category. Although 67 municipalities fall into this category, this large number only accounts for approximately one-tenth of the Swedish population.
5. **Rural, low accessibility**: This category includes municipalities with at least 50% of their population in rural areas and less than 50% of their population having less than 45 min' journey to an agglomeration with at least 50,000 inhabitants. The 46 municipalities that belong to this category account for six percent of the population.
6. **Rural, very low accessibility**: Municipalities with their entire population in rural areas and with at least in average 90 min' journey to an agglomeration with at least 50,000 inhabitants. With only 15 municipalities, this is the smallest category in terms of municipalities and in terms of share of inhabitants as only one percent of the population lives in these 15 municipalities.

To understand the localization of these municipalities in Sweden, Fig. 1 shows the Swedish municipalities divided accordingly to these six different categories.

5 Method and Variables

To assess how individuals' background relates to the probability of becoming employed in the hospitality sector, we perform several logit estimations. The outcome variable in our estimations is binary, representing the employment outcome of individuals where we first separate the probability of becoming employed overall and in the second step we single out those being employed in the hospitality sector. We further differentiate between individuals who already have employment and switch jobs (opportunity-based) and those who are unemployed and looking for employment (necessity-based). By separating these two groups, we can observe those who

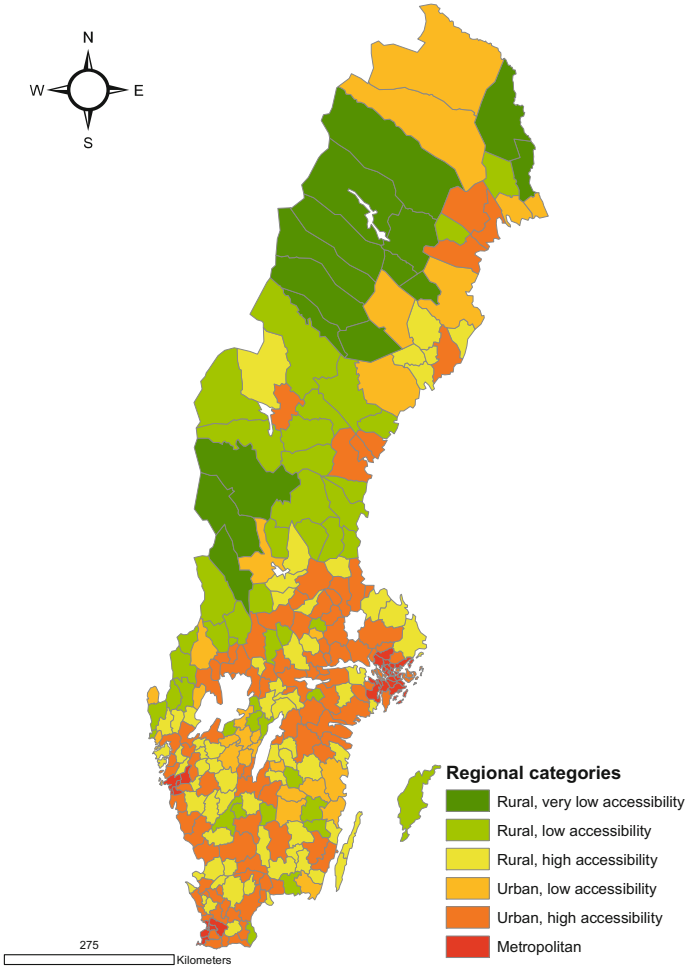


Fig. 1 Sweden divided into the six regional categories used in the empirical estimation: (i) metropolitan; (ii) urban, high accessibility; (iii) urban, low accessibility; (iv) rural, high accessibility; (v) rural, low accessibility, and (vi) rural, very low accessibility

seek employment out of necessity, driven by unemployment, and those who change employment when given the opportunity. The employment change is analogous to necessity- and opportunity-driven entrepreneurship. The dependent variable is measured for those who become employed in 2015.

The logit estimation is appropriate to use as the dependent variable takes the value of 1 if employed and 0 otherwise. Thus, the dependent variable takes a value of 0 or 1 and the model in which the probability of y being equal to one is displayed in the following equation.

$$\Pr(y = 1) = \Pr\left(\boldsymbol{x}'\beta + u > 0\right) = \Pr\left(-u < \boldsymbol{x}'\beta\right) = F\left(\boldsymbol{x}'\beta\right) \tag{1}$$

where F is the cumulative distribution function of the error term. In the logit model, the error term is assumed to be logistically distributed (Cameron and Trivedi 2009; Greene 2008). We perform the logit model by maximizing the log likelihood function associated with the probability function. The estimated model is presented in Eq. (2),

$$\text{Employment}_t = \alpha + Y_{t-1}\boldsymbol{\beta} + Z'_{t-1}\boldsymbol{\delta} + u_i \tag{2}$$

where the outcome variable, *Employment*, is a function of the background of the individual ($\boldsymbol{Y}_{t-1}$), and control variables at the individual level (Z'_{t-1}). u_i is the error term, and $\boldsymbol{\beta}$ and $\boldsymbol{\delta}$ are the estimated parameters.

Our variable of interest proxies the individual's background. Although we have access to detailed register data through Statistics Sweden, we are unable to match the country of origin to each individual due to Statistics Sweden's privacy policy. Instead, several countries are grouped into one category, creating regions of origin. The country groups are based on income level and geographical location. The regions of origin form 17 country groups and are presented in Table 2. Based on this information, we create 17 dummy variables using individuals born in Sweden as the base and comparing the outcomes of individuals from the different regions of origin.

All independent variables are measured in the year before the change in employment status, i.e., in 2014. Prior studies indicate that the age of the individual (*Age*) relates to the probability of finding employment although with a nonlinear effect (Age^2) (Baert et al. 2016; Nickell 1979). An individual's age also reflects the general experience level the individual possesses and contributes therefore to the individual's human capital. Human capital is further captured by the education level whereby individuals with a higher level of education (*Education*) have a higher probability of finding employment (Becker 1962; Kodde 1988; Mincer 1991; Smith 2010). The gender (*Gender*) of an individual also influences the probability of finding employment (Booth and Van Ours 2009; Russell and O'Connell 2001).

The civil status of individuals and their family situation (*Family situation*) relate to the probability of seeking employment (Barnett and Hyde 2001; Bernhardt 1993; Engelhardt et al. 2004; Hoem 1993). In the case where individuals change employment out of opportunity, we control for the wage the individual received in the year prior to the job change (*Wage*). Because the characteristics of the local labor market influence the inhabitants and their probability of finding employment, we control for regional characteristics by controlling for the regional type (*Regional category*). We create six categories based on the definition by Tillväxtanalys (explained in Sect. 4 in this chapter). Table 3 summarizes the variables used in the empirical estimations.

Table 2 Region of origin

Region	Included countries
Europe	
Nordic countries	Finland, Norway, Denmark, Iceland
EU15 + Schweiz	Belgium, France, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Switzerland, Spain, Britain, Germany, Austria
Europe—New EU members	Bulgaria, Cyprus, Estonia, Croatia, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia, the Czech Republic, Hungary
Europe—Rest	Andorra, Liechtenstein, Moldova, Monaco, San Marino, Vatican City
Balkans	Albania, Kosovo, Bosnia-Herzegovina, Macedonia, Montenegro, Serbia
Africa	
Africa, low income[a]	Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, Congo, Republic of the, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Senegal, Sierra Leone, Somalia, South Sudan, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe
Africa, middle income[a]	Algeria Angola Botswana Cabo Verde, Cameroon, Cote d'Ivoire Djibouti, Gabon, Lesotho, Libya, Mauritius, Morocco, Namibia, Nigeria, Sao Tome and Principe, Seychelles, South Africa, Tunisia
America	
North America	USA, Canada
South America	Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela
Central America	Belize, Costa Rica, Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Cuba, Mexico, Nicaragua, Panama
Asia	
Asia, low income[a]	Afghanistan, Bangladesh, Cambodia, Kyrgyzstan, Laos, Myanmar, Nepal, North Korea, Tajikistan, Uzbekistan, Pakistan, Vietnam, Sikkim
Asia, middle income[a]	Armenia, Azerbaijan, Bhutan, Philippines, Georgia, India, Indonesia, Kazakhstan, China, Malaysia, Mongolia, Pakistan, Sri Lanka, Thailand, Turkmenistan, Malay Federation, Maldives, East Timor
Asia, high income[a]	Japan, South Korea, Brunei Darussalam, Hong Kong, Singapore, Taiwan
Middle East	Bahrain, Egypt, United Arab Emirates, Iraq, Iran, Israel, Yemen, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, Turkey

(continued)

Table 2 (continued)

Region	Included countries
Oceania	American Samoa, Australia, Cook Islands, Fiji, French Polynesia, Guam, Christmas Island, Kiribati, Cocos Islands, Marshall Islands, Micronesia, Nauru, Niue, Northern Mariana Islands, Norfolk Island, New Caledonia, New Zealand, Palau, Papua New Guinea, Pitcairn Islands, Solomon Islands, Samoa, Tokelau, Tonga, Tuvalu, Vanuatu, Wallis and Futuna, East Timor
Russia et al	Russia, Ukraine, Belarus
Unknown	Individuals whose background is unknown

[a]Based on the definition by the World Bank

6 Empirical Findings

Table 4 shows the share of employees with foreign backgrounds working in Sweden's hospitality industry. The statistics are calculated for 1993, 2003, and 2013 to show the developments over time. We are not only interested in observing the share of employees with foreign backgrounds but also in their origins because of the clear differences between different groups of foreigners. Because the hospitality sector is very heterogeneous, we also show the development for the full hospitality sector and divide the hospitality sector into (i) hotels and accommodations, and (ii) restaurants.

Table 4 shows the high share of employees who have foreign backgrounds in the hospitality industry. In 2013, approximately 37% of all employees in the industry overall had foreign backgrounds. The corresponding figure in 1993 was 23%. In other words, there has been an increase of approximately 60% in the proportion of employees with foreign backgrounds over a twenty-year period. If we compare the hospitality sector with other industries in Sweden, the proportion is significantly higher in the hospitality sector and the increase over time has also been significantly higher (within other industries the increase has only been two percent over the same twenty-year period). To determine the region of origin for the largest proportion of individuals, we divided the individuals with foreign background into several groups. Individuals born in the Middle East and Asia are overrepresented in the hospitality sector. Distributed to different industries, restaurants have a higher proportion of people born in a different country than in Sweden, and in 2013 about four out of ten restaurant workers were born in another country. For hotels and accommodations, approximately 27% were born abroad. To understand these individuals' roles within companies, we have calculated the proportion of managers in the hospitality sector who have foreign backgrounds. For 2013, about one in three managers had a foreign background.

Figures 2a–c show which municipalities in Sweden have a high proportion of foreign-born employees in the hospitality sector. A darker color indicates municipalities with a higher proportion of employees with foreign backgrounds. There are three maps for the years 1993, 2003, and 2013 to show the development over time. The maps show an overall increase in the number of employees in the hospitality sector

Table 3 Variable description and summary statistics

Variable	Description	Mean	St. dev
Dependent variable, t			
Opportunity employment, all sectors	Binary variable: 1 if the individual becomes employed at time t (all sectors) and was employed in another sector at the two-digit level in $t-1$; 0 otherwise	0.18	0.38
Opportunity employment, hospitality sector	Binary variable: 1 if the individual becomes employed at time t in the hospitality sector and was employed in another sector in $t-1$; 0 otherwise	0.009	0.09
Necessity employment, all sectors	Binary variable: 1 if the individual becomes employed at time t (all sectors) and was unemployed in $t-1$; 0 otherwise	0.05	0.21
Necessity employment, hospitality sector	Binary variable: 1 if the individual becomes employed at time t in the hospitality sector and was unemployed in $t-1$, 0 otherwise	0.004	0.06
Independent variables, t − 1			
Sweden	Binary variable: 1 if the individual is born in Sweden, 0: otherwise. Used as a base in the estimations	0.797	0.402
Nordic countries	Binary variable: 1 if the individual is born in the Nordic countries, 0: individuals born in Sweden	0.023	0.150
EU15 + Schweiz	Binary variable: 1 if the individual is born in the EU15 + Schweiz countries, 0: individuals born in Sweden	0.012	0.110
Europe—New EU members	Binary variable: 1 if the individual is born in Europe – New EU members, 0: individuals born in Sweden	0.022	0.147
Europe—Rest	Binary variable: 1 if the individual is born in Europe – Rest, 0: individuals born in Sweden	0.000	0.011
Balkans	Binary variable: 1 if the individual is born in Balkans, 0: individuals born in Sweden	0.012	0.109
Africa, low income	Binary variable: 1 if the individual is born in the Africa, low income countries, 0: individuals born in Sweden	0.013	0.115

(continued)

Table 3 (continued)

Variable	Description	Mean	St. dev
Africa, middle income	Binary variable: 1 if the individual is born in the Africa, middle income countries, 0: individuals born in Sweden	0.001	0.029
North America	Binary variable: 1 if the individual is born in North America, 0: individuals born in Sweden	0.002	0.046
South America	Binary variable: 1 if the individual is born in South America, 0: individuals born in Sweden	0.010	0.098
Central America	Binary variable: 1 if the individual is born in Central America, 0: individuals born in Sweden	0.001	0.038
Asia, low income	Binary variable: 1 if the individual is born in the Asia, low-income countries, 0: individuals born in Sweden	0.005	0.073
Asia, middle income	Binary variable: 1 if the individual is born in the Asia, middle-income countries, 0: individuals born in Sweden	0.007	0.081
Asia, high income	Binary variable: 1 if the individual is born in the Asia, high-income countries, 0: individuals born in Sweden	0.001	0.026
Middle East	Binary variable: 1 if the individual is born in the Middle East, 0: individuals born in Sweden	0.050	0.218
Oceania	Binary variable: 1 if the individual is born in the Oceania countries, 0: individuals born in Sweden	0.001	0.026
Russia et al.	Binary variable: 1 if the individual is born in the Russian countries, 0: individuals born in Sweden	0.004	0.063
Unknown	Binary variable: 1 if it is unknown where the individual is born, 0: individuals born in Sweden	0.039	0.193
Age	Age of the individual	42.06	13.14
Age^2	To check for marginally decreasing effects	NA	NA
Gender	Binary variable: 1 for male and 0 for female	0.51	0.50
Wage	Annual labor income, in thousands of SEK	2646.52	2546.31

(continued)

Table 3 (continued)

Variable	Description	Mean	St. dev
Education	Education dummies based on the level of education	NA	NA
Family situation	Family taxonomy: 1: for married couples (including partnership) without children living at home, 2: for married couples (including partnership) with at least one kid under the age of 18 living at home, 3: for married couples (including partnership) with grown-up children (at least 18 years old) living at home, 4: nonmarried couples without children living at home, 5: nonmarried couples with at least one kid under the age of 18 living at home, 6: nonmarried couples with grown-up children (at least 18 years old) living at home, 7: single father with at least one kid under the age of 18 living at home, 8: single father with grown-up children (at least 18 years old) living at home, 9: single mother with at least one kid under the age of 18 living at home, 10: single mother with grown-up children (at least 18 years old) living at home, 11: One person household, and 12: unknown	NA	NA
Regional category	Regional taxonomy: 1: Metropolitan regions, 2: Urban, high accessibility, 3: Urban, low accessibility, 4: Rural, high accessibility, 5: Rural, low accessibility, and 6: Rural, very low accessibility	NA	NA

with a foreign background. This is evident in municipalities in northern Sweden, but it is true for most of the municipalities in Sweden.

Table 5 shows the empirical estimation for running the logit estimations for our four different specifications in which we separate necessity-based employment from opportunity-based employment and the employment pattern in the hospitality sector.

For individuals who are forced to find employment, i.e., necessity-driven employment for individuals unemployed in 2014 who obtained employment in 2015, we observe that overall individuals born in Sweden have a higher probability of becoming employed. All dummies capturing the different foreign backgrounds are negatively related to the probability of finding employment out of necessity. Several studies have shown that individuals with foreign backgrounds experience a worse outcome

Table 4 Share of employees with foreign backgrounds in the hospitality sector and subindustries

	Hospitality sector			Hotels and accommodations			Restaurants		
	2013	2003	1993	2013	2003	1993	2013	2003	1993
Share with a foreign background	0.366	0.291	0.229	0.269	0.215	0.176	0.399	0.321	0.256
Nordic countries	0.011	0.019	0.036	0.017	0.027	0.044	0.009	0.016	0.031
EU15 + Schweiz	0.016	0.017	0.024	0.019	0.013	0.016	0.016	0.018	0.028
Europe—New EU members	0.021	0.016	0.016	0.028	0.016	0.015	0.019	0.015	0.017
Europe—Rest	0.0001	0.00002	0	0.00007	0	0	0.0001	0.00003	0
Balkans	0.010	0.009	0.001	0.010	0.009	0.0007	0.011	0.0100	0.001
Africa	0.010	0.006	0.004	0.013	0.006	0.007	0.009	0.005	0.003
America	0.019	0.019	0.015	0.022	0.021	0.016	0.018	0.018	0.014
Asia	0.048	0.025	0.012	0.034	0.019	0.009	0.053	0.027	0.013
Middle east	0.119	0.092	0.047	0.024	0.023	0.015	0.151	0.119	0.063
Oceania	0.001	0.001	0.0008	0.001	0.001	0.0007	0.001	0.0009	0.0008
Russia	0.004	0.002	0.00008	0.005	0.004	0.0001	0.003	0.001	0.00005

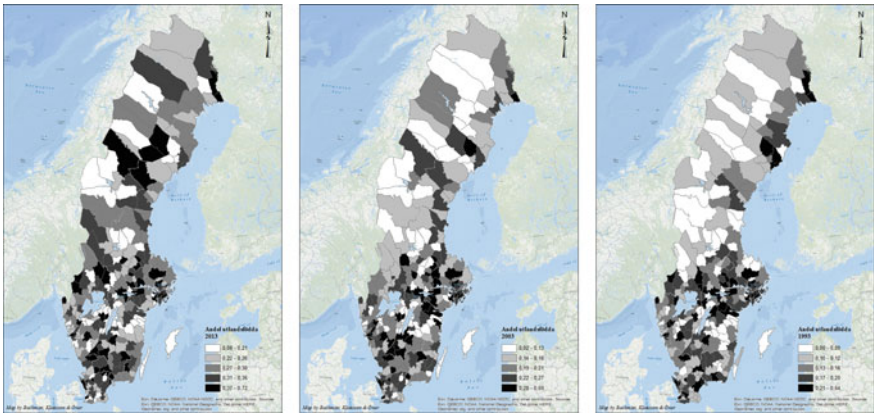


Fig. 2 a, b, c. Share of employees within the hospitality sector with foreign backgrounds, Swedish municipalities in 2013 (left map), 2003 (middle map), and 1993 (right map)

compared to natives in the labor market. This is also true for Sweden where the situation has also worsened over time (Ohlsson 1975; SOU 2008, 2009). The negative relationship can have many explanations including a lower level of human capital (both formal education and training and informal on-the-job training, although in many cases the problem does not lie in the formal education but in the lack of recognizing skills and qualifications in the new country), discrimination, lack of language proficiency, limited country-specific knowledge including lack of experience in the domestic labor market, cultural barriers, and access to native networks (Bloch 2008; Borjas 1994; Chiswick 1978, 1999; Dustmann et al. 2010). Across the different groups of individuals, we observe large differences again highlighting the heterogeneity across individuals with foreign backgrounds.

The only exception is individuals born in the Balkan countries who have a higher probability of finding employment. Studies find that because immigrants are a heterogeneous group, the factors influencing employment differ as well as their labor market outcome. Lundborg (2013) compared different groups of immigrants in his study and found that individuals who originate from countries similar to the receiving country have a higher probability of finding employment. For individuals whose cultural difference is larger and thus who have less cultural proximity, the likelihood of experiencing unemployment is higher. There are also two cases where the dummy is insignificant (individuals from low-income African countries and individuals from Central America).

For individuals who already have employment but change sectors, including all sectors, we observe that individuals with foreign backgrounds have a higher probability of changing sectors compared to natives in Sweden. Opportunity-based employment is measured at the two-digit level, which means that the variable captures individuals who change employment across substantially different sectors. It is plausible to assume that there is a better match between natives and their employees in the

Table 5 Empirical results from running the logit estimations

	Necessity employment		Opportunity employment	
	All sectors	Hospitality sector	All sectors	Hospitality sector
Immigration origin categories, Native Swede = base category				
Nordic countries	−0.275***	−0.0773*	0.252***	0.0154
	(0.0137)	(0.0435)	(0.0161)	(0.0677)
EU15 + Schweiz	−0.213***	1.171***	0.342***	1.221***
	(0.0534)	(0.117)	(0.0526)	(0.150)
Europe—New EU members	−0.799***	0.788***	−0.0427	1.064***
	(0.0712)	(0.178)	(0.0706)	(0.217)
Europe—Rest	−0.374***	1.396***	−0.160***	0.925***
	(0.0231)	(0.0437)	(0.0249)	(0.0684)
Balkans	0.146***	1.609***	0.132***	1.318***
	(0.0208)	(0.0387)	(0.0201)	(0.0466)
Africa, low income	0.0214	0.285***	−0.0552***	−0.0693
	(0.0173)	(0.0564)	(0.0150)	(0.0697)
Africa, middle income	−0.440***	0.320***	0.0262*	0.857***
	(0.0181)	(0.0575)	(0.0157)	(0.0574)
North America	−0.0786***	0.267***	0.0346***	0.275***
	(0.0130)	(0.0437)	(0.0114)	(0.0483)
South America	−0.509***	−0.429	0.178	1.110**
	(0.152)	(0.711)	(0.145)	(0.456)
Central America	0.0204	0.898***	0.231***	1.104***
	(0.0475)	(0.120)	(0.0390)	(0.116)
Asia, low income	−0.317***	0.996***	0.0638***	0.556***
	(0.00837)	(0.0207)	(0.00866)	(0.0310)
Asia, middle income	−0.528***	0.349***	0.144***	0.779***
	(0.0412)	(0.126)	(0.0364)	(0.143)
Asia, high income	−0.473***	−0.515***	0.0762***	0.121*
	(0.0171)	(0.0785)	(0.0120)	(0.0619)
Middle East	−0.326***	0.907***	0.0770	1.364***
	(0.0731)	(0.178)	(0.0622)	(0.184)
Oceania	−0.364***	0.198**	0.0205	0.343***
	(0.0265)	(0.0938)	(0.0264)	(0.113)
Russia et al	−0.0207	0.614***	0.151***	0.918***
	(0.0195)	(0.0554)	(0.0154)	(0.0482)
Unknown	−0.299***	0.740***	0.0281***	0.577***
	(0.00985)	(0.0258)	(0.00886)	(0.0318)

(continued)

Table 5 (continued)

	Necessity employment		Opportunity employment	
	All sectors	Hospitality sector	All sectors	Hospitality sector
Control variables				
Age	0.0357***	−0.0111**	−0.101***	−0.115***
	(0.00133)	(0.00436)	(0.00101)	(0.00442)
Age^2	−0.000952***	−0.000555***	0.000753***	0.000660***
	(1.66e-05)	(5.66e-05)	(1.23e-05)	(5.68e-05)
Sex, Male = 1	0.0973***	−0.0144	0.0523***	−0.408***
	(0.00469)	(0.0144)	(0.00323)	(0.0139)
Wage, t − 1, (log)	–	–	−0.327***	−0.388***
			(0.00158)	(0.00487)
Education controls	Yes	Yes	Yes	Yes
Family type controls	Yes	Yes	Yes	Yes
Municipality type controls	Yes	Yes	Yes	Yes
Constant	−2.366***	−3.717***	2.999***	1.252***
	(0.0407)	(0.120)	(0.0346)	(0.129)
No obs	1,305,511	1,305,508	4,180,547	4,180,543
Pseudo R2	0.0915	0.0726	0.0625	0.116

Standard errors in parentheses, *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

first place because it is easier for natives to verify their education, prior experience and skills. This means that natives are less likely to change sectors.

Regarding the employment probability in the hospitality sector, we observe interesting findings for individuals born in countries other than Sweden. For both necessity- and opportunity-driven employment, we observe that immigrants have a higher probability of employment compared to Swedes. The highest probabilities are once again observed for individuals born in the Balkans. The hospitality sector is characterized by low entry barriers in terms of formal and informal knowledge requirements, which makes it easier for individuals with foreign backgrounds to enter the sector. Because the sector already has a large share of immigrants, it is further possible to use their social networks to acquire employment.

The control variables in the estimations show the expected result that younger individuals have a higher probability of finding employment out of opportunity and out of necessity in the hospitality sector. For necessity employment in all sectors, we observe a positive relationship between age and probability of obtaining employment. Men have a higher probability of finding employment when analyzing all sectors. For employment in the hospitality sector, we observe a higher probability of finding employment for women, a result that is confirmed by the descriptive statistics.

To assess how the employment in the hospitality sector varies across different types of regions in Sweden, we perform the same estimation as in Table 5 but separate individuals living in different regional categories. We use the same six regional categories described previously. For some estimations, the dummy variable capturing the different region of origins is perfectly collinear and is therefore dropped from the estimations; this is especially visible for the estimations with lower numbers of observations. Table 6 illustrates differences across regional categories.

7 Conclusions

This chapter assesses the role of the hospitality sector in employing individuals with foreign backgrounds. The analysis is conducted using the country of Sweden, which has experienced a large influx of immigrants over several years, and the composition of immigrants has moved from being labor market driven to including a larger share of refugees in later years. The hospitality sector in Sweden, as confirmed in many other developed countries, employs a large share of individuals with foreign backgrounds. In 2013, approximately 37% of the employees in the hospitality sector had foreign backgrounds, whereas the equivalent number ten years prior was 29%. This increase is substantial and can be compared to other industries in Sweden where the share of employees with foreign backgrounds has grown by two percent.

To further understand the employment pattern in Sweden and in the Swedish hospitality sector, we perform a logit estimation with four different outcomes: necessity employment (moving from being unemployed to employed) in all sectors and in the hospitality sector as well as opportunity employment (moving from already being employed to employment in another sector) for all sectors and in the hospitality sector. The empirical estimation shows that, as expected, natives in Sweden have a higher overall probability of finding necessity employment and opportunity-based employment when analyzing all sectors. Separating out the hospitality sector illustrates the pattern found in the descriptive statistics, whereby individuals with foreign backgrounds have a higher probability of finding employment within the hospitality sector. One advantage of this study is that we account for the large heterogeneity observed among individuals with foreign backgrounds and separate them into 17 different groups. The results show that individuals born in the Balkan countries have a higher probability of obtaining employment in the hospitality sector, both out of necessity and opportunity.

Our study shows the hospitality sector's importance as a labor-market integration platform for individuals with foreign backgrounds. Thus, the initiative by the Swedish government to reduce the value-added-tax for the restaurant sector should be expanded to include a broader definition of the hospitality sector because this has the possibility of creating jobs for those who are struggling to enter the Swedish labor market: individuals with foreign backgrounds.

Table 6 Empirical results from running the logit estimations. Necessity employment in the hospitality sector is separated into six different regional categories

	Metropolitan	Urban, high accessibility	Urban, low accessibility	Rural, high accessibility	Rural, low accessibility	Rural, very low accessibility
Immigration origin categories, Native Swede = base category						
Nordic countries	−0.0105	−0.263***	0.387**	0.125	0.0221	0.244
	(0.0653)	(0.0726)	(0.173)	(0.181)	(0.180)	(0.382)
EU15 + Schweiz	1.264***	1.056***	0.770	0.672		
	(0.142)	(0.229)	(0.720)	(0.719)		
Europe—New EU members	0.865***	0.395	1.892***		1.616**	
	(0.223)	(0.383)	(0.601)		(0.742)	
Europe—Rest	1.154***	1.741***	1.516***	1.457***	0.825***	0.784
	(0.0653)	(0.0657)	(0.237)	(0.220)	(0.253)	(0.758)
Balkans	1.627***	1.521***	1.919***	1.455***	1.845***	1.481***
	(0.0631)	(0.0620)	(0.143)	(0.145)	(0.143)	(0.383)
Africa, low income	0.243***	0.219**	0.928***	0.348	0.204	
	(0.0875)	(0.0878)	(0.203)	(0.226)	(0.324)	
Africa, middle income	0.242***	0.229**	0.639**	0.346	0.827***	0.441
	(0.0786)	(0.112)	(0.266)	(0.242)	(0.202)	(0.532)
North America	0.126**	0.249***	0.597***	0.613***	0.674***	0.231
	(0.0620)	(0.0793)	(0.221)	(0.140)	(0.190)	(0.735)
South America	0.0989					
	(0.715)					
Central America	0.975***	0.599**	1.006	1.247**	0.224	
	(0.148)	(0.247)	(0.723)	(0.516)	(1.012)	
Asia, low income	0.753***	1.106***	1.522***	1.173***	1.546***	1.986***
	(0.0319)	(0.0321)	(0.0876)	(0.0951)	(0.0971)	(0.298)
Asia, middle income	0.461***	0.123	0.773	0.0593	-0.354	
	(0.158)	(0.245)	(0.588)	(0.714)	(1.007)	
Asia, high income	−0.610***	−0.451***	−0.372	−0.600*	−0.351	−0.711
	(0.120)	(0.133)	(0.295)	(0.321)	(0.274)	(0.723)
Middle East	0.817***	1.104***	1.451**			2.658**
	(0.242)	(0.296)	(0.730)			(1.150)
Oceania	0.249**	−0.0812	0.383	0.0776	0.607	1.637***
	(0.124)	(0.188)	(0.416)	(0.414)	(0.418)	(0.634)
Russia et al	0.621***	0.516***	0.511	0.343	0.879***	
	(0.0691)	(0.109)	(0.324)	(0.359)	(0.298)	
Unknown	0.710***	0.697***	1.120***	0.651***	0.849***	0.901**

(continued)

Table 6 (continued)

	Metropolitan	Urban, high accessibility	Urban, low accessibility	Rural, high accessibility	Rural, low accessibility	Rural, very low accessibility
	(0.0373)	(0.0431)	(0.107)	(0.119)	(0.128)	(0.352)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Education controls	Yes	Yes	Yes	Yes	Yes	Yes
Family type controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	−3.661***	−4.278***	−4.866***	−4.180***	−3.711***	−4.102***
	(0.134)	(0.142)	(0.378)	(0.353)	(0.359)	(0.960)
No obs	481,119	554,177	79,467	110,412	71,333	8,247
Pseudo R2	0.0687	0.0736	0.0907	0.0769	0.0846	0.109
Mean of dependent variable (Necessity employment, hospitality)	0.019	0.016	0.015	0.012	0.015	0.018

Standard errors in parentheses, *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

References

Andriotis, K., & Vaughan, D. R. (2004). The tourism workforce and policy: Exploring the assumptions using Crete as the case study. *Current Issues in Tourism, 7*(1), 66–87.

Baert, S., Norga, J., Thuy, Y., & Van Hecke, M. (2016). Getting grey hairs in the labour market. An alternative experiment on age discrimination. *Journal of Economic Psychology, 57,* 86–101. https://doi.org/10.1016/j.joep.2016.10.002

Barnett, R. C., & Hyde, J. S. (2001). Women, men, work, and family: An expansionist theory. *American Psychologist, 56*(10), 781–796.

Baum, T. (2007). Human resources in tourism: Still waiting for change. *Tourism Management, 28,* 1383–1399.

Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy, 70*(5, Part 2), 9–49.

Bernhardt, E. M. (1993). Fertility and Employment. *European Sociological Review, 9*(1), 25–42. https://doi.org/10.1093/oxfordjournals.esr.a036659

Bloch, A. (2008). Refugees in the UK labour market: The conflict between economic integration and policy-led labour market restriction. *Journal of Social Policy, 37*(01), 21–36. https://doi.org/10.1017/S004727940700147X

Booth, A. L., & Van Ours, J. C. (2009). Hours of work and gender identity: Does part-time Work Make the family happier? *Economica, 76*(301), 176–196. https://doi.org/10.1111/j.1468-0335.2007.00670.x

Borjas, G. J. (1994). The economics of immigration. *Journal of Economic Literature, 32*(4), 1667–1717.

Cameron, A. C., & Trivedi, P. K. (2009). *Microeconomics using STATA* (Revised). Texas: Stata Press.

Chiswick, B. R. (1978). The effect of Americanization on the earnings of foreign-born men. *Journal of Political Economy, 86*(5), 897–921.
Chiswick, B. R. (1999). Are immigrants favorably self-selected? *the American Economic Review, 89*(2), 181–185.
Church, A., & Frost, M. (2004). Tourism, the global city and the labour market in London. *Tourism Geographies, 6*(2), 208–228. https://doi.org/10.1080/1461668042000208462
Dustmann, C., Glitz, A., & Vogel, T. (2010). Employment, wages, and the economic cycle: Differences between immigrants and natives. *European Economic Review, 54*(1), 1–17. https://doi.org/10.1016/j.euroecorev.2009.04.004
Engelhardt, H., Kögel, T., & Prskawetz, A. (2004). Fertility and women's employment reconsidered: A macro-level time-series analysis for developed countries, 1960–2000. *Population Studies, 58*(1), 109–120. https://doi.org/10.1080/0032472032000167715
Evans, Y., Wills, J., Datta, K., Herbert, J., McIlwaine, C., & May, J. (2014). 'Subcontracting by Stealth' in London's Hotells: Impacts and implications for labour organising. *Just Labour*.
Greene, W. H. (2008). *Econometric analysis.* Upper Saddle River: Pearson Prentice Hall.
Hania, J. (2011). Polish migrant workers in the UK hospitality industry: Profiles, work experience and methods for accessing employment. *International Journal of Contemporary Hospitality Management, 23*(6), 803–819. https://doi.org/10.1108/09596111111153484
Hoem, B. (1993). The compatibility of employment and childbearing in contemporary Sweden. *Acta Sociologica, 36*(2), 101–120. https://doi.org/10.1177/000169939303600202
Joppe, M. (2012). Migrant workers: Challenges and opportunities in addressing tourism labour shortages. *Tourism Management, 33*(3), 662–671. https://doi.org/10.1016/j.tourman.2011.07.009
Kim, E. C. (2009). Mama's family': Fictive kinship and undocumented immigrant restaurant workers. *Ethnography, 10*(4), 497–513.
King, R. (1995). Tourism, labour and international migration. In A. Montanari & A. M. Williams (Eds.), *European tourism: Regions, spaces and restructuring* (pp. 177–190). Chichester: Wiley.
Kodde, D. A. (1988). Unemployment expectations and human capital formation. *European Economic Review, 32*(8), 1645–1660. https://doi.org/10.1016/0014-2921(88)90023-2
Lundborg, P. (2013). Refugees' employment integration in Sweden: Cultural distance and labor market performance. *Review of International Economics, 21*(2), 219–232. https://doi.org/10.1111/roie.12032
May, J., Wills, J., Datta, K., Evans, Y., Herbert, J., & McIlwaine, C. (2007). Keeping London working: Global cities, the British state and London's new migrant division of labour. *Transactions of the Institute of British Geographers, 32*(2), 151–167. https://doi.org/10.1111/j.1475-5661.2007.00241.x
McDowell, L., Batnitzky, A., & Dyer, S. (2009). Precarious work and economic migration: Emerging immigrant divisions of labour in greater London's service sector. *International Journal of Urban and Regional Research, 33*(1), 3–25. https://doi.org/10.1111/j.1468-2427.2009.00831.x
Mincer, J. (1991). Education and unemployment. *NBER Working paper series* (Working paper No. 3838).
Nickell, S. (1979). Estimating the probability of leaving unemployment. *Econometrica, 47*(5), 1249–1266. https://doi.org/10.2307/1911961
Ohlsson, R. (1975). *Invandrarna pä Arbetsmarknaden [Immigrants in the Labour Market]*: Economic historical publications, Lund, Sweden.
Ottenbacher, M., Harrington, R., & Parsa, H. G. (2009). Defining the hospitality discipline: A discussion of pedagogical and research implications. *Journal of Hospitality & Tourism Research, 33*(3), 263–283. https://doi.org/10.1177/1096348009338675
Russell, H., & O'Connell, P. J. (2001). Getting a job in Europe: The transition from unemployment to work among young people in nine European countries. *Work, Employment and Society, 15*(1), 001–024. https://doi.org/10.1017/S0950017001000010
Smith, V. (2010). Review article: Enhancing employability: Human, cultural, and social capital in an era of turbulent unpredictability. *Human Relations, 63*(2), 279–300. https://doi.org/10.1177/0018726709353639

SOU. (2008). *Egenmakt - med professinellt stöd, betänkande av Utredning om nyanländes arbetsmarknadsetablering*. Retrieved from Stockholm.
SOU. (2009). *Aktiv väntan - asylsökande i Sverige, Betänkande av Asylmottagningsutredningen*. Retrieved from Stockholm.
Taylor, M., & Finley, D. (2010). Acculturation, assimilation and retention of international workers in resorts. *International Journal of Contemporary Hospitality Management, 22*(5), 681–692.
Tillväxtanalys. (2014). *Bättre statistik för bättre regional- och landsbygdspolitik*. Retrieved from Stockholm.

Temporal and Spatial Perspectives in the Analysis of Tourism

The Role of Air Transport in Tourism Market Access: A Framework for Capturing Spatial, Temporal and Industry Variability in Air Traffic Flows

Aisling Reynolds-Feighan

1 Introduction

According to the United Nations World Tourism Organisation (UNWTO), air is the dominant mode of transport for tourism, accounting for 55% of tourism arrivals in 2017. The development and growth of air transport have played a key role in the pattern of tourism development in all major global regions. 2018 marks the fortieth anniversary of the passage of the Airline Deregulation Act in the USA which removed restrictive economic regulations from the domestic interstate air transport industry. The processes of deregulation of domestic markets and liberalisation in the international setting has continued at pace all over the world and allowed for rapid and consistent growth of air transport, facilitating and enabling access to a greater variety of tourism markets. The International Civil Aviation Organisation (ICAO) indicated that 4.1 billion passengers were carried in 2017, with 37 million departures globally, and this represented a 78% and 43% increase, respectively, since 2007 ICAO (2007, 2016). At the time of deregulation, US air traffic accounted for over 50% of global air traffic irrespective of how it was measured. Since then, the continental shares of global air traffic have changed significantly with Asia now accounting for the largest share. There is a vast academic literature examining various aspects of air transportation in different regional settings, but mostly focusing on the US experience. Detailed data on traffic, financial performance, prices and capacity are publicly available for the USA and this facility has enabled many aspects of the industry to be evaluated and tested empirically, thereby supporting or debunking theoretical models that try to explain and predict carrier behaviour and industry impacts and consequences. Comparative analyses of the experiences of different global regions have been difficult to undertake because of data limitations. The *Official Airline Guide (OAG)* daily schedules of all

A. Reynolds-Feighan (✉)
UCD School of Economics, University College Dublin, Belfield, Dublin 4, Ireland
e-mail: aisling.reynolds@ucd.ie

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_6

civil airlines worldwide allow for such comparative analyses, and these databases will be used in this research.

This chapter presents a framework for the analysis of air traffic flows at varying spatial, industry and temporal scales and demonstrates the utility of the framework for comparative analysis of major global region air transport patterns in the last 10 years. The spatial dimension describes the distribution of air traffic across a system of airports or air traffic communities at national or continental scales. The temporal dimension examines variations in air traffic over a 12-month period and can capture the extent of seasonality in air traffic flows when viewed at monthly scale, or connectivity when viewed at daily scale. The industry dimension captures the industry market structure and can be used to assess the performance of the industry at aggregate level, or the extent of competition at individual carrier level. Bringing these aspects together allows for analysis of carrier network dynamics and community air service variability and vulnerability. Since the air transport sector has a significant impact on access to tourism markets, this framework can help identify trends, key drivers or constraints on performance in national, regional or local tourism markets. Seasonality in air traffic, for example, can hinder the development of more sustainable regional tourism markets that seek to spread demand away from peaked patterns that lead to congestion of facilities and infrastructure, and have significant impacts on the nature of local labour markets.

2 Relationship Between Air Transport and Tourism

The published literature examining the symbiotic relationship between air transport and tourism is quite limited, despite many clear statements and descriptions of the mutual and intertwined paths of tourist indicators and measures of air transport activity at different spatial scales. Two recent reviews of the literature in air transport and tourism highlight a number of key research themes and also show the gap that exists particularly in relation to transportation research (Duval 2013; Spasojevic et al. 2018). Both transportation and tourism research are inherently interdisciplinary, requiring an understanding of a range of technical and social science aspects to their operation and functioning. Regional Science has developed as a worldwide field by driving, celebrating and promoting the development of methods and approaches towards analysing and understanding complex phenomena requiring multidisciplinary perspectives.

Air transport has been a heavily regulated sector traditionally and much of the literature has focused on operational aspects of the sector in different settings through regulation and liberalisation. Shifts in policies towards liberalisation have often had dramatic impacts on the extent and scale of air traffic growth, with tourism and trade in services in regional and national markets being a significant beneficiary (Forsyth 2006, 2014; Dobruszkes and Mondou 2013; Zhang and Findlay 2014; Button et al.

2015). Furthermore, the continuing development of information technology has facilitated the globalisation of tourism, greatly expanding the range of products and choices, and the ease of access to avail of them.

Low cost airline services have been a crucial part in developing new markets and rapidly expanding air services in the wake of more liberal regulations. The low cost carriers have contributed towards reducing generalised travel costs as well as predominantly offering direct air services in favour of connecting services both of which play key roles in tourist market development, though it is not possible to identify tourist and other categories of travellers (Castillo-Manzano et al 2011; Dieke and Button 2011; Graham and Dennis 2010; Lian and Denstadli 2010; Rey et al. 2011).

One of the key features of the airline industry in the most recent period has been the sophisticated use of yield or revenue management strategies by the airlines in order to better manage capacity and optimise revenue from the sale of seats. In the 1970s and 1980s, the number of 'fare buckets' was relatively small, and it was a crude tool used by airlines to identify different price elasticities, with tourist travellers generally being more price sensitive and less time sensitive than business travellers.[1] Revenue management practices by airlines in the current period give rise to daily or even hourly changes in fare offerings based on such characteristics as bookings trends, characteristics of purchasers identified by Internet browsing habits, airline fare preferences and ancillary choices, for example, (Vasigh and Rowe 2020). Perfect price discrimination would enable the airlines to charge each customer their reservation price and business and tourist travellers cannot be easily distinguished. It is the mix of travel demand drivers that enables airlines to maintain and grow their services across expanding networks.

Competition in liberalised or deregulated air transport markets can give rise to significant fluctuation in the pattern and volume of air transport services which have increased the volatility in accessibility to markets with significant tourism sectors. Tracing continental regional air traffic flows contributes to an understanding of airline-airport-region dynamics and nature of shifting market preferences, services availability and connectivity and accessibility. However, Spasojevic et al. (2018) note that most of the research undertaken in the area of air transport and tourism has been published in the tourism literature and there remains a paucity of studies exploring, analysing and developing tools for the transportation aspects.

The key themes in the literature relating air transport and tourism can be summarised as (i) environmental consideration, impacts and implications (estimated at about one quarter of the papers published) (ii) regulatory changes and their impacts on route development, airports and tourist destinations and (iii) relationships between airline business models, destinations and connectivity (Spasojevic et al. 2018; Duval

[1] For example, airlines broadly distinguished between tourist and business travellers by requiring a Saturday night stayover to avail of lower fares.

2013). In this chapter, the framework developed brings together the airline-airport-region/country relationships to trace traffic flows and their fluctuations over monthly and annual timeframes. It contributes to the development of the latter two research streams as an organising schema that can be applied at different spatial scales.

3 Framework for Analysis of Air Traffic Flows

Gini analysis has been applied in a wide variety of contexts in economics (e.g. income distribution and inequality, employment, health, financial markets) and in other disciplines where cumulative distribution functions are employed (e.g. study of ecological and biological phenomena such as river flow changes (e.g. Masaki et al (2014)), kinase inhibitors characteristics (Graczyk 2007) or telescopic imagery analysis (Florian et al. 2016).

Koo et al. (2016) present an airport dependency index (ADI) and argue that the composite index captures an individual airport's traffic distribution characteristics along spatial (city and country), temporal (seasonality) and industry dimensions. Their ADI is a linear combination of four Gini sub-indexes (relating to traffic distributions across cities, countries, airlines, and time), with weights determined by average results from a survey of industry experts' Likert scores. There are a number of shortcomings with the ADI as pointed out by the authors themselves and these relate to (i) dealing with significant differences and changes in the dimensions for each sub-index (ii) the fact that there are two spatial dimensions and these are added together rather than having a nested structure (iii) the Lorenz curve is compared to a weighted industry level average share rather than a uniform distribution (what the authors call a 'relative Gini index'). Reynolds-Feighan (2007) presented a framework for analysing spatial and industry dimensions of air transport activity and utilising Gini decomposition approaches to track between micro-level and macro-level changes in air transport activity. This framework is further extended now to include a temporal dimension and allow air transport flows to be analysed at monthly intervals. The Gini decomposition schemes may be applied to analysis of the three dimensions in order to compare and characterise key aspects of the industry in different continental regions as well as different countries or subnational regions.

Extending Reynolds-Feighan's (2007) two-dimensional Gini Index to three dimensions for a variate x, where each $x^{t}_{i,j}$ represents the level of x in category i for subgroup j at time t. The Gini Index then involves a pairwise comparison of each cell in an M × N × K array, where M is the number of subgroups for i, N the number of subgroups for j and K is the number of time periods t; F^{ijt} is the cumulative distribution of x over *i, j and t* entities. r_x^{ijt} is the ranking of x over *i, j* and t entities. The distribution of r is derived by adding the column rank, row rank and height rank and this is equivalent to taking the cumulative distribution of x summed over rows, columns and heights. The three-dimensional Gini index is given by

$$G^{3D} = 2\sum_{j=1}^{M}\sum_{i=1}^{N}\sum_{t=1}^{K}\left[\frac{\mathrm{cov}(x_{ij}^{t}, F^{tij})}{\sum_{j}\bar{x}_{j} + \sum_{i}\bar{x}_{i} + \sum_{t}\bar{x}_{t}}\right]$$

$$= 2\sum_{j=1}^{M}\sum_{i=1}^{N}\sum_{t=1}^{K}\left[\frac{\mathrm{cov}(x_{ij}^{t}, r_{x}^{ijt})}{\left(\sum_{j}\bar{x}_{j} + \sum_{i}\bar{x}_{i} + \sum_{t}\bar{x}_{t}\right)/\mathrm{MNK}}\right] \quad (1)$$

If $x_{i,j}^{t}$ measures the number of aircraft departures from airport i operated by carrier j in month t, then we can decompose this three-dimensional Gini into subcomponents to get the following relationship:

$$G^{3D} = \sum_{i} S_i G_i^{*} R_i \frac{n_i}{\mathrm{MNK}} + \sum S_i R_i \frac{N - n_i}{\mathrm{MNK}} + \sum_{j} S_j G_j^{*} R_j \frac{m_j}{\mathrm{MNK}}$$
$$+ \sum_{j} S_j R_j \frac{M - m_j}{\mathrm{MNK}} + \sum_{t} S_t G_t^{*} R_t \frac{k_t}{\mathrm{MNK}} + \sum S_i R_i \frac{K - k_t}{\mathrm{MNK}} \quad (2)$$

where the six components measure (i) spatial concentration due to variations within airports, (ii) concentration due to variations between airports, (iii) industry concentration due to within airline concentration, (iv) industry concentration due to between airline concentration, (v) temporal concentration or seasonality due to variations across months and (vi) temporal concentration due to between months concentration. This multivariate Gini index turns out to be equivalent to the 'distance Gini' formulation presented in Kosevoy and Mosler (1997).

Each of the three dimensions may be examined separately or expanded to allow for deeper analysis: in the spatial dimension, for example, route level analysis may be undertaken by breaking traffic at airports out by destination; in the temporal dimension, daily schedules may be examined in order to analyse connectivity potential among inward and outward flows. The decompositions of traffic will vary depending on the dimension examined: the number of airports in a continental system remains reasonably constant over time, but some airports will not receive traffic every month or every year. Concentration of traffic over space then can vary depending on the number of airports served (shift factors), as well as how the traffic is distributed across the airports. The adjustment suggested in Reynolds-Feighan (2007) is therefore applied to measure the shift factor for year on year comparisons. This adjustment relates the raw Gini Index computed for a variate x over i entities, $G(x_i^{*})$, to an adjusted Gini Index $G(x_i)$ taking account of the full set of entities (N) and those performing or actually receiving traffic (n_i) as

$$G(x_i) = \left(\frac{n_i}{N}\right) G(x_i^{*}) + \left(\frac{N - n_i}{N}\right) \quad (3)$$

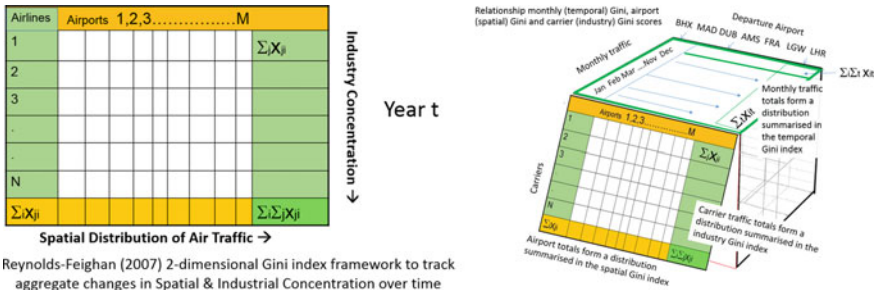


Fig. 1 Illustration of air traffic accounting framework and generation of summary Gini index scores across spatial, industry and temporal dimensions

The dimensions of the traffic system will vary among continental regions and can give useful and insightful information about the density of air traffic and market structure characteristics. It may be helpful to apply some grouping schemes so as to compare sub-populations across continental regions: for example, if carriers are grouped into categories based on operating characteristics (such as full-service, low cost and regional carriers), segment shares and growth or decline over time can be compared among major global regions. Figure 1 illustrates the air traffic accounting framework and relates the Gini scheme set out above for air traffic in a one-year period. The derivation of the continental summary Gini index scores for each dimension is shown in the figure and a description of the computed values are set out for each dimension in the next section.

4 Application to Global Region Air Traffic

Using the methodology and framework outlined, air traffic patterns across seven major global regions are examined over the period 2006–2016 using the OAG ex-post daily schedules. These data represent 97% of all commercial air passenger transport activity worldwide and are issued annually by the OAG publisher on a subscription basis. The air traffic data relate to the seats offered for sale by carriers on departures performed each day during a calendar year and can be viewed as a supply side measure of air transport activity. The specific type of aircraft utilised is recorded as well as departure and arrival times, intermediate stops, code-sharing agreements and flight numbers, cargo space available, seats available (broken down by broad seat class—first class, business, economy), departure and arrival airport, city and country. The data were aggregated for this study into monthly traffic flows by origin and destination airports and by carrier for each calendar year.

Figure 2 shows the traffic shares for each of the seven global regions over the period 1996–2016, while Fig. 3 shows the distribution of total departure seating capacity

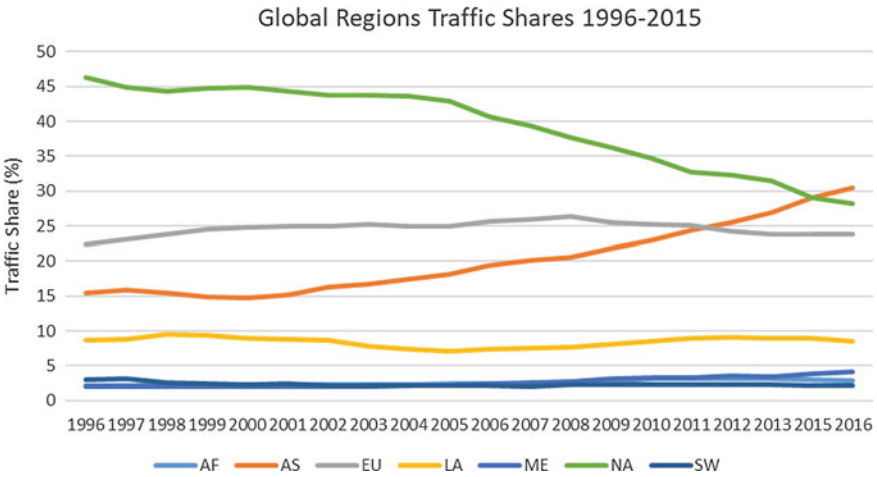


Fig. 2 Global distribution of air traffic shares (non-stop jet departure seating capacity) for major global regions, 1996–2016

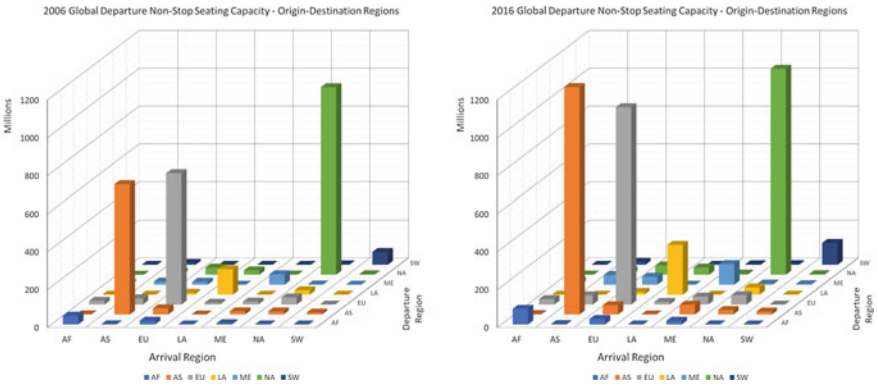


Fig. 3 Global distribution of departure seating capacity by departure and arrival region, 2006 and 2016

by origin and destination regions in 1996, 2006 and 2016.[2] The global regions are the ICAO and IATA regional nomenclatures and reflect contiguous geographic areas rather than reflecting economic or functional classifications. The most striking aspect of Fig. 2 is the gradual decline in the North American (NA) share of global airline movements over the entire period and the equally dramatic rise in the Asian (AS) share from 2000 onwards. The European (EU) and Latin American (LA) shares

[2] Departures are aggregated for all routes (domestic and international) and categorised based on the locations of the origin airport and destination airport as either intra-regional (red graph floor diagonal line in Fig. 3) or interregional for the main global regions.

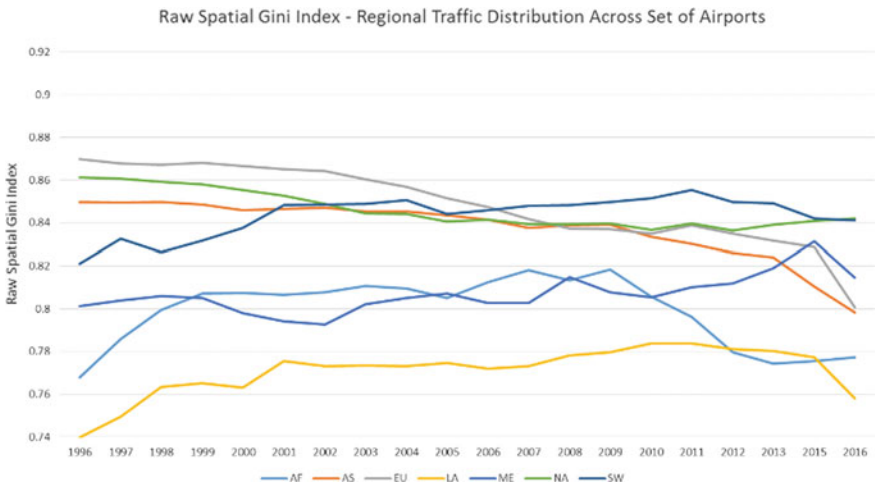


Fig. 4 Raw spatial Gini Index scores for each global region, 1996–2016

remain relatively constant as do the other regions. Boeing and Airbus produce long-term industry forecasts and suggest that strong Asian growth will continue to drive global traffic growth over the next 20 years as incomes increase and the size of the middle-class expands (Boeing 2016; Airbus 2016).

Global air traffic is dominated by intra-regional flows rather than inter-regional flows (between continental regions). The concentration of capacity in Fig. 3 along the red diagonal clearly demonstrates this pattern and shows the dominance of the North American, Asian and European markets. The off-diagonal cells show the inter-regional flows and while these have increased between the two time periods, they represent 14% of total seating capacity in 2016 (12% in 2006) compared to 86% for intra-regional seating capacity in 2016 (88% in 2006).

Spatial, temporal and industry Gini coefficients were computed for the period 1996–2016 and decomposed by airport, country and carrier. The spatial Gini Index scores are illustrated for each major global region in Figs. 4 and 5. Figure 4 shows the 'raw' Gini index score for the 1996–2016 period, while Fig. 5 shows the adjusted Gini index which removes the effect of changes in the number of airports being served from year to year. Both figures show a decline in the extent of regional spatial concentration although this is more pronounced when the adjusted spatial Gini index is used. The figures also show a convergence across the regions, particularly in the last decade. These trends reflect significant changes in the operation of the air transport industry in the decade following the great recession: air traffic has generally become more dispersed across the system of airports. This reflects a number of factors including the expansion in the number of airports receiving jet air services, aggressive growth of low cost carriers particularly in secondary airports, greater utilisation of larger aircraft and the more efficient use of aircraft capacity by the airlines.

The growth rate in aircraft departures is slower than the growth rate in seats, reflecting the deployment of larger jet aircraft worldwide. Figure 6 shows the average

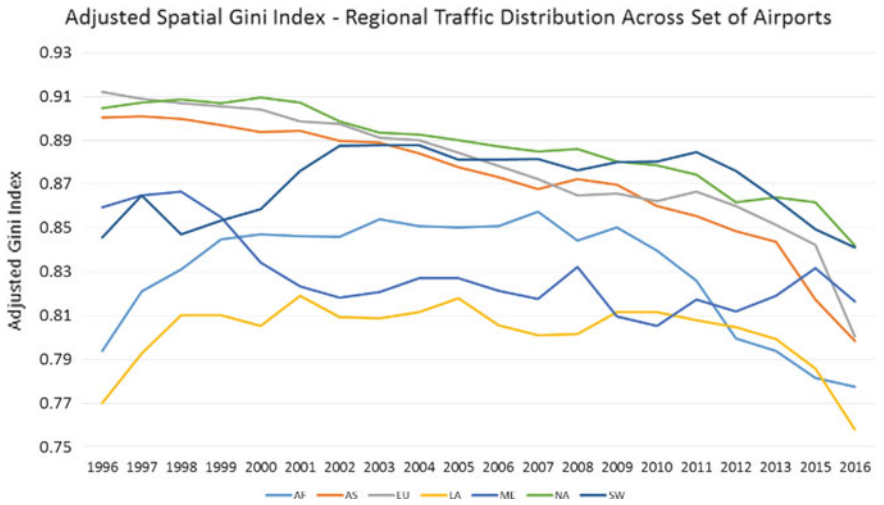


Fig. 5 Adjusted spatial Gini Index by continental region for 1996–2016

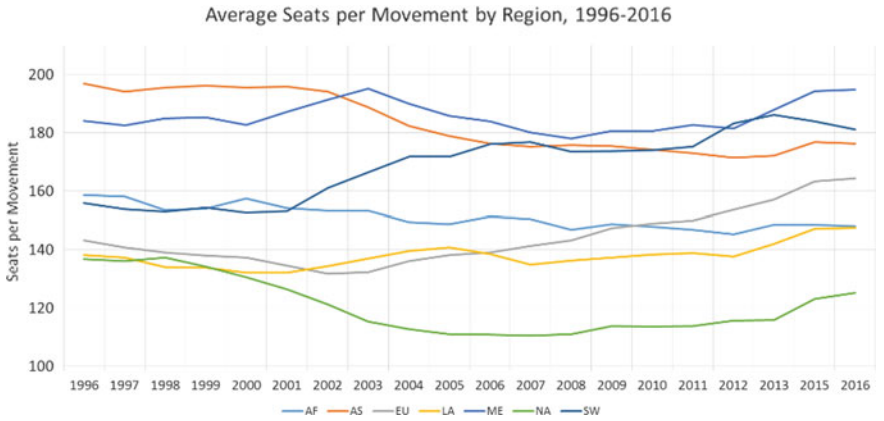


Fig. 6 Average seats per movement for each region, 1996–2016

number of seats per movement for each global region from 1996–2016, while Fig. 7 shows the ICAO estimates of global load factors for international and domestic air traffic over the 1998–2016 period,[3] with the regional load factors for 2016 indicated. North American load factors were highest in 2016 at 83%, followed by Europe (82%) with Asia, Southwest and Latin America at 80%, and Africa significantly lower at 68%. The gradual increase in load factors particularly in the last decade has contributed to an improvement in industry finances and profitability. In the North American market, the deployment of regional jets and significant increase

[3] Load factors for 1996 and 1997 are not available.

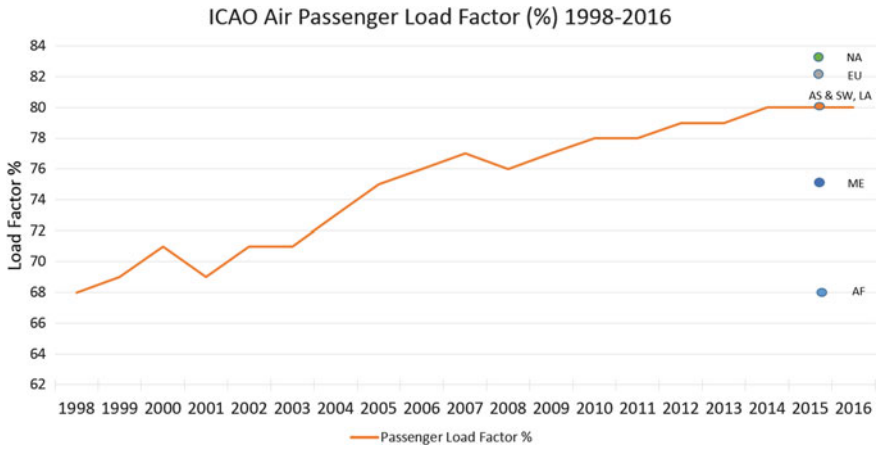


Fig. 7 ICAO estimated passenger load factors for global air traffic, 1998–2016

in frequency of service gave rise to a substantial increase in the number of aircraft movements between 1996 and 2006. However, this trend is reversed somewhat in the 2006–2016 period when average aircraft size increases, particularly after 2013. This reflects the retirement of older larger jet aircraft and deployment of increasing numbers of regional jets with 70–80 seat capacity. Thus, while air traffic movements actually declined by 11% in the 2006–2016 period in North America, the number of available seats slightly increased in this period (Reynolds-Feighan 2018).

Airports have a limit to their capacity in terms of the maximum number of aircraft departures and landings possible per runway in a one hour period. Planning procedures for expansion of capacity at existing large metropolitan airports are slow and increasingly influenced by noise, air and emissions considerations, so that capacity increments can take 5–10 years to come on-stream.

Outside of Asia and the Middle East, there have been very few new airports brought online in the most recent decade so as airports reach maximum capacity, secondary airports and secondary cities are increasingly being utilised to deal with the growth in movements and seats. London, for example, is now served by six airports, Paris by 5 airports, with Milan, Stockholm and New York each being served by 4 airports. These factors contribute to the spreading of traffic to medium and smaller airports where there is typically spare capacity.

Temporal Gini Index Analysis: The analysis of seasonality in continental air traffic flows has not been undertaken to date in the literature. The monthly traffic flows for each continental region were computed for selected years and summary temporal Gini Index scores were calculated. The temporal Gini scores for each region in 1996, 2006 and 2016 are illustrated in Fig. 8, along with traffic growth rates for the 19,962,006 and 2006–2016 periods. The temporal Gini scores range from between 0.015 and 0.09 over the period and the regions indicate relatively small variability in monthly traffic movements generally. The Gini index summarises the pairwise variability between each month's traffic and every other month. Because there are

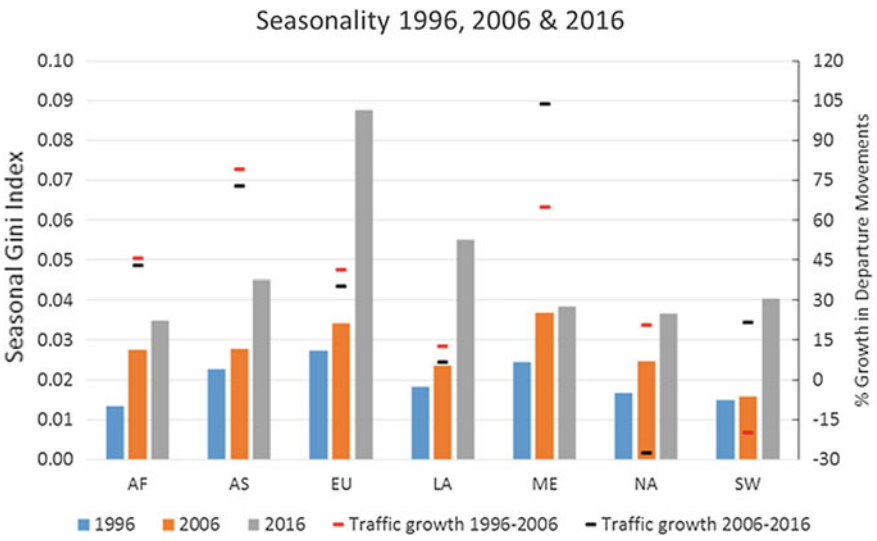


Fig. 8 Temporal Gini Index scores for air traffic in major global regions in 1996, 2006 and 2016, and traffic growth rates for 1996–2006 and 2006–2016

just 12-month categories, temporal Gini Index scores will be relatively low if there are significant traffic volumes recorded in each month.

An alternate measure of seasonality utilised is the ratio of the lowest traffic month movements to the highest traffic month's movements in a particular calendar year (referred to in the figure as the 'Low: High Ratio'). Across all regions, February is the lowest traffic month,[4] while the highest traffic month is either July or August in the Northern Hemisphere and December in the Southern hemisphere. The degree of seasonality has been increasing over time in all regions and is particularly high in Europe in the last three years at 0.085 in 2016 compared with the lowest African region Gini index score of 0.035. Figure 8 shows the distribution of temporal Gini index scores for all European, Asian and North American airports in 2016, plotted against the Low: high traffic ratio percentage. The Gini Index score increases as the differential between the lowest and highest trafficked months increases, but there is an increasing degree of variability in the Gini index scores across the airports as the ratio increases. This reflects the fact that the Gini Index gives an average of the traffic differences for *every* pair of months in a given year, while the Low: High ratio only compares two months.

It can be observed from Fig. 9 that the vast majority of North American and Asian airports have temporal Gini index scores of less than 0.3, while many European airports have scores in excess of 0.3

[4] The fact that February usually has 28 days compared with 31 in July, August and December exaggerates the differential between the lowest and highest months. To rectify this in the computation of the Gini Index score, an average number of seats per day, or movements per day, is computed and used rather than the total monthly seats or movements.

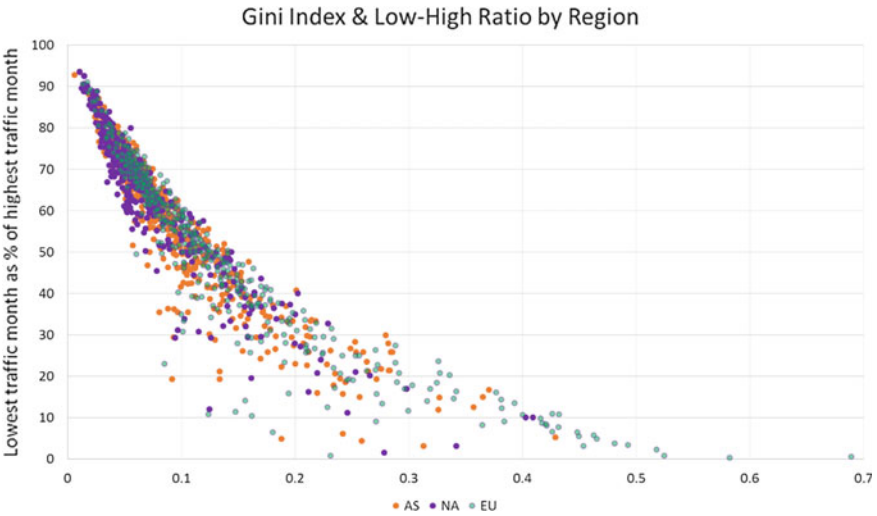


Fig. 9 Gini Index scores and low: high ratio percentage for Europe, Asian and North American region airports in 2016

Many of the European airports receive some jet air services in the summer months only and have relatively low levels of annual traffic. There is a strong North–South orientation to European air traffic flows during the summer period, giving rise to a high degree of seasonality in the Mediterranean holiday resort airport traffic patterns. The large northern European airports have a more sustainable traffic mix of business/leisure/VFR traffic that generates year-round demand for air travel and a lower degree of seasonal variability. European air traffic growth was consistently strong over the 20 years since 1996 despite the negative impact of the great recession in the 2008–2012 period. However, the substantial increase in seasonality in the post-recession period may reflect adverse regional economic effects in tourist-dependent regions.

In order to examine this further, airport communities were classified in each region based on the share of annual air traffic movements. The classification system utilised is a version of the US Federal Aviation Administration's (FAA) 'hub classification system' which measures the percentage of traffic handled by air transport communities

Table 1 Hub classification scheme used to categorise air transport communities

Traffic criterion	Hub type
1% or more of annual departure movements	Large
At least 0.25%, but less than 1% of annual departure movements	Medium
At least 0.05%, but less than 0.25% of annual departure movements	Small
More than 500 but less than 0.05% of annual departure movements	Non-hub—type A
Between 10 and 499 annual departure movements	Non-hub—type B
Less than 10 annual departure movements	Non-hub—type C

Source Reynolds-Feighan (2017)

in a one year period (see Reynolds-Feighan (2017) for a detailed description).[5] Table 1 sets out the classification used for the continental regions in 2016.

Using the hub classification system, temporal Gini Index scores were computed for each air transport community in each region in 2016. Those communities receiving year-round service were identified separately from those communities receiving service for a sub-set of months each year. The average Gini Index score by hub type for each region for the communities receiving year-round service are illustrated in Fig. 10. The pattern observed in Fig. 9 for Europe is repeated for each hub class, with seasonality becoming more pronounced the smaller the air transport community.

Temporal Gini index scores were computed for individual air transport communities in 2016 and can be linked to the region's overall temporal Gini score (illustrated in Fig. 8) via the following Gini decomposition scheme:

$$G = \sum_{i=1}^{N} \left[\frac{\text{cov}(x_i, F(x))}{\text{cov}(x_i, F(x_i))} \cdot \frac{2\text{cov}(x_i, F(x_i))}{\overline{x}_i} \cdot \frac{\overline{x}_i}{\overline{x}} \right] == \sum_{i=1}^{N} R_i G_i S_i \qquad (4)$$

[5] FAA Hub classification system.

1% or more	Large
At least 0.25%, but less than 1%	Medium
At least 0.05%, but less than 0.25%	Small
More than 10,000, but less than 0.05%	Non-hub primary
At least 2500 and no more than than 10,000	Non-hub non-primary

Primary Airports are Commercial Service Airports that have more than 10,000 passenger boardings each year. Hub categories for Primary Airports are defined as a percentage of total passenger boardings within the United States in the most current calendar year ending before the start of the current fiscal year

Nonprimary Commercial Service Airports are Commercial Service Airports that have at least 2500 and no more than 10,000 passenger boardings each year

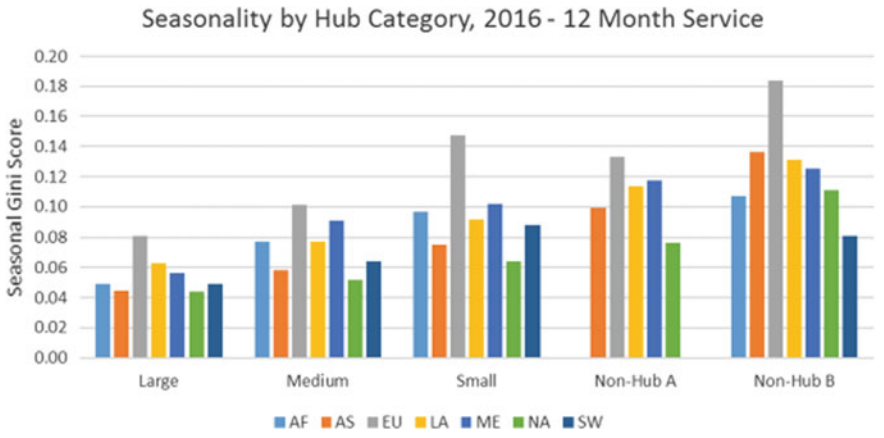


Fig. 10 Temporal Gini index scores by hub class for each region in 2016

where G is the region's temporal Gini index score, R_i is the rank correlation ratio between airport i and overall traffic for each month, G_i is the relative Gini of airport i, and S_i is air transport community i's share of total regional traffic (Lerman and Yitzhaki 1984). This decomposition requires that each subgroup has a distribution over the same range as x, (in this case months per year). The air transport community or city-specific temporal Gini index scores for the top 10 hubs in each global region are illustrated in Fig. 11 and demonstrate the variability in seasonality of traffic flows even among the large hubs. North American, Asian and the Southwest's largest air transport communities show greater consistency, while there is greater variability

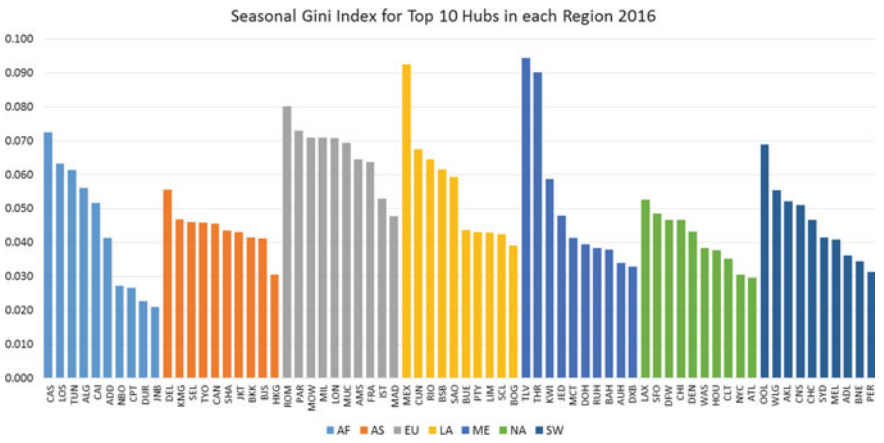


Fig. 11 Temporal Gini index scores for the top 10 air transport communities in each global region in 2016 (communities may be served by multiple airports and traffic has been aggregated in these cases)

in the European, Latin American and African regions. For many of the large European and Latin American hubs, the communities are served by multiple airports and there can be significant differences among the airports. For example, for the London airports, the temporal Gini index scores for Heathrow (LHR) is 0.043 while the score for Gatwick is 0.110, 0.066 for Stansted and 0.110 for Luton. Gatwick and Luton have significant low cost carrier traffic with Gatwick being the main base for the European low cost carrier easyjet. The seasonality among different types of carriers will be investigated further as a decomposition of the third major dimension, the industry.

The traffic distribution across the carriers operating in each region was examined to determine the extent of industry concentration. Figure 12 shows the total number of carriers operating in each region over the period 1996 to 2016, while Fig. 13 shows the regional industry Gini Index score for 2016.

The number of carriers serving the Middle East, Asia and Africa has been increasing over the period from 2001 to 2016, while numbers have declined in Europe and North America since 2008, although in both regions, there was a small increase in the 2015–2016 period. The European market had a particularly large number of carriers in the early 2000s and the drop in numbers has occurred because of consolidation, financial failures and withdrawal of international carriers from serving European markets. Industry concentration has remained high in all regions over the 2001–2016 period, with Industry Gini Index scores of 0.76 in Africa to 0.96 in North America. The North American market has a significantly higher degree of industry concentration and this has increased steadily since 2008 with completion of the Delta-Northwest Airlines merger in 2009, the United-Continental Airlines merger in 2010, the Southwest-AirTran Airways merger in 2011 and the USAir-American Airlines merger of 2013.

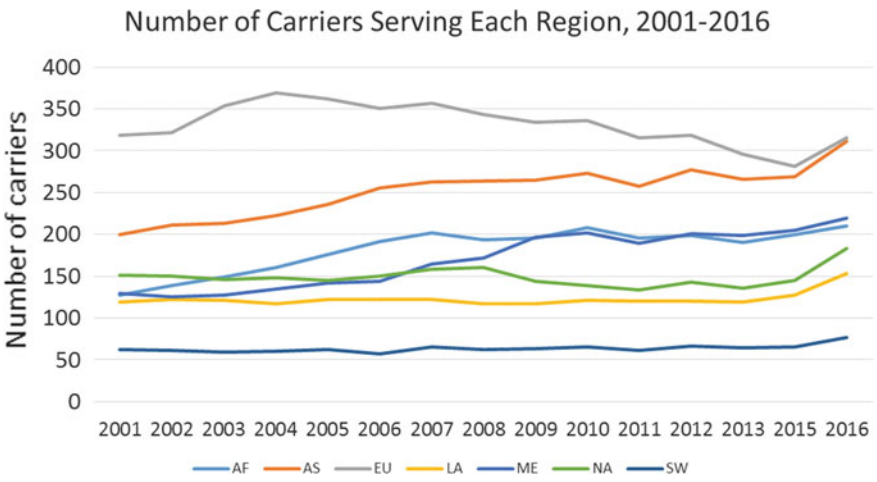


Fig. 12 Number of carriers serving each region, 2001–2016

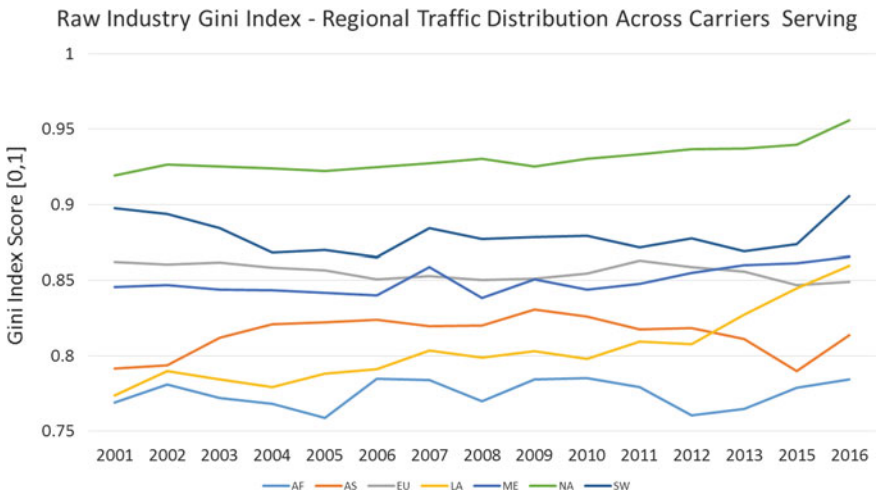


Fig. 13 Raw industry Gini concentration scores for each region across all of serving carriers

Reynolds-Feighan (2017) presents an evaluation of the competitiveness of the airline industry in the major regions by examining the extent to which routes are served by just one or two carriers and concludes that while the majority of air routes are either served by one or two carriers, the share of routes with 3 or more carriers has increased in all regions in the last decade. The small and medium-sized communities are more likely to have single carrier routes.

Analysis of the comparative temporal distribution of air traffic within carrier networks for major regions has not been presented in academic outlets to date. Using the decomposition scheme presented in (4), carrier system Gini Index scores were computed for monthly traffic distributions for the regions in 2016 in order to identify differences among the airlines given the aggregated trends observed earlier in relation to seasonality. Figure 13 shows the top 10 carrier Gini Index scores for each region in 2016, along with the total departure movements. There is variation in seasonality scores across the top 10 carriers in every region, with the greatest variability in Latin America. The three Mexican carriers, Aeromexico (AM), Volaris (Y4) and Interjet (4O) have high Gini seasonality scores all of which are greater than 0.10, with Interjet's Gini Index scores being 0.125 for 2016.

The large size of the 'big four' US carriers (Delta Air Lines (DL), United Airlines (UA), American Airlines (AA) and Southwest Airlines (WN)) relative to carriers in any of the other regions is immediately obvious. All of these carriers have system temporal Gini Index scores of less 0.05, with Delta Air Lines score being 0.033 and United Airlines at 0.028. The domestic-only network traffic distributions of the 'big four' are lower than the system-wide scores in every case.

The European traffic distributions were scrutinised further as the overall extent of seasonality was particularly high compared to other regions. Figure 15 presents Gini index scores for selected carriers in the European and North American markets, with

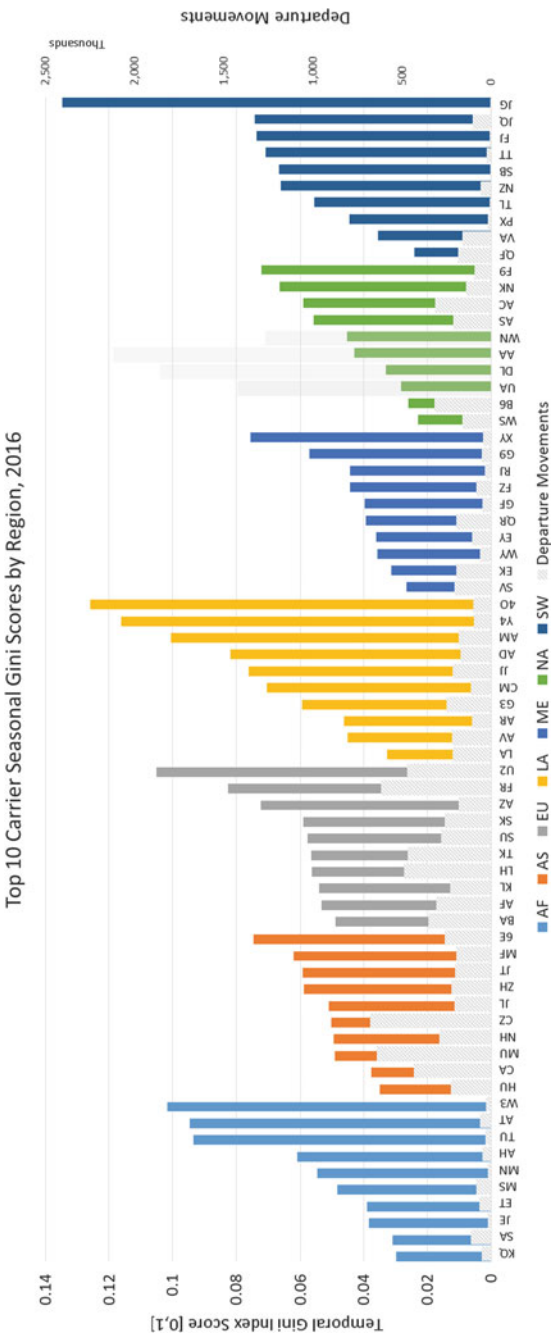


Fig. 14 Temporal Gini Index scores measuring seasonality for the top 10 carriers in each global region and total departure movements, 2016

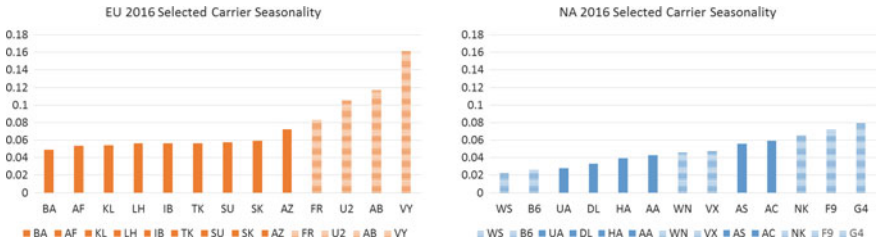


Fig. 15 Selected European and North American carrier seasonality in the 2016 traffic distributions (low cost carriers are shaded)

low cost carriers being identified with shaded bars and full service carriers with solid bars. The large European former flag carriers, BA (code BA, UK), Lufthansa (code LH, Germany), Air France-KLM (codes AF & KL, respectively, from France and the Netherlands), Iberia (code IB, Spain), SAS (code SK, Scandinavia), Turkish Airlines (code TK, Turkey) and Aeroflot Russian Airlines (code SU, Russian Federation) all have relatively low temporal Gini scores of less than 0.06. By contrast the low cost carriers Ryanair (code FR, Ireland), easyjet (code U2, UK), Air Berlin (code AB, Germany) and Vueling (code VU, Spain) have significantly higher temporal Gini scores ranging from 0.08 to 0.16. These carriers have rapidly expanded their market shares in Europe and driven growth of air traffic within the continent. A detailed analysis of the airport and carrier temporal Gini scores via the decomposition scheme presented in Eqs (2) and (4) could provide valuable insights into the nature and impact of low cost carrier services at European airports and is left for a more in-depth regional study.

It has been noted already that the large North American carrier temporal Gini scores show very low levels of seasonality in the traffic flows by contrast, although several of the smaller low cost carriers (Spirit (NK), AirTran (F9) and Allegiant (G4)) do have scores in excess of 0.06. The evolution of these scores through merger events and across different categories of hub community could be analysed via the Gini decomposition scheme proposed in Eq. (2). Comparative analysis of low costs carriers in other continental regions would provide valuable insights into the development of air transport in the fastest growing new markets worldwide.

5 Implications for Tourism

The Gini analysis framework outlined gives insights into the patterns and trajectories of growth and development of air transport in the major global regions. Tourism is at once a driving factor for the development of air transport services and a beneficiary of these services. Air transport is of critical importance to tourism development and is a highly flexible mode of transport requiring relatively small levels of infrastructure investment relative to surface transport modes (see for example Papatheodorou

(2002), Bieger and Wittmer (2006), Koo et al. (2017b) and Khan et al. (2017)). Capacity can be introduced, augmented or withdrawn as patterns of demand change in local markets and this has both advantages and disadvantages: services can be introduced quickly and allow for rapid development of new tourism markets on the one hand; on the other hand, communities face increased risk as the withdrawal of service by carriers can leave regions isolated and tourism assets stranded. Liberalisation of air transport markets and better management of capacity by carriers has resulted in improved financial health of the industry, though new start-up carriers face particular difficulties entering new markets and competing with larger airlines in mature airports which tend to be less prone to seasonal traffic variability. Air transport and by association tourism markets have displayed cycles of boom and decline over the last 40 years: the improved financial health of the industry through better management of capacity contributes to reduced investment risks. Koo et al. (2017a) attempt to estimate the effect of direct air service on tourist flows in Australia and highlight the difficult empirical issues arising from trying to establish causal relationships. Larger scale continent-wide analysis, relating aggregate air transport flows and tourism flows may help to establish empirically the strong and sustained linkages between air transport and tourism.

Smaller communities face ongoing problems related to the seasonal pattern of demand for tourist services and products. Strategies aimed at diversifying the mix of regional economic activities in tourist-dependent communities can help to reduce variability in air service levels offered by carriers between peak and off-peak periods. The peaked demand in tourist resorts dependent on weather (sun holiday or skiing/winter resorts) is a particular problem and generates difficulties for local economic development as the local labour markets will be impacted by seasonality, as will resource requirements. The use of small aircraft for off-peak service requirements at least keeps smaller communities connected to national and international air transport systems, although such services are less common outside of North America.

Since airlines publish their schedules and make commitments to deliver service up to 6 months in advance, their forecasts and predictions of demand have a significant impact on local community tourism flows and market characteristics. The low cost carriers have played a particularly important role in driving growth and development of short- and medium-haul markets within the major continental regions over the last 20 years (Castillo-Manzano et al 2011; Dieke and Button 2011; Graham and Dennis 2010; Lian and Denstadli 2010; Rey et al. 2011). The low cost carriers have higher seasonality and are less likely to provide year-round service unless regional economies demonstrate a mix of economic activities that will drive year-round demand for air services. New air markets with low cost carriers are likely to be single carrier routes, making communities vulnerable to carrier management decisions and competition from other communities incentivising carriers to offer new or augmented service.

6 Conclusions and Recommendations

This chapter has presented a framework for the analysis of air traffic flows across spatial, time and industry dimensions. An analysis of macro-level air transport departure movements was presented to illustrate the utility of such a framework, by examining Gini index scores for seven major global regions using spatial, temporal and industry breakdowns. The analysis highlighted some key differences between the regions and how the air transport market is evolving. Air traffic is generally becoming less concentrated in space, but with a greater degree of seasonal variation. The concentrated nature of carrier market share distributions in every region results in very high industry Gini index scores and these have shown very little change in the last two decades despite ongoing deregulation and liberalisation of air transport markets. The air traffic databases utilised also contain detailed information on the equipment used and the framework could be easily recast to evaluate the environmental impacts that growth of air transport has contributed at national and continental scales.

While many more communities are receiving air services in 2016, the small- and medium-sized communities have greater seasonal variability in service and are more likely to have limited or no competition among the carriers serving them. A detailed micro-level comparative analysis of the rapidly growing continental markets on one hand and mature continental markets on the other along spatial, temporal and industry dimensions would provide a useful context for the substantial volume of research output on this rapidly growing transport sector. One limitation of the study results presented in this chapter has been the lack of an explicit demonstration of the linkages between air traffic flows and tourism flows.

The sparse literature on the linkages between air transport and tourism was noted earlier in the chapter. The availability of detailed tourism statistics along with other economic indicators, married with the air traffic databases explored in this chapter present opportunities to better understand the nature, intensity and evolution of these relationships. Case studies and strategies for building on these kind of linkages have been articulated recently by industry representative bodies like the WTTC (2018). In their 2018 white paper, the WTTC outline the case for development of tourism destinations from an airline hub and highlight the cases of Dubai, Hong Kong and Singapore in this regards. These three destinations have significantly expanded the contribution of tourism to the city economies by strategically extending the stays of transit visitors, encouraging visits beyond the airport to the cities, and encouraging visits to the cities in their own right. Through the detailed analysis of air transport and tourism relationships, regional scientists can contribute to evidence-based policy option development to support communities and regions foster growth and sustainable development of their economies.

References

Airbus Industries (2016) Global market forecast: Mapping demand: 2016–2035, Airbus SAS, 2016. Access online in December 2016 at https://www.airbus.com/company/market/global-market-forecast-2016-2035/.

Bieger, T., & Wittmer, A. (2006). Air transport and tourism—Perspectives and challenges for destinations, airlines and governments. *Journal of Air Transport Management, 12*(1), 40–46.

Boeing (2016) Current market outlook, Boeing, 2016. Access online in December 2016 at https://www.boeing.com/resources/boeingdotcom/commercial/about-our-market/assets/downloads/cmo_print_2016_final_updated.pdf.

Button, K., Martini, G., & Scotti, D. (2015). African decolonisation and air transportation. *Journal of Transport Economics and Policy, 49*(4), 626–639.

Castillo-Manzano, J. I., L´opez-Valpuesta, L., & Gonz´alez-Laxe, F. (2011). The effects of the LCC boom on the urban tourism fabric: The viewpoint of tourism managers. *Tourism Management, 32*, 1085–1095.

Dieke, P. U. C., & Button, K. J. (2011). Introduction: Special edition on developments in air transport and tourism. Special Edition, *Journal of Air Transport Management, 17*(3), 153–154.

Dobruszkes, F., & Mondou, V. (2013). Aviation liberalization as a means to promote international tourism: The EU–Morocco case. *Journal of Air Transport Management, 29,* 23–34.

Duval, D. T. (2013). Critical issues in air transport and tourism. *Tourism Geographies, 15*(3), 494–510.

Florian, M. K., Gladders, M. D., Li, N., & Sharon, K. (2016). The Gini coefficient as a tool for image family identification in strong lensing systems with multiple images. *The Astrophysical Journal Letters, 816*, 2.

Forsyth, P. (2006). Martin Kunz memorial lecture. Tourism benefits and aviation policy. *Journal of Air Transport Management, 12*(1), 3–13.

Forsyth, P. (2014). Is it in Germany's economic interest to allow emirates to fly to Berlin? A framework for analysis. *Journal of Air Transport Management, 41,* 38–44.

Gracyzk, P. (2007). Gini coefficient: A new way to express selectivity of kinase inhibitors against a family of kinases. *Journal of Medicinal Chemistry, 50*(23), 5773–5779.

Graham, A., & Dennis, N. (2010). The impact of low cost airline operations to Malta. *Journal of Air Transport Management, 16*(3), 127–136.

ICAO (2007) Annual Report of the Council, (2007), Montreal. Available online in October 2017 at https://www.icao.int/publications/Documents/9898_en.pdf#search=annual%20report%20of%20the%20council%202007.

ICAO (2016) Annual Report of the Council, (2016), Montreal. Available online in October 2017 at https://www.icao.int/annual-report-2016/Pages/default.aspx.

Khan, S. A., Qianli, D., SongBo, W., Zaman, K., & Zhang, Y. (2017). Travel and tourism competitiveness index: The impact of air transportation, railways transportation, travel and transport services on international inbound and outbound tourism. *Journal of Air Transport Management, 58*(January), 125–134.

Koo, T., Halpern, N., Papatheodorou, A., Graham, A., & Arvanitis, P. (2016). Air transport liberalisation and airport dependency: Developing a composite index. *Journal of Transport Geography, 50,* 83–93.

Koo, T., Lim, C., & Dobruskes, F. (2017a). Causality in direct air services and tourism demand. *Annals of Tourism Research, 67*, 67–77.

Koo, T., Rashidi, T. H., Park, J., Wu, C., Tseng, W. (2017b). The effect of enhanced international air access on the demand for peripheral tourism destinations: Evidence from air itinerary choice behaviour of Korean visitors to Australia. *Transportation Research Part A: Policy and Practice, 106*, 116–129.

Kosevoy, & Mosler. (1997). Multivariate Gini Indices. *Journal of Multivariate Analysis, 60*, 252–276.

Lerman, R. I., & Yitzhaki, S. (1984). A note on the calculation and interpretation of the Gini coefficient. *Economics Letters, 15,* 363–368.
Lian, J. I., & Denstadli, J. M. (2010). Booming leisure air travel to Norway—The role of airline competition. *Scandinavian Journal of Hospitality and Tourism, 10*(1), 1–15.
Masaki, Y., Hanasaki, N., Takahashi, K., & Hijioka, Y. (2014). Global-scale analysis on future changes in flow regimes using Gini and Lorenza symmetry coefficients. *Water Resources Research, 50,* 4054–4078.
Papatheodorou, A. (2002). Civil aviation regimes and leisure tourism in Europe. *Journal of Air Transport Management, 8*(6), 381–388.
Rey, B., Myro, R. L., & Galera, A. (2011). Effect of low-cost airlines on tourism in Spain. A dynamic panel data model. *Journal of Air Transport Management, 17*(3), 163–167.
Reynolds-Feighan, A. J. (2007). Competing networks, spatial and industrial concentration in the US airline industry. *Spatial Economics Analysis, 2*(3), 239–259.
Reynolds-Feighan, A. J. (2017). Small community Impacts of liberalization and the provision of social air services. In M. Finger & K. Button (Eds)., Chapter 11 in Air Transport Liberalization, A Critical Assessment, Edward Elgar, December 2017.
Reynolds-Feighan, A. J. (2018) US feeder airlines: Industry structure, networks and performance. *Transportation Research Part A, 117*,, 142–157.
Spasojevic, B., Lohmann, G., & Scott, N. (2018). Air transport and tourism—A systematic literature review (2000–2014). *Current Issues in Tourism, 21*(9), 975–997.
Vasigh, B., & Rowe, Z. (2020). *Foundations of airline finance: Methodology and practice* (3rd ed.). Abingdon, Oxon, UK: Routledge.
World Travel and Tourism Council (WTTC). (2018). Creating a tourism destination from an airport hub: A travel facilitation white paper. November 2018, Available online at https://www.wttc.org/-/media/files/reports/2018/creating-a-tourism-destination-from-an-airport-hub.pdf. Accessed January 2019.
Zhang, Y., & Findlay, C. (2014). Air transport policy and its impacts on passenger traffic and tourist flows. *Journal of Air Transport Management, 34,* 42–48.

Tourism Seasonality Across Markets

Antonio Fernández-Morales

1 Introduction

Seasonality is one of the most distinctive features of tourism activity. Given the importance of this phenomenon, there is a considerable body of literature dealing with the causes, the effects, and policy implications of seasonal variation. Thus, there is considerable interest in measuring and monitoring the extent of tourism seasonality, not only in academia, but also in the private sector and in tourism destination management. Moreover, the growing importance of the tourism sector in many regions also gives tourism seasonality a relevant role in regional planning.

The tendency of tourism flows to periodically concentrate in short periods of time during the year is commonly used to define tourism seasonality. However, there is still an ongoing academic debate on how to measure tourism seasonality. This is a multidimensional concept that requires an appropriate quantitative approach that takes into account all its facets with suitable techniques to provide adequate measurements and interpretation. Currently, as several authors have stated, the most studied characteristics are seasonal pattern and seasonal concentration (De Cantis et al. 2011; Duro 2016; Fernández-Morales 2017; amongst others). The former is usually measured with techniques arising from time series analysis, while indexes of inequality and dispersion are commonly used to measure the latter. It is in the field of assessing the level of seasonal concentration where new approaches on measurement are being proposed (Lo Magno et al. 2017).

In addition, tourism demand is usually comprised of heterogeneous segments that in most cases exhibit different seasonal distributions. Knowing the similarities or differences between seasonal patterns of tourism markets in a region plays a key role

A. Fernández-Morales (✉)
Departamento de Economía Aplicada (Estadística y Econometría), Facultad de Ciencias Económicas y Empresariales, Universidad de Málaga, Calle El Ejido, 6, 29071 Málaga, Spain
e-mail: afdez@uma.es

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_7

in the decision making of destination managers and private entrepreneurs, but residents are also affected by uneven seasonal patterns whether it is by employment instability or congestion of public services and infrastructures, especially in areas where there is a very busy high season. However, it is even more important to know how each demand segment contributes to the general seasonal concentration level that is observed in a destination or region. There are some available techniques for decomposing the seasonal concentration indexes that estimate the contribution of each segment as well as identify which ones generate potential counter-seasonal effects (Cisneros-Martínez and Fernández-Morales 2015). The relevance of this approach relies on the fact that uneven seasonally distributed markets are not necessarily troublesome for a destination if they are concentrated in periods of low general demand. Thus, a balanced seasonal demand distribution can be the result of different segment combinations that are either evenly or unevenly distributed, depending on the period of the year each segment concentrates on. The analysis of these effects, which are not always well understood, requires specific quantitative techniques reviewed in this chapter.

There have been some remarkable studies analysing tourism seasonality at a regional scale (Cisneros-Martínez et al. 2016; Turrón-Prats and Duro 2017; Roselló and Sansó 2017). The approaches chosen range from comparing seasonal patterns between regions and regional markets to more complex techniques decomposing their contribution to tourism seasonal concentration. Some of them also make it possible to estimate potential marginal effects, which are very useful for regional tourism managers who design specific policies and marketing strategies.

This chapter discusses the main methodological approaches available for measuring tourism seasonal concentration, especially those developed to research markets' contribution to seasonality in tourism destinations. The most recent proposals, including double decompositions, which allow the simultaneous consideration of markets and segments or the introduction of a territorial component, are also discussed. Finally, to illustrate the use of these techniques, a case study of the seasonality of hotel demand in Andalucía, the southern region of Spain, is analysed.

2 Measuring Tourism Seasonal Concentration

Although there is not a uniform definition of tourism seasonality, the most commonly used definition by scholars was provided by Butler (1994), who conceives it as 'a temporal imbalance in the phenomenon of tourism'. In addition, it is also generally assumed that this imbalance is repeated periodically, usually every year (Bar-On 1975; Allcock 1994; Butler 1994). Therefore, in the field of tourism analysis, seasonality is observed as a systematic imbalance during the year of variables that represent some characteristics of tourism activity, such as number of visitors, employment, and admission to attractions. This is the concept of tourism seasonality usually adopted in the literature to measure tourism seasonality.

To have an adequate depiction of the seasonality of the variable of interest, it is necessary to analyse two main features: the seasonal pattern and the level of seasonal concentration. The seasonal pattern that is periodically observed every year is usually estimated using time series methods. The simpler ones are based on the calculation of monthly (or quarterly) ratios to the annual average or to moving averages (Lim and McAleer 2001). This approach assumes a deterministic seasonal pattern, which is also the case when one uses time series regression models with seasonal dummy variables (Ashworth and Thomas 1999). One can also use stochastic seasonality factors and X-12 ARIMA or TRAMO-SEATS decomposition methods (González and Moral 1996). All these methods allow one to estimate (monthly or quarterly) seasonal factors that represent the distinctive distribution of the variable of interest during the year.

Despite the importance of having a description of the distribution through seasonal factors, there is a growing academic, as well as practical, interest in obtaining a synthetic measure of the degree of seasonal concentration. However, it is worth noting that a picture of the seasonal pattern should always accompany synthetic measures of seasonal concentration.

There are several indexes available in the literature to estimate the level of seasonal concentration of a tourism variable, with some comprehensive reviews such as those by Lundtorp (2001) or Koenig and Bischoff (2005). De Cantis et al. (2011) in their study mention six measures: seasonal peak, seasonal ratio, seasonal range, coefficient of variation, Theil index, and the Gini concentration index. The last three are currently the most used in academic literature, especially the Gini index.

Only a handful of works compare the performance of these indexes. Recently, in a study that compares the coefficient of variation, the Gini index, and two members of the Theil family of indexes, Duro (2016, p. 53) states that there is no single index preferable to the rest and suggests either using the most appropriate for the specific characteristics and goals of the analysis or a combination of indexes.

The seasonal concentration index that has been more widely used in tourism literature is the Gini index (Cisneros-Martínez et al. 2018; Cisneros-Martínez and Fernández-Morales 2015; Fernández-Morales 2003; Fernández-Morales et al. 2016; Fernández-Morales and Martín-Carrasco 2014; Fernández-Morales and Mayorga-Toledano 2008; Halpern 2011; Koenig and Bischoff 2003; Lacher and Nepal 2013; Rosselló et al. 2004; Tsitouras 2004; Wanhill 1980). In contrast, the coefficient of seasonal variation has been scarcely used (Yacoumis 1980; De Cantis et al. 2011). The third most commonly used indexes are indeed a family of indexes, the Theil index family, which includes the entropy index. This measure, traditionally used in other academic fields, has recently gained interest, and several authors have used it to measure tourism seasonality (Duro 2016; Roselló and Sansó 2017).

But this research problem is making it possible to develop new approaches like the one adopted in a recent paper by Lo Magno et al. (2017), who have proposed a new index of tourism seasonality based on a transportation cost approach. This new approach provides some good properties, including an innovative consideration of circular distance between time periods which possibly will yield new contributions to this field.

However, as the Gini concentration index and its properties are more acknowledged in tourism seasonality literature, it will be used in the rest of this chapter as a measure of tourism seasonal concentration, particularly in the proposed case study. Although there are different periodicities in tourism series, for the sake of simplicity, we will assume monthly data; thus, for a set of twelve data, Y, the Gini concentration index can be calculated using the covariance formula:

$$G = \frac{2\mathrm{Cov}(Y, F(y))}{\mu_Y}, \tag{1}$$

where $F(y)$ is the empirical distribution function of Y, and μ_Y is the mean of Y.

3 Decompositions Across Markets

As mentioned in the introduction, tourism demand is usually comprised of different segments and markets, many of them showing different seasonal patterns and concentration. While the estimation of the seasonal patterns of each segment or market does not present any additional conceptual problem or technique, studying tourism seasonality across markets requires the additive decomposition of the chosen measure of seasonal concentration.

The decomposition by using inequality indexes (the Gini concentration index or the family of Theil indexes, which are very common in the field of economic inequality) is the most adequate to analyse the decomposition of tourism seasonal concentration across markets. It has been used by several authors to decompose indexes of seasonal concentration in tourism (Cisneros-Martínez and Fernández-Morales 2015, 2016; Cisneros-Martínez et al. 2018; Duro 2016; Fernández-Morales and Mayorga-Toledano 2008; Roselló and Sansó 2017). Recent contributions like Lau et al. (2017) or Lau and Koo (2017) are also using the Gini decomposition to analyse the geographical dispersion of tourism activity.

The seasonal concentration index in a destination is not a simple average of the indexes of each segment or market but a weighted sum of several components depending on the index chosen. This is because different markets can be concentrated in different months, yielding a distribution less concentrated because of a compensation effect. Therefore, the total concentration index depends not only on the concentration index of each market and its relative share, but also on their respective correlations.

The additive decomposition of the Gini concentration index proposed by Lerman and Yitzhaki (1985) makes analysing the contribution of each market to the general index of seasonal concentration easier. It was firstly applied in the field of tourism by Fernández-Morales and Mayorga-Toledano (2008) and subsequently by several authors, as cited before.

The Gini concentration index of the variable Y, that is the sum of k components (markets or segments), $Y = Y_1 + Y_2 + \ldots + Y_K$, with respective means $\mu_1, \mu_2, \ldots, \mu_K$ can be decomposed as:

$$G_Y = \sum_{k=1}^{K} \frac{\mu_k}{\mu_Y} \frac{\mathrm{Cov}(Y_k, F(Y))}{\mathrm{Cov}(Y_k, F(Y_k))} G_k = \sum_{k=1}^{K} \frac{\mu_k}{\mu_Y} \Gamma_{Y_{k,y}} G_k, \tag{2}$$

where the Gini index of each component, G_k, is weighted by its share ($S_k = \mu_k/\mu_Y$) multiplied by the coefficient known as the Gini correlation of Y_k with variable Y, $\Gamma_{Y_k,Y}$. Therefore, each market contributes positively to the overall seasonal concentration through its own concentration (G_k) and its share (S_k), and through its correlation with the total distribution during the year ($\Gamma_{Y_k,Y}$) positively or negatively, depending on the sign.

A very interesting feature of this decomposition is that it allows the estimation of the relative marginal effect of each component k over the general level of seasonal concentration (Lerman and Yitzhaki 1985):

$$\mathrm{rme}_k = \frac{S_k \Gamma_{Y_k,Y} G_k}{G_Y} - S_k, \tag{3}$$

The relative marginal effect, rme_k, shows the effect of a small proportional increment of the share of component Y_k over G in relative terms. Calculating the relative marginal effects of the markets in a destination can be very useful to evaluate the potential effects of promoting specific markets over the general level of seasonal concentration, at least marginally, particularly for those ones with negative rme_k, which can help reduce the overall seasonal concentration (Fernández-Morales 2017). It is worth noting that the sum of rme_k over k equals 0.

This methodology has been applied by several authors, like Duro (2016), who decomposed Spanish seasonal concentration of hotel demand in the main tourist provinces by markets (national vs. international and by main inbound countries), or Fernández-Morales and Mayorga-Toledano (2008) who analysed the same variable by markets (national vs. international) in three coastal destinations of Southern Spain.

It is possible to develop additive decompositions of the Gini index with more than one level (usually two-level decompositions). This is a well-known technique in the field of economic inequality (Yitzhaki and Schechtman, 2013). Recently, Lau and Koo (2017) applied this methodology to analyse the geographical concentration of visitors' nights in Australia by inbound country and purpose of travel. This technique can also be very useful for decomposing the measurement of seasonal concentration across markets, and a two-level decomposition can be used in which markets can be considered as a first level and segments or submarkets as a second level. But other possibilities exist such as using a geographic layer as the first or second level, as in the case studied in the next section.

The double decomposition of the Gini index is applied considering that each component k (of the first level) is comprised of the sum of J sub-components (of the

second level), $Y_k = Y_{k1} + Y_{k2} + \ldots + Y_{kJ}$, (for $k = 1, 2, \ldots, K$), with respective means, $\mu_{k1}, \mu_{k2}, \ldots, \mu_{kJ}$. Then, the overall Gini index is decomposed as.

$$G_Y = \sum_{K=1}^{K} \sum_{j=1}^{J} S_k S_{kj,j} \Gamma_{Y_k,Y} \Gamma_{Y_{kj},Y_k} G_{kj}, \tag{4}$$

where,

$$S_{k,j} = \frac{\mu_{kj}}{\mu_k}, \Gamma_{Y_{kj},Y_k} = \frac{\mathrm{Cov}(Y_k, F(Y_k))}{\mathrm{Cov}\left(Y_{kj}, F\left(Y_{kj}\right)\right)} \tag{5}$$

The terms G_{kj}, $S_{kj,j}$, and Γ_{Y_{kj},Y_k} stand for the Gini concentration index of the sub-component Y_{kj}; the share of component Y_{kj} into component Y_k; and the Gini correlation of sub-component Y_{kj} with component Y_k, respectively. The terms of this two-level decomposition allow us to better understand the contribution of sub-components to the overall seasonal concentration through their contribution to components in the first level of the decomposition. The relative marginal effects of the elements in the second level are obtained by

$$\mathrm{rme}_{kj} = \frac{S_k S_{kj,j} \Gamma_{Y_k,Y} \Gamma_{Y_{kj},Y_k} G_{kj}}{G_Y} - S_{kj} \tag{6}$$

In addition, the sum of the relative marginal effects of the sub-components of a component Y_k of the first level is equal to its own rme_k:

$$\sum_{j=1}^{J} \mathrm{rme}_{kj} = \mathrm{rme}_k \tag{7}$$

4 Regional Perspective

Most empirical studies on tourism seasonal concentration have been case studies in which this phenomenon has been analysed in one or several destinations. However, some remarkable cases incorporate a regional perspective by using several methodological approaches; a simple approach that takes into account this perspective estimates and compares seasonal concentration indexes in several regions or subregions and considers the implications for regional policies and planning.

By using this approach, in a very recent paper, Turrón-Prats and Duro (2017) go down to a local scale and estimate a partial concentration measure—the number of

overnights from June to September as a proportion of the total—for 124 municipalities in Spain in a study of the factors that determine the level of seasonal concentration of hotel demand. Other examples of this approach include Ferrante et al. (2018) who study seasonal concentration of hotel demand in 21 European countries; Martín Martín et al. (2014) who distinguish four types of destinations in the southern region of Spain, Andalucía, in their analysis of seasonality of tourism demand; or Coshall et al. (2015) who to examine seasonal patterns and concentration of overseas tourism demand in 13 Scottish regions.

There is also a group of studies that use more complex techniques to analyse tourism seasonal concentration with a regional perspective (Cisneros-Martínez and Fernández-Morales 2015, 2016; Cisneros-Martínez et al. 2018; Fernández-Morales et al. 2017; Roselló and Sansó 2017).

Some of these techniques also allow for the estimation of potential marginal effects, which are very useful for regional tourism managers when designing specific policies and marketing strategies. Fernández-Morales et al. (2017) used a Gini decomposition to study the inter-regional tourism demand in England. For each destination region, a decomposition was performed by region of origin. Apart from significant differences between regions in their seasonal concentration levels (from 0.21 in South Wales to 0.08 in London), the hypothesis that closer markets are less seasonal was not supported in the intra-regional study. In some regions, the demand from adjacent regions was the least seasonally concentrated, but in other regions, the reverse situation was found (Fernández-Morales et al. 2017, p. 187).

Moreover, the relative marginal effects estimation in this study allowed for each destination to find the regions of origin with the best potential effects for reducing seasonal concentration. Another interesting outcome of this study was that regional demand mixes that together showed a lower seasonal concentration than when they were considered individually were identified. For example, the region of London (which had the lowest Gini indexes in the study) receives a mix of the demand of other regions that individually are more concentrated, but together they have a more evenly distributed demand during the year as a compensation effect.

Cisneros-Martínez and Fernández-Morales (2016) used a similar methodology to study the seasonal distribution of the hotel demand in Argentina at a regional scale. Their main results showed that a simple disaggregation of the regional hotel demand into domestic and international origin hides significant differences in pattern and concentration. The authors decomposed the regional seasonal concentration indexes using a regional disaggregation for the domestic demand and by main inbound countries for the international one, finding important differences that they considered critical in the planning of regional policies against tourism seasonality (Cisneros-Martínez and Fernández-Morales 2016, p. 199). For example, in all the regions analysed, except Patagonia, domestic demand shows a positive *rme*, but if domestic demand is disaggregated by regions, it is found that intra-regional demand (tourism demand from the same region of origin and destination) in all the cases shows a negative *rme*, which makes it an ideal target market for reducing seasonality.

A recent study on visitor—who come by plane—seasonality to the Balearic Islands by Roselló and Sansó (2017) also used additive decompositions: the Gini and

Theil's entropy indexes. The markets analysed were defined by countries of origin; at a regional scale, the decomposition by island (Ibiza, Mallorca, and Menorca) shed light on interesting results such as the seasonal behaviour of British tourists by island, who were the most seasonally concentrated in Mallorca but not so much in the other two islands. This study also presented an interesting decomposition of the Theil index by weeks and months.

5 A Case Study: Seasonal Concentration of Hotel Demand in Andalucía

To illustrate the methodological approach described in the previous sections, the seasonality of hotel demand in Andalucía will be analysed. Andalucía is in the southern region of Spain with a population over eight million inhabitants—which makes it the most populated Spanish region—and an extension of 87,597 square km. This region is considered an important tourism destination that receives more than 20 million tourists annually since 2010 (Junta de Andalucía 2017). Tourism seasonality in Andalucía is considered a problem that is, far from being controlled, a worsening phenomenon (Martín Martín et al. 2014, p. 133).

The analysis of the hotel demand in this region was carried out using monthly data on hotel nights from the Hotel Occupancy Survey published by the Spanish National Statistics Institute (*Instituto Nacional de Estadística*, INE) and specific disaggregations for Andalucía elaborated by the Andalucía Statistics and Cartography Institute (Instituto de Estadística y Cartografía de Andalucía). The region was divided into eight provinces, five of them with coasts facing the Mediterranean Sea or the Atlantic Ocean.

Tourism activity in Andalucía clearly shows general seasonal patterns that are also observed in the hotel demand figures. The seasonal patterns estimated with 2013–2017 monthly data are shown in Figs. 1 and 2. The estimation of the seasonal factors was performed using the moving average ratios procedure within the multiplicative decomposition approach, one of the most used techniques in classical time series analysis. The distribution of the estimated monthly seasonal factors for the domestic and international demand exhibits some differences as can be seen in Fig. 1. The domestic market has a more pronounced distribution with the main peak in August and a high season that extends from June to September. In contrast, the seasonal pattern of the international market is more evenly distributed during the year, with the main peak in September and a high season longer than the observed for the domestic demand that extends from April to October.

The main regions of origin for the domestic demand are Andalucía itself, Madrid, and Cataluña, accounting in 2017 for 20.1%, 7.8%, and 2.7% of the domestic demand, respectively. There were also some differences between these domestic submarkets (Fig. 2a shows their seasonal patterns). Visitors from Cataluña and Madrid exhibited a higher seasonal peak in August than the rest of domestic markets studied. Moreover,

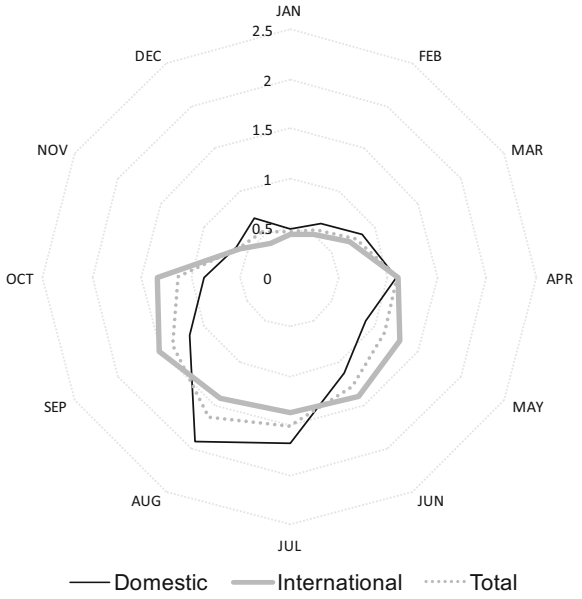


Fig. 1 Seasonal patterns of hotel demand by origin (domestic and international)

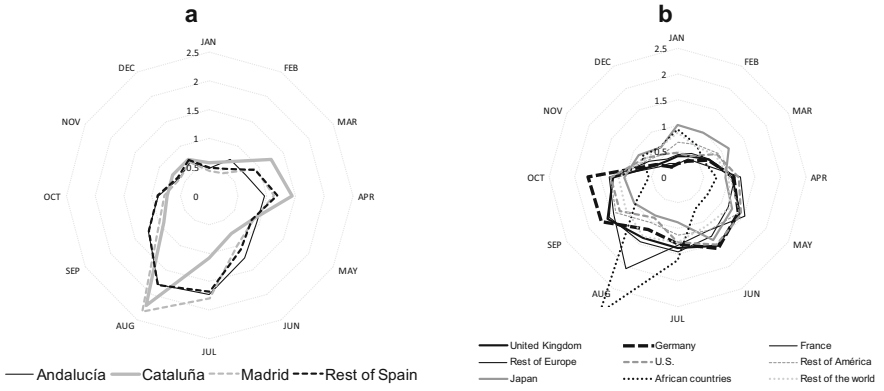


Fig. 2 Seasonal patterns of **a** domestic and international hotel demand by Spanish main regions and **b** international hotel demand by main inbound countries

July and August were the main months making up the high season in the Madrid market, while the pattern of visitors from Cataluña had higher seasonal factors in March and April than any other domestic markets. The seasonal pattern of the intra-regional market—visitors from Andalucía—is more similar to the rest of the regions with a slightly more even distribution.

Within the international market, there were also some differences by country of origin. The estimated seasonal patterns for the main inbound countries are shown in Fig. 2b. The French market had a distinctive profile with a significant main peak in August and a high season from April to October. In contrast, although the German market had a high seasonality during the same months, its distribution was different as there was also higher concentration during September and October. These two markets along with the African countries are the ones that exhibit more concentrated seasonal patterns and the lowest seasonal factors in the winter months. Visitors from the UK showed their highest demand in September and had a second peak in June; their seasonal profile is less pronounced than the German or the French ones. The remaining markets showed seasonal profiles more evenly distributed, especially the Japanese market with the seasonal factors closest to 1 in almost all the months.

As mentioned above, seasonal patterns provide a depiction of the seasonal distribution during the year for the tourism variable of interest—hotel nights in this case—but a quantitative indicator of the level of seasonal concentration is usually also needed to get an effective and comprehensive picture of the main features of seasonality. In this case study, the Gini index and its decompositions were used for this purpose.

The main results of the Gini index decomposition by markets of the hotel demand in Andalucía for 2017 are shown in Table 1. The overall Gini index of the hotel demand in Andalucía for 2017 is estimated at 0.221. However, the Gini indexes of the main markets, domestic and international, are 0.222 and 0.230, respectively. Both values are slightly higher than the overall Gini index since the seasonal patterns of

Table 1 Decomposition of the Gini index by markets

Market	S	Γ	G	Relative marginal effect
Domestic	**0.441**	**0.963**	**0.222**	**−0.013**
Andalucía	0.201	0.978	0.219	−0.006
Madrid	0.078	0.927	0.273	0.011
Cataluña	0.027	0.676	0.215	−0.009
Other Spanish regions	0.135	0.936	0.220	−0.009
International	**0.559**	**0.980**	**0.230**	**0.013**
UK	0.136	0.940	0.256	0.012
Germany	0.086	0.848	0.312	0.017
France	0.049	0.949	0.310	0.016
Other European countries	0.197	0.987	0.228	0.004
USA	0.021	0.755	0.206	−0.006
Other American countries	0.021	0.771	0.162	−0.009
Japan	0.004	0.196	0.100	−0.004
African countries	0.009	0.817	0.276	0.000
Other countries	0.036	0.922	0.125	−0.017

Bold text is used for the domestic market as a whole and the international market as a whole, respectively

these two markets are concentrated in different months resulting in a distribution of the total demand slightly more evenly distributed (Fig. 1). In addition, the relative marginal effect of the domestic market is negative, indicating that increments in the domestic market *ceteris paribus* would result in the reduction of the seasonal concentration, measured by the Gini index, at least marginally. This outcome is relevant for managers and planners to design counter-seasonal policies, but when these main markets are not homogeneous, it might be best to use a greater level of disaggregation.

For this study, the regional data of hotel demand in Andalucía was also available by main inbound countries of origin and by regions in the case of domestic visitors. This more thorough insight, using the Gini decomposition, unveils some interesting features. Firstly, it is found that within the domestic regional markets, the demand coming from the Madrid region exhibits a positive relative marginal effect. This means that, although the domestic market is favourable for deseasonalising the hotel demand in Andalucía, not all of its components have this property. Particularly, demand from the Madrid region, due to its seasonal pattern and to its high seasonal concentration level, contributes to a greater concentration of the demand.

On the opposite side, there are several inbound countries with relative marginal effects of negative sign, indicating a counter-seasonal potential effect, contrary to what is expected of the overall international demand. These are the cases of USA, Japan, 'rest of America', and 'rest of the world'. Therefore, the American and Japanese markets are especially attractive form a promotional point of view to reduce the seasonality in the region.

As Andalucía is comprised of eight provinces, it seemed convenient to consider this territorial component in the analysis of the seasonality of the regional hotel demand. The different characteristics of each province have a clear influence in the tourism demand (Martín Martín et al. 2014). The provinces with a more sand- and beach-oriented product showed higher levels of seasonality, although there were notable differences as explained later. On the other hand, the provinces in the inland, without coasts (Córdoba, Jaén, and Sevilla), exhibited lower seasonality levels mainly due to their product mix based on historical and natural attractions.

The seasonal patterns of the domestic and international demand in the eight provinces are shown in Fig. 3. The seasonal profiles of the domestic demand (Fig. 3a) in the coastal provinces are mainly concentrated in the summer months of August and July, but there are three provinces, Almería, Cádiz, and Huelva, where the main high season peak is highly prominent in the months of August and July. Málaga and Granada show a similar scheme, but clearly attenuated mainly since both provinces have important cultural attractions that also attract significant tourism demand in the remaining seasons. Provinces in the inland (Córdoba, Jaén, and Sevilla) exhibit a seasonal profile less concentrated in the summer.

The monthly distribution of the international demand in the provinces of Andalucía also reflects the same important differences between them (Fig. 3b). However, in the case of the international demand, the summer season, in general, is more extended and includes high seasonal factors in June and September.

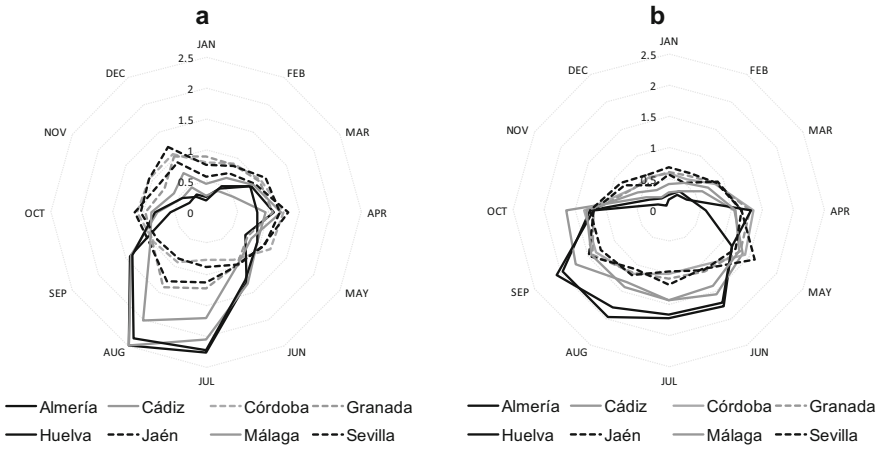


Fig. 3 Seasonal patterns of **a** domestic hotel demand by province and **b** international hotel demand by province

The observed differences in the seasonal patterns in the eight provinces of Andalucía, including the inhomogeneous distributions across domestic and international markets, suggest that applying a double decomposition of the Gini index to analyse the contribution of these markets to the seasonal concentration in this context is appropriate. A first layer or level introduces the territorial component decomposing the regional seasonal concentration by province, and a second level considers the market of origin of the visitors. Unfortunately, the second layer is only available for domestic and international visitors since the data of hotel nights is not available by countries or regions of origin at the province level.

Using the methodology described above, the double Gini index decomposition was performed for the monthly hotel nights in Andalucía in the last available year, 2017. The Gini indexes used in formula (4) and the overall Gini indexes of the domestic and international markets are shown in Table 2. Some remarkable outcomes were observed in the distribution of the concentration ratios. In the first level, there were three provinces with the highest Gini indexes, above 0.3: Almería, Cádiz, and Huelva, which are coastal provinces with a tourism product mix heavily based on the sand and beach concept. On the opposite side, three provinces showed the lowest levels of seasonal concentration, below 0.15: Sevilla, Córdoba, and Jaén, which are provinces in the inland of Andalucía—and Granada with a small coastal strip that offer a tourism product based on cultural and natural resources. Finally, the province of Málaga exhibited an intermediate Gini index in the observed range in this study. This is the province with the highest hotel demand in the region, absorbing 38% of the total regional hotel nights in 2017 with a mature coast tourism product that is progressively combined with other products like cultural and natural ones.

Delving into the second level, it was found that the small difference between the Gini indexes of the overall domestic and international markets—0.222 and 0.23,

Table 2 Gini indexes by province and market

Province	Market		Total
	Domestic	International	
Almería	0.388	0.381	0.374
Cádiz	0.359	0.309	0.321
Córdoba	0.081	0.181	0.103
Granada	0.091	0.165	0.104
Huelva	0.360	0.396	0.368
Jaén	0.116	0.198	0.120
Málaga	0.228	0.232	0.225
Sevilla	0.076	0.126	0.084
Andalucía	0.222	0.230	0.221

respectively—was amplified between and within provinces. In the provinces with lower seasonal concentration ratios, the international market exhibited Gini indexes much higher than the domestic ones. However, this fact only occurred in one of the provinces of high seasonal concentration, Huelva. Cádiz presented the reverse situation, while Almería had similar indexes for both markets.

To get a clearer indication of the contribution of each market and province over the general level of seasonal concentration, the relative marginal effects were calculated according to formula (6). The results are shown in Table 3. In general terms, these results suggest that, at a provincial level, the markets with a negative relative marginal effect over the regional seasonality are those located in the four provinces with low seasonal concentration (Córdoba, Granada, Jaén, and Sevilla), whether for domestic or international demand (although domestic ones exhibited a greater magnitude). In contrast, all the markets studied showed positive relative marginal effects in the three provinces with high Gini indexes (Almería, Cádiz, and Huelva).

Table 3 Relative marginal effects of the double decomposition by province and market

Province	Market		Total
	Domestic	International	
Almería	0.045	0.026	0.071
Cádiz	0.047	0.019	0.066
Córdoba	−0.024	−0.006	−0.030
Granada	−0.044	−0.020	−0.064
Huelva	0.030	0.021	0.051
Jaén	−0.009	−0.001	−0.010
Málaga	−0.005	0.013	0.008
Sevilla	−0.054	−0.039	−0.093
Andalucía	−0.013	0.013	

Málaga, which showed an intermediate Gini index value, was the only province where a difference in the signs of the relative marginal effects for both domestic and international markets was found. The double decomposition of the relative marginal effects revealed that, in this case, the territorial component is of such magnitude that it dominates over the domestic and international markets' contribution to the overall seasonal concentration ratio.

6 Conclusions

Seasonality is undoubtedly one of the most distinctive features of tourism activity. Even though there is a growing body of literature dealing with several aspects of tourism seasonality, causes, impacts, etc., the research on the methodological aspects related to seasonality measurement is still relatively scarce. While the measurement of seasonal patterns poses no special problems with a wide range of techniques coming from the analysis of time series, they do not provide a synthetic measure of seasonal concentration, which is frequently demanded by regional and destination planners. In contrast, there is a limited range of available quantitative instruments to measure seasonal concentration. Within this set of indexes, there is an ongoing academic debate about their properties and suitability for different research problems. In addition, there is also room to develop new measures, as some contributions discussed in this chapter bring to light.

The role of markets in the configuration of seasonal patterns and concentration in tourism destinations adds an additional problem to the measurement of seasonal concentration. The seasonal concentration observed from a combination of several markets cannot be calculated as a simple average of each market's concentration index. An additive decomposition technique is needed to estimate the contribution of each market to the overall synthetic index. Every available decomposition in the literature has specific properties, and currently, there is not a method clearly superior to the rest. However, the most commonly used is the additive decomposition of the Gini concentration index. In this field, there have been some recent contributions that propose using double decompositions to allow the joint consideration of markets and segments or even markets and a territorial component in the decomposition.

The case study analysed in this chapter helped illustrate some of the conceptual problems present in the analysis of tourism seasonality across markets. On the one hand, it was observed how the total hotel demand in Andalucía showed a seasonal concentration level slightly lower than the one corresponding to each of the domestic and international markets. The possibility of this compensation effect that occurs when markets concentrate on different periods of the year is the main reason we need the decomposition techniques discussed in this chapter. These techniques consider measures of correlation between markets' distributions instead of merely estimating individual indexes and averaging them. The case study also highlighted that a finer market disaggregation may reveal hidden patterns not observable with broader market definitions. In the case studied, the Japanese and North American markets have a

potential counter-seasonal effect over the hotel demand in Andalucía, with negative relative marginal effects over the regional Gini index, which contrasts with the pro-seasonal effect of the international market when it is considered as a whole.

The seasonality analysis of the hotel demand in Andalucía has also provided the opportunity to apply a double decomposition of the Gini index, introducing a territorial element: the disaggregation by province in addition to the international and domestic markets. This type of decomposition may contribute valuable insights to the seasonal concentration analysis in general terms. In the case of the hotel demand in Andalucía, it has been found that the spatial component dominates over the market component, at least with the disaggregation level used in this study.

Finally, there are still some challenges in this field that require future research. Amongst them, double decompositions of seasonal concentration indexes are currently in an initial stage; more research using these decompositions of Gini or other alternative indexes should provide very useful insights of this phenomenon, whether from a regional perspective, as in the case study of this chapter, or using another combination of factors. Furthermore, measuring the concentration of tourism activity across time and space, using some recent proposals to measure the geographic characteristics of tourism markets, could also be a good starting point to develop an integrated approach.

References

Allcock, J. B. (1994). Seasonality. In S. F. Witt & L. Moutinho (Eds.), *Tourism Marketing and Management Handbook* (pp. 86–92). New York: Prentice Hall.

Ashworth, J., & Thomas, B. (1999). Patterns of seasonality in employment in tourism in the UK. *Applied Economics Letters, 6*(11), 735–739. https://doi.org/10.1080/135048599352312

Bar-On, R. V. (1975). Seasonality in tourism—a guide to the analysis of seasonality and trends for policy making. *Technical Series,* 2. London: The Economist Intelligence Unit.

Butler, R. W. (1994). Seasonality in tourism: Issues and problems. In A. V. Seaton (Ed.), *Tourism: TheState of the Art* (pp. 332–339). Chichester: Wiley.

Cisneros-Martínez, J. D., & Fernández-Morales, A. (2015). Cultural tourism as tourist segment for reducing seasonality in a coastal area: The case study of Andalusia. *Current Issues in Tourism, 18*(8), 765–784. https://doi.org/10.1080/13683500.2013.861810

Cisneros-Martínez, J. D., & Fernández-Morales, A. (2016). Concentración estacional de la demanda hotelera en Argentina. *Revista De Estudios Regionales, 106,* 197–221.

Cisneros-Martínez, J. D., McCabe, S., & Fernández-Morales, A. (2018). The contribution of social tourism to sustainable tourism: A case study of seasonally adjusted programmes in Spain. *Journal of Sustainable Tourism, 26*(1), 85–107. https://doi.org/10.1080/09669582.2017.1319844

Coshall, J., Charlesworth, R., & Page, S. J. (2015). Seasonality of overseas tourism demand in Scotland: A regional analysis. *Regional Studies, 49*(10), 1603–1620. https://doi.org/10.1080/00343404.2013.859666

De Cantis, S., Ferrante, M., & Vaccina, F. (2011). Seasonal pattern and amplitude—a logical framework to analyse seasonality in tourism: An application to bed occupancy in Sicilian hotels. *Tourism Economics, 17*(3), 655–675. https://doi.org/10.5367/te.2011.0055

Duro, J. A. (2016). Seasonality of hotel demand in the main Spanish provinces: Measurements and decomposition exercises. *Tourism Management, 52,* 52–63. https://doi.org/10.1016/j.tourman.2015.06.013

Fernández-Morales, A. (2003). Decomposing seasonal concentration. *Annals of Tourism Research, 30*(4), 942–956. https://doi.org/10.1016/S0160-7383(03)00090-2

Fernández-Morales, A., & Mayorga-Toledano, M. C. (2008). Seasonal concentration of the hotel demand in Costa del Sol: A decomposition by nationalities. *Tourism Management, 29*(5), 940–949. https://doi.org/10.1016/j.tourman.2007.11.003

Fernández-Morales, A., & Martín-Carrasco, Y. (2014). Concentración e impacto estacional del turismo de cruceros en Málaga. *Revista De Estudios Regionales, 101,* 43–70.

Fernández-Morales, A., Cisneros-Martínez, J. D., & McCabe, S. (2016). Seasonal concentration of tourism demand: Decomposition analysis and marketing implications. *Tourism Management, 56,* 172–190. https://doi.org/10.1016/j.tourman.2016.04.004

Fernández-Morales, A. (2017). Tourism mobility in time and seasonality in tourism. *Rivista Italiana Di Economia Demografia E Statistica, 71* (2), 35–52.

Ferrante, M., Lo Magno, G., & De Cantis, S. (2018). Measuring tourism seasonality across European countries. *Tourism Management, 68,* 220–235. https://doi.org/10.1016/j.tourman.2018.03.015

González, P., & Moral, P. (1996). Analysis of tourism trends in Spain. *Annals of Tourism Research, 23*(4), 739–754. https://doi.org/10.1016/0160-7383(96)00019-9

Junta de Andalucía. (2017). *Balance del año turístico en Andalucía 2017*. Sevilla: Consejería de Turismo, Comercio y Deporte.

Halpern, N. (2011). Measuring seasonal demand for Spanish airports: Implications for counter-seasonal marketing. *Research in Transportation Business and Management, 1*(1), 47–54.

Koenig, N., & Bischoff, E. (2003). Seasonality of tourism in Wales: A comparative analysis. *Tourism Economics, 9*(3), 229–254. https://doi.org/10.1177/135481660300900301

Koenig, N., & Bischoff, E. E. (2005). Seasonality: The state of the art. *International Journal of Tourism Research, 7,* 201–219. https://doi.org/10.1002/jtr.531

Lacher, R. G., & Nepal, S. K. (2013). The changing distribution of global tourism: Evidence from Gini coefficients and Markov matrixes. *Tourism Analysis, 18,* 133–144.

Lau, P. L., & Koo, T. (2017). A multilevel Gini decomposition approach to measuring the geographic concentration of tourism. *Current Issues in Tourism, 20*(8), 883–893. https://doi.org/10.1080/13683500.2016.1190321

Lau, P. L., Koo, T., & Dwyer, L. (2017). Metrics to measure the geographic characteristics of tourism markets: An integrated approach based on Gini index decomposition. *Tourism Management, 59,* 171–181. https://doi.org/10.1016/j.tourman.2016.07.019

Lerman, R. I., & Yitzhaki, S. (1985). Income inequality effects by income source: A new approach and applications to the United States. *the Review of Economic and Statistics, 67*(1), 151–156. https://doi.org/10.2307/1928447

Lim, C., & McAleer, M. (2001). Monthly seasonal variations—Asian tourism to Australia. *Annals of Tourism Research, 28*(1), 68–82. https://doi.org/10.1016/S0160-7383(00)00002-5

Lo Magno, G. L., Ferrante, M., & De Cantis, S. (2017). A new index for measuring seasonality: A transportation cost approach. *Mathematical Social Sciences, 88,* 55–67. https://doi.org/10.1016/j.mathsocsci.2017.05.002

Lundtorp, S. (2001). Measuring tourism seasonality. In T. Baum & S. Lundtorp (Eds.), *Seasonality in Tourism* (pp. 23–50). Pergamon: Oxford.

Martín Martín, J. M., Jiménez Aguilera, J. D., & Molina Moreno, V. (2014). Impacts of seasonality on environmental sustainability in the tourism sector based on destination type: An application to Spain's Andalusia region. *Tourism Economics, 20,* 123–142.

Rosselló, J., Riera, A., & Sanso, A. (2004). The economic determinants of seasonal patterns. *Annals of Tourism Research, 31,* 697–711.

Roselló, J., & Sansó, A. (2017). Yearly, monthly and weekly seasonality of tourism demand: A decomposition analysis. *Tourism Management, 60,* 379–389. https://doi.org/10.1016/j.tourman.2016.12.019

Turrón-Prats, J., & Duro, J. A. (2017). Determinants of territorial seasonality: A Case study for Spanish tourist municipalities. *Tourism Analysis, 22,* 583–588. https://doi.org/10.3727/108354217X15023805737701

Tsitouras, A. (2004). Adjusted Gini coefficient and 'months equivalent' degree of tourism seasonality: A research note. *Tourism Economics, 10,* 95–100.
Wanhill, S. R. C. (1980). Tackling seasonality: A technical note. *International Journal of Tourism Management, 1,* 243–245.
Yacoumis, J. (1980). Tackling seasonality: The case of Sri Lanka. *International Journal of Tourism Management, 1,* 84–98.
Yitzhaki, S., & Schechtman, E. (2013). *The Gini methodology.* New York: Springer.

Using a Qualitative Science Approach to Reveal the Tourism Potential of a Story from History: Where Regional Science Meets Heritage-Based Tourism

Michael Fagence

1 Introduction

This chapter moves outside the usual framework and focus of studies of regional science and of regional development potential that is often characterised by heavily-laden economic assessments, inventories of resources, prognoses of potential, and organisational arrangements for implementation, or any combination of these (see, for example, the commentaries of Macke et al. 2003; Nijkamp et al. 2015). Without doubt the spatial element is indispensable to all of these studies, and it is seldom not accorded due attention, even though in many cases, it is the economic and organisational issues that are the special and principal concerns. However, there will be circumstances in which other elements in the situation deserve special attention because of the impact (actual or potential) they can have on the particular character or significance of any region, and the potential they have to differentiate and distinguish one region or sub-region from others. A particular case of this circumstance is where tourism development is committed to telling a story from history through the medium of heritage-based tourism, and this is the focus of this chapter.

The capacity of value-adding to the general level of tourism development potential could be heightened by partnering the spatial elements that flow from the processes of "thinking geographically" with elements that are drawn from what may be referred to as Peircean semiotics with its focus on "thinking about signs and symbols". This partnership could be effective at both the investigative and interpretive phases of the analysis, and also at the phases of planning the development. The aim of the approach being considered in this chapter is to present a case to add significant qualitative viewpoints and dimensions to the conventional skill sets of regional science and tourism. As will be mentioned in a later section, the attraction of particular resources

M. Fagence (✉)
School of Earth and Environmental Sciences, The University of Queensland, St Lucia, Qld 4072, Australia
e-mail: efa73150@gmail.com

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_8

for tourism is often dependent upon their significance, difference and distinctiveness (Urry 2002); so, adding skill sets that can be used to expose particular (rather than general) qualities and characteristics can be expected to be of benefit to the decision-making processes. For the competitive case of history-linked and heritage-based tourism, this would be especially important. It is the special qualities and characteristics of phenomena, situations, resources and settings that are embedded in stories from history that can be drawn into opportunities for niche and special interest tourism. These are most likely to occur at major points of concentration (such as at World War II and American Civil War battlefield sites) or, and possibly more likely, in clusters across a region perhaps even as sub-regions. All forms of concentration and dispersion can be woven into a regional plan for tourism.

A further supporting argument for what is being proposed here comes from the case being made through the late 1990s and into the early 2000s that regional assessments and developments should include elements that address "quality of life" issues (Bailly and Gibson 2004). Studies and practices in regional science are commonly well-placed to do that because of their dependence on strict scientific protocols, and their emphasis on "multidisciplinary thinking" (Nijkamp 2004, p. 517; see also Sonis and Hewings 2009). As Cole (2007) has commented in his overview of the regional science of tourism, *"any social science analysis that has a spatial dimension might be embraced by regional scientists"* (p. 186); he has also suggested that *"at first blush, tourism as a topic for study through regional science might be a marriage made in heaven"* (p. 188). All that is being asked for in the case presented here is that the same tests for the application of the protocols and expectations of the commonly used quantitative sciences are applied reasonably to the engagement of the more qualitatively inclined sciences in fitting the process of telling stories from history to tourism. The challenge is really simple: firstly, it requires a change of mind-set to move beyond the conventional grouping of disciplinary structures and a commitment to identifying the special nuances of a subject; secondly, it requires the conceptualisation of those special nuances in terms of a contribution to well-ordered tourism development; and thirdly, it requires the ability to apply those "new" disciplinary structures and conceptualisations to issues of cultural heritage as a resource in regional development (Riganti and Nijkamp 2004). This is the task of this chapter.

In unwrapping the selected case study of a story from Australian history and the presentation of it as a distinctive tourism attraction, the task is pursued here with due acknowledgement that *"the landscape does not speak to us very clearly. At a very minimum, one must know what kinds of questions to ask"* (Lewis 1979, p. 26). The search for the "kinds of questions to ask" has been promoted by Jamal and Kim (2005) with their call to bridge inter-disciplinary divides by formulating purpose-designed and well-credentialed theories and practices to link history and heritage-linked matters with tourism studies. Other insightful provocations that have been drawn on for this study include such recent explorations of tourism and popular culture by Lundberg and Lexhagen (2013) and by Lundberg and Ziakas (2019), of creative tourism and heritage by Palmer and Tivers (2018), and of tourism and trails by Timothy and Boyd (2015). In combination, these offer a number of ideas about how to implement, through tourism, de Groot's (2009) ideas about "consuming history".

Each of these sources is concerned with a special aspect of tourism, and with the attractions and the activities being focused at what may be described appropriately as the level of a distinctive sub-region.

To manage the experiment described here, three a priori judgements were made. The first was to select for the purpose of the case study, a story from the history of Australia and for it to be presented through the medium of heritage-based tourism; the second was to draw specifically on the investigative and interpretive approaches from the special toolkits of geography and semiotics; and the third was to expose both the regional expanse and the special circumstances of the spatial patterns covered by the episodes of the story. In the following section—Background—attention will be drawn to some of the important aspects of theory that underpin this study (systemic interaction, epistemological pluralism, the "raw materials of evidence", i.e., the resources, and the spatial alignments and patterning of them). Beyond that, in the case study section, that bank of theory is confronted with the "facts of the situation" (such as the telling of stories through tourism, the significant markers of the story, the pool of evidence on which the interpretations draw, and the spatial patterns into which the telling of the story can be fitted). The concluding section addresses such matters as the strengths and weaknesses of the preliminary a priori judgements, the transferability of the experience of the case study, and especially the contribution of the approach taken here to the advocacies about the regional science of tourism articulated by Cole (2007), to the broad picture of regional science painted by Bailly and Gibson (2004), and to some of the elements of "regional science matters" as they have been considered in the edited collection of papers by Nijkamp, Rose and Kourtit (2015).

2 Background

The justification for the case presented in this chapter relies on the proposition that the complexities of tourism are such that it is inevitable that the demands placed upon skill sets for investigation, interpretation, planning, development and organisation extend beyond the competence of even the most resilient and expansive single-focus disciplines (Darbellay and Stock 2012). This is a position that is well-recognised by regional science, because whilst the scope and nature of regional science is evolving, it can, according to circumstances, take on the perspectives of geography, economics, and planning and become a composite of them in any singular or multiple fashion. One implication of this may be that matters of concern to tourism, that interacts with and across all of these, may benefit in certain cases from additional research elements so that the level of understanding of the nature and scope of the resources, and the contribution they may make to forming and sustaining the distinctiveness and attractiveness of tourism destinations may be improved. This will be especially important in situations of niche and special interest tourism where the resources offer particular attractions and the consumers of those resources seek particular experiences and knowledge.

Whist Bailly and Gibson (2004) have addressed this issue, particularly from the point of view of drawing up appropriate teaching programs, Cole (2007), with his special editorial commentary, has usefully suggested that there are three points that should dominate any estimation of how well tourism fits with the expectations of regional science theory and practice. To paraphrase Cole's case, he suggests that for tourism studies should learn from the experience of regional science research and practice about, firstly, the need for an awareness of the nature and implications of the systemic interactions; secondly, the need for formal analysis to be informed from the perspectives of a range of disciplines; and thirdly, the values implicit in the specificity and uniqueness of resources. Responsive comments to each of these dominate this section.

2.1 Systemic Interaction

Cole's (2007) general point about understanding the systemic interactions in tourism focuses principally on the organisational and business linkages which sustain (or may even impede) tourism development (see pp. 183–186), and whilst it acknowledges the possibility of linkages across scales of development, it does not extend its logic to special forms of tourism activity (such as telling the stories of history through heritage-based tourism). The implication here is that in the complexity of tourism, the conventional approaches may actually overlook the subtleties of binding together particular elements that can contribute to the special identity of a place, or of a person (in the story), or of an important artefact or document, and that mark out those elements as significant indicators of the story. In other words, the subtle nuances of and interactions between places, people and things may be lost through generalisations or by setting the focus above the level at which those interactions are determinants of significance, or by neglecting to tie the existence of tangible and visible evidence to the story of which it is an important part. To cover this circumstance, Sorensen and Carman (2009) in the case of heritage studies and van der Duim (2005) more generally with the circumstances of tourism studies advocate the careful treatment of what they refer to as scientific synergy (see Cole 2007, pp. 186–189; Nijkamp 2004, p. 517). The lesson of regional science and its dealing with synergies of the "grand scale" of regional economic assessments, of organisational and procedural structuring, and of the spatial scales associated with growth points and core-periphery structures that are usually well-handled by quantitative measures would need to be re-calibrated to cope with the different order and scale of systemic interaction faced in the more nuanced situations of story-linked tourism, and at scales "below" that of extensive regions. The likelihood is that awareness of and knowledge about these intricacies, system interactions and synergies would be expanded by the application of qualitative measures of investigation and interpretation, especially if the previously referenced problem articulated by Lewis (1979)—that *"the landscape does not speak to us very clearly"* (p. 26)—is to be addressed successfully.

By way of example, the systemic interactions in the case of heritage-based tourism can be envisaged as stretching across two intersecting planes. One of these planes is concerned with matters that are essentially static and tangible—people, places, "things" and objects, buildings, structures, routes and trails. It is seldom that it is only the issue of quantity that is important; numbers of people, distances between places, sizes of places, numbers of buildings, and so on are seldom the only determinants of tourism significance, importance, distinctiveness, and development potential. The second of the two planes is concerned with matters that are essentially fluid and intangible, and include, for example, the presentation and communication of the story, associated advocacies and prescriptions, impact of timescales, impact of fluctuating tourist and consumer interest, and the impact of the symbolism communicated through the story by the physical resources. Urry (2002) in particular, has urged careful consideration of these matters and their contribution to forging a tourism attraction of distinctiveness, and has emphasised the need for carefully calibrated means of qualitative assessment so that the resources individually and in aggregate can appropriately inform the story being told. It is a combination and interaction of these two planes that has the capacity to secure the embedding of the material evidence in the story; one without the other would be insufficient. Two questions are raised by this; firstly, which may be the most suitable qualitative approaches? and secondly, how may they be integrated so as to probe for the systemic interactions?

2.2 Epistemological Pluralism

The second of Cole's (2007) three points refers to the need for formal analysis to be informed from the perspectives of a range of disciplines. This has been taken to imply disciplines both as in the nature of the subject and its perspective (e.g. geography in the perspective of spatial interaction) and in the nature of that perspective (that is, whether quantitative or qualitative). Many sources of commentary on the nature and perspective of regional science refer to its disciplinary nature, and to the process of combing analytical frameworks from different disciplinary backgrounds. For example, in the introductory commentary on what and which matters are of concern to regional science, Nijkamp et al. (2015) offer the opinion that *"regional science has found its genesis in the awareness that a thorough understanding of the complex space-economy needs a multidimensional analytical approach in which various disciplines are merged or at least related to each other"* (p. 9). Without expressly using the term "epistemological pluralism" in their discussion, Nijkamp et al. (2015) are most likely inferring an approach of this kind. The basic idea of pluralism (which need not be limited to a partnership of two) is to bring into both an intellectual and an operational balance the application of (at least two) complementary disciplines to enable investigations, interpretations and decision-making to be more holistic than could otherwise be the case (Davies 2006; Suri 2013). This action is no longer a novel experiment as various combinations of, for example, anthropology,

cultural studies, ethnology, geography, history, heritage studies, law, planning, political science, psychology, semiotics, or sociology are being drawn into an increasingly complex research process (see, for example, Coles et al. 2006; Darbellay and Stock 2012). The "magic moment" for pluralism in the cases of heritage and tourism studies is reached with the decision about which combination of disciplines offers a good chance of, for example, revealing the intricacies of any particular heritage-tourism situation.

Regional science and tourism share a common commitment to the specific referencing of space and location. So, for many commentators, it is axiomatic that in coupling disciplines, one of the anchor points will be geography. For example, some tourism specialists have long held to the view that as tourism is essentially place-based and is hall-marked by the production of destination identity, "thinking geographically" is virtually the core and anchoring discipline (Butler 2004; Dredge and Jenkins 2003). If this is so, the challenge lies with the choice of its companion. What is needed is a discipline with the ability to complement, and to contribute positively to the identification of special nuances, differences and distinctiveness. This remains a significant characteristic for Urry (1992) who has suggested that for any aspect of heritage-based tourism to attract and hold its appeal as a tourism feature it should be distinctive, particularly as "*the signs collected by tourists have to be visually extraordinary*" (p. 173). Following this approach would lead inevitably to adopting, at least notionally, semiotics as the companion discipline for geography, especially because of its capacity to identify, codify and elaborate on the relevance of signs and symbols as indicators of something distinctive (Metro-Roland 2009; Waterton and Watson 2014).

The coupling of disciplines does not occur naturally; it has to be orchestrated and managed. For the particular case being considered in this chapter, the orchestrated coupling of geography with semiotics could be expected to provide opportunities to achieve and sustain a focus on such matters as:

- the content and meaning of the story being told through tourism;
- the revelation of such core issues as locations, sites and situations, functionalities and spatial patterns (agglomeration, concentration, dispersion, diffusion, hierarchies) of importance to the story;
- the codification and prioritization of the contribution of the core issues to the story;
- the distinctiveness of those core issues of the cultural heritage landscape and historic sites and how they are differentiated in terms of activities, places and spaces, private and public buildings and structures, routes, trails and tracks, documents, objects and artefacts;
- the re-presentation of the happenings of the story through festivals, celebrations, re-enactments, and collections in museums, libraries and art galleries;
- and the nurturing of a "sense of place" where the happenings in the story took place.

In choosing the disciplines for the partnership (in pluralism), it needs to be recognised that bringing into effect a workable relationship of qualitative-based skill sets

may not be easy, with potential difficulties accruing at various times in the investigative and interpretive processes as each discipline claims its primacy. The arbiter in the case of telling a story through tourism will be, of course, whichever of the contributing disciplines is best suited to communicating particular elements of the story.

2.3 *The "Raw Materials of Evidence" and Spatial Referencing*

It is the third point highlighted in Coles' (2007) commentary that refers to specificity of location and uniqueness of resources that together will give rise to distinctiveness. This is a matter that may have as much to do with qualitative as quantitative issues. The task which follows from this third point of Coles is concerned with the need to establish.

- firstly, the nature and scope of what van der Duim (2005) has referred to as the "bits and pieces of what we label as tourism"—including the places, the raw materials, the people, the events and the activities that feature in the story being told through tourism;
- and secondly, the spatial configuration into which that evidence sits.

Van der Duim's (2005) premise was that the mere existence of a landscape, a resource or a vista and its "bits and pieces" only foreshadowed potential. To become a tourism attraction, any of these had to have qualities of distinctiveness and to have appeal for tourism. In this, he follows the advocacy of Urry (1992). Even for the special case of telling stories through tourism, there is no magic formula or inventory that will disclose all the information needed to convert potential into attraction. Of course, engaging with the investigative and interpretive capacities from two disciplines would most likely add to the complexity, but the exercise can be orchestrated to suit the special requirements of the particular case of storytelling (Fagence 2011).

Using clues from Van der Duim's (2005) study of the nature of what he has referred to as "tourismscapes" the information-gathering exercise for telling stories through tourism may be conveniently separated into two categories:

- the raw materials (i.e. the "physical and material reality")—including, for example, places, spaces, sites, tracks, trails, routes, landscape settings, structures, archaeological remnants, buildings, settlements and communities, and a diversity of "texts" (such as artefacts, tools, appliances, armour, machinery, vehicles); these are essentially tangible and may be located in situ;
- the movable and interpreted items from that list of raw materials, in some cases as re-locations or re-positions, and in others as representations or re-presentations—including, for example, tangible evidence (or facsimiles) of the story (books,

newspapers, films, photographs, artworks, written documents, often held in exhibitions, galleries, museums, libraries, record offices away from the sites to which they may be associated in the story), re-enactments of episodes from the story, and "markers" such as memorials and monuments.

These will be important as foundational elements, with the importance of them being impacted by the degree to which they are tangible, visible, geographically-referenced, credibly linked to the story, and which of them have survived the fluctuating machinations of the interests and influences of the public (tourist, visitor), public agencies, public interest groups, the business community, and the prescriptions of international, national and even local protocols and design standards. What is important from here is to fashion a spatial framework into which these various elements can fit, so that a distinguishable tourism product can emerge (Gunn 1997).

There are two aspects to the spatial referencing of telling a story. One of these refers particularly to the general ambience of the story, and the capacity to express it as a "theme". A themed landscape or a "themescape" is a determinable space that is both geographically definable and culturally distinctive because of its relevance and importance to the story being told (Rodaway 1994). "Themescapes" are essentially qualitative interpretations of a set of circumstances that share a number of characteristics. In the case of telling a story through tourism, these characteristics might include a configuration with loosely defined boundaries, an internal arrangement of sites and settings relevant to the story being told that may be marshalled and manipulated into a semi-formal geographical structure, and that may be composed of spatial units such as nodes or clusters, as community-attraction complexes, as corridors, or such indicative forms as a "footprint". These will seldom conform strictly to organisational and administrative units (i.e. government jurisdictions). The significance and usefulness of the "themescape" is.

- that it is a broadly based spatial reference for the story—where events have taken place, where artefacts and representations (such as artworks) may be found;
- that it becomes a holistic sign, an indicator, a marker and symbol of that story, with a determinable spatial identity;
- and that is emblematic of the distinctiveness of the story with a peculiar and identifying "footprint" and "*genius loci*".

Situated within the loose configuration of the "themescape" could lie a spatial patterning that reflects the episodes of the story. This patterning could be inclusive of spot locations, of identifiable concentrations of activity in the story (such as small townships or districts or precincts), and of contrived concentrations formed around spatial variants based on the geometric forms of points, lines or areas (such as linear or corridor forms, nodal points or clusters).

The geographical referencing of tourism activity has a long history of academic and professional interest. Gunn (1997: earlier editions 1972, 1988) most likely started the trail with his early concept design for a tourist region. Later, Wall (1997) offered a codification of the spatial referencing with tourist attractions being formed from

configurations based on points, lines and areas. In addition to the basic "whole-of-place" configurations, some commentators have focused attention on the design of precincts or spot locations, while Cartier (2005) has referred to the"atmospheric" concept of the "touristed landscape". It is important to realise that not one of the configurations will be "natural", and, as Ashworth and Graham (2005) have commented, that regions and even smaller entities of heritage-based tourism are "*products of the creative imagination*" (p. 3). Their reasoning for this is that "*place images do not simply come into existence*" (p. 4), and that "*we create the heritage we require and manage it for a range of purposes defined by the need and demands of our present societies*" (p. 5).

This section has ranged over some of the backgrounding issues important to the theme considered in this chapter; they are now exposed in the context of the selected case study.

3 Case Study

At the core of this case study is the story of the exploits of a bushranger-cum-outlaw of nineteenth century Australia—Ned Kelly. The story can be told through tourism with explicit references to people, to places, to sites and settings, to buildings and structures, and to events and objects that have in some way contributed to its distinctiveness. This is the crucial test: the priority in storytelling is to communicate the core issues, and to leave the peripheral, incidental and complementary matters to later embellishments. As can be deduced from the previous section, Background, the emphasis through this episode of storytelling is on the contribution of qualitative issues. There will be few references to quantities, and where they are made, they will really be of little significance to the unfolding quality-led exercise. The Ned Kelly story is significant because it has so many distinctive markers, as signs and symbols. It is, though, a study of a sub-region, and, as some of the commentary in the conclusion will show, it would not be appropriate to claim that what is done here, and how it is done, can be easily transferred to a much larger scale of region. The underlying claim will be that the case study demonstrates the usefulness of applying qualitative measures to the story so as to expose nuanced matters, and that, without these being revealed, the tourism-based expression of the story would be incomplete.

The approach taken for this case study has been consistent with Coles' (2007) indicators of a good standard of scientific study (his three important points—see earlier). It is also a "good fit" with his commentaries about the theories and practices of regional science, albeit with a focus on "the smallest entities" and on "the specificity of locations", and with his advocacy for the use of "integrative disciplines" and the commitment to "contextualised analysis" (see pp. 186–190).

In this section, there is a brief backgrounding commentary on the nature and scope of history-linked and heritage-based tourism, and an explanation of the methodology adopted for this study. From that point, the discourse presents an overview of the historical circumstances of the activities reported in the case study, and that

is followed by a qualitative (geographical and semiotic) assessment of many of the principal elements of the story. To conclude this section, there is an interpretation of the spatial patterns that can be formed from the distributions of the principal tangible elements of the story.

3.1 Background to Telling Stories Through Tourism

Whilst the telling of stories through tourism is not a new phenomenon, it has taken on a heightened profile as it has been absorbed into the wide scope of popular culture (Lundberg and Lexhagen 2013). As the complex set of representational practices (inclusive of dance, film, literature, music, TV drama series and documentaries) continues to expand to meet an apparently insatiable public (popular) appetite for the telling of history-related stories (de Groot 2009), it should not be surprising that the opportunities that tourism can offer have been added to the prospectus. More than two decades ago Sobchack observed that "*popular audiences have become involved in and understand the stakes in historical representation …* [they see] *themselves not only as spectators of history but also as participants in and adjudicators of it*" (1996, p. 7). This potential for active involvement not only sets tourism apart from the other forms of representation but presents opportunities for those learning from and enjoying the tourism experience to become involved in an extensive "landscape" of evidence. As the opportunities for telling stories through tourism have increased, and as the roles of tourists have expanded (see Sobchack's comment), a distinctive form of tourism has emerged (Timothy and Boyd 2003).

From this, and from the increasing specialisation of studies in history and heritage, has emerged the identifiable niche of history-linked and heritage-based tourism (Timothy and Boyd 2003). Most commonly this is abbreviated simply to "heritage tourism". A distinctive tourism product has emerged, centred on places, buildings, structures, events and happenings, "things" and artworks that can be witnessed or engaged with on site (in situ) or in carefully-managed depositories such as galleries, libraries, and museums. Additionally, the distinctiveness of and the attraction for tourism of the stories of history have been released from confinement to a single site. Rather, there is an extensive spatial canvas that extends from spot locations, through small concentrations of sites that share a common theme, to agglomerations of small townships that contribute to a "themescape", and to a region (or more usually to a sub-region) that includes cultural heritage as one of its dominant themes. A special niche of "theming" has been advocated by Pearce, Morrison and Moscardo (2003), the popular hero, where the principal theme is linked directly to the "life and times" of an important historical figure; this is the case presented here.

3.2 Methodology

In developing the approach to this study, an emphasis placed on purpose-designed processes and structures won out over adopting any previously formulated study approach (Moustakas 1990). The selection of the approach taken here was influenced by, for example, the geographical scale of the area to be investigated, the nature of the subject and its quantitative and qualitative peculiarities, the operational context into which the study fits, and by the indicators of approaches from mixed research methods being canvassed here and the opportunities that they offer for delving deeply into the intricacies and complexities of subject matters (see, for example, Darbellay and Stock 2012; Wilson and Hollinshead 2015). The chosen methodological process has drawn from the toolkits of the disciplinary areas of geography and semiotics; from geography because of the importance of the considerations of place and space in both tourism and regional science, and from " the gaze" component of semiotics because it offered a perspective with which to expose issues of distinctiveness that would be most likely to attract the attention of tourists (Metro-Roland 2009; Urry 1992; Waterton and Watson 2014).

The information base that supports this case study is drawn from a source that was commenced more than a decade ago to support a research project designed to investigate the contribution of stories about folk heroes to heritage-based tourism (Fagence 2011). It is a baseline that is under constant review from both desk-based and fieldwork-based investigations resulting in amendments as an outcome of revelations of additional, new, different, up-dated and corrected information. Two particular studies—Wood's (2000) commentary on the historic site as cultural text, and Riganti and Nijkamp's (2004) study into the valuing of cultural heritage in urban and regional development—have been used almost as templates to sustain the emphasis on qualitative issues.

3.3 Background to the Story: Markers of the Significance of the Ned Kelly Story

The case study used in this chapter tells the story of a bushranger-cum-outlaw Ned Kelly, and his activities across a short period of time during the late nineteenth century in Australia. It fits well with the stories about the genres of bandits, highwaymen and outlaws (Hobsbawm 1969; Seal 1996) and particularly to the contributions they have made to the character of the Australian "bush" and its outback regions, to the American frontier and to the European hotbeds of banditry. The special case of the story of Ned Kelly has been dramatized in various expressions of popular culture (including films, novels, poetry, artworks of various kinds, legends and folktales, drama, music), and its legacy contributes to the profile of the tourism industry in the north-east region of the Australian State of Victoria. It is there that most of the action in the story took place.

It is not the intention here to tell the story in its contentious socio-political context; rather, the telling of the story here will focus on those elements that contribute to its significance because of the places where events occurred, the buildings and places associated with those events, and the corpus of tangible "things" that are all signs and symbols of those events. The geographical scale of the story is sub-regional, and it is that which has determined the scale and scope of its tourism potential. Commentaries about the outlaw genre insist that "*it is not the historical personage who is the folk hero, but the image or representation of that person in folklore*" (Seal 2001, p. xix). In the case of Ned Kelly, Seal (1996) has suggested that "*the outlaw and his legend cannot be allowed to die*" (p. 103), because it is so important to sustaining the identity and image of some local communities, and it is especially important for tourism in the study area.

The story unfolded across an area which is sometimes referred to as Kelly Country (see the Location Map, Fig. 1), situated in the north-east of the State of Victoria with a "footprint" that extends as a loosely-formed corridor astride the major Melbourne to Sydney highway (formerly the Old Sydney Road, and now the Hume Highway, M 31). The territory covered by the story has an expanse that has a southwest/northeast axis (length) of approximately 300 kms (185 miles) and a northwest/southeast axis (breadth) of approximately 100 kms (60 miles). This "footprint" is framed on the northern fringe by the Warby Range, and along the southern fringe by the small ranges that mark the western extension of the Great Dividing Range (including the Strathbogie and Wombat Ranges). A number of important water courses cross the area as tributaries to the Murray-Darling Basin. This was (and remains) a predominantly agricultural region, although for a few decades in the second half of the nineteenth century it was also an area for goldmining. The highway, as a core, holds together an uneven "ribbon" of small townships (Beveridge, Avenal, Euroa, Benalla and Glenrowan), with other service centres set in the river flats and the foothills of the Ranges accessed at the time of the activities of Ned Kelly mainly by rough tracks (Beechworth, Greta, Mansfield, and the Woolshed Valley). In addition to these settlements, and the result of the gold-mining activities of previous decades, there were several notable temporary settlements and camp sites in the Woolshed Valley, and in some creek areas. Two townships that were to prove important to the Kelly story are located beyond the loose confines of the "footprint"; one of these is Melbourne, the capital city of Victoria, where Kelly's life was terminated, and the other is Jerilderie (just across the Murray river in the adjoining state of New South Wales), the site of the second bank robbery and where the writing took place of what has become referred to as one of the Kelly political manifestos (known as the Jerilderie Letter). Although some of these locations continue to enjoy significance for servicing local areas, some have a heightened profile because of their direct association with the Kelly story (Wheeler 2010).

Kelly's life was short (1855–1880), but, the main period of significance to the telling of the story through modern-day tourism lasted only for the period 1878–1880. It is a period marked by a sequence of dramatic and historically distinctive and significant events:

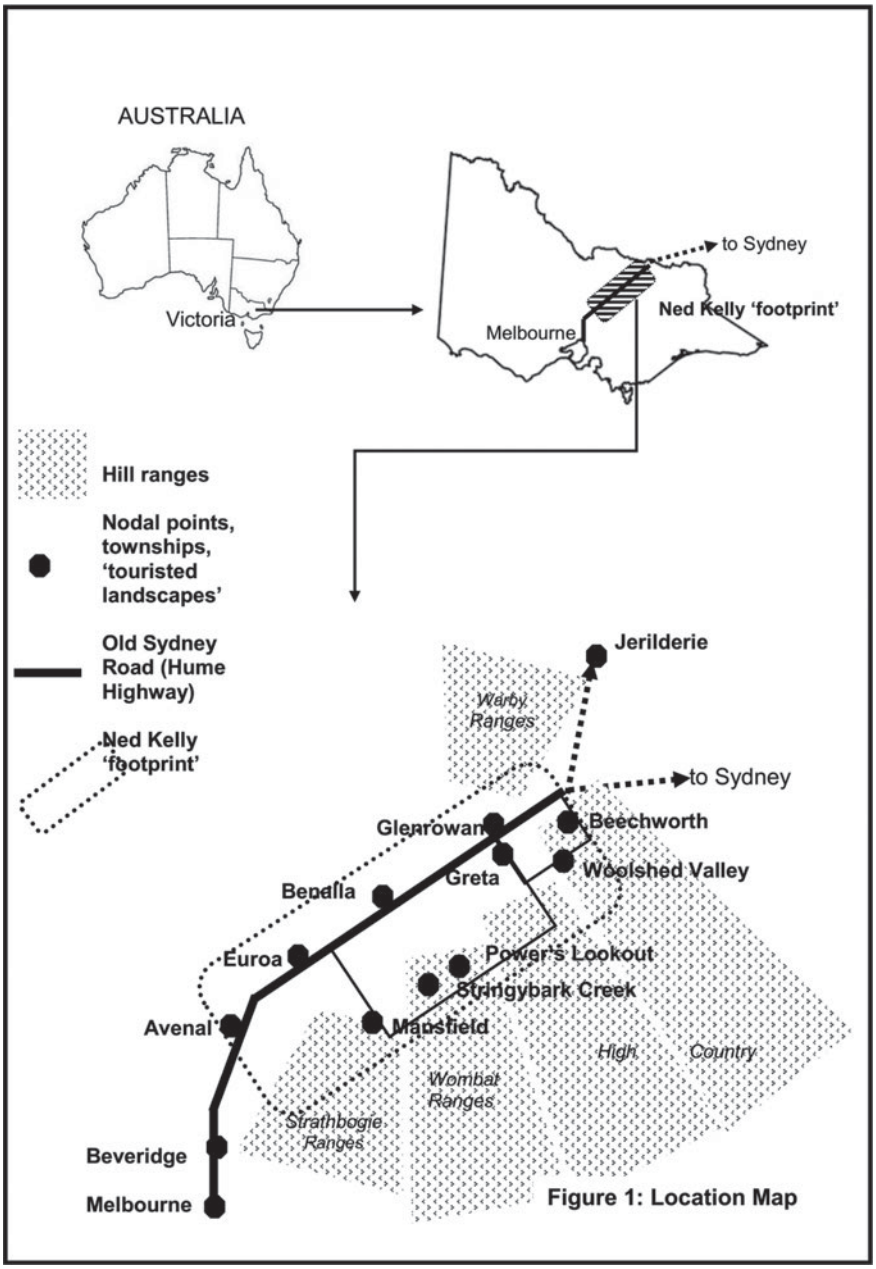


Fig. 1 Location map

- in 1878: the so-called Constable Fitzpatrick episode at the Kelly home at Greta (April); the Stringybark Creek siege at which three policemen were shot dead by the Kelly Gang (October); "The Great Sebastopol Raid" of Kelly sympathiser's homes in the Woolshed Valley by the police (November); the formal declaration of the Kelly Gang as outlaws (November); the bailing up of Faithfull's Creek Station and the bank robbery at Euroa (December); and the preparation of the Cameron Letter (December);
- in 1879: the bank robbery at Jerilderie (February); the preparation of the Jerilderie Letter (February);
- in 1880: the murder of the suspected police informant Aaron Sherritt (26 June); the bail-up of Ann Jones Inn and damage to the railway track at Glenrowan (27 June); the siege of Glenrowan by a special police train, and the shoot-out with the Kelly Gang (28 June); Kelly's preliminary trial in Beechworth (August); his trial in the Supreme Court, Melbourne (October); his execution in Melbourne Gaol (November 11).

These episodes of the Kelly story can be tracked geographically, and some of the physical and material evidence of the events has been retained within the loosely-formed Kelly corridor—the Kelly "footprint". Other evidence has been collected into museums (in Beechworth, Benalla, Glenrowan and Melbourne) while some has been re-presented as artworks in Benalla, Melbourne and Canberra. For Australia, the events of "the Kelly Outbreak" have attracted a significance that has been described as "*a compelling example of the potency of the outlaw hero tradition …* [Ned Kelly] *is now the closest thing Australia has to a national hero*" (Seal 1996, p. 145).

3.4 The Evidence

In their commentary about the value of historical and heritage resources Graham, Ashworth and Tunbridge (2000) suggest that in the telling of a story the worth of those resources lies more in what is selected from the story to be remembered, the implications of that selection, and how the remembrance is presented for contemporary purposes, than in their intrinsic merit. This is especially important for the case of tourism. From the bank of evidence about the Ned Kelly story, three simple categories can be identified. In the first of these, the evidence has a particular geographical significance even though the selection may have been influenced considerably by its semiotic characteristics. It includes, for example, the sites of the Kelly family homesteads (Avenal, Beveridge, Greta), the bank robberies (Euroa, Jerilderie), the sieges (Stringybark Creek, Glenrowan), and the camp sites (German's Creek, Harry Power's Lookout, Woolshed Valley), the court houses and the gaols (Benalla, Beechworth, Melbourne), the gravesites of Kelly family members and their associates, people involved in the siege at Glenrowan and Stringybark Creek and in the various court proceedings (Avenal, Beechworth, Benalla, Greta, Mansfield, Melbourne), and the townships closely identified with episodes of the Kelly story. Some of the important

sites at the time of the events in the story—such as the bail-up sites at Faithfull's Creek (for Euroa) and near Jerilderie, the family homesteads at Avenal and Greta, and the entire siege site at Glenrowan—have deteriorated through neglect. At present the contribution they make to the telling of story is little more than notional and indicative.

The second category is composed of evidence that is particularly tangible and visual. It is composed of "things" rather than places, and includes, for example, the suits of armour worn by the members of the Kelly Gang at the Glenrowan siege (with two sets on exhibition at the Police Museum and another set at the State Library in Melbourne, with one suit in a private collection), the weapons used by the Kelly Gang at the two sieges and in the two bank robberies (in collections in Melbourne), buildings and structures such as the still-intact bridge over the river at Avenal where Kelly effected a rescue, courthouses and goals (Beechworth, Mansfield and Melbourne), and a number of residential buildings linked to members of the legal fraternity at the time of the Kelly trials in Beechworth and Melbourne. In addition, public document records and commission of inquiry reports, diaries, newspaper reports are held in depositories such as the Public Records Office, the Parliamentary Library, the State Library, the Police Museum (all in Melbourne) or in regional newspaper offices, local libraries and museums throughout Kelly Country (e.g. in Benalla, Glenrowan, Mansfield, Woolshed Valley). Especially important in this category are the two Kelly political manifestos (usually referred to as the Cameron and the Jerilderie Letters) that set out his thoughts about conditions in rural Victoria at the time of the so-called Kelly Outbreak. The semiotic significance of the two letters, the Glenrowan suits of armour and a number of other texts has been sustained through the creation of many copies and facsimiles.

A third category of evidence is essentially representational, and it includes, for example, monuments, memorials, artworks, performances, re-enactments, ceremonies and festivals. There is no particular geographic concentration of these markers, signs and symbols. In Glenrowan, there is a mammoth statue (which is neither a monument nor a memorial) and an animatronic theatre at which the scenes of the siege are re-enacted. In the Art Gallery in Benalla, there is a graphic representation of the Glenrowan siege episode in the form of a major tapestry designed by the artist Sidney Nolan. That gallery also has a sketch profile of one member of the Kelly Gang (Joe Byrne). There are markers of episodes from the Kelly story in a series of totem poles across the important sites at Glenrowan and at Stringybark Creek, and there is a series of paintings by Sidney Nolan in the National Gallery in Canberra. This category is augmented by occasional "travelling" re-presentations of parts of the Kelly story through performances of ballet and dance, drama, film, various kinds of music and musical theatre and by art and photographic exhibitions. For a number of years re-enactments of significant Kelly-linked episodes were conducted annually in Beechworth and biannually at Jerilderie; these have not taken place in recent years.

Taking a further cue from Graham, Ashworth and Tunbridge (2000), it has to be acknowledged that what is important in tourism is not always the evidence per se, nor whether the presentation is authentic, and the re-presentation is accurate. Rather, the importance of any available evidence lies with its "physical presence", its "meaning" and the significance it holds for telling the story.

3.5 Spatial Patterns

Since the real-time episodes of the story, the territory encompassed within the Kelly " footprint" has not experienced many of the development pressures that could have led to significant changes to its internal structure and to its linkages with other regions. Whilst there has been some economic growth, and some modernisation to the basic infrastructure services the most significant feature of Kelly Country has been its stability (Wheeler 2010). One of the outcomes of this process has been a reluctance (especially by government agencies) to formulate a consistent profile-setting agenda with a definable spatial structure for tourism in general or for the particular case of the Kelly story. A consequence of this has been an informal approach to tourism development and strategy-making that has been forged by local agencies and loose communities of entrepreneurs. Almost inevitably the outcome has been an approach to tourism development that lacks spatial and semiotic cohesion, and that relies more on individual initiative than on a well-articulated spatial framework. In this section, attention will be drawn to spatial framework elements and forms that have the potential to give spatial structure to the telling of the Kelly story.

In the background section, there was a discussion about spatial referencing, and within that attention was drawn to Wall's (1997) useful commentary about spatial forms that can be developed from the three elements of Euclidean geometry – points, lines and areas. That source and the speculations about regional forms by Gunn (1997) have been drawn on here to guide the construction of a credible spatial framework into which telling the Kelly story could be fitted, a framework that could be inclusive of:

- an interpreted area, a general form such as a corridor, capable of being " realized" as a "themescape", as a "footprint";
- a suite of lines, as routes, comprised of a principal route as a spine with a network of connecting lower-order routes, and including a loose arrangement of country roads that penetrate into the hill ranges to connect the dispersed homesteads and the former camp sites of the goldmining period;
- and a loose "network" of interacting and servicing settlements, with a number of spot locations, in a pattern of nodal points in clusters with each contributing to aspects of the Kelly story.

The physical evidence remaining of the Kelly story is not concentrated. There is, in fact, a high degree of geographical patchiness. In this circumstance, any creation of a Kelly-relevant spatial form is nudged towards a structure that is composed

of a number of individual and small-scale "touristed landscapes" (Cartier 2005) and nodes. Each of these could be interpreted as a definable story "space", each with its individual character, each making its own contribution to the telling of the story, each with its own repertoire of places, sites, buildings, structures, objects, representations and re-presentations associated with it, and each being supported by at least a rudimentary level of servicing, Any spatial structure formalised to tell the Kelly story will inevitably will be "loose", with any degree of cohesion being imposed through the recognition of particular event-inspired "themescapes" (even if they cannot be accurately fixed to geographical coordinates), with a range of "unequal" nodal points "clustered" to contribute towards a semblance of spatial cohesion. This, clearly, would be an orchestrated spatial form, composed of nodes and clusters rather than a whole-of-region framework—that is, it is a "product of creative imagination" (Ashworth and Graham 2005). Such a spatial arrangement has the capacity to be configured to meet any particular circumstances such as telling the whole story, or responding to such special themes as, for example, the sieges, or the bank robberies, or the preparation of the Kelly political manifestos, or the Kelly homesteads, or the legal proceedings (court appearances, gaol terms), or the gravesites and monuments, or the bushranging hideouts, or the depositories of Kelly-linked artworks and so on. This approach to a multi-site configuration has as its basis speculations about tourism destinations in Australia (Jackson and Murphy 2002), about the clustering of creative industries (Lazzaretti et al. 2012), about creative cultural clusters (Cooke and Lazzaretti 2008), and about the clustering of historic sites as cultural texts (Wood 2000) A notional interpretation of a spatial framework of nodes, clusters and "touristed landscapes" for the sub-region of the Kelly "footprint" is depicted in Fig. 2.

4 Conclusion

The essential task of the case study has been to use the exercise of telling a particular story from history to give a particular focus to the use of tools of inquiry from geography, heritage, history, and from semiotics to highlight the contributions they can make to create a suitably defined tourism product. This marks it as a departure from many studies in which the scope of regional science and tourism is twinned, and where the investigatory and the interpretational processes are dominated by elements from the conventional repertoire of skill sets from the economic and organisational sciences. This study was conceived and has been presented as an experimental study, with a degree of novelty and exploration that should be treated essentially as little more than indicative of a means of contributing to the process of drawing out the nuances and subtleties of telling stories from history through the medium of tourism.

It was made clear in the introduction, and through the consideration of a number of backgrounding issues that the writing of this chapter was motivated in part to test the observation of Cole that the study and practice of regional science could embrace *"any social science analysis that has a spatial dimension"* (2007, p. 186).

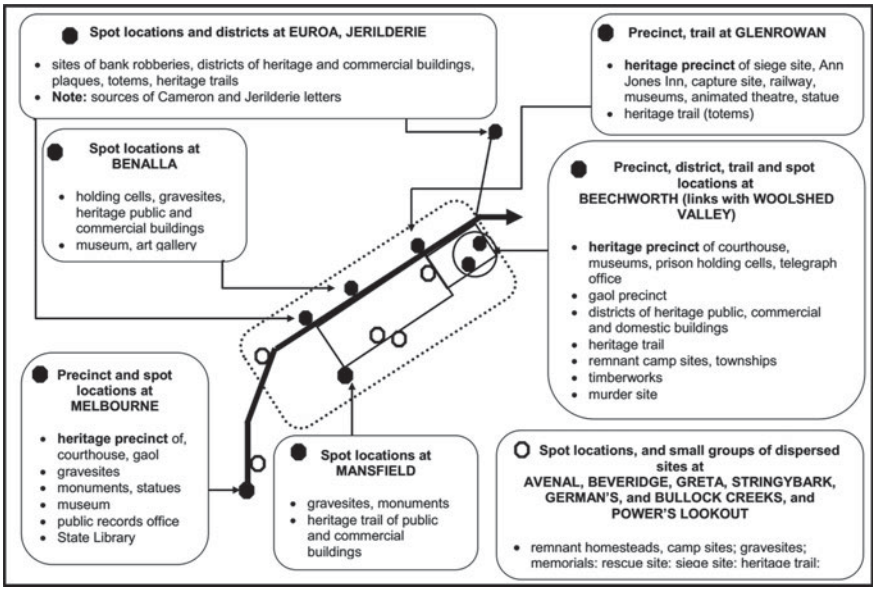


Fig. 2 Spot locations, Nodes, Clusters and Precincts

To conduct the test, this study delved into the subject matter of a case embedded in the history and heritage of Australia, and the expression of it in popular culture through history-linked and heritage-based tourism. Briefly, whereas the subject matter was interrogated using the standards of scientific rigour, investigative and interpretive capacities that are the hallmarks of regional science, the peculiarity of this study lies in its choice and use of disciplinary insights, perspectives and tools that are associated more with the scope of the qualitative sciences than with the quantitative sciences. It has been an exercise that has reached out to the "emergent social sciences" (Wilson and Hollingsworth 2015), whilst maintaining the rigour of the thought processes and advocacies set out in *Tool Kits in Regional Science* edited by Sonis and Hewings (2009), and in *Regional Science Matters* edited by Nijkamp, Rose and Kourtit (2015). The study area selected for consideration in this chapter has not experienced (and would be unlikely to experience) an exceptional level of visitation; it is essentially set at a micro-scale—at best, at the scale of a sub-region—that has a dispersal of resources linked to a story from history that embody the degrees of distinctiveness that can be mediated and commoditized for the purposes of tourism.

So … what can be learned from this experimental study ? It has provided an example of how the nuances and subtleties of a story can be exposed to suit the requirements of tourism by drawing on the investigative and interpretive capacities of an operational partnership forged from complementary disciplines in the "emergent soft sciences". It has been framed by responding to the three advocacies of Cole (2007) about fitting studies in tourism to the expectations of regional science theory and practice—exposing system interactions, drawing on the perspectives of a range of

disciplines, and acknowledging the values implicit in the uniqueness of the resources targeted in the study. Each of these is addressed in the background section of the chapter. In responding to the implicit expectations of these advocacies, this study proceeded with three over-arching a priori decisions—about the nature, scope and content of the study's subject (to use the story of Ned Kelly), about the disciplines most likely to achieve a harmonious partnership (to draw on elements of the skill-sets of geography and semiotics), and about the scale of operation for which decision-outcomes were needed (to focus on a loosely-drawn sub-region as a " footprint"). Drawing these various strands together heightens the interpretation of this case as being focused on an example of niche and/or special interest tourism, and that the approach taken is largely novel and experimental. These various matters, perhaps singly, but certainly as a combination, remove this study from being offered as a template with potential widespread applicability. However, the general approach might be transferable to other situations in tourism studies, and especially those that have pretentions to be region-wide, but each case would need to have judgements made about the opportunities for indulgence with qualitative issues and the balance between the needed skill-sets from both the qualitative and the quantitative sciences. The use here of a partnership of geography with semiotics may not be well suited to all circumstances and all scales. There was no specific need in this study for quantitative measures of, for example, visitor numbers, visitor origins and visitor types; in other studies, even of tourism involving telling stories from history, the need for quantitative measures might be important for decision-making about what to do with the resources of tourism potential. Even recent studies of the territory covered by the Ned Kelly story in the Australian state of Victoria have not been overly concerned with quantitative issues. Rather than focusing on broad-based quantitative issues, this study has followed the lead of some of the previously cited references about creative and cultural industry clusters, and sharpened its focus to the spatial grouping of special interest and attraction that have the potential to be the magnets for tourists, for tourism agencies and for tourism entrepreneurs. Of course, this has meant that the emphasis has been on places, signs and symbols as determinants of distinctiveness. Whether a whole-of-region study could cope with the level of detail that emerges from a process that engages with multiples of disciplines is a challenge that was not faced here; and it will not be answered here, although the suspicion could be that detailed inventories of resources and interpretations used at the level of this study might be overwhelming at a larger scale.

An important critical insight to derive from this study of a special form of tourism would be that the standards of scientific rigour claimed to be the hallmark of regional science would not be imperilled by the introduction of qualitative issues and methods of qualitative study. The key is for the issues and the methods to be selected carefully so that they add value to those that are more conventional the practices of regional science. Cole (2007) in concluding his remarks about the regional science of tourism, suggests that "*while it is possible to envisage a potential application of every regional science topic or method to the subject of tourism, the concern should not simply be*

to looking for problems to apply a method, but a problem identified by the host community where methods that are more sophisticated might help to explicate the issue" (p. 190). In essence, this has been the task of the study recorded in this chapter.

References

Ashworth, G., & Graham, B. (Eds.). (2005). *Senses of place: Senses of time*. London: Ashgate.

Bailly, A., & Gibson, L. (2004). Regional Science: Directions for the future. *Papers in Regional Science, 83,* 127–138.

Butler, R. (2004). Geographical research on tourism, recreation and leisure: Origins, eras and directions. *Tourism Geographies, 6*(2), 143–162.

Cartier, C. (2005). San Francisco and the left coast. In C. Cartier & A. Lew (Eds.), *Seductions of Place: Geographical Perspectives on Globalisation and Touristed Landscapes* (pp. 148–168). London: Routledge.

Cole, S. (2007). The Regional Science of Tourism: An overview. *the Journal of Regional Policy and Analysis, 37*(3), 183–192.

Coles, T., Hall, C., & Duval, D. (2006). Tourism and post-disciplinary enquiry. *Current Issues in Tourism, 9*(4–5), 293–319.

Cooke, P., & Lazzeretti, L. (Eds.). (2008). *Creative cities, cultural clusters, and local economic development*. Cheltenham: Edward Elgar.

Darbellay, F., & Stock, M. (2012). Tourism as a complex interdisciplinary research object. *Annals of Tourism Research, 39*(1), 441–458.

Davies E (2006) *Epistemological Pluralism*. Retrieved from https://philsci-archive.pitt.edu/3083/1/EPsingle.doc.

De Groot, J. (2009). *Consuming History: Historians and Heritage in Contemporary Popular Culture.* London: Routledge.

Dredge, D., & Jenkins, J. (2003). Destination place identity and regional tourism policy. *Tourism Geographies, 53*(4), 383–407.

Fagence M. (2011) *'Dead Men Do Tell Tales': 'teasing out' the contribution of the folk hero to heritage-based tourism*. PhD thesis, La Trobe University, Melbourne (Australia).

Graham, B., Ashworth, G., & Tunbridge, J. (2000). *A Geography of Heritage.* London: Arnold.

Gunn, C. (1997). *Vacationscape* (3rd ed.). New York: Van Nostrand Reinhold Company.

Hobsbawm, E. (1969). *Bandits.* London: Wiedenfeld & Nicholson.

Jackson, J., & Murphy, P. (2002). Tourism destinations as clusters: Analytical experiences from the New World. *Tourism and Hospitality Research, 4*(1), 36–52.

Jamal, T., & Kim, H. (2005). Bridging the interdisciplinary divide. *Tourist Studies, 5*(1), 55–83.

Lazzaretti, L., Capone, F., & Boix, R. (2012). Reasons for clustering of creative industries in Italy and Spain. *European Planning Studies, 20*(8), 1243–1262.

Lewis, P. (1979). Axioms for Reading the Landscape. In D. Meinig (Ed.), *The Interpretation of Ordinary Landscapes* (pp. 11–32). New York: Oxford University Press.

Lundberg, C., & Lexhagen, M. (2013). Pop Culture Tourism: A research model. In A. Chauvel, N. Lamerichs, & J. Seymour (Eds.), *Fan Studies: Researching Popular Audiences* (pp. 1–22). Freeland, Oxon (UK): Inter-Disciplinary Press.

Lundberg, C., & Ziakas, V. (Eds.). (2019). *The Routledge Handbook of Popular Culture and Tourism.* Abingdon, Oxon: Routledge.

Macke, D., Hirasuna, D., Fluharty, C., & Shields, M. (2003). Regional scientists are talking – is anybody listening ? *the Journal of Regional Analysis and Policy, 33*(1), 81–97.

Metro-Roland, M. (2009). Interpreting Meaning: An application of Peircean semiotics to tourism. *Tourism Geographies, 11*(2), 270–279.

Moustakas, C. (1990). *Heuristic Research: Design, methodology, and applications.* Newbury Park: Sage.
NijKamp, P. (2004). Regional science: Multi-disciplinarity 'avant la letttre.' *Papers in Reginal Science, 83*(3), 516–518.
Nijkamp, P., Rose, A., & Kourtit, K. (2015). Regional Science: What matters ? which matters ? In P. Nijkamp, A. Rose, & K. Kourtit (Eds.), *Regional Science Matters* (pp. 1–11). Cham: Springer.
Palmer, C., & Tivers, J. (Eds.). (2018). *Creating Heritage for Tourism.* Abingdon, Oxon: Routledge.
Pearce, P., Morrison, A., & Moscardo, G. (2003). Individuals as tourist icons: A developmental and marketing analysis. *Journal of Hospitality and Leisure Marketing, 10*(1–2), 63–85.
Riganti P & Nijkamp P (2004) Valuing cultural heritage benefits to urban and regional development. Retrieved from https://hdl.handle.neet/10419/117122 .
Rodaway, P. (1994). *Sensuous Geographies.* London: Routledge.
Seal, G. (1996). *The Outlaw Legend*. Cambridge: Cambridge University Press.
Seal, G. (2001). *Encyclopaedia of Folk Heroes.* Santa Barbara: ABC-CLIO.
Sobchack, V. (1996). *The Persistence of History*. New York: Routledge.
Sonis, M., & Hewings, G. (Eds.). (2009). *Tool Kits in Regional Science – theory, models and estimation.* Heidelberg: Springer-Verlag.
Sorensen, M., & Carman, J. (Eds.). (2009). *Heritage Studies: Methods and Approaches.* London: Routledge.
Suri, H. (2013). Epistemological pluralism in research synthesis methods. *International Journal of Qualitative Studies in Education, 26*(7), 889–911.
Timothy, D., & Boyd, S. (2003). *Heritage Tourism.* Harlow: Prentice Hall.
Timothy, D., & Boyd, S. (2015). *Tourism and Tails: Cultural, ecological and management issues.* Clevedon: Channel View Publications.
Urry, J. (1992). The tourist gaze 'revisited.' *American Behavioural Scientist, 36*(2), 172–186.
Urry, J. (2002). *The Tourist Gaze* (2nd ed.). London: Sage.
Van der Duim R (2005) Tourismscapes: an actor-network perspective on sustainable tourism development. PhD Dissertation, Wageningen University, Wageningen (The Netherlands).
Wall G (1997) Tourist attractions: points, lines and areas *Annals of Tourism Research,* 24 (1), 240–243.
Waterton, E., & Watson, S. (2014). *The Semiotics of Heritage Tourism.* Bristol: Channel View Publications.
Wheeler F (2010) *Politics, power and passion: regional destination branding in North East Victoria*. PhD thesis, Monash University, Melbourne (Australia).
Wilson, E., & Hollinshead, K. (2015). Qualitative tourism research: Opportunities in the emergent soft sciences. *Annals of Tourism Research, 54,* 30–47.
Wood P (2000) The Historic Site as Cultural Text. *Material History Review,* 52: Fall, 33–43.

Proximity to Hotels and Airbnb Home Sharing Accommodations

Mitra Akhtari

1 Introduction

The online home sharing platform, Airbnb, emerged in 2008 and has since grown all over the world. Airbnb's centralized marketplace matches hosts and guests by facilitating the booking of accommodations, arranging payment, providing a reputation system, and guaranteeing transactions between parties. In 2008, Airbnb had 2 bookings during the South by Southwest Conference and Festival in Austin, Texas, and 80 bookings during the Democratic National Convention in Denver, Colorado (McCann 2015). Today, Airbnb has millions of listings in more than 81,000 cities and 191 countries across the world (Airbnb 2019a, b).

As Airbnb has grown over the last decade, the accommodation types it offers have also expanded. The co-founders of Airbnb started out by renting airbeds in their spare living space during big events when hotels were completely sold out. Today, guests can book private rooms, entire apartment or homes as well as boats, tents, bed, breakfasts, etc. With its current listings, Airbnb offers a differentiated service compared to the traditional hospitality sector (hotels) as it allows the option to rent a shared room (a living room equipped with a couch or an airbed for sleeping), private rooms in shared homes, and a variety of "unique" accommodations such as yurts, castles, and tree houses. Despite its differentiated services, how Airbnb's accommodations compare and contrast with the services offered by hotels is important for understanding how the hospitality sector is changing due to the entry of online home sharing platforms such as Airbnb (Eugenio-Martin et al. 2019).

In this chapter, we offer a descriptive analysis of how Airbnb has changed the geospatial distribution of the tourism and hospitality sectors in the USA. To establish a relevant benchmark, we first analyze the scope and reach of the traditional lodging sector in the USA by mapping the geospatial distribution of hotels. In addition to

M. Akhtari (✉)
Airbnb Data Science, 888 Brannan Street, San Francisco, California, US
e-mail: mitra.akhtari@airbnb.com

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*,
Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_9

visualizing the distribution of hotels, we estimate "proximity to the nearest hotel": the median distance between a US resident and her nearest hotel. Although not very informative on its own, this measure gives a useful benchmark for the next component of the analysis: understanding how Airbnb has changed the lodging landscape. We map the geospatial distribution of Airbnb listings in the USA and compute "proximity to the nearest Airbnb." Finally, we perform a series of comparative analyses to provide insight into how accommodations offered by the traditional lodging sector and Airbnb compare.

We find that Airbnb listings are more geographically widespread than hotels: As of 2016, approximately 12% of US block groups (the smallest census division with demographic information available containing between 600 and 3,000 people) had at least 1 hotel whereas three times the percentage, 35% of block groups had at least 1 Airbnb. The geospatial analysis reveals that Airbnb listings are especially prominent along the coasts, in the Appalachian Valley, the Northeast, and in the Western United States. In terms of proximity, for the typical[1] person in the USA, the nearest hotel is located approximately 1.4 miles away and the nearest Airbnb is located 0.7 miles away, nearly twice as close as the nearest hotel.[2] Overall, Airbnb has broadened the set of regions and people that have easy access to short-term accommodations.

We then analyze the extent to which the geographic distribution of hotels and Airbnb listings overlap. As mentioned above, we find that Airbnb listings are present in more areas than hotels. However, do Airbnb listings and hotels exist in completely different areas? Or is there some overlap in the areas they serve? Furthermore, are areas with little hotel penetration ("hotel deserts") served by Airbnb listings and, vice versa, are areas with little Airbnb penetration ("Airbnb deserts") served by hotels? The juxtaposition of areas with and without hotels/Airbnb listings reveals that, perhaps unsurprisingly, the majority of US block groups (58%) have neither a hotel nor an Airbnb. This is largely driven by the fact that the vast majority of landmass in the USA is rural and rural areas are less likely to have hotels and Airbnb listings.[3] Approximately 5% of block groups have both hotels and Airbnb listings; such areas are more likely to be dense urban centers. Interestingly, approximately 7% of block groups have a hotel but no Airbnb and 29% of block groups have an Airbnb but no hotel. Therefore, it seems that Airbnb listings are more likely than hotels to fill the void in accommodations left by their lodging-provider counterpart.

[1] Proximity for the "typical" person refers to the distance from the median block group's population-weighted centroid to the nearest hotel/Airbnb. Section 2.4 explains the methodology in more detail and explains why this measure captures proximity to the nearest accommodations for the typical person.

[2] These distances may seem small. This is largely driven by the fact that block groups are constructed to have approximately equal population, which means that densely populated areas will have many more block groups than remote areas. Thus, an average or median across block groups is essentially population-weighted due to how these geographical units are defined and the distances reported above should be interpreted as distance to the nearest Airbnb/hotel for the typical person in the USA.

[3] "Rural areas cover 97% of the nation's land area but contain 19.3% of the population (about 60 million people)." United States Census Bureau: https://www.census.gov/newsroom/press-releases/2016/cb16-210.html.

This conclusion is affirmed using the proximity measure as well. In block groups without any hotels, the distance to the nearest Airbnb is half as much as the distance to the nearest hotel. The same cannot be said about hotels filling the void left by Airbnb listings: In block groups without any Airbnb listings, the distance to the nearest Airbnb is still less than the distance to the nearest hotel.

Overall, Airbnb listings in the USA are more evenly distributed than hotels and, although there is some overlap in the areas that hotels and Airbnb listings serve, Airbnb listings are disproportionately more likely than hotels to fill the void in accommodations left by their counterpart; i.e., Airbnb listings fill the gap in lodging left by hotels at a higher rate than hotels fill the lodging gap left by Airbnb listings. Therefore, Airbnb's home sharing platform has brought accommodations to more areas and to closer proximity for people in such areas. Proximity to lodging is important for a variety of reasons: Tourists visiting national parks need a quick commute from where they are staying to their final destination, families who have a loved one in a hospital that is far from home need a temporary place of residence, and towns with high-volume events such as conventions, sporting events, and university graduations need to provide convenient accommodations to a large number of visitors.

There is a growing literature on the sharing economy more broadly and Airbnb more specifically. However, there are two papers in particular that are closely related to the current analysis. Coles et al. (2017) study Airbnb usage across New York City neighborhoods: Similar to our findings, Coles et al. find that hotels in NYC are located in a much smaller set of census tracts compared to Airbnb bookings. Quattrone et al. (2018) analyze the spatial penetration of Airbnb listings across 8 US cities finding that (when controlling for a wide range of local characteristics) there is no relationship between hotel presence and Airbnb adoption. This is consistent with our finding that Airbnb listings in the USA are much more widely distributed than hotels and are not concentrated in the same areas as hotels. Although our findings are consistent with prior work, we add to this literature by studying a more expansive region and using precise, proprietary data for Airbnb listings and the leading data source for hotels; hence, we arrive at generalizable and precise results. Nevertheless, there is more work to be done in quantifying the characteristics of areas that are underserved by hotels and/or home sharing services and assessing how innovations in the hospitality sector, such as home sharing, can help tourism specialists and policymakers better serve such areas.

The remainder of the chapter is structured as follows: Sect. 2 describes the data sources (Smith Travel Research data for hotels, proprietary data for Airbnb, and a variety of demographic characteristics from the US Census) and the steps we take in defining and measuring the relevant metrics; Sect. 3 quantifies the scope and reach of the traditional hospitality sector by mapping the geospatial distribution of hotels and measuring proximity to the nearest hotel; Sect. 4 repeats a similar exercise for Airbnb listings; Sect. 5 compares the geographical distribution and proximity of hotels and Airbnb listings to provide insight into how Airbnb has supplemented and augmented the accommodations offered by the traditional lodging sector; Sect. 6 concludes with a discussion of why proximity matters and suggestions for future avenues of research in this area.

2 Data and Methodology

We combine data from three different sources to compare and contrast the geospatial distribution of hotels and Airbnb listings: Smith Travel Research census data on hotel geolocations, proprietary data from Airbnb, and US Census shapefile data and a variety of demographic data. In this section, we describe each of these datasets, the steps we take in cleaning and refining the data, and the assumptions we make in defining our key "proximity" metric.

2.1 Hotel Data

We use data from Smith Travel Research (STR) to identify the geolocation of hotels in the USA. STR is the leading travel industry data provider globally; its coverage is more complete in the USA (and major urban areas more generally).[4] To be accounted for in the census of hotels by STR, a hotel must include a minimum of 15 rooms in North America (and 10 rooms outside of North America). Furthermore, the STR census database does not include bed and breakfasts, hostels, or time-shares. Therefore, our analysis compares and contrasts Airbnb home sharing activity to larger accommodation providers (more than 15 rooms) such as hotels and motels. The latest STR data available to us at the time of this analysis was from July 19, 2016. Therefore, the geospatial analysis of the traditional hospitality sector in Sect. 3 should be thought of as a snapshot of the hotel industry in July 2016.

STR data contains the name and a variety of other information of each hotel in its database (such as address, management company, chain affiliation, class, and number of rooms). Important for us, it includes the geolocation (latitude and longitude) of each hotel. We use the geolocation of each hotel to map it into its corresponding US Census geographic unit, which will be described in Sect. 2.3.

2.2 Airbnb Data

We use Airbnb data as of July 19, 2016, to ensure comparability between the data on traditional hospitality accommodations and home sharing accommodations.[5] We

[4] We focus our analysis on the USA for several reasons. First, STR data is most complete and comprehensive in the USA. Second, comprehensive, national shapefile and socio-demographic data are often difficult to find for all countries. Therefore, we focus our analysis in the U.S. to ensure good data quality and discipline the scope of our analysis. Although we realize that focusing on the USA limits the generalizability of our results, our methodology can be applied more broadly to other contexts.

[5] Since Airbnb has been growing quickly in recent years, it may seem that 2016 Airbnb data is somewhat outdated. Nevertheless, we believe it is important to compare snapshots of hotels and Airbnb listings at a similar moment in time. In Sect. 4.2, we present some statistics about how

restrict our Airbnb data to "active" listings, i.e., ones that can be searched on the Airbnb Web site. In July 2016, Airbnb had approximately 400,000 active listings comprised of shared rooms, private rooms, and entire homes or apartments in the USA. Although not all active Airbnb listings are available year-round, the same way that dedicated hotel rooms are, we use active listings to proxy for the potential of home sharing in geography.[6] Furthermore, we abstract from occupancy of Airbnb listings or hotel rooms (i.e., we do not account for how often each kind of accommodation is booked) because we are interested in access to potential supply of accommodations. Using proprietary Airbnb data (as opposed to scraped data) for this analysis is important in order to have a precise measure of the geolocation (latitude and longitude) of listings and the capacity of listings.[7]

2.3 US Block Groups and Census Data

We combine STR and Airbnb data with census data to map the geospatial distribution of short-term rental accommodations and explore some demographic characteristics of areas with and without hotels/Airbnb listings. We focus on US Census block groups (BGs) as the geographic unit of analysis, identify whether each BG has at least one hotel/Airbnb, and then visualize the distribution of BGs with and without hotels/Airbnb listings. Ideally, we would map the precise geolocation of hotels and Airbnb listings. However, due to STR and Airbnb data privacy and confidentiality concerns, we cannot reveal the precise location of either type of accommodation. Therefore, we use BGs as a way to aggregate the geospatial representation of the data.

Furthermore, block groups are fairly small geographic units and are the smallest unit for which relevant socioeconomic and demographic information is released. The US Census categorizes households into approximately: 11 million blocks (equivalent to a city block), 217,000 block groups, 73,000 census tracts, 3,142 counties, and 50 states. A block group contains between 600 and 3,000 people and is the smallest statistical division for which the census releases socioeconomic and demographic information: For the smallest unit, a census block, the census only releases population and housing unit counts and no information on race, gender, education,

---

Airbnb's geographic distribution has changed between 2016 and 2017 to give a more updated picture of Airbnb's geospatial distribution.

[6] One reason that "active listings" is a good proxy for potential supply even though it does not account for availability is that during peak demand, for example during sporting events, college graduations, or a unique event such as the 2017 Solar Eclipse, many people who are active on the platform make their listing available.

[7] Scraped data does not include the listing address because Airbnb does not reveal the address of a listing until after a booking has been made. The Airbnb Web site does, however, show a "pin" that approximates the location of a listing. However, scraping this pin location does not provide an accurate and precise measure of the location of the listing as the pin is "perturbed" to protect the privacy of the host/listing.

etc. Since we would like to explore some characteristics of areas with and without hotel/Airbnb presence, it is important for us to have demographic measures (such as race and ethnicity) for the geographic unit of analysis. For this reason (availability of census measures) and data privacy concerns, we use US Census block groups as the geographic unit to map and analyze the geospatial distribution of hotels and Airbnb listings. In the next section, we explain how we combine hotel, Airbnb, and census data to analyze the geospatial distribution of traditional and home sharing accommodations.

2.4 Methodology

We map the precise geolocation of hotels and Airbnb listings onto shapefiles of US block groups and create a map of the USA broken down at the block group level where each block group is denoted as either having at least one hotel (or Airbnb) or not. As a first pass, we focus on the existence of a hotel/Airbnb, without considering density or capacity constraints, as a means to map out accessibility to accommodations: If a single individual were to visit family in Andrews, TX (a small city in West Texas with a population of 12,718), would they have access to a hotel room? How about access to an Airbnb? We then expand on this existence measure and map out the density of hotels (in terms of number of hotels) and Airbnb listings (in terms of number of Airbnb listings) at the block group level.

After visualizing the existence and density of hotels and Airbnb listings across the USA, we seek to precisely quantify proximity to each type of accommodation: For the typical individual, how far or near is the closest hotel? How about the nearest Airbnb? From the population-weighted centroid of each block group, we measure the distance to the nearest hotel ("proximity to the nearest hotel") and the distance to the nearest Airbnb ("proximity to the nearest Airbnb"). We use the population-weighted centroid of each block group to proxy for where most individuals live, visit, and congregate within a small geographic unit.[8] By measuring the distance between population-weighted block group centroids and the nearest hotel/Airbnb, we arrive at the full distribution of proximity to hotels and Airbnb listings across US block groups. We can then use the moments of this distribution (mean or median)

[8] Theoretically, to measure proximity to the nearest hotel/Airbnb, one would compute the distance to the nearest hotel/Airbnb for every individual and quantify the full distribution of how far or near individuals in the USA are from each type of accommodation. However, it is difficult to geolocate all individuals. One could use a dataset of the geolocation of addresses in the USA to proxy for location of individuals. However, to our knowledge, a comprehensive geolocated address database does not exist, although there are open-sourced efforts to create such a database (Open Address). Furthermore, not all addresses are occupied. Therefore, we use the population-weighted centroid of a block group as a metric of where individuals live in the USA. Since this is a population-weighted measure, it will locate the center of a block group in more heavily populated areas and away from areas with little population density. In this way, we move closer to our ideal dataset of the geolocation of all individuals in the USA.

to answer the question of interest: For the typical individual, how far or near is the closest hotel/Airbnb?

Finally, we explore the heterogeneity in our proximity measure with respect to socio-demographic characteristics such as the urban/rural divide and race/ethnicity to better understand how the availability and accessibility of accommodations vary across different regions and groups in the USA.

3 Geospatial Analysis of Traditional Hospitality Sector

3.1 Visualization

Figure 1 shows the geographical distribution of US block groups with at least one hotel as of July 2016 using Smith Travel Research data. Of the 216,331 block groups in contiguous USA,[9] 12.10% have at least one hotel. Perhaps unsurprisingly, rural block groups are less likely to have a hotel: Of the 43,388 rural block groups, 10.97% have at least one hotel (compared to 12.42% for urban block groups).[10] Block groups

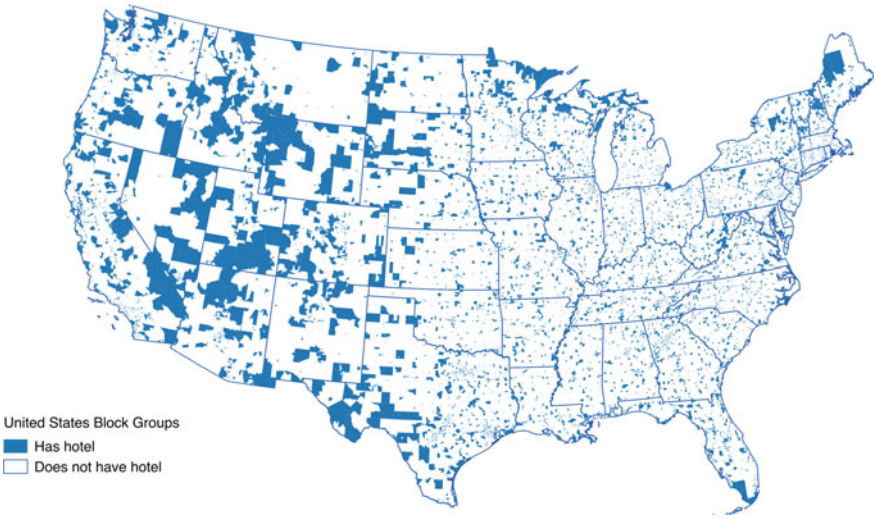


Fig. 1 Block groups with and without at least one hotel

[9] We focus on contiguous USA (i.e., exclude Alaska and Hawaii) for expositional purposes. Also, because when measuring distances between block group centroids and the nearest hotel/Airbnb, we use the Albers equal-area conic projection, which is used by the US Census and is best suited for measuring distances in the contiguous USA.

[10] We identify rural block groups as follows: The census identifies each *block* as urban or rural. We compute the share of the *block group* population that lives in urban blocks and the share of the population that lives in rural blocks. We then categorize a block group with more than half of its

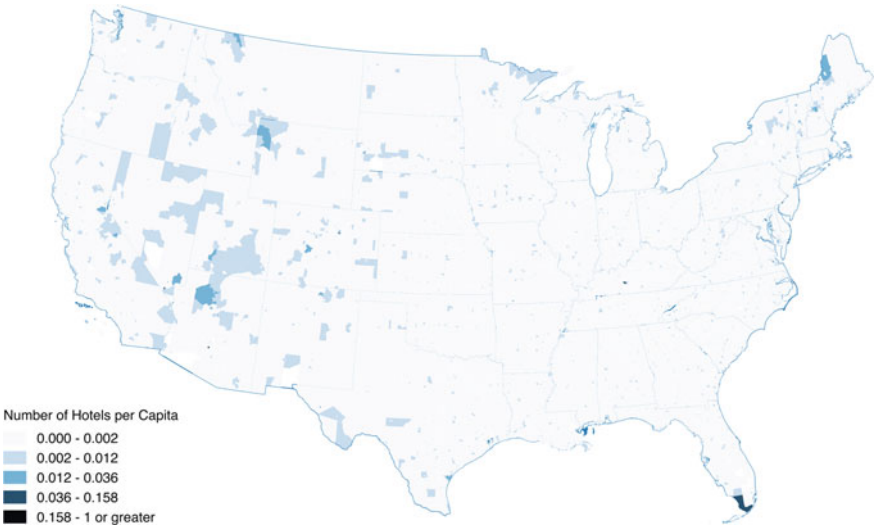


Fig. 2 Number of hotels per capita across US block groups

that are "majority–minority," i.e., the share of non-Hispanic white population is less than half, are also less likely to have at least one hotel: Of the 64,290 majority–minority block groups, 10.94% have at least one hotel (compared to 12.62% of majority non-Hispanic white areas).

We also map out the density of hotels per block group to account for the fact that a block group with one hotel has a different tourism landscape than a block group with many hotels. In Fig. 2, we show a heat map of the per capita number of hotels in each block group to gain a sense of the geographical distribution of hotel density.[11] The 5 categories or bins shown in the legend of Fig. 2 specify the "Jenk" of the distribution[12] of the hotel per capita measure across block groups. Other categorization methods (based on quantiles of the data, for example) show similar results. Since the number of hotels per block group is heavily concentrated at or near zero (recall that approximately 88% of block groups have 0 hotels), we see that the majority of areas in Fig. 2 are colored in white. Interestingly, the darkest colored areas visible on the map (areas with 0.036–0.158 hotels per capita or the

population living in rural census blocks as a rural block group. Because block groups are designed to have a population of 600–3,000 people, rural areas tend to have fewer block groups that cover a larger surface area. Hence, only 21% of block groups are categorized as rural.

[11] We focus on hotels *per capita* to normalize for the fact that more populated areas are bound to have more hotels. In Appendix Fig. 5, we show the absolute (i.e., not normalized by population) number of hotels by block group and the conclusions are similar.

[12] The Jenks optimization method is a data clustering method that determines the best arrangement of values into different classes. It does so by minimizing each class's average deviation from the class mean and maximizing each class's deviation from the means of other groups; i.e., it reduces within-class variance and maximizes across-class variance.

most dense areas with 0.158–3.25 hotels per capita) are mostly national parks in Eastern California, Nevada, Utah, Arizona, Colorado, West Texas, Wyoming, Idaho, Montana, Minnesota, and Southern Florida. This is partly driven by the fact that there are many accommodations near such destinations and partly driven by the low population of such areas (the denominator of hotels per capita in such areas is small).

Overall, because urban block groups tend to be small in size (and therefore difficult to discern on a full map of the USA, which over-illustrates larger, rural areas), a map of hotel density (number of hotels per capita in Fig. 2 or number of hotels in absolute terms in Appendix Fig. 5) is not very informative. For example, downtown New York City has numerous hotels, but since NYC block groups are relatively small in size, as most urban block groups, they are difficult to visualize on such a map. Therefore, in the next section we use an alternative measure to quantify the geographical distribution of hotels by measuring proximity to the nearest hotel.

3.2 Proximity Analysis

In this section, we answer the following question: For the typical individual, how far or near is the closest hotel? By quantifying such a proximity measure, we gain an understanding of the ease of accessibility to traditional accommodations for individuals in the USA. As described in Sect. 2.4, we measure the distance between the population-weighted centroid of each block group to the nearest hotel, where the nearest hotel may or may not be in the same block group. We then take the median of the distribution of "proximity to the nearest hotel" across all block groups as a measure of how near or far the closest hotel is for the typical person in the USA.[13] For the median block group, the distance to the nearest hotel is 1.39 miles (or 2.4 km). This distance may seem small. This is largely driven by the fact that block groups are constructed to have approximately equal population (between 600 and 3,000 people), which means that densely populated areas will have many more block groups than remote, rural block groups. Thus, an average or median across block groups is essentially population-weighted due to how these geographical units are defined and the 1.39-mile distance reported above can be interpreted as the distance to the nearest hotel for the typical person in the USA.

Consistent with rural block groups being less likely to have a hotel, the typical individual in a rural block group is 5.90 miles away from the nearest hotel. For the typical individual in a majority–minority block group, the nearest hotel is 1.00 mile away. The fact that majority–minority block groups are less likely to have hotels compared to other block groups (Sect. 3.1) and yet seem to provide accessibility to hotels in terms of proximity to the nearest hotel is consistent with the pattern that

[13] We use the median of this distribution, as opposed to the mean, because the distribution of proximity to the nearest hotel across block groups is heavily concentrated on the left and has a long right tail. Due to this skew, we believe that median is a better measure of central tendency of the distribution of proximity.

minorities in the USA are more likely to live in cities or urban centers (compared to suburbs or rural areas). Such urban centers are closer to where hotels are located even if the specific block groups that minorities actually live in are less likely to have hotels themselves.

Although the heterogeneity in proximity to the nearest hotel in rural areas or majority–minority areas is interesting, in and of itself, this measure is not very informative. In the next section, we visualize the geospatial distribution of Airbnb listings across the USA and compute proximity to the nearest Airbnb to provide a comparative lens for understanding proximity to accommodations.

4 Geospatial Analysis of Airbnb

4.1 Visualization

Figure 3 shows the geographical distribution of US block groups with at least one active Airbnb listing as of July 2016 using Airbnb data. Of the 216,331 block groups in contiguous USA, 34.73% have at least one Airbnb. Appendix Fig. 6 shows a heat map of the density of Airbnb listings per capita, across block group in an effort to account for capacity. We use the same categories, the "Jenks" of the distribution of hotels per capita, to keep Fig. 2 and Appendix Fig. 6 comparable. Overall, the geographical distribution of Airbnb listings (Fig. 3) and the geographical density of

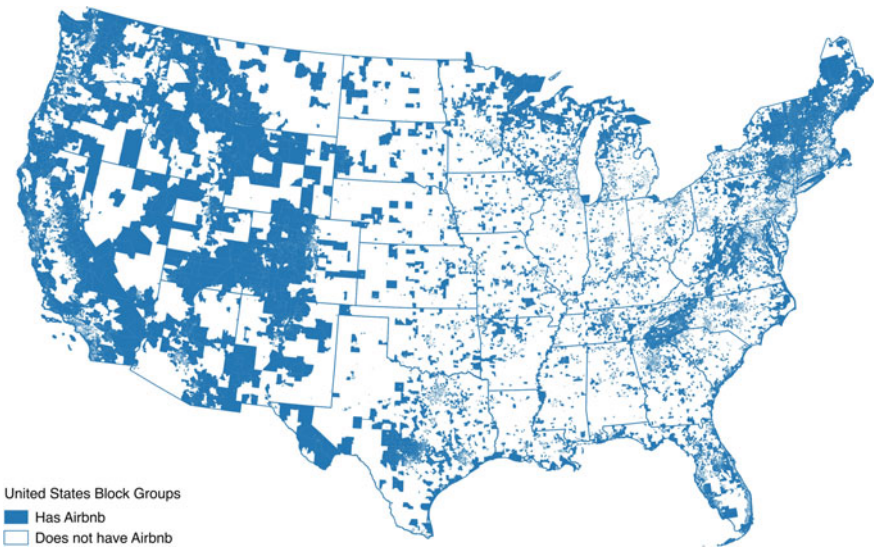


Fig. 3 Block groups with and without at least 1 Airbnb

Airbnb listings (Appendix Fig. 6) show similar patterns: Airbnb listings are especially prominent along the coasts, Appalachian Valley, the Northeast, and Western USA.

In terms of the heterogeneity of Airbnb's geolocation with respect to socio-demographic characteristics, 27.24% of rural block groups and 33% of majority–minority have at least one Airbnb (compared to 36.74% of urban and 35.64% of majority white, non-Hispanic block groups). Overall, Airbnb listings are approximately 3 times more geographically widespread across the USA than hotels. In the next section, we analyze how the geographic distribution of Airbnb listings translates proximity to accommodations.

4.2 Proximity Analysis

For the typical individual, how far or near is the closest Airbnb? Using the methodology from Sect. 2.4, we find that for the median block group, the distance to the nearest Airbnb is 0.70 miles (1.13 km). Therefore, for the typical individual in the USA, the nearest Airbnb is within 0.70 miles, twice as close as the nearest hotel. For individuals in rural block groups, the distance to the nearest Airbnb is 4.52 miles (which is approximately 1.50 miles closer than the nearest hotel in rural areas). For individuals in majority–minority block groups, the nearest Airbnb is within 0.44 miles. Again, this result is consistent with the fact that minorities are more likely to live in urban centers, which is often where business or leisure travelers would like to locate near.

Overall, Airbnb listings are approximately three times more geographically widespread across USA compared to traditional hotels. This wider distribution translates to Airbnb listings bringing accommodations in closer proximity to individuals: Specifically, the nearest Airbnb is twice as close as the nearest hotel. In the next section, we comparatively analyze the geolocation of hotels and Airbnb listings to better understand how Airbnb home sharing has supplemented and augmented the accommodations offered by the traditional hotel sector.

5 Comparative Analysis of Geolocation of Hotels and Airbnb Listings

In this section, we analyze the extent to which the geographic distribution of hotels and Airbnb listings overlap: Do Airbnb listings and hotels exist in perfectly disjoint areas (in which case each of these two accommodation sectors augments the services provided by the other)? Or is there some overlap in the areas served by these two sectors (in which case each of these two accommodation sectors complements and adds to the services provided by the other)? Furthermore, what does such an overlap

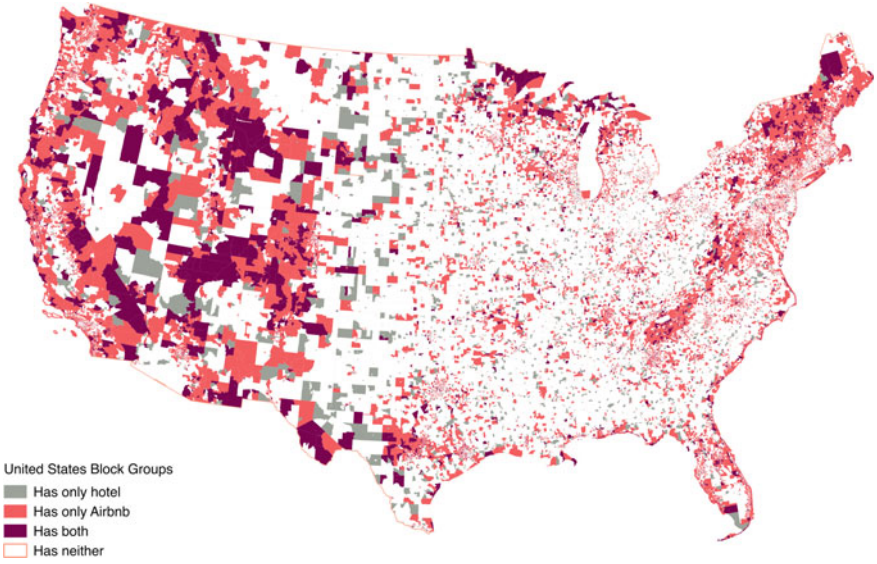


Fig. 4 Block groups categorized into four disjoint sets: ones with only hotels, ones with only Airbnb listings, ones with both hotels and Airbnb listings, and ones with neither type of accommodation

look like? Are there areas that are heavily served by both sectors; are there areas that are disproportionately served by either type of accommodation?

To shed light on such questions, we create a 2×2 matrix of block groups in the USA. Each block group is categorized based on whether it has at least one hotel *and* whether it has at least one Airbnb. The table below shows the distribution of block groups across 4 disjoint groups that can be summarized as blocks groups that have: neither hotels nor Airbnb listings, only hotels, only Airbnb listings, and both hotels and Airbnb listings.

As shown by the white cells in Fig. 4, the majority of US block groups (58% of them) have neither a hotel nor an Airbnb. Such areas are more likely to be rural areas: 23% of block groups that have neither form of accommodation are rural, whereas 18.9% of block groups that have both forms of accommodation are rural.

Figure 4 also shows that consistent with the patterns uncovered in Fig. 3, the Northeast, Appalachian Valley, and Western USA have many block groups that have only an Airbnb and no hotel. The fact that there are more block groups that have only Airbnb listings (29%) compared to block groups that have only hotels (7%) is perhaps not that surprising given the findings in Sects. 3 and 4 that Airbnb listings are approximately three times more widespread than hotels. However, what is more surprising is that Airbnb listings are more likely than hotels to fill the void in accommodations left by the other sector. In particular, we consider a block group as a "hotel desert" if it does not have any hotels (column 1 of Table 1) and an "Airbnb desert"

Table 1 Distribution of US block groups across areas with/without hotels/Airbnb listings

	Block group has no hotel	Block group has at least 1 hotel
Block group has no Airbnb	126,536 (58.49%)	14,621 (6.76%)
Block group has at least 1 Airbnb	63,623 (29.41%)	11,551 (5.34%)

if it does not have any Airbnb listings (row 1 of Table 1).[14] Approximately 33.46% of hotel deserts have at least 1, Airbnb whereas only 10.36% of Airbnb deserts have at least one hotel. Moving to a more granular level than block groups, we use the precise geolocation of Airbnb listings/hotels to measure the penetration of each form of accommodation in the "desert" left by the other form of accommodation. Sixty-eight percentage of Airbnb listings (active as of 2016) were located in hotel desert block groups (i.e., block groups with no hotels). Conversely, only 50% of hotels (as of 2016) were located in Airbnb desert block groups. Therefore, Airbnb listings are not just more geographically widespread than hotels but also Airbnb listings are more likely than hotels to fill the void in accommodations left by their counterpart.

This conclusion is affirmed using the proximity measure as well. In block groups without any hotels, proximity to the nearest hotel is 1.55 miles and proximity to the nearest Airbnb is 0.70 miles. Hence, in such block groups, the nearest Airbnb is more than twice as close as the nearest hotel. However, the same cannot be said about hotels bringing proximity to accommodations in areas without Airbnb. In block groups without any Airbnb listings, the distance to the nearest Airbnb is still less than the distance to the nearest hotel: In Airbnb deserts, the nearest Airbnb is within 1.22 miles whereas the nearest hotel is 1.54 miles.

Overall, it seems that whether considering the relative likelihood of block groups to have at least one hotel/Airbnb, or precise geolocation of hotels/Airbnb listings in areas with and without Airbnb listings/hotels, or our measure of proximity, the consistent finding is that: Airbnb listings are more likely than hotels to fill in the accommodation gap left behind by the other sector. This has important implications for the role that home sharing plays in the tourism and hospitality sector. We discuss some of these implications in the next section.

[14] Block groups, especially in urban areas, can be quite small. Therefore, a block group that does not have a hotel located within its boundaries is not necessarily a "hotel desert" in the sense that it may have easy access to hotels in nearby block groups. We use the term "desert" to proxy for the absence of a hotel or Airbnb and only interpret the availability of Airbnb listings/hotels in such "deserts" in relative terms.

6 Conclusion

In this chapter, we quantified the geography of the traditional hospitality sector in the USA (focusing on larger hotels) by visualizing their geospatial distribution and measuring proximity to the nearest hotel for the typical individual. We then assessed how home sharing practices via Airbnb have complemented the landscape of the traditional hospitality sector. We find that Airbnb listings are approximately three times more geographically widespread across the contiguous USA than traditional hotels. Furthermore, Airbnb listings provide accommodations that are nearly twice as close as the nearest hotel for the typical person in the USA and Airbnb listings are disproportionately more likely than hotels to fill the void in accommodations left by their counterpart lodging-providers, hotels. There is more work to be done in quantifying the characteristics of areas that are underserved by hotels and/or Airbnb and assessing how innovations in the hospitality sector, such as home sharing, can help tourism specialists and policymakers better serve such areas. Overall, Airbnb has broadened the set of regions and people that have easy access to short-term accommodations.

Why do geographic distribution and proximity to short-term accommodations matter? First, by more evenly distributing short-term accommodations, Airbnb distributes the benefits of tourism, in terms of host earnings, guest spending, and cultural exchange, to a wider set of geographic areas (Lagonigro et al. 2020). The second benefit of the expansive geographic nature of Airbnb listings is its reliance on existing infrastructure to accommodate visitors. This is especially important during big events such as graduations, large conferences, sporting events, or the Olympic Games, when an alternative to building large infrastructure (that may go unused after the visitors have left town) is to use existing infrastructure to accommodate visitors (Varma, et al. 2016). Furthermore, in highly seasonal markets, where operating a hotel year-round may be unprofitable, Airbnb listings can fill in the accommodations gap during peak season. Third, beyond the benefits of spreading out the geographic distribution of lodging options and relying on existing infrastructure, there are benefits to bringing short-term accommodations in closer proximity to people and places. For example, families who have a loved one in a hospital or nursing home that is far from their place of resident need a temporary place to stay while visiting their loved one, tourists visiting national parks need a convenient commute from where they are staying to their final destination, and business travelers working in areas that are not the downtown center of a city need short-term lodging that is near their place of business.

7 Appendix

See Figs. 5 and 6.

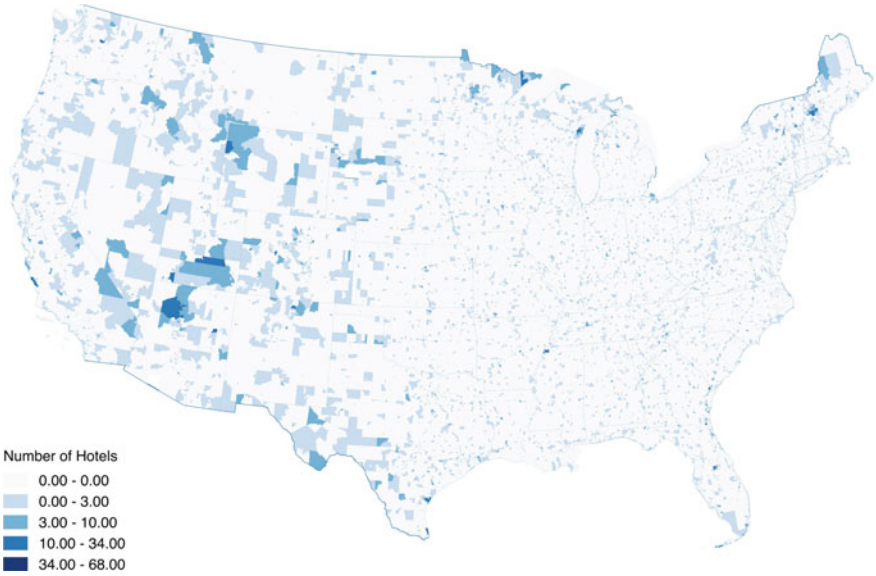


Fig. 5 Number of hotels across US block groups

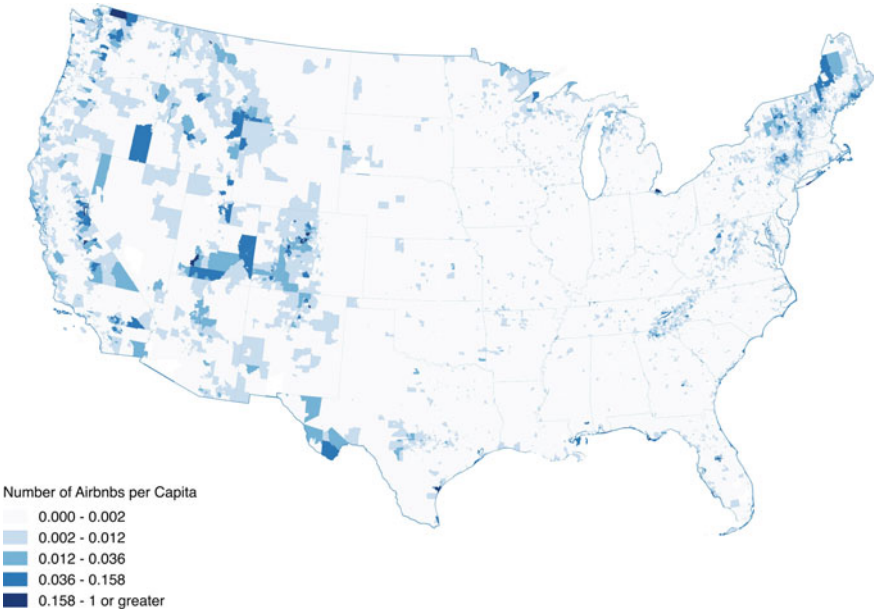


Fig. 6 Number of Airbnb listings per capita across US block groups

References

Airbnb. (2019a). About us. Document available at: https://news.airbnb.com/about-us/. Last accessed 07/2020.

Airbnb. (2019b). Beyond Cities: How Airbnb Supports Rural Revitalization. Document available at: https://news.airbnb.com/wp-content/uploads/sites/4/2019/06/Beyond-Cities_Global-Report.pdf. Last accessed 07/2020.

Coles, P. A., Egesdal, M., Ellen, I. G., Li, X., & Sundararajan, A. (2017). Airbnb usage across New York City neighborhoods: Geographic patterns and regulatory implications. In N. M. Davidson, M. Fink & J. J. Infranca (Eds.), *Cambridge Handbook on the Law of the Sharing Economy*, 108–128.

Eugenio-Martin, J. L., Cazorla-Artiles, J. M., & González-Martel, C. (2019). On the determinants of Airbnb location and its spatial distribution. *Tourism Economics, 25*(8), 1224–1244.

Lagonigro, R., Martori, J. C., & Apparicio, P. (2020). Understanding Airbnb spatial distribution in a southern European city: The case of Barcelona. *Applied Geography, 115,* 102136.

McCann, C. (2015). Scaling Airbnb with Brian Chesky — Class 18 Notes of Stanford University's CS183C. Document available at: https://medium.com/cs183c-blitzscaling-class-collection/scaling-airbnb-with-brian-chesky-class-18-notes-of-stanford-university-s-cs183c-3fcf75778358. Last accessed 07/2020.

Quattrone, G., Greatorex, A., Quercia, D., Capra, L., & Musolesi, M. (2018). Analyzing and predicting the spatial penetration of Airbnb in US cities. *EPJ Data Science, 7*(1), 31.

Varma, A., Jukic, N., Pestek, A., Shultz, C. J., & Nestorov, S. (2016). Airbnb: Exciting innovation or passing fad? *Tourism Management Perspectives, 20,* 228–237.

Modeling Spatial Attractiveness to Wine Tourism in North Carolina, U.S.A.

Miriam E. Martin and Eric M. Delmelle

1 Introduction

North Carolina's wine industry has grown substantially over the past decade; as of December, 2016, the state was ranked eleven in US wine production and had the highest production of any other state in the Southeast (Wines and Vines 2020). A total of 186 wineries spread over 2300 acres were drawing approximately 1.9 million tourists. That same year, the economic impact of the North Carolina industry was estimated at $1.97 billion but one might find it interesting that the greatest direct impact was not generated from wine sales or tax revenue, but from wine-related tourism. From 2005 to 2013, the number of wine tourists grew 113.9%, from 800,000 to 1,711,000. In 2013, wine tourism generated $48 million in tourism wages and over $257 million in tourism revenue, an increase of 97.5% since 2005 (Frank and Co. LLP 2015). The impact of this revenue is mostly felt in rural areas that have experienced economic decline due to the state's weakening agricultural industries, especially tobacco.

Understanding wine tourists' experiences and the factors affecting their decisions to visit wineries are increasingly important, with implications for the development of the industry, especially for marketing strategies, tourism product development, and infrastructure development (Shoval and Isaacson 2009; Byrd et al. 2016). To further understand motivations and barriers for visitors to North Carolina wineries, this chapter identifies (1) characteristics that explain the attractiveness of a winery and (2) barriers to participating in wine tourism activities. Surveys conducted across

M. E. Martin · E. M. Delmelle (✉)
Department of Geography and Earth Sciences, University of North Carolina at Charlotte, University City Boulevard, 9201, Charlotte, NC 28036, U.S.A.
e-mail: Eric.Delmelle@uncc.edu

M. E. Martin
e-mail: MiriamMartin0523@gmail.com

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_10

different wineries in North Carolina will provide knowledge on demographics, origin locations, trip patterns, and factors influencing tourists to visit wineries.

A spatial interaction model is used to estimate likely wine tourist locations for a given winery—which could inform marketing campaigns and tourist product development. Further, the spatial interaction model enables the visualization of the interactions of wine tourists between their residential locations and the wineries or wine regions they visit. Results from surveys of wine tourists at several North Carolina wineries help calibrate the spatial interaction model. The findings contribute to a better understanding of the dynamics of North Carolina wine tourism.

2 Related Literature and Research Objectives

2.1 Fundamentals of Wine Tourism

Getz and Brown (2006, p. 147) define wine tourism as "simultaneously a form of consumer behavior, a strategy by which destinations develop and market wine-related attractions and imagery, and a marketing opportunity for wineries to educate, and to sell their products directly to consumers". Wine tourism falls into several different categories of "niche tourism," which describes tourism activities where individuals seek out specific experiences.

Wine tourism also falls under the umbrella of rural (small and locally owned), agricultural, or gastronomic tourism (Novelli 2005, 5; Lane 1994; Bruwer 2003). Tourism in rural areas also tends to be specialized, niche tourism that supports other regional interests, as opposed to urban areas where the tourism industry is self-supporting (Lane 1994).

2.2 Characteristics of Wine Tourists

As Hashimoto and Telfer (2003, p. 63) point out, "understanding the differences between winery visitors becomes very important for marketers and winery operators in targeting potential visitors." Those differences, which tend to vary geographically, can include demographics, values, motivations, and barriers; identifying these differences enables those in the industry to determine different types of activities sought out and different ways of marketing a winery. It has been recommended that wine tourist profiles for one place should not be assumed to be reflective of wine tourists in another location (Charters and Ali-Knight 2002; Mitchell et al. 2000, p. 123; Hashimoto and Telfer).

These geographical inconsistencies are reflected in comparisons of wine tourist profiles conducted, not just between countries, but even among states within the United States. For example, the most recent profile of North Carolina wine tourists

indicated that 66.7% lived within North Carolina, while the remaining 33.3% lived in other U.S. states, and there was no report of visitors from international locations. In contrast, a 2014 profile of Napa Valley visitors showed that 12.3% of Napa Valley wine tourists were from places outside of the United States. A further contrast is evident in the incomes of wine tourists—in Calgary, Canada 19.8% of wine tourists make over $160,000; in Napa Valley, California, 32.1% of wine tourists have incomes over $150,000; and in North Carolina, only 13.9% of wine tourists have incomes over $150,000 (Byrd et al. 2012; Destination Analysts 2014; Getz and Brown 2006).

There has also been a shift in the demographics of wine tourists over the past decade. Prior to the millennial generation coming of drinking age, older age was considered to be a fairly reliable predictor of likelihood to consume wine and participate in wine-related tourism activities. However, recent market research has revealed that not only does the younger millennial generation consume more wine than any other generation, but millennials who consume wine are likely to spend more money on a bottle of wine (Franson 2016).

2.2.1 Barriers

Several studies have analyzed wine tourist barriers across different geographies. In general, barriers to tourism are typically segmented into *intrapersonal*, *interpersonal*, and *structural* barriers (Getz and Brown 2006; Marzo-Navarro and Pedraja-Iglesias 2012). *Structural* barriers are recognized as "intervening factors between leisure preference and participation," referring to more concrete and measurable concepts, such as the availability of time or finances, suitability of the climate, family life cycle stage, or availability of an activity (Crawford and Godbey 1987, p. 124). Marzo-Navarro and Pedraja-Iglesias (2012) found that among Spanish wine tourists, time and cost were the most significant barriers to tourism. Further, tourism in rural areas faces different challenges than those faced in touristic urban areas. Transportation infrastructure may affect travel time, as most wineries are located in very rural areas with sparse road networks (Lane 1994).

Time and the availability thereof (time budgets) is arguably one of the most important factors that affect tourists' trip plans (Shoval and Isaacson 2009). Despite wide acknowledgment of the impact of time on tourism activities and tourist movements, its effects have received little consideration in existing wine tourism research.

2.3 Modeling Spatial Attractiveness

The incentives to visit a winery, or "attractiveness" of a winery, coupled with negative effects of increased travel time can be utilized to estimate interactions between wineries and wine tourist origins, as part of a spatial interaction model (SIM). Rodrigue et al. (2013, p. 304) define a spatial interaction model as "a realized movement of people, freight or information between an origin and a destination. It is a

transport demand/supply relationship expressed over a geographical space." In the context of wine tourism, spatial interaction modeling encapsulates the movement of wine tourists to wineries or wine regions. Several spatial interaction models have been developed, such as the Huff model and the gravity model. Although there are some differences in their uses, there are some basic components to spatial interaction models (Fotheringham and O' Kelly 1989; Roy and Thill 2004; Coghlan 2006; Delmelle et al. 2012):

1. Origin location attributes, such as population characteristics, where demand originates
2. Destination location (winery) attributes, such as winery size or attractiveness
3. Friction (e.g., travel time, as an impedance) between the origin and destination
4. Parameters reflecting distance decay and influence of the origin and destination attributes.

There are also three basic assumptions that inform spatial interaction models: intervening opportunities, transferability, and complementarity. When given the choice between two wineries that offer equal benefits, *intervening opportunities* encapsulates the notion that an individual is likely to visit the closest winery. Nevertheless, it is rare to find wineries that offer the same experience. For instance, several winery characteristics may affect attractiveness, ranging from (1) the quality of customer service at a winery (highly personalized and attentive, to lackluster and uninformed, to overly corporate and impersonal), (2) a winery's scenery (typical image of hills covered in vineyards, to a small shop in a strip shopping center, to a large metal warehouse), and (3) wine quality. *Transferability*, also referred to as accessibility, refers to the ease of traveling from one place to another—with greater ease of movement between regions, there is a higher degree of interaction. *Complementarity* refers to the supply—demand relationship between an origin and destination. In the context of wine tourism, transferability may be hampered by poor road connectivity and distant highways, while complementarity is typically reflected as the relationship between wine tourists and the locations that offer the leisure experiences they are seeking.

2.4 Research Objectives

In terms of the geography of wineries and wine tourism, there is a paucity of research that examines the relationships between an individual winery and the likely origins of individuals likely to visit that winery. In North Carolina for example, a winery located in the mountains would not likely attract many visitors from the coast, and vice versa. An additional limitation of existing research is the lack of consideration for travel constraints (as it relates to time budgets), although time has been shown to have considerable effects on tourism planning decisions.

Spatial interaction models provide the ability to identify likely locations of wine tourists for a given winery or set of wineries; this could aid wineries and wine industry

professionals in determining locations of potential wine tourist populations that may not have yet been discovered, and where marketing campaigns could be focused. Using wine tourist survey responses related to time budgets and preferred winery characteristics from wineries across the state, this research aims to determine how winery characteristics affect the attractiveness of a winery, how time budgets affect or limit wine tourism activities, and how those characteristics can inform a gravity-based model to identify areas that are likely to have the highest interactions with a given winery. With those goals in mind, the research questions are as follows:

1. How do regional and winery-specific characteristics affect the overall attractiveness of a given winery?
2. How do limits on travel time constrain wine tourism activities?
3. For day trips, which comprise the vast majority of North Carolina wine-related trips, how can time and winery attractiveness be combined in a gravity model to identify areas that have the highest amount of interaction with a given winery?
4. Which wineries have the highest potential to attract wine tourists, based on proximity to wine tourists and the attractiveness of the winery?

3 Wine Tourism in North Carolina, Methodology and Data

3.1 Wine Tourism in North Carolina

The history of North Carolina's wine industry stretches back to early 1500s, when the Scuppernong grape was first discovered in the Cape Fear River Valley. Over 300 years later, in 1835, Sidney Weller founded Medoc Vineyards, the state's first commercial winery in Halifax County (Taplin and Breckenridge 2008). After continued growth, North Carolina became the top wine-producing state in the country in the 1890′s, with several North Carolina wines winning medals at the 1900 Paris Exposition and the 1904 Louisiana Purchase Exhibition (NC Wine). Five years later, prohibition ended wine production until it was repealed in 1933 (Taplin and Breckenridge 2008, NC Wine) (Fig. 1).

North Carolina's wine industry was slow to come back after prohibition was repealed, especially with the states focus on cash crops like tobacco. The first winery to open after prohibition was Westbend Vineyards, which opened in 1976. In the 24 years between 1976 and 2000, there was very little growth in the industry; only about 25 wineries operated in 2000 (Frank and Co. LLP 2009, 2015). Between 2000 and 2015, the number of wineries in North Carolina grew to over 150, averaging nine new wineries per year. In recent years, North Carolina has ranked within the top ten wine-producing states, and the top five states visited for wine tourism (Wines and Vines, Byrd et al. 2012). The state also currently has four AVAs, including the Haw

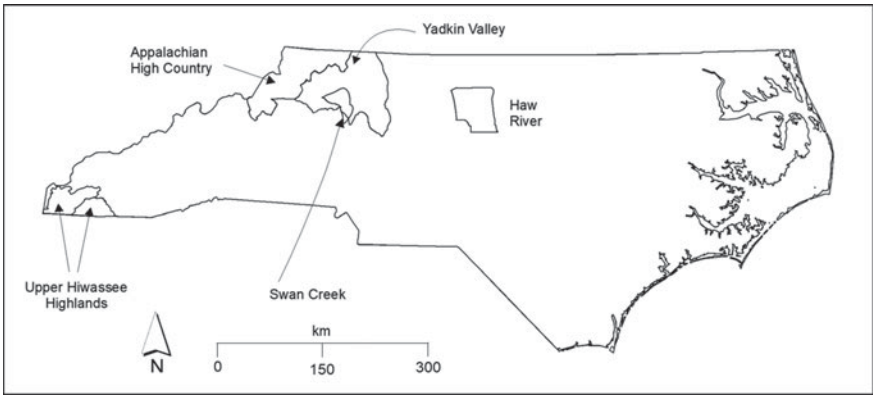


Fig. 1 Geographic extent of the American Viticulture Areas for the state of North Carolina

River Valley AVA, Swan Creek AVA, Yadkin Valley AVA, and the Upper Hiwassee Highlands AVA, which extend into the northern part of Georgia.[1]

Although the industry has grown substantially in recent years, many small and medium-sized wineries still face challenges in development and marketing. As Byrd et al. (2016, p. 19) indicate, one of the industry's major economic development hurdles is its "ability to foster a sustainable revenue base for small and medium wineries." In 2014, the University of North Carolina at Greensboro (UNCG) Bryan School of Business and Economics developed a strategic plan for the state's wine industry (Canziani and Byrd 2014). This plan outlined several strategies for the continued development of the wine industry through 2019. One of the five goals outlined in the plan focused on the development of the overall wine tourism product, aiming to "increase visitation to NC wineries and vineyards, and sales of NC wine and grapes by strategically partnering with state and local tourism and hospitality organizations and efforts" (Canziani and Byrd 2014, p. 17). One of the objectives outlined was to improve the links between wine and the broader notion of tourism within North Carolina, and to improve the links between wine tourism and other local tourism attractions and services. This included identifying "attractions and services that would increase wine tourists' motivation to visit or revisit the wine region" (Canziani and Byrd 2014, p. 18).

It is commonly agreed that customer service at the tasting room is the most significant factor in influencing individuals' decisions to return to the winery or visit other wineries. While that information is useful to winery owners who want to encourage people to return, it leaves out the fundamental issue of attracting first-time visitors. Many wineries rely on tasting room sales and on-site activities to generate revenue. This is especially true of small boutique wineries that lack the product volume necessary to sell their wine through outside retailers; these small wineries

[1] Since the time this research was conducted, the Appalachian High Country AVA has been established as the fifth AVA in the region.

also lack the resources necessary to conduct market research or carry out large scale marketing campaigns that could initially attract visitors to the winery (Dodd 1995; Byrd et al. 2016). For these small wineries, understanding the wine tourists who visit their wineries is important in determining how to properly allocate their marketing budgets.

Several wineries characteristics incentivize individuals to visit wineries within North Carolina; of that customer service was found to be the primary predictor of wine tourists' intentions to return to an individual winery (Byrd et al 2016). Several spatial incentives have also been shown to be important to wine tourists. These include (1) residential proximity, (2) clustering of wineries within an area, (3) the presence of roadway signage, and (4) the presence of other tourism-related features, such as regional attractions, fine dining establishments, and accommodations (Getz and Brown 2006; Frank and Co. LLP 2007; Byrd et al. 2012).

Although time is commonly seen as a constraining factor, there are some characteristics that affect positive perceptions related to time, such as travel time reductions due to close proximity to a winery. When wine tourists intend to visit multiple wineries, clustering of wineries also enables them to maximize the value of time spent in a wine region, potentially creating a greater mass of attractiveness in that region (Getz and Brown 2006). Wineries located near highways and metropolitan areas may also benefit from being more accessible due to reduced travel times to large population centers (Frank and Co. LLP 2007).

The effect of regionality also plays a role in the branding of a wine label and the resultant success of a wine-producing region (Rasmussen and Lockshin 1999; Orth et al. 2005; Bruwer and Johnson 2010). The quality of wine produced in a region is commonly linked with terroir, referring to a set of environmental characteristics that affect the quality and characteristics of wine. In the United States, the regionality of terroir is evidenced by the presence of American Viticulture Areas (AVAs), which are federally recognized grape-growing regions (TTB 2012, p. 2). The AVA designation allows "vintners and consumers to attribute a given quality, reputation, or other characteristic of a wine made from grapes grown in an area to its geographic origin" (TTB 2012, p. 2), and it has been suggested that the official recognition and subsequent branding of these regions can improve the overall perception of a wine-producing region, which can help attract tourists (Bruwer and Johnson 2010; Charters and Michaux 2014; Holland et al. 2014).

3.2 Methodology

Figure 2 summarizes the methodological framework, with the ultimate goal to determine regions with the highest level of interaction. The spatial interaction model is composed of three components, namely destination attractiveness A_j, travel impedance T_{ij}, and origin location attributes S_i. In this chapter, destination attractiveness is calibrated using surveys of day visitors at selected North Carolina wineries

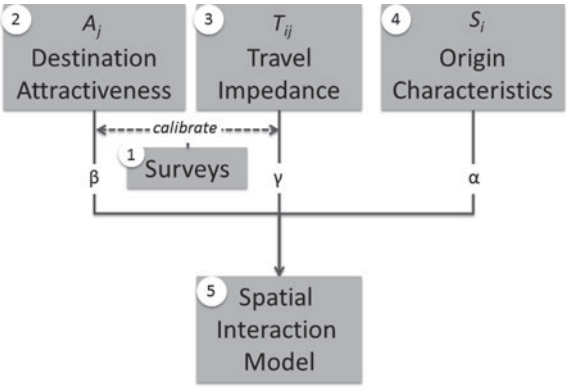


Fig. 2 Overall framework

($n = 7$), while the spatial interaction is implemented for $n = 98$ wineries across North Carolina.

The spatial interaction model includes three components and is specified as follows:

$$G_{ij} = S_i^{\alpha} * A_j^{\beta} * f(t_{ij})^{\gamma} \tag{1}$$

where G_{ij} is the interaction between origin zip code i and destination winery j. S_i is the size of the origin, calculated as number of drinking age residents who have consumed domestic wine within the past 6 months. The attractiveness of a winery, A_j is based on scoring developed from a pair-wise comparison of winery characteristics. The third component, $f(t_{ij})$, is an impedance function reflecting the willingness to travel a certain amount of time or distance, calculated as a functional probability based on empirical evidence from wine tourist surveys. The parameters alpha (α), beta (β), and gamma (γ) govern the importance of each component. The interaction should be interpreted as the relationship between a winery (supply) and its customers (aggregated), but does not have a unit, since the different input factors are each weighted by an exponent. The spatial interaction model is developed in the Python programming environment, while the results visualized in a commercial GIS (ArcGIS 10.3, ESRI).

3.3 Collecting Tourist Characteristics Through Surveys

Currently, there exists no publicly available information linking wine tourists with the destination wineries they visit in North Carolina, let alone providing information on tourist characteristics and preferences. Although there are a variety of methods that have been implemented to gather information pertaining to tourist movements,

Table 1 Geographical characteristics of participating wineries

Winery	Municipality	Near metro	AVA	Urban
1	Leicester	Asheville	No	Urban
2	Andrews	N/A	Yes	Rural
3	Gibsonville	Burlington	Yes	Urban
4	Tryon	Hendersonville	No	Rural
5	Mill Springs	Hendersonville	No	Rural
6	Ronda	Statesville	Yes	Rural
7	Monroe	Charlotte	No	Urban

such as self-administered trip diaries, these methods are expensive (O'Connor et al. 2005).

For this chapter, a survey questionnaire was developed to capture (1) demographics, including age and income and place of residence (at the ZIP code level); (2) wine preferences (including preference for dry or sweet wines); (3) trip characteristics (including frequency of wine-related trips and the number of wineries typically visited); (4) time budgets for weekend day trips, overnight trips, and weekday trips; (5) perceived barriers, such as time and cost; and (6) Likert-style matrices indicating which features were most important to wine tourists' decisions to visit a given winery.

As part of the university Institutional Review Board (IRB) requirements, any surveys conducted at locations outside of university property required written permission from business owners.[2] Wineries were segmented according to AVA membership and geographic location and were contacted in groups according to their location. All North Carolina wineries that operate tasting rooms were contacted by phone or email, but the majority did not respond or declined to participate.

A total of seven North Carolina wineries offered their permission to conduct surveys at their wineries located in Mill Springs, Leicester, Andrews, Monroe, Ronda, Gibsonville, and Tryon (Table 1 and Fig. 3).

3.4 Estimating Attractiveness (A_j)

Given that wine tourism is still in its infancy in North Carolina, there is very little information that is free and publicly available on its wineries, and there tends to be inconsistencies in some of the data that is currently available to the public. Secondary winery data was obtained from online business review sites including TripAdvisor, Yelp, Facebook, NCWine.org, and Google (A detailed list of data sources is available in Table 2).

[2] Protocol #15-09-10 was approved by the Institutional Review Board at the University of North Carolina at Charlotte on September 10, 2015.

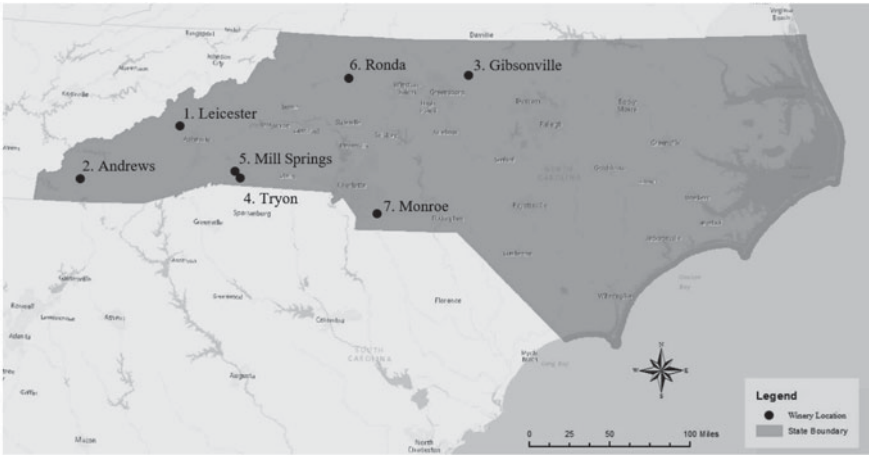


Fig. 3 Location of participating wineries

A total of 124 wineries were identified as potentially operating tasting rooms; of which only 98 had complete information necessary to calculate attractiveness scores (Fig. 4).

The attractiveness score for each winery (A_j) is estimated as a composite indicator:

$$A_j = \sum_j (w_j * Att_j) \tag{2}$$

where w_j is the weight given to a particular winery characteristic, and Att_j is the value of that characteristic. Weights are determined using a pair-wise comparison matrix, with the magnitude of the weights estimated from Likert-style survey responses, indicating whether a given characteristic was "Not Important at All," "Slightly Important," "Moderately Important," "Important," or "Extremely Important (Required)." The reliability of that scale is verified with a Cronbach's alpha (α) of 0.805. Assuming that the importance of winery-specific and regional characteristics that motivated their current trip would weigh more heavily on their ranking of the characteristics that are important, the weights for individual winery characteristics were determined separately for first-time (FT) day trips and repeat (RV) day trips.

For each survey response, the importance of an individual characteristic was assigned different weights based on the perceived level of importance (Likert scale: 5 = Extremely Important, 1 = Not Important at all). For each pair of characteristics, the weighted values of each survey response were subtracted from one another and averaged for a score, as follows:

$$\overline{D} = \frac{\sum_i (Y_{i1} - Y_{i2})}{n} \tag{3}$$

Table 2 Winery characteristics and scoring

Characteristics	Score	Definition	Source
Winery experience	0–41	Percentage of the range of online ratings	TripAdvisor
Winery tour	0	Does not offer winery tours	VisitNC
	7	Offers winery tours	
Public events	0	No public events	Facebook
	2	Occasional public events	
	5	Regular public events	
Cost	2	N/A or $$$$	Facebook, Yelp
	4	$$$	
	6	$$	
	8	$	
Specials and discounts	0	Does not offer discounts to general public	Groupon, LivingSocial
	6	Offers discounts to general public	
Snacks	0	Small to no selection	VisitNC, Facebook,
	4	Medium selection	Winery websites,
	8	Large assortment of food items, snack bar, and/or restaurant	
Proximity to other wineries	0–8	Number of wineries within 45 min, with a maximum of 8	
AVA Affiliation	0	Not affiliated with an AVA	NCWine, VisitNC
	2	Affiliated with an AVA	
Non-urban location	0	RUCA Code <4	USDA RUCA codes
	6	RUCA Code ≥4	
Roadway signage	0	No official roadway signage	NCDOT connect
	9	Official roadway signage	

where $\overline{D}$ is the mean of the differences between the winery characteristics, Y_{i1} is the weight attributed to one winery characteristic for response i, Y_{i2} is the weight attributed to a second characteristic, and n is the total number of surveys, where people ranked both responses and the importance of each characteristics according to the $\overline{D}$ values in Table 3. The resulting $\overline{D}$ values ranged between -1.97 and 2.10.

The remaining characteristics used to calculate attractiveness scores included quality of customer service, quality of wine, quality of scenery, the presence of roadway signage, availability of snacks, cost, availability of discounts, whether a winery offers special events, regional affiliation, whether it was located in outside

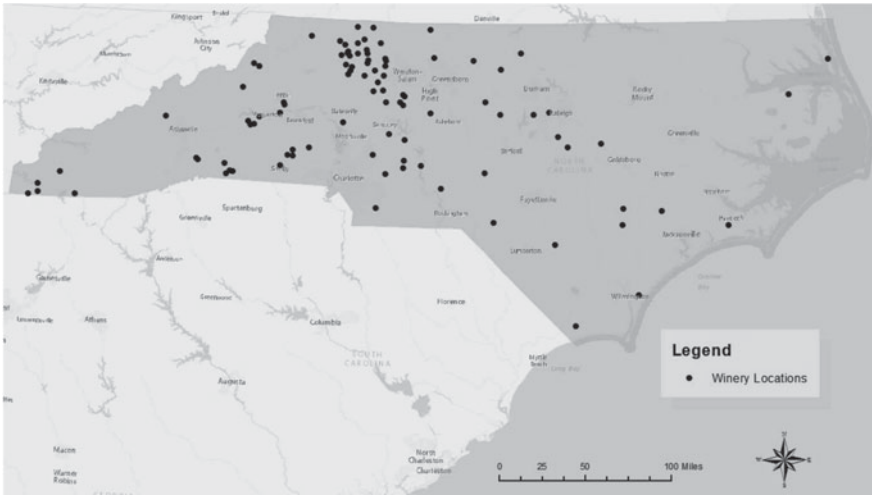


Fig. 4 Winery locations for which attractiveness scores were estimated ($n = 98$)

Table 3 Mean difference weights for pair-wise comparison

$\bar{D}$	Importance	Y_{i1} Weight	Y_{i2} Weight
1.21 or higher	Much more important	2	0
0.41–1.20	Slightly more important	1	0
0.40 to −0.40	Equally important	1	1
−0.41 to −1.20	Slightly less important	0	1
−1.21 or higher	Much less important	0	2

of an urban area, proximity to other wineries, and availability of winery tours. First-time visitors would not have prior experiences at a winery that would inform the quality of customer service, wine, or scenery; in this instance, winery reviews were used, as these would be the most likely resource to determine what to expect in terms of the quality of the experience. The weights of wine quality (C), customer service (D), and scenery (F) were combined to create a maximum possible score of 41 points reflecting the expected quality of the entire winery experience and will be referred to hereinafter as the "Winery Experience." Based on the results from the pair-wise comparisons, attractiveness scores were attributed to each winery based on the attributes from Table 2, and the scores ranged from 33.92 to 84.59 out of a maximum of 100 possible points.

3.5 Travel Time Impedance (T_{ij})

The MapQuest directions Application Programming Interface (API) was used to gather information pertaining to travel times and distances required for each trip (Delmelle et al. 2019) and create shapefiles of routes that were likely to have been taken between an origin and the destination(s) for a trip. Survey respondents provided ZIP codes corresponding to their homes addresses, which were then utilized to calculate travel times to the wineries they visited. MapQuest uses the Dijkstra algorithm to find the route between origin and destination that required the shortest amount of driving time or distance, depending on the impedance metric. Although the routes created from this API may not reflect the exact routes taken by wine tourists, they provide a general idea of routes that people are most likely to take when traveling to, from, and between wineries.

3.6 Origin Populations (S_i)

Although survey respondents were asked to provide information about their age and other demographic characteristics, they were not asked to report any other demographic characteristics that may have indicated a likelihood of participating in wine tourism. Aligning with recent research, we hypothesize that an increase in age or income was not necessarily an indicator of likelihood to consume wine or participate in wine tourism activities.[3] Through survey responses, a variety of other wine tourist characteristics were reviewed, and it was found that approximately 95% of respondents preferred domestic wines or had no preference for the origin location. With such a high degree of commonality across wine tourists, regardless of income, age, or other characteristics, one of the assumptions of this model is that individuals who enjoy domestic wines are more likely to participate in wine tourism activities.

The percentage of people who drink domestic wine was available by ZIP code through SimplyMap, which provides a variety of market research data from SimmonsLocal and other similar sources. Due to a lack of other measures of populations who would participate in wine tourism, S_i was calculated as follows:

$$S_i = p_i * w_i \tag{4}$$

where p_i is the drinking age population in ZIP code *i,* obtained from the U.S. Census Bureau, and w_i is the percentage of people who consume domestic wine in ZIP code *i,* obtained from SimplyMap.com. ZIP Code populations for those consuming wine in the past 6 months are illustrated in Fig. 5, showing high populations of domestic

[3] It is important to note that, although higher levels of educational attainment are associated with wine consumption, educational attainment was not measured in the survey and therefore poses a considerable limitation on identifying the relationship between wine tourism activities and educational attainment.

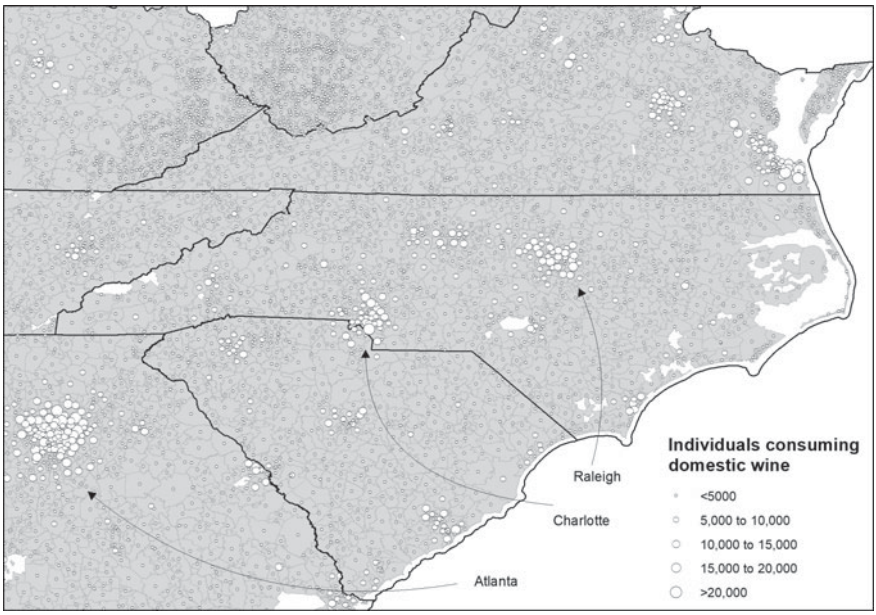


Fig. 5 Population consuming wine (2015) at the zip code level

wine consumers in urban areas throughout the region. The population of each origin ZIP code p_i was calculated according to the drinking age population or those over the age of 21.

4 Results

A total of $n = 283$ surveys were conducted from September to November 2015 at the seven wineries mentioned earlier. We now present descriptive statistics from those surveys as well as the results from the spatial interaction model.

4.1 Winery Attractiveness

There were several differences in the characteristics valued by first-time (FT) versus repeat visitors (RV) (see Table 4).[4] For all winery day trips, the most important winery characteristics were customer service (19%), wine quality (19%), and scenery (11%),

[4] Since the attractiveness of a winery depends on previous experiences at that winery, for which information is not made available, these trips are not modeled yet it is important to note that there are differences in what attracts FTs versus RVs.

Table 4 Weighting results from pair-wise comparisons for FT and RV day trips

	First-time visitors		Repeat visitors	
Characteristic	PWC score	Percent of total score (w_j) (%)	PWC score	Percent of total score (w_j) (%)
Quality of customer service	19	19	19	21
Quality of wine	11	11	15	17
Quality of scenery	11	11	10	11
Roadway signage	9	9	9	10
Cost	8	8	4	4
Snacks	8	8	8	9
Proximity to other wineries	8	8	7	8
Winery tour	7	7	4	4
Non-urban location	6	6	6	7
Specials and discounts	6	6	1	1
Public events	5	5	4	4
AVA affiliation	2	2	2	2
Total	100	100.0	89	99.6

all of which pertain to the quality of the experience. This was consistent across first-time day trips and repeat day trips. However, wine quality and customer service were more important to repeat visitors whereas discounts (e.g., Groupon), cost, and public events were more important to first-time visitors. This is consistent with findings from Byrd et al. (2016), which also suggested that the experience at the winery, especially customer service, was a strong predictor of intention to return to a winery. Since repeat visitors place more value on experiential factors such as customer service, this indicates that people may be more influenced to return to a winery if they were provided good customer service and good quality wine. Another difference found between first-time and repeat visitors was that first-time visitors seem to need some incentive to visit a winery; if they enjoy their initial experiences, this could incentivize them to return.

The next most important characteristic was road signage but there were several other relevant issues pertaining to navigating to wineries. The availability of foods to accompany wine and proximity to other wineries was consistently ranked as the third most important by both FT and RV groups. Affiliation with a known wine region was among the least important for both types of visitors. However, AVA affiliation can indicate that there is a cluster of wineries so, although the affiliation may not be important to wine tourists, the proximity to other wineries is.

The presence of an on-site restaurant, accommodations nearby, and participation of a winery in a wine trail was that all found to be unimportant to the clear majority

of day tourists and was not included when estimating attractiveness. Wine tastings, although important to survey respondents, are a consistent feature across all wineries studied and were also removed. Proximity to home was not considered to be important and, although travel time was moderately important, these characteristics were also removed as they would be accounted for in a separate part of the gravity model.

Although time was the most common perceived barrier to visiting wineries, when asked about difficulties they actually experienced during their trip, 14% of the respondents reported that "Lack of familiarity with the area" caused difficulties, followed by 7% that said lack of signage was a problem, and 6% that said confusing directions were a problem. Only about 38 North Carolina wineries have official highway signage erected by the North Carolina Department of Transportation (NCDOT) and several winery owners indicated that their lack of highway signage was due to the high setup cost. Outside of temporal barriers and navigational difficulties, 6% said that lack of transportation or lack of childcare presented additional barriers. Less than five percent of respondents suggested that drunk driving or inclement weather were attenuating factors.

4.2 Travel Impedance

Based on the results from the surveys, it was evident that time can play a pivotal role in determining which wineries to visit, and that there were several important considerations to be made regarding travel time impedance. Approximately, 65% of survey respondents indicated that the amount of time to travel prevented them from visiting wineries. The vast majority of the respondents (94%) also indicated that for a weekend day trip, they would be unwilling to drive more than three hours to a winery or wine region. When asked about the maximum amount of time they would be willing to spend driving to wineries for a day trip, the vast majority (94%) indicated that they would be unwilling to drive more than three hours. Maximum travel times indicated in the surveys, as well as actual travel times are reported in Fig. 6.

Though 36.2% of survey respondents indicated that they would be unwilling to visit wineries during the week, 33.3% indicated that they would be willing to drive up to 30 min during the week, and an additional 14.8% indicated they would be willing to drive up with an hour. Many wineries do not open their tasting rooms during the workweek, which could be the result of not having adequate weekday demand from local populations to justify staffing a tasting room during the week. However, this suggests that wineries located within 30 min of large population centers may have more potential to generate revenue during the week.

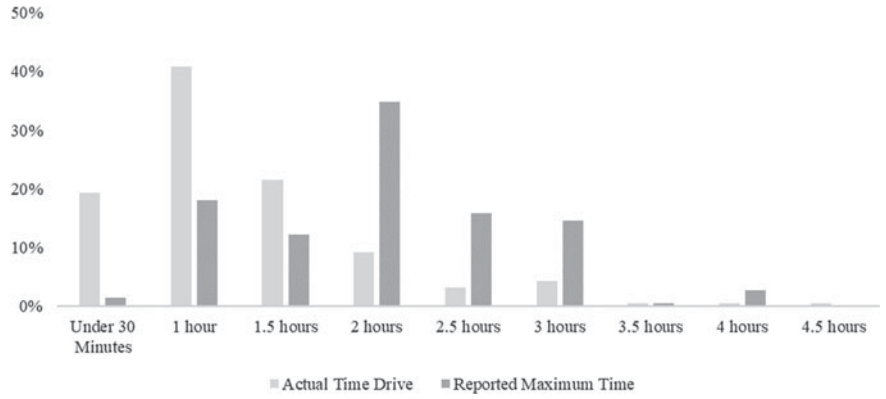


Fig. 6 Actual time driven and reported maximum time driven for day trips

4.2.1 Difference in Travel Impedance for Rural and Urban Visitors

Further, review of survey responses revealed substantial differences in travel times for winery visitors originating from urban and rural areas, where urban residents were willing to travel longer distances than individuals living in rural areas; travel time frequency distributions are displayed in Fig. 7. Travel time distributions were explored separately for urban and rural groups, informing travel time probabilities for each group. For the gravity model, values of $f(t_{ij})$ were based on a functional probability from empirical evidence, representing the probability of traveling a certain distance to wineries.

Due to the distribution of travel times being skewed toward lower values, as seen in Fig. 6, travel times were normalized using the natural log of travel time. The probability of driving a certain distance was obtained by calculating z-scores and their respective probabilities from the natural log of the travel times. Z-scores were multiplied by -1 so that the probabilities of driving farther were lower instead of higher, with the full z-score calculation as follows:

$$f(tij) = p(\ln(x)) = P(z) = P\left(-1 * \frac{x - \mu}{\sigma}\right) \tag{5}$$

where x is the natural log of the travel time, μ is the average of the natural log of the travel times for each respective group, and σ is the standard deviation of the natural log of the travel times for each respective group. The different means and standard deviations for the z-scores, based on rural and urban origin location classifications, are found in Table 5. By calculating $f(t_{ij})$ in this way, a lower probability reflects a higher impedance, and a higher probability reflects a lower impedance. For example, for rural residents a travel time of 45 min generates a z-score of -0.40, or a 34% probability that they would drive that far; for urban residents, a travel time of 45 min generates a z-score of 0.41, or a 66% probability that they would drive that far (Fig. 7).

Table 5 Mean (μ) and standard deviation (σ) for z-score calculations

Location type	RUCA code	μ	σ
Urban	1.0–3.9	4.04	0.567
Rural	4.0 or higher	3.33	1.195

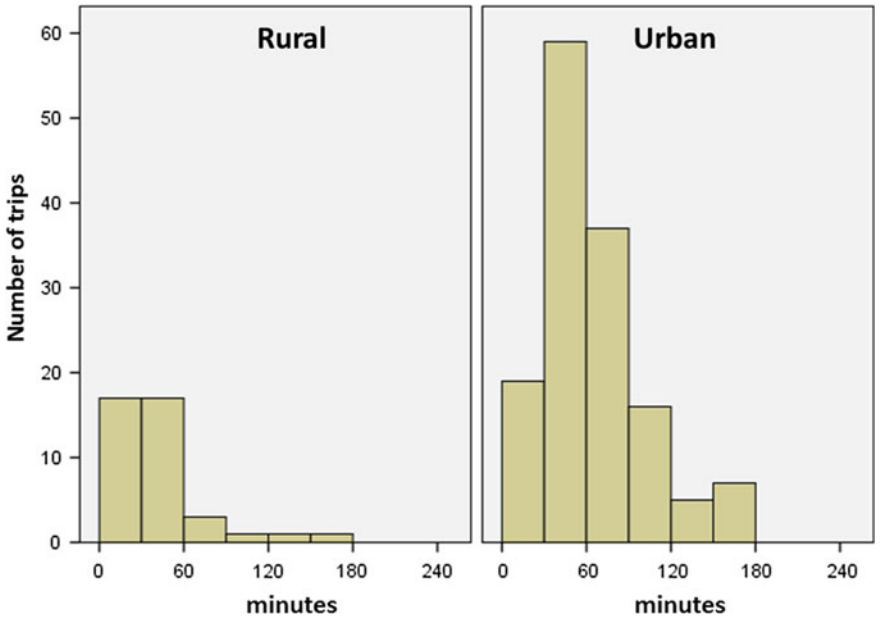


Fig. 7 Actual drive time for rural and urban winery visitors

Tourists from rural areas also indicated that proximity to wineries, and thus, travel time was more important than they were for urban visitors. Informal conversations conducted during the surveys revealed that rural residents living in close proximity to wineries they had visited earlier preferred to return to the same wineries. Aligning with that notion, almost all wineries ranked as the top attraction within their respective municipalities so people living in rural areas near wineries may prefer to visit the wineries near their residential location, not explicitly searching out wine tourism activities, but simply seeking out leisure opportunities available in the surrounding area. Due to the higher strength of the relationship between local rural areas and the tendency of those in urban areas to drive further, travel time distributions were evaluated separately for visitors from urban areas and visitors from rural areas.

4.2.2 Difference in Travel Impedance by Winery

Further, comparisons of winery visitors from urban versus rural areas revealed some differences that are noteworthy. Very few individuals visited wineries from rural areas, and the majority (85%) visited from locations within an hour of the winery they visited. Of the 146 visitors from urban areas, most drove between 30–90 min.

As indicated in Fig. 8, there were considerable differences in the amount of time traveled to each winery, some of which can be explained by the proximity to major metropolitan areas. For example, the winery located in Monroe (7) is very close to the city of Charlotte and appears to attract a high number of visitors from the nearby Charlotte metropolitan area, but few from outside of that area. The wineries located in Tryon (4) and Mill Springs (5) both seem to attract as many locals (within 30 min) as those from 60, 90, and 120 min away, indicating a moderately strong but lasting attraction. The wineries in Gibsonville (3) and Ronda (6) have small attractions to locations nearby, but strong attractions to those that are moderately far (30–90 min). The winery in Leicester (1), although located near highly touristic Asheville, received fewer day trip visitors than any other winery. Many of the survey respondents who visited this winery were overnight visitors, which could result from the appeal of the entire Asheville area.

For wineries located near large population centers such as Charlotte, the Piedmont Triad, or the Research Triangle areas, there are some considerable differences reflected in the 2015 populations within 30, 60, 90, and 120 min (see Table 6). The winery in Andrews, being located in a much more rural area than any other winery, has much smaller populations within each time budget than any other wineries. Conversely, the population of people within 30 min of the winery in Monroe is four

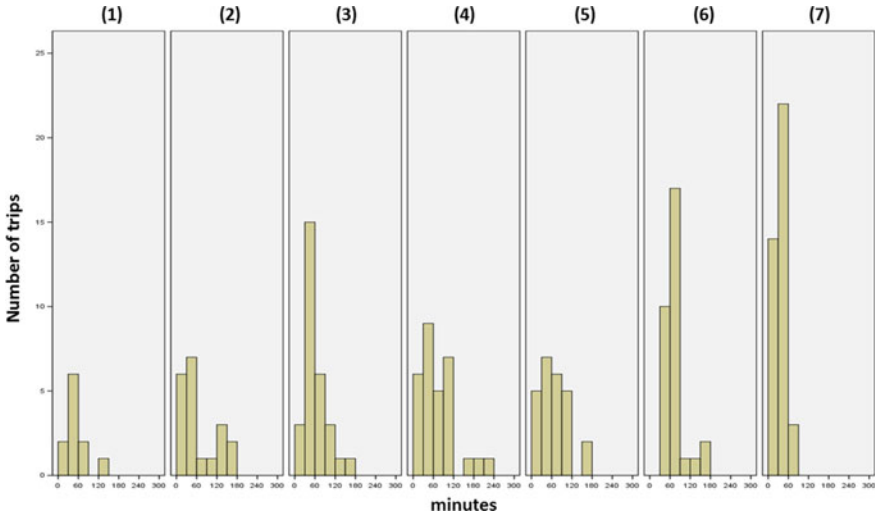


Fig. 8 Day trip travel times by winery (number in bracket denotes the winery)

Table 6 Population within given travel time

Winery	Municipality	30 m	60 m	90 m	120 m
1	Leicester	53,311	252,298	643,902	1,879,537
2	Andrews	6,943	65,256	188,735	777,521
3	Gibsonville	55,175	746,902	2,047,359	3,333,035
4	Tryon	77,310	745,522	1,674,768	3,603,310
5	Mill springs	77,299	729,471	1,636,943	3,532,131
6	Ronda	21,098	388,169	1,955,888	3,420,884
7	Monroe	309,103	1,291,121	2,101,632	3,848,840

times larger, due to the proximity to Charlotte. Although the local populations vary considerably within the 30 and 60 min ranges, most wineries seem to have relatively equal populations within 90 min, with the exception of the wineries in Leicester and Andrews.

As the winery in Andrews is located in an isolated rural area, it would not be as easily accessible from most urban areas but there seems to be a strong connection to locals who visit it from within 30 min and up to 60 min. The winery in Ronda, located in the Yadkin Valley AVA, is easily accessible by interstate highways, which could significantly reduce travel times; most individuals who enjoy that winery seem to visit it from 61–90 min than any other group. This 90 min radius reaches several major metropolitan areas including the Piedmont Triad region and the majority of the city of Charlotte.

4.3 Gravity Model

One of the benefits of the spatial interaction model lies in its ability to create different scenarios by changing the exponent parameters (α), (β), and (γ). We illustrate the behavior spatial interaction model under different scenarios to gain insight on its sensitivity. Further, the results are mapped for the wineries located in Ronda and Monroe. These wineries are selected due to their location; rural and close to an urban area, respectively, and their attraction score (Monroe: 60.71 and Ronda: 80.71). To align with observations from winery visitors, the gravity model is adjusted so that only locations within three hours are considered as possible wine tourist locations. ZIP codes outside of this radius are assumed to be unlikely to produce day visitors.

4.3.1 Scenario 1: $\alpha = 1, \beta = 1, \gamma = 1$

This scenario gives equal weight to each component of the model. Results indicate that for most wineries, stronger interaction values are obtained for nearby urban areas rather than rural areas, even in cases where rural areas are closer by. This is a direct

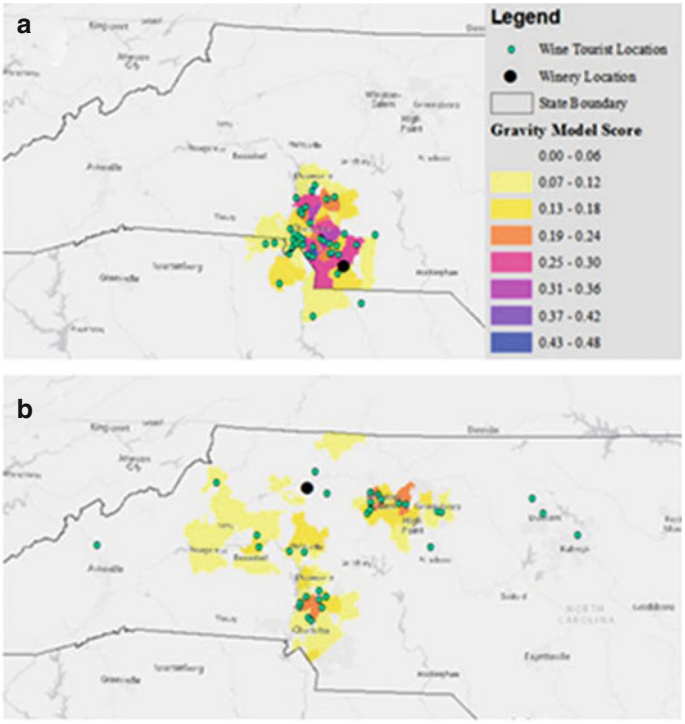


Fig. 9 Scenario 1 for Monroe winery in (**a**) and Ronda winery in (**b**)

effect of the importance of the push factor S_i since the majority of winery visitors reside in urban regions. An example illustrating this behavior is the winery located in Monroe, which had a much stronger connection to regions within or near the city of Charlotte (Fig. 9a), but the interaction, although strong nearby, did not extend to areas outside of the Charlotte region.

The winery in Ronda (Fig. 9b), however, had a comparatively weak interaction with locations in Charlotte but the interactions were more widespread. This model, with the parameters indicated here, may not accurately portray interactions between these and the origin locations of those who visited them.

4.3.2 Scenario 2: $\alpha = 0.0001$, $\beta = 2$, $\gamma = 1$

The results from Scenario 2 dramatically decrease the importance given to the population S_i, while the exponent regulating the importance of the winery attractiveness remains at 2. The effects of exponentiating the population to 0.0001 resulted in a similar attraction across large urban populations and small rural populations, which is not characteristic of the differences in interactions between urban and rural populations that were observed in the survey results.

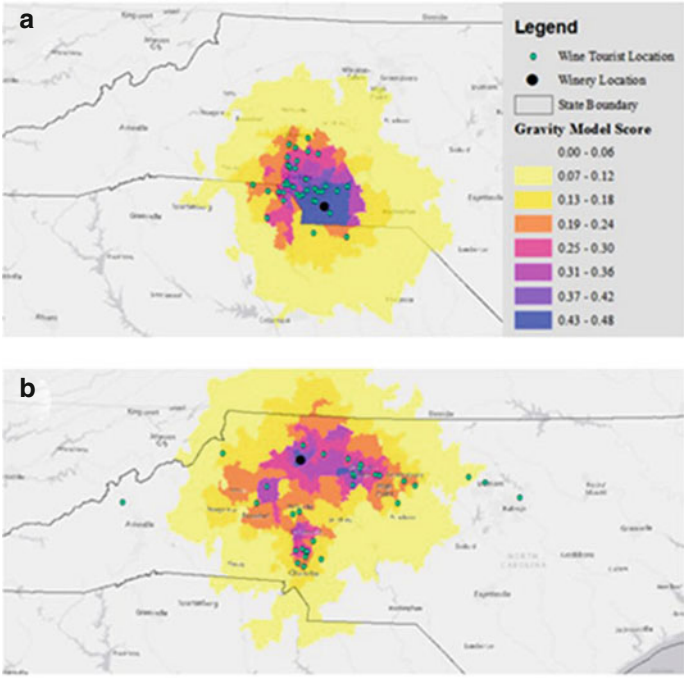


Fig. 10 Scenario 2 for Monroe winery in (**a**) and Ronda winery in (**b**)

For the winery in Monroe, the results from this model show an interaction across the surrounding area that appears to be merely a function of distance (concentric pattern), suggesting that nearby areas have stronger interactions, whereas survey results showed that areas within Charlotte, as well as between the winery and Charlotte, had stronger interactions (Fig. 10a). Decreasing the value of alpha (α) revealed low interactions between the city Charlotte and the winery in Ronda (Fig. 10b), but important interactions along the Wilkesboro-Winston-Salem corridor along highway 421 and further extending to Greensboro through Interstate 40. Although decreasing the value of alpha was a step in the right direction, the value of 0.0001 may be too low to reflect actual patterns in wine tourist origin locations, especially when comparing the interactions between urban and rural locations.

4.3.3 Scenario 3: $\alpha = 0.5, \beta = 2, \gamma = 1$

The resulting gravity model values for Scenario 3 provided a slight improvement on Scenario 2 in that there was more weight given to the population component of the model. For the winery in Monroe, it also resulted in values that did not seem to rely so much on distance decay values. Higher levels of interaction were observed for areas within Charlotte that are closest to the winery; these areas produced high

numbers of wine tourists for the winery in Monroe. For the winery in Ronda, there were some visitors from the Durham and Raleigh areas that were not accounted for in this model, indicating that the interactions modeled here do not reach as far as the real interactions taking place between the research triangle area and the winery in Ronda.

4.3.4 Scenario 4: $\alpha = 0.5, \beta = 2.0, \gamma = 0.5$

As a further adjustment to the model in Scenario 3, the gravity model values generated using the parameters in Scenario 4 seem to most adequately model the interactions observed from the survey results for both wineries (Fig. 11). Where the Scenario 3 model failed to attract visitors in some areas for the winery in Ronda; the model in Scenario 4 encapsulates these locations, and for the most part, higher and lower gravity model score values correspond with higher and lower numbers of winery visitors determined from surveying wine tourists.

The clustering of winery visitors to the winery in Monroe remains around the Charlotte area and does not extend much further outside, while for the winery in

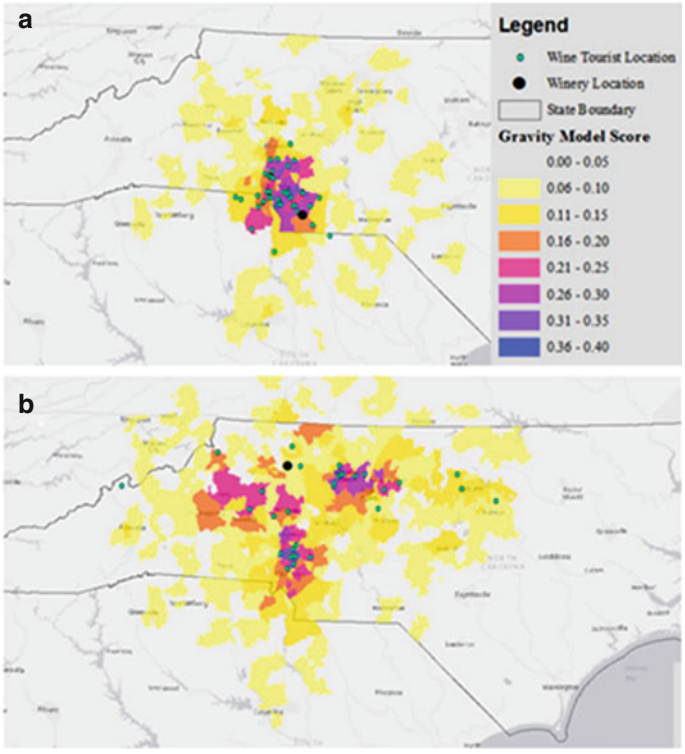


Fig. 11 Scenario 4 for Monroe winery in (**a**) and Ronda winery in (**b**)

Ronda, the model captures wine tourists visiting from much more distant regions. For the winery in Monroe, there are several more areas extending further from the immediate Charlotte region that did not have high enough scores, but are now visible with Scenario 5. However, this model still indicates that the highest interactions are within the Charlotte region, but also that other areas such as Boone, Winston-Salem, Greensboro, Hickory, and Morganton may also have small levels of interaction with this winery.

5 Conclusions

There are several winery characteristics that can affect wine tourists' decisions to visit wineries, the most important of which pertain to the quality of the experience at a winery including customer service, wine quality, and attractive scenery. The findings align with previous research suggesting that positive experiences at a winery could influence visitors to return to a winery. First-time visitors place more importance on winery characteristics that incentivize their visit, such as the availability of promotions or discounts (e.g., Groupon), and the availability of public events like concerts, which enable them to maximize the value of their time at that winery. The presence of winery clusters serves a similar purpose; in that individuals can maximize the value of their time in a region when they are able to visit multiple wineries within a relatively short time frame.

The findings also highlight some of the significant differences between wine tourists from rural versus urban locations and their interactions with wineries, specifically (1) a strong correlation between individuals living in urban areas and winery visitation—the majority of wine tourists originate in urban areas, and (2) the willingness for urban residents to overcome greater travel impedances than individuals living in rural areas, who prefer visiting nearby wineries. The combination of these characteristics indicates that those from rural areas tend to patronize wineries as local regulars who are simply interested in leisure activities. For these individuals, it is possible that wineries simply serve as easily accessible leisure activities in areas that are characteristically undeveloped, especially in tourism.

In terms of barriers, lack of time was reported as the most common perceived barrier to visiting wineries; this aligns with findings from other studies, showing that time and the availability thereof is one of the most influential factors affecting tourists' trip plans (Shoval andIsaacson 2009; Marzo-Navarro and Pedraja-Iglesias 2012). Survey responses indicated that most individuals are not willing to travel more than three hours to a winery for a weekend day trip, and many would not drive more than an hour during the week.[5] In fact, 36% would not visit wineries during the week at all. This research also indicates that although time can constrain areas that

[5] Some wineries have begun to use satellite tasting rooms, which are tasting rooms located outside of the winery's property, and usually closer to large population centers. Doing so may substantially decrease travel times, and make the tasting room more accessible. However, doing so may also

individuals are willing to visit; there are other factors that can aid or deter access to wineries once within a given wine region. Several individuals reported that they had issues navigating to wineries, including lack of signage and poor GPS directions. Currently, only 38 wineries have official NCDOT highway signage. In addition to providing navigational aid, these signs could also serve to attract travelers passing through the area.

The combination of travel time constraints, the attractiveness of a winery, and proximity to urban populations appear to affect the spatial interactions of a tourist with a winery. Understanding the different dynamics of spatial interaction should aid in identifying potential populations of wine tourists for a given winery. This contributes to a better understanding of the differences in potential wine tourist markets across the state and helps identify areas where the advertisement of wine tourism products could generate higher levels of visitation and, subsequently, higher revenue. Wineries that can attract first-time visitors and provide them with quality experiences which have greater potential to generate more revenue from these visitors through repeat visits, including overnight visits. Several studies have reached similar conclusions regarding first-time visitor experiences, and the potential to increase business via positive word of mouth resulting from positive experiences at a winery (Dodd 1999; Alant and Bruwer 2010).

5.1 Limitations

This study relied on a few assumptions and limitations that may affect the validity of the proposed approach. One considerable limitation of this research was the inability to obtain winery owners' permission to conduct surveys on their premises. It would have been helpful to obtain survey responses from other locations throughout the state, especially locations where there are small clusters, such as near Albemarle and the Uwharrie mountains, east of Charlotte where there are about seven wineries. Other areas of interest where there were multiple wineries include the Hickory area, the Albemarle area, the Lexington area, and the northwest corner of the state, where several wineries have petitioned for the establishment of an AVA. Though there are only a few wineries near the coast, obtaining survey responses from this area could have also been helpful for those wineries, but it is unlikely to see much winery growth or wine tourism growth in that area due to environmental characteristics. Second, the surveys were based on a convenience sample; the validity of our results may be biased as we move further away from sample locations, or as we try to apply a similar gravity model to regions with a different spatial distribution of wineries and customers. In other words, uncertainty of our findings will increase away from existing samples. Third, we estimated parameters from seven wineries selected from a set of 98 wineries; 26 wineries did not have complete information to calculate an

remove some benefits that people seek, such as the scenery, and ability to get away from urban areas.

attractiveness score. Wine tourist profiles for one place should not be assumed to be reflective of wine tourists in another location. As such, our findings should be taken with caution and may (or may not) be applicable to these 26 wineries.

5.2 Future Research

In the future, it would be helpful to be able to understand effects of the greater tourism superstructure in attracting wine tourists, especially overnight tourists who would spend considerably more money on activities outside of wineries (e.g., hotels, restaurants, and other regional attractions). As a highly used travel resource, TripAdvisor could provide a wealth of information about tourism experiences in specific areas, such as ratings, reviews, business characteristics, and recommendations, but the company does not provide access to this information for academic purposes. Providing access to this resource could significantly aid tourism research and development not just for wine tourism, but for other tourism industries as well.

We suggest that our data could be used to further describe the interaction between customers and wineries, such as the competing destination models. Finally, it is likely that our results could be used to inform an optimization-based model; for instance, a winery located too far from a large metropolitan area may not receive visitors from that city (visitors were sensitive to a maximum of three hours drive time during the weekend); additionally, a winery will likely benefit from the competition of nearby wineries since visitors tend to visit more than one winery at a time. This could aid wineries and wine industry professionals in determining locations of potential wine tourist populations that may not have yet been discovered, and where marketing campaigns could be focused.

References

Alant, K., & Bruwer, J. (2010). Winery visitation sets: Intra-regional spatial movements of wine tourists in branded regions. *International Journal of Wine Business Research, 22*(2), 191–210.

Bruwer, J. (2003). South African wine routes: Some perspectives on the wine tourism industry's structural dimensions and wine tourism product. *Tourism Management, 24*(4), 423–435.

Bruwer, J., & Johnson, R. (2010). Place-based marketing and regional branding strategy perspectives in the California wine industry. *Journal of Consumer Marketing, 27*(1), 5–16.

Byrd, E. T., Canziani, B., Hsieh, Y.-C., Debbage, K., & Sonmez, S. (2016). Wine tourism: Motivating visitors through core and supplementary services. *Tourism Management, 52,* 19–29.

Byrd, E. T., Canziani, B., Keith, D., & Y.-C. J. Hsieh, Debbage, D. (2012). *Study of Visitors to North Carolina Wineries*. https://www.uncg.edu/bae/or/NC-Winery-Visitor-Tourism-Study-Final-Report.pdf.

Canziani, B., & Byrd, E. T. (2014). *Strategic plan: North Carolina wine and grape industry*. https://www.uncg.edu/bae/or/WINESTRAT-Final-Report-2014.pdf

Charters, S., & Ali-Knight, J. (2002). Who is the wine tourist? *Tourism Management, 23*(3), 311–319. https://doi.org/10.1016/S0261-5177(01)00079-6

Charters, S., & Michaux, V. (2014). Strategies for wine territories and clusters: Why focus on territorial governance and territorial branding? *Journal of Wine Research, 25*(1), 1–4.
Coghlan, I. (2006). Gravitational theory: A consumer behavior perspective. *International Journal of Business and Society, 7*(2), 108–118.
Connect NCDOT. *Business partner resources.* www.connect.ncdot.gov.
Crawford, D. W., & Godbey, G. (1987). Reconceptualizing barriers to family leisure. *Leisure Sciences, 9*(2), 119–127. https://doi.org/10.1080/01490409109513147
Destination Analysts. (2014). Visit Napa Valley: 2014 Napa Valley visitor profile report of findings.
Delmelle, E. M., Li, S., & Murray, A. T. (2012). Identifying bus stop redundancy: A gis-based spatial optimization approach. *Computers, Environment and Urban Systems, 36*(5), 445–455.
Delmelle, E., Marsh, D., Dony, C., & Delamater, P. (2019). Travel impedance agreement among online road network data providers. *International Journal of Geographical Information Science, 33*(6), 1251–1269.
Dodd, T. H. (1995). Opportunities and pitfalls of tourism in a developing wine industry. *International Journal of Wine Marketing, 7*(1), 5–16.
Dodd, T. H. (1999). Attracting repeat customers to wineries. *International Journal of Wine Marketing, 11*(2), 18–28.
Fotheringham, A., & O'Kelly, M. E. (1989). *Spatial interaction models: Formulations and applications* (Vol. 5). Kluwer Academic Pub.
Frank, R., & Co. LLP (2007). *Assessment of the profitability and viability of Virginia wineries* . https://leg2.state.va.us/dls/h&sdocs.nsf/By+Year/HD372007/%24file/HD37.pdf.
Frank, R., & Co. LLP (2009). *The economic impact of North Carolina wine and wine grapes*. https://www.nccommerce.com/Portals/8/Documents/Research/Other/NorthCarolinaWineEconomicImpactStudy2009.pdf.
Frank, R., & Co. LLP (2015). *The economic impact of North Carolina Wine and Wine Grapes*. Accessed from: https://partners.visitnc.com/uploads/teim/2015-Impact-of-North-Carolina-Wine-on-Economy.pdf.
Franson, P. (2016). Number of Millennial wine drinkers catches boomers. *Wines and Vines*. https://www.winesandvines.com/template.cfm?section=news&content=166313
Getz, D., & Brown, G. (2006). Critical success factors for wine tourism regions: A demand analysis. *Tourism Management, 27*(1), 146–158.
Hashimoto, A., & Telfer, D. J. (2003). Positioning an emerging wine route in the Niagara region: Understanding the wine tourism market and its implications for marketing. *Journal of Travel & Tourism Marketing, 14*(3–4), 61–76.
Holland, T., Smit, B., & Jones, G. V. (2014). Toward a conceptual framework of terroir tourism: A case study of the Prince Edward County, Ontario Wine Region. *Tourism Planning & Development, 11*(3), 275–291.
Lane, B. (1994). What is rural tourism? *Journal of Sustainable Tourism, 2* (1–2): 7–21. https://www.tandfonline.com/doi/pdf/10.1080/09669589409510680.
Mapquest. Mapquest directions service developer's guide. https://www.mapquestapi.com/directions/.
Marzo-Navarro, M., & Pedraja-Iglesias, M. (2012). Critical factors of wine tourism: Incentives and barriers from the potential tourist's perspective. *International Journal of Contemporary Hospitality Management, 24* (2), 312–334.
Mitchell, R., Hall, C. M., & McIntosh, A. (2000) Wine tourism and consumer behaviour. In *Wine tourism around the world: Development, management and markets* (pp. 115–135). Butterworth-Heinemann.
NCWine. The history of wine in North Carolina. *NCWine*. https://www.ncwine.org/about/the-history-of-wine-in-north-carolina.
Novelli, M. (2005). *Niche tourism: Contemporary issues, trends and cases*. Routledge.
O'Connor, A., Zerger, A., & Itami, B. (2005). Geo-temporal tracking and analysis of tourist movement. *Mathematics and Computers in Simulation, 69* (1), 135–150.

Orth, U. R., Wolf, M. M., & Dodd, T. H. (2005). Dimensions of wine region equity and their impact on consumer preferences. *Journal of Product & Brand Management, 14*(2), 88–97.

Rasmussen, M., & Lockshin, L. (1999). Wine choice behaviour: The effect of regional branding. *International Journal of Wine Marketing, 11*(1), 36–46.

Rodrigue, J.-P., Comtois, C., & Slack, B. (2013). *The geography of transport systems.* Routledge.

Roy, J. R., & Thill, J.-C. (2004). Spatial interaction modelling. *Papers in Regional Science, 83*(1), 339–361.

Shoval, N., & Isaacson, M. (2009). *Tourist mobility and advanced tracking technologies.* Routledge.

Taplin, I. M., & Saylor Breckenridge, R. (2008). Large firms, legitimation and industry identity: The growth of the North Carolina wine industry. *The Social Science Journal, 45*(2), 352–360.

United States Alcohol and Tobacco Tax and Trade Bureau (TTB). (2012). American Viticultural Area (AVA) manual. https://www.ttb.gov/wine/p51204_ava_manual.pdf.

Wines and Vines. Wine industry metrics. https://winesvinesanalytics.com/statistics/winery/ (retrieved April 20, 2020).

The Impacts of Tourism

Measuring Economic Impacts of International Tourism Activities: A Global Inter-Country Input–Output Approach

Ali Alsamawi, Oliver Fritz, and Norihiko Yamano

1 Introduction

International tourism activities depend on variety of products that need to be reinvented constantly. It can play an important role in increase country revenue, create jobs and participate in the overall growth of a country. According to the United Nations World Tourism Organization (UNWTO), global number of international tourists reached around 1.2 billion in 2016 (number of arrivals for international tourism, UNWTO 2017). That amount increased substantially in the past two decades, where the numbers of tourists were less than 300 million in 1980 and exceeded 1 billion for the first time in 2012. For some countries, e.g. least developed countries, tourism is representing the main source of income, foreign exchange currency, exports, poverty alleviation, etc. (Honeck 2008). In addition, tourism is an important economic driver in many countries and has an important contribution to the sustainable development goals (SDGs). Few targets in the SDGs have directly been linked to tourism, and these include:

- In target 8.9: "*By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products*".
- In target 12.b: "*Develop and implement tools to monitor sustainable development impacts for sustainable tourism which creates jobs, promotes local culture and products*".

A. Alsamawi · N. Yamano
Directorate for Science, Technology and Innovation, OECD 2, rue André Pascal, 75775 Paris, France
e-mail: Ali.ALSAMAWI@oecd.org

N. Yamano
e-mail: Norihiko.YAMANO@oecd.org

O. Fritz (✉)
WIFO—Austrian Institute of Economic Research, Wien, Austria
e-mail: oliver.fritz@wifo.ac.at

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_11

– And in target 14.7: "*By 2030, increase the economic benefits of SIDS and LDCs from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism* ".

As a consequence of fluctuating in the natural resources' prices and the fragmentation of global production, many countries are now more encouraged to diversifying their income and increase revenues. This becomes one of the main issues concerning decision-makers and economists in the past years. Among those diversified industries, tourism appeared as source of income for many countries. According to the United Nations Conference on Trade and Development, tourism is one of the five exported-oriented industries in more than 150 countries and occupied the first in around 60 countries worldwide (UNCTAD 2010). Around 266 million jobs that directly and indirectly tourism has provided in 2014 (World Economic Forum (WEF), 2015). The importance of tourism lies in that it is involving almost all industries. In reality, there is no tourism industry or product, but according to Tourism Satellite Account (TSA), there are *tourism characteristic products*, which includes the main related industries to tourism such as hotels and restaurants, transportation and sports and recreational activities, and *tourism-connected products,* which is not always primarily consumed by domestic and international tourists such as manufactured food products and financial and educational services, see (UN 2010). However, the complexity of economic integration in terms of wide industry coverage and the fragmentation of production processes which makes the measurement of the tourism impact (e.g. value added, jobs and income generated) are vague.

This paper examines the economic impact of direct purchases[1] by non-residents to measure the direct and indirect value added that tourism industry (directly occurs through sales of goods and services to tourists and indirectly through inputs to those sales) generated using a comprehensive Inter-Country Input–Output (ICIO) table that contents the monetary flows of intermediate and final goods and services for 63 economies (current basic prices). The first edition of OECD-ICIO was developed in 2011 (OECD 2011), and it has been regularly updated (Yamano and Webb 2018). While expenditure, value added, employment and other variables are well defined in the national accounts and TSA frameworks, this only counts the direct effect. For instance, the value added generated by food served in hotels and restaurants supplied by domestic and international agricultural sectors is not counted in the TSA framework.

The importance of using IO tables' household consumption expenditure columns than TSA to present the value added lies in that the latter sometimes cannot separate domestic and international tourism. This is because, for instance, the estimated figures of investment (e.g. around 10 percent of Japanese investments are allocated to tourism activities, see Japanese TSA 2010) or employment (e.g. 20 percent of Malaysian total workforce, according to Tourism Satellite Account of Malaysia in 2015) in the

[1] The definition of direct purchases in this paper included educational expenses by foreign students as mentioned by national accounts; however, the majority of direct purchases by non-residents are related to international tourism activity for most countries. In addition, direct purchases by non-residents cover only international non-residents, and domestic tourists have not been included.

TSA include all tourism involving industries that previously mentioned who serving both households and non-residents. In the IO framework, the indirect effect of non-residents' expenditures (more than 50%) can be captured using a Leontief multiplier (see Kronenberg et al. 2018 and Tsuchiya 2014). Some researchers have an attempt to split the tourism activities/direct purchases from exports or to have a national analysis by link the tourism data for all tourism industries to the IO framework (Fletcher 1989; Bullon et al.2015). Others (Freeman and Felsenstein 2007; Kim and Kim 2015; Teigeiro and Díaz 2014) have done the economic impact analyses using IO framework, but only for specific tourism characteristics industry, e.g. accommodation and food services.

Countries like Thailand became one of the main destinations for tourists worldwide in the past years as it has an attractive nature, a well-prepared infrastructure and many other facilities that promote the increase in tourists. However, the increase in demand required inputs from domestic and international markets. It can be seen that transportation services (include land, air and water) occupying around 24% of total direct purchases in 2010, following by hotels and restaurants at 22% and textile and jewellery at 14%. Meanwhile, it can be seen that for some products, the import contents in expenditure by inbound tourists are relatively high, e.g. motor vehicle fuels, jewellery and electronics products. In Thailand, for example, final consumption expenditures by non-residents' participations have been increasing in the past decade (2005 4.5%, 2010 5.4%, 2016 10.9%, national accounts). These figures show how important tourism industry to overall Thailand economy.

While certain economic analyses can be done on a country level using national input–output (IO) tables, detailed economic dependencies across countries and regions can only be done using inter-regional inter-industry system (see Leontief 1936; Chenery 1953; Moses 1955). In addition, while the first mentions of inter-regional work were in the last century, the actual global IOs become available in the past few years. Example of currently available Inter-Country IO databases includes: EORA (1990–2012), EXIOBASE (1995–2011), IDE-JETRO (1970–2005), OECD-ICIO (1995–2011) and WIOD (1995–2014).[2]

The OECD-ICIO and its main application *trade in value added (TiVA)* (https://oe.cd/tiva) were built to facilitate the need to expand the knowledge and to have a better understanding of the domestic value added each country generated from its exported goods and services. Coverage in TiVA includes 63 economies (plus rest of the world) and a common industry of 36 sectors (see Appendix Tables 1 and 2) and a time series spanning from 1995 to 2011. TiVA indicators are driven from the Inter-Country Input–Output table (ICIO) where the national accounts, trade statistics, supply and use, and input–output tables of those economies were all putting together to create a world input–output table. Thus, the results are not mere numbers, and it is a figure that is driven from complex and detailed matrices. To extend the use of this framework, tourism industry has been investigated in this study for further examinations. The value added generated from international direct purchases has been examined for 63 economies and rest of the world for a time series spanning

[2] Available years of each database are as of April 2018.

from 1995 to 2011. While there are numerous studies investigating tourism activities using IO technique (Los and Steenge 2010), this is to our knowledge the first study that uses Inter-Country Input–Output tables to measure the value added and job of direct purchases by non-residents in global context. The feature of split exports into cross-border exports and direct purchases is only available in the OECD-ICIO table and has not yet been found in all other global input–output models.

Various kinds of applications have recently been linked to ICIO framework. These applications include environmental [CO2, pollution, land use, etc., see Wiebe and Yamano 2016], social [occupational health and safety, child labour, etc., see Alsamawi et al. 2017] and economical [employment, net primary production, etc., see Alsamawi et al. 2014; Habrel et al. 2007] indicators.

Trends of non-residents' expenditure in domestic territory and consumption abroad by residents appear to be stable in the past two decades, as a percentage of total household final consumption expenditure for most targeted economies. An exceptional increase for some countries, i.e. Thailand, see Figs. 1 and 2. This is because as a consequent of an increase in the number of tourists inflow to Thailand. In general, non-residents' expenditure demand required supplies of goods and services from the hosting country and from outside to address that demand. Thus, consumption of non-residents of goods and services within a country may include foreign inputs, and hence, a foreign value added may exist in the expenditures of tourists outside their countries. The aim of this work is to increase our understanding of the processes of tourism activities by providing insights into the value added generated by each country as a consequence of non-residents' expenditures of goods and services worldwide. Moreover, this paper presents the amount of jobs created and sustained by tourists' consumption in each industry and country.

The paper is designed as follow: Sect. 2 is about the method and data being used, Sect. 3 describes the main results and findings of this work, and Sect. 4 is the policy implication and the summary and future remarks.

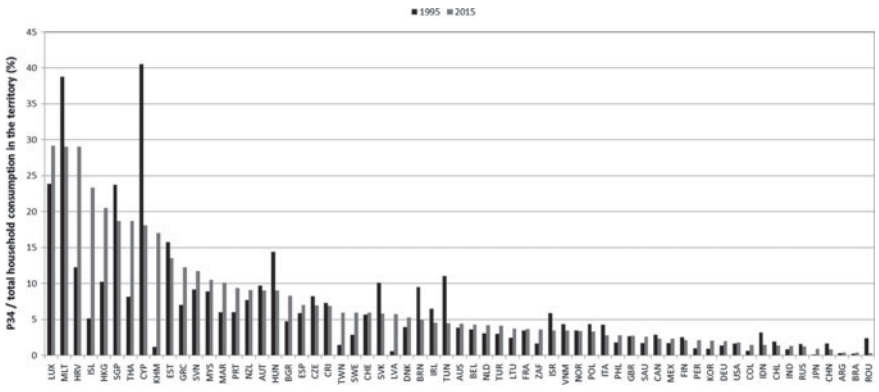


Fig. 1 Percentage of direct purchases by non-resident households to total household consumption in the territory. *Sources* National Accounts (OECD and United Nations). See Annex A2 for country codes

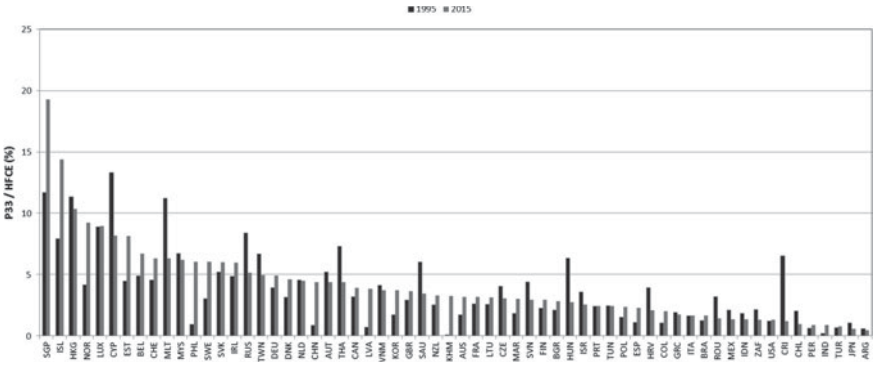


Fig. 2 Percentage of direct purchases abroad to total household final consumption expenditure by residents. *Sources* National accounts (OECD and United Nations). See Annex A2 for country codes

2 Method

In general, this kind of work required lots of underlying data (in particular, input–output (Fig. 3), supply use tables and national accounts) to be gathered, reconciled and harmonised before use in the ICIO system, and were most of them are hard to find by harmonised product and industry classifications. This is to our knowledge the first attempt to have that measure in terms of country and time coverage. In the OECD-ICIO framework, the direct purchases by non-residents' expenditure are treated separately from cross-border final consumption as it can be seen in Fig. 4.

The strength of national input–output technique lies in the fact that it can identify the direct and indirect economic effects by additional final expenditures, in this case, of the value added and employment generated from a consumption of non-residents' expenditures within a country. In general, the structure of national IO table consists of three blocks or matrices (see Fig. 3): intermediate transaction (T), final (F) and primary input (V) parts (more information is mentioned later in this section).

In order to measure the total economic impact of a consumption of non-residents in a country, the existed infrastructure of OECD-ICIO has been used. The OECD-ICIO 2016 version covers 63 economies (Table 1) and 34 harmonised sectors (Table 2) that represent around 91–95% of the world GDP and 86–91% of the total direct purchases for the mid-1990s to the late 2010s. The framework in the ICIO is similar to the national IO tables, where it consists of three main parts, intermediate transaction (T), final demand (F) and primary input (V) parts, which includes the value added and total output information.

T matrix or intermediate demand matrix (NK xNK dimensions, N is the number of industries, and K is the number of countries) holds the monetary flows of intermediate goods and services with an element $T_{ir,js}$ from supplying sector i, $i = 1,\ldots,N$, *in country* r, $r = 1,\ldots,K$ into a using sector j, $j = 1, \ldots, N$, in country s, $s = 1, \ldots, K$. ***F*** matrix (NKxMK dimensions, M is the number of final demand categories) holds the final demand data of private (households and non-profit institutions serving

Symmetric industry-by-industry I-O table	Intermediate demand			Final expenditure				Output
	Ind 1	…	Ind 34	Domestic demand	Exports cross-border	Direct purchases by non-residents	Direct purchases abroad	
Industry 1 (domestic, bp)								
…								
Industry 34 (domestic, bp)								
Product 1 (imports, pu)					*	**		
…					*	**		
Product 34 (imports, pu)					*	**		
Taxes less subsidies on intermediate and final products								
Total intermediate / final expenditure (pu)								
Value-added (bp)								
of which, compensation of employees								
of which, other net taxes on production								
of which, gross operation surplus								
Output at basic prices								

(pu): purchasers' prices
(bp): basic prices
* Re-imports and Re-exports
** Imported products purchased by non-residents

Fig. 3 Ideal national input–output table format for tourism analysis

Inter-country I-O	Intermediate demand						Final consumption and capital formation			Direct purchases			Output
	Cou A		Cou B		Cou C		Cou A	Cou B	Cou C	Cou A	Cou B	Cou C	
	Ind 1	Ind 2	Ind 1	Ind 2	Ind 1	Ind 2							
Country A Industry 1													X(A1)
Industry 2													X(A2)
Country B Industry 1													X(B1)
Industry 2													X(B2)
Country C Industry 1													X(C1)
Industry 2													X(C2)
Taxes less subsidies on intermediate and final products	NTZA1	NTZA2	NTZB1	NTZB2	NTZC1	NTZC2	NTFA	NTFB	NTFC	NTFAd	NTFBd	NTFCd	
Value added	V(A1)	V(A2)	V(B1)	V(B2)	V(C1)	V(C2)							
Output at basic prices	X(A1)	X(A2)	X(B1)	X(B2)	X(C1)	X(C2)							

Fig. 4 Inter-Country Input–Output (ICIO) framework. *Source* OECD Inter-Country Input–Output database (https://oe.cd/icio)

households NPISH) and public consumption (government consumption), gross fixed capital formation (GFCF), changes in inventories and exports (cross-border exports and direct purchases) and imports with an elements $F_{i,r,ls}$ from supplying sector i, $i = 1 \ldots N$ in country r into those final demand categories l, $l = 1 \ldots M$ in country s, $s = 1, \ldots, K$ where $r \neq s$. Finally, $\boldsymbol{V}$ is a vector of value added (NKx1), and X is a vector of total output ($NKx1$) with elements V_{js} and X_{js}, respectively.

Industries that serving tourism activities in the ICIO framework are, for instance, hotels and restaurants, transportation, and cultural and sports activities. Other activities like food and beverage apparel and footwear, fuel and utility are also important as they are indirectly consumed by non-residents (i.e. the expenditure created at the suppliers and their suppliers or second tier of the supply chains of a product).

ICIO framework has been worked to facilitate various policy areas, developing indicators concerning technology diffusion, embodied CO_2, trade in value added

indicators (TiVA), global value chains (CVCs), jobs and skills. The question can be asked here, if this technique can be used for tourism.

To calculate the direct and indirect impact of an indicator using the ICIO, a global Leontief inverse **B** needs to be calculated as $\mathbf{B} = (\mathbf{I} - \mathbf{A})^{-1}$, where **I** is an identity matrix (NKxNK), and **A** is a coefficient matrix with an element $a_{ir,js} = T_{ir,js} / X_{js}$. In this regard, the value added multiplier matrix can be written as

$$\mathbf{VB} = \boldsymbol{diag}\left(VX^{-1}\right)\mathbf{B}$$

where V is a value added vector with elements V_{js}, and X is output vector with element X_{js}.

Then, the domestic value added generated by non-residents' expenditures $\left(\mathbf{NONRES_{DVA,r}}\right)$ for country r is

$$\mathbf{NONRES_{DVA,rs}} = \sum_{i}^{} \sum_{j}^{} \mathbf{VB}_{\boldsymbol{ir,jr}} \mathbf{F}_{\boldsymbol{jr,ps}} \tag{1}$$

With the element $VB_{ir,jr}$, being the total value added generated in sector i of country r by the selling industry j of country r and $F_{jr,ps}$ is the direct purchases category in the final demand block, i.e. direct purchase from producing sector j in country r by non-residents living in country s. To measure the domestic value added for a certain sector, Eq. 1 can be used for that purposes. However, the resulting value added can only reflect the outcome from that industry. In other words, domestic value added generated in hotels and restaurants industry by non-residents' expenditures ($\mathrm{NONRES_{DVA\,hotel},_{r,s}}$) can be present as

$$\mathbf{NONRES_{DVA\,hotel,r,s}} = \sum_{i}^{} VB_{ir,\mathrm{hotel},r} F_{\mathrm{hotel},r,ps} \tag{2}$$

Finally, foreign contents (backward linkages) $\boldsymbol{NONRES_{FVA\,rs}}$ from non-residents' expenditures in country r can be written as

$$\mathbf{NONRES_{FVA,rs}} = \sum_{i}^{} \sum_{l \neq r}^{} \sum_{j}^{} \mathbf{VB}_{\boldsymbol{il,jr}} \mathbf{F}_{\boldsymbol{jr,ps}} \tag{3}$$

3 Results

Figure 5 shows the share of domestic value added (as a percentage of total value added) generated from non-residents' expenditures for tourism characteristic products, i.e. hotels, restaurants, transportation and community services paid by international tourists (Table 3)—differ substantially among countries (see Eq. (1)). Notably, the shares seem stable between 1995 and 2011 among targeted countries, with few exceptions. The differences are probably attributed to the increase in per capita income and population. Domestic value added in Morocco shows a high increase in the past two decades for two of the main tourism characteristics industries (hotels and restaurants, and personal services). This is attuning with the high increase in the number of tourists visiting Morocco, also resulting from externalities, i.e. domestic instability in other northern African countries in recent years. In addition, it can be seen that, for instance, 82% (2011) of total value added generated in hotels and restaurants industries in Luxembourg were linked directly and indirectly to direct purchases by non-residents, and this share increased from 45% in 1995. In contrast, the contribution of direct purchases is less than 1% in Japan for the same industry between the mid-1990s and the early 2010s.

On average, value added of tourism characteristics industries, i.e. hotels and restaurants, transportation services and recreation and other personal services, occupied around 50% of the total domestic value added generated by direct purchases by non-resident visitors for most economies in 2011 (Fig. 6). Trends of domestic value added shares of tourism characteristics industries in the past two decades lean towards fluctuations around the same level (see the results of all targeted countries in Appendix Table 3). In general, while domestic value added increased in absolute term in the past two decades for all countries, a reduction in the share to the total direct purchases can be seen for some countries, for instance the USA. This means that there is an increase in the foreign value added both in absolute terms and in terms of the shares of products consumed by international tourists. A deeper investigation with respect to sectors, in particular hotels and restaurants, reveals that the domestic value added increased in most of the economies examined in this study in past decades. Hotels and restaurants thus play an important role in shaping the value added generated by tourism activities. A remarkable increase in tourists' purchases of tourism-connected products, e.g. manufactured foods and financial and education services in China, Thailand and Vietnam, has been seen in the past two decades. Similarly, it can be seen that the increase in the tourism-linked industries/products was attuned with an increase in the indirect value added generated from non-residential spending (see Fig. 7 for more information about the top 20 countries). This results from the fact that the production of goods requires more inputs from other industries other than service industries.

Extending the analyses in terms of value added and employment by regions shows that in the past two decades, there is a twofold increase among OECD countries (Fig. 8a and b). For other countries, some of which are BRICS[3] countries, growth

[3] Includes Brazil, Russian Federation, India, China and South Africa.

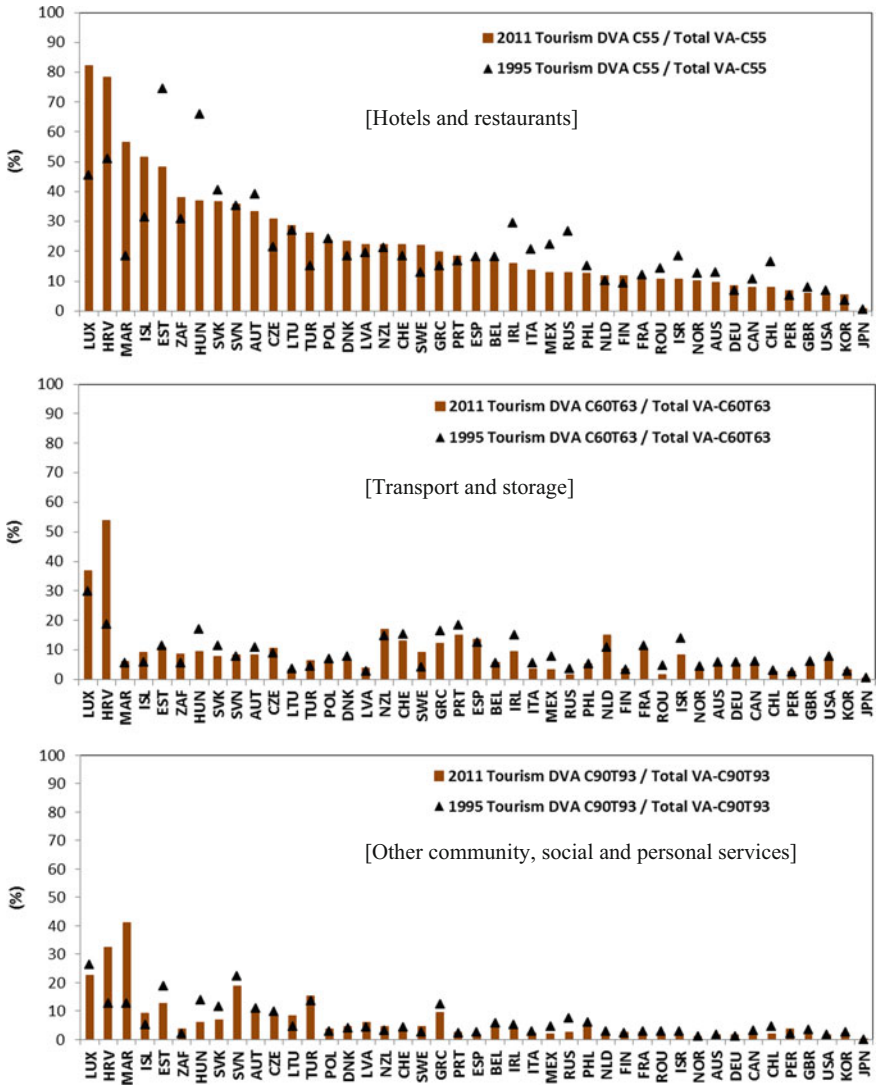


Fig. 5 Domestic value added generated in main tourism characteristic industries by non-residents' expenditures in domestic territory measured as a percentage of total value added of those industries for the years 1995 and 2011. *Note* Tourism DVA *is the domestic value added created from international tourist's expenditures* . The results are driven from Eq. (1). See Annex A2 for country codes

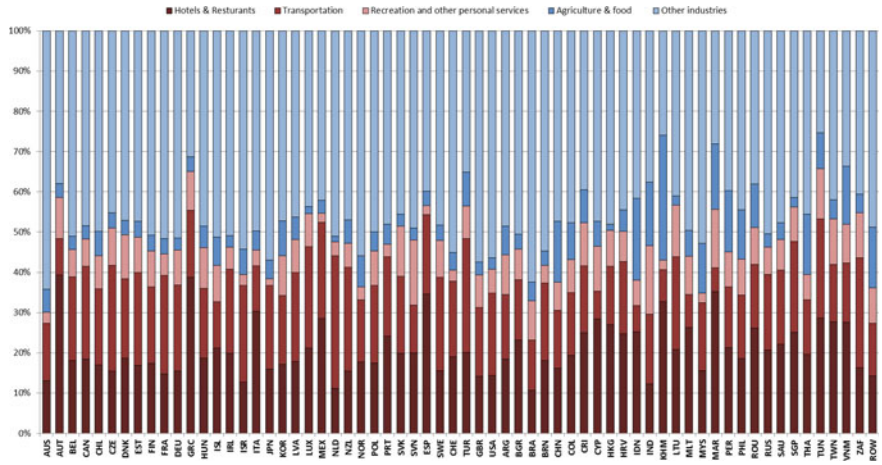


Fig. 6 Domestic value added generated by non-residents' expenditures by industry, 2011. *Notes* The results incorporated in this charts are driven from Eq. (2). See Annex A2 for country codes

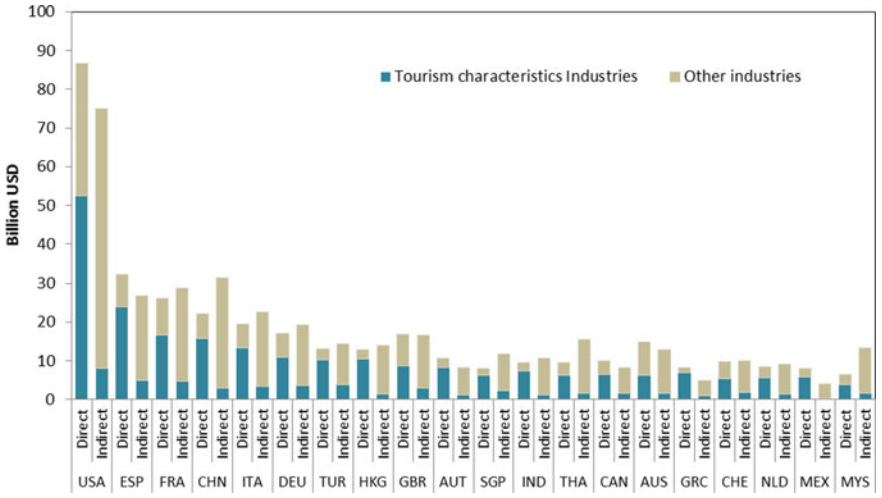
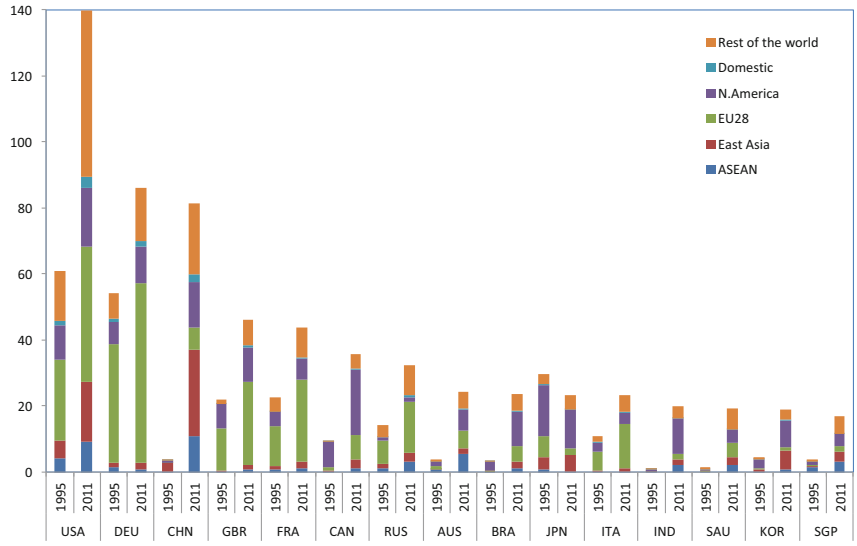


Fig. 7 Initial and secondary effects of direct purchases by non-residents. *Note* See Annex A2 for country codes

ranges from two to more than fivefold. Only Japan shows a decline in the 2011 value added, compared to the corresponding values in 1995, due to a decline in the non-residents' expenditures resulting from the earthquake in 2011. In addition, from a regional perspective, EU28 has the highest shares resulting from North American tourists.

Panel A: USD Billion



Panel B: Share

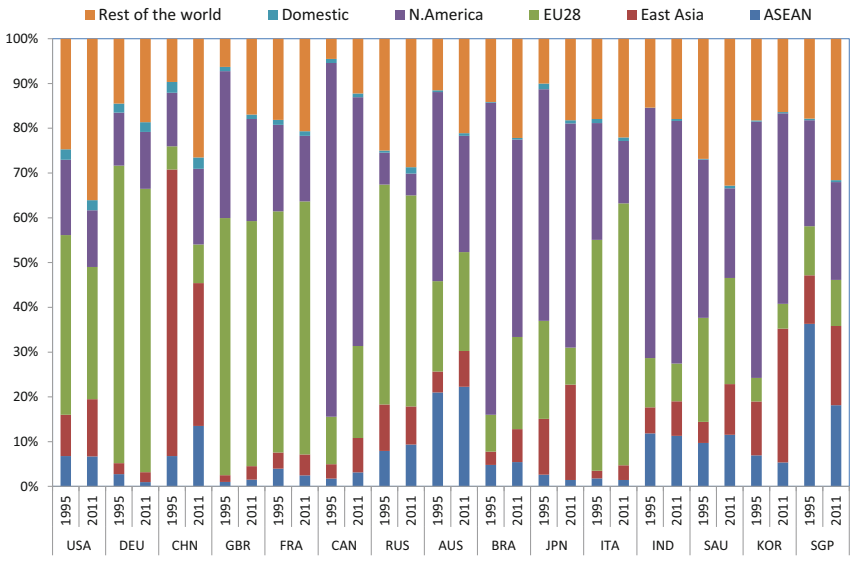


Fig. 8 Value added generated by direct purchases in selected economies (USD Billion and share, 1995 and 2011). *Note The results incorporated in this chart are driven from* Eq. 3. See Annex A2 for country codes

In general, in 2011, small countries show high shares of direct and indirect jobs sustained by non-residential spending than larger sized countries (Table 3). Share of indirect jobs created is stable across many targeted countries. The changes in these shares result from the fact that tourists may consume products that have many inputs in the production process other than service products. Surprisingly, in countries like Turkey with a huge domestic workforce, 4% of the domestic employment are directly and indirectly linked to international tourism, domestic tourism having been excluded from the analysis. In nutshell, countries with small population show a percentage increase in the amount of jobs sustained by non-residential spending in the past two decades, while the number of jobs linked to the tourism industry in middle and high population countries is relatively stable.

4 Summary and Future Remarks

This study examines the economic impacts of household consumption expenditures by non-residents for 64 economies and for a time series spanning from 1995 to 2011, using a comprehensive ICIO database generated by the OECD. This database incorporates information on tourism activities from various statistical sources, including data on direct purchases from national accounts and national SUT and IO tables, balance of payment data as well as information from existing Tourism Satellite Accounts covering expenditure by commodities. The benefit of global input–output framework analysis is to provide an overall picture of the economic impacts of tourism activities rather than descriptive statistics.

Our results confirm that tourism activities play an important role as drivers of economic growth in many countries, in particular small- and medium-sized countries worldwide. Overall exports resulting from direct purchases by non-residents exceed 10% equivalent amount of GDP in only a few of the countries covered by the analysis. The foreign contents (i.e. intermediate imports required to support tourism "export" activity) of unit consumption by non-residents account for approximately 10% of total non-residents' expenditures between the mid-1990s and the early 2010s. This implies that 90% of the additional expenditures by non-residents are contributing to domestic value added. The ratio is significantly higher compared to exports of manufacturing products, in particular with respect to smaller economies (e.g. Luxembourg) where the majority of parts, components and intermediate business services are imported from abroad.

Other findings of this study concern direct versus indirect expenditures for tourism activities. The economic impacts are not only limited to industries directly serving inbound tourists, e.g. accommodation, land transportation and sport event facilities, but also extended to other industries via indirect effects of expenditures by non-residents ("ripple effects"), which turn out to be quite significant. For most

economies, the indirect economic impacts are as large as the initial impacts of expenditures on tourism characteristics commodities.

In order to enhance the quality with respect to the estimation of the tourism-induced contribution to overall economic activities and growth, many challenges with respect to data lie ahead. These include:

1. Supply—use tables and Tourism Satellite Accounts are available on an annual basis for only a few non-OECD countries for which tourism plays an important role.
2. For key variables like output, value added and employment detailed sectoral information is often lacking. In many countries, tourism characteristics industries such as hotels and restaurants and transportation industries are merged with other sectors in input–output/make-use tables.
3. Across different countries, tourism expenditures, i.e. direct purchases by non-residents, are not equally defined/measured. For instance, spending by non-residents related to education is included in some, but not all TSAs.
4. Finally, tourism-related expenditures may be underestimated particularly in those countries where inbound tourism for leisure and business purposes is quite important as such activities are not explicitly taken into account in conventional national and global multiregional input–output analytical frameworks.
5. Further investigation of indirect economic impacts would be important: First, a model with endogenous household consumption could be applied to include impacts derived from the income of tourism employees. Second, the model could be enhanced with respect to investment in the tourism sector.

Appendix

See Tables 1, 2 and 3.

Table 1 Geographical coverage in OECD-ICIO 2016 edition

1	AUS	Australia	23	NLD	Netherlands	45	CYP	Cyprus
2	AUT	Austria	24	NZL	New Zealand	46	IND	India
3	BEL	Belgium	25	NOR	Norway	47	IDN	Indonesia
4	CAN	Canada	26	POL	Poland	48	HKG	Hong Kong (China)
5	CHL	Chile	27	PRT	Portugal	49	LTU	Lithuania
6	CZE	Czech Republic	28	SVK	Slovak Republic	50	MYS	Malaysia
7	DNK	Denmark	29	SVN	Slovenia	51	MLT	Malta
8	EST	Estonia	30	ESP	Spain	52	MAR	Morocco
9	FIN	Finland	31	SWE	Sweden	53	PER	Peru
10	FRA	France	32	CHE	Switzerland	54	PHL	Philippines
11	DEU	Germany	33	TUR	Turkey	55	ROU	Romania
12	GRC	Greece	34	GBR	United Kingdom	56	RUS	Russia
13	HUN	Hungary	35	USA	United States	57	SAU	Saudi Arabia
14	ISL	Iceland	36	ARG	Argentina	58	SGP	Singapore
15	IRL	Ireland	37	BRA	Brazil	59	ZAF	South Africa
16	ISR	Israel1	38	BRN	Brunei Darussalam	60	TWN	Chinese Taipei
17	ITA	Italy	39	BGR	Bulgaria	61	THA	Thailand
18	JPN	Japan	40	KHM	Cambodia	62	TUN	Tunisia
19	KOR	Korea	41	CHN	China	63	VNM	Viet Nam
20	LVA	Latvia	42	COL	Colombia	64	ROW	Rest of the World
21	LUX	Luxembourg	43	CRI	Costa Rica			
22	MEX	Mexico	44	HRV	Croatia			

Table 2 Industry level in the OECD-ICIO

Tourism characteristics industry	Code	Label
	01, 02, 05	Agriculture, hunting, forestry and fishing
	10, 11, 12, 13, 14	Mining and quarrying
	15, 16	Food products, beverages and tobacco
	17, 18, 19	Textiles, textile products, leather and footwear
	20	Wood and products of wood and cork

(continued)

Table 2 (continued)

Tourism characteristics industry	Code	Label
	21, 22	Pulp, paper, paper products, printing and publishing
	23	Coke, refined petroleum products and nuclear fuel
	24	Chemicals and chemical products
	25	Rubber and plastics products
	26	Other non-metallic mineral products
	27	Basic metals
	28	Fabricated metal products except machinery and equipment
	29	Machinery and equipment n.e.c
	30, 32, 33	Computer, electronic and optical products
	31	Electrical machinery and apparatus n.e.c
	34	Motor vehicles, trailers and semi-trailers
	35	Other transport equipment
	36, 37	Manufacturing n.e.c; recycling
	40, 41	Electricity, gas and water supply
	45	Construction
	50, 51, 52	Wholesale and retail trade; repairs
x	55	Hotels and restaurants
x	60, 61, 62, 63	Transport and storage
	64	Post and telecommunications
	65, 66, 67	Finance and insurance
	70	Real estate activities
	71	Renting of machinery and equipment
	72	Computer and related activities
	73	Research and development
	74	Other Business Activities
	75	Public admin. and defence; compulsory social security
	80	Education
	85	Health and social work
	90, 91, 92, 93	Other community, social and personal services
	95	Private households with employed persons

Note ISIC Rev 3 division codes

Table 3 Value added and jobs created by non-residents' expenditures

	Direct purchases by non-residents 1995						Direct purchases by non-residents 2011					
	M USD	Domestic VA share (%)			Domestic employment		M USD	Domestic VA share (%)			Domestic employment	
			Of which TCI[a] (%)	Of which other Ind (%)	TCI[a] (000′)	Other industry (000′)			Of which TCI[a] (%)	Of which other Ind (%)	TCI[a] (000′)	Other industry (000′)
Australia	3798	88	31	58	81.71	135.23	24,389	84	30	53	98.67	194.54
Austria	6399	88	39	48	117.92	97.52	8882	84	41	42	140.6	101.17
Belgium	7006	88	44	45	50.89	55.63	14,561	81	38	43	57.93	71.5
Canada	9630	92	33	59	160.63	125.44	35,701	88	39	48	166.98	112.11
Chile	736	91	39	53	41.48	33.23	1825	86	29	58	40.15	34.4
Czech Republic	1661	87	38	50	74.22	122.96	2346	84	39	44	110.33	99.6
Denmark	3373	87	38	48	34.01	37.66	7747	83	43	40	51.75	47.23
Estonia	102	89	38	51	25.22	27.25	735	85	42	43	19.16	14.81
Finland	1454	87	39	48	11.71	18.23	3441	82	43	39	20.1	26.42
France	22,519	88	38	50	247.15	247.36	43,852	82	37	44	309.28	343.77
Germany	54,383	87	40	47	217.46	187.05	86,180	83	39	43	325.16	271.26
Greece	1873	88	35	52	105.21	119.7	3146	84	43	40	116.07	87.53
Hungary	1482	86	37	49	143.73	120.41	2051	80	34	46	90.37	78.58
Iceland	293	89	39	51	2.54	2.23	757	84	39	45	7.57	5.27
Ireland	1674	88	41	46	31.46	21.87	6705	87	41	46	34.15	41.16
Israel1	1899	89	38	51	37.1	32.52	2954	87	34	53	36.96	37.75

(continued)

Table 3 (continued)

	Direct purchases by non-residents 1995						Direct purchases by non-residents 2011					
	M USD	Domestic VA share (%)			Domestic employment		M USD	Domestic VA share (%)			Domestic employment	
			Of which TCI[a] (%)	Of which other Ind (%)	TCI[a] (000′)	Other industry (000′)			Of which TCI[a] (%)	Of which other Ind (%)	TCI[a] (000′)	Other industry (000′)
Italy	11,077	89	40	49	281.64	362.25	23,326	85	45	40	284.11	296.97
Japan	29,770	90	35	56	19.53	26.9	23,362	88	35	53	58.88	72.84
Korea	4710	91	35	57	89.28	68.1	18,921	89	35	53	187.88	151.09
Latvia	124	88	39	50	7.85	9.41	703	84	38	46	11.38	10.3
Luxembourg	480	90	34	57	14.93	13.13	1371	82	31	51	38.77	45.88
Mexico	3563	89	32	57	0.81	8.53	7986	87	32	55	0.95	9.19
Netherlands	10,037	87	42	45	83.14	78.3	17,422	82	43	39	112.95	124.25
New Zealand	897	89	35	54	31.26	40.06	3870	85	36	49	50.01	43.45
Norway	2864	85	42	43	17.54	27.01	18,110	79	40	39	17.2	28.23
Poland	436	87	33	54	118.73	113.31	9429	82	37	45	151.79	171.99
Portugal	1759	90	46	43	65.16	87.33	3039	84	46	38	93.39	101.75
Slovak Republic	499	88	40	48	46.11	50.76	2707	80	37	43	44.81	32.7
Slovenia	470	87	42	45	19.49	27.47	782	83	38	45	24.67	25.92

(continued)

Table 3 (continued)

	Direct purchases by non-residents 1995						Direct purchases by non-residents 2011					
	M USD	Domestic VA share (%)			Domestic employment		M USD	Domestic VA share (%)			Domestic employment	
			Of which TCI[a] (%)	Of which other Ind (%)	TCI[a] (000′)	Other industry (000′)			Of which TCI[a] (%)	Of which other Ind (%)	TCI[a] (000′)	Other industry (000′)
Spain	3976	90	39	51	268.47	338.63	15,023	85	36	49	427.12	409.91
Sweden	3658	87	41	46	30.02	33.25	12,163	82	36	46	73.58	80.74
Switzerland	8463	87	46	41	85.31	96.19	15,618	81	39	41	105.94	115.71
Turkey	955	89	38	51	165.74	214.36	4890	85	37	48	427.76	466.62
United Kingdom	22,137	88	39	49	235.47	325.94	46,194	83	39	45	227.71	305.93
United States	60,810	87	39	48	1,063.81	869.35	1,39,824	83	36	47	1,126.51	935.15
Argentina	3429	88	38	50	56.28	60.58	6205	85	38	48	126.94	96.78
Bulgaria	208	88	35	53	27.35	41.25	1429	83	36	47	116.79	123.61
Brazil	3551	92	36	55	80.37	60.34	23,838	86	38	48	266.23	184.67
Brunei Darussalam	255	86	34	51	0.06	0.57	524	82	38	44	0.14	0.63
China	3883	83	35	48	1.61	8.06	81,427	81	31	49	10.05	59.83
Colombia	1247	88	38	50	0.26	1.84	2339	85	36	49	0.44	2.54

(continued)

Table 3 (continued)

	Direct purchases by non-residents 1995						Direct purchases by non-residents 2011					
	M USD	Domestic VA share (%)			Domestic employment		M USD	Domestic VA share (%)			Domestic employment	
			Of which TCI[a] (%)	Of which other Ind (%)	TCI[a] (000′)	Other industry (000′)			Of which TCI[a] (%)	Of which other Ind (%)	TCI[a] (000′)	Other industry (000′)
Costa Rica	338	90	39	51	0.3	1.57	454	86	36	50	0.38	2.81
Cyprus	209	89	44	45	31.09	35.56	1090	83	39	44	26.65	23.27
Hong Kong (China)	8711	90	38	52	5.35	32.13	14,935	83	36	47	14.58	57.83
Croatia	441	86	38	48	51.2	48.05	987	82	35	47	104.77	114.25
Indonesia	2298	83	38	45	415.67	1,150.15	7019	78	33	45	842.56	721.47
India	1099	90	34	56	998.26	1,672.11	19,872	86	37	50	2,403.23	2,870.86
Cambodia	2	86	31	55	0.01	0.09	57	78	32	46	0.26	0.87
Lithuania	110	88	43	46	9.66	8.13	685	82	38	45	18.92	10.84
Malta	225	88	39	49	13.56	12.36	286	83	38	45	10.37	13.27
Malaysia	2424	85	44	41	7.05	40.03	10,053	82	34	48	26.85	120.61
Morocco	296	89	40	49	0.29	3.3	1027	86	40	46	0.78	8.88
Peru	275	89	40	49	0.17	1.05	1223	86	40	46	0.44	3.59
Philippines	444	88	32	56	0.73	9.39	6157	80	33	48	1.2	8.9
Romania	730	88	41	47	43.71	81.35	2234	83	38	46	29.15	31.57

(continued)

Table 3 (continued)

	Direct purchases by non-residents 1995						Direct purchases by non-residents 2011					
	M USD	Domestic VA share (%)			Domestic employment		M USD	Domestic VA share (%)			Domestic employment	
			Of which TCI[a] (%)	Of which other Ind (%)	TCI[a] (000′)	Other industry (000′)			Of which TCI[a] (%)	Of which other Ind (%)	TCI[a] (000′)	Other industry (000′)
Russia	14,335	87	40	47	466.33	489.88	32,568	81	38	43	339.49	232.62
Saudi Arabia	1361	89	36	53	26.6	17.72	19,350	83	37	46	178.34	91.4
Singapore	3761	88	38	50	13.4	73.31	16,966	84	35	48	48.32	127.12
Thailand	2978	85	32	53	7.73	46.6	5147	81	27	54	26.61	91.19
Tunisia	263	90	40	50	0.56	5.55	681	83	39	44	0.93	6.16
Chinese Taipei	8846	89	39	50	1.54	10.6	11,357	88	36	52	7.66	35.37
Viet Nam	623	84	36	48	0.38	3.67	1919	83	29	54	2.95	19.92
South Africa	1936	87	39	48	65.24	52.24	5880	83	37	46	131.92	127.4

[a]*TCI* Tourism characteristics Industry (UN 2010)

References

Alsamawi A., Murray, J., & Lenzen, M. (2017). Trade in occupational safety and health: Tracing the embodied human and economic harm in labour along the global supply chain. *Journal of Cleaner Production, 147*, 187–196.

Alsamawi, A., Murray, J., & Lenzen, M. (2014). The employment footprints of nations. *Journal of Industrial Ecology, 18,* 59–70. https://doi.org/10.1111/jiec.12104

Bullon, D., Mena, B., Meng, T., Sanchez, N., Vargas, H. & Inomata, S. (2015). *Using the input-output approach to measure participation in GVCs: The Case of Costa Rica.* IDE Discussion Papers from Institute of Developing Economies, Japan External Trade Organization (JETRO)

Chenery, H. B. (1953). Regional analysis. In H. B. Chenery, P.G. Clark, & V. C. Pinna (Eds.), *The structure and growth of the Italian economy*. Rome, Italy : US Mutual Security Agency.

Fletcher, J. (1989). Input-output analysis and tourism impact studies. *Annals of Tourism Research, 16*(3), 514–529.

Freeman, D., & Felsenstein, D. (2007). Forecasting regional investment in the hotel industry: An input-output approach special section: Tourism and regional science. *The Journal of Regional Analysis and Policy, 37*(3), 243–256.

Los, B., & Steenge, A. (2010). Tourism studies and input-output analysis. Introduction to a Special Issue. *Economic Systems Research, 22* (4), 305–311.

Haberl, H., Erb, K.-H., Krausmann, F., Gaube, V., Bondeau, A., Plutzar, C., et al. (2007). Quantifying and mapping the human appropriation of net primary production in earth's terrestrial ecosystems. *Proceedings of the National Academy of Sciences of the United States of America, 104*(31), 12942–12947.

Honeck, D. (2008). *LDC poverty alleviation and the Doha development agenda: Is tourism being neglected?* Staff Working Paper ERSD-2008-03. World Trade Organization.

Kim, H. & Kim, B. (2015). Economic impacts of the hotel industry: An input-output analysis. *Tourism Review, 70* (2), 132–149. https://doi.org/10.1108/TR-11-2014-0056 Permanent link to this document: https://doi.org/10.1108/TR-11-2014-0056

Kronenberg, K., Fuchs, M., & Lexhagen, M. (2018). A multi-period perspective on tourism's economic contribution—A regional input-output analysis for Sweden. *Tourism Review, 73* (1), 94–110, https://doi.org/10.1108/TR-03-2017-0044.

Leontief, W. (1936). Quantitative input-output relations in the economic system of the United States. *Review of Economics and Statistics, 18*(3), 105–125.

Moses, L. N. (1955). The stability of interregional trading patterns and input-output analysis. *American Economic Review, 45*(5), 803–832.

Teigeiro, L. R., & Díaz, B. (2014). Estimation of multipliers for the activity of hotels and restaurants. *Tourism Management, 40,* 27–34.

OECD. (2011). *Towards green growth: Monitoring progress: OECD indicators. OECD Green growth studies.* Paris: OECD Publishing. https://doi.org/10.1787/9789264111356-en.

Tsuchiya, K. (2014). *How to estimate economic effect of tourism by the input-output table.* UNWTO Special Workshop on Tourism Statistics. November 20–21, 2014 Nara, Japan.

UNCTAD. (2010). The contribution of tourism to trade and development. United Nations Conference on Trade and Development. 2010/02. Geneva: UNCTD.

WEF. (2015). *The Travel and Tourism Competitiveness Report 2015 Growth through Shocks, World Economic Forum.* Insight report, Geneva 2015. ISBN-13: 978-92-95044-48-7.

UNWTO. (2017). United Nations—World Tourism Organization (UNWTO) Tourism Highlights, 2017 Edition. https://www.e-unwto.org/doi/pdf/10.18111/9789284419029

United Nations. (2010). International recommendations for tourism statistics 2008, ST/ESA/STAT/SER.M/83/Rev.1.

Wiebe, K., & Yamano, N. (2016). *Estimating CO_2emissions embodied in final demand and trade using the OECD ICIO 2015: Methodology and results.* OECD Science, technology and Industry Working Papers, No. 2016/05, OECD Publishing, Paris

Yamano, N., & Webb, C. (2018, March). Future development of the Inter-Country Input-Output (ICIO) Database for Global Value Chain (GVC) and Environmental Analyses. *Journal of Industrial Ecology*. https://doi.org/10.1111/jiec.12758

Exploring the Spatial Link Between Tourism and Construction: How Touristic Landmarks Affect the Second-Home Market in Spain

André Carrascal-Incera and Diana Gutiérrez-Posada

1 Introduction

One of the clear effects of tourism expansion is the increase in the demand for second homes (Marjavaara 2007). Tourism, as a complex phenomenon, includes not only visitors staying in rented accommodation but also those spending the night in their own residence. In fact, the definition of a second home, or residential tourism, reflects that its main use is related to leisure and recreational activities (Hall and Muller 2004).

The literature on the subject identifies three demand-side factors for owning a second home: compensation, life cycle and affluence (Norris and Winston 2010). They respond to the possible different motivations behind the acquisition of the additional dwelling. The compensation factor recognizes that second homes satisfy specific needs not fulfilled by the principal residence. These needs could be being located in a quiet place or a coastal area with nice weather. This indicator is also identified as a willingness to escape from the place of residence for a short period (Dijst et al. 2005; Strandell and Hall 2015). The lifecycle factor connects owning a second home with retiring plans or inheritance. These residences can be used either as holiday homes or to preserve family bonds (Balfe 1995). As Hall (2014) indicates, some of the areas with a high concentration of second homes could evolve into retirement places over time, as this type of dwelling becomes the most frequent one. Finally, the affluence factor links second homes to investment motivations based on expected future revenues (Brunetti and Torricelli 2017).

Additionally, second homes are not uniformly allocated in space. They tend to be more concentrated in areas with touristic landmarks and natural amenities, such as

A. Carrascal-Incera (✉) · D. Gutiérrez-Posada
Birmingham Business School, University of Birmingham, City-REDI, Birmingham, UK
e-mail: a.carrascalincera@bham.ac.uk

D. Gutiérrez-Posada
e-mail: d.gutierrezposada@bham.ac.uk

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_12

in coastal and alpine areas or islands (Hall 2014). This means that certain locational characteristics are inherently linked to each type of motivation, i.e. large urban areas in the case of the affluence factor. Therefore, the effects that these second home acquiring motivations have on the local economies or on the spatial distribution of this kind of dwelling should not be neglected.

The evidence also suggests that an increasing tourism demand in specific destinations leads to a higher second-home demand in that place. This exerts a higher pressure on the local housing market and land availability (Allen et al. 1999; Cho et al. 2003; Di 2009; Marjavaara 2007; Hall 2014). This particular association can have positive effects on the economic contribution of tourism in a certain place since it implies that more population is consuming, but it could lead also to conflict between permanent and temporary residents (Milbourne 1997; Volo 2011). Another problem related to the development of residential tourism is seasonality, which may cause holiday destinations to turn into "ghost towns" during the winter, compromising the economic sustainability of an area (Simms et al. 2002).

When the different motivations for buying a second home are analysed in detail, it can be anticipated that their relationship with local characteristics may not be necessarily the same in terms of magnitude or direction. Proximity to natural amenities may be more influential for compensation than for lifecycle motivations. Similarly, population density can act as a booster for investment but as a deterrent for compensation. In this research, we try to evaluate how the motivation behind the decision to buy a second home, as reflected by the interplay of certain socio-economic and geographic characteristics, influences the spatial distribution of this type of properties in Spain. In addition, we explore the distinct patterns that emerge when the heterogeneity between localities is brought forward. This is because different territories are more fitted to satisfy certain needs and thus, the concentration of second homes is expected to vary across the country.

In Spain, tourism and construction are two of the main cornerstones of the economy. In the case of tourism, following the Spanish Tourism Satellite Account (TSA) it represented at least 10% of the GDP, and from 11 to 13% of the total employment, in the period 2000–2015. Additionally, according to the World Tourism Organization (WTO), in 2016, Spain ranked third in the arrival of international visitors, behind France and the USA. On the other hand, the construction sector exhibits a larger variability, ranging between 5 and 10% of the GDP, and between 5 and 13% of the total employment for the same period. Not surprisingly, the proportion of holiday homes in Spain appears well above the European average (Norris and Winston 2010; Dijst et al. 2005). Similar trends have been found in other Southern European countries like Greece and Italy, and also in France and Sweden. In 2001, the number of second homes was 3,360,631, accounting for 16% of the total housing stock. In 2011, that number rose to 3,681,520, which represented a share of 14.6% of the total. This ratio can be interpreted as if one out of six people in Spain owned a second home, even though the recent crisis caused a small decrease in these figures.

In this chapter, we contribute to the existing literature with an analysis of the effect of the local characteristics on the concentration of second homes in Spain. We adopt a novel approach by structuring the research through the three motivations

described earlier (compensation, life cycle or affluence). In this way, we deal with the impact of tourism on second-home construction by assessing the effect of the distance to tourist sites on the share of this type of dwellings in 2001 and 2011. Simultaneously, we also consider other geographical and socio-economic variables. Moreover, we propose a new measure, the Tourism Centrality Index (TCI), which represents the weighted distance to tourist landmarks, accounting for the relative position of a locality with respect to the main touristic spots all over the country. Our main interest is to understand the spatial processes at work at the local level in each year, with a focus on the spillover effects that might reflect the advancement of the sub-urbanization and counter-urbanization processes already observed in previous works. As part of this spatial analysis, we also attempt to highlight the outcomes experienced in different areas of the country as a result of a distinct type of tourism or motivation for owning a second home. To this aim, we use a Spatial Durbin Error Model (SDEM) at the municipal level in order to unveil the general impact of proximity to the main tourist localities in Spain. In addition, we use Geographically Weighted Regression (GWR) that allows us to assess and map the heterogeneous effect of the included features on the territory.

The rest of the chapter is divided into four sections. The first revisits the related literature to set the background of this study. In the following section, we start by explaining the context of the phenomenon under study, then we describe the methodological approach, and lastly, we show the principal databases and variables used, including the Tourism Centrality Index developed in the analysis. In the third section, we present the results obtained for each year and the spatial differences across the Spanish municipalities. Finally, the last section explains the main conclusions reached along the chapter.

2 Background

In the last years, second homes have been subject to great academic attention in Europe, especially for particular touristic areas and countries. Recent related literature covers different aspects of second homes, ranging from the analysis of the motivations behind second-home ownership or their use patterns, to the study of the decision to rent out private second homes or not.

Among several other interesting studies, Brunetti and Torricelli (2017) explore the case of the second homes in Italy that are not available for rent, i.e. not creating any economic profit to their owners. Their results, using data from Survey on Household Income and Wealth (SHIW), show that the unprofitable use of second homes is related to male decision-makers and to the specific characteristics of the property. They found that, particularly, the inherited properties are more likely to not be used profitably. Skak and Bloze (2017) use survey data collected from 2386 Danish households to investigate the drivers of the decision to rent out private second homes in Denmark. Their analysis suggests that one of the strongest drivers of the decision to put a

property up for rent is the age of the owner of the second home, with younger households showing a higher propensity.

Another strand of the literature is focused on measuring the economic impact of second homes. Oliveira et al. (2015) found that an expansion of the second-homes market has net positive effects on the economy, outweighing some negative impacts on the local economy and on the government accounts. This study for a region in central Portugal also confirms the findings from the literature on the importance of the socio-geographical context at explaining the economic impacts of second homes (Mottiar 2006; Hoogendoorn and Visser 2010). Larsson and Müller (2017) analyse how local communities deal with the effects of residential tourism. By interviewing public and private service providers, and stakeholders in the Swedish West Coast, they found that second-home owners are regarded as a source of development for local businesses, in line with Gallent (2014) and Robertsson and Marjavaara (2015). More concretely, in some rural communities, second-home tourism is perceived as a positive economic engine. Through a multivariate logistic regression, Rye (2011) confirms that those with a direct economic interest in the second-home market have a very positive attitude regarding further development, unsurprisingly. He also finds that resistance towards second homes is stronger in municipalities with a high density of this type of properties, but that a high growth rate in the number of second homes, paired with an increase of the investment, seems to increase local support. Additionally, Mottiar and Quinn (2003) show that kinship and long-lasting relations to place, related to the lifecycle motivation, also facilitate local engagement among second-home owners.

Strandell and Hall (2015) examine whether the compensation hypothesis as the main motivation explains the use of second homes in Finland. They analyse the transition from owners (primary residence) to users (second homes), trying to account for the people that actually enjoy the possession of second homes. In their econometric analysis, they include variables reflecting the characteristics of the permanent home, as well as several socio-economic and demographic factors, finding support for the compensation hypothesis in Finland. When building density increases or access to a private garden is reduced in the primary property, the use of second homes increases.

Regarding the Spanish case, there is a vast literature studying the probability of owning a second home, taking into account individual or household characteristics. In this sense, Módenes and López-Colás (2007a) analyse the socio-economic and demographic profile of the households that own a second home, using data from the 2001 Census. They found that having a second home is related to the fact of living in urban areas or being between 45 and 65 years old, among other results. In a different study, Módenes and López-Colás (2007b) confirmed the compensation hypothesis in the Spanish housing market. They specifically find that the location of the main residence in a very dense urban context is related to a greater probability of having a second home. Finally, the relationship between primary and second homes is examined in Barke (2008). He concludes that they are closely interrelated and that the dichotomy in the Spanish housing market may be between residents and foreigners rather than between primary and second homes. At the regional and local level, some studies already provide evidence on the relationship between construction and

tourism. This is particularly true for some of the tourism-specialized regions in the country, namely the Balearic Islands (Barke and France 1988; Pons and Rullan 2014) Catalonia (Cuadrado-Ciuraneta et al. 2017) and Barcelona (Muñiz et al. 2013). They find gentrification and urban sprawl as the main concerns in this matter. However, there are no empirical studies at the local level covering the whole Spanish territory using a spatial macroeconomic approach, focusing on the location characteristics instead of on the characteristics of the households of those that own a second home.

3 Data and Methodology

3.1 Study Context

As can be seen in Fig. 1, the share of second homes in Spain at the municipal level follows two spatial patterns: Their share is higher in the inner part of the top half of the country and in the coastline (especially the Mediterranean coast), while it is smaller in cities. This evidence is consistent in both 2001 and 2011. On top of that, there is significant variability around the national share, with several municipalities showing a proportion of second homes higher than 50% of their total dwellings.

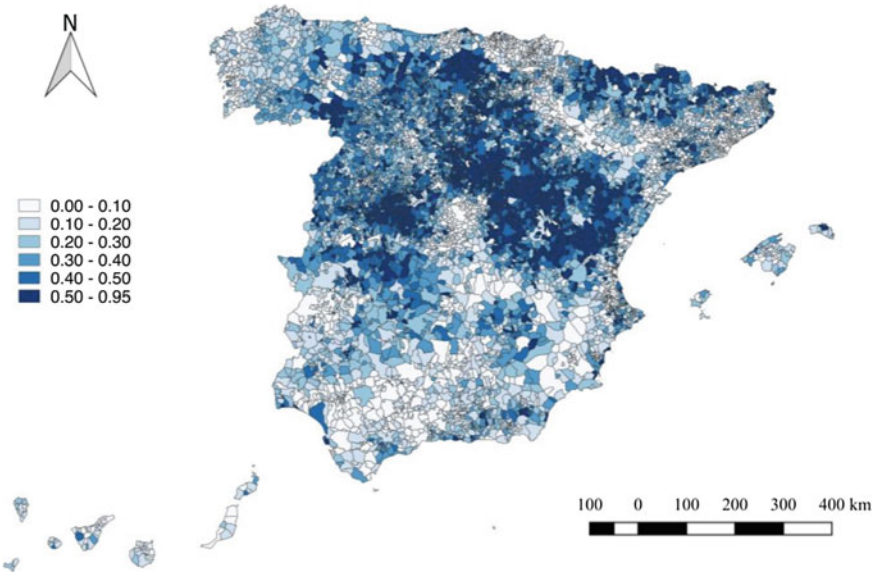


Fig. 1 Share of second homes over the total housing stock by municipality in 2011 (Own elaboration from Spanish Census 2011)

According to the 2001 Census, in terms of the relationship between the location of the primary residence and the second home,[1] almost half of the owners of an additional dwelling have it in the same municipality or province as the main one (51.7%).

However, as shown in Fig. 2, the differences across provinces are considerable if we take into account the degree of urbanization of the region, and if it is located on the coast or not. Examples of this urban effect are the residents in Madrid, Barcelona, Seville and in the provinces of the Basque Country (Vizcaya, Guipuzcoa and Alava): more than 60% of their second homes are in a different province or region, going up to 78% in the case of Madrid. On the other hand, residents in coastal provinces such as the Balearic Islands and the ones of Canary Islands (Las Palmas and Santa Cruz de Tenerife), Huelva, Cadiz, Granada and Almeria from Andalusia, Alicante and Castellon from the Valencian region, Murcia, and A Coruña from Galicia, have more than 75% of their second homes in the same municipality or province. These numbers indicate that different geographical locations and urban profiles, both for primary and second residences, derive in the specific spatial distribution of the second homes in Spain, resulting in the map depicted in Fig. 1.

3.2 Methods

The figures presented in the introduction of this study describe a heterogeneous landscape where some areas exhibit a high concentration of second homes in both 2001 and 2011, while in others the share of this kind of dwellings is generally lower. This spatial distribution suggests that the location of second homes in Spain is not random. It is then necessary to analyse this phenomenon with a toolbox that accounts for the spillover effects that may arise from the interaction of the factors behind the acquisition of an additional property. As mentioned before, the literature on this matter considers three main reasons to buy a second home: compensation, life cycle or affluence. It follows that depending on the characteristics of the area under analysis and those of its neighbours, the clustering in the share of second homes will reveal different realities. This calls for a twofold analysis that can shed light on two circumstances at issue, spatial dependence and spatial heterogeneity. The former refers to the relationship between observations regarding a certain variable when spatial proximity is taken into account: if there is a regularity (similarity or dissimilarity) among neighbouring areas, the independence assumption is violated. On the other hand, the main problem with spatial heterogeneity is that if the intensity of the spatial process under study varies significantly from one location to another, a single global coefficient will mask the specific local effects we want to explore. In terms of the analysis of second homes, the spatial clustering of these dwellings in response to the features of neighbouring municipalities (with respect to each of the three motivations considered) deems traditional approaches like OLS unfitted for

[1] This information is not available in the 2011 Spanish Census.

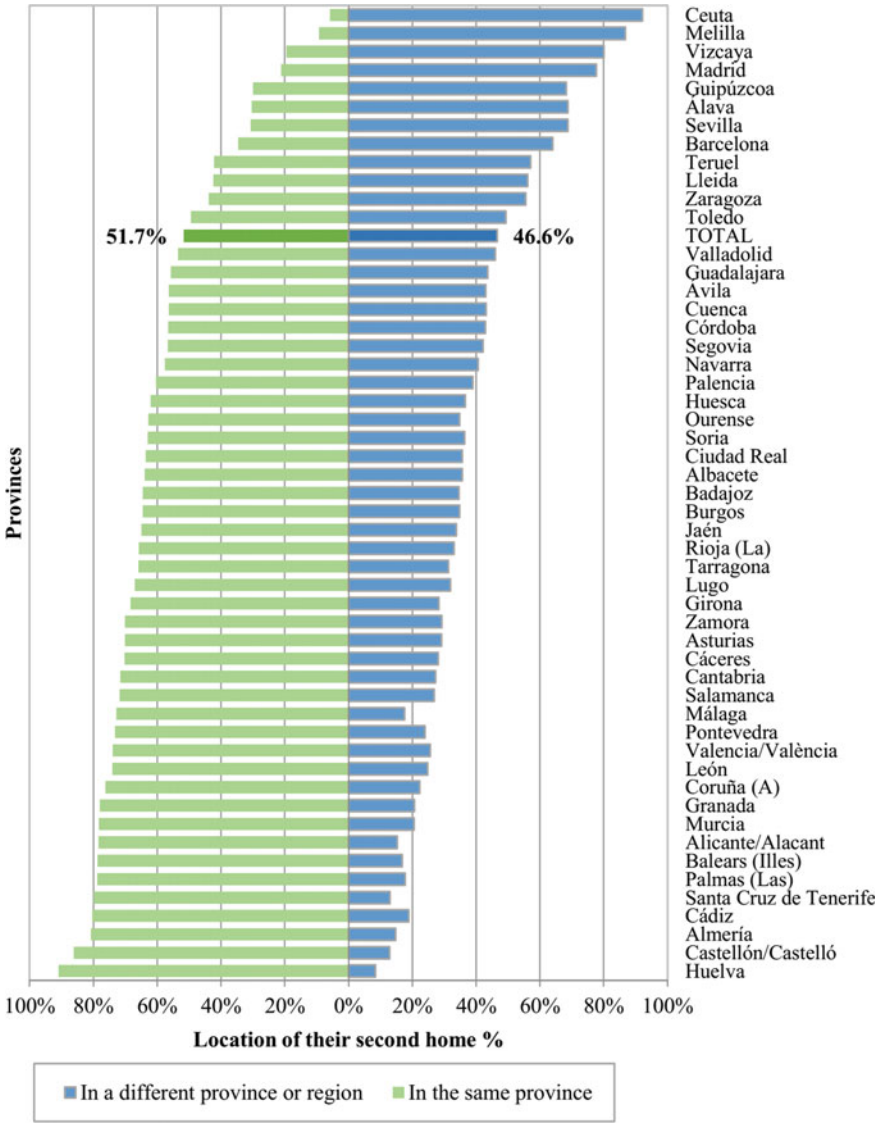


Fig. 2 Location of the second home by province of residence of the owner in 2001 (%) (Own elaboration from Spanish Census 2001) (The sum of both categories does not add up to 100% due to the second homes located abroad, which represent a very low percentage.)

the task. Additionally, provided the variety of scenarios across the Spanish territory (areas with attractive characteristics for one or more types of buyers), it can be expected that the effect of each explanatory factor differs visibly when looked at the local level, calling for a more detailed analysis.

There are several methodological options to deal with spatial dependence (autocorrelation in the error term induced by the spatial structure of the data). Useful reviews on the matter are offered by Anselin (1988, 2006), Anselin and Bera (1998), Arbia (2006), LeSage and Pace (2009) or Elhorst (2014). In order to assess the influence of the neighbouring localities from a global perspective, in this analysis we will rely on a definition of neighbourhood as the forty nearest municipalities, contained in matrix W, using centroids as reference points. The proposed spatial scheme reflects the distribution of second homes across Spain, as indicated by the Exploratory Spatial Data Analysis (ESDA) (Anselin 1999), and subsequently by evaluating alternative neighbourhood options via the Akaike Information Criterion (AIC).

Provided that in the first part of this study we will focus on the role played by the spatial spillovers emerging from the characteristics of the surroundings, and that the Moran's I test confirms the existence of spatial autocorrelation, the specification chosen to deal with it is the Spatial Durbin Error Model (SDEM) (LeSage and Pace 2009):

$$\begin{aligned} y &= \iota_n \alpha + \beta X + \gamma WX + u \\ u &= (I_n - \lambda W)^{-1} \varepsilon \end{aligned} \tag{1}$$

where, in our case, y is the share of second homes in 2001 or 2011. On the right-hand side, X is a vector of local characteristics comprising factors related to the three aforementioned reasons to own a second property along with other control variables, and WX represents those same features but in the neighbouring localities. The parameter gamma (γ) measures the spillover effects caused by the influence of the surrounding areas on the concentration of second homes in a certain municipality, and the parameter lambda (λ) represents the spatial dependence in the disturbances.

In this kind of models, the dependent variable in a given municipality is regressed against the features of the locality itself and the features of its neighbours. This allows for the estimation of the residual spatial disturbances (spatial dependence not captured by the included variables) at the same time. Although the Spatial Durbin Model (SDM) is more widely used in empirical applications [especially in growth analysis, as argued by LeSage and Fisher (2008)], in this case we opted for the SDEM because the analogous SDM is affected by residual spatial autocorrelation. This issue cannot be solved directly in the SDM specification (there is no spatial parameter in the error term to gather the spatial effect of the omitted variables), biasing the results of the estimation. In consequence, the coefficients obtained would not reflect the actual effect of the local characteristics on the share of second homes. As an alternative, the SDEM does not include the spatial autoregressive term (spatial lag of the dependent variable, i.e. the share of second homes in the surrounding municipalities). However, this model accounts for the attributes of the neighbours and, in contrast to the SDM,

the spatial dependence in the residuals is specified in the error term, avoiding the misspecification bias (Pace and Zhu 2012).

Although global approaches as SDEM are useful to understand the overall distribution of second homes, the specific effects that can be expected for certain local environments (especially in terms of the three motivations mentioned in the introduction) remain concealed since parametric heterogeneity is not accounted for. This implies that only one coefficient reflects the effect of one characteristic over the concentration of second homes in Spain as a whole, with the loss of valuable regional evidence. In this sense, global coefficients do not inform about the different effect that factors may exert in different parts of the country or their relative importance as contending explanations for the same fact. One example is the case of the demographic density, which can be in line with the willingness to escape if it has a negative effect on the share of second homes, or with an investment motivation if it has a positive effect. The factors can also show a higher or lower prominence depending on the place when explored jointly with other locational characteristics. In the presence of significant heterogeneity at the local level, global estimations can be misleading since a locally important factor may be disregarded as statistically insignificant due to a possible compensation towards zero in average terms.

Geographically Weighted Regression (GWR) (Brunsdon et al. 1996, 1998) is a nonparametric technique that makes evident the effects of spatial heterogeneity, exposing interesting spatial relationships that would be hidden otherwise (McMillen and Redfearn 2010). This methodology reveals spatial variations in the regression coefficients using a weighting matrix in the estimation process, enabling the observation of different responses to an explanatory factor across space.

The GWR model is specified as:

$$Y_i = \beta_{i0} + \beta_{i1} x_{i1} + \beta_{i2} x_{i2} + \cdots + \beta_{ik} x_{ik} + \varepsilon_i \tag{2}$$

The estimation output is a set of parameters for each location, calculated through the equation:

$$\hat{\beta}_i = \left(X' W_i X\right)^{-1} X' W_i Y; i = 1, 2, \ldots, n \tag{3}$$

The matrix W used in this process shows the spatial effects emerging from neighbouring locations within a specific bandwidth, which defines the kernel weighting function (Cleveland and Devlin 1988; McMillen 1996; Brunsdon et al. 1996, 1998). This matrix sets what is considered a neighbourhood in the estimation based on the bandwidth chosen. For this specific analysis, the bandwidth will be an adaptive window[2] (the distance adapts to the size of the vicinity) of forty nearest neighbours for consistency with the SDEM estimated earlier. Since the election of the kernel

[2] The bandwidth can be defined as a certain distance threshold or as an adaptive window (equivalent to the k nearest neighbours approach chosen in this work). The process of optimization followed was the minimization of the information loss as indicated by the Akaike Information Criterion, the same as for the SDEM.

function (equation that defines each element in the W matrix) does not appear to affect the robustness of the results, we opted for a Gaussian distance decay expression:

$$\alpha_{ij} = e^{-(1/2)(d_{ij}/h)^2} \tag{4}$$

where d_{ij} is the distance between the centroids of the municipalities and h is the adaptive bandwidth at work for each locality.

One flaw of GWR is that it cannot assess the spatial dependence within the neighbourhoods delimited (Shearmur et al. 2007), stressing the importance of complementing the analysis with an evaluation of the spillover effects, as we try to do here by means of the SDEM. Another significant issue is the possibility of misidentifying stationary and varying spatial processes (Wheeler and Tiefelsdorf 2005). This means that in some cases the spatial dependence detected is not authentic but a result of the optimization process. However, this is not much of a problem in large samples (Páez et al. 2011) like the one used in this analysis.

3.3 Databases and Variables Used

Table 1 offers a summary of some basic information on the variables used and the main databases. The endogenous variable is calculated as the share of second homes over the total household residences (i.e. excluding the collective houses) in each municipality. As was indicated in the introduction, the independent variables included go in line with the ones suggested by the literature on the main motivations for acquiring a second home.

Following this reasoning, the tourism factor can be identified as a compensation source, i.e. being close to a place with certain tourist attractiveness compensates that your primary home does not have that kind of amenities. With this idea in mind, we propose a Tourism Centrality Index (TCI) inspired on the incremental distances method devised by Partridge et al. (2008):

$$TCI_i = \begin{cases} \frac{1}{D_{ij}} \cdot \frac{P_j}{\sum_{j=1}^{m} P_j} & \text{if } i \neq j \\ 100 \cdot \frac{P_j}{\sum_{j=1}^{m} P_j} & \text{if } i = j \end{cases} \quad TCI_i \in [0, 100] \tag{5}$$

where D_{ij} represents the distance between i and j, P_j stands for the number of overnight stays[3] in j, being i the municipalities and j the tourist sites defined by the Spanish National Statistic Institute (INE).[4] m is the total amount of tourist sites,

[3] Overnight stay is defined in the Hotel Occupancy Survey (HOS) as each night spent by a visitor in an accommodation establishment. Overnight stays are preferable over the number of visitors because they take into account also the number of days those visitors stay in the municipality.

[4] The Spanish National Statistic Institute (INE) considers a municipality as a Tourist Site if there is a significant concentration of tourist supply services located in that place.

Table 1 Variables included in the model and main information sources

Variable description			Source
Dependent variable	Share of second homes over the total household residences		Population and Housing Census (2001 and 2011) from the National Statistics Institute (INE)
Independent variables	Tourism factor	Tourism Centrality Index	Hotel Occupancy Survey from the National Statistics Institute (INE) and Digital maps of the National Geographic Institute (IGN)
	Demographic pressure factor	Ratio of households per Km^2	Population and Housing Census (2001 and 2011) from the National Statistics Institute (INE) and Digital maps of the National Geographic Institute (IGN)
	Lifecycle factor	Share of 65-year-old or more population	Population and Housing Census (2001 and 2011) from the National Statistics Institute (INE)
	Land price factor	Urban land price per m^2	Urban Land Price Statistics from the Ministry of Development and Infrastructures
	Natural amenities and climate factors	Distance to the nearest coast	Digital maps of the National Geographic Institute (IGN)
		Average annual rainfall from 1987 to 2007	State Meteorological Agency (AEMET)
		Minimum temperature January (average from 1987 to 2007)	
		Maximum temperature July (average from 1987 to 2007)	

which in 2001 amounted to 61, and to 145 in 2011, reflecting the growth in tourism experienced in Spain during this period. The intuition behind this index is that the closer a municipality is to a tourist site, the stronger the tourism influence it will receive, serving as a measure of the degree of centrality/peripherality of the municipalities. This index is weighted by the share that each tourist site represents over the total amount of overnights stays, as a way of accounting for the size of each landmark. Consequently, this measure also takes into account the difference between being close to a large, medium or small tourist site and, at the same time, it incorporates the effect of being near to several tourist locations (tourism centrality). In this sense, this indicator compensates for the distance-to-size (as a continuous variable) without distorting the actual distance, as the incremental distances approach does, which might result in a misleading assessment of the relative position of the municipality. Theoretically, it acts like a centrality score that ranges between 0 and 100, being 100 when the municipality is the only one considered as a tourist site ($i = j$ and $m = 1$), and 0 if there are no tourist sites in the territory studied ($m = 0$). When a municipality is located very far from any tourist site, the index is close to 0. This factor relies on the economic assumption that a significant concentration of the supply of tourism services in an area is linked to a high demand for spending time in that place. In consequence, it can be expected that the demand for second homes will be also higher in those locations.

We also include a demographic pressure factor defined as the ratio of households per Km^2. If this variable has a negative effect on the share of second homes, it means that urban and highly populated areas are not places where people like to have their second residence. This would respond to an escape-from-dense-spaces motivation. On the contrary, having a positive effect on the endogenous variable would mean that the high-population factor is an aspect that increases the share of second homes, suggesting an investment or affluence motivation.

In order to take into account the influence of relatively recent socio-economic trends, some elements that should not be ignored in this analysis are the depopulation and retirement issues. In relation to that, lifecycle-related factors appear to be especially significant in Spain at the local level. Even though the country presents an average ageing profile with respect to the EU-28 according to Eurostat (19% of the Spanish population is over 65 years old in 2017), there are substantial differences between municipalities (for a review on the local spatial variability of aged population in Spain, see Gutierrez Posada et al. 2018). Derived from the acute ageing process, inheritance is a common way of acquiring a second home (especially in inland locations), and it is also usual to choose family-related areas as retirement destinations in order to preserve personal bonds and enjoy the benefits associated to family networks (Costa-Font et al. 2009). In this context, we decided to include the share of population older than 65 in each municipality to account for the local heterogeneity in terms of the demographic structure, focusing on the particular relationship of this age group with second-homes trends.

Another factor we try to account for is the price of the urban land per m^2. This economic factor represents the situation in the housing market of each municipality since it reflects the interaction between the demand for houses and the available

housing stock (Altuzarra and Esteban 2011). In general, it is expected that this variable shows a negative effect on the concentration of second homes because a higher price disincentives getting any kind of property. However, an investment motivation would go in line with a positive relationship between land prices and the share of second residences in some particular locations.

Geographical and climate indicators are added to reflect the attractiveness of a municipality with regard to its natural amenities, which have been considered as important factors in population allocation (Graves 1980). The distance of the municipality to the coastline is an environmental variable that accounts for certain types of tourism, including sun-and-beach. The climate-related variables (average rainfall, maximum temperature in summer and minimum temperature in winter) were created using long-term series with the purpose of considering the actual weather profile of the municipality, discounting for abnormal cyclic behaviours.

Regarding sources, as can be seen in Table 1, the Spanish Census of 2001 and 2011, are the main databases for the research performed here, along with the Hotel Occupancy Survey, both of them available from the Spanish National Statistics Institute (INE). The Census (carried out every ten years) is the principal source of information concerning the socio-economic characteristics of the population, and it also includes a record of the amount of primary and second homes at a municipal level. Additionally, the urban land price data can be found in the statistics of the Spanish Ministry of Development and Infrastructures, which offers this data in different population size tiers within each province. The information required to calculate the distances from every municipality to the nearest tourist site and to the coastline was obtained from the National Geographic Institute (IGN). Finally, the climate-related statistics come from the State Meteorological Agency (AEMET).

It should be noted that to have a set of comparable units in 2001 and 2011, we had to undo the changes that occurred in the municipal structure during this period, matching the one of 2001. In this process, we had to add up the information in the case of a separation, and to distribute it correspondingly to their original share when the municipalities were initially together. Therefore, our database comprises 8,108 spatial observations for both years.

4 Results

This section presents the results obtained from the estimation of the empirical models built for 2001 and 2011 with the variables described. Along with the examination of the results, a comparison between 2001 and 2011 will be reported for all the models.

The coefficients of the OLS model, presented in Table 2, have the expected sign. A more central location in terms of proximity to the tourist hotspots brings a higher share of second homes, as shown by the positive coefficient of the TCI; and a larger proportion of aged population is also significantly linked with more non-primary residences. Certainly, historical migration trends point out to a higher mobility from the inner top half of the country to other areas, especially from the third decade

of the twentieth century (Silvestre 2005; Paluzie et al. 2009), which supports the hypothesis that family linkages and inherited properties explain to a large extent the spatial pattern observed in Fig. 1.1. Densely populated areas and higher land prices appear to have a weak negative impact on the concentration of second homes. The positive effect of the distance to the coast (the farther from the coastline, the more second properties) might be another sign of the global preference for inland locations with kinship ties, but the influence of this factor is also limited. Regarding the weather-related variables, they reflect the preference for locations with milder climatic conditions.

This baseline specification provides with preliminary evidence about the greater explanatory power of the model for the share of second homes in 2011, when the share of second homes decreased in relative terms as a result of the economic crisis. Secondary properties are found to have suffered more the effect of the shock due to their closer link to the financial markets compared to principal ones (investment motivation). This is besides the generalized hit taken by the construction sector overall, with a deeper impact on residential tourist locations (Perles-Ribes et al. 2016). However, the Moran's I test warns about the presence of spatial autocorrelation affecting the reliability of the results for both years, calling for the use of a different estimation method. The robust version of the Lagrange Multiplier tests favours the Spatial Error Model, which accounts for the spatial dependence in the disturbances, over the Spatial Lag Model, more appropriate to measure the spillover effects. Provided this result, the SDEM appears as a very suitable option from the methodological perspective, as it combines both approaches. The SDEM allows modelling the residual spatial dependence, significant according to the Lagrange Multiplier tests, while allowing for the analysis of the spatial relationship between neighbouring municipalities in terms of their characteristics. Additionally, as mentioned in Sect. 2, by using this technique we address the issue of residual spatial autocorrelation existing in the Spatial Durbin estimation (spatial relationship in the local share of second homes that is not accounted for with the explanatory factors included, distorting the coefficients obtained as the errors are not randomly distributed).

Table 3 contains the results of the SDEM estimation. In general, the significant indirect effects arising from the characteristics of neighbouring municipalities (spatial lags) have a proportionally large impact on the share of second residences, although more vicinity factors are influential in the model for 2001. Again, the share of elder population stands out as an important variable, bearing an increase of 0.60% in the share of second homes in 2001 when the share of population aged 65 or more increases 1%. Similarly, the increase derived from an equivalent growth in the nearby localities amounts to 0.41%. The figures for the year 2011 are moderately higher (direct and indirect effects of 0.66% and 0.41%, respectively). This growth may be consistent with the advancement of the local ageing convergence process in the last decade, which has been especially intense in the top-left quarter of the country (Gutiérrez Posada et al. 2018), matching the pattern of concentration of second homes shown in Fig. 1. A relatively central position regarding tourist sites

Table 2 OLS estimation results

Variable	2001	2011
Intercept	0.511***	0.598***
TCI	0.070***	0.064***
Demographic pressure	−0.00003***	−0.00002***
Share of +65 pop.	0.612***	0.670***
Urban land price	−0.0002***	−0.0004***
Distance to the coast	0.044***	0.047***
Max. temperature summer	−0.013***	−0.015***
Min. temperature winter	−0.001	−0.004***
Rain	−0.012***	−0.011***
Adjusted R^2 OLS	*0.284*	*0.433*
F-statistic test	*403***	*776***
Jarque–Bera test	*288.86***	*508.75***
Moran's I	*0.060***	*0.074***
LM error test	*623.875***	*951.280***
LM lag test	*228.992***	*271.140***
Robust LM error test	*402.297***	*680.911***
Robust LM lag test	*7.414***	*0.771*

Dependent variable: share of second homes in 2001 and 2011
*/**/*** represent significance at 10%/5%/1% level, respectively

Table 3 SDEM estimation results

	SDEM 2001		SDEM 2011	
	Factor	Spatial lag	Factor	Spatial lag
Intercept	−0.188	–	−0.037	–
TCI	0.059***	0.16***	0.057***	0.115**
Demographic pressure	−0.00003***	−0.0001*	−0.00002***	−0.0001
Share of +65 pop	0.604***	0.405***	0.663***	0.411***
Urban land price	−0.0002***	0.0002	−0.0004***	0.0002
Distance to the coast	0.046***	−0.022**	0.044***	−0.013
Max. temperature summer	−0.016***	0.019***	−0.018***	0.018***
Min. temperature winter	−0.001	0.003	−0.005***	0.004
Rain	−0.013***	0.016***	−0.012***	0.008
Lambda	*0.459****		*0.533****	
Akaike information criterion (AIC)	*−5547*		*−7580*	
Log likelihood	*2792.51*		*3809.45*	
Likelihood ratio test	*171.96*		*279.51*	

Dependent variable: share of second homes in 2001 and 2011
*/**/*** represent significance at 10%/5%/1% level, respectively

is also important since ascending one unit in the TCI score[5] is associated with a direct rise of approximately 6% in the share of second residences in both years and with an indirect increase of 16% in 2001 and 11% in 2011. The larger indirect effect might be an indication of the trade-off between the desire to be close to the goods and services offered by tourist areas, and the repulse caused by saturation, which makes "second order" proximate locations more appealing. Our interpretation for the impact of the distance to the coastline is similar, as the direct effect is positive (further municipalities have more second residences by a rate of 0.4% approx. every 10 km inland) while the indirect effect (significant only for 2001) pulls in the opposite direction. The taste for relative moderation rules in the impact of the climatic variables, as own extreme weather conditions lessen the share of second homes and, at the same time, being near to warm or humid areas fosters it to a comparable extent. The demographic pressure and the urban land price have lower coefficients than the rest of the variables included. These factors amount for a reduction in the proportion of second homes of 0.003% in 2001 and 0.002% in 2011 when there is an increase of 100 households per km^2, and of 0.02% and 0.04%, respectively, when the price per m^2 increases in 100€. This situation suggests that the acquisition of a second residence in Spain is mostly related to life cycle and compensation reasons, while the affluence driver stands in third place. It should be taken into account that the decision to get a second home is influenced by the circumstances of the primary one (i.e. housing condition or tenure status), particularly in a situation of economic crisis and/or if the property is contemplated as an investment.

Despite our efforts to include as many factors as we could in order to explain the spatial distribution of the share of second homes in Spain, the error terms still show signs of a spatial component, as indicated by the Lambda parameter. It is slightly smaller for the year 2001, although the rest of the indicators designate the model for 2011 as more accurate.

Beyond the global assessment of the influence of neighbourhood relationships on the share of second properties, another important outcome of the SDEM is the suggestion of clusters linking a high tourist centrality or a high share of elder population with a high proportion of second homes. As we pursue the identification of these spatial clusters and the processes at work in them (regarding the possible interaction between the compensation, affluence and lifecycle motivations), we use an additional methodology that makes visible the heterogeneous effect of each factor across the Spanish municipalities.

Tables 4 and 5 show the distribution of the effect of each variable by means of GWR estimations for the year 2001 and 2011. In both cases, the variation in the coefficient is significant across the spatial distribution (F3 test), suggesting that this type of model is the most suitable for studying this phenomenon. Figures 3 and 4 map

[5] The TCI ranges from 8.65 (Madrid) to 0.12 (Haría) in 2001, and from 7.50 (Madrid and Barcelona) to 0.12 (Camariñas) in 2011. The top ten municipalities with the highest TCI score for 2011 were: Barcelona, Madrid, San Bartolomé de Tirajana (in Las Palmas province), Adeje (Santa Cruz of Tenerife province), Benidorm (Alicante province), Calviá (Balearic Islands), Palma de Mallorca, Pájara (Las Palmas province), Arona (Santa Cruz of Tenerife province) and Salou (Tarragona province).

Table 4 GWR estimation results for 2001

Variable	Global (OLS)	Min.	1st Qu.	Median	3rd Qu.	Max.	F3 test[(a)]
Intercept	0.511***	−6.874	−0.356	0.424	1.325	7.501	+++
TCI	0.07***	−21.06	0.009	0.186	1.101	8.819	+++
Demographic pressure	−0.00003***	−0.02	−0.0004	−0.00004	0.00002	0.002	+++
Share of +65 pop.	0.612***	−1.459	0.253	0.456	0.674	1.669	+++
Urban land price	−0.0002***	−0.005	−0.0006	−0.0003	−0.00007	0.002	+++
Distance to the coast	0.044***	−1.335	−0.122	0.003	0.084	0.871	+++
Max. temp. summer	−0.013***	−0.248	−0.04	−0.014	0.011	0.271	+++
Min. temp. winter	−0.001	−0.148	−0.024	−0.004	0.01	0.126	+++
Rain	−0.012***	−0.213	−0.019	0.004	0.029	0.228	+++
Adjusted R^2 *OLS*	*0.284*	*F-statistic*		*403****			
Adjusted R^2 *GWR*	*0.573*						
F1 test[(b)]	*0.656+++*						
F2 test[(c)]	*4.411+++*						

Dependent variable: share of second homes in 2001

*/**/*** and $^{+}/^{++}/^{+++}$ represent global significance or significant variation at 10%/5%/1% level, respectively

(a), (b) and (c): statistical tests proposed by Leung et al. (2000) in order to compare the goodness of fit between global and GWR models (F1, F2), and to check the significance of the variation in the coefficient distribution obtained (F3)

the results obtained in order to identify the different factors behind the second-home distribution from one area to another. White areas in the maps represent the negative sign of a certain variable, while coloured areas mean the opposite. Circles in the maps are tourist sites recognized by the National Statistic Institute in 2001 and 2011, and the size of each one represents the number of overnights stays.

The first conclusion that can be extracted from these results is that tourism affects positively the share of second homes for the most part of the country in both 2001 and 2011, as expected given that they are by definition tourism residences. However, two different types of tourism appear, as can be seen in maps a and b in Fig. 3. There are some places that can be identified as accommodation oriented (hotels, hostels and similar), and others that can be identified as second-home-oriented. The municipalities of Madrid, Barcelona, Valencia and the Basque Country are generally cases of the former (white areas) during this period, reflecting that households do

Table 5 GWR estimation results for 2011

Variable	Global (OLS)	Min.	1st Qu.	Median	3rd Qu.	Max.	F3 test[(a)]
Intercept	0.598***	−7.848	0.062	0.597	1.195	4.615	+++
TCI	0.064***	−8.052	−0.026	0.113	0.559	7.589	+++
Demographic pressure	−0.00002***	−0.021	−0.0003	−0.0001	−0.00001	0.002	+++
Share of +65 pop.	0.67***	−0.848	0.32	0.489	0.695	1.455	+++
Urban land price	−0.0004***	−0.005	−0.001	−0.001	−0.0002	0.003	+++
Distance to the coast	0.047***	−1.182	−0.074	0.032	0.14	0.89	+++
Max. temp. summer	−0.015***	−0.178	−0.041	−0.02	−0.0005	0.307	+++
Min. temp. winter	−0.004***	−0.106	−0.019	−0.004	0.008	0.106	+++
Rain	−0.011***	−0.148	−0.008	0.013	0.039	0.252	+++
Adjusted R^2 *OLS*	*0.433*	*F-statistic*		*776***			
Adjusted R^2 *GWR*	*0.689*						
F1 test[(b)]	*0.607*+++						
F2 test[(c)]	*4.814*+++						

Dependent variable: share of second homes in 2011
*/**/*** and $^{+}/^{++}/^{+++}$ represent global significance or significant variation at 10%/5%/1% level, respectively
(a), (b) and (c): statistical tests proposed by Leung et al. (2000) in order to compare the goodness of fit between global and GWR models (F1, F2), and to check the significance of the variation in the coefficient distribution obtained (F3)

not have a second home in these places for recreational reasons. The supply of accommodation activities satisfies the tourism demand better than a second residence in these areas. On the contrary, areas such as the coast and the islands, but especially the Cantabrian Coast, the Galician Coast and the interior part of Castile and Leon and Extremadura have a strong presence of residential tourism. This is one of the explanations to the small capacity of the accommodation establishments, which tend to be run as a familiar business in these regions (Carrascal Incera and Fernández 2015).

Maps c and d in Fig. 3 show the negative effect that demographic pressure has on the share of second homes, i.e. the compensation hypothesis can be identified as a significant driver for the majority of the Spanish territory (white area). Nevertheless, some municipalities show a positive sign linked to the household density, which suggests an investment motivation. Although the Great Recession is not included

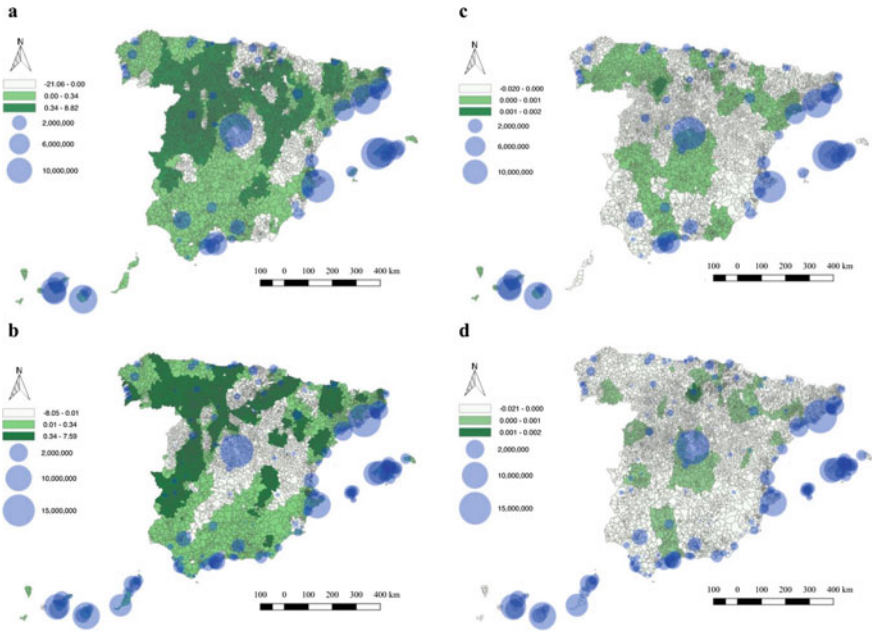


Fig. 3 **a** GWR coefficients for the TCI factor in 2001, **b** GWR coefficients for the TCI factor in 2011, **c** GWR coefficients for the demographic pressure factor in 2001, **d** GWR coefficients for the demographic pressure factor in 2011

as one of the explanatory factors in the analysis,[6] the influence of the crisis is one of the reasons inferred for the decline of the coloured area, as it is larger in 2001 than in 2011. This is coherent with the fact that 2000–2007 was an expansionary period, followed by the economic crisis (Carballo-Cruz 2011; Perles-Ribes et al. 2016). In 2001, several areas can be recognized as driven by affluence motivations: the cities of Madrid, Malaga and Zaragoza and their surroundings, the surroundings of the Basque Country, Salou and Barcelona, and the Canary Islands and the Northwestern part of the country (except A Coruña). However, in 2011, the investment related to household density is limited to the surroundings of Madrid, Malaga and Zaragoza because of the drop on the expected revenues from real-estate assets that could be expected from the burst of the housing bubble (García 2010; Martin 2011).

Results for the lifecycle factor are shown in maps a and b in Fig. 4. The coefficients are positive for the share of second homes in the whole country, except for the Balearic Islands and the Galician Coast in 2001. This means that acquiring a second residence is highly associated with locations that concentrate elder population, as was also concluded in the previous global models. The Southern inner part of the country, Asturias, and the Mediterranean Coast are especially affected by this variable. In

[6] It is not possible to build a longitudinal database that accommodates the methodological approach proposed.

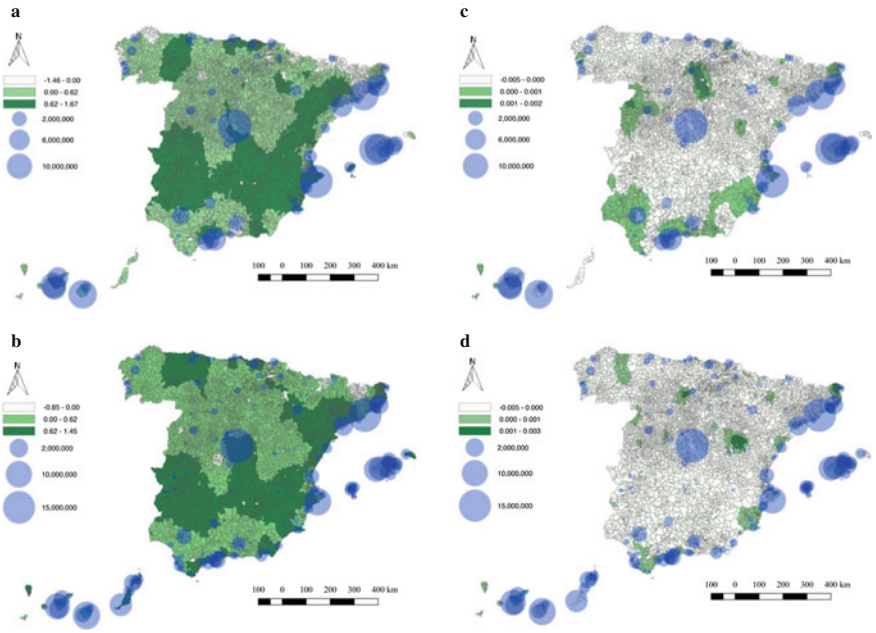


Fig. 4 **a** GWR coefficients for the share of elder population in 2001, **b** GWR coefficients for the share of elder population in 2011, **c** GWR coefficients for the urban land price factor in 2001, **d** GWR coefficients for the urban land price factor in 2011

2011, the effect of this factor, that reflects retirement and inheritance, becomes even more widespread, except again for the case of the Balearic Islands.

Finally, the last two maps c and d in Fig. 4 show that the urban land price has a negative effect on the acquisition of second homes overall. However, heterogeneity is also present here since there are some municipalities displaying a positive impact of this factor. This suggests an investment motivation not driven by the household density (or, in other words, not caused by the demand for houses). Those places are mainly located in the coast of Girona, Andalusia, Murcia, Alicante and Galicia in 2001, and limited to the Mediterranean coastline in 2011.

5 Conclusions

This chapter examines the concentration of the share of second homes in Spain at the municipal level by focusing on its relationship with the proximity to tourist sites, as well as by accounting for the principal motivations to own a second property regarded in the literature. We compare the results obtained for the years 2001 and 2011 using different spatial econometric models. In this way, we estimate a Spatial Durbin Error Model (SDEM) to evaluate the global effects, taking into account also

the spillovers impacts from neighbouring locations. By means of Geographically Weighted Regressions (GWR), the influence of each factor can be assessed locally, distinguishing between the different effects that operate at the same time in a particular place. Additionally to the tourism factor (Tourism Centrality Index), this research considers other components: the demographic pressure (households density) related to the compensation motivation, the share of elder population as an indicator of the lifecycle factor, or the urban land price to account for the affluence motivation. Environmental and climate variables are also included to represent the appeal of a municipality with respect to its natural amenities.

Previous literature was mainly focused on determining the profile of the owners of second residences. However, these studies cannot distinguish between destination characteristics because the available data sources they used (microcensus data) do not provide with the information that links the location of the principal and the second residence. Moreover, in the national census, there is no question about the motivation for having a second home, so it must be implied from the results derived from the characteristics of the household and/or the primary home location. Therefore, they tend to overrate the compensation (associated with households living in dense cities like Madrid and Barcelona) and the retirement effect (corresponding to being older than 45 years old). The approach of this analysis is different since we focus on the location of the second residences. We try to understand which variable might be affecting the decision of acquiring this type of dwelling in each municipality, and subsequently, which was the motivation of the owner.

Results suggest that the acquisition of a second residence in Spain is mostly related to the lifecycle motivation. Retirement and return migration seems to drive the concentration of second homes for the whole country, except for the Balearic Islands. This conclusion may have its roots in the demographic structure (ageing population combined with a very low birth rate), the tenancy scheme (low percentage of renting) and the transmission of properties by inheritance. In terms of compensation, we identified two different types of tourism in Spain. The first one relies on second homes to supply for leisure and recreational needs. The second is more oriented to accommodation establishments (hotels, hostels and similar). On the other hand, the demographic pressure and the urban land price act as reducing factors for the share of second homes overall.

Going deeper into the analysis, the different effect that each factor has across space can support different motivations. This is especially the case of the variables indicating a possible affluence effect. The positive impact of the demographic pressure or/and the urban land price observed in certain municipalities points out to investment opportunities (this is the case of some major cities and their surroundings). Simultaneously, the negative effect is linked to a compensation process (escaping from the agglomeration), in line with the results found in Strandell and Hall (2015).

Regarding policy implications, the findings presented in this chapter can serve as a guide to tailor interventions to the specific local impact of second homes, as these properties relate to the municipal context in different ways. In some areas, the booming of second homes is in line with an ageing process, which poses particular challenges on the services that will be needed and the demographic prospects

associated. In other areas, second homes are mostly an investment, affecting deeply the prices and availability of the housing market, as well as having implications in terms of access to financial resources. Lastly, the places where second homes act mainly as an escaping valve from the routine have certain requirements related to, for example, the management of social and natural amenities. These differences should be taken into account to devise policy measures effectively when addressing the issues mentioned. This is particularly relevant since second homes can become an interesting element for, for example, promoting local development through tourism, solving housing scarcity problems in densely populated areas, or fighting depopulation. We advocate in this analysis for a previous understanding of where it makes sense to implement such initiatives, and which impact can be reasonably expected.

The present analysis would benefit from having more information regarding the nationality of the owner, in order to distinguish between the different locations preferred by residents and by non-residents. According to the study by Módenes and López-Colás (2007a), non-residents owned around 1,000,000 s homes in Spain in 2001, which would account for 29.7% of the total second residences in that year. Knowing to what extent each motivation influences their decision of acquiring a second home in Spain, in comparison to that of the Spanish residents, would assist in determining how both profiles interact in the housing market (Barke 2008).

One interesting extension of this work would be to link data about the municipality of the main residence with that of the second home. This would be useful for disentangling the remaining questions about the concentration of second homes in relation to the motivations to acquire them that were not answered here. If that kind of information was available, we would be able to build a bridge between the traditional approach adopted in the literature that focuses on the characteristics of the owner, and the strategy followed in this study, concentrated on the characteristics of the location of the second home. This would allow us to obtain a more complete picture of the evolution and current trends of the phenomenon.

References

Allen, C., Gallent, N., & Tewdwr-Jones, M. (1999). The limits of policy diffusion: comparative experiences of second-home ownership in Britain and Sweden. *Environment and Planning C: Government and Policy, 17*(2), 227–244.

Altuzarra, A., & Esteban, M. (2011). Land prices and housing prices: the case of Spain. *Journal of Housing and the Built Environment, 26*(4), 397–409.

Anselin, L. (1988). *Spatial econometrics: Methods and models.* Dordrecht: Springer Science + Bussiness Media.

Anselin, L. (1999). Interactive techniques and exploratory spatial data analysis. In P. A. Longley, M. F. Goodchild, D. J. Maguire, & D. W. Rhind (Eds.), *Geographical information systems: Principles, techniques, management and applications* (pp. 251–264). New York: Wiley.

Anselin, L. (2006). Spatial econometrics. In T. C. Mills & K. Patterson (Eds.), *Palgrave handbook of econometrics* (Vol. 1, pp. 901–969). Basingstoke: Palgrave Mcmillan.

Anselin, L., & Bera, A. (1998). Spatial dependence in linear regression models with an introduction to spatial econometrics. In A. Ullah & D. Giles (Eds.), *Handbook of applied economic statistics* (pp. 237–289). New York: Marcel Dekker.

Arbia, G. (2006). *Spatial econometrics: Statistical foundations and applications to regional convergence.* Berlin: Springer.

Balfe, J. H. (1995). Passing it on: The inheritance of summer houses and cultural identity. *The American Sociologist, 26*(4), 29–40.

Barke, M. (2008). Second homes in the Spanish housing market: One market or two? *Journal of Housing and the Built Environment, 23*(4), 277–295.

Barke, M., & France, L. A. (1988). Second homes in the Balearic Islands. *Geography, 73*(2), 143–145.

Brunetti, M., & Torricelli, C. (2017). Second homes in Italy: Every household's dream or (un) profitable investments? *Housing Studies, 32*(2), 168–185.

Brunsdon, C., Fotheringham, S., & Charlton, M. (1996). Geographically weighted regressions: A method for exploring spatial nonstationarity. *Geographical Analysis, 28*(4), 281–298.

Brunsdon, C., Fotheringham, S., & Charlton, M. (1998). Geographically weighted regressions—Modeling spatial non-stationarity. *The Statistician, 47*(3), 431–443.

Carballo-Cruz, F. (2011). Causes and consequences of the Spanish economic crisis: Why the recovery is taken so long?. *Panoeconomicus, 58*(3), 309–328.

Carrascal Incera, A., & Fernández, M. (2015). Tourism and income distribution: Evidence from a developed regional economy. *Tourism Management, 48,* 11–20.

Cho, S. H., Newman, D. H., & Wear, D. N. (2003). Impacts of second home development on housing prices in the Southern Appalachian Highlands. *Review of Urban & Regional Development Studies, 15*(3), 208–225.

Cleveland, W. S., & Devlin, S. J. (1988). Locally weighted regressions: An approach to regression analysis by local fitting. *Journal of the American Statistical Association, 83*(403), 596–610.

Costa-Font, J., Elvira, D., & Mascarilla-Miró, O. (2009). Ageing in place'? Exploring elderly people's housing preferences in Spain. *Urban studies, 46*(2), 295–316.

Cuadrado-Ciuraneta, S., Durà-Guimerà, A., & Salvati, L. (2017). Not only tourism: unravelling suburbanization, second-home expansion and "rural" sprawl in Catalonia, Spain. *Urban Geography, 38*(1), 66–89.

Di, Z. X. (2009). Does second-home ownership affect primary housing demand? *Housing Studies, 24*(3), 321–332.

Dijst, M., Lanzendorf, M., Barendregt, A., & Smit, L. (2005). Second homes in Germany and the Netherlands: Ownership and travel impact explained. *Tijdschrift voor Economische en Sociale Geografie, 96* (2), 139–152.

Elhorst, J. P. (2014). *Spatial econometrics: From cross-sectional data to spatial panels.* Heidelberg: Springer.

Gallent, N. (2014). The social value of second homes in rural communities. *Housing, Theory and Society, 31*(2), 174–191.

García, M. (2010). The breakdown of the Spanish urban growth model: social and territorial effects of the global crisis. *International Journal of urban and regional research, 34*(4), 967–980.

Graves, P. E. (1980). Migration and climate. *Journal of Regional Science, 20*(2), 227–237.

Gutiérrez Posada, D., Rubiera Morollón, F., & Viñuela, A. (2018). Ageing places in an ageing country: the local dynamics of the elderly population in Spain. *Tijdschrift voor Economische en Sociale Geografie, 109* (3), 332–349.

Hall, C. M. (2014). Second home tourism: An international review. *Tourism Review International, 18*(3), 115–135.

Hall, C. M., & Müller, D. K. (Eds.). (2004). *Tourism, mobility, and second homes: Between elite landscape and common ground* (Vol. 15). Clevedon: Channel View Publications.

Hoogendoorn, G., & Visser, G. (2010). The role of second homes in local economic development in five small South African towns. *Development Southern Africa, 27*(4), 547–562.

Larsson, L., & Müller, D. K. (2017). Coping with second home tourism: responses and strategies of private and public service providers in western Sweden. *Current Issues in Tourism* 1–17.
LeSage, J. P., & Fischer, M. M. (2008). Spatial growth regressions: Model specification, estimation and interpretation. *Spatial Economic Analysis, 3*(3), 275–304.
LeSage, J. P., & Pace, R. K. (2009). *Introduction to spatial econometrics.* Boca Raton: CRC Press.
Marjavaara, R. (2007). The displacement myth: Second home tourism in the Stockholm Archipelago. *Tourism Geographies, 9*(3), 296–317.
Martin, R. (2011). The local geographies of the financial crisis: from the housing bubble to economic recession and beyond. *Journal of Economic Geography, 11*(4), 587–618.
McMillen, D. P. (1996). One hundred fifty years of land values in Chicago: A nonparametric approach. *Journal of Urban Economics, 40*(1), 100–124.
McMillen, D. P., & Redfearn, C. L. (2010). Estimation and hypothesis testing for nonparametric hedonic house price functions. *Journal of Regional Science, 50*(3), 712–733.
Milbourne, P. (1997). Housing conflict and domestic property classes in rural Wales. *Environment and Planning A, 29*(1), 43–62.
Módenes Cabrerizo, J. A. M., & López-Colás, J. L. (2007a). Second homes in Spain: Socio-demographic and geographical profiles. *Population, 62*(1), 157–171.
Módenes Cabrerizo, J. A. M., & López-Colás, J. L. (2007b). Second homes and compact cities in Spain: Two elements of the same system? *Tijdschrift voor Economische en Sociale Geografie, 98*(3), 325–335.
Mottiar, Z. (2006). Holiday home owners, a route to sustainable tourism development? An economic analysis of tourist expenditure data. *Journal of Sustainable Tourism, 14*(6), 582–599.
Mottiar, Z., & Quinn, B. (2003). Shaping leisure/tourism places-the role of holiday home owners: A case study of Courtown, Co. Wexford, Ireland. *Leisure Studies, 22* (2), 109–127.
Muñiz, I., Calatayud, D., & Dobaño, R. (2013). The compensation hypothesis in Barcelona measured through the ecological footprint of mobility and housing. *Landscape and Urban Planning, 113,* 113–119.
Norris, M., & Winston, N. (2010). Second-home owners: Escaping, investing or retiring? *Tourism Geographies, 12*(4), 546–567.
Oliveira, J. A., Roca, M. D. N. O., & Roca, Z. (2015). Economic effects of second homes: A case study in Portugal. *Economics and Sociology, 8*(3), 183–196.
Pace, R. K., & Zhu, S. (2012). Separable spatial modeling of spillovers and disturbances. *Journal of Geographical Systems, 14*(1), 75–90.
Páez, A., Farber, S., & Wheeler, D. (2011). A simulation-based study of geographically weighted regressions as a method for investigating spatially varying relationships. *Environment and Planning A, 43*(12), 2992–3010.
Paluzie, E., Pons, J., Silvestre, J., & Tirado, D. A. (2009). Migrants and market potential in Spain over the twentieth century: A test of the new economic geography. *Spanish Economic Review, 11*(4), 243–265.
Partridge, M. D., Rickman, D. S., Ali, K., & Olfert, M. R. (2008). Lost in space: Population growth in the American hinterlands and small cities. *Journal of Economic Geography, 8*(6), 727–757.
Perles-Ribes, J. F., Ramón-Rodríguez, A. B., Rubia-Serrano, A., & Moreno-Izquierdo, L. (2016). Economic crisis and tourism competitiveness in Spain: permanent effects or transitory shocks?. *Current Issues in Tourism, 19*(12), 1210–1234.
Pons, A., & Rullan, O. (2014). The expansion of urbanisation in the Balearic Islands (1956–2006). *Journal of Marine and Island Cultures, 3*(2), 78–88.
Robertsson, L., & Marjavaara, R. (2015). The seasonal buzz: Knowledge transfer in a temporary setting. *Tourism Planning and Development, 12*(3), 251–265.
Rye, J. F. (2011). Conflicts and contestations. Rural populations' perspectives on the second homes phenomenon. *Journal of Rural Studies, 27*(3), 263–274.
Shearmur, R., Apparicio, P., Lizion, P., & Polèse, M. (2007). Space, time, and local employment growth: An application of spatial regression analysis. *Growth and Change, 38*(4), 696–722.

Silvestre, J. (2005). Internal migrations in Spain, 1877–1930. *European Review of Economic History, 9*(2), 233–265.

Simms, A., Oram, J., MacGillivray, A., & Drury, J. (2002). *Ghost Town Britain: The threat from economic globalisation to livelihoods, liberty and local economic freedom*. London: New Economics Foundation.

Skak, M., & Bloze, G. (2017). Owning and letting of second homes: What are the drivers? insights from Denmark. *Journal of Housing and the Built Environment, 32*(4), 693–712.

Strandell, A., & Hall, C. M. (2015). Impact of the residential environment on second home use in Finland-Testing the compensation hypothesis. *Landscape and Urban Planning, 133,* 12–23.

Volo, S. (2011). Comity or conflict? A qualitative study on host-guest relationship in second home tourism. *Tourism Analysis, 16*(4), 443–460.

Wheeler, D., & Tiefelsdorf, M. (2005). Multicollinearity and correlation among local regression coefficients in geographically weighted regressions. *Journal of Geographical Systems, 7*(2), 161–187.

The Impact of the County Fair—Building an Economic Toolbox

Russ Kashian, Suvojit Choton Basu, and Pasan Samaranayake

1 Introduction

According to Gartner (2005), the transformation of rural America has been well under way for a long time now. The biggest concern with this transformation is "whereas in the past, rural economies were supplemented by increasing levels of economic activity, today's rural economy is buffeted by economic changes that are diminishing the viability of many rural communities" (Gartner 2005).

In the face of this change, rural tourism continues to play a key role in the economic impact of smaller communities. While there does not seem to be a globally accepted definition of rural tourism, Nagaraju and Chandrashekara (2014) state that rural tourism represents "any form of tourism that showcases the rural life, art, culture and heritage at rural locations, thereby benefiting the local community economically and socially, as well as enabling interaction between the tourists and the locals for a more enriching tourism experience." Meanwhile, Sasu and Epuran (2016) identify five categories of rural tourism. These are agritourism, ethnic tourism, ecotourism, creative tourism, and culinary tourism. While the focus of each category is different, they share several common threads, the biggest of which is local economic impact. A particular subset of the rural tourism categories are various theme-based festivals and county fairs that such rural communities have to offer.

R. Kashian
Department of Economics, University of Wisconsin-Whitewater, Whitewater, WI, USA
e-mail: kashianr@uww.edu

S. C. Basu (✉)
Sam Walton Fellow—Enactus, Department of IT/SCM, University of Wisconsin-Whitewater, Whitewater, WI, USA
e-mail: basuc@uww.edu

P. Samaranayake
Fiscal and Economic Research Center, University of Wisconsin-Whitewater, Whitewater, WI, USA

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_13

Marsden (2010) writes that, "County fairs are festivals of the harvest, but on a communal level as contrasted with the much less localized state fairs." His observation is that "above all, county fairs are for the insiders as well as for the outsiders very sensual experiences, appealing to as many of our five senses as possible, and often simultaneously. We can feel, smell, taste, hear, and see the blending of rural folk culture with the popular culture of the midway and the carnival. It is at these points of tension where the county fair is most fully realized."

Having existed for approximately 150 years, county fairs are a tradition of both rural and urban people so much so that many communities have established permanent locations for these annual events. These fairs are frequently celebrations of seasonal events, such as harvest time or the end of summer and historically these gatherings have offered people a place to display and trade products or goods. Furthermore, venue operators display and sell livestock, unique handicrafts, and agricultural farm products. In addition to the business opportunities, county fairs also provide a social element to a community by providing a venue for family entertainment. While the purpose of these fairs is to entertain local residents of surrounding areas and bring residents together, attendance records indicate that fairs also attract visitors from different geographic areas, even different states. The unique and interesting attractions that county fairs offer encourage visitor spending and promote economic activity. Events ranging from concerts, tractor pulls, and demolition derbies have had an impact on communities, generating revenues and bringing economic activity to the counties. The county fair is an important provider of economic activity and as such, the county fair needs to be conducted properly to remain successful.

According to the 2016 Wisconsin County and Fairs Annual Report, more than "3 million people attended 76 county and district fairs in Wisconsin during 2016. As current and future generations become ever more distant from the farm, there is a serious need to increase agricultural awareness and education to consumers." The report further recognizes the key role of state, county and district fairs, which do "an exceptional job in filling this need by offering both an educational and entertaining experience for fairgoers through hundreds of exhibits, educational events, and entertainment." The economic impact derived from these county fairs and festivals are significant. In the above report, it was clear that the trend now centers on "spending more time to develop fun and educational agricultural displays where volunteers interact with fairgoers of all ages." It is important to note that the first objective of every fair is to present a teaching/learning experience, done in such a way as to be enjoyed by all ages. These fairs and festival are serving as a showplace for the community and the opportunity for youth and adults to work together.

However, with the increasing velocity of change and the changing visitor profile (demographic, tastes, and preferences), it is our assertion that in order for fairs to remain in business, planners must proactively adapt and update their attractions to bring new visitors and retain regular visitors. Understanding regional consumer preferences and willingness to spend allows county fairs to implement attractions and policies that maximize revenue and economic activity. This paper attempts to impart onto county fair managers and administrators the ability to conduct their own economic impact studies for their county fairs.

In order to implement a "toolbox" or the methods and steps to collecting consumer spending and demographic data, a county fair director must first develop a survey. Then, the fair organizers must obtain a volunteer force to administer the survey. The volunteer force needs to be trained on how to give out the survey and attract fairgoers. Once the data are collected, an input–output analysis can be used to calculate the direct, indirect, and induced effects of conducting a county fair.

The economic toolbox offers an opportunity to clearly measure the demographics, spending patterns, and the origins of county fair attendees. This provides the county fair director a valuable insight into the event's reach and revenue potential. Some sample results from four county fairs (below) provide some insights. This when combined with detailed analysis and geo-location information provides tremendous insights to the country fair director to find ways to make future fairs popular and economically viable.

In the following sections, we introduce the specifics of the economic toolbox, survey, assembling the volunteer force, input–output analysis, analysis and findings and impact areas. We also explain the local impact, the multiplier effect, and provide an understanding of input–output analysis Impacts. In the Conclusion and Future Directions, we provide some best practices from our study and suggestions on how to enhance the toolbox available to fair directors and county fair organizers. The ultimate goal of the chapter is to provide the county fair directors and organizers with usable tools to start understanding ways to improve the experiences for the fairgoers and having a significant economic impact for their communities.

2 Building the Economic Toolbox

In order to develop an economic toolbox useful for understanding the economic contributions of county fairs, a few steps must be taken including: develop a survey, obtain a volunteer force to administer the survey, train the volunteer force to give out the survey and attract fairgoers, and use an input–output analysis to calculate the direct, indirect, and induced effects of conducting a county fair. The economic toolbox offers an opportunity to clearly measure the demographics, spending patterns, and the origins of county fair attendees. This provides the researcher a valuable insight into the event's reach and revenue generating. In order to create this tool box, fair directors need to develop a survey specific to the information needed, get volunteers to administer the survey, attract fairgoers to take the survey, and finally input the data into input–output analysis to determine the economic impact. One simple but very effective best practice we can share in this regard is to identify key decisions that need to be made and work backward from these key decisions to see what data are needed to make those decisions. This provides focus and clarity in designing a survey.

2.1 Developing a Survey

Developing the survey (see Fig. 1) is the first step in the toolbox. The surveys must be specialized and molded toward the fair that circulates them. For example, some fairs

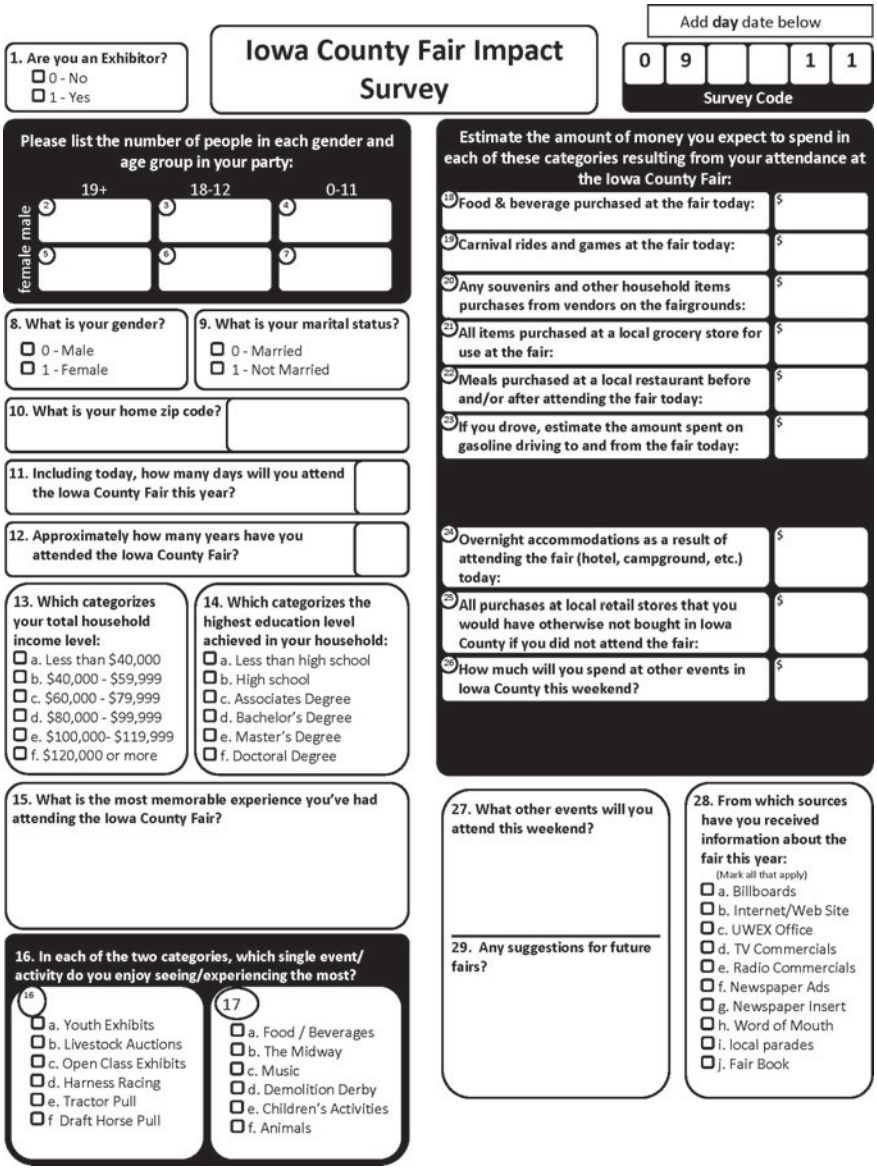


Fig. 1 Sample survey instrument used for Iowa County Fair, Wisconsin

feature horseracing, while other fairs feature stock-car races. In other words, focus on these specialized events allows the survey takers to gather data on the individualized events. Other fairs may have special promotions targeted at specific demographics such as senior citizens or youth. The survey taker may wish to emphasize these events. Finally, the structure of a midway or carnival may vary from fair to fair. The survey needs to be customized to these differences however subtle they may be.

Although some demographic questions remain constant throughout most surveys such as age, gender, group size, income bracket, hometown (zip code), and education level, the spending and preference questions should apply to a specific fair. A summary of the answers generated in recent surveys are included in Table 8 through 13. The responses are included to provide context for future county fairs who conduct similar analysis.

Most county fairs maintain annual events. These include demolition derbies, concerts, and tractor pulls and produce festivals and other community specialties that draw individuals and families alike from long distances away, and these unique events distinguish each fair in a crowded entertainment marketplace. Identifying the events that attract the most visitors is extremely important because the fair has an opportunity to concentrate on those areas in demand (or those that lack demand). Adding a section to the survey that asks for recommendations or ranking potential events can add insight as well.

While the attractions provide valuable marketing information, the ultimate goal of this study is to determine the fair's economic impact. As a result, questions regarding money spent during the trip on gas, lodging, and food provide the fundamental foundation that determines the fair's economic impact. The questions are designed to broadly cover visitors' spending patterns. While the study is primarily focused on economic impact, it also offers an opportunity to take a demographic snapshot of the fair. Once taken, this snapshot can be used in several ways. For example, if the fair identifies the average fairgoer by age, gender, income, and education, current and potential sponsors may wish to be informed of this. However, it may also allow the fair board to identify demographic gaps that may be marketed to in order to expand attendance. Once collected, the surveys need to be consolidated to properly conduct a study. As such, answers to questions need to have a semblance of uniformity in order to enter the answers into a database. An example of a survey used by the Iowa County Fair is displayed at the end of the paper (Fig. 1). After developing a survey, a force of volunteers must be found who can issue and collect the surveys.

It is important to note that since the purpose of the study is to evaluate the economic impact of the ongoing county fair, the survey does not ask whether the participant would recommend the county fair to family, friends, or other acquaintances. We evaluate average spending habits based on the data collected from the survey and utilize the aggregate attendance for the county fair; therefore, it is not necessary for us to ask whether a participant would recommend the fair to any of their acquaintances.

2.2 Assembling a Volunteer Force

The task of assembling a volunteer force is rather straight forward. The administrator needs to find a group of individuals who fairgoers will not quickly ignore or avoid. Getting young individuals from 4-H, Boy Scouts, Girl Scouts, or local students (from high school or college) will generally provide the best results, assuming they know how to properly administer the survey. Younger individuals are less intimidating, have more free time, and have more energy than older individuals on average. In many cases, these individuals often have required service hours that they must conduct. By contacting organizations of interest, those organizations can ask their members to volunteer their time. The director of a county fair can ask the members in person for their assistance as well. Once the volunteer force is attained, the next step is effectively issuing and collecting the surveys. A best practice we highly recommend is to conduct a training program for the volunteers. This will provide the consistency and increase the reliability of the data collected by them.

Issuing the survey to fairgoers can be challenging because many fairgoers consider filling out a survey to be a low priority. As such, correct placement of volunteers at ideal times is a necessity. Volunteers should be placed where fairgoers are likely to frequent and where fairgoers will be most willing to stop to take the survey. Gates and entrances should be avoided as individuals eagerly pass through gates as they are excited to attend the fair. They will quickly brush past the survey takers. In addition, they have not spent any money nor have they observed the attractions that are included in the survey. Also, individuals leaving a venue often are in a rush and/or no longer willing to take any survey. A more appropriate location would be near restrooms or food stands, as most fairgoers end up visiting these sites. Many individuals near these locations will be waiting for their friends and family to buy food and use the restroom. These are ideal locations for maximizing participation in the survey, as these individuals will have nothing else to do. Incentives, such as tote bags, key chains, and water bottles, can improve the participation rate significantly (often the fair may have leftover promotional materials from previous years to use).

Once the data are collected, an input–output analysis (described below) can be used to determine the economic impact of the fair. County fairs generally create three areas of economic development:

1. Fair operations (often centered on the fair's seasonal administration),
2. The fair itself, and
3. The animal or livestock auctions.

Each of these areas creates an economic impact that will be explored in the sections below. This includes actual results of studies completed by the Fiscal Economic Research Center (FERC) for five counties in Wisconsin–Walworth, Waukesha, Iowa, Clark, and Green. Another way to look at this is that we have successfully utilized this methodology in multiple locations with reliable results.

2.3 Input–Output Analysis

Over the past several years, the Fiscal and Economic Research Center (FERC) at the University of Wisconsin-Whitewater has shown that the county fair is not only a source of entertainment for locals and foreigners alike, but it also has a relevant economic impact on the community. FERC members and local volunteers randomly surveyed fair attendants in five different county fairs: Walworth County Fair (2009), Waukesha County Fair (2010), Clark County Fair (2012), Iowa County Fair (2011), and Green County Fair (2016). The purpose of these surveys was to analyze the economic effects the fairs have on their respective regions.

Through these studies, we were able to collect data about household income, education level, average expenditure, preferred fair activities, attendee group size, marital status, and admission discount received. After analyzing these data, we were able to determine the economic impacts that these county fairs had on their respective communities. This is accomplished by using input–output analysis which is an economic impact assessment software system. The system was originally developed and is now maintained by the Minnesota input–output analysis Group (MIG). It combines a set of extensive databases concerning economic factors, multipliers, and demographic statistics with a highly refined and detailed system of modeling software. Input–output analysis allows the user to develop local-level input–output models that can estimate the economic impact of new firms moving into an area as well as the impacts of professional sports teams, recreation and tourism, and residential development. The model accomplishes this by identifying direct impacts by sector, then developing a set of indirect and induced impacts by sector through the use of industry-specific multipliers, local purchase coefficients, income-to-output ratios, and other factors and relationships. In this case, input–output analysis is used to measure the impact of the county fair.

In order to determine the economic impact of the fair on the community, the FERC implemented the 2006 input–output analysis economic modeling system. This method produces an economic multiplier, which is a quantitative approach that measures the direct and indirect impacts on the economy. Therefore, the economic multiplier explicates that a change in the economy will result in another change in the economy. Consequently, an original injection of capital into the economy will result in a greater total impact after the economic multiplier takes effect. The input–output analysis model is capable of determining the overall impact on the economy by initial spending. This model uses data gathered in surveys to estimate the extent that different spending categories affect the local economies in terms of direct effect, indirect effect, and induced effect.

- **Direct Effect**—production change associated with a change in demand for the good itself. It is the initial impact to the economy, which is exogenous to the model. This includes the spending brought about by the county fair.
- **Indirect Effect**—the secondary impact caused by changing input needs for directly affected industries (e.g., additional input purchases to produce additional output). This concerns inter-industry transactions. For instance, the county fair has

a demand for locally produced materials. The success of the county fair affects all of its suppliers including products and services provided by the local community. This can be viewed as the additional spending brought about by the direct effect.

- **Induced Effect**—caused by changes in household spending due to the additional employment generated by direct and indirect effects. The induced effect measures the effects of the changes in household income by analyzing those individuals working at the fair, the fair's suppliers, and money spent at restaurants, grocery stores, and shops. This can be viewed as the additional spending brought about by the indirect effect.

There are three main input–output tools that we could utilize to measure the economic impact of the county fairs, there are RIMS-II, IMPLAN, and REMI. RIMS-II and IMPLAN are input–output models, while REMI is a hybrid between input–output analysis and econometric techniques.

RIMS-II is based on a set of national input–output accounts that illustrate the goods and services produced and utilized by each industry (BEA, 2017). According to IMPLAN Group (2018), "IMPLAN expands on the traditional input–output model to include transactions between industries and institutions themselves, which captures all monetary market transactions in a given period of time. IMPLAN can thus more accurately be described as a Social Account Matrix (SAM) model, though the terms I–O and SAM are often used interchangeably." REMI is a dynamic general equilibrium model with multiple loops, which can forecast into the future, often REMI models have high degrees of complexity, with combing elements of a traditional input–output model and as other economic variables such as unemployment rates, prices, and income (Neill 2013). For the purpose of this study, we utilize IMPLAN for the following reasons:

- IMPLAN is a partial equilibrium model, which means that the model assumes that the event does not consume the full capacity of the surrounding economy. In other words, consumption operations in the county fair would not affect consumptions that occur elsewhere.
- IMPLAN allows us to obtain a breakdown of direct, indirect, and induced effect at both the aggregate activity and individual industry level whereas RIMS-II does not have that capability (Neill 2013).
- When comparing the multipliers between RIMS-II and IMPLAN, there is evidence for slightly higher multipliers in RIMS-II and it is often best to have a conservative estimate of the total regional economic impact than overstate the effect (Neill 2013).
- REMI would be more suitable to evaluate dynamic actions or initiatives that would change market dynamics and consumer behaviors, such as changes in tax policies or measuring the regional impact of any other regional tax policy (Neill 2013).
- REMI models often have high degrees of complexity. Since we mostly conduct regional economic impact studies for non-academic and non-policy-oriented purposes, this level of complexity is often unnecessary for studies of this scale (Neill 2013).

2.4 Initial Findings and Impact Areas

These fairs impact their counties in three major ways. The first is the revenue generated by the local expenditures made at each fair, such as carnival rides, attractions, and refreshments. The input–output analysis calculations of funds generated by the fairs alone follow the traditional line of input–output analysis; the data that describes the fairgoers' spending patterns are entered into the appropriate categories in input–output analysis. For example, respondents are asked about their spending at hotels and gas stations. These are common areas of economic impact for tourism in the input–output analysis. These data are derived from the surveys given out at a fair. Only by knowing how much fairgoers spend on gas, hotels, and local restaurants can one begin to estimate the economic impact of consumers visiting the fair.

The second is income generated by the expenses paid to the employees, supplies, and services provided to the fair. Within input–output analysis, fair operations fall into a couple of possible classes. The analyst can select carnivals and fairs as a business activity or the analyst can choose to break the expenses into smaller categories, such as utilities, office supplies, and insurances. The selection of approach depends on the depth of information in the budget offered by the fair to the input–output analysis analyst. These operating costs generate their own economic impact upon the local community. Many of the services and products of the fair will come from the local community. Typically, electricity, water, local produce, and specialty crafts will come from businesses residing close to the fair.

Finally, the third impact is the monetary transactions created by auctioning livestock. This analysis treats the rearing of animals as a farm operation in the livestock area of input–output analysis. In effect, the exhibitors are operating a single animal farm that creates a demand for feed, veterinary services, building, and so on. Although one animal sale is not substantial, when a fair conducts an animal auction there are substantial impacts. The aggregate sales of animals at the livestock auction can produce an economic impact. All the animals need to be provided feed, which is bought locally. The animals need to be checked for diseases and treated for injuries, which is provided by the local vet. Furthermore, the animals need housing which is built with wood, nails, paint, and tools bought in the local community.

1. **Local Impact and the Multiplier Effect**

Not all money spent at the fair will stay in the local county; a portion of this economic benefit will leave the local economy through taxes and expenses to be paid to companies that are outside of the local economy. People who work at the fair could be from outside the state. In addition, the professional fair workers often work for traveling entertainment companies, so their earnings are ultimately spent in their hometown. Insurance paid by the employers and employees might be paid to a company in a different state. The prizes or trinkets awarded/bought at the fair in all likelihood were not produced locally (quite often they are imported from overseas). Each of these and many more possibilities allow for money to leak out of the economy, thus affecting other areas. The multiplier effect compensates for this loss with indirect and induced economic effects.

The idea of the economic multiplier requires some explanation. The economic multiplier is the additional industry sales, employment, and employment income that come about after the direct effect upon an industry. For instance, if 30 employees are hired to work at the fair, employment will increase by more than the 30 jobs directly tied to the fair. There are two reasons to describe why this happens. First, the operation of the fair requires several expenditures including utilities, insurance, and maintenance costs. This spending creates additional jobs in those industries that supply those services. These impacts are referred to as indirect effects because they are indirectly created by the establishment of jobs in the county fair. Another impact occurs from the people who work in the industry spend their earned income in the local community. This spending creates jobs in the businesses that provide those services. These impacts are called induced impacts. This defines the employment multiplier as the number that is multiplied by the number of jobs directly involved in the fair to give the total number of jobs created (both directly and those created in the community by the fair). If the total number of jobs created by the industry was 40, then the employment multiplier would be 1.33 (40/30).

The data presented in the following tables (Tables 1, 2, 3, 4, 5, 6 and 7), show the impacts and multipliers of the Walworth, Waukesha, Iowa, Clark, and Green county fairs. Data from other areas of the survey are also presented later in the chapter. These include demographics, preferences, educational levels, annual income, and attendee group size.

2. Understanding Input–Output Analysis Impacts, Multipliers, and Results

As can be seen in the tables below, the multipliers for each county fair are very similar to each other. This allows the analyst to easily provide a preliminary estimate of the economic impact of a new county fair. As mentioned and shown in the previous pages, there are three different impacts that need to be analyzed when conducting a county fair: fairgoer expenditure, county fair expenses, and livestock auctioning.

In Tables 1, 2, and 3, we provide the expenses based on the three categories—Fairgoer Expenditure, County Fair Operations, and Livestock Auctions. We have also

Table 1 Fairgoer expenditure impact

County	Walworth	Waukesha	Iowa	Clark	Green
Industry sales	$6,318,449	$4,781,098	$439,362	$376,045	$911,784
Jobs	77	99	8	7	10
Employment income	$1,334,730	$1,558,071	$135,773	$120,015	$349,945

Table 2 County fair operations impact

County	Walworth	Waukesha	Iowa	Clark	Green
Industry sales	$1,112,330	$922,371	$243,131	$98,824	$620,759
Jobs	26	27	3	3	8
Employment income	$458,231	$182,317	$65,271	$33,461	$189,937

Table 3 Livestock auctions impact

County	Walworth	Waukesha	Iowa	Clark	Green
Industry sales	$590,358	112,093	$194,555	$146,692	$315,886
Jobs	14	2	4	3	1
Employment income	$141,595	$12,644	$42,215	$31,132	$55,303

Table 4 Fairgoer expenditure multiplier

County	Walworth	Waukesha	Iowa	Clark	Green
Industry sales	1.26	1.11	1.25	1.24	1.76
Jobs	1.25	1.05	1.12	1.11	1.38
Employment income	1.4	1.1	1.25	1.22	1.75

Table 5 County fair expenses multiplier

County	Walworth	Waukesha	Iowa	Clark	Green
Industry sales	1.41	1.12	1.29	1.17	1.94
Jobs	1.19	1.04	1.23	1.07	1.47
Employment income	1.29	1.24	1.63	1.13	2.69

Table 6 Livestock auctioning multiplier

County	Walworth	Waukesha	Iowa	Clark	Green
Industry sales	1.62	1.05	1.28	1.05	1.41
Jobs	1.28	1.28	1.25	1.28	1.5
Employment income	1.9	1.15	1.56	1.15	1.99

segmented each category into industry sales, jobs, and employment income. This is based on actual data that were collected for each of the five fairs and analyzed using input–output analysis.

Fairgoer expenditure is determined by the survey data collected at the fair. Although surveying all of the fairgoers is unreasonable, one can estimate the spending per visitor by averaging out the spending in the selected categories of the survey. This

Table 7 Total impact of the five county fairs

County	Fairgoer expenditure	County fair operations	Livestock auctions	Total impact
Industry sales	$12,826,738	$2,997,415	$1,359,584	$17,183,737
Jobs	201.56	66.20	23.90	292
Employment income	$3,498,945	$929,217	$282,889	$4,711,051

average can be applied to the total number of visitors to estimate the direct impact that they have on the community. Gasoline, food, hotel stays, and other recreational activities can and should be taken into consideration with this estimate. Each industry, however, has different indirect and induced effects on the community; therefore, each of these industries needs to be analyzed individually in order to calculate the total economic impact in a regional community. The economic impact of actually running the county fair is the next aspect to consider.

Tourism is not the only driving force behind the revenues a county fair brings to a community. Events that communities conduct require the use of electricity, water, maintenance personnel, ride conductors, management, and cleanup crews. Many of these services purchased for the fair come directly from the immediate community members and businesses. This information is much easier to obtain than fairgoer data as all of this information is documented. With these data, in much the same way as fairgoer data, the economic impact can be determined.

Livestock auctions, which are the last part analyzed, produce a significant impact as well. The economic impact of livestock auctions can be determined in a much simpler manner than all of the other economic impacts. Each sale of livestock needs to be documented and tallied. The sum of the sales of the livestock is the direct economic impact.

Once all of the separate impacts have been calculated, they can be compiled to produce a complete picture of the county fair's total economic impact. The director should not worry about calculating the leaks of such a study because the multiplier shows that the indirect and induced effects more than compensate for the lost economic impact from leakages. With this economic toolbox, most county fairs can produce the data required to calculate the impact that they have on the regional community. Acquiring access to input–output analysis is the one step that fairs would need to outsource to attain. One possibility is to coordinate with local or regional universities/colleges or economic development agencies, which may have access to the input–output analysis software platform.

In the five-county study, our survey also included items such as most anticipated activity (Table 8), which provides tremendous insights to the fair director. We did not collect these data for Green County but as is evident from the data from the other counties, there is significant variance based on the county fair and region. This is extremely useful information for the county fair director for planning future events.

We also captured data on attendee spending profile per person (Table 9) as well as household income (Table 10). These spending data were then divided into categories such as refreshments, snacks, rides, transportation, and souvenirs, which become critical data to run the input–output analysis. It also sheds light on where fairgoers are willing to spend their money which has direct impact in organizing future county fairs. Also, as expected, this has high correlation with the most anticipated activity findings.

Tables 11, 12, and 13 provide additional demographic data of the fairgoers and help provide insights for marketing and messaging related to the county fair. Almost 2/3 of the visitors were married and over 80% of the attendees' education level was concentrated between high school, two-year degree, and bachelor degrees. Overall

Table 8 Most anticipated activity

Legend #1 = Most anticipated

County	Walworth	Waukesha	Iowa	Clark
Food/Beverages	1	7	5	6
Grandstand	2	1	3	7
Youth Exhibits	4	2	1	1
Animals	8	3	2	2
Kiddie Carnival	6	8	7	11
Livestock Auctions	7	6	9	10
Carnival	9	3	11	12
Open Class Exhibits			10	9
Hames Racing			4	
Tractor Pull			6	4
Draft Horse Pull			12	3
Foo			8	8
Demolition Derby			5	5
Sea Lion Splash		2		

Table 9 Attendee spending profile per person

County	Walworth	Waukesha	Iowa	Clark	Green
Refreshments and/or Snacks at the Fair	$11.50	$11.51	$9.83	$9.46	$11.57
Carnival Rides and Games	$4.78	$4.20	$4.84	$4.32	$3.47
Other Events in the County	$4.53	$2.78	$2.65	2.34	$2.54
Souvenirs from Local Merchants	$3.27	$2.47	$1.51	$1.60	$1.12
Local Transportation	$3.17	$2.75	$5.84	$3.23	$6.49
Food Purchases at a Local Grocery Store	$2.38	$1.58	$2.30	$4.56	$5.06
Meals Purchased Before or After the Fair	$1.56	$2.14	$2.66	$3.21	$6.94
Overnight Accommodations	$1.16	$1.16	$2.03	$2.94	$0.69

Table 10 Household income percentage of fairgoers

Legend: All figures in percentages (%)

County	Walworth	Waukesha	Iowa	Clark	Green
Less than $40,000	21.2	17.9	23.6	30.2	22.1
$40,000–$59,000	21	23.4	24.7	30.8	28.8
$60,000–$79,000	18.7	19.9	21.4	15.9	14.4
$80,000–$99,000	14.8	16.4	17.3	12.8	9.7
$100,000–$119,000	11.7	11.9	6.3	6.2	9.6
$120,000+	12.5	10.6	6.6	4.1	15.4

Table 11 Education level of fairgoers

Legend: All figures in percentages (%)					
County	Walworth	Waukesha	Iowa	Clark	Green
Less than High School Diploma	1.7	1.3	2.9	0.6	0.7
High School Diploma	28.6	28.8	28.8	37.7	38.1
2-Year Degree	23.7	25.7	22	27.4	23.3
Bachelor's Degree	29.5	27	31.2	23.3	25.5
Master's Degree	13.5	15	12.7	9.3	10.1
Doctoral Degree	3	2.2	0	1.7	2.3

Table 12 Attendee group size

Legend: All figures in percentages (%)					
County	Walworth	Waukesha	Iowa	Clark	Green
1	18.8	13.52	19.5	16.9	12.7
2	34.9	39.24	27.3	33.7	23.9
3	13	16.01	11	12.5	17.2
4	13.2	16.01	21.8	16.4	14.2
5+	20.1	27.95	20.5	20.5	32.1

Table 13 Attendee marital status

Legend: All figures in percentages (%)					
County	Walworth	Waukesha	Iowa	Clark	Green
Married	69.6	75.2	73.2	67.1	66.4
Unmarried	30.4	23.8	26.8	32.9	33.6

trends across the counties seem to be similar and a majority of the people preferred to attend the fair in a group. This is clearly a plus for the county fair organizers since fairgoers seem to view the county fair as a group activity. County directors need to ensure they are planning their activities for groups.

3 Conclusion and Limitations

County fairs were found to be economically beneficial to the surveyed Wisconsin communities. The five county fairs analyzed in this paper had a total economic impact of $17,183,737 in industry sales, resulted in 292 jobs, and resulted in $4,711,051 in employment income in the state of Wisconsin. According to the Wisconsin Association of Fairs, there are 77 county and state fairs in the state. Additionally, the industries

that are highly affected are retail, restaurants, entertainment (parks, zoos, museums, historical sites amusement parks and arcades), real estate, and health care. Given the prevalence of county fairs in Wisconsin, there is little doubt that these events stimulate many local economies and the economy of the state of Wisconsin itself. From selling produce to specialty trade goods, from live performances to carnival rides, the county fair provides an element of growth for communities. While this input–output analysis is limited only to county fairs in Wisconsin, the impact of county fairs in general can be seen. Given the dynamic nature of these events, county fairs can be adapted to fit most communities.

Another important point that must be emphasized is that based on our toolbox when an individual participates in a county fair, the increase in expenditure may increase their consumption in the current period; however, we assume that there will be no downward pressures on future consumption. Quite simply put, there will be no opportunity cost of consumption between the current and future periods. There are a few reasons why we adhere to this assumption; first, the consumption of most individuals within the festival grounds is not a significant portion of their income. Even those that do purchase livestock during the county fair tend to save money prior to the county fair in order to finance their purchase; additionally, after the purchase there are further maintenance costs for the livestock which may instead place upward pressure on future consumption of the new owners of livestock. Second, rather than an opportunity cost with respect to consumption across periods, there may be a tradeoff between recreation activities that an individual may participate in; since most of these fairs take place in rural parts of the state, it may be the case that a sizeable portion of the participants would not have engaged in recreational activities if the county fest had not existed in the same time period. If this is the case, county fairs may actually be increasing the consumption of these individuals as they are engaging in a recreational activity where they otherwise would not have.

With the economic toolbox, most county fairs can produce an economic impact analysis. By developing a survey, getting volunteers, and administering the survey in the most efficient ways, obtaining the data for a study becomes much easier. Once the data for the fairgoer spending, fair operation expenditures and livestock auctions have been collected, then an input–output analysis can be conducted. The economic toolbox gives fair directors the means to analyze the effectiveness, profitability, and impact of their venues.

There are a few limitations to this study that are worth noting. First, we do not evaluate the expenditures of exhibitors or venders that attend the county fair; second, since surveys are collected by participants within the fairgrounds, there may be inconsistences or there may be an underestimation of the expenditures of county fair participants. However, we shall explain how these short comings may provide a conservative estimate of the economic impact of a county fair:

We do not evaluate the expenditures of the vendors or exhibitors attending the county fair as these expenditures are minute expenditures and these individuals are often on a tight budget based on our interviews with them. Additionally, vendors that travel from other states carry out most of their expenditures before they arrive at the fair and therefore these expenditures count as leakages. Since we do not record

their spending habits while in the state or county that the fair will be held in, we do recognize that there will be an underestimation of the total effect of the county fair.

We acknowledge there will be inaccuracies when collecting survey responses from county fair participants; however, we do not encourage our volunteers from correcting the expenditures of the participants. Typically, we obtain 400 surveys per day from the county fair and it is fair to state that there are some participants that overstate or understate their expenditures. However, it is fair to say that as the number of surveys increase, we could assume that the total expenditure deviations even out and we obtain values that may be close to the actual expenditure values, due to the law of large numbers.

Even though the participants are surveyed while they are still attending the county fair, we do recognize that there will be a downward bias to our expenditure estimates. However, as we stated in Sect. 2.2 of this paper, individuals who are done attending the festival are often in a rush to leave the fairgrounds, which lowers the total number of participants that we could obtain by surveying. Finally, we recognize that inclement weather during the duration of the county fair may place further downward pressures on expenditures of those who attend the county fair, as individuals may be discouraged from attending the fair and those that are in the fairgrounds may decrease the duration that they are in the fair, which may decrease expenditures. Regardless, we do acknowledge that this downward bias could possibly result in a conservative estimate of the total economic impact of the county fair.

4 Future Directions

In this chapter, we provided a methodology, a toolbox, and a clear process for fair directors and organizers to follow and gain insights into their county fairs. Given the popularity of these fairs, it is important to utilize the toolbox and emerging technologies to create your own toolbox that will provide a clear "line of sight" to the fairgoers. The application of this toolbox goes beyond county fairs and has other implications on tourism. In 2014, an economic impact study in in Illinois https://www.illinoiscountyfairs.org/economic-impact-study noted that $170 million was spent as a result of the 104 fairs for that year. It was also found that, "key informant interviews revealed that these fairs contribute to the culture, unity and tradition of the communities they serve." County fairs play a big economic, social, and cultural role in their communities but the fair director and organizers need to make every effort to use the "toolbox" we have introduced and demonstrated in this chapter. We may want to include a question that would ask participants about what would they have otherwise done if they did not attend the event, to identify if there could be an influx of people who would otherwise have not have done anything during that time.

References

BEA. (2018). *RIMS II An essential tool for regional developers and planners*. Retrieved: https://www.bea.gov/sites/default/files/methodologies/RIMSII_User_Guide.pdf (December 28, 2018).

Behrends, M. (2014). *Economic impact study*. Retrieved https://www.illinoiscountyfairs.org/economic-impact-study (February 4, 2018).

Gartner, W. (2005). A perspective on rural tourism development. *Journal of Regional Analysis and Policy, 35,* 1.

Key Assumptions of IMPLAN & Input/Output Analysis. (2018). Retrieved: from https://implanhelp.zendesk.com/hc/en-us/articles/115009505587-Key-Assumptions-of-IMPLAN-Input-Output-Analysis (December 30, 2018).

Marsden, M. T. (2010). The county fair as celebration and cultural text. *Journal of American Culture, 33*(1), 24–29.

Nagaraju, L. G., & Chandrashekara, B. (2014). Rural tourism and rural development in India. *International Journal of Interdisciplinary and Multidisciplinary Studies, 1*(6), 42–48.

Neill, J. (2013). IMPLAN, RIMS-II, and REMI economic impact models comparisons, in context of EB-5 analysis. Presentation, AKRF.

Sasu, K. A., & Epuran, G. (2016). An overview of the new trends in rural tourism. *Bulletin of the Transilvania. University of Braşov Series V: Economic Sciences*, *9*(58), No. 2.

Wisconsin County & District Fairs 2016 Annual Report. Produced by Wisconsin Department of Agriculture, Trade and Consumer Protection. Retrieved: https://datcp.wi.gov/Documents/2016WisconsinFairsAnnualReport.pdf (February 2, 2018).

Using Casinos for Growth: The Benefits and Limits of Commercial Gambling as an Economic Development Strategy

Karl R. Geisler

1 Introduction

The Indian Gaming Regulatory Act of 1988 (IGRA) opened the door for casino legalization in the USA by effectively giving states the legal authority to regulate casino gambling. Prior to that point, casinos operated legally only in Nevada and Atlantic City, New Jersey. In the three decades, since the IGRA, casinos have spread quickly across the country. The American Gaming Association's (2017) annual report notes that 40 US states now have some form of casino gambling. Casinos come in many forms, and some states have more than one kind of casino gambling. Of the 40 states with legal casino gambling, 24 states have commercial casinos, 28 states have casinos owned by Native American tribes, and 14 states have racetracks that double as casinos. Within these states, the distribution of casinos is relatively wide. Lim and Zhang (2017) note that "casinos were present in about 13% of counties in the 48 contiguous states" in 2003 (p. 416). This number increased to 16% of counties in the lower 48 states by 2012. Given that nine of these states have no casino gambling whatsoever, the proportion of counties with casinos in gambling states is even higher.

One of the main reasons for the rapid expansion of casinos is the purported economic benefits. Many communities pursue legalization and expansion of the casino industry as an economic development strategy. They expect that a new casino will "attract consumers from a wide range of surrounding areas, which, subsequently, will generate new jobs, promote the construction of infrastructure, and energize the local economy" (Cotti 2008, p. 18). Having a new, large employer in the form of a casino may very well increase employment, but it is also possible that casino jobs could come instead by cannibalizing employment from existing firms. The true

K. R. Geisler (✉)
Department of Economics and Finance, College of Business, Idaho State University, 921 South 8th Ave., Stop 8020, Pocatello, ID 83245, USA
e-mail: geiskarl@isu.edu

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_14

effect of casinos on employment lies somewhere in between these two extremes and depends at least in part on location.

Casinos are also legalized to increase tax revenues. In their analysis of why governments choose to legalize and regulate casinos, Calcagno and Walker (2016) observe that "the primary policy goal is to maximize government revenues" (p. 14). Policymakers see the legalization or expansion of gambling as a way to finance expenditures with increasing tax revenues obtained via a voluntary tax. Compared to cutting expenditures or increasing income or property taxes, taxing gambling revenues is a more politically acceptable avenue to balance state budgets.

Using casino gambling as a method of taxation is particularly enticing when casinos cater to tourists as they essentially export the burden of the tax to nonresidents. Even if casinos primarily serve locals, however, the local economy can benefit through a process akin to import substitution. As Israeli and Mehrez (2000) point out, Israel lost out on some $400–$500 million dollars a year to Turkey in gambling expenditures in the mid-1990s. They further report that a subsequent survey of Israeli gamblers indicated that a majority of these gamblers would have preferred to have gambled at a casino in Israel had one been available domestically. Whether marketed to tourists or locals casinos can have positive economic impacts either by exporting tax burdens via tourism or by keeping dollars at home via import substitution.

In addition to their potential to increase economic growth and tax revenues, legalizing or expanding casinos may also have social consequences. These costs can detract from the benefits, potentially more than offsetting any economic gains. Unfortunately, no widely accepted study does a true benefit/cost analysis of gambling.[1] Walker and Sobel (2016) note the literature exploring "the impacts of casinos fall generally into two categories: economic and social" (p. 293). The main reason studies typically examine just one side of the ledger is that no standardized methodology exists for a full benefit/cost analysis of legalized gambling. The measurement of social costs is particularly contentious, with "little agreement either on how to define a cost or on how to measure it" (p. 623, Walker 2007b). As a result, studies on the social costs of casinos usually look at a single component of cost such as bankruptcy or crime.

With benefits dependent on factors that vary by location and social costs typically explored independently, whether or not a region should legalize or expand casino gambling as part of their economic development strategy remains a case-by-case decision. This chapter seeks to enumerate the important factors that should be considered in making these decisions. The next section discusses casino gambling as a tourism amenity. The follow two sections review the social and economic impacts of casinos. The fourth section takes the social and economic impacts a step further by exploring how some of these effects change over distance. The chapter closes by summarizing key considerations for using casino legalization or expansion as an economic development strategy.

[1] Grinols (2004) attempts a full benefit/cost analysis, but his analysis contains multiple critical flaws. See Walker (2007a) for a detailed critique.

2 Casinos as a Tourism Amenity

Casino gambling has long been a tourism amenity. Roehl (1994) points out that "[g]ambling played an important role at the spa resorts of the eighteenth and nineteenth centuries" (p. 156). Gambling was not the sole purpose of these spas, but rather something the clientele demanded as part of the suite of available services. This interdependence between gambling and other tourism amenities continues today. Eadington (1995) points out that the major tourism-based economies in Nevada have benefited by integrating gambling with general tourism:

> The experience of Nevada – Las Vegas, Reno and Lake Tahoe, in particular – is perhaps the exception. In each of these locales, support tourism facilities, such as motels, restaurants, service stations, and retail shopping have grown up with the tourist based casino industry and a degree of complementarity and mutual dependence has emerged. (p. 53)

In an attempt to capture these kinds of complementarities, non-gambling amenities are increasingly bundled with casinos as part of larger efforts to increase tourism (Calcagno and Walker 2016; McCartney 2016). Las Vegas, for example, has seen revenue growth in non-gambling amenities while gambling revenue falls as a share of total revenue. Suh and West (2010) estimate that shows have positive interactions with food and beverage sales and conclude that casinos should "continue leveraging show traffic with additional revenue-enhancing venues such as restaurants" (p. 570).

One potential downside to bundling casinos with other tourism amenities is that ubiquity means easier access to gambling. After all, not only tourists use casinos. Opponents to casino gambling sometimes cite increased access as a potential cause of pathological and problem gambling. To address this question, Sévigny et al. (2008) explore if proximity to casinos in Québec leads to higher rates of problem gambling. They find that increased proximity to casinos does lead to higher gambling participation and expenditure, though proximity does not lead to an increase in problem gambling. This finding deserves to be tested in other locations to either confirm or refute their finding that casinos have no effect on problem gambling.

Others argue that easier access to gambling may actually benefit consumers. One potential benefit is that legalization brings "the consumer and provider of [gambling] services the protection of contract" (Eadington 1996, p. 6). Walker (2007b) proposes that increased casino competition may be good for consumers as it reduces the cost of gambling, potentially increasing the consumer surplus of gamblers. He further suggests that non-gamblers may benefit from increased consumer surplus as casinos likely stimulate competition within the hotel and restaurant industries. As with the findings of Sévigny et al. (2008), Walker's claims need further empirical examination by researchers.

3 Social Impacts

Even though policymakers may prefer to talk about the economic gains that may accompany casino legalization, the conversation must be tempered by considerations of potential social costs. As Eadington (1995) points out, "[t]o introduce casinos if the community is really opposed to the idea of casino gaming, but just wants to capture the economic benefits, is a real gamble indeed" (p. 54). Casinos should only be legalized and regulated if they are both economically and socially acceptable. If a community does not find commercialized gambling socially tolerable but chooses to pursue its introduction solely for the economic gains, it may regret that decision. The jobs and tax revenues casinos provide make them much harder to close once they begin operating. Even if these benefits are significantly lower than was, initially expected policymakers are unlikely to make changes that reduce employment and tax revenues. Therefore, communities and policymakers must consider the potential negative impacts of casinos at the outset and be willing to accept them as part of the package should they choose to legalizing casino gambling.

Adding to the complexity of whether or not casinos are socially acceptable is the fact that local perceptions of casinos have changed over time. Using a survey of residents in towns with proposed casinos, Pizam and Pokela (1985) find the majority of residents opposed to the casinos. Their opposition was rooted in a generally negative perception of casinos. Kang et al. (1996), on the other hand, find that residents in places with casinos are generally supportive of gambling as an economic development strategy. Hsu (2000) also finds residents supportive of existing casinos, though she reports that support declines over time. More recently, Stitt et al. (2005) surveyed residents from communities with casinos in Iowa, Missouri, Illinois, and Mississippi. These surveys reveal that these communities did not perceive a change in the rates of occurrence of most major distributions to the community life. The two exceptions were perceptions regarding the prevalence of divorce and bankruptcy. Statistically divorces declined in 4 of the 8 survey communities while increasing in just one. Bankruptcies, however, increased in more than half of these communities.

Casinos may have become more socially acceptable over the last three decades, but the occasional divergence between perception and reality raises an important empirical question: What are the measurable social costs of gambling? Conceptually, the question is simple. Any cost to the community that is not directly paid by the casino or its patrons is a social cost of gambling. Practically, economists who study casinos generally have a hard time agreeing on whether a cost is private or public. For example, Walker (2007b) notes that some economists view transfers of wealth as social costs because they are costs to someone; other economists argue that wealth transfers do not belong in benefit–cost analysis because they do not change the overall level of societal wealth. One's point of view here depends on the social welfare function used. Another example of a contentious cost is that of lost productivity. Grinols (2004) treats lost productivity as a social cost, where Walker (2007b) argues that productivity is internalized in the transaction between employee and employer and is thus a private cost.

Further complicating the measurement of the social costs of gambling is the issue of comorbidity. Alcoholics are more likely to be pathological or problem gamblers—if an alcoholic with a gambling problem commits financial fraud to support both habits, which addiction is to blame? To conduct an accurate benefit/cost analysis of gambling, each contributing factor would have to be appropriately weighted. By looking at costs one by one, economists can sidestep this issue of weighting while still giving policymakers vital information. Another issue that comes with conducting a full benefit/cost analysis is that all social costs must be identified. While identifying and estimating the impact of every possible social cost is not currently feasible, economists have explored some obvious social costs of gambling. Explained below are three generally acknowledged social costs of gambling: bankruptcy, crime, and alcohol-related traffic fatalities.

3.1 Bankruptcy

One of the established negative impacts of casinos is bankruptcy. Barron et al. (2002) find that bankruptcy rates are higher in localities near casinos, and to a lesser extent, casinos have an impact on the national bankruptcy rate. They postulate that removal of casinos would decrease bankruptcy filings by 5% in counties neighboring casinos and that bankruptcy nationwide would drop by 1%. Garrett and Nichols (2008) further explore the national bankruptcy impact, finding that "states having more residents who visit out of state casino resorts have roughly 10% higher bankruptcy filing rates, on average" (p. 1481). This impact was observed primarily in the south, with visits to Mississippi resort casinos driving the overall result. Regionally, the impact of Mississippi resort casinos was strong, with an attributable increase of "2.4 bankruptcies per 1000 people," while the nationwide impact of resort casinos was nearly a tenth the size at "3 bankruptcies per 10,000 people" (p. 1493). Jurisdictions considering casino legalization should take into account that such a legalization will likely increase bankruptcies locally, regionally, and nationally.

3.2 Crime

Another major social impact of casinos economists have examined is crime. Looking at annual data of US counties for the five years following a casino's opening, Grinols and Mustard (2006) find that counties with casinos had higher relative crime rates than non-casino counties. In particular, they find that casinos lead to higher rates of aggravated assault, rape, robbery, larceny, and burglary. These impacts typically start a few years after the casino opens and subsequently increase. Overall, they attribute "8.6% of poverty crime and 12.6% of violent crimes in counties with casinos … to the presence of the casino" (p. 44).

Humpherys and Soebbing (2014) find somewhat different results. Using data from the Canadian province of Alberta, they find that casinos increase annual robberies by 9.5 per 100,000 people, while cases of shoplifting under $5000 drop by 65 annually.

Breaking and entering, credit card fraud, drug possession, illegal gambling, and prostitution were all statistically unrelated to casino openings. Looking at video lottery terminals (VLTs), the only statistically significant negative impact Humpherys and Soebbing (2014) find is on credit card fraud: For every 100 added VLTs, an additional five incidences of credit card fraud occurred for every 100,000 people. Breaking and entering, drug possession, illegal gambling, fraud, and robbery were all statistically unrelated to VLT numbers. Prostitution and shoplifting dropped as VLTs increased.[2]

The recent study by Nichols and Tosun (2017) helps resolve the contrasting findings reported by Grinols and Mustard (2006) and Humpherys and Soebbing (2014). Using US county data similar to that of Grinols and Mustard (2006) but a longer timeframe, Nichols and Tosun (2017) first confirm that crime rates do increase in the years following a casino opening. These effects, however, are transitory, as they also find the "initial increases in crime were offset by significant decreases in crime many years later" (p. 11). The long-run net effect on crime differed by casino type. Casinos owned by Native American tribes experienced an eventual reduction in crime greater than the initial increase, resulting in lower overall crime for those counties. Counties with commercial casinos experienced an offsetting reduction in crime that led to no long-run effect on crime.

3.3 Alcohol-Related Fatal Accidents

One crime not addressed by the above studies is drunk driving. In their 2010 paper, Cotti and Walker fill this gap with an analysis of how casinos impact alcohol-related fatal accidents (ARFAs). They find that the average county with a casino experiences 9.2% more ARFAs compared to the average non-casino county. This finding varies depending on the characteristics of the casino county. In particular, "rural or moderately sized counties will likely see an increase in alcohol-related fatal traffic accidents when casinos are present, but urban or greater than average populous counties may be expected to see a decrease in alcohol-related fatal traffic accidents when casinos are present" (Cotti and Walker 2010, p. 795).

A casino's impact on drunk driving is not isolated to the casino county, either. Using a spatially explicit estimation, Cotti and Walker (2010) find that a significant neighbor county impact and an even greater casino county impact: "the opening of a casino increases ARFAs in border counties by a statistically significant 10.7% and in the casino county itself by 11.7%" (p. 795). This helps to explain why less populous rural counties experience higher-than-average ARFAs, while more populous urban counties might experience a decline. In rural areas with less public transportation and further distances to travel, the presence of a casino may "increase miles driven

[2] This difference between VLTs and casinos is interesting, as it has been noted that "VLTs are actually video poker machines that have minor payout differences from the same devices in casinos" (Eadington 1996, p. 4). Humpherys and Soebbing (2014) acknowledge that it is possible their VLT regression model is mis-specified, but the difference in results may also stem from the locations where VLTs are placed (usually in bars), which differ substantially from stand-alone casinos.

by intoxicated drivers (potentially from residents of the county and by out-of-county visitors) whereas in urban areas this effect may be more than offset by a substitution of casino patronage for other drinking establishments" (Cotti and Walker 2010, p. 792).

4 Economic Impacts

Economic development is the main reason cited by policymakers to justify the legalization and expansion of casino gambling. The idea of economic development means different things to different people. Sen (1999) defines economic development as a process of "enhancing the lives we lead and the freedoms we enjoy" (p. 14). Most policymakers seeking to legalize gambling take a narrower view. They typically focus on the economic growth aspects of development. These include increasing tax revenues to improve provision of public sector goods and services, increasing incomes for local residents, and increasing the number of jobs available.

As with social costs, measuring the extent to which casinos cause economic growth is not without complications. As Walker (2007b) asks, "[d]oes a new casino reduce unemployment or simply shift jobs among industries?" (p. 616). If the former is true, the casino plainly provides economic development. If the latter is the case, whether the casino induces economic development is unclear. It is possible that such a shift among industries comes from workers freely choosing to change employers, thus implying the casino has better terms of employment. But it is also possible that a large employer such a casino may wield monopsony-like power, leading employment to shift between industries with no long-term gains for employees; this possibility may increase in likelihood as the casino location becomes more rural. In any case, if a new casino does not lead to income growth, it may end up simply redistributing economic activity rather than stimulating development.

The following sub-sections discuss the impacts casinos have on three key aspects of economic development. First examined is whether casinos have a significant impact on local tax revenues and government expenditures. Then income changes in localities with casinos are explored. The impact of casinos on employment concludes this section.

4.1 Tax Revenue

The desire to use casinos as a source of tax revenue is one of the main drivers for legalization. In fact, Calcagno and Walker (2016) find that maximizing government revenues is the primary policy goal of legalization. In spite of gambling taxes typically being much higher than taxes on other goods and services, gambling taxes account for less than 5% of tax revenue in most states (Walker and Jackson 2011; Walker and Hodges 2018). While not as high as some policymakers would like, this 5% might meet the primary goal of increasing government revenues in one of two ways. The first possibility is that this percentage of state revenues would not have been collected

absent the casino. If this is the case, then the state has 5% more revenue to spend post-legalization. The second possibility is that this 5% would have been collected absent the casino, with casino tax revenue representing a reallocation of state tax revenue sources. The potential benefit in this case stems from the implicit reduction in taxes on income, general sales, and/or property. Given that casinos are typically taxed at higher rates than other activities, tax revenues from casinos that substitute for taxes on other activities represent fewer spent dollars taxed. This means that aggregate savings (or spending) in the state can increase while maintaining the same level of state expenditures. The true source of this revenue is likely a combination of these two possibilities, though this extent has yet to be fully defined. Popp and Stehwien (2002) do find sales tax revenues in New Mexico decrease as the result of casino introduction in that state. Unfortunately, they fail to look at how property or income taxes change, leaving the overall tax substitution picture murky. In spite of not knowing how much state gambling revenue is new revenue and how much of it comes from some kind of tax substitution, states overall gain at the margin.

These fiscal policy benefits are captured at the state level rather than directly by the casino county. At the county level, casinos do not have a significant impact on per capita tax revenues or expenditures. Nichols et al. (2015) find that county-level revenues and expenditures increase only in counties where state law mandates casino counties receive a portion of tax revenue. In states, without such legislation casinos have "no statistically significant impact on county area government revenues and expenditures" (p. 754). The fact that tax revenues and expenditures increase primarily at the state level is not surprising considering that casino gambling is regulated by the state.

4.2 Income

In contrast to the fiscal policy gains which accrue primarily at the state level, casinos positively impact incomes at both the state and county level. Walker and Jackson (2013) find that casino revenue Granger causes increased personal per capita income at the state level. This leads them to conclude "that the casino industry does have a positive effect on a host-state's economy" (p. 86).

The income benefits of casinos are not uniformly distributed statewide. The impact is generally higher in the counties where casinos open, with smaller income changes occurring elsewhere in the state. A number of studies find significant per capita income increases in casino counties. Cotti (2008) finds that average weekly incomes increase by 0.79% in counties following casino openings. Using difference-in-difference and spatial Durban models with a variety of different specifications, Geisler and Nichols (2016) estimate that casinos cause annual per capita income to increase between $680 and $920 in the counties where they open. Lim and Zhang (2017) find that an additional casino establishment causes a 0.50% increase in per capita income growth, which is approximately $144 more income per capita.

Increasing a county's per capita income by between $144 and $920 dollars may seem small at first, but this number is a county-level average. The net gains are likely

to be concentrated in two groups: casino owners and casino workers. If the casino is owned by a local entity, the owner's share of the increase in per capita county income will result in at least some additional local expenditures. The amount spent will clearly vary across individual owners, though a common example is that of tribal ownership. Native American tribes own a significant number of casinos in the USA. The tribes often use casino revenues to provide goods and services to their members, returning nearly the entire owner's share of the per capita county income increase to the community.

In the event that the casino is owned by non-local entity, the returns to the owner will not be reflected in additional county income. Instead, any increase in county-level earnings will accrue primarily to workers of the casino and secondarily to workers and owners of other local businesses through multiplier impacts. Grinols and Mustard (2006) note that gambling and the often-related hotel and restaurant industries are among "the few growth sectors with a high demand for unskilled labor" (p. 30). Increased income of $144 is a significant sum for a low-skilled worker; $920 is a veritable windfall.

4.3 Employment

In addition to increasing incomes, casinos increase employment in the places where they open. Cotti (2008) reports that casinos increase total employment in their counties by a statically significant 0.03–0.08%, depending on model specification. Lim and Zhang (2017) find that the job growth rate grows by between 0.67 and 0.71% when a casino is added to a county. Using a slightly different approach, Geisler and Nichols (2016) find a decline in the unemployment rate "between a third and a half of a percent" and a "labor force participation rate increase [of] roughly one percent." While the different methodologies and datasets lead to slightly different numbers, it is clear that casinos lead to a modest yet significant increase in total employment in the counties where they open.

If increasing low-skilled employment and wages are the goal, the strategy of legalizing casinos to boost employment may be sound. Introducing a new, and typically large, employer of low-skilled labor into the local labor market should give workers more opportunities and thus more market power. The increase in total employment brought about from the casino coupled with the increase in average incomes should help to put upward pressure on wages in the local labor market. Labor markets do not exist in isolation, however, as workers may commute across county and/or state lines for employment. These spatial effects are addressed in the following section.

5 Geographic and Spatial Impacts

In order to make well-informed decisions, policymakers need to know more than how a proposed change works on average; they need to know how that change works

in communities similar to their own. When considering casinos as a local economic development strategy, differences in county characteristics may influence the degree to which employment and incomes increase. In fact, counties attempting to impose similar changes in casino gambling may experience contradictory impacts due to differences between the counties.

Simultaneously, the impacts of casinos are not limited to the places where they open. Adjacent counties and states experience changes when their neighbors open casinos. Understanding these spillovers can help state and federal policymakers plan more comprehensively. On the local and regional levels, knowledge of the potential spillovers can enable better coordination of activities.

Competition further complicates the picture of local and regional consequences. The balance of competition and complementarity between casinos plays a key role in determining the impacts on a given location and the degree to which spillovers occur. Because casino regulation determines the number of casinos in a given market, the levels of competition and agglomeration experienced within a jurisdiction result from policy decisions. These choices can substantially influence the outcomes of legalizing or expanding casino gambling. This section explores the spatial distribution of four key aspects—county type, spillovers, competition, and complementarity with other tourism amenities—to better enumerate the impacts and limits of casino gambling as an economic development strategy.

5.1 Differences by County Type

The impacts of casinos vary by the characteristics of county where they locate. Wenz (2008) reports that casinos owned by Native American tribes cause significant increases in their counties employment, population, and housing. Conversely, he finds that commercial casinos have no significant impacts on their counties. In his follow-up paper, Wenz (2014), he finds that Native American casinos are a positive local amenity but that commercial casinos are neither positive nor negative. As mentioned above in the social costs, Nichols and Tosun (2017) found that casinos owned by Native American tribes have net-negative long-run effects on crime, while commercial casinos have no net long-run crime effects. One possible explanation for the difference between tribal and commercial casinos is that the unique nature of tribal ownership results in more public expenditures on things like education and law enforcement. Whatever the explanation, Native American tribal-owned casinos have more benefits than commercial casinos.

Whether a county is urban or rural similarly influences casino impacts. Recall from the section on social costs that Cotti and Walker (2010) report rural counties should expect alcohol-related traffic fatalities increase with casino introduction, while urban counties can expect this number to decrease.

Casinos also affect income and employment differently in rural and urban counties. Cotti (2008) finds county-level employment gains occur only in the least populated places; counties in the bottom third of his sample experience a total employment increase of 0.11% as the result of a casino opening. He attributes the larger impact

observed in rural counties to the fact that the impacts of a new casino are more or less fixed. These benefits are relatively small in urban areas with already high employment numbers but larger by comparison in lower population rural counties. Likewise, Geisler and Nichols (2016) find that the impacts of casinos on rural counties are much higher than in urban areas:

> Casinos in rural counties increase incomes and decrease unemployment in their host county by more than the average riverboat casino county, where casinos in urban counties have below-average impacts. In fact, casinos in urban counties do not statistically increase the real per capita income of the host county, nor do they statically change the labor force participation rate. (Geisler and Nichols 2016, p. 112)

Given this rural/urban difference, it is plausible that the effects of casinos on rural counties drive most, if not all, of the observed gains for casino counties in general.

5.2 Spillovers

Many casinos are intentionally placed near borders in order to draw patrons from nearby jurisdictions. But tourists are not the only thing that potentially crosses county and state lines. The costs and benefits of casino locations may just as easily spillover onto neighbors.

On the social cost side, Cotti and Walker (2010) report that casinos lead to increases in alcohol-related fatal accidents for both casino and neighbor counties, with neighbor counties experiencing an increase of approximately 90% that experienced by the casino counties. In addition to the net-zero and net-negative long-run crime impacts of tribal and commercial casinos (respectively) in the casino county, Nichols and Tosun (2017) also explore the spillover effects. They find that crimes increase in counties adjacent to commercial casinos but that crimes decline for tribal casino neighbor counties.

On the economic benefit side, the literature finds that employment in neighbor counties is not meaningfully impacted by casinos. Cotti (2008) finds that "the effect of casino entry on overall employment in neighboring counties is insignificant and basically zero, though he also finds a positive effect on employment in the hospitality sector in nearby communities" (p. 27). Geisler and Nichols (2016) also find no statistically significant impact of casinos on employment in neighboring counties.

When it comes to the income spillover effects of casinos, the literature finds small yet significant impacts. These findings, however, are contradictory in direction. Looking only at casinos in Indiana, Hicks (2014) finds that own-county income growth increases while neighboring county income growth declines slightly. Geisler and Nichols (2016) look at the six riverboat casino states—Illinois, Indiana, Iowa, Louisiana, Mississippi, and Missouri—and find that both casino and neighbor counties experience income gains from the casino. In particular, using a difference-in-difference estimation they find that neighboring counties see "average increases in per capita income of more then $600" (p. 121). It is possible that both findings are accurate, with Hicks' findings on incomes in Indiana being more than offset by the

other 5 riverboat states in the analysis by Geisler and Nichols (2016). The spatial Durban model that Geisler and Nichols (2016) employ as a robustness check further supports the idea that income gains spillover by finding that neighboring counties receive a cumulative increase in per capita income of $1700.

5.3 Geographic Competition and Agglomeration Economies of Scale

In the most comprehensive study on competition between casinos to date, Gallagher (2014) finds that casinos are generally substitutes. Increasing competition, particularly through the development of new casinos, decreases wagering and patronage at existing casinos. The one exception that he finds is with casinos located very close to each other; these casinos have somewhat of a shopping externality. Walker and Nesbit (2014) similarly report that table games in casinos located near one another act as weak complements. If the distance between casinos increases just a little, however, tables become substitutes. Walker and Nesbit (2014) also report that slot machines, the other major draw of casino gambling, are substitutes no matter how close casinos are located.

While they find no evidence of positive agglomeration effects among casinos, Walker and Nesbit (2014) acknowledge that their study only looks at Missouri data. They point out different results may come out of analysis of "markets such as Las Vegas, Atlantic City, and Biloxi" (Walker and Nesbit 2014, p. 38). Indeed, Wenz (2014) notes that "a larger investment in the casino operation creates local productivity increases, either directly through the casino or through some sort of agglomeration effect" (p. 156). Lim and Zhang (2017) also mention the labor-pooling impact of casinos, finding a small but significant effect on overall job growth "even after controlling for spatial autocorrelations because people in similar occupations (gaming) tend to locate in the same places" (p. 425). Overall, densely located casinos with a high proportion of their gambling floors devoted to tables may have some agglomeration benefits from shopping and labor force pooling, though these casinos are likely the exception to the rule. While more work needs to be done on the agglomeration economies of scale of casinos, it seems safe to say that the evidence so far indicates casinos typically compete more than complement.

When it comes to gambling legislation, states tend to compete against each other just as casinos themselves compete. Nichols (1998) lays out how this process unfolded in Iowa and Illinois, though a similar story can be found in many other locations. Legalized gambling often has significant initial regulation. In Iowa, Nichols (1998) reports that casinos were originally only allowed on riverboats which had to sail (as opposed to remaining at the dock). On the boats themselves, a maximum of 30% of the square footage could be part of the casino. The maximum bet was a $5 wager, and there was a per-person loss limit of $200 per excursion.

Noticing the success of casino legalization in Iowa, Nichols (1998) notes that neighboring Illinois followed suit by passing casino legislation of its own, though

with fewer restrictions. As Iowans began to shift their gambling expenditures across the border to the less-restrictive casinos in Illinois, revenues dropped at Iowa casinos. The response in Iowa was to remove the limits on betting and losses, permit dockside gambling, and allow racetracks to operate slot machines. Nichols (1998) cites this deregulation in Iowa for increasing the state's tax revenues, particularly by encouraging Illinoisans to gamble in Iowa.

This story of legalization is relatively common. One state moves initially to allow some casino gambling for economic development purposes. A neighboring state then reacts by legalizing casino gambling in order to retain gambling revenues and taxes. The first state then has an incentive to ease the initial restrictions to make a more enticing market for both the customers and purveyors of gambling in order to recapture the initial economic benefits. This can quickly become an iterative process of deregulation leading to lower tax rates and potentially lower revenues from gambling.

Examining the casino market in the Northeastern United States, Economopoulos and Luxem (2015) find that a state's average gaming revenues increase by about $118 million when a new casino opens in their borders, but at the same time, neighboring states lose $33 million in gaming revenues. Looking at Missouri, Walker and Nesbit (2014) similarly note that increased regional competition reduces revenue at existing casinos. Economopoulos and Luxem (2015) conclude that while the casino industry still has room to grow, increasing "competition among the states appears to erode the regional benefits" (p. 10).

At the same time that increased casino competition eats away at existing casino revenue, Geisler and Nichols (2016) find that increased competition among casinos also reduces the employment and income benefits. Competition drives the county-level benefits of higher earnings and lower unemployment attributable to a casino to drop to "approximately the levels experienced by non-casino counties that border casino counties" (p. 121). In other words, if a casino already exists in one county, a neighboring county would not significantly increase the income or employment benefits already spilling over by opening its own casino.

6 Summary, Conclusions, and Policy Considerations

The web of connected, and sometimes conflicting, economics literature on casino impacts can be daunting for policymakers and economic developers. The above sections give those deliberating the legalization of casino gambling or the opening of a new casino as an economic development strategy plenty to contemplate. While falling short of a full benefit/cost analysis, these findings point to a number of key considerations that should be part of any legalization debate.

One of the first issues to decide is whether or not the proposed casino will be owned and operated by a Native American tribe or similar entity. The impacts of tribal casinos are generally positive, with income and employment both increasing while crime decreases in the long run. In the short run, crime does increase for the host and neighbor counties, but each type of county eventually ends up with less crime.

Commercial casinos also lead to a temporary increase in crime rates in the counties where they open, though their long-term impact on crime is neutral. For both tribal and commercial casinos, the short-run increase in crime should not be ignored; well-designed casino legalization policy should seek to address this problem. Two other issues that should be addressed regardless of who owns the casino are bankruptcy and fatal traffic accidents. Both of these have been shown to increase because of casinos, and as such, they should be included as part of any discussion on legalization.

One way to counter these costs is by thoughtful use of the increased tax revenues that come from legalized gambling. Setting aside a meaningful portion of the state-level gains to counter or prevent these costs is a prudent first step, and one that can be changed relatively easily should the costs of casino gambling be lower than anticipated. Care should be taken in these allotments to directly address these problems not only in casino counties, but also in neighboring counties. Fatal traffic accidents increase by nearly as much in neighboring counties as casino counties, and while long-term crime falls back to pre-casino levels for casino counties, it remains above pre-casino levels for the neighbors.

Along with costs, casinos also come with some economic benefits beyond the increase in state tax revenues. Average county income increases where casinos open, as does employment. These impacts differ when placing a casino in an urban or a rural county, so the casino location must also be considered.

As Cotti (2008) points out, the impact of a new casino is more or less fixed, thus providing a relatively larger impact to rural counties than to urban ones. Rural counties experience higher-than-average increases in income and employment as the result of a casino. The general preference for rural locations over urban, however, must be tempered with the knowledge that rural casinos lead to greater increases in alcohol-related fatal accidents than casinos located in urban counties.

The location of other casinos adds another layer of complexity to legalizing new casinos. Since casinos generally act as competitors, placing a new casino too close to an existing casino may result in few benefits from the new casino while simultaneously reducing some of the benefits from the existing casino. Simply put, more casinos in an area typically lead to fewer benefits per casino. Diminishing marginal returns are already being felt in some regional casino markets. Increasing competition means that each new casino serves a little less latent demand while cannibalizing a little more from existing casinos.

This cannibalization does not stop at state lines. If states are legalizing and subsequently expanding the casino gambling in their states to maximize employment, income, and tax revenue benefits, it would benefit states to plan with their neighbors rather than to race to the bottom. Multi-state regional planning efforts could be the key to better capturing the economic benefits of commercial gambling while helping to limit the social costs.

To better capture whatever benefits may exist in the legalization of gambling should occur in concert with other tourism initiatives. Especially as casinos become increasingly ubiquitous, their novelty will need to be supplemented by other tourism offerings in order to maintain visitation. Considering how casinos will interact with other tourism amenities as a part of a broader tourism initiative will leverage the

most benefit. Casinos can be an important and economically successful addition to a place's set of amenities, but they should not be added if they are at odds with existing plans.

Deciding whether or not to legalize casinos for economic development is not unlike a gamble itself. Communities considering casino legalization as an economic development strategy have much to consider, and as such, they should not rush the decision to put their money on the table. In particular, policymakers and economic developers need to weigh the likely costs and benefits for their particular situation; doing so may point to a positive expected return or it may not. No matter the potential economic benefits, though, each community ultimately needs to decide if their local values are compatible with casino gambling. Gambling does not occur in a vacuum. A county, state, or nation that legalizes casino gambling for economic gains in spite of deep moral opposition may find itself simultaneously winning and losing.

References

American Gaming Association. (2017). *State of the states: The AGA survey of the Casino industry.* Washington D.C.: American Gaming Association.

Barron, J. M., Staten, M. E., & Wilshusen, S. M. (2002). The impact of casino gambling on personal bankruptcy filing rates. *Contemporary Economic Policy, 20*(4), 440–455.

Calcagno, P. T., & Walker, D. M. (2016). A review of regulatory theory and the U.S. Casino industry. *Journal of Gambling Business and Economics, 10*(1), 14–39.

Cotti, C. (2008). The effect of casinos on local labor markets: A county level analysis. *The Journal of Gambling Business and Economics, 2*(2), 17–41.

Cotti, C. D., & Walker, D. M. (2010). The impact of casinos on fatal alcohol-related traffic accidents in the United States. *Journal of Health Economics, 29,* 788–796.

Eadington, W. R. (1995). Economic development and the introduction of casinos: Myths and realities. *Economic Development Review, 13*(4), 51–54.

Eadington, W. R. (1996). The legalization of casinos: Policy objectives, regulatory alternatives, and cost/benefit considerations. *Journal of Travel Research, 34*(3), 3–8.

Economopoulos, A. J., & Luxem, U. (2015). Examining the impact of competition on casino revenues and prices in the Mid-Atlantic States. *UNLV Gaming Research and Review Journal, 19*(1), 1–15.

Gallagher, R. M. (2014). An examination of cannibalization effects within the riverboat gaming industry: The case of the Illinois-area casinos. *Growth and Change, 45*(1), 41–59.

Garrett, T. A., & Nichols, M. W. (2008). Do casinos export bankruptcy? *The Journal of Socio-Economics, 37*(4), 1481–1494.

Geisler, K. R., & Nichols, M. W. (2016). Riverboat casino gambling impacts on employment and income in host and surrounding counties. *The Annals of Regional Science, 56*(1), 101–123.

Grinols, E. L. (2004). *Gambling in America.* Cambridge: Cambridge University Press.

Grinols, E. L., & Mustard, D. B. (2006). Casinos, crime, and community costs. *The Review of Economics and Statistics, 88*(1), 28–45.

Hicks, M. J. (2014). Do good fences make good neighbors? The cross border impact of casino entrance. *Growth and Change, 45*(1), 5–20.

Hsu, C. H. C. (2000). Residents' support for legalized gambling and perceived impacts of riverboat casinos: Changes in five years. *Journal of Travel Research, 38,* 390–395.

Humpherys, B. R., & Soebbing, B. P. (2014). Access to legal gambling and the incidence of crime: Evidence from Alberta. *Growth and Change, 45*(1), 98–120.

Israeli, A. A., & Mehrez, A. (2000). From illegal gambling to legal gaming: Casinos in Israel. *Tourism Management, 21,* 281–291.
Kang, Y.-S., Long, P. T., & Perdue, R. R. (1996). Resident attitudes toward legal gambling. *Annals of Tourism Research, 23,* 71–85.
Lim, S. H., & Zhang, L. (2017). Does casino development have a positive effect on economic growth? *Growth and Change, 48*(3), 409–434.
McCartney, G. (2016). Play the cards, roll the dice—The integration of casinos within Asian tourism destination development strategy. *UNLV Gaming Research & Review Journal, 20*(2).
Nichols, M. W. (1998). Deregulation and cross-border substitution in Iowa's riverboat gambling industry. *Journal of Gambling Studies, 14*(2), 151–172.
Nichols, M. W., Tosun, M. S., & Yang, J. (2015). The fiscal impact of legalized casino gambling. *Public Finance Review, 43*(6), 739–761.
Nichols, M. W., & Tosun, M. S. (2017). The impact of legalized casino gambling on crime. *Regional Science and Urban Economics, 66,* 1–15.
Pizam, A., & Pokela, J. (1985). The perceived impacts of casino gambling on a community. *Annals of Tourism Research, 12,* 147–165.
Popp, A. V., & Stehwien, C. (2002). Indian casino gambling and state revenue: Some further evidence. *Public Finance Review, 30*(4), 320–330.
Roehl, W. S. (1994). Gambling as a tourist attraction: Trends and issues for the 21st century. In A.V. Seaton (Ed.), *Tourism: The State of the Art* (pp. 156–68). New York: Wiley.
Sen, A. K. (1999). *Development as freedom.* New York: Anchor Books.
Sévigny, S., Ladouceur, R., Jacques, C., & Cantinotti, M. (2008). Links between casino proximity and gambling participation, expenditure, and pathology. *Psychology of Addictive Behaviors, 22*(2), 295–301.
Stitt, G. B., Nichols, M. W., & Giacopassi, D. (2005). Perception of casinos as disruptive influences in USA communities. *International Journal of Tourism Research, 7,* 187–200.
Suh, E., & West, J. J. (2010). Estimating the impact of entertainment on the restaurant revenues of a Las Vegas hotel casino: An exploratory study. *International Journal of Hospitality Management, 29*(4), 570–575.
Walker, D. M. (2007a). Book review: Gambling in America. S*outhern Economic Journal, 73*(3), 830–832.
Walker, D. M. (2007b). Problems in quantifying the social costs and benefits of gambling. *American Journal of Economics and Sociology, 66*(3), 609–646.
Walker, D. M., & Collin, D. H. (2018). Gambling taxes. In A. J. Hoffer & T. Nesbit (Eds.), *For your own good: Taxes, paternalism, and fiscal discrimination in the twenty-first century* (pp. 361–447).
Walker, D. M., & Jackson, J. D. (2011). The effect of legalized gambling on state government revenue. *Contemporary Economic Policy, 29*(1), 101–114.
Walker, D. M., & Jackson, J. D. (2013). Casinos and economic growth: An update. *Journal of Gambling Business and Economics, 7*(2), 80–87.
Walker, D. M., & Nesbit, T. M. (2014). Casino revenue sensitivity to competing casinos: A spatial analysis of Missouri. *Growth and Change, 45*(1), 21–40.
Walker, D. M., & Sobel, R. S. (2016). Social and economic impacts of gambling. *Current Addiction Reports, 3*(3), 293–298.
Wenz, M. (2008). Matching estimation, casino gambling and the quality of life. *The Annals of Regional Science, 42*(1), 235–249.
Wenz, M. (2014). Valuing casinos as a local amenity. *Growth and Change, 45*(1), 136–158.

Linkages Between Tourism and Agriculture: The Case of Turkey

Güliz Salihoglu and Ferhan Gezici

1 Introduction

Today, not only manufacturing sectors but also service sectors receive priority in development plans because of their income-generating effects. Many developing countries receive economic benefits from tourism activities and are striving to further develop the sector, as tourism contributes to local/regional development through the creation of employment, the provision of new business lines, increases in household income, and the attraction of capital investments to the region.

Apart from the tourism sector's direct economic effects on wages, its relation to other sectors positively affects the general economy. The development of such intersectoral relations leads to the growth of new and existing firms and employment generation through the demand arising from the purchase of products and services. For example, Baum (2013) states that a job in the accommodation sector produces about 1.5 additional jobs indirectly in relevant sectors through supply relationships.

According to Gezici and Gül (2004), the participation of local actors in the sector is explained by the fact that local entrepreneurs provide various goods and services that tourist organizations need. The economic contribution of the sector is especially strong when the majority of the needs of tourism activities are provided by local entrepreneurs and local products (Ashley et al. 2007; Meyer 2007); the accommodation sector actually demands products and services in order to maintain its core activities, thus creating economic opportunities for local suppliers. These products

G. Salihoglu (✉)
Department of Urban and Regional Planning, Faculty of Architecture, Gebze Technical University, Kocaeli, Turkey
e-mail: gozturk@gtu.edu.tr

F. Gezici
Department of Urban and Regional Planning, Faculty of Architecture, Istanbul Technical University, Taskisla Campus, 34437 Istanbul, Turkey
e-mail: gezicif@itu.edu.tr

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_15

are mainly food, beverages, hotel equipment, and textile products, while the services required can span many different areas, such as laundry, landscaping, transportation, and entertainment. As a result, the provision of tourism activities requires the development and maintenance of various other sectors (Holder 1992).

Studies on tourism and its suppliers often examine the industry's relationships with the agricultural sector and highlight its positive effects on agricultural product suppliers. Some of the research in this area has focused on the role of hotels: their behaviour in the food procurement process, their contributions to the local economy through the food supply network, the geography of their food supply, and the influence of their supply chain on micro- and small- and medium-sized enterprises. In this context, the relationship between tourism and the local economy can be examined through the firms that supply agricultural products to the hotels in a localized area in which tourism and agriculture are the dominating sectors.

The study was carried out in Alanya, one of the most popular tourism destinations in Turkey, and aims to address the following questions: Who are the actors in the tourism and food supply process? What are the impacts of tourism on the firms that supply agricultural products? What kind of supplier geography does tourism create for second-tier suppliers?

The first of the following sections presents a literature review on the role of tourism in the agriculture-based supply relations of the hospitality sector. The second section introduces the study area and explains the methodology. In order to describe the impact of tourism on agricultural production and procurement, the next section presents the results of non-parametric tests and supply chain analyses based on the differences in firms' relationships to tourism and other sectors. The final section discusses the findings through a consideration of their contribution to the literature of tourism studies and economic geography. This study analyses the relationship between tourism and the agricultural sector with in-depth research and explains the different aspects of this relationship through a study of a popular tourist destination in Turkey, setting it apart from the existing body of the literature.

2 The Local Economic Impacts of Tourism and Its Relation to Agriculture

Tourism and its contribution to economic development have been widely discussed because of its income and employment generating effects. However, the most important economic contribution of the sector derives from the local income generated by the expenditures of visitors to a destination. The World Tourism Organization has touted the benefits of tourism for local and regional development, such as the creation of new business lines, increases in household income, the development of SMEs, and the attraction of capital investments (Cunha and Cunha 2005). In addition, there have been studies that explore the contributions of tourism through supply relationships

(Gezici and Küçüksarı 2012; Anderson and Juma 2011; Romero and Tejada 2011; Meyer 2007; Telfer and Wall 2000; Clancy 1998).

The common emphasis of these studies is that the linkages between the tourism sector and the local economy should be strengthened to encourage economic gains. However, some criticize that the full extent of the sector's relation to local economies is not clarified (Meyer 2007) and that there has been little progress in tourism research on measuring the impact of tourism on local development (Cunha and Cunha 2005).

The economic impacts of tourism are generally classified as primary, secondary, and induced (Brown 2000; Cunha and Cunha 2005; Tribe 2011; Robinson et al. 2013). While tourist expenditures on hotel services, souvenirs, etc. and the output and value added of the companies serving these needs are defined as the primary economic impacts of tourism, secondary impacts result from the participation of local people and the provision of various goods and services by local entrepreneurs, tourist organizations, etc. to these first-tier companies (supply relations). Induced impacts, on the other hand, are defined by the influence of income-induced consumption and the reinvestment of firm profits that result from direct and indirect expenditures made in tourism and its supplying sectors (Vellas 2011; Robinson et al. 2013).

Establishing better linkages with the local economy diminishes the rate of foreign exchange leakage (Meyer 2007). These linkages allow for the creation of employment opportunities for local people and the generation of a significant multiplier of income, thereby ensuring the circulation of income in a regional economy (Brohman 1996). Değer (2006) also mentions that tourism, apart from this direct impact, triggers employment especially in other sectors with strong forward and backward linkages. The main purpose of establishing inter-sectoral links is to use local supply products instead of goods and services imported from other regions or abroad. According to Meyer (2007), as an inter-sectoral relationship increases, the benefits of scale economies also increase.

Nevertheless, firm-level relationships constitute an important step for local connections, as there is a local supply chain which forms the basis for relationships between sectors. Lejárraga and Walkenhorst (2010) state that the growth of tourism creates various business opportunities for local people across different sectors, resulting in the increased supply of new or existing products. For this reason, it is emphasized that local people should participate in the supply chain in order to claim a share of the tourism sector's economic benefits. Michael (2003) draws attention to the importance of contributing to the regional economy starting from the firm level of the supply chain created by the tourism sector, in addition to the impact of tourism agglomeration.

Tourism firms and firms in other related sectors and various institutions form a network that develops the tourism sector as a cluster within a geographically limited area. Product and service provision creates a network of relationships throughout the backward and forward linkages within these clusters. Hotels are important actors in tourism clusters because of the supply linkages they establish. Providing affordable and quality products and services in the hospitality sector, with the help of local, regional, national, and even global connections, has become an important element

of competitiveness. The structure of the hospitality sector, which depends on both product and service provision, exerts influence on the supply network and geography.

The most important point about linkage and leakage with respect to the supply chain is that each reverses the effects of the other. In particular, it is assumed that purchasing products produced by local people provides an important economic backward linkage, reducing imports, and preventing leakages. Kweka et al. (2003) point out that tourism provides the most significant backward linkages besides agriculture and manufacturing, allowing for the development of different supply chain approaches that link all production and consumption activities. In such a chain, tourism firms can be a node as well as a product or a service provider (Zhang and Wang 2009) (Fig. 1).

As a result, the impact of supply chains on the scope of local and regional development results from the supply relationships established between firms. In terms of tourism and agriculture, tourism contributes to local agricultural producers and local entrepreneurs through supply chains.

According to Çıkın et al. (2009), hotels and catering establishments maintain a close input-output relationship with the agricultural sector in their service processes. Accordingly, it is emphasized that studies on suppliers and linkages are mainly focused on the tourism and agriculture sectors (Telfer and Wall 1996, 2000; Torres 2003; Rogerson 2012; Pillay and Rogerson 2013). Torres (2003) also points out that in developing countries with rich agricultural production, the linkages between

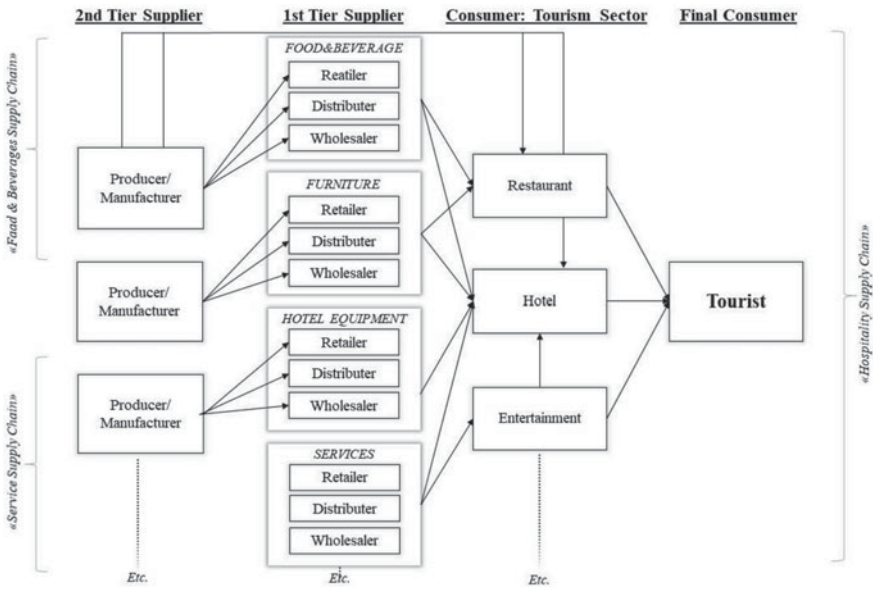


Fig. 1 Potential supply chain between various kinds of goods and services and the tourism sector [Authors' own—produced with the help of Zhang and Wang (2009), Zhang et al. (2009) and Piboonrungroj and Disney (2015)]

tourism and agriculture are of great importance for the country visited. Increasing demand for agricultural products leads to the development of the agriculture sector, not only in terms of product quantity but also in terms of quality as well.

Most developing countries support local farmers who provide food to hotels and try to reduce leakages (Ashley et al. 2000). According to Scheyvens and Momsen (2008), the increase in domestic production has both contributed to food security and helped to reduce foreign exchange leakages. In addition, agricultural producers have benefited from the increased knowledge and experience gained from producing to the standards of hotels. However, Telfer and Wall (2000) underline the need to consider economic and geographical features in any comparison of tourism's relative contributions within different destinations.

Torres (2003) emphasizes that large-scale hotels prefer imported goods rather than locally grown products because foreign firms have a financial structure that can cover import costs and in order to attract customers by offering various international products. Rogerson (2012), in his study in South Africa, explains the different reasons for importing goods, determining that luxury goods are supplied from more distant regions while fresh vegetables and fruit are bought from local producers. Torres (2003) also examines the quantities and origins of Mexican products purchased in the Quintana Roo region, underscoring that the use of imported products in the region negatively affected the agricultural sector, thereby reducing the local food supply. Pillay and Rogerson (2013) and Rogerson (2012) evaluate the relationship between the hospitality and the agricultural sectors in South Africa through a supply chain analysis, revealing that hotels work together with a network of intermediaries, in cooperation with (weak) agricultural groups and a master distributor.

According to Torres and Momsen (2011), recent research has revealed that the relationship between the tourism and agricultural sectors is multifaceted, domain-specific, and highly complex. Accordingly, politicians and academics have recognized the need to establish a synergistic relationship between the two sectors, and interest in the issue has increased. The results of studies investigating linkages between the two sectors are predominantly focused on the positive effects of tourism on the agricultural sector. This study aims to reveal the secondary economic impacts of tourism on the agricultural sector in Alanya.

3 Study Area

The study was carried out in Alanya (a district of Antalya), which is an attractive coastal tourism destination and agricultural production region in Turkey. Possessed of natural attractions and having drawn massive tourism investments, the districts of Kemer, Serik, Manavgat, and Alanya are the most important tourism centres not only in the Antalya province but also in all Turkey (Fig. 2). The accommodation facilities of Alanya and Manavgat constitute approximately 25% of the total number of accommodation units in Turkey. Among these districts, Alanya is the only unplanned mass tourism destination in Antalya.

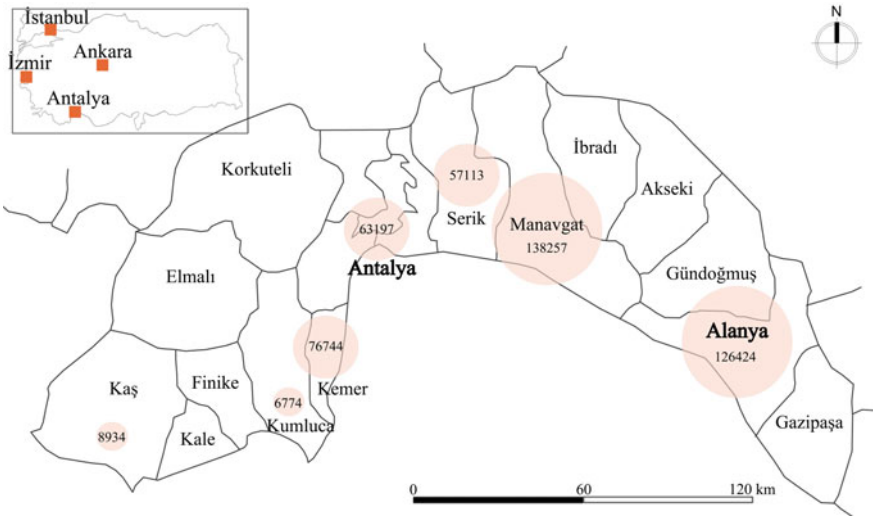


Fig. 2 Bed capacities in the districts of Antalya (Authors' own—data obtained from Antalya Provincial Directorate of Culture and Tourism office in 2013)

Although the origins of tourism activities in Alanya date back to the 1950s, tourism investments in the province started to accelerate after the Tourism Incentive Law in 1982. Since these investments in the hospitality sector, the district has become the centre of a global mass tourism destination in Turkey. Today, tourism is known as the main economic sector of Alanya because of its direct and indirect impacts on employment and investments. The district's tourism revenues have increased by 60% in the period between 2001 and 2011 (ALTSO 2013).

According to data from ALTSO (2017), between 2011 and 2016 there was a nonlinear trend in the number of foreign tourists coming to Alanya; this number exceeded 3 million in 2012, 2014, and 2015. In 2016, Alanya hosted about 8% (1,423,349) of the total foreign tourists visiting Turkey, the sharp decrease that occurred as a result of national and global political crises. The most important source markets of Alanya are Germany, Denmark, Russia, Sweden, and Ukraine (ALTSO 2016). Tourism revenues have been fluctuating, with a decline[1] in 2015.

Turkey is considered to be one of the leading agricultural producers in the world, benefitting from its favourable geographical conditions and climate, fertile lands, and abundant water supplies. Alanya is of particular importance due to its advantages in vegetation and warm temperature; almost all kinds of vegetables and fruits (especially citrus), various tropical plants, and some cereals species that grow nowhere else can be produced using improved greenhouses and industrial production plants with organic farming facilities. The area's agriculture sector has been the driving force

[1] According to the average visitor expenditure per capita published by the Ministry of Culture and Tourism, the tourism income of Alanya in 2015 was approximately 3.5 billion dollars, accounting for approximately 10% of the tourism revenues of Turkey.

of economic development, and a significant portion of the population relies on the subsistence agricultural sector. There are small family businesses as well as farming facilities with large and modern technical facilities. Tourism development and the growth of the city, however, have placed pressure on agricultural land use, which has led to a decreasing supply of agricultural products accompanied by increasing prices. In addition, the transformation of the coastal agricultural areas into tourist facilities and housing areas has resulted in the shift of agricultural areas to higher sections of the city (ALTSO 2013).

According to a report[2] published by the Mediterranean Touristic Hoteliers Association (AKTOB 2014), the second most important category of hotel expenditures after personnel expenses is food expenses. A five-star hotel's second main expense is food, at 20–25% of total expenditures after wages. Moreover, the report emphasized that food, which covers a large number of specific products, constitutes the major part of total purchasing costs. The report states that the bulk purchases made by the hospitality sector are a direct source of revenue for many suppliers and an indirect source of the wages of workers in those firms.

For these reasons, Alanya, which is dominated by tourism and agricultural production, serves as a suitable case to demonstrate the secondary impacts of tourism on firms that supply agricultural products to the tourism sector.

4 Methodology

Many basic food and beverage products, especially fresh fruit and vegetables, are intensively consumed in the course of tourism activities; the agriculture and tourism sectors thus establish intensive supply relations with each other. In this study, the impact of tourism activities on the agricultural sector will be analysed with respect to the backward linkages they have established within the sector, first by examining the procurement process between tourism and agriculture and defining the actors. Subsequently, the significance of tourism for agriculture is compared to other sectors to which tourism is linked. Finally, the study explores the spatial dimension of the fresh fruit and vegetable supply network in Alanya, distinguishing between first- and second-tier suppliers.

Semi-structured interviews were conducted with firms selling agricultural products (fresh fruit and vegetables) in July 2015. These firms are co-located at the Alanya fresh fruit and vegetables wholesale market (WM for F&V), which is active year-round. Due to the number of firms, the total population sampling method was applied, and out of 63 firms at this market, 47 firms (74%) were interviewed.[3] Firms at the

[2] The report covers nine hotels in Antalya between 2008 and 2012.

[3] The other WMs for F&V are located at Payallar (45 firms), Konaklı (36 firms), and Demirtaş (33 firms). The WMs for F&V of Payallar, Konaklı, and Demirtaş are closed from 15 June to 15 September since the firms in these WMs for F&V are only agricultural producers and exporters, and production is interrupted due to climatic conditions in the summer. Since the study focuses only on the relationship between agriculture and tourism, these other WMs for F&Vs are excluded.

WM for F&V are important actors in the process of reaching the final consumers of agricultural production; they are also in direct contact with the producers.

The framework of the interviews follows the research questions, which were designed to gather information on the relationships between agriculture and tourism throughout supplier linkages, on the role of different actors within this process, and on the spatial characteristics of the linkages.

The data collected was subjected to a non-parametric Mann–Whitney test as well as chi-square and ratio distributions to explain the impact of tourism on the suppliers of agricultural products. A supply chain network diagram is used to show the geographical dimension of the two sectors' interactions.

5 Findings

5.1 Identification of Actors in Agricultural Supply in Alanya

The following section first analyses the operation of the supply process of agricultural products to tourism and other sectors and then identifies the actors operating in this process. A board member of the Association of Alanya WM for F&V described the functioning of the market in the following way: '*The Alanya* WM for F&V *works both as a producer and a consumer. There are many kinds of vegetables and fruit that grow in Alanya and are brought to the* WM for F&V from their sowing areas, *and they go to other places. For example, fruit coming from outside may not be sold at the local market and can be directly distributed across Turkey. Conversely, products coming from Bursa (another province) may be sold to the hotels and market places in Alanya. In other words, there are firms exporting products to other regions and firms selling products only to hotels in Alanya. The products sold to other cities are mostly produced in winter. The agricultural production of Alanya in the summer is only sufficient for its own population and visitors* '.

The following statements were made in relation to purchases made by hotels. '*The hotel manager makes a contract with a firm. The manager wants all the products to be supplied by that firm. That firm also purchases products from other brokers, then sells them to the hotel. All the hotels in Alanya usually purchase from this WM for F&V. I do not think that there are hotels purchasing directly from the market place. Even restaurants get supplies from here because it is cheaper. If it is purchased from the local marketplace, the stallholder will add his profit margin to the price, so the product is more expensive*'. The association member also stated that most of the firms are local and that both new and old firms exist.

Firms at the WM for F&V are generally referred to as 'brokers'. Some of them produce agricultural products themselves, in which case they are also 'producers'. Brokers coming from WMs for F&V outside Alanya to purchase local products are called agricultural 'merchants'. Merchants then sell these products to WMs for F&V in other regions. Other actors who purchase products from the Alanya WM for F&V

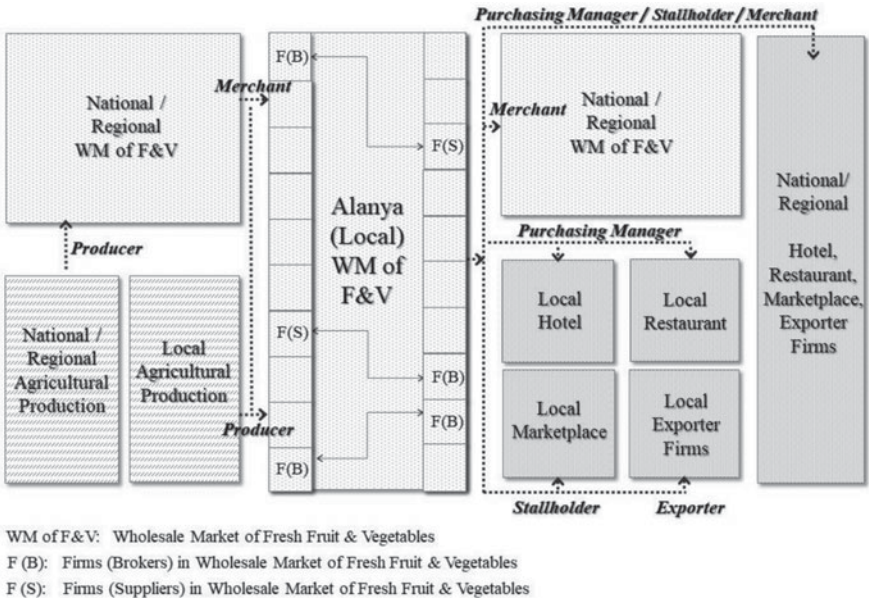


Fig. 3 Actors and the supply process of the wholesale market for fresh fruit and vegetables (WM for F&V) in Alanya (Authors' own)

are referred to as 'stallholders' and 'hotel purchasing managers'. There is also one special type of firm that is an important actor involved in the tourism-agriculture supply network at the Alanya WM for F&V called a 'supplier' [F(S)'s in Fig. 3]. These firms sell products exclusively to the tourism sector (hotels and restaurants).

The supply process of agricultural production to tourism and other sectors is shown in Fig. 3. According to this figure, products produced in Alanya or other regions are brought by producers to the firms in the Alanya WM for F&V. The producers deliver their products to the firm they deal with, from whom they receive a share of the sales. Firms sell the products to the purchasing managers of hotels that come to the WM for F&V as customers, agricultural merchants (i.e. brokers from other provinces), or suppliers that only supply to hotels and restaurants.

While different types of firms are categorized as producers, brokers, merchants, and suppliers, some belong to more than one of these designations. However, the majority of firms in the WM for F&V (83%) are brokers collaborating with producers, receiving a certain commission. 30% of the firms interviewed were only brokers, 30% were producers and brokers, 19% were merchants and brokers, and 11% were suppliers. The supplier firms within the scope of this study are the firms that supply products mostly to the hospitality sector.

The interviews indicated that many firms support producers financially in the production phase by establishing greenhouses and storage facilities and providing pesticides and other tools as well as financial aid. In this respect, although these firms

Table 1 Distribution of sales in the Alanya WM for F&V, according to sector

Tourism	Hospitality	37%
	Restaurant	5%
Other	Retail business	25%
	Agricultural merchant	31%
	Exports	1%
	Total	100%

are not directly involved in the production process, they seem to be important actors in supporting agricultural production.

Figures for the tourism and other sectors indicate that 41.7% of all sales are made to the tourism sector (36.9% to hotels, 4.7% to restaurants),[4] 31% to agricultural merchants, 25% to retail businesses (markets, groceries, and local marketplaces), and 1.44% to export firms (Table 1).

Sales to food exporting firms (1.44%) and restaurants (4.77%) are low, with no sales to food processing firms. The firms that sell to the manufacturers and exporters are mostly producers located in a different WM for F&V in Alanya, which also suggests that the WMs for F&V are specializing. The central WM for F&V dealt with in this study comprises mostly broker and supplier firms. All but 5 of the 47 firms have linkages exclusively with the tourism sector. Firm officials state that due to the lengths of the tourism and agricultural production seasons, the proportion of sales changes according to the sector. For example, one of the interviewed firms pointed out that because they sell only to tourism firms in the summer season, their summer customers are all from Alanya, while in winter traders from all parts of Turkey buy their products. Another firm stated that they sell to the hotels in the summer and to the retail trade in the winter.

5.2 The Impact of the Tourism Sector on Suppliers of Agricultural Products in Alanya

Firms are divided into groups according to in which sectors they make 50% or more of their total sales, which helps to illuminate the differences between the relations of tourism and other sectors to the agricultural sector. Consequently, the firms are distinguished into two groups: those that sell mostly to the tourism sector (FTs) and those that sell to other sectors (FOs). FTs sell agricultural products more to hotels and restaurants, while FOs sell to exporting firms and retail firms (groceries, supermarkets, and marketplaces). 21 of the 47 firms interviewed stated that they made 50% or more of their sales to the tourism sector, while 26 sold more to other

[4] Since sales to restaurants are relatively low, sales to the hospitality sector and sales to restaurants are grouped together as sales to the tourism sector in the latter part of the study.

sectors (see Appendix 1 for more details). FTs provide products needed by hotels from local, regional, and national firms or producers. The owner of such firms has indicated that they purchase products from regional and national suppliers when the purchasing managers of hotels request different types of products. They also emphasize that product quality is an important factor in supplying goods from the region that specializes their production. In winter, with a reduction in tourism activities, they supply products to restaurants and hotels open during the winter and in different cities. In this sense, it can be said that these suppliers are those most affected by the tourism sector.

The Alanya WM for F&V first began operating in the 1970s in the city centre. Upon examination of the establishment year of the firms there, it becomes clear that the number of firms increased greatly after 2001 (13% of the firms opened between 1970 and 1985, 21% between 1986 and 2000, and 66% from 2001 to 2015), during the development period of the tourism sector (see Appendix 2). Although tourism may not be the only factor that affected the increase in the number of firms providing fruit and vegetables, this data offers some insight into the significance of tourism's impacts.

Some studies in the literature indicate that the tourism sector contributes to the development of firms in related sectors (Clancy 1998; Pearce 1998; ODI 2006, 2009; Meyer 2007; Font et al. 2008). To investigate this claim, the firms interviewed were compared in terms of capital structure, firm type, and firm size, which indicate firm development, in order to determine the differences between the firms related to tourism (FTs) and other firms (FOs). In addition, an inquiry was conducted into the number of second-tier suppliers and the proportion of producers in these tiers. In this way, the differences between FTs and FOs can be examined according to their links with agricultural producers.

The chi-square test indicated that the only significant relationships were between the sector the firm sells to and the firm type. According to the results of the crosstabulation, suppliers are mostly FTs, while broker firms are mainly FOs (Table 2). It can thus be argued that the tourism sector maintains supply relations through intermediaries but is not directly related to production.

Table 2 Distribution of firms by type (%)

		Supplier	Agricultural broker	Supplier + agricultural broker	Total
FTs	Num.	5	15	1	21
	%	24%	71%	5%	100%
FOs	Num.	0	25	1	26
	%	0	96%	4%	100%
Total	Num.	5	40	2	47
	%	11%	85%	4%	100%

FTs—Firms that sell to the tourism sector
FOs—Firms that sell to other sectors

Table 3 Distribution of firms according to the types of their second-tier suppliers

	Total num.	Producer (%)	Agricultural	Total (%)
			Broker or supplier (%)	
FTs	52	70	30	100
FOs	118	94	6	100
Total	85	82	18	100

FTs = firms that sell to the tourism sector
FOs = firms that sell to other sectors

However, according to the commercial firm structures,[5] which help to reveal the capital sizes of the firms, 62% of the FTs are unlimited companies, and 38% are equity companies, while 77% of the FOs are unlimited companies, and 23% are equity companies. Moreover, there are no corporations among the FOs. Thus, among the firms selling to the tourism sector, there are more firms with large capital holdings.

In terms of firm size, all of the interviewed firms employed on average 6 employees, with 8.4 employed by FTs and 4.3 by FOs. It is thus clear that the firms that sell to the tourism sector are larger on average.

In order to examine the second-tier fresh fruit and vegetable suppliers of tourism, the firms were asked how many suppliers (producers, brokers, or suppliers) provided them with agricultural products. The interviewed firms indicated that they had a minimum of 10 and a maximum of 500 firms delivering products to them, with an average of 85 suppliers per firm. While this average was 52 among FTs, the average number of product suppliers of FOs was 118 (Table 3).

70% of the firms selling to FTs were producers, while 30% were brokers and suppliers; for firms supplying to FOs, these shares were 94% and 6%, respectively. This data suggests that the FTs are seeking various kinds of products sold by agricultural brokers or suppliers in order to meet the needs of hotel purchasing managers. These firms are therefore relatively less connected to producers because they have more linkages with brokers in other WMs for F&V or with brokers within the Alanya WM for F&V than FOs. According to the Mann–Whitney test results, there were significant differences in the type of second-tier suppliers between the FTs and FOs (Table 4).

A broker (FO16[6]) referred to seasonal effects to explain the difference in the number of product suppliers with which they had linkage: "*According to the records, we have 1000 suppliers, but the number currently active is around 500. They are all between Gazipaşa and Alanya. During the summer, the number of product suppliers falls to 200–300. When agricultural production decreases in Alanya in summer, we*

[5] Firms have been examined as unlimited or equity companies [corporations (Co.) or limited liability (Co. Ltd.)]. Commercial company types are considered important indicators of firm size. Accordingly, 70% of the firms interviewed were unlimited companies, and 30% were equity companies. Among the equity companies, Co. accounted for 6%, and Co. Ltd. comprised 24%.

[6] See Appendix 1 for the general characteristics of the interviewed firms.

Table 4 Mann–Whitney test results for differences between types of suppliers of FTs and FOs

		N	Mean rank	Sum of ranks	Mann–Whitney U	p
Producer	FTs	21	19.38	407.00	176,000	**0.001**
	FOs	26	27.73	721.00		
	Total	47				
Agricultural broker or supplier	FTs	21	29.38	617.00	160,000	**0.001**
	FOs	26	19.65	511.00		
	Total	47				

FTs = firms that sell to the tourism sector
FOs = firms that sell to other sectors

bring in products from outside Alanya". The data indicates that the tourism sector is dependent on brokers or suppliers for the supply of agricultural products in cases where the direct linkage with the producer is relatively weak, which can be explained by the supplied products' vulnerability to seasonal effects and low local production in Alanya during the tourist season. This result is also not surprising, as there is no effective marketing system for agricultural production in Turkey, which is controlled mostly by suppliers.

5.3 The Supply Chain and Spatial Network Between the Tourism and Agriculture Sectors in Alanya

The next part of the study explored the spatial network of second-tier suppliers through an examination of their distribution. The first step in this exploration was to determine the supply chains between the two sectors. The producers bring their agricultural products to the Alanya WM for F&V and sell them to the brokers, who sell the products to the hotel purchasing managers who have come to the Alanya WM for F&V or to the suppliers who provide products to the hotels. In this way, products reach the final consumers, the tourists, forming the supply chain between the tourism and agricultural sectors (Fig. 4).

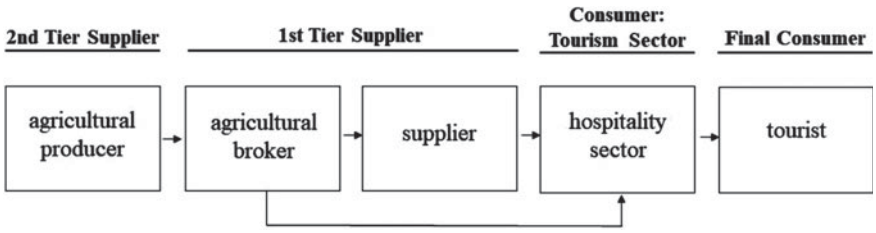


Fig. 4 Tourism and agriculture supply chain in Alanya (Authors' own)

Table 5 Spatial distribution of suppliers of FTs and FOs

	Local		Regional		National	
	Alanya (%)	Gazipaşa (%)	Manavgat (%)	Antalya (%)	Other provinces (%)	Total (%)
FTs	56	2	7	8	27	100
FOs	75	4	8	3	9	100
Total	66	3	8	6	18	100

FTs = firms that sell to the tourism sector
FOs = firms that sell to other sectors

The firms were also asked about the origins of the three products they sell the most. Their answers shed light on the local, regional, and national distributions of the second-tier suppliers of all firms, shown in Table 5. 65% of second-tier suppliers are located in Alanya (local).

The most common origins of the agricultural products purchased from the WM for F&V are as follows: the Antalya province at the regional scale and the Konya, Adana, Bursa, Mersin, Burdur, Isparta, Çanakkale, İzmir, and Niğde provinces at the national scale. This distribution shows the influence of the agricultural production zones on supplier geography and reflects the tendency of the firms to supply products from specific production regions.

It is clear that FTs have fewer linkages with the producers of Alanya than FOs, which indicates that the former purchase products from other locations in order to meet the more varied demands of the hotels. Interviewees often mentioned that the firms supply goods from the other provinces/districts in cases where some of the products demanded by the purchasing managers of hotels cannot be provided from Alanya. Some suppliers have stated that their aim is to attract hotel managers by bringing in different products from different regions.

For example, the owner of FT8 stated, '*It's important to offer various kinds of products, and we often need to procure them from other sources*', whereas FO19 declared that it purchased products from different regions and said, '*We are trying to purchase high-quality products from producers, so we usually buy it from specific production regions*'. Another causative factor in this situation is the limited amount and variety of products grown in summer in Alanya. For these reasons, the number of FTs is higher than that of other firms on a national scale.

In the case of FOs, most of the linkages of second-tier suppliers are with local producers. FOs mostly consist of brokers who also sell local products. At the same time, they have fewer linkages with national suppliers than FTs. The Mann–Whitney test results also indicate that there is a significant difference between the local and national distributions of the second-tier suppliers of FTs and FOs (Table 6). According to the mean rank, the FTs have more linkages with national producers and brokers, while the FOs have more linkages with local ones.

When the supply chain between agriculture and tourism is examined spatially, it is clear that the tourism-related firms affect a wider geographical area, with linkages

Table 6 Mann–Whitney test results for the differences between the spatial distribution of the suppliers of FTs and FOs

		N	Mean rank	Sum of rank	Mann–Whitney U	p
Local	FTs	21	20.10	422.00	191.000	0.039
	FOs	26	27.15	706.00		
	Total	47				
Regional	FTs	21	23.81	500.00	269.000	0.468
	FOs	26	24.15	628.00		
	Total	47				
National	FTs	21	27.48	577.00	200.000	**0.042**
	FOs	26	21.19	551.00		
	Total	47				

FTs—Firms that sell to the tourism sector
FOs—Firms that sell to other sectors

to national and regional producers, brokers, and suppliers as well as local producers and brokers. They receive both types of product directly from national or regional producers and from other sources. While tourism provides a significant demand for the agricultural products that are produced in Alanya, the linkages of these firms are not only to local but also to regional and national second-tier suppliers (Fig. 5).

According to these results, most second-tier suppliers are producers and local. However, the FTs have more linkages with regional and national producers than the FOs.

6 Conclusion

Today, in addition to the direct economic impacts of tourism, such as bringing in foreign exchange, creating employment, and raising household income, studies on regional development have also focused on the secondary impacts associated with linkages to other sectors. This study has examined the secondary impacts created by the hospitality sector, which has the most significant linkage to other sectors within the tourism sector, through the supply of fresh fruit and vegetables. The results of the study not only highlight the importance of tourism in stimulating the establishment of new firms and generating employment but also point out the need to pay special attention to the sustainability and productivity of agricultural production.

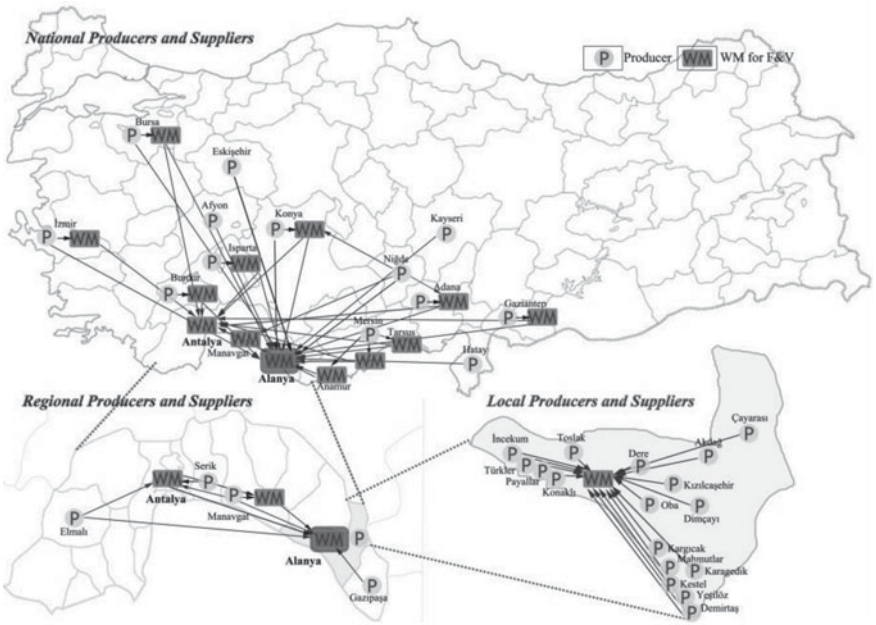


Fig. 5 Supplier geography of tourism and agriculture within the first- and second-tier-suppliers of tourism (Authors' own)

Alanya has been selected for case study since it is one of the most important tourist destinations in Turkey, with very high potential for agricultural production. The region is thus a convenient destination for examining fruit and vegetable suppliers, since their products are important in terms of the purchasing costs of hotels.

This study helps us understand the system, the actors, and their role within the supply chain of hotels as regards agricultural products. The major actors for the supply of agricultural goods are the firms in Alanya's WM for F&V. These firms mainly meet the demand created by tourism in Alanya for fresh fruit and vegetable production. Moreover, fresh fruit and vegetable suppliers and brokers, especially those associated with the tourism sector, also purchase products from other regions to meet the varying demands of hotels. Thus, the demand for fresh fruit and vegetables created by the tourism cluster in Alanya has a positive impact on supplier firms not only at the local level, but also in other agricultural production regions in Turkey.

Moreover, it appears that different actors have roles within the tourism-agriculture supply chain, which has led to the observation that the tourism sector in the study area is also responsible for the formation of a different firm type (supplier) throughout the supply of agricultural products. This observation has gone unremarked on in the literature on the contribution of tourism to local businesses.

Countries and regions that do not produce agricultural products depend on imported goods and have high leakages that reduce secondary impacts on the local area. Alanya, on the other hand, not only is a fertile agricultural region with local supplier firms but also has a spatially wider secondary impact throughout the country, as hotels provide goods from different regions, either because they require seasonal products or goods not produced in sufficient quantities locally during the peak season, or because they prefer to purchase some products from specialized regions out of quality concerns. It is estimated that these results would be similar to those for destinations in the nearby geography with similar tourism and agricultural potential to Alanya. However, it is clear that tourist destinations with a different balance between the two sectors or where local geographical features not as dominant as in Alanya will bear different results.

The fruit and vegetable demand of hotels has created significant supplier capacity in terms of quality and quantity in Alanya; however, Alanya has become more attractive to supplier firms outside the region as well. Consequently, since tourism in Turkey has recently been vulnerable due to political crises, the supplier linkages of hotels as a secondary impact of tourism should be taken into consideration along with potential threats to supplier firms and other sectors in Alanya and different regions.

Acknowledgements We would like to thank Istanbul Technical University Support Program for Doctoral Dissertation (Project Number: 37766) and Alanya Chamber of Commerce and Industry for funding this research. We also thank Sinem Metin Kacar, Joan Eroncel, and Paul Waite for language editing and proofreading.

Appendix 1. General Characteristics of the Interviewed Firms

Firms that sell to tourism sector (FTs)					Firms that sell to other sectors (FOs)				
Firm code	Open. date	Capital structure	Firm type	Num. of emp.	Firm code	Open. date	Capital structure	Firm type	Num. of emp.
FT1	2013	Unli.comp.	AB	3	FO1	1990	Part.Comp.	AB	4
FT2	1998	Unli.comp.	S + AB	3	FO2	1995	Co.Ltd.	AB	6
FT3	1992	Co.Ltd.	AB	20	FO3	1992	Co.Ltd.	AB	8
FT4	1998	Co.Ltd.	S	15	FO4	1994	Part.Comp.	AB	3
FT5	2014	Corp	S	30	FO5	1970	Part.Comp.	S + AB	4
FT6	2000	Co.Ltd.	S	3	FO6	2000	Part.Comp.	AB	4
FT7	1992	Co.Ltd.	AB	5	FO7	1991	Co.Ltd.	AB	6
FT8	1995	Unli.comp.	AB	2	FO8	2012	Part.Comp.	AB	3
FT9	2005	Unli.comp.	AB	2	FO9	1994	Part.Comp.	AB	2
FT10	2013	Co.Ltd.	S	18	FO10	2000	Part.Comp.	AB	5
FT11	2014	Corp.	S	18	FO11	2012	Co.Ltd.	AB	16
FT12	1992	Unli.comp.	AB	2	FO12	1970	Part.Comp.	AB	1
FT13	1996	Corp.	AB	4	FO13	1970	Co.Ltd.	AB	3
FT14	1992	Unli.comp.	AB	4	FO14	1971	Part.Comp.	AB	1
FT15	1992	Unli.comp.	AB	4	FO15	2000	Part.Comp.	AB	4
FT16	1994	Unli.comp.	AB	8	FO16	2000	Part.Comp.	AB	4
FT17	1994	Unli.comp.	AB	8	FO17	1990	Part.Comp.	AB	6
FT18	1992	Unli.comp.	AB	7	FO18	2008	Part.Comp.	AB	2
FT19	1992	Unli.comp.	AB	7	FO19	2014	Part.Comp.	AB	2
FT20	1982	Unli.comp.	AB	7	FO20	2002	Part.Comp.	AB	3
FT21	1982	Unli.comp.	AB	7	FO21	1988	Co.Ltd.	AB	10

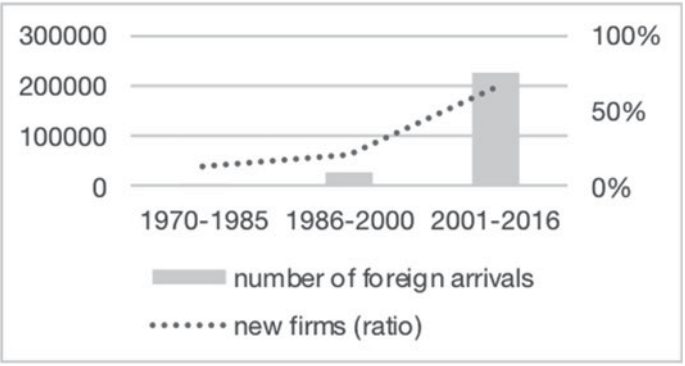
(continued)

(continued)

Firms that sell to tourism sector (FTs)					Firms that sell to other sectors (FOs)				
Firm code	Open. date	Capital structure	Firm type	Num. of emp.	Firm code	Open. date	Capital structure	Firm type	Num. of emp.
					FO22	1989	Part.Comp.	AB	3
					FO23	1997	Part.Comp.	AB	3
					FO24	2000	Co.Ltd.	AB	3
					FO25	1999	Part.Comp.	AB	6
					FO26	1994	Part.Comp.	AB	2

*Firm Type = AB: Agricultural Broker, S: Supplier, S + AB: Supplier + Agricultural Broker.

Appendix 2. Number of Foreign Arrivals and New Firms



References

AKTOB. (2014). Structure, size and contribution of economy: Socio-economic effects of tourism and accommodation sector (*TurizmSektörününYapısı, Büyüklü˘ güveEkonomiyeKatkısı: TurizmveKonaklamaSektörününSosyo-ekonomikEtkileri)*. Report of Mediterranean Touristic Hoteliers Association, RetmaMatbaa, Antalya.

ALTSO. (2013). *Economic report of Alanya 2012*. Ankara: BaşakMatbaa.

ALTSO. (2016). *Economic report of Alanya 2015*. Antalya: Günizi Tasarım Basım Tanıtım Ltd. Şti.

ALTSO. (2017). *Economic report of Alanya 2016*. Antalya: Günizi Tasarım Basım Tanıtım Ltd. Şti.

Anderson, W., & Juma, S. (2011). Linkages at tourism destinations: Challenges in Zanzibar. *ARA Journal of Tourism Research, 3*(1), 27–41.

Ashley, C., Boyd, C., & Goodwin, H. (2000). *Pro-poor tourism: Putting poverty at the heart of the tourism agenda, Department for International Development Natural Resource Perspectives*, Number 51. https://195.130.87.21:8080/dspace/bitstream/123456789/444/1/Propoor%20tourism%20%20putting%20poverty%20at%20the%20heart%20of%20the%20tourism%20agenda.pdf (29.09.2012).

Ashley, C., Briene, P. D., Lehr, A., & Wilde, H. (2007). *The role of the tourism sector in expanding economic opportunity*. Corporate Social Responsibility Initiative Report No.: 23. Cambridge, MA: Kennedy School of Government, Harvard University.

Baum, T. (2013). *International perspectives on women and work in hotels, catering and tourism* (Bureau for Gender Equality Working Paper 1/2013), Sectoral Activities Department Working Paper No. 289. Geneva: International Labour Office (ILO). Access: https://www.ilo.org/wcmsp5/groups/public/@dgreports/@gender/documents/publication/wcms_209867.pdf.

Brohman, J. (1996). New directions in tourism for third world development. *Annals of Tourism Research, 23*(1), 48–70.

Brown, F. (2000). *Tourism reassessed: Blight or blessing*. Oxford, UK: Butterworth-Heinemann Publishing.

Çıkın, A., Çeken, H., & Uçar, M. (2009). The impact of tourism on the agriculture sector, agro-tourism and economic consequences (Turizmintarımsektörüneetkisi, agro-turizmveekonomiksonuçları). *Turkish Journal of Agricultural Economics., 15*(1), 1–8.

Clancy, M. (1998). Commodity chains, services and development: Theory and preliminary evidence from the tourism industry. *Review of International Political Economy, 5*(1), 122–148.

Cunha, S. K., & Cunha, J. C. (2005). Tourism cluster competitiveness and sustainability: Proposal for a systemic model to measure the impact of tourism on local development. *Brazilian Administration Review-BAR, 2*(2), 47–62.

Değer, M. K. (2006). Tourism and export-led growth: 1980–2005 Turkey experience (Turizmeveihracatadayalıbüyüme: 1980–2005 Türkiyedeneyimi). *İktisadiveİdariBilimlerDergisi*, *20*(2), 67–86.

Font, X., Tapper, R., Schwartz, K., & Kornilaki, M. (2008). Sustainable supply chain management in tourism. *Business Strategy and the Environment, 17,* 260–271.

Gezici, F., & Gül, A. Y. (2004). Local development policies in tourism and search for alternative tourism (Turizmdeyerelkalkınmapolitikalarıve alternative turizmarayışları). In S. Atabay (Ed.), *Tourism policies in the New Millennium: New trends and structural changes, International Symposium Book* (*YeniBinyıldaTurizmPolitikaları: YeniE˘ gilimlerveYapısalDe˘ gişmeler, UluslararasıSempozyumuBildirilerKitabı*). Istanbul: YTU Basım-YayınMerkezi.

Gezici, F., & Küçüksarı, G. (2012). An analysis of supply chain of accommodation sector: The case of Manavgat in Turkey. İçinde *ERSA Conference Papers* (No. ERSA 12, p. 239). European Regional Science Association.

Holder, J. S. (1992). The need for public/private sector cooperation in tourism. *Tourism Management, 13*(2), 157–162.

Kweka, J., Morrissey, O., & Blake, A. (2003). The economic potential of tourism in Tanzania. *Journal of International Development, 15*(3), 335–351.

Lejárraga, I., & Walkenhorst, P. (2010). On linkages and leakages: Measuring the secondary effects of tourism. *Applied Economics Letters, 17*(5), 417–421.

Meyer, D. (2007). Pro-poor tourism: From leakages to linkages. A conceptual framework for creating linkages between the accommodation sector and 'poor' neighbouring communities. *Current Issues in Tourism, 10*(6), 558–583.

Michael, E. J. (2003). Tourism micro-clusters. *Tourism Economics, 9*(2), 133–145.

ODI. (2006). *Briefing paper: Tourism business and the local economy: Increasing impact through a linkages approach.* https://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/2592.pdf (10.10. 2012).

ODI. (2009). *Trade and poverty in Latin America briefing paper: Upgrading along value chains, strategies for poverty reduction in Latin America.* https://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/5654.pdf (10.10.2012).

Pearce, D. (1998). *Tourist development* (2nd ed.). UK: Longman Group.

Piboonrungroj, P., & Disney, S. M. (2015). Supply chain collaboration in tourism: A transaction cost economics analysis. *International Journal of Supply Chain Management, 4*(3), 25–31.

Pillay, M., & Rogerson, C. M. (2013). Agriculture-tourism linkages and pro-poor impacts: The accommodation sector of urban coastal Kwazulu-Natal, South Africa. *Applied Geography, 36,* 49–58.

Robinson, P., Lück, M., Stephen, S. L. J., & Lackey, M. (2013). *Tourism.* UK: CAB International.

Rogerson, C. M. (2012). Tourism–agriculture linkages in rural South Africa: Evidence from the accommodation sector. *Journal of Sustainable Tourism, 20*(3), 477–495.

Romero, I., & Tejada, P. (2011). A multi-level approach to the study of production chains in the tourism sector. *Tourism Management, 32*(2), 297–306.

Scheyvens, R., & Momsen, J. H. (2008). Tourism and poverty reduction: Issues for small island states. *Tourism Geographies*, *10*(1), 22–41. Stynes, D. J. (1997). *Economic impacts of tourism, a handbook for tourism professionals.* Illinois Bureau of Tourism, Illinois Department of Commerce and Community Affairs. Prepared by the Tourism Research Laboratory at the University of Illinois at Urbana-Champaign.

Telfer, D. J., & Wall, G. (1996). Linkages between tourism and food production. *Annals of Tourism Research, 23*(3), 635–653.

Telfer, D. J., & Wall, G. (2000). Strengthening backward economic linkages: Local food purchasing by three Indonesian hotels. *Tourism Geographies, 2*(4), 421–447.

Torres, R. (2003). Linkages between tourism and agriculture in Mexico. *Annals of Tourism Research, 30*(3), 546–566.

Torres, R. M., & Momsen, J. (2011). Introduction. In: R. M. Torres & J. Momsen (Eds.), *Tourism and agriculture: New geographies of consumption, production and rural restructuring* (pp. 1–10). Routledge.

Tribe, J. (2011). *The economics of recreation.* Routledge, New York: Leisure and Tourism.

Vellas, F. (2011). *The indirect impact of tourism: An economic analysis*. Paper presented at the Third Meeting of T20 Tourism Ministers, Paris, France.

Zhang, T. C., & Wang, W. N. (2009). Analysis on travel public services of the local government's behaviour. *Academic Journal of Zhongzhou*. *China, 172*, 114–118.

Zhang, X., Song, H., & Huang, G. Q. (2009). Tourism supply chain management: A new research agenda. *Tourism Management*, *30*(3), 345–358. Tour. Manage *30*, 345–358 (2009).

Zhang, X., Song, H., & Huang, G. Q. (2009). Tourism supply chain management: A new research agenda. *Tourism Management, 30*(3), 345–358.

Tourism Segments and Tourist Behaviours

Craft Beer Tourism: The Search for Authenticity, Diversity, and Great Beer

Neil Reid

1 Introduction

Craft breweries are becoming increasingly common in a growing number of countries across the world. Craft beer first became popular[1] in the United States in the mid-1980s, where the number of craft breweries increased from 37 in 1985 to over 8000 in 2019 (Fig. 1).[2] By 2019, craft breweries controlled 13.6% of the U.S. beer market by volume and 25.2% by sales (Brewers Association 2020b).[3] The growing popularity of craft beer in the United States was soon replicated in other parts of the world, and craft breweries started appearing in greater numbers in other countries. In Europe, for example, the number of craft breweries in the United Kingdom increased from 694 in 2009 to 1978 in 2018. Over the same period, the number of craft breweries in Spain and Italy grew from 27 to 395, and from 242 to 692, respectively (Fig. 2). The same trend was simultaneously occurring in Australia (Argent 2017), Canada (Eberts 2014), Mexico (Brewers Association 2015), South Africa (Rogerson 2016), and a number of other countries (Garavaglia and Swinnen 2018).

[1]In reality, prior to the consolidation of the brewing industry, most breweries were small and produced beer for geographically local markets. For example, in the United States in 1865, there were over 2500 breweries producing beer that, using today's definition, would be considered craft beer (Stack 2000).

[2]In the United States, a craft brewery is one that produces under 6 million barrels (7,040,865 hl) of beer per year and which is independently owned (less than 25% of the craft brewery is owned or controlled by an alcohol industry member that is not a craft brewer. It must also produce beer) (Brewers Association 2020a).

[3]The sales share is higher than the volume share because craft beer has a higher price point than non-craft beer.

N. Reid (✉)
Geography and Planning, University of Toledo, Toledo, OH 43606, USA
e-mail: NEIL.REID@utoledo.edu

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_16

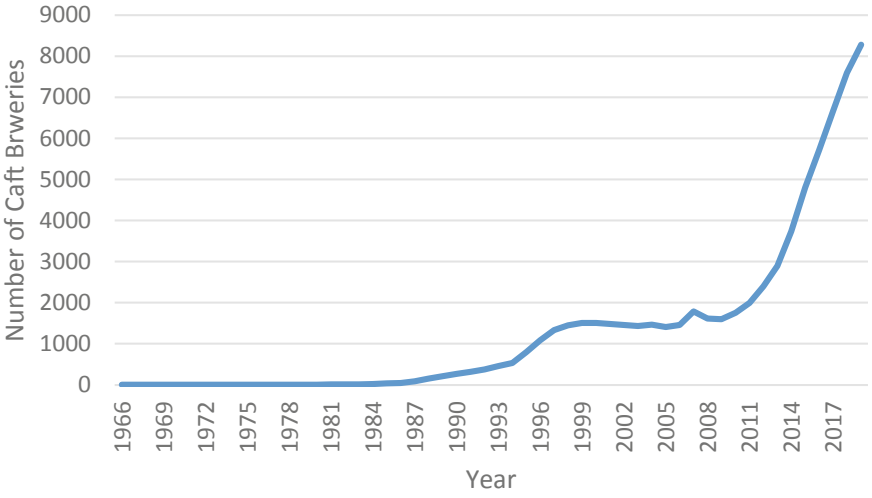


Fig. 1 Growth of craft breweries in the United States, 1966–2019 (While different terminology and definitions are used in different countries, for the sake of consistency, the term craft brewery is used throughout this chapter. A craft brewery is one that is independently owned and engages in the small-volume production of beer). *Source* Brewers Association (2020b)

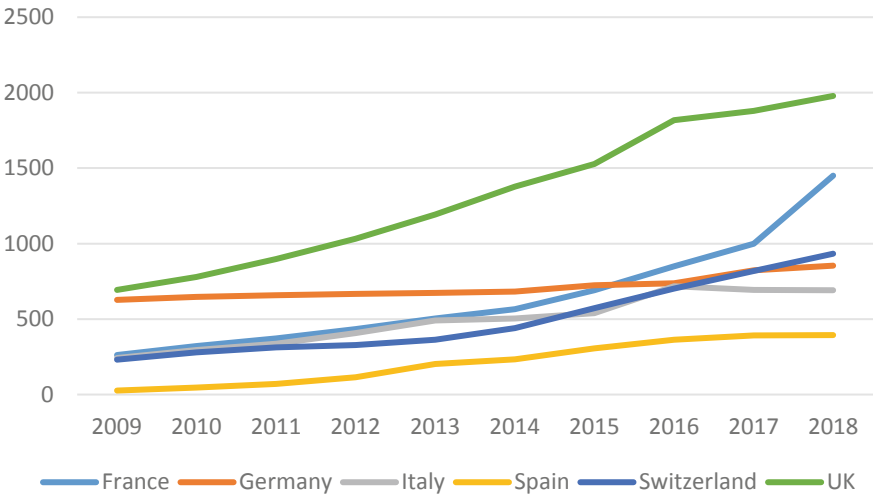


Fig. 2 Growth of craft breweries in select European countries, 2009–2018. *Source* Brewers of Europe (2014, 2018, 2020). *Notes* Unless specified a microbrewery has a production under 1000 hl per year. Spanish data cover all microbreweries regardless of production volume. UK data include breweries producing up to 60,000 hl per year and which receive "small brewer relief" from the UK government

Across countries and cultures, the growth of craft beer's popularity appears driven by a common set of factors. First, a younger generation of beer drinkers (known as Millennials in the United States) are rejecting the mass-produced, homogeneous, bland-tasting pale lagers (think Budweiser and Heineken) produced by large multinational corporations, in favor of the more flavorful and diversified portfolio of beers that are offered by craft breweries (Maier 2013; Gomez-Corona et al. 2016; McLaughlin et al. 2016). Second, in addition to providing greater diversity and more flavors, craft beer allows the consumer to purchase beer, made in small-scale, independently owned breweries, whose owners live locally. Craft beer is part of a broader neolocalism movement, described by Schnell (2013, 55) as "the conscious attempt of individuals and groups to establish, rebuild, and cultivate local ties and identities." Schnell (2013, 45) refers to craft breweries as "tools of local identity." Indeed, market research in the United States suggests that "local is most important to the youngest group of beer aficionados (those 21–34)" (Nielsen 2015).

As craft beer has grown in popularity, an increasing number of places are recognizing that the industry may represent an economic development opportunity (Reid and Gatrell 2015, 2017). These opportunities take several distinct, yet often interrelated, forms. In the United States, some larger craft breweries (known as regional craft breweries) are expanding their market geographically and, as a result, often establish second production locations, in order to reduce transportation costs. The announcement that a regional craft brewer is seeking a second production location results in bids from multiple communities hoping to attract the brewery to their locale (Jones 2014; Rolett 2014; Reid and Gatrell 2015). Attracting a large regional brewery can have a significant impact on the local economy. At the neighborhood level, many craft breweries are playing a key role in revitalizing economically distressed and blighted neighborhoods. Craft breweries are willing to invest in distressed neighborhoods because the rent is inexpensive, and they are very adept at adaptively reusing old buildings (Reid et al. 2019). As a result, craft breweries have played an important part in the revitalization of a number of neighborhoods across the United States including Ohio City (Cleveland, OH), River North (Denver, CO), and Williamsburg (Brooklyn, NY) (Alexander 2013; Arbel 2013; Gorski 2015). In a case study of craft breweries in Charlotte, NC Nilsson and Reid (2019) demonstrated that the existence of a craft brewery has a positive impact on neighborhood home values. In other words, craft breweries are a neighborhood amenity. The geographic clustering of craft breweries in particular neighborhoods has been detected in numerous cities across the United States (Nilsson et al. 2018) and in London in the United Kingdom (Dennet and Page 2017). The clustering of craft breweries in neighborhoods has created an opportunity for cities to promote and market these areas as "brewery districts," to the increasing number of individuals who engage in beer tourism. Beer tourism, which is growing in popularity, represents another economic development opportunity at both the city and larger regional scales. The efforts of places to leverage its craft breweries and beer-related events (e.g., beer festivals) as tourism assets is part of a larger movement to capitalize on a growing interest in locally grown and locally produced food products. Schnell (2011) found that, between 1993 and 2008, Canadian and U.S. provinces and states devoted increasing amounts of space to local food and

agriculture in tourist brochures and booklets. Online travel guides, such as Lonely Planet and Fodors, now include information on the craft beer scene for a variety of destinations (Eaves nd, Schultz 2017. In 2016, the travel Web site, Travelocity, introduced its beer tourism index, in which it identified the six best large and six best small American metropolitan areas in which to take a "beercation," Factors that contributed to the creation of the index included the availability of rideshare services, accessibility via air, and the average cost of lodging (Travelocity 2016; Herz 2016).

The purpose of this chapter is to examine the current state of knowledge with respect to beer tourism, by conducting an exhaustive review of the small, but growing, literature on the topic.[4] There are two biases inherent in this chapter. First, while large multi-national corporations, such as AB InBev and Heineken, produce most of the beer consumed by the world's beer drinkers, it is the small-scale craft breweries that are increasingly capturing the imagination of beer drinkers everywhere. As such, craft breweries are creating most of the new opportunities related to beer tourism; and, of all beer drinkers, craft beer drinkers appear to be the ones most interested in engaging in beer tourism. The craft-brewing sector is, therefore, the primary focus of this chapter. Second, the growth and size of the craft-brewing sector in the United States means that much of the literature on beer tourism focuses on the American experience, and this chapter will inevitably reflect this bias. The remainder of this chapter is divided into eight sections. The second section provides a definition of beer tourism. In the third section, the motivations that drive some beer drinkers to engage in beer tourism are examined. The fourth section looks at ale trails and beer festivals–both of which provide some structure to the beer tourism industry and are very popular among beer tourists. The fifth section describes the economic impact of beer tourism. The sixth section highlights some of the negative impacts of beer tourism. Challenges facing the development of beer tourism sector are the focus of the seventh section. The eighth and final section provides some concluding thoughts.

2 Definition of Beer Tourism

As craft beer has grown in popularity, so has the number of people who are willing to travel outside of their town or city of residence to visit breweries and drink craft beer. Beer tourism is defined as the "visitation to breweries, beer festivals, and beer shows for which beer tasting and experiencing the attributes of beer region[s] are the prime motivating factors for visitors" (Plummer et al. 2005).[5] Being a beer tourist means "traveling specifically for beer itself" (Janzen 2015). As such, beer tourism

[4] A secondary objective of this chapter is to provide a comprehensive list of scholarly journal articles, book chapters, and reports pertaining to craft beer tourism.

[5] Plummer et al.'s (2005) definition of beer tourism is based on Hall et al.'s (2003) definition of wine tourism.

Table 1 Typology of beer attractions

Category	Examples
Attractions not designed to attract tourists	Breweries Bars and pubs
Attractions designed to attract tourists	Beer museums Beer trails
Special events	Beer festivals Beer memorabilia fairs Beer conferences and trade shows

After Plummer et al. (2005), Bujdosó and Szűcs (2012)

is a subset of culinary tourism (Long 2013). The types of attractions and special events that appeal to beer tourists include breweries, beer museums, and beer festivals (Table 1).

3 Motivations for Beer Tourism: Experiencing Local Beer, People, and Places

In discussing wine tourism, Plummer et al. (2005, 451) suggest, "in order to understand wine tourism, it is important to get a profile of the customers." We can extend this statement to beer tourism. In terms of a general profile, craft beer tourists in North America tend to be male (between 60 and 66% are male), under the age of 50 (75 and 84%), have at least a Bachelor's degree (60–80%), and have an average household income of $80,000 or higher (49%) (Plummer et al. 2005; Kraftchick et al. 2014; Murray and Kline 2015; Giedeman et al. 2015; Slocum 2018).[6] Data from beer festivals in South Africa and New Zealand suggest many similarities with North American beer tourists. South African beer festival attendees are predominantly male (65%), young (average age of 35.9), university graduates (69%), and had an average household income of approximately 560,000 Rand (Rogerson and Collins 2015).[7] Similarly, Fountain and Ryan (2015) show attendees at two New Zealand beer festivals to be young (average age 35).

The high socio-economic status of craft beer drinkers should not be surprising. In contrast to mass-produced pale lager, craft beer is a normal good, for which demand increases when incomes rise (Tremblay and Tremblay 2011). In his classic late-nineteenth century treatise on wealth and status, Veblen (1899, 56) suggests that the consumption patterns of the "gentleman of leisure … undergoes a specialization as regards the quality of the good consumed. He consumes freely and of the best, in food, drink, narcotics …" Several contemporary scholars make the case for the

[6] Numbers in parentheses represent the range of percentages found in various studies.

[7] In 2011 the average household income in South Africa was approximately 103,000 Rand (Desilver 2013).

craft beer drinker being a Veblen consumer. Baginski and Bell (2011, 175), for example, suggest that craft beer is a "high order prestige good" that is "often viewed as highbrow," while Murray and O'Neill (2012, 900) characterize the craft beer consumer as "sophisticated" and "discerning." Tremblay and Tremblay (2011, 155) refer to the "prestige factor" of drinking craft beer. In discussing real-ale drinkers in northern England, Spracklen et al. (2013) note that drinking "real ale is seen as a marker of good taste and distinction."[8]

To understand why individuals engage in beer tourism, it is necessary to understand the motivation of the craft beer drinker. In this respect, the work of Carpenter et al. (2013) is particularly useful. Carpenter et al. (2013) identified four types of craft beer drinkers–Novice, Loyalist, Explorer, and Enthusiast. Most craft beer drinkers are either Explorers or Enthusiasts. While there are important differences between Explorers and Enthusiasts, a key characteristic that they have in common is their aspiration to visit as many different breweries and to sample as many different beers as possible.[9] Spracklen et al. (2013) refer to beer drinkers, who enjoy trying beers that they have not had before, as "tickers." Tickers like to' tick' (or check off) new beers, as they consume them. This desire to try many different beers is reflected in the popularity of the app Untappd (Rotunno 2016). With over 3.2 million users, Untappd allows beer drinkers to log and share, with peers, the beer that they are drinking, the location where they are drinking it, and their opinion of the beer. For Millennials (the cohort driving craft beer's popularity), one observer noted that, "social media and the very act of sharing [online] are in their DNA" (Cone Communications 2013). In many respects, the desire to visit different breweries and taste different beers makes Explorers and Enthusiasts ideal candidates to engage in beer tourism. Millennials, particularly males, are more likely to travel to engage in a hobby than non-millennials (Barton et al. 2013). A survey by the Pacific Asia Travel Association found that 85% of Asian millennials wanted to "live like a local" while traveling, with tasting food being a priority (Harrison 2017).

Examining the motivations of beer tourists in North Carolina, Kraftchick et al. (2014) found that the primary factor motivating craft beer tourists is the experience associated with visiting a craft brewery. This experience is often multi-faceted and includes the opportunity to taste new beers (particularly those not available in a tourist's place of residence) and enhancing one's knowledge of the brewing process by participating in brewery tours (Kraftchick et al. 2014; Murray and Kline 2015; Fletchall 2016). In 2014, an estimated ten million individuals took a tour of a craft brewery in the United States.[10] Data from the Waterloo–Wellington Ale Trail in

[8] In the United Kingdom, real ale is "beer brewed from traditional ingredients (malted barley, hops water, and yeast), matured by secondary fermentation in the container from which it is dispensed, and served without the use of extraneous carbon dioxide. Brewers use ingredients which are fresh and natural, resulting in a drink which tastes natural and full of flavor." (Campaign for Real Ale, https://www.camra.org.uk/about-real-ale). Real ale can be considered a sub-category of craft beer.

[9] Enthusiasts have a strong appreciation for the brewing process and its history, while Explorers do not (Carpenter et al. 2013).

[10] While numbers generally do not exist for individual U.S. states, Roulton et al. (2016) estimated that 389,000 individuals toured breweries in the state of Georgia in 2014.

Canada show that annual number of participants ranged between nine thousand and ten thousand (Plummer et al. 2005). Beer tourists also like to spend their money in locally owned businesses (Murray and Kline 2015). Supporting locally owned businesses, such as craft breweries, is consistent with the values of the Millennial demographic (Inland Institutional 2015).

Craft breweries are also spaces where beer tourists feel that they can "connect with locals and learn about the area from a local perspective" (Fletchall 2016, 556). The desire to drink beer in the taproom of the brewery where the beer was brewed, while connecting with locals, is part of the beer tourist's "quest for authenticity" (Fletchall 2016). While some scholars have identified "authenticity" as a problematic concept, there is little doubt that in the mind of many beer tourists (and food tourists more generally) this is what they find when they enter a craft brewery (Sims 2009; Gatrell et al. 2017). There is a "rising demand from consumers for more authentic and engaging travel experiences" (Peak + Skift 2014). According to beer tourists, who visited craft breweries in Montana, doing so "allows for the community to show you more than just the tourist traps. You talk to the regulars at the breweries... stopping by a brewery or two when visiting a town in Montana really gives you a great sense of the community you're visiting" (Fletchall 2016, 555). Many breweries, in Montana, and elsewhere, leverage their connection to the local community by naming their beers after local landmarks, historical events, historical figures, etc. (Eades et al. 2017; Eberts 2014; Flack 1997) (Table 2).

According to Spracken et al. (2013, 307), emphasizing local connections (aka neolocalism) "has become a significant asset to tourism development because of its symbolic ties to place and culture." From a brewery's perspective, in addition to

Table 2 Examples of locally inspired beer names

Brewery	Beer name	Inspiration
Edmund Fitzgerald Porter	Great Lakes Brewing Co., Cleveland, Ohio, USA	Edmund Fitzgerald was a freighter that sank on Lake Superior in 1975, killing all 29 crew members
Bishops Finger ESB	Shepherd Neame, Faversham, Kent, UK	Finger-shaped signposts which pointed pilgrims on their way to the tomb of Thomas a Becket in Canterbury
Sevens Stout	Hong Kong Beer Co., Hong Kong	The annual Hong Kong Sevens rugby tournament
Garibaldi Honey Pale Ale	Howe Sound Brewing, Squamish, British Columbia, Canada	Mount Garibaldi (8766 ft, 26,765 m) is in British Columbia
100 W IPA	Nya Carnegiebryggeriet, Stockholm, Sweden	The brewery is housed in the old Luma Light Bulb factory
Mt. Macedon Pale Ale	Holgate Brewhouse, Woodend, Victoria, Australia	Mt. Macedon dominates the landscape overlooking the Holgate brewery

increasing on-site sales, visits from tourists allow it to build brand awareness for their product (Dunn and Kregor 2014, 2017). With limited or non-existent marketing budgets, craft breweries depend upon direct interaction with consumers (as well as social media) to promote their beers. Finally, people that brew beer at home are particularly enthusiastic beer tourists. A survey of home brewers in the United States found that 55% plan day trips and 37% plan vacations around beer (Murray and O'Neil 2012).

In an era when online shopping is increasingly commonplace, brick and mortar stores are struggling to retain customers (Centre for Retail Research 2018). Those that are successful appear to be those who offer an "experience" (Sicola 2016). Craft breweries are particularly adept at providing their customers with an "experience." They also engage in adaptive reuse and as a result are often located in interesting spaces, including old churches, funeral homes, factories, and warehouses (Reid et al. 2019). Drinking locally brewed beer in a building that once housed the local jail or produced light bulbs is much more interesting than drinking the beer in a new building with no history.

"The craft beer consumer is looking for a unique atmosphere, taste, and overall experience, and it is up to the breweries to meet those expectations. The physical space and its associated atmosphere play an important role in achieving the 'experience' consumers have come to expect" (CBRE 2016: 4) and "an adaptive reuse location can deliver a unique experience to the consumer not found in other types of conventional real estate" (CBRE 2016: 2).

4 Ale Trails and Beer Festivals

A growing number of places have developed ale trails and established beer festivals to attract beer tourists. An ale trail is defined as a "collaboration of breweries, located in close proximity to each other, and often involves joint marketing efforts to promote beer consumption as a tourist activity" (Slocum 2018, 85). Ale trails can be formal or informal in nature. At its most informal, an ale trail may comprise as a cluster of breweries in a city, that act as a magnet for beer tourists who wish to visit them as part of a self-guided tour. A more formal ale trail may be organized as part of an established tour package in which beer tourists are taken from brewery to brewery in a bus (Slocum 2018; Myles ad Breen 2018; Bennet 2007). While ale trails in the United States focus almost exclusively on craft breweries, in the United Kingdom, there are several ale trails where visiting pubs is the primary objective (Minihane 2018).

Ale trails are designed to enhance the beer tourist's experience, as well as promote the breweries that participate in the trail. Ale trails focus on either a particular city (e.g., Columbus, Ohio—https://www.cbusaletrail.com/) or a larger geographic region such as British Columbia, Canada (https://bcaletrail.ca/ale-trails/) or the United Kingdom's Lake District (Bennett 2007). In those cases where visiting pubs is the primary objective, the beer that is available tends to be real ale. Most ale trails

have Web sites where the prospective tourist can access information. In addition to information on the breweries participating in the trail, Web sites provide maps and suggested itineraries. For example, the Web site for the Finger Lakes Beer Trail (https://fingerlakesbeertrail.com/content/itineraries/) in the state of New York divides the region into twelve sub-regions and suggests an itinerary for each. Many ale trails have a 'Passport' book that tourists can have stamped at each brewery. Upon receipt of a prescribed number of brewery stamps, tourists are rewarded, with a gift such as a beer glass or t-shirt (Lorr 2018).

In American cities, where breweries are often located in close geographic proximity to each other, it is possible to walk between breweries. The geographic concentration of breweries has resulted in the emergence of recognizable brewery districts, which cities market as destination points for beer tourists. The city of Denver, Colorado, for example, markets four distinct areas of the city (Downtown, River North/Five Points, Highlands, and South Denver) where visitors to the city can travel between breweries on foot or bicycle (Denver.org 2018). While many ale trails are self-guided, tour companies exist that provide transportation between craft breweries. For example, the company Brews Cruise Inc., offer "educational tasting tours" to craft breweries in over a dozen cities across the United States (BrewsCruise.con 2016). In Saigon, Vietnam, Vespa Adventures takes beer tourists on vintage Vespas to various breweries (Tham 2017; Vespa Adventures 2018).

In the United Kingdom, the rail network is utilized to promote beer tourism. These so-called rail ale trails use trains to take tourists to pubs that are in close geographic proximity to railway stations (Gildea 2016). With pubs in Britain struggling to stay open (Preece 2016; Davies 2016), one of the objectives of the rail ale trail movement is to bring more customers through their doors (Devon and Cornwall Rail Partnership 2018). A variation of the rail ale trail is the summer Ale and steam weekend, an annual event that utilizes a stretch of heritage railway line in Gloucestershire, England, with beer served on the platform of the various railway stations (Watkins 2017). In Traverse City, Michigan, there is an ale trail that requires participants to travel between breweries on a combination of bicycles and kayaks (https://kayakbikebrew.com/).

There is evidence that ale trails attract tourists to a destination. In a multi-year study of the Waterloo–Wellington Ale Trail in Ontario, Canada, Plummer et al. (2005, 2006) found that as many as 70% of those participating in the ale trail said that the existence of the trail was either an important, or very important, reason for their visit to the region. Furthermore, the number of ale trail participants who were from outside of the immediate region increased over time, from 58.2% in 1998 to 64.9% in 2000 (Plummer et al. 2005).

Beer festivals also attract beer tourists. Beer festivals are common in a growing number of cities across the world, including Johannesburg, South Africa (Rogerson and Collins 2015), Bratislava, Slovakia (Jablonská et al. 2013), and Qingdao, China (Denton 2017). As with brewery visits, a key benefit of festivals from a brewery's perspective is the opportunity to highlight products and attain brand recognition (Lyons and Sharples 2008). In some countries, there are literally dozens of beer festivals held on an annual basis. In South Africa, for example, there are over 50 beer

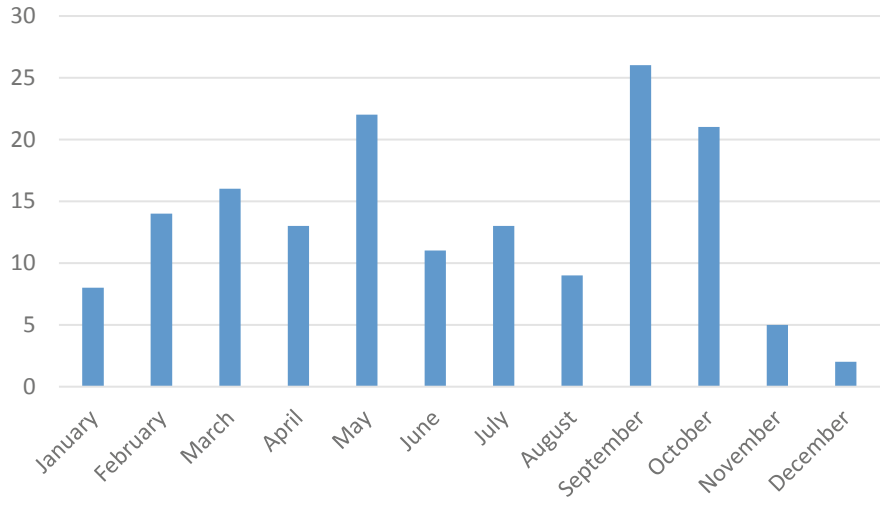


Fig. 3 Beer festivals in the United Kingdom by month. *Source* https://www.camra.org.uk/

festivals held annually (Rogerson and Collins 2015). In 2014 there were 160 beer festivals in the United Kingdom, with 69 (43%) of these occurring in the months May, September, and October. These months coincide with better weather, while avoiding school holidays, when many families take vacation (Fig. 3). The city of Portland, Oregon hosts over forty-five beer festivals each year (Portland Beer Festivals 2018). The maturity of the Portland craft beer scene is such that the city hosts festivals focused on one particular style of beer. For example, in February, there is a festival dedicated to barrel-aged ales, while in June, there is one dedicated to fruit beer.

The world's largest beer festival is Oktoberfest, which is held every September in Munich, Germany.[11] Running for between 16 and 18 days, the event attracts 60 million visitors. The Munich Oktoberfest has spawned an estimated 2000 imitations worldwide (City of Munich 2017a). In cities across the United States, there are at least 430 Oktoberfest's held annually (Hall et al. 2003). Outside of the Oktoberfest spin-offs, the largest beer festival in the United States is the Great American Beer Festival (GABF). Held in Denver, Colorado, every September, and the GABF attracts 60,000 attendees.

People attend beer festivals for a variety of reasons. With respect to craft beer festivals in South Africa, the opportunity to sample new craft beers and socialize with friends and family are equally important factors in influencing the decision of patrons to attend (Rogerson and Collins 2015). Fountain and Ryan (2015) analyzed attendee motivations at two beer festivals (Beervana and the Great Kiwi Beer Festival) in New Zealand. Both festivals focus on craft beer. However, the motivations behind

[11] Oktoberfest has its origins in the celebrations that followed the wedding of Crown Prince Ludwig of Bavaria and Princess Therese of Sachsen-Hildburghausen on October 12, 1810 (City of Munich 2017b).

attending each festival differed. The primary reasons people attend Beervana is to try new and experience a range of different beers. In contrast, the main reasons people attend Great Kiwi is to have fun with friends and enjoy the festive atmosphere. Comparing the individuals attending Great Kiwi and Beervana, beer plays a significantly more important part in the lives of Beervana attendees. Furthermore, Beervana attendees are also more interested in expanding their beer knowledge. The Great Kiwi Festival, with its cooking demonstrations and range of musical performances, appears to appeal to a broader demographic than Beervana. At Beervana, craft beer is the primary focus. Attending craft beer festivals provides an ideal opportunity for the craft beer aficionado to sample a large number of beers within a short space of time (Cook 2018).

Several U.S states and cities include craft beer as part of their official tourism marketing efforts, viewing its inclusion as an important contributor to the diversification of their tourism offerings (Bell 2017; Eades et al. 2017). The small Italian village of Apecchio has in recent years leveraged its craft breweries to generate tourist traffic. Despite having under 2000 inhabitants, Apecchio is home to three craft breweries. In 2012, Appecchio implemented a territorial marketing project, which it called 'ApecchioCittàdellaBirra' (Apecchio the Beer City). In the same year, the village organized and hosted the first Alogastronomia Festival, which highlighted local food and beer. The annual festival attracts approximately 4000 visitors to the village (Pezzi 2017). In at least one case, a brewery is credited with being the catalyst for the rebirth of a town's tourism industry. By the mid-1980s, the small Canadian town of Creemore (population 1170) was facing several significant economic challenges. As a result, many of the businesses in Creemore's downtown area had closed, leaving boarded up storefronts. In 1987, Creemore Springs Brewery opened. The brewery became a tourist attraction and signaled a new era of tourism for Creemore (Mitchell and Vanderwerf 2010).

5 Beer Tourism—Economic Impact

While there are numerous reports that document the economic impact of the brewing industry in general (Brewers of Europe 2017; Beer Institute 2017; Conference Board of Canada 2013), there are relatively few that examine the economic impact of beer tourism. Those that do exist are primarily for the United States. Stonebridge Research Group (2015) estimated expenditures of craft beer-related tourists in the state of New York to be $450 million. Giedeman et al. (2015) estimated the economic impact of beer tourism on Kent County, Michigan, to be $12.23 million.[12] The 42,000 beer tourists who visited Kent County accounted for 14,000 hotel nights (at an average of $148 per night) and visited an average of 3.7 breweries. In terms of

[12] Kent County, Michigan, is home to the city of Grand Rapids. Grand Rapids has numerous craft breweries and in 2012 and 2013 was voted Beer City USA by readers of the newspaper USA Today (Webster 2013).

their average daily spending, the top three categories for beer tourists visiting Kent County were craft beer (31% of daily spending), lodging (30%), and food (23%). Beer festivals can also have a significant economic impact. An analysis of the Oregon Beer Festival (OBF) estimated its local economic impact to be $32.6 million. Over half (56.8%) of attendees at the OBF were from outside of the city of Portland, where the festival was held. Lodging ($9.1 million) accounted for the largest share of the spending of festival attendees (OregonCraftBeer.org 2014). A study of spending patterns at Munich's 2014 Oktoberfest revealed that attendees spent a total of EUR 349 million on the grounds of the festival. Visitors from outside Munich spent an additional EUR 434 million on accommodation and EUR 245 million on food, drink, shopping, and transportation elsewhere in the city. The Munich Oktoberfest employs approximately 8000 people on a permanent basis and hires an additional 5000 during the festival (City of Munich 2017a). The economic impact of the Great American Beer Festival on the city of Denver was estimated (in 2017) to be $29.3 million (Great American Beer Festival 2018). In the case of the state of New York, the 207 craft breweries that existed in 2013 were responsible for an estimated 3011 jobs in the state's tourism sector (Stonebridge Research Group 2015). Many parts of a local economy benefit when a city or region is able attract beer tourists. These include lodging, restaurant, retail, transportation, and entertainment sectors (Giedeman et al. 2015). Craft breweries have a reputation for their philanthropic initiatives (Herz 2015). The additional revenue created by craft beer tourism allows craft breweries to donate more money to charitable causes. As noted by Chris Cramer of the Karl Strauss Brewing Company, "with San Diego becoming a destination for craft brewing tourism–it is enabled us to support local community organizations ranging from art programs in local schools to the Navy Seals." (California Craft Brewers Association 2013).

6 Beer Tourism–Negative Impacts

While the literature overwhelmingly focuses on the positive impacts of beer tourism, negative aspects have also been noted. For example, although rail ale trails in England are beneficial for many pubs, there have been problems associated with drunkenness among participants (BBC News 2013). In her paper on "outrageous beer tourism," Munar (2010) explores the behavior of German tourists who visit Bierstrasse on the Spanish island of Majorca. Bierstrasse is a favorite destination for German tourists visiting the island. It provides an example of what Munar (2010) calls "staged nationalism," where the German model of leisure is reproduced, and German tourists are provided with "a feeling of being at home away from home." Most of the beer available for sale is German, food on restaurant menus is predominantly German, and bar and restaurant staff communicate with patrons in German. Bierstrasse also provides a stage for "performed masculinity" as German male tourists engage in ritualistic behavior such as group, often binge, drinking. In their analysis of the

Kitchener–Waterloo Oktobrefest in Canada, Xao and Smith (2004) noted the dissatisfaction expressed by some residents at the negative externalities generated by the event. These include congestion and attendee drunkenness. In the United States, craft breweries have displayed a tendency to locate in older buildings in economically distressed neighborhoods. In many cases, they have been part of a larger initiative to gentrify neighborhoods. This has created challenges for neighborhood residents, some of whom are forced to make way for redevelopment projects. Residents who remain may eventually be priced out of their homes as increasing property values make them less affordable (Spriggs 2014; Myles and Breen 2018). Finally, in a study of evolving drinking habits in the Greek village of Arachova, Moore (1995) traces how beer consumption among local males increased because of them observing beer drinking among foreign tourists. This is an example of what is termed the "demonstration effect" (Fisher 2004).

7 Challenges Facing Beer Tourism

To maximize the economic potential of craft beer tourism, it is essential that craft breweries collaborate effectively, not only with each other, but also with other tourism assets in their locale. According to Augustyn and Knowles (2000, 341), "the fragmented nature of tourism supply at destinations, combined with the need for the provision of total tourism products that satisfy the visitors' needs calls for co-operation within tourism regions." Discussing the benefits of cooperation between tourism organizations and breweries in Bavaria, Germany, Pechlaner et al. (2009, 33) suggest that, "by linking the two sectors, the differentiation of the destination can be optimized and the location attractiveness for the breweries can be increased." However, their research suggests that there is room for improvement when it comes to cooperation between the two sectors. While each group felt the benefits of cooperation outweighed the costs, both were only moderately satisfied with the levels of cooperation (Pechlaner et al. 2009). One of the barriers to effective cooperation is the lack of an overarching coordinating authority to initiate appropriate projects, as well as lowering the transaction costs of cooperation for the partners (Pechlaner et al. 2009). As a result, there is a lack of coordination of activities. In another study, Dunn and Kregor (2014, 2017) found only limited cooperation between breweries and tourism organizations in both San Diego, California and Portland, Oregon. In her work in Loudoun County, Virginia, Slocum (2018) found that craft breweries did not trust large tour operators and corporate hotels to promote the region's craft breweries. Most tour companies in Loudoun County did not see any benefit to participating in a craft beer trail initiative; many tour companies are already working closely with wineries and do not see the value of adding craft breweries to their portfolio of attractions. In contrast, however, craft breweries did trust the small family-owned bed and breakfast establishments, with these two segments actively promoting each other. Even the rather innocuous ale trail maps have been criticized for failing to promote non-brewery tourist attractions in a region (Feeney 2017). Viewing beer as

a constituent part of a larger whole, however, is likely to benefit everyone in a city or region. According to Kerri Kapich, COO of the San Diego Tourism Authority, "beer gives us a new story angle for culinary media, men's pubs, and travel too, but we do not think of beer as a separate thing. It is part of an inclusive story in San Diego that can combine the arts, neighborhoods, food, nightlife, so it is all very seamless." (Skift 2016). In a similar vein, craft breweries in Italy and Spain recognize the opportunities associated with marketing craft beer as part of a "visit, taste, eat, stay" package that would "allow for developing territorial 'aggregation,' which embraces farms, restaurants, and hotels" (Alonso et al. 2017, 52). To assist localities to better leverage their beer-related assets, one company hosts an annual beer marketing and tourism conference (Zephyr Conferences 2018).

In some instances, the challenges to cooperation are more pronounced at the inter-brewery level. Plummer et al. (2006) document the emergence and subsequent dissolution of the Waterloo–Wellington Ale Trail in Ontario, Canada. The trail, which represented a collaboration between six breweries, dissolved after three very successful years. The failure of the trail reflected a complex interplay of factors; including competitiveness among participants, unclear goals, and plans to expand the trail. One barrier to participating in a craft beer trail is that of time and resources. Craft breweries in Loudoun County, while interested in being part of a craft beer trail, noted that they did not have the time to engage in any of the organizational aspects of such an initiative (Slocum 2018). Myles and Breen (2018) note similar challenges with respect to inter-brewery cooperation in the case of the Brewgrass Ale Trail in Lexington, Kentucky.

In the United States, the regulatory environment represents a significant hurdle facing the development of beer tourism (Alonso 2011). Most US cities and states have regulations that make it difficult for craft breweries to succeed (Williams 2017; Anhalt 2016; White 2016; Mitchell and Koopman 2014). These regulations place several limitations on craft breweries; including where they can locate, how much beer they can produce, and how they are able to distribute their beer, etc. However, as cities and states recognize the economic potential that the industry offers, they are enacting legislation that makes either eliminates or reduces some of the regulatory burdens (Bell 2017). Regulatory differences between states and cities impact their competitive position. For example, the stricter regulatory environment of Maryland makes it more difficult for that state's craft breweries to grow and expand, compared with craft breweries in surrounding states such as Virginia where regulations are more brewer-friendly (Schweitzer 2018). The stricter the regulatory environment, the more difficult it is for a city or state to develop its beer tourism industry. Craft

breweries in other countries also face a difficult regulatory environment (Hinson 2015). However, as is happening in the United States, these regulations appear to be gradually easing (Achin 2014).

8 Conclusion

In this chapter, I have tried to provide an overview and summary of the existing literature on craft beer tourism. Craft beer's growing popularity is increasing in many countries across the globe. This growth is driven by the desire on the part of increasing numbers of beer drinkers to consume beer that exhibits more diversity in terms of styles, flavor, and strength than the beer brewed by the large multinational brewing companies. Many craft beer drinkers cherish the opportunity to experience new craft beers, particularly when they can do so in the taproom of the brewery's producing the beer. Drinking beer brewed by a small-scale, locally owned brewery is attractive to some craft beer drinkers. The desire to try new beers at the point of production is a primary driver behind the emergence and growth of craft beer tourism. Cities and regions have been quick to realize the potential of craft beer tourism to boost their locale's tourism dollars. Ale trails and beer festivals have been developed to capitalize on this growing demand to sample beer where it was brewed.

While some question whether the demand for craft beer in the United States is reaching saturation point (Girard 2016; Glassman 2016), Bart Watson, Chief Economist of the Brewers Association suggests that "while the craft brewing industry is entering a period of maturation, most markets are not near saturation" (Nobile 2017). Forecasts suggest that the popularity of craft beer will also continue to grow in other regions of the world, including Europe and Asia (Business Wire 2017; Kapoor 2017). Of course, the growth potential of craft beer will vary from city to city and country to country. This continued popularity of craft beer represents an ongoing opportunity for cities and regions to capitalize on its potential to attract craft beer tourists. However, a city or region that has identified craft beer tourism as a development opportunity does have to confront some challenges. In many countries, alcohol production is highly regulated. Much of this regulation favors the large producers over smaller craft producers. However, it is the craft segment of the brewing industry which has the greatest potential to attract beer tourists. As elected officials and planners recognize this, they are gradually making regulatory modifications that are more favorable to craft breweries; this can only bode well for the future of craft beer in general and craft beer tourism in particular. Another challenge facing craft beer tourism is that of working with local tourism stakeholders to be viewed as part of a broader portfolio of attractions that a city or region has to offer. In this respect, the craft beer industry is lagging the wine industry, whose longer presence means that it is embedded more deeply in established networks of cooperation.

References

Achin, K. (2014, December 15). South Korea's craft beer start-ups battle big brewers. *BBC.com.* https://www.bbc.com/news/business-30451115.

Alexander, D. (2013, November 26). Beer entrepreneurs fuel comeback of struggling Cleveland neighborhood. *Forbes.* https://www.forbes.com/sites/danalexander/2013/11/26/beer-entrepreneurs-fuel-comeback-of-struggling-cleveland-neighborhood/#14cc94c3574f.

Alonso, A. D. (2011). Opportunities and challenges in the development of micro-brewing and beer tourism: A preliminary study from Alabama. *Tourism Planning & Development, 8*(4), 415–431.

Alonso, A. D., Sakellarios, N., & Bressan, A. (2017). Stakeholders and craft beer tourism development. *Tourism Analysis, 22*(1), 45–58.

Anhalt, B. D., Crafting a model state law for today's beer industry. *Roger Williams University Law Review*, *21*(1), 162–218.

Arbel, T. (2013, July 5). Build a craft brewery, urban revival will come. *USA Today.* https://www.usatoday.com/story/money/business/2013/07/05/in-urban-revival-beer-creates-small-business-hubs/2487625/.

Argent, N. (2017). Heading down to the local? Australian rural development and the evolving spatiality of the craft beer sector. *Journal of Rural Studies.* https://doi.org/10.1016/j.jrurstud.2017.01.016.

Augustyn, M. M., & Knowles, T. (2000). Performance of tourism partnerships: A focus on York. *Tourism Management, 21*(4), 341–351.

Baginski, J., & Bell, T. L. (2011). Under-tapped? An analysis of craft brewing in the Southern United States. *Southeastern Geographer, 51*(1), 165–185.

Barton, C., Haywood, J., Jhunjhunwaka, P., & Bhatia, V. (2013). *Traveling with Millennials.* The Boston Consulting Group. https://www.bcg.com/documents/file129974.pdf.

BBC News. (2013, June 16). *Transpennine Real Ale Trail alcohol restrictions introduced*. https://www.bbc.com/news/uk-england-leeds-22927355.

Beer Institute. (2017). *Economic impact*. https://www.beerinstitute.org/industryinsights/economic-impact/.

Bell, T. R. (2017). As if beaches and theme parks were not enough: Mediated social construction of craft beer tourism in Tampa Bay. In C. Kline, S. L. Slocum, & C. T. Cavaliere (Eds.), *Craft beverages and tourism, Volume 1 The rise of breweries and distilleries in the United States* (pp. 89–103). Cham, Switzerland: Palgrave Macmillan.

Bennett, O. (2007, October 20). The Ale Trail: From beer to eternity. *Telegraph.* https://www.telegraph.co.uk/travel/destinations/europe/uk/lakedistrictandcumbria/738580/The-Ale-Trail-from-beer-to-eternity.html.

Brewers Association. (2015). *Craft beer market in Mexico.* https://www.brewersassociation.org/wp-content/uploads/2015/07/Craft-Beer-in-Mexico-Final-Report-2015.pdf.

Brewers Association. (2020a). *Craft Brewer definition* https://www.brewersassociation.org/statistics-and-data/craft-brewer-definition/.

Brewers Association. (2020b). *National beer sales & production data.* https://www.brewersassociation.org/statistics/national-beer-sales-production-data/.

Brewers of Europe. (2014). *Beer statistics: 2014 edition.* Brussels: The Brewers of Europe. https://www.brewersofeurope.org/uploads/mycms-files/documents/publications/2014/statistics_2014_web_2.pdf.

Brewers of Europe. (2017). Beer Serves Europe. Brussels: The Brewers of Europe. https://brewersofeurope.org/uploads/mycms-files/documents/publications/2017/Beer%20Serves%20Europe%20-%20Lets%20Treat%20it%20Fairly%20November%202017.pdf.

Brewers of Europe. (2018). *Beer statistics: 2017 edition.* Brussels: The Brewers of Europe. https://brewersofeurope.org/uploads/mycms-files/documents/publications/2018/EU-beer-statistics-2018-web.pdf.

Brewers of Europe. (2020). *European beer trends: Statistics report 2019 edition.* The Brewers of Europe. https://brewersofeurope.org/uploads/mycms-files/documents/publications/2019/european-beer-trends-2019-web.pdf.

BrewsCruise Inc. (2016). *What is Brews Cruise?* https://www.brewscruise.com/inc/about-us/.

Bujdosó, Z., & Szűcs, C. (2012). Beer tourism—From theory to practice. *Academica Turistica, 5*(1), 103–111.

Business Wire. (2017, August 11). Global craft beer market—Geographical segmentation and growth forecast by Technavio. *Business Wire.* https://www.businesswire.com/news/home/20170811005227/en/Global-Craft-Beer-Market---Geographical-Segmentation.

California Craft Brewers Association. (2013). *California craft brewing: Economic impact report*. Sacramento: California Craft Brewers Association. https://www.californiacraftbeer.com/files/Economic-Impact-Study-FINAL.pdf.

Carpenter, A. J., Darlington, W., Frick, D., Garver, T., Kane, H. C., Mimken, R., & Serwitz, K. (2013). *Craft beer and consumer behavior*. Paper submitted for Marketing 6060, Buyer/Consumer Behavior. Denver: University of Colorado.

CBRE. (2016a). *Ohio craft beer … taking flight* . August. CBRE. https://www.cbre.com/research-and-reports.

Centre for Retail Research. (2018). *Retail in 2018—Shop numbers, online and the high street* . https://www.retailresearch.org/retail2018.php.

City of Munich. (2017a). *A business perspective: The economic impact of the Oktoberfest*. Department of Labor and Economic Development, City of Munich. https://www.muenchen.de/rathaus/home_en/Tourist-Office/Mediaguide/Pressetexte_engl/Oktoberfest_engl/Pressemitteilungen.html.

City of Munich. (2017b). *The history of the Oktoberfest*. Department of Labor and Economic Development, City of Munich. https://www.muenchen.de/rathaus/home_en/Tourist-Office/Mediaguide/Pressetexte_engl/Oktoberfest_engl/Pressemitteilungen.html.

Cone Communications. (2013). *2013 Cone communications social impact study: The next cause evolution.* Boston, MA: Cone Communications.

Conference Board of Canada. (2013). *From farm to glass the value of beer in Canada.* Ottawa: Conference Board of Canada.

Cook, Z. M. (2018). Craft brewing festivals. In S. L. Slocum, C. Kline, & C. T. Cavaliere (Eds.), *Craft beverages and tourism* (Vol. 2, pp. 141–170). Cham, Switzerland: Palgrave Macmillan.

Davies, R. (2016, August 10). Pricey pints blamed as 21 British pubs a week call time at the bar. *The Guardian.* https://www.theguardian.com/lifeandstyle/2016/aug/10/pricey-pints-blamed-as-21-british-pubs-a-week-call-time-at-the-bar.

Dennet, A., & Page, S. (2017). The geography of London's recent beer brewing revolution. *The Geographical Journal, 183*(4), 440–454.

Denton, B. (2017, October 30). A beer festival in China has German roots, but no Lederhosen. *New York Times.* https://www.nytimes.com/2017/10/30/world/asia/china-beer-festival.html.

Denver.org. (2018). *Denver beer trail*. https://res.cloudinary.com/simpleview/image/upload/v1/clients/denver/BeerTrails_Abbreviated_R2_e3787e2a-599a-4ce2-97f8-d70d9d06ff1b.pdf.

Desilver, D. (2013, December 6). *Chart of the week: How South Africa changed, and didn't, over Mandela's lifetime* . Pew Research Center. https://www.pewresearch.org/fact-tank/2013/12/06/chart-of-the-week-how-south-africa-changed-and-didnt-over-mandelas-lifetime/.

Devon and Cornwall Rail Partnership 2018. *Rail Ale Trails.* https://www.dcrp.org.uk/projects/rail-ale-trails/.

Dunn, A., & Kregor, G. (2014). Making love in a canoe no longer? Tourism and the emergence of the craft-beer movement in California. In *Proceedings of the 2015 CAUTHE conference.* Brisbane: University of Queensland.

Dunn, A., & Kregor, G. (2017). Tourism as a business strategy for growth in Oregon and Washington craft breweries. In C. Kline, S. L. Slocum, & C. T. Cavaliere (Eds.), *Craft beverages and tourism* (Vol. 1). Cham, Switzerland: Palgrave Macmillan.

Eades, D., Arbogast, D., & Kozlowski, J. (2017). Life on the "Beer Frontier": A case study of craft beer and tourism in West Virginia. In C. Kline, S. L. Slocum, & C. T. Cavaliere (Eds.), *Craft beverages and tourism, Volume 1 The rise of breweries and distilleries in the United States* (pp. 57–74). Cham, Switzerland: Palgrave Macmillan.

Eaves, M. (nd.). East Asia's craft beer revolution: The ultimate guide to Japan, Taiwan, South Korea and China. *Lonelyplanet.com.* https://www.lonelyplanet.com/asia/travel-tips-and-articles/east-asias-craft-beer-revolution-the-ultimate-guide-to-japan-taiwan-south-korea-and-china/40625c8c-8a11-5710-a052-1479d2767aac.

Eberts, D. (2014). Neolocalism and the branding and marketing of place by Canadian microbreweries. In M. Patterson, & N. Hoalst-Pullen (Eds.), *The geography of beer* (pp. 189–199). Dordrecht: Springer.

Feeney, A. E. (2017). Beer-trail maps and the growth of experiential tourism. *Cartographic Perspectives, 87,* 9–18.

Fisher, D. (2004). The demonstration effect revisited. *Annals of Tourism Research, 31*(2).

Flack, W. (1997). American microbreweries and neolocalism: "Ale-ing" for a sense of place. *Journal of Cultural Geography, 16*(2), 37–53.

Fletchall, A. M. (2016). Place-making through beer-drinking: A case studies of Montana's craft breweries. *Geographical Review, 106*(4), 539–566.

Fountain, J., & Ryan, G. (2015). 'It's not all beer and skittles': An exploratory analysis of the characteristics and motivations of beer festival visitors. In *Proceedings of the 2015 CAUTHE conference: Rising tides and sea changes: Adaptation and innovation in tourism and hospitality.* Gold Coast, QLD: School of Business and Tourism, Southern Cross University.

Garavaglia, C., & Swinnen, J. (Eds.). (2018). *Economic perspectives on craft beer*. Cham, Switzerland: Palgrave Macmillan.

Gatrell, J. D., Reid, N., & Steiger, T. L. (2017). Branding spaces: Place, region, sustainability and the American craft beer industry. *Applied Geography.* https://doi.org/10.1016/j.apgeog.2017.02.012

Giedeman, D., & Isely, P., & Simons, G. (2015). *The economic impact of beer tourism in Kent County, Michigan.* https://www.gvsu.edu/cms4/asset/7A028470-B5EB-E9D6-C17010124D94A01E/beer_tourism_report_october_2015.pdf.

Gildea, S. (2016, June 17). Real Ale Trail: Everything you need to know about the legendary pub crawl. *The Huddersfield Daily Examiner* https://www.examiner.co.uk/whats-on/food-drink-news/real-ale-trail-everything-you-11481499.

Girard, J. (2016, August 12). How many is too many? Two more breweries announce openings in Grand Rapids. *WFGR.com.* https://wfgr.com/how-many-is-too-many-two-more-breweries-announce-openings-in-grand-rapids/.

Glassman, B. (2016, March 24). Does San Diego have too many breweries? *San Diego Magazine.* https://www.sandiegomagazine.com/Blogs/Behind-the-Brews/Spring-2016/Does-San-Diego-Have-Too-Many-Breweries/.

Gomez-Corona, C., Escalona-Buendía, H. B., García, M., Chollet, S., & Valentin, D. (2016). Craft vs. industrial: Habits, attitudes and motivations towards beer consumption in Mexico. *Appetite, 96,* 358–367.

Gorski, E. (2015, February 16). Denver's River North neighborhood: The brewing district. *The Denver Post*. https://www.denverpost.com/2015/02/16/denvers-river-north-neighborhood-the-brewing-district/.

Great American Beer Festival. (2018). *Festival history, facts & figures* https://www.greatamericanbeerfestival.com/press/festival-history-facts-figures/#Overview.

Hall, C. M., Sharples, L., & Smith, A. (2003). The experience of consumption or the consumption of experiences? Challenges and issues in food tourism. In C. Michael Hall, L. Sharples, R. Mitchell, N. Macionis, & B. Cambourne (Eds.), *Food tourism around the world* (pp. 314–335). Butterworth-Heinemann: London.

Harrison, V. (2017, August 11). Why millennials are the next tourism frontier. *BBC.com.* https://www.bbc.com/news/business-40701934.

Herz, J. (2015). *Craft Brewers' 2014 Charitable Donations Top $71M. Boulder* . Brewers Association. https://www.brewersassociation.org/communicating-craft/craft-brewers-contribute-millions-to-local-causes/.

Herz, J. (2016, October 19). Travelocity debuts new beer tourism index. *Brewers Association.* https://www.brewersassociation.org/communicating-craft/travelocity-debuts-new-beer-tourism-index/.

Hinson, T. (2015, April 14). Craft beer movement arrives in Thailand as bars pop up all over Bangkok. *Independent*. https://www.independent.co.uk/life-style/food-and-drink/news/craft-beer-movement-arrives-in-thailand-as-bars-pop-up-all-over-bangkok-10176506.html.

Inland Institutional. (2015). *Shopping patterns of millennials.* https://www.nareim.org/wp-content/uploads/2015/03/Shopping-Patterns-of-Millennials-ICAP-2-15.pdf.

Jablonská, J., Pôbiš, T., & Timčák, G. M. (2013). Beer tourism in Slovakia. In Ľ. Štrba (Ed.), Strategies of building geotourist and geoheritage attractions. *Proceedings of the history of Central European mining and its protection conference.* Košice, Slovakia: Technical University of Košice.

Janzen, E. (2015, February 10). A brief history of beer tourism in America. *Food Republic.* https://www.foodrepublic.com/2015/02/10/a-brief-history-of-beer-tourism-in-america/.

Jones, S. (2014, June 10). Stone Brewing says no decisions made on East Coast location. *MyrteBeachOnline.* https://www.myrtlebeachonline.com/news/business/article16669181.html.

Kapoor, A. (2017, January 3). Increasing demand of craft beers will Boost Europe's beer market through 2020. *World Branding Forum.* https://brandingforum.org/news/industry/increasing-demand-craft-beers-will-boost-europes-beer-market/.

Kraftchick, J. F., Byrd, E. T., Canziani, B., & Gladwell, N. J. (2014). Understanding beer tourist motivation. *Tourism Management Perspectives, 12,* 41–47.

Long, L. (2013). Culinary tourism. In P. B. Thompson, & D. M. Kaplan (Eds.), *Encyclopedia of food and agricultural ethics* (pp. 452–458). Springer: Dordrecht.

Lorr, M. J. (2018). Pure Michigan beer? Tourism, craft breweries, and sustainability. In S. L. Slocum, C. Kline, & C. T. Cavaliere. *Craft beverages and tourism* (Vol. 2, pp. 49–64). Cham, Switzerlamd: Palgrave McMillan.

Lyons, H., & Sharples, L. (2008). Beer festivals: A case study approach. In C. Michael Hall, & L. Sharples (Eds.), *Food and wine festivals and events around the world* (pp. 166–177). London: Butterworth-Heinemann.

Maier, T. (2013). Selected aspect of the microbreweries boom. *Agris On-Line Papers in Economics and Informatics, 5*(4), 135–142.

McLaughlin, R. B., Reid, N., & Moore, M. S. (2016). Inter-metropolitan location patterns of commercial craft brewing in the United States. *Studies in Regional Science, 46*(1), 115–129.

Minihane, J. (2018, February 23). *Lake District Pub Crawl: Hunting for the best beers on the ultimate ale trail*. https://www.independent.co.uk/travel/uk/lake-district-pub-crawl-walking-routes-ale-trail-beers-windermere-ambleside-a8223441.html.

Mitchell, C. J. A., & Vanderwerf, J. (2010). Creative destruction and trial by space in a Historic Canadian Village. *The Geographical Review, 100*(3), 356–374.

Mitchell, M., & Koopman, C. (2014). *Bottling up innovation in craft brewing: A review of the current barriers and challenges.* Fairfax, VA: The Mercatus Center, George Mason University. https://www.mercatus.org/publication/bottling-innovation-craft-brewing-review-current-barriers-and-challenges.

Moore, R. S. (1995). Gender and alcohol use in a Greek tourist town. *Annals of Tourism Research, 22*(2), 300–313.

Murray, A., & Kline, C. (2015). Rural tourism and the craft beer experience: Factors influencing brand loyalty in rural North Carolina, USA. *Journal of Sustainable Tourism, 23*(8/9), 1198–1216.

Munar, A. M. (2010). *Revealing the attractiveness of outrageous beer tourism.* CLCS Working Paper Series. Copenhagen Business School: Center for Leisure & Culture Services. https://openarchive.cbs.dk/bitstream/handle/10398/8570/Ana_Maria_Munar_2012.pdf?sequence=1.

Murray, D., & O'Neill, M. A. (2012). Craft beer: Penetrating a niche market. *British Food Journal, 114*(7), 899–909.

Myles, C. C., & Breen, J. M. (2018). (Micro)Movements and microbrew: On craft beer, tourism trails, and material transformations in three urban industrial sites. In S. L. Slocum, C. Kline, & C. T. Cavaliere (Eds.), *Craft beverages and tourism* (Vol. 2, pp. 159–170). Cham, Switzerlamd: Palgrave McMillan.

Nielsen. (2015, July 14). *Tapped in: Craft and local are powerful trends in the Beer Aisle.* https://www.nielsen.com/us/en/insights/news/2015/tapped-in-craft-and-local-are-powerful-trends-in-the-beer-aisle.html.

Nilsson, I., Reid, N., & Lehnert, M. (2018). Geographic patterns of craft breweries at the intraurban scale. *The Professional Geographer, 70*(1), 114–125.

Nilsson, I., & Reid, N., The value of a craft brewery: On the relationship between craft breweries and property values. *Growth and Change* (forthcoming).

Nobile, J. (2017, January 21). Is Cleveland overserved with breweries? *Crain's Cleveland Business.* https://www.crainscleveland.com/article/20170121/SPECIAL_REPORT_BEER/170129965/is-cleveland-overserved-by-breweries.

OregonCraftBeer.org. (2014, September 23). *The economic impact of the Oregon Brewers Fest is $32.6 Million.* https://oregoncraftbeer.org/the-economic-impact-of-the-oregon-brewers-fest-is-32-6-million/.

Peak + Skift. (2014). *The rise of experiential travel*. Skift Team + Peak Adventure Travel Group. https://skift.com/wp-content/uploads/2014/06/skift-peak-experiential-traveler-report1.pdf.

Pezzi, M. G. (2017). From peripheral hamlet to craft beer capital: Apecchio and the 'Alogastronomia.' *Italian Journal of Planning Practice, 7*(1), 154–185.

Plummer, R., Telfer, D., Hashimoto, A., & Summers, R. (2005). Beer tourism in Canada along the Waterloo-Wellington Ale Trail. *Tourism Management, 26,* 447–458.

Plummer, R., Telfer, D., Hashimoto, A., & Summers, R. (2006). The rise and fall of the Waterloo-Wellinton ale trail: A study of collaboration within the tourism industry. *Current Issues in Tourism, 9*(3), 191–205.

Pechlaner, H., Raich, F., & Fischer, E. (2009). The role of tourism organizations in location management: The case of beer tourism in Bavaria. *Tourism Review, 64*(2), 28–40.

Portland Beer Festivals. (2018). https://www.portlandbeerfestivals.com/.

Preece, D. (2016). Turbulence in UK public house retailing: Ramifications and responses. In I. Cabras, D. Higgins, & D. Preece (Eds.), *Beer, brewing and pubs: A global perspective* (pp. 247–265). Palgrave McMillan: Basingstoke.

Reid, N., & Gatrell, J. D. (2015). Brewing growth: Regional craft breweries and emerging economic development opportunities. *Economic Development Journal, 14*(4), 4–12.

Reid, N., & Gatrell, J. D. (2017). Craft breweries and economic development: Local geographies of beer. *Polymath, 7*(2), 90–110.

Reid, N., & Gripshover, M. M., & Bell, T. L. (2019). Craft breweries and adaptive reuse—The use and reuse of space and language. In S. D. Brunn (Ed.), *The changing world language map.* Dordrecht: Springer (forthcoming).

Rogerson, C. M. (2016). New directions in the South African beer industry: Interpreting the growth of craft beer. In *Proceedings of the centenary conference of the society of South African Geographers* (pp. 15–21).

Rogerson, C. M., & Collins, K. J. E. (2015). Festival tourism in South Africa: Characteristics and motivations of attendees at craft beer festivals. *African Journal for Physical, Health Education, Recreation and Dance (AJPHERD), 21*(Supplement 1), 76–87.

Rolett, B. (2014, October 6). Possible stone brewing sites get first city approval. *Richmond BizSense.* https://richmondbizsense.com/2014/10/06/possible-stone-brewing-sites-get-first-city-approval/.

Rotunno, T. (2016, April 25). Two guys created their dream jobs, forged by a love for tech and beer. *CNNC.com.* https://www.cnbc.com/2016/04/25/two-guys-created-their-dream-jobs-forged-by-a-love-for-tech-and-beer.html.

Schnell, S. M. (2011). The local traveler: Farming, food, and place in state and provincial tourism guides. *Journal of Cultural Geography, 28*(2), 281–309.

Schnell, S. M. (2013). Deliberate identities: Becoming local in America in a global age. *Journal of Cultural Geography, 30*(1), 55–89.
Schultz, B. (2017, August 23). 7 international breweries where you can have a sleepover. *Fodos.com*. https://www.fodors.com/news/photos/7-international-breweries-where-you-can-have-a-sleepover.
Schweitzer, A. (2018). As craft beer industry booms, Maryland is losing brewers to Virginia. *Wamu.org*. https://wamu.org/story/18/03/08/craft-beer-industry-booms-maryland-losing-brewers-virginia/#.WqK3dlqIaf0.
Sicola, M. (2016). The rise of experiential retail. *Development Magazine*, Summer. https://www.naiop.org/en/Magazine/2016/Summer-2016/Business-Trends/The-Rise-of-Experiential-Retail.aspx.
Sims, R. (2009). Food, place and authenticity: Local food and the sustainable tourism experience. *Journal of Sustainable Tourism, 17*(3), 321–336.
Skift, G. (2016, July 28). Travel on tap: The rise of craft beer tourism. *Skift*. https://skift.com/2016/07/28/the-rise-of-craft-beer-tourism/.
Slocum, S. L. (2018). Developing social capital in craft beer tourism markets. In S. L. Slocum, C. Kline, & C. T. Cavaliere (Eds.), *Craft beverages and tourism* (Vol. 2, pp. 83–100). Cham, Switzerland: Palgrave Macmillan.
Spracklen, K., Laurencic, J., & Kenyon, A. (2013). 'Mine's a Pint of Bitter': Performativity, gender, class and representations of authenticity in real-ale tourism. *Tourist Studies, 13*(3), 304–321.
Spriggs, B. (2014, June 30). Lexington downtowners on the G word: Gentrification. *Ace Weekly*. https://www.aceweekly.com/2014/06/lexington-downtowners-on-the-g-word-gentrification/.
Stack, M. (2000). Local and regional breweries in America's brewing industry, 1865 to 1920. *Business History Review, 74*(3), 435–463.
Tham, D. (2017). Vietnam's booming craft beer scene. *CNN.com*. https://www.cnn.com/2017/07/04/asia/vietnam-craft-beer/index.html.
Stonebridge Research Group. (2015). The economic impact of craft beer on the New York Economy, 2013. https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/NYCraft_Beer_2013_Impact_Study_FINAL4.15.15.pdf.
Travelocity. (2016). America's best beer destinations named in the first travelocity beer tourism index. https://www.travelocity.com/press/americas-best-beer-destinations-named-in-the-first-travelocity-beer-tourism-index/.
Tremblay, C. H., & Tremblay, V. J. (2011). Recent economic developments in the import and craft segments of the US Brewing Industry. In J. F. M. Swinnen (Ed.), *The economics of beer* (pp. 141–160). New York: Oxford University Press.
Veblen, T. (1899). *The theory of the leisure class*. New York: Macmillan.
Vespa Adventures. (2018). *Saigon craft beer tour*. https://vespaadventures.com/product/saigon-craft-beer-tour/.
Watkins, J. (2017, September 26). Craft beer and steam trains: England's best day out. *OZY Magazine*. https://www.ozy.com/good-sht/craft-beer-and-steam-trains-englands-best-day-out/80447.
Webster, J. (2013, May 13). The votes are in: Grand Rapids voted Beer City USA in a landslide. *The Ann Arbor News*. https://www.annarbor.com/entertainment/food-drink/the-votes-are-in-grand-rapids-voted-beer-city-usa-in-a-landslide/.
White, R. (2016). Death and re-birth of Alabama beer. *Business History, 58*(5), 785–795.
Williams, A. (2017). Exploring the impact of legislation on the development of craft beer. *Beverages, 3*(2), 18. https://doi.org/10.3390/beverages3020018.
Xao, H., & Smith, S. L. J. (2004). Residents' perceptions of Kitchener-Waterloo Oktoberfest: An inductive analysis. *Event Management, 8,* 161–175.
Zephyr Conferences. (2018). *Beer marketing & tourism conference*. https://beernow.org/.

Individual and Contextual Determinants of Cruise Passengers' Behavior at Their Destination: A Survival Approach

Mauro Ferrante, Ivana Pavlić, and Stefano De Cantis

1 Introduction

Tourism is a crucial factor of the economic development of many countries. Due to its impact, it has attracted the interest of scientists in the course of their research. In recent decades, researchers have shown increasing interest in cruise tourism (Hung et al. 2019), which has shifted from a niche luxury market to a mass tourism product. Moreover, the emergence of new markets in Asia is expected to determine a considerable increase in terms of the volume of passengers worldwide.

Cruise tourism brings several economic benefits to its destination. These are mainly related to the direct, indirect and induced impacts of the expenditure of cruise passengers at their destination, to goods and services purchased by cruise companies and to taxes paid to local authorities (Pratt and Blake 2009). The potential increase in cruise tourism merits attention in understanding the potential implications from environmental and socioeconomic perspectives and also in terms of how it might affect the current overnight tourism market. A lack of planning, which makes difficult the dealing of high volumes of passengers involved in cruise tourism, is a guarantee of multiple negative impacts at a given destination, wherever this segment exists or is under consideration as an option for promoting economic growth (Brida and Aguirre 2009, p. 116). It is of the utmost importance for local authorities to forecast

M. Ferrante (✉)
Department of Culture and Society, University of Palermo, Palermo, Italy
e-mail: mauro.ferrante@unipa.it

I. Pavlić
Department of Economics and Business, University of Dubrovnik, Dubrovnik, Croatia
e-mail: ivana.pavlic@unidu.hr

S. De Cantis
Department of Economics, Business and Statistics, University of Palermo, Palermo, Italy
e-mail: stefano.decantis@unipa.it

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_17

the future trends of flows of crew ship passengers in order to exploit related advantages, but also as an extremely important and often neglected fact in the long run to reduce the negative effects on a given tourism destination. Nonetheless, the growth in cruise tourism has raised concerns regarding the sustainability of this segment type, especially in critical contexts, such as Venice or Dubrovnik (Andriotis and Agiomirgianakis 2010; Bresson and Logossah 2011; Seraphin, Sheeran, and Pilato 2018). By considering the increase in the volume of cruise ships and the relatively short amount of time available for visiting a destination, it is important to understand how cruise passengers behave at that destination and to identify the main determinants of their behavior in order to improve the management of the impact of cruise tourism.

The majority of papers regarding cruise tourism analyze the experiences of cruise passengers at their destination by focusing their attention on: activity participation; the time spent at the destination; expectation, satisfaction and the intention of returning to that destination (Gabe et al. 2006; Petrick 2004; Petrick Tonner and Quinn 2006); and, most of all, the spending pattern of the passengers (Brida et al. 2014; Chase and McKee 2003). Only a few contributions have explicitly focused on the spatial behavior of cruise passengers at their destination (De Cantis et al. 2016; Domènech et al. 2019; Jaakson 2004; Navarro-Ruiz et al. 2019; Scherrer et al. 2011; Shoval et al. 2020). Moreover, the impact of the various characteristics of a destination on the mobility of cruise passengers has not been explicitly considered in the literature.

This chapter will propose an analysis of data relating to the behavior of cruise passengers, collected in the ports of Palermo and Dubrovnik by means of GPS technology. In order to evaluate the effect of destination-related characteristics and individual characteristics on the behavior of cruise passengers at their destination, a survival analysis approach has been applied to a set of space-time indicators and in turn derived from GPS tracking data. Section 2 will present an overview of previous studies relating to the behavior of cruise passengers at their destination. Section 3 will describe the materials and methods implemented in this study, followed by a presentation of the results in Sect. 4. Finally, Sect. 5 will conclude this chapter by considering policy implications and ideas for future research.

2 Background

Despite increased attention to the segment of cruise tourism in the literature, relatively few studies have focused their attention on the impact of cruise tourism at its destinations (Brida and Aguirre 2009). Different authors have divided the impacts of cruise tourism on their destinations in different ways. For example, Cartwright and Baird have analyzed social, technological, economic, political and environmental impacts (Carwright and Baird 1999). Brida and Zapata have elaborated economic, political, sociocultural and environmental impacts (Brida and Zapata 2010). Concurrently, the economic impact of cruise tourism has been the main topic of much research (Dwyer and Forsyth 1998; Henthorne 2000; Kester 2002; Chase and McKee 2003;

Seidl et al. 2006), while different influences have only recently entered the literature. In this regard, Dwyer and Forsyth (1998) have developed a framework for assessing the economic impact of cruise tourism for a given country and its sub-regions.

Among others, Andriotis and Agiomirgianakis (2010) have analyzed the experiences of cruise passengers via a segmentation approach. This study is based on information relating to the motivation and satisfaction, which is collected from a questionnaire-based survey of a sample of cruise passengers at Heraklion (Crete). These results demonstrated that the activities of cruise passengers were restricted to sightseeing and shopping due to the limited time available. In terms of socio-demographic characteristics, senior citizens and retired persons comprised a significant proportion of the passengers, although middle-aged adults and employed people dominated this profile. The results of this research confirmed the findings of a study by Marti (1991), who empirically identified a false impression that cruise passengers consist mainly of older, retired persons (Andriotis and Agiomirgianakis 2010, p. 394). Furthermore, the authors concluded that the spatial behavior of cruise passengers, who had not participated in a tour or hired a taxi (preferring instead to walk around the city), invariably gravitated towards the modern part of the city of Heraklion instead of visiting the city center, where the main tourist attractions are located.

In order to explore the expectation and satisfaction of 183 cruise passengers visiting sub-Antarctic islands of the New Zealand coast, Cessford and Dingwall (1994) administered a pre-visit and a post-visit questionnaire. The sample mainly comprised more elderly passengers, with over half of the sample being over 60 years of age. The authors of this study attributed this type of socio-demographic profile to the relatively 'passive' style of cruise travel and its relatively high cost. In agreement with the findings of Andriotis and Agiomirgianakis (2010), Cessford and Dingwall (1994) observed the limited time on the islands as the main constraint to further exploration, and they emphasized the importance of improving the quality of guidance and information at the given destination (Cessford and Dingwall 1994).

Brida et al. (2010) have focused their attention on the experiences and satisfaction of cruise passengers at the port of Cartagena. According to Henthorne (2000), they emphasized the role of destinations as one of the main reasons why travelers had chosen a specific cruise package. By performing a cluster analysis, performed with a hierarchical classification method. Brida et al. (2010) identified six groups of passengers. Variables in the analysis included expenditure, the perception of safety at destination, satisfaction and other socio-demographic characteristics (Brida et al. 2010). In terms of the time spent at destination, the results indicated that the average time spent was 4 h. This suggested that destination managers' efforts should be directed to extending the length of stay of cruises at their destinations.

Douglas and Douglas (2004) have analyzed the expenditure of cruise passengers on two cruises in seven Pacific island ports of call. Their results revealed that age and weather played an important role in the spending patterns at each port: the more elderly demonstrated a greater propensity to seek out food and beverage options ashore and to shop more for duty-free perfume and alcohol. Moreover, Douglas and Douglas (2004) observed that, although the tours proposed by the cruise company were expensive, convenience in an unfamiliar environment was a strong motivation

for passengers to choose this option of onshore experiences (Douglas & Douglas 2004, p. 258).

Gabe, Lynch and McConnon (2006) have examined the factors affecting the intention of passengers on a cruise ship to return to Bar Harbor in Maine. The results indicated that the amount of time which the passenger spends in a given port during a visit will have a positive effect on the likelihood of returning to that destination. Thus, Gabe et al. (2006) concluded that local policy makers and destination managers in port communities should use this information to incorporate cruise ship visits as part of a comprehensive, repeat tourism strategy.

Guyer and Pollard (1997) have investigated the environmental impression of cruise passengers by means of a cruising survey on the interlinked systems of the Shannon-Erne Waterways in north-western Ireland. The authors of this study highlighted that establishing points of attraction is not an easy matter, particularly in a rural environment where the names of so many landscape features are often unknown to the visitor. Nevertheless, Guyer and Pollard (1997) obtained a broad indication of popularity from the responses to the survey, where visitors were asked to note favorite stops as well as the heritage sites visited.

The aforementioned study by Henthorne regarding passengers' expenditure in Ocho Rios, Jamaica (Henthorne 2000), has demonstrated that the amount of time which a visitor spends on shopping has a substantial impact on the amount of money spent. The author also observed that the combined average stay was little more than 5 h, based on a combined population of tourists who went on a self-directed walk into town and those who made use of an organized bus tour. Larsen et al. (2013) have analyzed the expenditure of cruise passengers at their destination, as compared to other tourists' expenditure, highlighting that the former is lower than the latter in almost every category of consumption. Similar results have also been obtained by Brida et al. (2012), according to which the contributions of cruise passengers to local economies are relatively unimportant.

Following a segmentation based on the travel preferences of cruise ship passengers from a sample of passengers who had disembarked at the port of Panama Canal Watershed, Thurau et al. (2015) have analyzed the expected spending patterns of cruise ecotourists in order to highlight different spending expectations compared to conventional tourists.

The increasing availability of GPS technology has provided social scientists with an opportunity to garner information relating to tourists' behavior on a very accurate temporal and spatial scale (Shoval and Isaacson 2007; Shoval and Isaacson 2010; Shoval et al. 2014). De Cantis et al. (2016) have analyzed the behavior of cruise passengers by means of GPS technology in the port of Palermo, and Ferrante et al. (2018) have presented a general framework for collecting and analyzing data relating to cruise passengers at their destinations by means of GPS technology. More recently, Domènech and Gutiérrez (2019) have analyzed the behavior of cruise passengers in the Port of Tarragona with GPS technology in order to analyze expenditure behavior

in relation to the mobility pattern of cruise passengers. Their findings have revealed that the time spent at a given destination, visiting shopping centers and type of group composition are associated with expenditure level. The association of expenditure level with time spent onshore has also been confirmed in other studies (Brida and Risso 2010; Gargano and Grasso 2016; Marksel et al. 2017).

3 Materials and Methods

3.1 Study Contexts

With more than 740,000 passengers in 2017, Dubrovnik was the 11th cruise port in the Mediterranean (MedCruise 2018) by volume of passengers. After a peak in 2013, with more than 1.1 million passengers, the effects of overcrowding compelled the Mayor in 2018 to reduce the impact of cruise tourism by permitting a maximum of two cruise ships per day and staggering their arrival and departure times. Many consider the most important attraction in Dubrovnik to be the Old City of Dubrovnik recognized since 1979 as a UNESCO World Heritage Site. Surrounded by ancient walls, the Old City covers an area of less than 10 km^2. However, high flows of cruise passengers and tourists have engendered a negative opinion of the local population regarding tourism (Pavlić 2013).

The second case study to be analyzed in this chapter is the city of Palermo, in which the number of cruise passengers is considerably lower than that of Dubrovnik. And this was despite the remarkable growth in the number of cruise passengers in the last decade, with more than 600,000 passengers in 2018, that is, an increase of + 26% compared to 2017 (MedCruise 2018). The port of Palermo is located no more than 400 meters from the city center which, with an area of about 2.5 km^2, is one of the largest in Europe. Moreover, there are other important destinations located approximately 1 h by car from Palermo. These include Monreale with its famous Cathedral, Cefalù and the Temple Valley of Agrigento, the latter included in the UNESCO World Heritage List since 1977. Consequently, Palermo experiences far fewer problems of overcrowding compared to the city of Dubrovnik.

3.2 Data

Two surveys concerning cruise passengers, who had docked in the ports of Palermo and Dubrovnik, were undertaken in the spring of 2014 and the summer of 2015, respectively. The survey implemented was the same for both case studies. With the aim of collecting information regarding the behavior of cruise passengers visiting Palermo and Dubrovnik, the following was provided for every cruise passenger sampled: a GPS device and two questionnaires (one opening and one closing). The

questionnaires gathered information relating to socio-demographic characteristics (such as age, educational level, income and nationality), as well as other information (including the nature of the group and the experiences of the cruise passengers at their destination (Ferrante et al. 2018)). Although the surveys were given to those on an organized (by the cruise company) tour and independent passengers, only information relating to this latter group has been considered for the purposes of this study. Details regarding study design, sampling plan, questionnaire content and on-field operations have been described elsewhere (De Cantis et al. 2016).

In order to collate GPS tracking data, several indicators relating to the mobility of cruise passengers and correlated time-space activities were considered. One of these indicators was the identification of the location of cruise passengers at 10-second intervals. An initial, simple indicator was the total duration of the tour (D), given by the difference between the commencement and termination times of the said tour. A second indicator was the total tour length (L), given by the sum of all the distances between consecutive pairs of itinerary coordinates for a given cruise passenger. In order to take into account the use of transportation mode, a third indicator was the average speed (SP); this was obtained by dividing the total length of tour by its total duration. Finally, the final indicator was the maximum distance from the port ($D_{\max}$), which provided information relating to the spatial extent of the visit. By considering that every cruise passenger must return to the same point (the cruise ship) at the end of their visit, the value of this indicator provided information regarding the extent of exploration made by an individual cruise passenger. These four indicators provided concise information regarding the complex structure of the experiences of cruise passengers at their destination, which could be related to other individual and contextual destination-related characteristics.

4 Methods

Having obtained these indicators, the various similarities and differences between Palermo and Dubrovnik and the influence of socio-demographic characteristics on the activities undertaken on a given visit could be analyzed by means of a survival analysis approach. Also referred to as *duration analysis* or *event history analysis*, survival analysis is used to analyze data in a time period of interest of a given event. Data can be perceived as having been generated by a 'failure time process' (Kalbfleisch and Prentice 2011), consisting of statistical units which are observed from a specific starting point until the event of interest has been observed.

Survival analysis has been used in tourism research to model the survival time of firms in the hotel industry (Kaniovsky et al. 2008; Gémar et al. 2016; Lado-Sestayo et al. 2016) and, in the majority of cases, to model tourists' length of stay (see, e.g. Gokovali, Bahar and Kozak 2007; Martínez-Garcia and Raya; 2008; Barros, Correia and Crouch 2008; Barros, Butler and Correia; 2010). However, Thrane (2012) has raised various concerns regarding the adequacy of this modeling approach

relating to tourists' length of stay due to it generally being determined before the trip commences.

In the context of this study, the starting point of observation can be given by the moment in which cruise passengers disembark from the cruise ship; the event of interest is the moment in which passengers return to the ship. At the risk of generalizing, let us consider, for example, the duration of tour D which is called 'the survival time', that is, the duration of the experienced event.

Let D be the response variable, such that $D \geq 0$. The *survival function* $S(d)$ can be defined thus:

$$S(d) = \Pr(D > d) = 1 - F(d) \tag{1}$$

as the probability that a subject will survive after time d, that is, the probability that a subject has a tour duration higher than a certain value d. $F(d)$ is the probability distribution function of D, namely $\Pr(d \leq D)$.

Generally, d ranges from 0 to ∞, and the survival function has the following properties (Klein and Moeschberger 2006):

- It is non-increasing.- at $d = 0$, $S(d) = 1$. That is, the probability of surviving past time 0 is 1.
- as d goes to infinity, $S(d)$ goes to 0.

In this chapter, the maximum value of d depends on the total time of the cruise ship in port.

It is possible to define the hazard function, also known as the hazard rate (Klein and Moeschberger 2006), as:

$$h(d) = \lim_{\Delta d \to 0} \frac{\Pr(d < D < d + \Delta d | D > d)}{\Delta d} = \frac{f(d)}{S(d)} \tag{2}$$

which represents the event rate at time t, which is conditional on surviving up to or beyond time t. It is also possible to introduce the cumulative hazard $H(d)$ as the accumulated risk up to time d.

If any one of the functions $S(d)$, $H(d)$ or $h(d)$ are known, the other two functions can be derived as follows (Klein and Moeschberger 2006):

$$h(d) = -\frac{\partial \log(S(d))}{\partial d} \tag{3}$$

$$H(d) = -\log(S(d)) \tag{4}$$

$$S(d) = \exp(-H(d)) \tag{5}$$

When no assumptions are made regarding the distribution of the process and in order to estimate the survival function $S(d)$, a non-parametric approach (Kaplan-Meier) or semi-parametric approach (Cox regression) may be applied (Collett 2015). In this study, the Kaplan-Meier method was used in order to compare survival functions related to the behavior of cruise passengers between different groups, defined according to the context being analyzed (i.e. Palermo and Dubrovnik,) or according to the various socio-demographic characteristics (e.g. educational level, family income, etc.). In a second step, the Cox proportional hazard model was used with the aim of studying the effect of a set of covariates on the hazard rate of selected indicators of the mobility of cruise passengers, according to the following relationship:

$$\ln[h(d)] = \ln[h_0(d)] + \sum_{i=1}^{p} x_i \beta_i \tag{6}$$

where x_1, x_2,..x_p are the covariates, β_1, β_2, …, β_p are the regression coefficients, d is the elapsed time, and h_0 is the baseline hazard rate, when all the covariates are equal to zero.

It is possible to show that regression coefficients can be interpreted as the value of the relative risk when the value of the covariate is increased by one unit, and this relative risk is assumed to be constant for all time values (*proportional hazard*).

5 Results

Two samples accounting for a total of 328 valid individual tracks (277 for Palermo and 51 for Dubrovnik) comprised the dataset under analysis. Survival functions relating to the application outlined in this study were used to describe the mobility of cruise passengers in terms of the probability that a selected indicator of mobility (X) assumes a value greater than a number x (Forbes et al. 2011, p. 5). Four indicators of time-space mobility have been considered in this study: a) time spent at the destination or total tour duration (L), b) total tour length (in kilometers)(D), c) average speed of tour (SP) and, finally, d) the maximum distance from the port ($D_{\max}$).

The Kaplan-Meier (K-M) survival curves of selected indicators are reported in Fig. 1 in order to distinguish the mobility of cruise passengers in Palermo from that of Dubrovnik. Table 1 reports the percentiles, which have been derived from the K-M survival curves, for all the mobility indicators under consideration in the two case studies. Several differences regarding the behavior of cruise passengers have been revealed from the two case studies.

The survival curves in Fig. 1 indicate a marked degree of variability from temporal and spatial perspectives; this can be said to characterize the behavior of cruise passengers in Palermo compared to Dubrovnik. That is, the mobility of cruise passengers in Palermo shows a higher degree of variability compared to Dubrovnik, in which

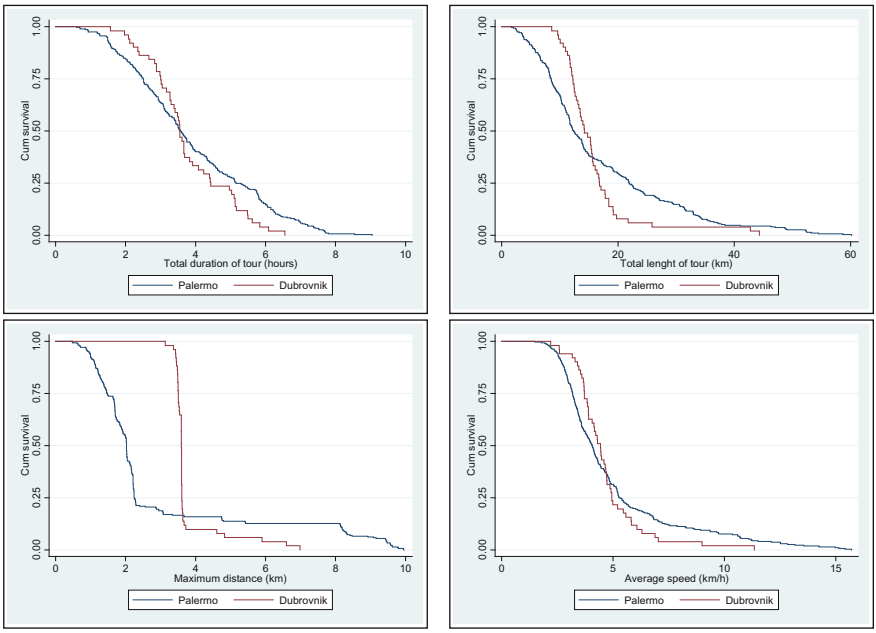


Fig. 1 Kaplan-Meier survival curves of indicators relating to the mobility of cruise passengers in Palermo and Dubrovnik

Table 1 Kaplan-Meier survival curves of indicators relating to the mobility of cruise passengers in Palermo and Dubrovnik

Mobility indicators	Palermo			Dubrovnik		
	Percentiles			Percentiles		
	75%	50%	25%	75%	50%	25%
Total tour duration(D) (hours)	2.50	3.57	5.15	3.00	3.55	4.43
Total tour length(L) (km)	8.50	12.37	21.94	12.22	14.21	16.82
Average speed (S) (km/h)	3.18	4.06	5.29	3.71	4.44	4.94
Maximum distance (Dmax) (km)	1.47	2.03	2.24	3.51	3.60	3.61

the mobility behavior appears more homogeneous. This leads to a rapid decrease for almost all curves relating to Dubrovnik after a threshold value.

The particular shapes of the curve, which are related to the maximum distance from the port, highlight that at least 75% of cruise passengers traveled approximately 3.5 km (Table 1) from the port of Dubrovnik, which corresponds to the distance from the port and the city center. Only a few cruise passengers traveled further than 4 km (Fig. 1). The curve relating to the maximum distance in Palermo has a higher degree of variability than Dubrovnik, rapidly decreasing to a value of about 2 km; the latter is the extent of the city center, which is directly accessible from the port. The curve

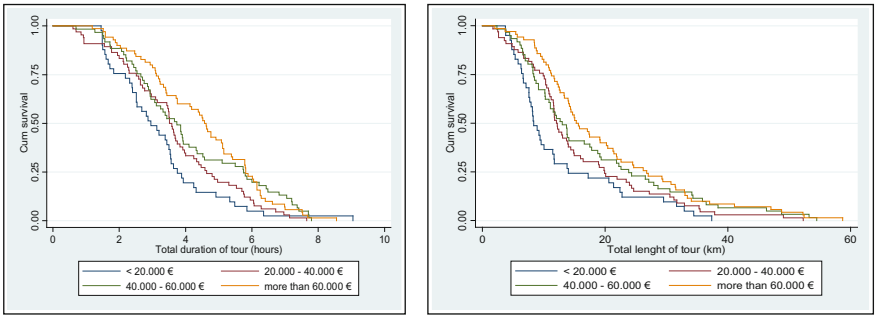


Fig. 2 Kaplan-Meier survival curves of the total tour duration and total tour length by income category in Palermo

shows that only a few cruise passengers traveled beyond the city center and those who did travel at a maximum distance of 10 km from the port. In terms of time spent, 25% of cruise passengers spent more than 5 h in Palermo; the third quartile of the total tour duration is less than 4 h and a half for Dubrovnik. More than 25% of cruise passengers were engaged on a tour exceeding 21 km in Dubrovnik with the third quartile being less than 17 km. On the other hand, small differences characterize the distribution of the average speed at the two destinations under consideration.

Due to considerations relating to the reduced sample size of the data for Dubrovnik and in order to check the association between the indicators of the mobility of cruise passengers and a set of potential influencing factors, only the sample collected in Palermo has been considered in this study. As a factor potentially affecting the time-space indicators regarding the activities of cruise passengers (only regarding Palermo), income has been analyzed in Fig. 2 by means of survival functions and in turn estimated according to the K-M method. Figure 2 demonstrates that income seems to have an influence on total tour duration and on total tour length, with higher values for both indicators being associated with higher income levels.

In order to check the association between selected indicators relating to the behavior of cruise passengers and potential related factors (socio-demographic characteristics, purchasing activities and the total level of satisfaction), several Cox regression models were estimated with a different set of covariates. The results of four Cox regression models (one for each indicator) are displayed in Table 2: L, D, SP and $D_{\max}$ have been modeled versus: income, food and beverage purchases, the purchase of transportation services and the level of satisfaction for the visit. Each of these factors proved to be significantly associated with at least one of the four indicators. Gender, age and educational level were excluded in the final models as they did not reveal any significant association with any of the selected indicators.

Generally, the four selected factors proved to be markedly associated with the majority of selected indicators. However, there were some differences. Income, food and beverage purchases and the purchase of transportation services associated most strongly with the total tour duration (D). All the selected factors were significantly

Table 2 Results of the Cox regression models for selected indicators regarding the mobility of cruise passengers at their destination

Variables	Categories	*D*	*L*	*SP*	D_{max}
		exp(B)	exp(B)	exp(B)	exp(B)
Income	Less than 20,000 € (ref.)				
	20,000-40,000 €	2.162***	1.863***	1.242	1.437*
	40,001-60,000 €	1.516**	1.234	1.122	1.169
	More than 60,000 €	1.057	1.012	1.029	0.968
Purchased food and beverage	No (reference)				
	Yes	2.863***	1.887***	1,042	1.316*
Purchased transportation services	No (reference)				
	Yes	1.434***	2.711***	2,300***	2.568***
Level of satisfaction for the visit	Dissatisfied (reference)				
	Satisfied	1.108	2.499***	2.604***	2.028***
	Very Satisfied	0.881	1.459**	1.499**	1.189

*, ** and ***, indicate significance levels at 90%, 95% and 99%, respectively

associated with the total tour length, whereas only the purchasing activities of transportation services and total level of satisfaction were significantly correlated with the average walking speed of a cruise passenger. The maximum distance from the port was particularly associated with all the factors under consideration, albeit to varying degrees.

Of interest, the lowest income levels seem to be associated with the shortest length of visit. The risk of a longer visit by those who declared annual income levels of between €20,000 and €40,000 was double when compared to that of those cruise passengers with an annual income below €20,000. Similarly, those cruise passengers who bought food and beverages had a threefold 'risk' of making a longer visit, compared to those who did not purchase food and beverages.

The following were all associated with tour length: higher income levels, the purchasing activities of food and beverages and transportation services, and higher levels of satisfaction. The same factors were also associated with the maximum distance from the port. The average speed of the cruise passenger seemed to be associated typically with the purchasing activity of transportation services and with a higher level of satisfaction.

6 Conclusion

The widespread availability of GPS technology allows for the collation of detailed information relating to human behavior. This in turn can determine a rapid increase in the application of tracking technologies in the field of tourism studies (Shoval and Ahas 2016). However, any analysis of GPS-based information still presents researchers with several challenges due in part to the elevated degree of complexity of this kind of data when applied to an analysis of tourist mobility. The use of survival functions has been proposed in this contribution as a tool for summarizing the behavior of cruise passengers at their destination. This involves examining specific indicators of the mobility of cruise passengers, such as the total duration of the visit, the total tour length, the average speed of the cruise passenger and maximum distance from the port. The survival approach has permitted an analysis of the variability of these indicators through their cumulative distribution function. This has been made possible by highlighting the main characteristics of these distributions and allowing for comparisons among different destinations and different segments of cruise passengers.

The use of regression models permits the joint evaluation of the impact of individual and contextual characteristics on the mobility of cruise passengers. An analysis of selected indicators relating to the mobility of cruise passengers at their destination has revealed different segments of cruise passenger. Subsequently, the indicators proposed in this paper could form the basis of a segmentation of cruise passengers which is in function of the design of destination management policies.

From a policy point of view, an improved knowledge of the main characteristics of the mobility of cruise passengers at their destination may orient the design of targeted marketing strategies, in relation to the specific context being analyzed and the characteristics of individual tourists (Torbianelli 2012). This approach can proffer important guidelines for necessary action which should be taken in order to meet the requirements of cruise passengers in a more efficient manner. Such a strategy would improve competitiveness in the tourism market of this tourism segment. It would also facilitate more accurate planning and more efficient preparation for forthcoming changes in the field of tourism. Nonetheless, any interpretation of the association between a set of selected factors and indicators of the mobility of cruise passengers at their destination certainly requires greater critical examination. For example, the relationship between the level of satisfaction of a particular visit and its characteristics certainly merits further attention on account of their interdependence. Nor can it be contested—in the opinion of the authors of this chapter—that the results presented in this study will not provide an insight for the urban planning and management of cruise destinations.

References

Andriotis, K., & Agiomirgianakis, G. (2010). Cruise visitors' experience in a Mediterranean port of call. *International Journal of Tourism Research, 12*(4), 390–404.

Barros, C. P., Butler, R., & Correia, A. (2010). The length of stay of golf tourism: A survival analysis. *Tourism Management, 31*(1), 13–21.

Barros, C. P., Correia, A., & Crouch, G. (2008). Determinants of the length of stay in Latin American tourism destinations. *Tourism Analysis, 13*(4), 329–340.

Bresson, G., & Logossah, K. (2011). Crowding-out effects of cruise tourism on stay-over tourism in the Caribbean: Non-parametric panel data evidence. *TourismEconomics, 17*(1), 127–158.

Brida, J.G, Bukstein, D., Garrido, N., Tealde, E., & Zapata-Aguirre, S. (2010). Impactoeconómico del turismo de cruceros. Un análisis del gastode loscruceristasquevisitanel Caribe colombiano, Estudios y Perspectivas en Turismo, *19*(5), 607–634. Available at: http://www.estudiosenturismo.com.ar/PDF/V19/v19n5a02.pdf [last accessed 02/2015].

Brida, J. G., & Risso, W. A. (2010). Cruise passengers expenditure analysis and probability of repeat visits to Costa Rica: A cross section data analysis. *Tourism Analysis, 15*(4), 425–434.

Brida, J. G., & Zapata-Aguirre, S. (2009) The impact of the cruise industry on tourism destinations. In Castellani, V., & Sala, S. (Eds.) *Sustainable tourism as a factor of local development*, Vol. 1, pp. 110–117. Tangram Ediz. Scientifiche.

Brida, J. G., & Zapata-Aguirre, S. (2010). Cruise tourism: Economic, socio-cultural and environmental impacts. *International Journal of Leisure and Tourism Marketing, 1*(3), 205–226.

Brida, J. G., Fasone, V., Scuderi, R., & Zapata-Aguirre, S. (2014). Exploring the determinants of cruise passengers' expenditure at ports of call in Uruguay. *Tourism Economics, 20*(5), 1133–1143.

Brida, J. G., Pulina, M., Riaño, E., & Zapata-Aguirre, S. (2012). Cruise passengers' experience embarking in a Carribean home port. The case study of Cartagena de Indias. *Ocean and Coastal Management, 55,* 135–145.

Cartwright, R., Baird, C. (1999), The development and growth of the cruise industry, Butterworth-Hainman.

Cessford, G. R., & Dingwall, P. R. (1994). Tourism on New Zealand's sub-antarctic Islands. *Annals of Tourism Research, 21*(2), 318–332.

Chase, G. L., & McKee, D. L. (2003). The economic impact of cruise tourism in Jamaica. *Journal of Tourism Studies, 14*(2), 16–22.

Collett, D. (2015). Modelling survival data in medical research. Chapman and Hall/CRC.

De Cantis, S., Ferrante, M., Kahani, A., & Shoval, N. (2016). Cruise passengers' behavior at the destination: Investigation using GPS technology. *Tourism Management, 52,* 133–150.

Domènech, A., Gutiérrez, A., & Anton Clavé, S. (2019). Cruise Passengers' Spatial Behaviour and Expenditure Levels at Destination. Tourism Planning & Development, pp. 1–20.

Domènech, A., & Gutiérrez, A. (2019). Determinants of cruise tourists' expenditure visiting port cities. *Tourism Review*, 1–16. https://doi.org/10.1108/TR-11-2018-0162.

Douglas, N., & Douglas, N. (2004). Cruise ship passenger spending patterns in pacific Island ports. *International Journal of Tourism Research, 6,* 251–261.

Dwyer, L., & Forsyth, P. (1998). Economic significance of cruise tourism. *Annals of Tourism Research, 25*(2), 393–415.

Ferrante, M., De Cantis, S., & Shoval, N. (2018). A general framework for collecting and analysing the tracking data of cruise passengers at the destination. *Current Issues in Tourism, 21*(12), 1426–1451.

Forbes, C., Evans, M., Hastings, N., & Peacock, B. (2011). *Statistical distributions* (4th ed.). New York: Wiley.

Gabe, T., Lynch, C., & McConnon, J. (2006). Likelihood of cruise ship passenger return to a visited port: The case of bar harbor, Maine. *Journal of Travel Research, 44*(3), 281–287.

Gargano, R., & Grasso, F. (2016). Cruise passengers' expenditure in the Messina port: A mixture regression approach. *Journal of International Studies, 9*(2), 158–169.

Gémar, G., Moniche, L., & Morales, A. J. (2016). Survival analysis of the Spanish hotel industry. *Tourism Management, 54,* 428–438.
Gokovali, U., Bahar, O., & Kozak, M. (2007). Determinants of length of stay: A practical use of survival analysis. *Tourism Management, 28*(3), 736–746.
Guyer, C., & Pollard, J. (1997). Cruise visitor impressions of the environment of the Shannon-Erne Waterways system. *Journal of Environmental Management, 51*(2), 199–215.
Henthorne, T. L. (2000). An analysis of expenditure by cruise passengers in Jamaica. *Journal of Travel Research, 38*(3), 246–250.
Hung, K., Wang, S., Guillet, B. D., & Liu, Z. (2019). An overview of cruise tourism research through comparison of cruise studies published in English and Chinese. *International Journal of Hospitality Management, 77,* 207–216.
Jaakson, R. (2004). Beyond the Tourist Bubble? Cruise ship passengers in port. *Annals of Tourism Research, 31*(1), 44–60. https://doi.org/10.1016/j.annals.2003.08.003.
Kalbfleisch, J.D., & Prentice, R.L. (2011). The statistical analysis of failure time data (vol. 360). John Wiley & Sons.
Kaniovski, S., Peneder, M., & Smeral, E. (2008). Determinants of firm survival in the Austrian accommodation sector. *Tourism Economics, 14*(3), 527–543.
Kester, J. C. G. (2002). Cruise tourism. *Tourism Economics, 9*(3), 337–350.
Klein, J.P., &Moeschberger, M.L. (2006). Survival analysis: Techniques for censored and truncated data. Springer Science & Business Media.
Larsen, S., Wolff, K., Marnburg, E., & Øgaard, T. (2013). Belly full, purse closed: Cruise live passengers' expenditure. *Tourism Management Perspectives, 6,* 142–148.
Lado-Sestayo, R., Vivel-Búa, M., & Otero-González, L. (2016). Survival in the lodging sector: An analysis at the firm and location levels. *International Journal of Hospitality Management, 59,* 19–30.
Marksel, M., Tominc, P., & Božičnik, S. (2017). Cruise passengers' expenditures: The case of port of Koper. *Tourism Economics, 23*(4), 890–897.
Marti, B. E. (1991). Cruise ship market segmentation: a 'non-traditional' port case study. *Maritime Policy & Management, 18*(2), 93–103.
Martinez-Garcia, E., & Raya, J. M. (2008). Length of stay for low-cost tourism. *Tourism Management, 29*(6), 1064–1075.
MedCruise. (2018). Cruise activities in MedCruise Ports. 2017 Statistics. Piraeus: MedCruise Association.
Navarro-Ruiz, S., Casado-Díaz, A. B., & Ivars-Baidal, J. (2019). Cruise tourism: the role of shore excursions in the overcrowding of cities. *International Journal of TourismCities, 6*(1), 197–214.
Pavlić, I. (2013). Cruise tourism demand forecasting-the case of Dubrovnik. *Tourism and hospitality management, 19*(1), 125–142.
Petrick, J. F. (2004). The roles of quality, value, and satisfaction in predicting cruise passengers' behavioral intentions. *Journal of travel research, 42*(4), 397–407.
Petrick, J. F., Tonner, C., & Quinn, C. (2006). The utilization of critical incident technique to examine cruise passengers' repurchase intentions. *Journal of Travel Research, 44*(3), 273–280.
Pratt, S., & Blake, A. (2009). The economic impact of Hawaii's cruise industry. *Tourism Analysis, 14*(3), 337–351.
Seidl, A., Guiliano, F., & Pratt, L. (2006). Cruise tourism and community development in Central America and the Caribbean: The case of Costa Rica. *Revista de TurismoPatrimonio Cultural, 4*(2), 213–224.
Seraphin, H., Sheeran, P., & Pilato, M. (2018). Over-tourism and the fall of Venice as a destination. *Journal of Destination Marketing & Management, 9,* 374–376.
Sherrer, P., Smith, A.J., & Dowling, R.K. (2011). Visitor management practices and operational sustainability. Expedition cruising in the Kimberly, Australia. *Tourism Management*, *32*(5), 1218–1222.
Shoval, N., & Ahas, R. (2016). The use of tracking technologies in tourism research: the first decade. *Tourism Geographies, 18*(5), 587–606.

Shoval, N., Kahani, A., De Cantis, S., & Ferrante, M. (2020). Impact of incentives on tourist activity in space-time. *Annals of Tourism Research, 80,* 102846.

Shoval, N., & Isaacson, M. (2007). Tracking tourists in the digital age. *Annals of Tourism Research, 34*(1), 141–159.

Shoval, N., & Isaacson, M. (2010). *Tourist mobility and advanced tracking technologies.* London: Routledge.

Shoval, N., Isaacson, M., & Chhetri, P. (2014). GPS, smartphones and the future of tourism research. In A.A. Lew, C. M. Hall, & A. W. Williams (Eds.), *The Wiley Blackwell companion to tourism* (pp. 251–261). Malden: Wiley, Blackwell.

Thrane, C. (2012). Analyzing tourists' length of stay at destinations with survival models: A constructive critique based on a case study. *Tourism Management, 33*(1), 126–132.

Thurau, B. B., Seekamp, E., Carver, A. D., & Lee, J. G. (2015). Should cruise ports market ecotourism? A comparative analysis of passenger spending expectations within the Panama Canal Watershed. *International Journal of Tourism Research, 17*(1), 45–53.

Torbianelli, V. (2012). The local economic impact of cruises: From figures to the active policies of theEuropean harbor cities. *Scientific Journal of Maritime Research, 26* (1), 139–150.

Structure Versus Agency: Which Best Explains Tourist Activity in a Destination?

Amit Birenboim, Salvador Anton-Clavé, Antonio Paolo Russo, and Noam Shoval

1 Introduction

Due to its complexity, human behavior makes a challenging research subject in general and in the context of tourism and recreation more specifically. Classical works in tourism theorized the general motivations behind the act of tourism which include among others novelty seeking, escapism, and intellectual stimuli (Cohen 1972; Plog 2001; Ryan 1991). Nevertheless, it was often argued that tourist behaviors and motivations in a destination itself and especially the spatial manifestation of these behaviors are overlooked both theoretically and empirically (Dietvorst 1995; Mckercher and Lau 2008). This started to change in the last decade or so with the emergence of location tracking technologies such as GPS and smartphones (Shoval and Ahas 2016; Wolf et al. 2012) which allowed a more accurate data recording of tourist spatial movement and recently also attitudes (Birenboim 2018) in a way which is less burdensome for participants (Birenboim and Shoval 2016; Shoval and Ahas 2016).

From a theoretical point of view, two competing approaches are commonly used to study human behavior (Giddens 1979; MacCannell 2001; Richards 2002). The first one assumes the existence of a self-motivated individual, commonly referred to as agency. This approach focuses on examining individual perceptions, internal motivations, and drive. In tourism, this approach may yield, for example, research about tourist preferences and decision-making. The second approach considers structure and situational variables such as social context, weather, availability of resources,

A. Birenboim (✉)
Department of Geography and Human Environment, Tel Aviv University, Tel Aviv, Israel
e-mail: abirenboim@tauex.tau.ac.il

S. Anton-Clavé · A. P. Russo
Department of Geography, University Rovira i Virgili, Vila-seca, Catalonia, Spain

N. Shoval
Department of Geography, The Hebrew University of Jerusalem, Jerusalem, Israel

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_18

and other constraints as the primary factors that direct human behavior. In tourism research, this approach will support the investigation of factors such as the physical structure and transportation system of a destination (Lew and McKercher 2006), temporal constraints that tourists face (Birenboim et al. 2013) and services prices on tourist behavior. The latter approach implicitly assumes that it is possible to control human behavior by manipulating environmental factors. Therefore, it has practical implications for the management of tourist destinations ranging from local attractions to a region or a country. The two approaches that are presented above generated a longstanding debate between agency and structure. While there are few notable theoretical attempts to integrate between the two (Giddens 1984), it is often the case that researchers focus on one approach at a time.

In order to better understand the impact of both the structural factors and of agency on tourist activity, a detailed account about relevant situational factors (including environmental factors), personal characteristics and the revealed behavior of tourists is required. In this chapter, we examine the impact of both agency-related and structural factors on the activity of theme park visitors. To do so, we utilized various data sources and data collection techniques to record information about the three elements mentioned above (i.e., situational factors, personal characteristics, and revealed behavior) to investigate tourist activity in PortAventura theme park in Catalonia, Spain. Traditional questionnaires were used to record personal and visitation characteristics. Detailed Geographical Information System (GIS) layers were used to represent the physical structure of the theme park. Finally, GPS location recordings were utilized to characterize the behavior of tourists in the park. Since theme parks are highly controlled artificial environments, it is convenient to gauge both the characteristics of the park itself and of the activity patterns of visitors within it using these techniques.

The rest of the chapter is organized as follows. The theoretical background further discusses potential structural and agency-related factors that could affect the activity in theme parks. In addition, it presents a review of past studies about tourist activity in theme parks. This chapter is followed by a methodological section that introduces the tools, data, and sample. The chapter concludes with a discussion about the theoretical and practical implications of the results to destination managers in general and to theme parks more specifically.

2 Theoretical Background

2.1 Structure Versus Agency

The debate regarding agency and structural factors and their influence on human spatial behavior led to the development of several theoretical frameworks. A prominent example for a (post-) structural approach that explains spatial activity is Hägerstrand's time-geography (Hägerstrand 1970). While as his article title ("What about

people in regional science?") suggests, Hägerstrand original idea was to put forth an approach that advocates the study of human behavior from the point of view of the individual, in practice, his influential framework is highly structural in its nature. It relies heavily on the idea of *constraints* which impose certain daily routines and sequences of activities on the individual. These constraints, which are structural in their nature, include capability constraints, coupling constraints and authority constraints. Therefore, time-geography was criticized for having a somewhat naive and defective conception of the human agent (Giddens 1984).

On the other hand, there are the agency-dominant approaches that assume the existence of a self-motivated human agent. Dietvorst (1995), who refers to this approach as the choice-oriented approach, finds Chapin's (1974) work which examined human activity in the city a good example for this type of approaches. Decrop (1999, pp. 104–108) gives a comprehensive review of the components that constitute the "agent-based approach" in tourism. Although the two approaches seem to contradict each other, Dietvorst conceives them as complementary to one another. To his view, both approaches should be taken into consideration when studying tempo-spatial behavior of humans.

When studying human behavior in theme parks, it is important to consider the unique characteristics of the park itself. The park makes a highly controlled artificial environment, and therefore: (1) it can only be attended during opening hours (which might change from time to time), (2) park management can decide on the number and type of facilities that will be available for the visitors in a given day, and (3) entrance fees in theme parks are usually in the format of pay-one-price, meaning that once you pay the relatively high admission fee you are allowed to use all or most of the attractions in the park. This means that monetary issues should be of lesser importance in determining the amount and type of attractions that one can attend since once the visitor enters the park he or she can make use of all the facilities and attractions. The next paragraphs present factors (general factors and theme park-specific) that may influence visitors' tempo-spatial activity in theme parks.

2.1.1 Structural Factors that Influence Tourist Activity

Group Characteristics—The group has a major influence on decision-making. "Individual behavior becomes the outcome of personal motivations after they have been filtered and redirected by the social circle of the group" (Thornton et al. 1997, p. 287). The main type of group in theme parks consists of families with children.

Temporal Aspects—As Hägerstrand (1970) time-geography suggests, our spatial activity is constrained by time. Since we cannot participate in more than one activity at a time, a given duration of time, according to this approach, is adequate for a limited number of activities. Therefore, we ought to choose the type and sequence of activities we desire most, from a given set of activities. Since theme park visitors are limited in the time they can spend in the park, they have to allocate their time between the activities. Length of visit (number of days and number of hours per day), length of queues, special express tickets that reduce queues for their holder, are all

examples for temporal factors that have a strong influence on visitors' decisions and behavior.

Attractions Availability—The theme park is a highly artificial and controlled environment. Different sites and activities in the park are operated during different schedules and in different capacities (in accordance with the park management decisions). For example, the park chooses to operate more facilities during the high season when more visitors attend the park. For the same reasons, it operates more attractions during the weekends (as opposed to the middle of the week). The availability of attractions to visitors should of course influence visitors' activity in the park.

Physical Environment—The effect of the physical environment (i.e., weather, site appearance) on tourism was examined in several different research projects. Most of these studies, however, focused on the impact that the environment has on the image of tourist destinations, tourists' satisfaction of a destination, and destination choice process (see, e.g., Murphy et al. 2000). Surprisingly, the effect that the environment has on tourists' activity on-site, received only little attention (see, e.g., de Freitas 2003; Gospodini 2001; McKercher et al. 2014).

2.1.2 Agency-Related Factors that Influence Tourist Activity

In a given situation (structure), different people will react differently according to their personal preferences, motivation, perception, attitudes, and physical capabilities. The literature suggests that the following factors may influence activity of tourists in a destination:

Previous Experience (Previous Visits)—According to Kemperman and Joh (2003), repeat visitors tend to have a more diverse sequence of activity when compared to first-time visitors who followed a very distinct sequence. They concluded that the reason for the difference has to do with the fact that repeat visitors are familiar with the park facilities. Similar findings were reported by McKercher et al. (2012) in Hong Kong.

Cultural Predispositions (Nationality)—It is assumed that cultural predisposition influences personal preferences. The effect of nationality, which has a central role in generating cultural differences, was found to have a significant impact on tourist behavior in several market segmentation research (see, e.g., Johns and Gyimóthy 2002; Mudambi and Baum 1997). However, results regarding the impact of nationality are often ambiguous.

Gender—Frew and Shaw (1999), who studied the relationship between gender, personality, and tourism, showed that gender influences attraction choice through personality and therefore influences tourist activities.

Age—It is claimed that age affects tourists' activity. Age-related differences in the travel behavior of tourists to Bornholm, Denmark, for example, were found by Johns and Gyimóthy (2002).

The conceptual model in Fig. 1 presents the impact of structural and agency-related factors on the behavior of people. When making a decision, an individual needs to consider the situation he or she is facing and the constraints and opportunities that the

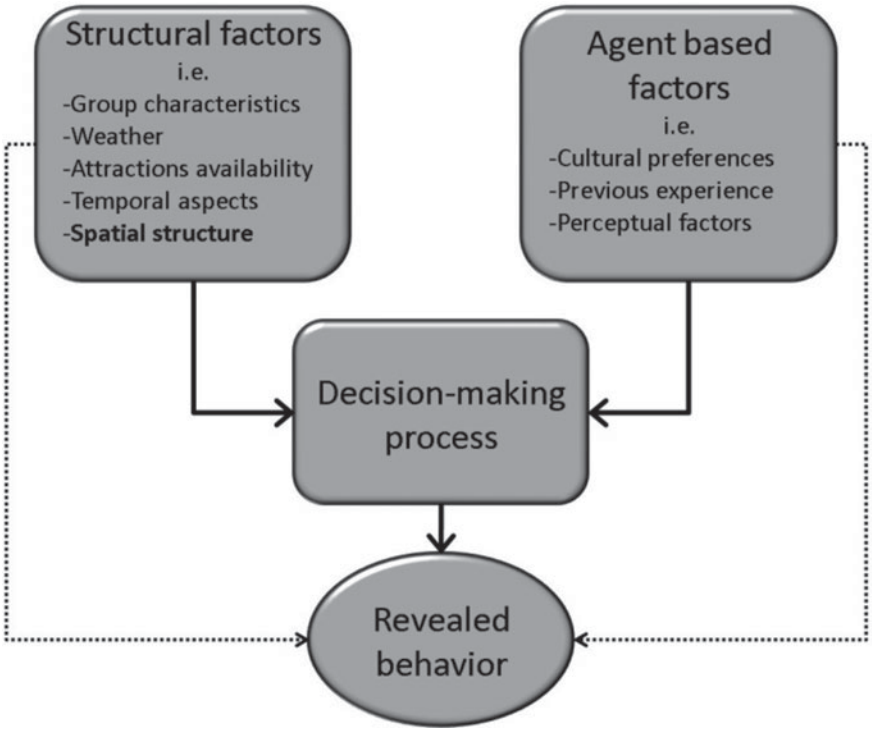


Fig. 1 Hypothesized impact of structural and agency factors on tourist behavior in a theme park

situation imposes. On the other hand, the individual might have unique preferences and needs that will affect his or her decision to engage in or avoid an activity. This study examines which of the two groups of variables is more dominant when it comes to understanding theme park activity.

2.2 Theme Parks

The year of 1955 is considered by many as the year in which the modern (some would say late-modern or even postmodern) theme park phenomenon had emerged. In that year, Disneyland opened its gates in Anaheim, California (Anton-Clavé 2007). While other sites with similar recreational function could be found earlier, Disneyland is the most dominant prototype of theme parks that still inspires the masses and is imitated by many (Davis 1997). "Theme parks are extreme examples of capital intensive, highly developed, user-oriented, man-modified, recreational environments. The entertainment, rides, specialty food, and park buildings are usually organized around themes or unifying ideas" (Pearce 1988, p. 60).

Kemperman (2000) recognizes the following components in the theme park product:

1. Theme park rides, activities, and exhibits.
2. Supporting facilities and services—the facilities include restaurants, refreshments stands, and shops. Services include visitors information, luggage deposit, and more.
3. Accessibility of the park—which is mainly dependent on transportation.
4. Image of the park.
5. Price to the consumer—as mentioned most theme parks tickets are in the format of "pay-one-price," meaning that the visitor pays an entrance fee that allows him to use all, or most of, the attractions in the park.

In this chapter, we consider visitors activity in the main facilities on-site, namely rides, shows and exhibits, restaurants and shops (which are absent from Kemperman's list).

Several studies examined visitors' activity in theme parks. The goal of the first group of studies was to optimize visitor flow in the park in order to enhance the quality of the service. Kawamura et al. (2004) tested four different algorithms of theme park coordination using a computer simulation, but could not find one single algorithm to be superior in terms of individuals' satisfaction and park efficiency under all conditions. A similar study that was conducted by the same group (Kataoka et al. 2005a, b) examined the effectiveness of a queuing system that allowed visitors to register their next move in order to reduce park queuing. The researchers concluded that notifying visitors regarding queues status is not sufficient by itself to prevent future congestion, since there is a delay effect between the decision-making and effect emergence; by the time visitors arrive to the attraction with the supposedly short queue, congestion level already changes.

Kemperman et al. (2002, 2003) utilized a conjoint choice experiment to predict visitors' time budgets in the Efteling park, the Netherlands. Three of the sites that were presented to participants did not exist in the actual park. Using this technique, the authors could indicate the probability for attending each attraction throughout the day and the preferred duration of stay visitors allocate to each type of activity. Moreover, they could hypothesize what would be the influence of the new facilities on the activity in case they were to be realized. More important, the findings led the authors to conclude that visitors' characteristics were not good predictors of the duration of activities. In other words, they found that agency-related factors were less dominant in determining activity patterns in the park. One of the biggest problems with this study is that the conjoint choice experiment is merely a choice task which does not simulate the real environment and situations in the park.

Dietvorst (1995) focused in his study on structural factors and more particularly on the physical structure of the park including the location of main attractions and stores on visitors' movement, revenue, and the carrying capacity of the park. According to Dietvorst, visitors tend to be more mobile during the morning hours and during the peak season, when the place is crowded. Moreover, he revealed that congestions are more common in areas where attractions are organized in clusters.

Rajaram and Ahmadi's (2003) found strong correlation between visitor flow and retail profits. Furthermore, their study showed that visitor flow is strongly affected by the capacity and schedule of major attractions (structural factors). This led them to the conclusion that by controlling visitor flow, they can improve parks' retail profits. In the second part of their study, Rajaram and Ahmadi developed a flow management model that simulates changes in the capacity and schedule of attractions in order to control visitor flow, which will eventually lead to increase in shopping revenue. Their model suggests that in high profit retail areas, attractions should have more frequent shows with less operating capacity. In low profit areas, an opposite mode of action should be considered. Low operating capacities in attractions in the high profit retail area increase queues, and this allows some of the family members to explore the nearby shops. This conclusion stands in contrast to Dietvorst's assumption that long queues will reduce visitors' satisfaction and hence their expenditure. Nevertheless, both studies emphasize the importance of structural factors in determining visitor activity.

An earlier study of Ahmadi (1997) investigated how park managers in Six Flags Magic Mountain in California can more efficiently manage ride operation by adjusting their capacities (i.e., by controlling the number of operating units in the rides) and by controlling visitor flow (i.e., by directing visitors to designated routes).

Kemperman et al. (2003) utilized a sequence alignment method to measure dissimilarity between sequences of activity. They found out that first-time visitors had more strict patterns of trips compared to repeat visitors. There was also a difference in the activity patterns between visitors who used information about the park and those who did not use any information. In this case, we can see that previous experience and familiarity (agency) were the main determinants of activity. Finally, Birenboim et al. (2013) found that the activity of tourists in theme parks is characterized by distinct and repetitive diurnal and intra-diurnal patterns. Though not conclusive, this might indicate that the activity in parks is structural in its nature. Otherwise, more variation in activity pattern would be expected.

3 Methods

3.1 Research Setting—PortAventura Theme Park

PortAventura theme park is an entertainment park located in Catalonia, Spain, next to the holiday resort of Salou, approximately one-hour ride from Barcelona. The park is one of the central tourist attractions in Costa Daurada. At the time of the study, the park was owned and operated by Caixa banking group, who bought Universal Studios' shares in the park in 2004. PortAventura is one of the most visited theme parks in Europe. The park opened its gates for the first time in 1995 with the support of the local public administration and the goal of improving the local tourism product (Anton-Clavé 1997). The park was comprised at the time of the study of five thematic

areas, each representing a different geographical region of the world. The thematic areas in the park included at that time were: Mediterranea, Polinesia, China, Mexico, and the Far West. The Mediterranea area is located at the park entrance, while the other four areas were arranged in a circle-like pattern.

The theme park environment makes a convenient setting to test our research question since it is a relatively small and spatially simple place which facilitates only a limited range of activities within it. This turns the park into an advantageous "natural lab" in which all visitors experience very similar environmental conditions.

3.2 Data Collection and Sample

Participants were recruited at the park's main entrance using a systematic sampling method. Park employees approached visitors at intervals of five (four visitors entered the park freely and the fifth was approached) and asked visitors who fitted the sample profile of the research, which was restricted to families with at least one young child (under 11) to take part in the study. Fieldwork took place during two non-consecutive weeks: the first week during the low season period and the second week during the high season.

Two types of datasets were collected as part of the study.

1. Socio-demographic information and details about visitation characteristics of each group of visitors were recorded by the interviewers at the park entrance using a conventional questionnaire.
2. Tempo-spatial activity patterns of visitors in the park were recorded using GPS loggers (I-blue 747 and BT 335) that were delivered at the park entrance after the visitors had completed the interview.

In addition, detailed GIS layers of the park structure and facilities were extracted based on AutoCad files that were supplied to the researchers by the park.

The final sample that was analyzed included 276 out of 288 families that were drafted to the study. The 12 families that were excluded had either failed to complete a questionnaire and/or did not have GPS sequences.

3.3 Variables

The following operational variables were utilized in the study:

3.3.1 Structural Factors

Group Size—The impact of the group on tourist behavior is documented in the literature (Decrop 2005; Thornton et al. 1997). In the context of theme parks, it is assumed

that it is harder for larger groups to find a ride that will suite all group members' preferences and abilities. Therefore, it is expected that the larger the group the less frequently it will attend rides. On the other hand, shows that supply entertainment for the whole family will be more attractive for larger groups. Larger groups will also tend to spend more time in restaurants since the larger the group the more time it takes the group to get organized in the restaurant (i.e., order the food, finish to eat).

Children's Age —The influence of children on group behavior is considered substantial (Thornton et al. 1997). It is hypothesized that the younger the children in the group the less time the family will spend on rides, since young children cannot participate in all rides due to minimum height restrictions of some of the rides. However, families with young children will spend more time in shows and restaurants, since these activities are more suitable for the entire family. Families with young children will spend less time in shops since this activity is less attractive to the younger children.

Type of Ticket—Single-day visitors will dedicate less time to explore the restaurants and shows of the park compared to multi-day visitors. They will attend the park's rides, which is the main attraction in the park, more frequently.

Length of Visit—The literature indicates that the length of visit is likely to influence visitor behavior (Yoshimura et al. 2014). As visits in the park extend, the share of activity in rides will decline in favor of activity in restaurants and shows since visitors get tired of the rides.

Availability of Attractions (Weekend and High Season Effects)—When more rides are available to the visitors (during the high season and weekends), visitors will attend more rides and spend more time in rides compared to shows.

3.3.2 Agency-Related Factors

Previous Experience (Previous Visits)—The effect of familiarity on tourist behavior in a destination was demonstrated in previous studies (see, e.g., Kemperman and Joh 2003; McKercher et al. 2012). In the context of theme parks, first-time visitors are expected to be more enthusiastic to go on the park's rides and shops of the park. This will leave them less time to observe shows and dine in restaurants.

Cultural Predispositions (Nationality)—Based on previous studies that showed relation between human behavior and nationality (Johns and Gyimóthy 2002), it is assumed that visitors of different nationalities will demonstrate different patterns of activity. However, it is hard to predict what exactly will be the difference.

Temporal Preferences (Day of Visit)—Visitors will spend more time on rides on the first day of their visit and less in the other types of activity.

Table 1 summarizes the hypothesized impact of the variables that were tested (independent variable) on the intensity of visitors' activity (percentage of time and frequency of visits) in different types of activities in the park.

Table 1 Hypothesized effects of different factors on the activity of theme park visitors

	Rides	Shows	Restaurants	Shops
Group size (big group)	–	+	+	?
Children's age (young children)	–	+	+	–
Type of ticket (single-day)	+	–	–	?
Length of visit (long visit)	–	+	+	+
Availability of attractions (high)	+	–	?	?
Previous visits (first time) visitors)	+	–	?	+
Day of visit (first day)	+	–	–	–
Nationality (Spanish)	?	?	?	?

'+'—expected positive correlation
'–'—expected negative correlation
'?' uncertain relations

3.4 Analysis

The revealed behavior of visitors was represented by the number of visits and percentage of time dedicated to each type of site (i.e., rides, shows, restaurants, shops). This was done using an overlay operation between the GPS locations that were recorded and the geographical layer of the park sites within a GIS environment. GIS tools allow detecting the GPS samples (represented as points) that fall within the boundaries of a specific site (represented as a polygon). By calculating the number of unique visitor IDs that fall within each site, it was possible to extract the number of unique visitors to each type of site. To calculate the percentage of time spent in each type of activity, the duration value assigned to each GPS sample (the time difference between two succeeding GPS samples) was used. Using the duration value, it was possible to calculate the total time each visitor spent in each site. This information was then aggregated based on the type of the site. The percentages of time each visitor spent in each type of attraction relative to the total duration of the visit were then calculated.

In order to explore the relationship between the independent variables that are described above to the revealed behavior, regression models were used. In the first set of models, the number of visits to different types of activities and/or sites in the park was used as the dependent variable. Since the number of visits is a "count" data type, a Poisson regression was utilized. In the second set of models, the dependent variable was the percentage of time that a visitor dedicated to each type of activity. In this case, standard OLS regression was implemented. In both sets of models, two sub-models were employed for each type of activity, namely Model 1 and Model 2. Model 2 contains the variable of "day of visit," and therefore, it includes only visitors that held a multi-day ticket. Other independent variables in the models include

temporal characteristics of the visit including binary weekend-midweek and high season-low Season variables and the length of visit of each participants in minutes. The nationality of participants, the type of ticket used to enter the park. The age of the children, size of the group, and familiarity with the park that was represented by a binary variable of first versus repeat visit.

4 Results

Table 2 summarizes the results of the first set of Poisson regression models that predict the number of visits to different types of sites in the park. Table 3 summarizes the second set of OLS regression models that predict the percentage of time that is dedicated to each type of activity (time budgets). As seen in the first set of models (Table 2), the models that predict the number of visits to shops not only have a poor pseudo-R^2 (0.041 in model 1 and 0.103 in model 2), but all of their parameters' coefficients were found to be statistically insignificant. It seems that both the agency-related and structural factors that were suggested could not explain and predict the number of visits that park visitors make to shops. The case for the restaurants models is similar, as they also showed a low pseudo-R^2 (0.079 and 0.087) and insignificant coefficients. The only exception is the length of visit variable, which was significant in the first restaurants model.

Though not having many statistically significant model coefficients, the shows models demonstrated higher pseudo-R^2 results (0.272 and 0.277) than the previous models. As in the restaurants models, the length of visit was the most dominant in these models with expected positive values that indicate that the longer the visitors stay the more shows they are likely to attend. In addition, visitors tended to attend more shows during the low season. This might be a result of the lower availability of rides (some of them were closed during the low season), which in turn might have spurred people to attend more shows. It is also possible that the less convenient weather during the low season led visitors to attend more shows as some of the shows take place in indoor venues.

The rides models had the highest pseudo-R^2 values (0.356 and 0.312) and several statistically significant coefficients. As in most of the other models in this group, the length of the visit coefficient is positive and significant. Two other interesting findings are the influence of the type of the ticket and children's age. Visitors with seasonal passes attend less rides ($B = -0.979$), probably since they are highly familiar with the rides from previous visits. As expected, children's age, was found to be a strong predictor for ride attendance. This is because young children under the age of seven are restricted to participate in only part of the rides due to their smaller physical dimensions. Visitors on the first day of their visit (applied only to multi-day and hotel visitors) tended to attend more rides, as expected. It should be noted that the length of the visit was found highly significant in most of the models and with positive values. In this set of models, however, it is not very surprising that longer visits resulted in more visits to the attractions.

Table 2 Number of visits to different types of sites as predicted by the study variables

	Shows		Rides		Shops		Restaurants	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Constant (Intercept)	−1.769**	−0.427	0.790*	0.003	−0.970	−9.584	−0.631	0.168
Weekend [Midweek]	0.019	−0.052	0.019	0.074	0.163	0.622	−0.039	−0.078
High season [Low Season]	0.420**	0.446*	0.094	0.031	0.141	0.401	0.088	0.056
Length of visit (min.)	0.003***	0.003***	0.001***	0.001***	0.000	0.002	0.001*	0.001
Nation [Spanish]	0.395	−0.647	0.072	0.786	−0.068	7.642	−0.359	−0.517
[British]	0.130	−0.873	0.006	0.624	−0.170	7.780	−0.719	−0.728
[French]	0.139	−0.663	0.098	0.782	−0.054	7.704	−0.703	−0.682
Ticket type [Single-day ticket]	0.373		0.138		−0.426		−0.307	
[Multi-day ticket]	0.388	0.201	−0.054	0.065	−0.406	0.026	0.084	0.071
[Hotel visitors]	0.288		−0.211		−0.366		0.061	
[Seasonal pass]	0.335		−0.979**		−0.496		−0.308	
[Group]	−0.210		−0.020		−1.057		0.617	
Children [all under 7]	−0.079	−0.055	−0.120	−0.059	0.092	0.172	0.018	0.261
[All above 7]	−0.220	−0.272	0.182*	0.225*	0.290	0.076	−0.188	−0.009
Group size	−0.095	−0.108	−0.037	−0.046	0.101	0.043	0.070	−0.020
Day of visit [First day]		−0.247		0.257*		−0.433		−0.283
[Middle day]		−0.003		−0.021		−0.405		−0.021
Previous visit [First Visit]		−0.129		−0.075		−0.153		−0.311
Sample size (n)	241	131	241	131	241	131	241	131
Pseudo-R^2	0.272	0.277	0.356	0.312	0.041	0.103	0.079	0.087

*P value < 0.05, **P value < 0.01, ***P value < 0.001

Table 3 Percentage of time dedicated to different types of sites as predicted by study variables

	Shows		Rides		Shops		Restaurants	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Constant (Intercept)	5.921	6.927	22.120	27.112***	1.077*	0.694	6.612*	10.295**
Weekend [Midweek]	0.326	0.479	0.420	1.123	0.008	0.065	−0.795	−1.443
High season [Low season]	1.130	1.222	−1.277	−1.744	0.080	0.124	0.196	0.991
Length of visit (min.)	0.011**	0.015**	−0.006	−0.017*	−0.001	0.000	−0.006	−0.001
Nation [Spanish]	1.830	−1.578	0.995	2.463	0.015	0.179	2.742*	1.142
[British]	−1.101	−3.825	−0.963	−2.167	0.036	0.445	−2.447	−2.342
[French]	−1.889	−3.886	1.679	1.672	0.056	0.374	−1.130	−1.804
Ticket type [Single-day ticket]	0.349		3.994*		−0.107		−1.162	
[Multi-day ticket]	1.322	0.970	1.252	1.741	−0.046	−0.127	−0.149	0.116
[Hotel visitors]	0.480		−3.944*	−1.741	0.253		0.334	
[Seasonal pass]	1.034		−8.069*		−0.201		−0.958	
[Group]	−3.133		2.974		−0.331		2.545	
Children [All under 7]	−0.112	0.631	−2.865**	−2.063	0.010	0.019	0.781	0.309
[All above 7]	−0.654	−0.893	3.299***	3.344**	0.075	−0.028	−0.672	−0.249
Group size	−0.797	−0.679	−0.383	−0.702	0.079	0.042	0.877	−0.013
Day of visit [First day]		−0.592		3.566**		−0.176		−1.875*
[Middle day]		0.816		−1.425		−0.045		0.308
Previous visit [First visit]		−0.500		−0.432		0.031		−1.206
Sample size (*n*)	241	131	241	131	241	131	241	131
R^2 (adjusted)	0.090 (0.034)	0.147 (0.053)	0.195 (0.145)	0.256 (0.177)	0.055 (−0.003)	0.072 (−0.031)	0.149 (0.096)	0.227 (0.141)

*P value < 0.05, **P value < 0.01, ***P value < 0.001

In the second set of models (Table 3), the independent variable is the percentage of time that is dedicated to each type of activity. In these models, we are actually examining the visitors' time allocation between activities. Since the results are in percentages, the coefficients signs (positive/negative) are not expected to be exactly similar to those in the first group of models. One of the models' weaknesses that should be acknowledged is that they are not sensitive to the rides' queues. Queues highly increase the length of stay in rides, and since we did not differentiate between queues waiting times and the actual ride activity, the interpretation of the result should be done carefully in the rides models. The decision to keep the waiting time in the analysis was due to the fact that queues are inseparable of the experience of the ride. The impact of the queues should be reflected to some degree in the high season and weekend parameters since the queues in these periods tend to be longer.

The shops models in Table 3 reveal an even poorer R^2 values than in the first models (0.055 and 0.072), with none of the coefficients being statistically significant. In Model 1 of the restaurants, the Spanish coefficient ($B = 2.742$) was found significant. The Spanish visitors, it seems, spend more time in restaurant (2.7% more than the average). According to the second model, visitors allocate less time to restaurants in their first day of visit. The R^2 in the restaurants models is higher compared to the first group of models. Shows, on the other hand, reveal significantly lower R^2 values compared to the first set of models. An interesting detail that can be observed in these models is that the longer the visit, the more time visitors allocate to shows.

As in the first set of models, the rides models have the highest R^2 values and the highest number of significant coefficients. Consistent with the previous models and with the hypotheses, single-day visitors allocate more time to rides. The park's hotels visitors and seasonal pass holders allocate a smaller portion of their time to rides (~4% and ~8% less than the average, respectively). Children's age is again very dominant in the rides models, where families with adult children (above 7) allocate a significantly greater portion of their time to rides. As mentioned, the length of the visit negatively influences the time allocation to rides—the share of time that is allocated to rides is reduced when the visit is being extended, though only in model 2 this result is statistically significant. As implied in the first set of models, first-day visitors spend a greater portion of their time on rides ($B = 3.566$).

5 Discussion and Conclusions

This chapter investigated the activity of tourists in a highly controlled recreational environment of a theme park. The aim of the study was to improve our understanding as to the factors that affect tourist activity and more specifically to identify which of two types of factors—agency or structural—is more dominant in determining tourist activity in a destination?

Overall, the two sets of models that were generated were not very robust. The strongest models (in terms of coefficient of determination and statistical significance of the coefficients) are the models of the rides category. In these models, children's

age, the day of the visit, and (to some extent) the type of ticket were found to be the most significant among the suggested predicting factors. The length of the visit, a "classical" constraint of the time-geography framework, was found to be an important factor as well, especially in the first set of models. However, it is not very surprising that longer visits resulted in more visits to sites in the park.

While the models demonstrated relatively low explanatory power, it should be noted that most of the variables that were found to be significant belong to the structural group of factors. These include the length of visit, type of ticket, children's age, and group size. This trend, though not very strong, suggests that visitors' mass behavior can be better predicted by structural and situational factors. The literature about activity in theme parks that was reviewed above supports the findings of the current study, since structural factors were found more prominent in previous works as well. This includes the physical structure of the site (Dietvorst 1995), temporal aspects (Birenboim et al. 2013; Dietvorst 1995), and the capacity and schedule of major attractions (Ahmadi 1997; Rajaram and Ahmadi 2003).

If structural factors are indeed more prominent as this study and others suggest, there is a support to the notion of controlling mass tourist activity through the organization and adjustment of the environment and other external factors in such a way that will best cater to the tourists. As previously suggested, such an approach can be utilized to increase tourists' monetary expenditure, reduce ecological and social impacts, and improve destination management in general.

Nevertheless, results of the current and previous studies should be carefully considered before concluding that structural factors are the dominant factors to affect tourist activity for several reasons. First, the results of the current study are probably not sufficiently robust to fully support such a statement. More studies (see recommendations below) are required to further support these findings. Second, since the studies that were reviewed are all dealing with theme parks, there is a question as to how relevant are the results that are obtained in these environments to other spaces such as complex urban areas. In this sense, it is important to keep in mind that theme parks are highly controlled environments which were designed to cater to and manipulate visitors' behavior at the first place (Davis 1997). Third, many of the studies that were introduced above were looking for structural and manipulatable variables at the first place, since their aim was to find ways to change behavior within the park. Therefore, there is most likely a bias toward the examination of structural variables.

The longstanding agency–structure debate will continue to facilitate theoretical developments and empirical studies in the future. As argued above, the two approaches are probably more complementary than contradictory (see, e.g., Lew and McKercher 2006). However, it is likely, as we tried to emphasize here, that one of the approaches can demonstrate dominance over the other under certain conditions. In the case of tourism, structural factors may often show such domination. First, since tourists often encounter novel environments which they see for the first time. With little knowledge about the environment, tourists (and humans in general) are likely to be more influenced by structural elements such as the physical environment. Second, many of the tourist environments are highly controlled and commercial (e.g., parks, resorts, attractions, shopping malls). Therefore, similarly to theme parks, such

environments are designed to affect the behavior and experience of their visitors at the first place which may lead to a greater dominance of structural factors.

5.1 Limitations and Suggestions for Future Research

The current study had several limitations that should be acknowledged. First, the variables that were examined and especially those variables that measure human agency were limited in their scope. Future studies should utilize psychometric and preferences variables which may allow a more comprehensive representation of human agency. Information about the capacity of rides, prices of food and souvenirs, and other structural factors could be collected as well.

Furthermore, in this study, activity was operationalized as the usage of attractions (number of visits and percentage of time) in the park. However, human behavior is of course more complex and includes other important facets such as monetary expenditure, decision-making, satisfaction, and attitudes that should be examined in the future as well. In this regard, a promising direction of investigation which receives a growing attention in general and in the context of tourist behavior more specifically is that of subjective experiences (Birenboim 2016; Kim and Fesenmaier 2014; Quinlan Cutler et al. 2016).

New tools and methods that are now available can enhance the investigation of human behavior. These include, for example, mobile applications (Birenboim 2016, 2018) and ambulatory bio-sensing techniques (e.g., skin conductivity, heart rate variability) that can be useful in recording changes in physical and mental aspects of behavior (Kim and Fesenmaier 2014; Shoval et al. 2018).

Finally, it is advisable that future research will include studies in more complex environments and for longer period of time (i.e., more than a day). Urban environments make a good candidate for such studies in light of the increase in the segment of urban tourism. A better understanding of tourist behavior in urban areas may be relevant to understand problems of carrying capacity that characterize major urban destinations such as Amsterdam, Barcelona, Venice, and others nowadays (Kádár 2014; Russo 2002), as well as shedding further light on how the spatial behavior of specific visitor groups influences place development and image (den Hoed and Russo 2017).

References

Ahmadi, R. H. (1997). Managing capacity and flow at theme parks. *Operations Research, 45*(1), 1–13.

Anton-Clavé, S. (1997). The Port Aventura theme park and the restructuring of coastal tourist areas in Catalonia. *European Urban and Regional Studies, 4*(3), 257–262.

Anton-Clavé, S. (2007). *The global theme park industry*. Cabi.

Birenboim, A. (2016). New approaches to the study of tourist experiences in time and space. *Tourism Geographies, 18*(1), 9–17. https://doi.org/10.1080/14616688.2015.1122078

Birenboim, A. (2018). The influence of urban environments on our subjective momentary experiences. *Environment and Planning B: Urban Analytics and City Science.* https://doi.org/10.1177/2399808317690149

Birenboim, A., & Shoval, N. (2016). Mobility research in the age of the smartphone. *Annals of the American Association of Geographers, 106*(2), 283–291.

Birenboim, A., Anton-Clavé, S., Russo, A. P., & Shoval, N. (2013). Temporal activity patterns of theme park visitors. *Tourism Geographies, 15*(4), 601–619.

Chapin, F. S. (1974). *Human activity patterns in the city: Things people do in time and in space.* New York: Wiley.

Cohen, E. (1972). Toward a sociology of international tourism. *Social Research, 39*(1), 164–182.

Davis, S. G. (1997). *Spectacular nature: Corporate culture and the Sea World experience.* Berkeley, CA: University of California Press.

de Freitas, C. R. (2003). Tourism climatology: Evaluating environmental information for decision making and business planning in the recreation and tourism sector. *International Journal of Biometeorology, 48*(1), 45–54. https://doi.org/10.1007/s00484-003-0177-z

Decrop, A. (1999). Tourists' decision-making and behavior processes. In A. Pizam & Y. Mansfeld (Eds.), *Consumer behavior in travel and tourism* (pp. 103–133). New York: The Haworth Press.

Decrop, A. (2005). Group processes in vacation decision-making. *Journal of Travel & Tourism Marketing, 18*(3), 23–36. https://doi.org/10.1300/J073v18n03_03

den Hoed, W., & Russo, A. P. (2017). Professional travellers and tourist practices. *Annals of Tourism Research, 63,* 60–72. https://doi.org/10.1016/J.ANNALS.2016.12.012

Dietvorst, A. G. J. (1995). Tourist behaviour and the importance of time-space analysis. In G. J. Ashworth & A. G. J. Dietvorst (Eds.), *Tourism and spatial transformations* (pp. 163–181). Wallingford, UK: CAB International.

Frew, E. A., & Shaw, R. N. (1999). The relationship between personality, gender, and tourism behavior. *Tourism Management, 20*(2), 193–202. https://doi.org/10.1016/S0261-5177(98)00081-8

Giddens, A. (1979). Agency, structure. In *Central problems in social theory: Action, structure and contradiction in social analysis* (pp. 49–95). London: Palgrave. https://doi.org/10.1007/978-1-349-16161-4_3

Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration.* University of California Press.

Gospodini, A. (2001). Urban design, urban space morphology, urban tourism: An emerging new paradigm concerning their relationship. *European Planning Studies, 9*(7), 925–934. https://doi.org/10.1080/09654310120079841

Hägerstrand, T. (1970). What about people in regional science? *Papers in Regional Science, 24*(1), 7–24. https://doi.org/10.1111/j.1435-5597.1970.tb01464.x

Johns, N., & Gyimóthy, S. (2002). Market segmentation and the prediction of tourist behavior: The case of Bornholm, Denmark. *Journal of Travel Research, 40*(3), 316–327. https://doi.org/10.1177/004728750204003009

Kádár, B. (2014). Measuring tourist activities in cities using geotagged photography. *Tourism Geographies, 16*(1), 88–104. https://doi.org/10.1080/14616688.2013.868029

Kataoka, T., Kawamura, H., Kurumatani, K., & Ohuchi, A. (2005a). Distributed visitors coordination system in theme park problem. In T. Ishida, L. Gasser, & H. Nakashima (Eds.), *Massively multi-agent systems I* (pp. 335–348). Berlin, Heidelberg: Springer Berlin Heidelberg.

Kataoka, T., Kawamura, H., Kurumatani, K., & Ohuchi, A. (2005b). Effect of congestion reduction with agents' coordination in theme park problem. In A. Abraham, Y. Dote, T. Furuhashi,

M. Köppen, A. Ohuchi, & Y. Ohsawa (Eds.), *Soft computing as transdisciplinary science and technology* (pp. 245–254). Berlin, Heidelberg: Springer Berlin Heidelberg.

Kawamura, H., Kurumatani, K., & Ohuchi, A. (2004). Modeling of theme park problem with multiagent for mass user support. In *Multi-agent for mass user support* (pp. 48–69). Springer.

Kemperman, A. D. A. M. (2000). *Temporal aspects of theme park choice behavior: Modeling variety seeking, seasonality and diversification to support theme park planning* . Technische Universiteit Eindhoven.

Kemperman, A. D. A. M., & Joh, C.-H. (2003). Comparing first-time and repeat visitors activity patterns. *Tourism Analysis, 8*(2), 159–164.

Kemperman, A. D. A. M., Borgers, A., & Timmermans, H. (2002). A semiparametric hazard model of activity timing and sequencing decisions during visits to theme parks using experimental design data. *Tourism Analysis, 7*(1), 1–13.

Kemperman, A. D. A. M., Borgers, A., Oppewal, H., & Timmermans, H. (2003). Predicting the duration of theme park visitors' activities: An ordered logit model using conjoint choice data. *Journal of Travel Research, 41*(4), 375–384.

Kim, J. (Jamie), & Fesenmaier, D. R. (2014). Measuring emotions in real time: Implications for tourism experience design. *Journal of Travel Research, 54*(4), 419–429.

Lew, A., & McKercher, B. (2006). Modeling tourist movements: A local destination analysis. *Annals of Tourism Research, 33*(2), 403–423. https://doi.org/10.1016/J.ANNALS.2005.12.002

MacCannell, D. (2001). Tourist agency. *Tourist Studies, 1*(1), 23–37. https://doi.org/10.1177/146879760100100102

Mckercher, B., & Lau, G. (2008). Movement patterns of tourists within a destination. *Tourism Geographies, 10*(3), 355–374.

McKercher, B., Shoval, N., Ng, E., & Birenboim, A. (2012). First and repeat visitor behaviour: GPS tracking and GIS analysis in Hong Kong. *Tourism Geographies, 14*(1), 147–161.

McKercher, B., Shoval, N., Park, E., & Kahani, A. (2014). The [limited] impact of weather on tourist behavior in an urban destination. *Journal of Travel Research.*

Mudambi, R., & Baum, T. (1997). Strategic segmentation: An empirical analysis of tourist expenditure in Turkey. *Journal of Travel Research, 36*(1), 29–34. https://doi.org/10.1177/004728759703600105

Murphy, P., Pritchard, M. P., & Smith, B. (2000). The destination product and its impact on traveller perceptions. *Tourism management, 21*(1), 43–52.

Pearce, P. L. (1988). *The Ulysses factor: Evaluating visitors in tourist settings.* New York, NY: Springer New York. https://doi.org/10.1007/978-1-4612-3924-6

Plog, S. (2001). Why destination areas rise and fall in popularity: An update of a Cornell Quarterly classic. *Cornell Hotel and Restaurant Administration Quarterly, 42*(3), 13–24.

Quinlan Cutler, S., Doherty, S., & Carmichael, B. (2016). The experience sampling method: Examining its use and potential in tourist experience research. *Current Issues in Tourism,* 1–23. https://doi.org/10.1080/13683500.2015.1131670

Rajaram, K., & Ahmadi, R. (2003). Flow management to optimize retail profits at theme parks. *Operations Research, 51*(2), 175–184.

Richards, G. (2002). Tourism attraction systems: Exploring cultural behavior. *Annals of Tourism Research, 29*(4), 1048–1064. https://doi.org/10.1016/S0160-7383(02)00026-9

Russo, A. P. (2002). The "vicious circle" of tourism development in heritage cities. *Annals of Tourism Research, 29*(1), 165–182. https://doi.org/10.1016/S0160-7383(01)00029-9

Ryan, C. (1991). *Recreational tourism: A social science perspective.* Routledge.

Shoval, N., & Ahas, R. (2016). The use of tracking technologies in tourism research: The first decade. *Tourism Geographies, 18*(5), 587–606. https://doi.org/10.1080/14616688.2016.1214977

Shoval, N., Schvimer, Y., & Tamir, M. (2018). Real-time measurement of tourists' objective and subjective emotions in time and space. *Journal of Travel Research, 57*(1), 3–16. https://doi.org/10.1177/0047287517691155

Thornton, P. R., Shaw, G., & Williams, A. M. (1997). Tourist group holiday decision-making and behaviour: The influence of children. *Tourism Management, 18*(5), 287–297. https://doi.org/10.1016/S0261-5177(97)00017-4

Wolf, I. D., Hagenloh, G., & Croft, D. B. (2012). Visitor monitoring along roads and hiking trails: How to determine usage levels in tourist sites. *Tourism Management, 33*(1), 16–28.

Yoshimura, Y., Sobolevsky, S., Ratti, C., Girardin, F., Carrascal, J. P., Blat, J., & Sinatra, R. (2014). An analysis of visitors' behavior in the Louvre Museum: A study using Bluetooth data. *Environment and Planning B: Planning and Design, 41*(6), 1113–1131. https://doi.org/10.1068/b130047p

Environmental Perspectives and Tourism Policy

Innovation, Competitiveness, and Sustainability in Tourism Clusters: An Empirical Model of Caribbean Destinations

Sam Cole

1 Introduction

This chapter addresses theoretical and empirical challenges posed by the growing literature on tourism innovation and ongoing changes in the tourism industry. The primary goal here is to explore how behaviors observed in destination tourism arise from their configuration as clusters of activity within a global industry The focus then is how the tourism system itself through structure, behavior, and innovation across a multitude of components, might generate complex behavior, and how this is impacted by, and impacts, present tourism trends.

Our analysis centers on small Caribbean destinations, partly because of familiarity, but more so that islands provide useful empirical case studies that compound issues of physical scale, heritage, sovereignty, and sustainability. As Carlsen and Butler (2011, p. xii) observe, "islands form perfect 'living laboratories' that enable researchers to isolate the causal and immediate effects of tourism development on the community, environment, and economy of islands and to study them at a level of detail that is not possible in other tourism destinations."

The theoretical model used here is an extension of Butler's (1980) destination life cycle (now Tourism Area Life Cycle or TALC). This model describes how destinations could pass through successive stages of exploration, involvement, development, consolidation, stagnation, to decline. Across the tourism literature, the TALC is discussed as both an innovation- and market-led phenomenon, informing tourism authorities on their role in financing, marketing, and leadership (Butler 2009). Hjalager (2006) adds a global dimension to the TALC. She proposes that the globalization of tourism proceeds through stages from simple to more complex forms. The model in this paper too steps beyond the TALC to formalize how the different physical scales of tourism—global, regional, destination, and enterprise levels, together

S. Cole (✉)
Department of Urban and Regional Planning, University at Buffalo, Buffalo, NY, USA
e-mail: samcole@buffalo.edu

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_19

with their characteristic styles of tourism and related industry policy impact a destination's growth trajectory. Each level is conceived as a cluster with aggregate properties, recognizing that, in small destinations especially, the properties overlap.

Empirically, the approach used here is an extension of Cole (2009, 2012a) using time series data for Caribbean island destinations to estimate key parameters of a destination's attractiveness to markets, accounting for regional and local clustering, property-size, and associated innovation. The results suggest that, despite variations of content and packaging of destinations, vacationers and investors across markets and within destinations share core expectations and trade-offs. This estimation, combined with recorded exogenous shocks and island policy, credibly reproduces the historic trajectory of a single destination, Aruba. One current policy concern for this destination and others is the rapid expansion of the "alternative" accommodation" market—mainly private rentals and small hotels (as opposed to chain hotels and resorts), that are marketed through social media such as AirBnB, HomeAway, and TripAdvisor. Estimations of these alternative accommodations are incorporated into the predictions of the estimated model.

2 Aggregate Tourism Innovation

The tourism innovation and systems of innovation literatures deal primarily with tourism in a national or large region context. However, given the high degree of globalization of the tourism industry, and especially the consequences for smaller destinations, a globalized innovation system is more appropriate. Thus, in this chapter, the notion of a global tourism innovation "cloud" is invoked. Within this global innovation cloud, each destination's distinctive attributes, arising from its own unique history of innovation and socialization, condition its relative competitiveness and positioning to attract designated markets though style of hotels, entertainment, dining, and shopping. These factors play into the differences in goals between different segments of the tourist market, local, and international tourism industry.

Carlsen and Butler (2011) observe that there is "no agreed definition or categorization system for innovation in (sustainable) tourism," or "consensus on the underlying factors that drive innovation." Several authors (Buhalis 2000; Murphy et al. 2000; Plaza et al. 2011) discuss the complexity of tourism innovation. Plaza et al. (2011, p. 466) explain that the tourism sector encompasses "a myriad of non-technological innovations" embodied in "complex and integrated portfolio of services" that should be viewed as "an overall appealing product distinctive to a place." Miles (2016) emphasizes that social sector innovation, in general, involves a wide range of heterogeneous products and processes with innovations, like other inputs to production, extensively sourced. Hall and Williams (2008) illustrate this for the innovations embedded in regional tourism clusters, as do Weidenfeld et al. (2010). Decelle (2004) emphasized the "context of complexity" and that tourism products are composite goods. The boundaries of tourism innovation systems are

diffuse because, as Hjalager (2010) explains, tourism, and associated innovations are increasingly global in nature, crossing many nations, cultures, and destinations, and that tourism innovations may be readily transferred, overwhelming local cultures and traditions. Nonetheless, Hjalager (2012) especially has argued the need to understand better the "aggregate innovativeness" of tourist destinations and its implications for "cumulative growth."

Contributions to understanding tourism innovation (e.g., Poon 1988; Hjalager 1997; Hall and Williams 2009) draw together some key concepts from the classic innovation and tourism innovation literatures: product, process, and organization, noting that these concepts are diffuse (e.g., Utterback and Abernathy 1975). Studies of industrial and creative clusters (e.g., Porter 1990), innovation and trade (e.g., Vernon 1966; Krugman 1991), and systems of innovation (e.g., Freeman and Soete 1987) have elaborated the connections. Others (e.g., Ozturk 2009; Hjalager 2010) stress the networking between the global and local levels. This implies that aggregate innovation must account for the combined contributions of all innovation: large and small, local and imported, public and private, successful or otherwise. Moreover, each of these components itself is a composite of other innovations, each with its own origins and life-cycle history. Clarifying this requires us to consider the relationship between the components of aggregate innovation.

Most studies of tourism innovation deal with creativity within individual enterprises—hotels, entertainment, tours, etc., rather than a destination or the tourism system as a whole. Pratt and Jeffcutt (2010) suggest that tourism managers maintain competitiveness through innovation in products and services as well as more traditional cost-saving via cheaper labor or technological substitution. Nonetheless, the highly dynamic nature of tourism destinations with newer destinations with new businesses better able to employ the latest advances and ease of duplication of services across destinations has resulted in a lack of innovation and high failure rates of tourism enterprises in established destinations (Getz 2004; Carlsen et al. 2008).

In an extended review, Hjalager (2006) explained that innovation research in tourism was a young phenomenon, and only slowly being elaborated in theory and empirical evidence. She observed that tourism innovation is typically examined on a "piecemeal case-by-case" manner. She showed, nonetheless, that tourism research had begun to address the wider implications of aggregate' innovativeness (see also, Nordin 2003; Hjalager et al. 2008). Hjalager (2010, p. 10) argued for "the construction of new empirically grounded theories that account for the distinctive features of tourism" and suggesting that a mix of conventional and tourism specific approaches might improve both. This has become increasingly challenging because, as Nedergaard and Gyrd-Jones (2013, p. 764) observe, "markets (have) become ever more chaotic through the processes of globalization, technological evolution, increased competition, and rapidly changing consumer needs and wants." Understanding the combined impacts of individual initiatives that confront local and global changes is especially necessary for small island destinations with fragile economies and ecologies.

Certainly, tourism development cannot be treated as "by definition endogenous and fundamentally dependent on the organization of the territory itself" as Capello

and Nijkamp (2011) assert, but rather is a complex combination of localizing and globalizing processes. César and Monfort-Mir (2012) too consider that it is necessary to develop a consolidated theoretical framework. Hall and Williams (2009) and Hall (2009) conclude that while there is an obvious quest for better empirical evidence about innovation in tourism, [and that] quantification is essential. Articulating and estimating an empirical model must confront the limitations of available statistics with incomplete time-series complicated by changing metrics and definitions. Metrics for accommodation have shifted over time from beds, to rooms, to suites, indicating innovation in quality, alongside volume. Given these constraints, our approach is less detailed than other proposed cluster models. Kim and Wicks (2010), for example, propose a "global competitiveness of tourism cluster development" approach with the tourism cluster as "an organic system with symbiotic relationships." The clustering may be geographic, political, cultural, physical, or more commonly a mixture of several, and arguably as much perceptual as existential.

3 Caribbean Tourism

Their complex histories have endowed Caribbean islands with distinctive cultures and environments that provide the basis of their tourism products and markets—beyond the sun, sand, and sea of their tropical location. Spurred by rising incomes and passenger jet aircraft after WWII, tourism has become a major driver of economic growth, employment, and government revenues—accounting for from 8% to 40% of GDP (IMF 2014). Across the Caribbean, a dozen islands draw over 50% of visitors traveling from East Coast North America, (e.g., Aruba, The Bahamas, Bermuda, Virgin Islands). Beyond, the issue of accessibility, historical connections with a former colonial power including a shared language are similarly important. While the flavor of Caribbean destinations rests on their distinctive island cultures, with tourism as their principal export, few islands have many residents prosperous enough to share their visitors' tourism amenities.

The Caribbean spans 2.5 million km^2 across distances of 2.5 thousand km. Flight times range from 1 hour for visitors from coastal South America and 12 hours for Europeans. Between islands, travel is often indirect via mainland airports. For the major markets in the Eastern United States, the minimum flight time is from 3 or 5 hours, but with local travel, check-ins and security, home-to-accommodation typically consumes a full day. That said, the availability of direct flights, speedy border arrangements, and trouble-free local travel, are highly important to visitors to the Caribbean (Cole and Razak 2012). The numbers of arrivals in all islands are impacted by swings in visitors' home economies and seasonal weather. Several have suffered major temporary declines due to hurricanes, crime, and social troubles.

The Caribbean region's share of the global market is declining even though total arrivals continue to grow (WTTC 2018). North America, Europe, and the Caribbean Basin supply 52, 25, and 23% of visitors, respectively. Several islands attract the majority of visitors from their former European rulers: notably some 80% of arrivals

to Guadeloupe are from France. In contrast, political stances ensure that few Americans visit Cuba directly, despite their proximity. The type of hotel adopted across the islands reflects the tourist market and their social and economic conditions. Accommodations range from large casino resorts with several thousand rooms, through all levels of chain hotels and timeshare with several hundred rooms, to specialized boutique properties, and traditional pension and private rentals. As an overgeneralization, the accommodations favored by North Americans tend to be larger (in terms of the number rooms and facilities), while Europeans favor smaller properties, with comparable variation across age, family, or income.

Despite their marked differences, Caribbean destinations, nonetheless, are part of a regional Caribbean-wide market, and in turn, part of a global industry. International hotel chains operate globally and regionally. They share marketing, technologies, innovation, and investors, reflecting visitors' expectations and expenditures on amenities as adapted to local markets, etc., as well a corporate need to achieve scale economies and extend their brands. With considerable temporary and permanent migration between islands and beyond, there are importation of activities, cuisines, entertainment, and traditions. As a first approximation, for the cluster model estimation, it is assumed that, on the supply-side, underlying incentives for investment and innovations are shared. Similarly, on the demand-side, despite differences in preferences, visitors share a desire for a satisfying variety of accomodation, dining, and other attractions.

4 Aruba

Despite their many shared characteristics, individual Caribbean destinations experience distinctive challenges and opportunities, and responses. Specific local public and private initiatives and specific local and overseas disturbances modify any trajectory calculated via the estimated cluster model. The case study of Aruba later illustrates this.

Aruba is selected both for reasons both of familiarity with the Island's history and the availability of data (Cole and Razak 2009, 2012). Tourism in Aruba, like several other Caribbean destinations evolved during the 1960s and 70s from a few small hotels and occasional cruise ships. And,as with many other destinations, the decision to initiate, develop, or expand tourism was propelled by an economic crisis: In this case, the need to offset workers laid-off from the Island's global-scale oil refinery. The initial development involved American style chain hotels, heavily subsidized by the government and by airlines seeking to develop new routes for their new jet airliners. Tourism evolved as adjacent clusters, "low" and "high" rise, appealing to European and North American visitor, respectively. With a record of safety, fulfilled expectations, and political stability (protected within the Kingdom of the Netherlands) the island remains a favored destination.

Figure 1 shows the number of arrivals to Aruba from US states, Canada, the Netherlands, and neighboring nations and islands according to airport-to-airport flight time.

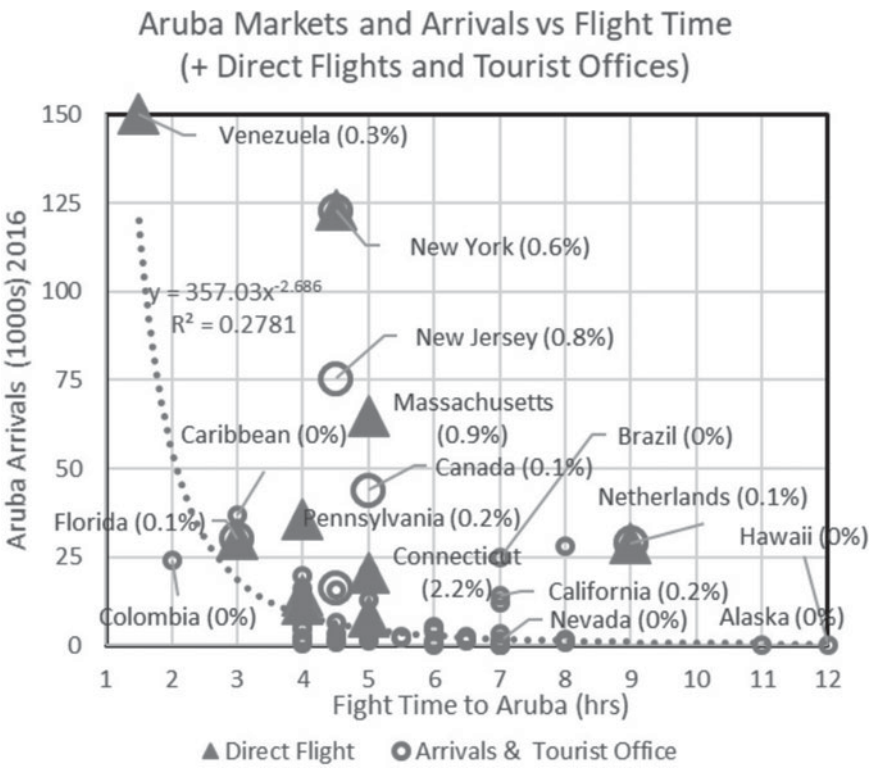


Fig. 1 Aruba markets and arrivals versus flight time

Here, it is evident that, while time-distance explains some of the variation, other factors: availability of direct flights (shown as triangles) and local tourist offices (shown as large circles) are relevant. Moreover, there is a chicken-and-egg relationship between marketing, access, and arrivals. The chart shows also the number of visitors as a percentage of their home market population. While there is a marked distance decay as with other gravity-style models, there are clearly many other factors involved, not least home-to-departure airport travel, political contingencies, or special activities. For nearby Venezuela, presently without direct flights to and from the USA, many "arrivals" are transiting via Aruba. Arrivals from more distant Nevada are primarily "junkets" to Aruba's casinos. As with other US-directed destinations, changed customs and border arrangements significantly determine both existing and new markets (Cole and Razak 2015).

As a favored destination, approximately half of travelers to Aruba return at least once, with some returning annually. Given this, there remains considerable pressure for new development. As a relatively prosperous community, residents make use of, as well as operate, tourist facilities. Nonetheless, the development path has been fraught.

Not least, the "final" shut-down of the refinery in the mid-80s promoted an over-subsidized nearly threefold increase in accomodation and arrivals. This crisis was followed by a series of stop-go policies toward new hotel construction, side-stepped by condominium and novel developments. These events have added to residents' recurring concerns about sustainability, immigration, and lost revenues.

Today, as a reflection of shifting income distribution worldwide, in several islands, including Aruba, wealthier visitors and residents are increasingly purchasing condominiums, villas, fractional ownerships and timeshares, for personal use and rental income. The expansion of this so-called "alternative" accommodation is facilitated greatly by internet marketing. In response, corporations are adopting flexible room use and ownership, meal-plans, and the like, impacting the endogenous structure of destinations. The implications of this are considered later.

5 Clusters within Clusters

Structurally, the model employed below treats a destination as a "product" comprising a cluster of activities, in turn part of the Caribbean cluster, and so on. As a component of global tourism, "the Caribbean" is a regional cluster sharing location, warm climate, and attractions. While some destinations, such as the USVI and the Bahamas, comprise multiple islands, only aggregate data are available, so for our analysis, these are treated as single clusters as are larger islands with several tourist centers, such as Jamaica and Puerto Rico. The choice of metric to measure spatial and non-spatial attributes is conditioned by the available data, typically aggregated across politically-defined territories At best, physical distance (or travel-time) from markets to the destination is a first approximation to access, just as the density of activities (such as rooms per km^2 or per km of beachfront) must be supplemented by other attributes. Arrivals, revenues, rooms, and the like are aggregated similarly. This limits the possibilities for modeling distinct tourist destination clusters within the larger Caribbean islands, territories, or groupings.

To the degree possible, the model separates exogenous and endogenous motivating perceptions and satisfactions: accessing the destination versus accessing activities within a destination cluster. Within a destination cluster, a visitor will be less satisfied if the tourist activities favored by them are too spatially distributed or inconvenient to access. This inevitably means that the physical design of a tourism cluster should be selective: formally or informally. Thus, accommodations, and other businesses and attractions should be coordinated to provide the destination's "product". In what follows, individual islands are approximated as single tourism clusters. That patrons use equivalent amenities closest to home or current situ is a central tenet of location theory. With tourism, the clustering of activities around accommodations demonstrates that visitors make use of proximate activities (Shoval et al. 2011). Others have observed that attributes, such as "cultural distance" also have impacts similar to travel distance (e.g., Patuelli et al. 2014; McKercher 2018).

The economic rationale for tourist area clusters is essentially that a single small or mid-sized hotel cannot generate the custom sufficient for visitors' other dining and activity needs, with sufficient variety for, say, a week of family vacation. This is simply a matter of requisite variety in demand and scale economies in production. The clustering of several mid-sized hotels promotes this, as does a large all-inclusive resort. But equally, many hotels attempting to serve many differentiated markets clustered with multiple diverse attractions become cluttered and less accessible for an individual visitor with specific preferences. Thus, destinations have to be selective. With this, the favored path for innovation becomes the evolution of distinctive destination cluster, including the planned introduction of new styles within a destination. This may incorporate business-specific adaptations and innovations, such as adding sea-facing rooms, constructing artificial beach, healthy menus, better marketing, and information, have implications for the overall spatial perceptions within a destination, just as airport facilities affect the net experience of travel. By adopting a given technology through design, market forces, or otherwise, a destination is positioned to serve selected markets (e.g., East Coast American families, well-heeled Europeans). A well-positioned destination offers a clear narrative and sufficiency in its components—accommodation, dining, entertainment, beach activities, and so on. These offer reinforcing synergies aesthetically and spatially, for the duration of each visit, and provide an enticement to return. The model and its empirical analysis center on this notion.

The prevailing technology within a destination cluster is characterized by the style of hotel adopted, boutique, all inclusive, timeshare, resort. Its size is approximated by the number of hotel rooms. Hotels have longevity, compared to most other tourism enterprises, typically a decade between refurbishing, bankruptcies, and changes in ownership. Moreover, data are available for most destinations. When clusters comprise few relatively components, discrete changes at a micro-level impact the macro-level, and vice versa. In this sense changes become "lumpy" or "quantized," at least during its initial and later transient development. For example, an additional property impacts occupancy and profitability destination-wide; a new destination in the region shift visitor options, and so on, exacerbated by time delays in planning and development, policy mis-steps, and seasonal climate and socio-political changes. The model helps clarify when and how such interactions might influence trajectories and so identify critical points in a destination's development.

6 A Global-Destination Framework

The conceptual framework for the model shown in Fig. 2 comprises several elements within and between the global and destination economies. The global economy (labeled 1) is driven by rising discretionary incomes and wealth and worldwide sources markets, finance, for the tourism sector, and also labor. This sets certain conditions on destinations, in general, for attractiveness to tourists and investors (2), that, if met by any given destination will ensure a sufficient supply of investors and

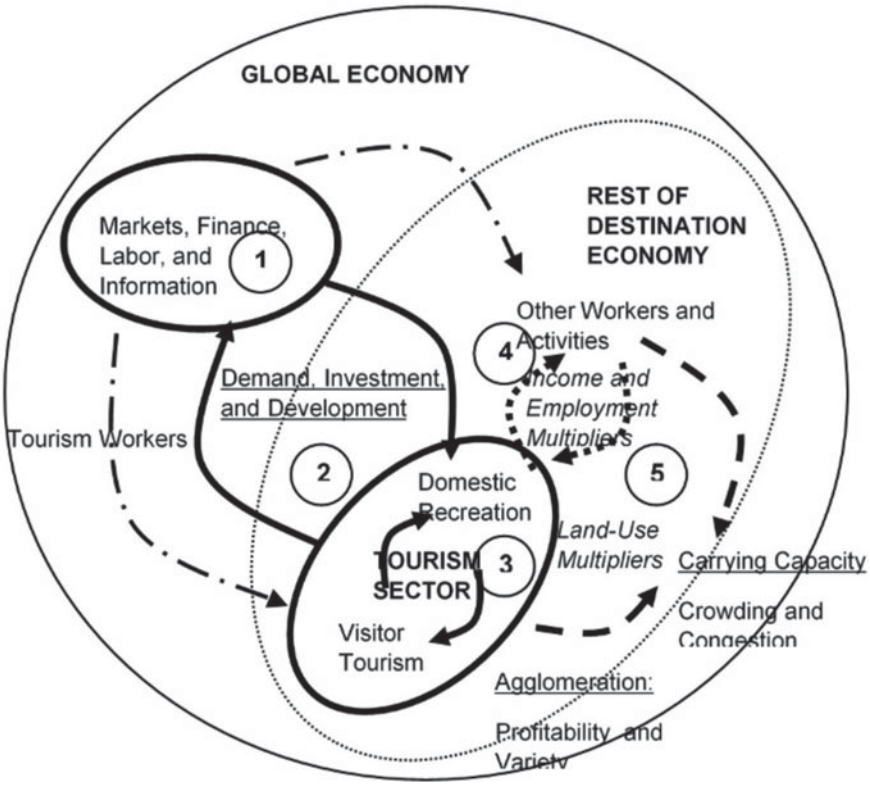


Fig. 2 Global-local destination model

visitors. This in turn sets off a process of agglomeration, first with economies, and subsequently diseconomies of scale (3). This agglomeration process has several interacting elements: reinforcing demand from both visitors and local residents, benefits in terms of cost and variety to accommodation and other tourism-related activities. Together these accelerate a destination toward its "carrying capacity" when a destination becomes congested or over-crowded. Congestion arises from expanding tourism both directly through overcrowded beaches or loss or authenticity, and indirectly via employment (4) and induced land-use for business and residences (5) and other downstream effects. In some destinations, the indirect implications for new residential land typically exceed those from tourism directly (Cole and Razak 2009).

The core assumptions about economic globalization in the model are the sufficiency and mobility of capital, labor, information, uncertainty, and demand. The notion of *sufficient* capital asserts that, provided an investment prospect meets international investor expectations capital will become available. Nonetheless, the volatility and fickleness of tourism demand ensure that investors in the industry seek above-average profitability, setting the investment hurdle or discount rate.

Although tourism demand is sourced worldwide, the activity itself is concentrated in specific locations—accessible clusters of accommodation, shopping, dining, entertainment, nature, and other activities. At this scale, as the destination grows, the dominant phenomena are synergistic agglomeration and saturation. The former arises through the clustering of supply and demand-side activities to enhance the attractiveness of products at a location to investors and market segments, the latter arises as the direct and indirect impacts of this localized activity approach some limitation or carrying capacity.

At the scale of production (and especially accommodation), the key characteristics are the incremental character of development: primarily from the lumpiness of new accommodation and the delays in implementation. Overall, with a high growth potential, increasing economies of scale (through agglomeration), plus decreasing economies (with saturation), plus discrete time-steps (decision-making and implementation) destination tourism has all the ingredients of a chaotic system. The next sections formalize the general phenomena of globalization, agglomeration, and discreteness as a discrete logistic equation. While the proposed form is similar to the familiar Lorentz equation, and the Butler tourist area life cycle (TALC) model, it has several distinctive features.

7 Tourism Life-Cycle Models

Variants of Butler's tourism area life-cycle model (TALC) remains the most enduring heuristic for understanding the evolution of tourist destinations (Butler 1980; Pearce 1989, 2001; Butler 2006). The original model argued for the existence of an S-shaped life cycle in the growth of a tourist destination with identifiable stages—exploration, involvement, development, consolidation, maturity, and stagnation—often followed by decline or rejuvenation. Numerous articles and doctoral theses have analyzed and elaborated on the assumptions, generality, and practicality of the model. Empirical analyses typically focus on single destinations.

While the overall S-shaped trend and the idea of stages of development are widely-accepted, there remains a great deal left unexplained by the TALC. This includes, not least the tremendous variability in arrivals, occupancy, and accommodation, the irregular patterns of growth and decline, and the succession of products and resorts, or dramatic reactions to relatively insignificant events (see, e.g., Lundtorp and Wanhill 2001). Butler (2009) too has concluded that a simple model like the TALC and its variants cannot predict in detail the future of a specific destination especially those engaged in the global competition that is tourism today.

The TALC equation is formally identical to the Lorentz chaos model (1963) but does not exhibit the variability associated with tourism primarily because, empirically, the growth potential (as opposed to the growth rate) does not reach the required level. Indeed, it is generally considered that the growth potential of human population systems (cities, nations) is well below that required to generate chaos (see, e.g., Batty 2005). Nonetheless as this author has shown elsewhere that including an

additional term in the Lorentz equation to take account of the synergistic effect of clustering boosts the growth potential to a level required to generate highly variable, if not chaotic, trajectories in tourism and other metropolitan areas (Cole 2009, 2012a). This variability is deterministic, in that it arises from endogenous aspects of the tourism system such as tendencies to over-investment. This behavior contrasts with the volatility due to irregular "random," singular and concatenated exogenous shocks, such as those from natural disasters or irregular tourist demand (Cole 2018). This volatility, in turn, may be moderated by countervailing policy (Cole 2012b).

Three specific modifications from the TALC are: First, formally, the TALC equation implies that the attractiveness *always* declines as the number of visitors increases, so the attractiveness of a destination declines from day one. Including that clustered enterprises have mutually synergistic properties that initially enhance the attractiveness of a destination. Second, the TALC uses a continuous (differentiable) equation for the number of visitors. This does not account for the discrete room-size of accommodations. This "lumpiness" provides a less volatile metric for modeling (than visitor arrivals) with substantive impacts on model trajectories. This is both in the early stages of a destination's growth when, for example, a large new hotel may double total accommodation at a destination, or later when such properties close or are redeveloped. Third, specific tourism policies, notably subsidies and moratoria, are introduced explicitly. While several of these issues are discussed in the literature cited above, the modifications arguably make the model more plausible theoretically and help us to untangle the available data.

8 "The Global Innovation Cloud"

Hjalager (2006) cautions that while globalization is progressing in scale and scope, the practical outcomes are unevenly distributed across enterprises, countries, and regions. For smaller destinations, characterized by Caribbean islands, even attempts to delineate localized regional or national innovation systems are problematic, since the innovation-base of tourism is distributed across chains, international organizations, and expatriates, visitors, and returning and domiciled nationals. This caution applies also to the present model with the rider that her stages of globalization are to be distinguished from the historical phases of globalization that have led to the diasporas and cultures upon which tourism so often draws (see, e.g., Pearce 1989; Chambers 2007). This is certainly true of the case study in this paper (see also Cole and Razak 2009, 2012). The tension between local and overseas content and expectations of the industry (ownership, management, immigration, revenues) poses a central dilemma of destination management, addressed in the sustainable and alternative tourism literatures.

In the cluster model, assumptions as to an abundant global demand and investment are complemented by that of a "global innovation cloud." This reaches well-beyond the Caribbean, but has attributes linked to the location, vintage, and markets of the region's tourism. A destination's ability to absorb and translate global and regional

know-how depends on skills, experience, and organization. Destination "innovation" includes the transfer and adapting of technologies to local conditions, as well as local products adapted to visitor markets. Local "unique" cultures comprise a layered innovation heritage from previous eras of globalization—centuries of migration and adaptation to local resources. Exploiting this depends on an understanding of visitor markets and residents' aspirations, and concerns.

At the destination level, given the high degree of globalization of tourism as an industry, the relative smallness of destinations compared even to that of the major tourism corporations, the majority of innovations are introduced from outside. With larger enterprises, changes are mandated via international management, corporate policy choices, and in other peripheral ways via visitors, expatriate entrepreneurs, immigrants, and locals traveling and living abroad, transferring activities from other places with similar climate, geography, or history. The same diffusion happens in reverse with the smaller number of local innovations by hotel managers, restaurant and tour operators, and others diffusing overseas. Collectively, this upward diffusion from many destinations and corporations provides the innovation cloud for businesses and destinations to draw upon. In the simulation model, these innovation streams are superimposed onto the cluster model. Table 1 elaborates on the 1–5 components shown in Fig. 3, to be formalized further below.

Tourism innovations may be significant or marginal and adopted substantively or partially, but in aggregate they constitute the *quantifiable* destination-level innovation. Together, globalized demand and investment, localized clustering, innovation, and policy can lead to a wide variety of dynamic trajectories.

9 Model Equations

This section summarizes the model equations given in Cole (2007, 2011, 2012).

9.1 Demand-Side

The intrinsic attractiveness of destination-specific variables: attractiveness $a(t)$, marketing-effectiveness, m, and visitor market-segment demand v, including accessibility, all of which are variables related to the attributes and management of individual destinations. The combination $mva(t)$ measures visitors' "preparedness-to-pay" based on their prior perception of the destination. This is modified over time. The overall attractiveness also varies as the number of available rooms in the destination cluster, N changes. Thus, overall transient attractiveness, and in turn expenditures per available room, is a combination of the intrinsic attractiveness, $B = B(t)$, the requisite variety or synergistic agglomeration stylized as $(1 + N(t)/A)$, and the crowding or carrying capacity, $(1 - N(t)/C)$. These account for distance-related expressions such as crowding at the destination or internal accessibility of attractions. For the

Table 1 Elements of destination aggregate technology and innovation

	Model specification
1. Global Innovation Cloud Product and Process Innovation and Diffusion from many destinations and sectors Destination selection by visitors and Investors based on experience, marketing, etc. Distance from markets and other accessibility variables are subsumed into the intrinsic attraction parameter	$B(t)$ with $\partial B/\partial t < 0$
2. Synergy and Choice Enhancing Product Innovation Emphasizes Product Quality, Variety, Novelty, Creative Adaptation, Commodification of Heritage, Co-location and Customization within Geographic and Thematic Clusters	$A(t)$ with $\partial A/\partial t < 0$
3. Congestion and Cost Reducing Process Innovation Emphasizes Process through Up-scaling, Design, Refinement, Delivery, Management, Marketing, Transportation, and Incorporating Products, Planned, and Unintended within Geographic and Thematic Clusters	$C(t)$ with $\partial C/\partial t > 0$
4. Destination-Specific Heritage Natural and Cultural Attractions Embedded Technology, Crafts, Customs, and Organization. Innovated, adapted, and accumulated technologies drawn from successive layers of native, immigrant, and industrial heritage during previous phases of globalization (4a). Potential source of new products but also depleted and transformed over time	$B(0)$, $A(0)$, $C(0)$
5. Discrete Planning and Policy Innovation New styles of Accommodation and Attractions, Visitor Safety, Arrivals, Quality Control, Collective Events such as Festivals, Destination Marketing, and Planned Repositioning	Adjustments to A, E, B, C and other technology parameters (see text)

estimation below, the synergy and congestion terms are uniform across islands, but vary of over time.

$$v(t) = B(t)(1 + N(t)/A)(1 - N(t)/C) \tag{1}$$

The importance of the synergy term for revenues is illustrated by Fig. 4 which shows how the synergy and congestion process combine to give an inverted U-shaped

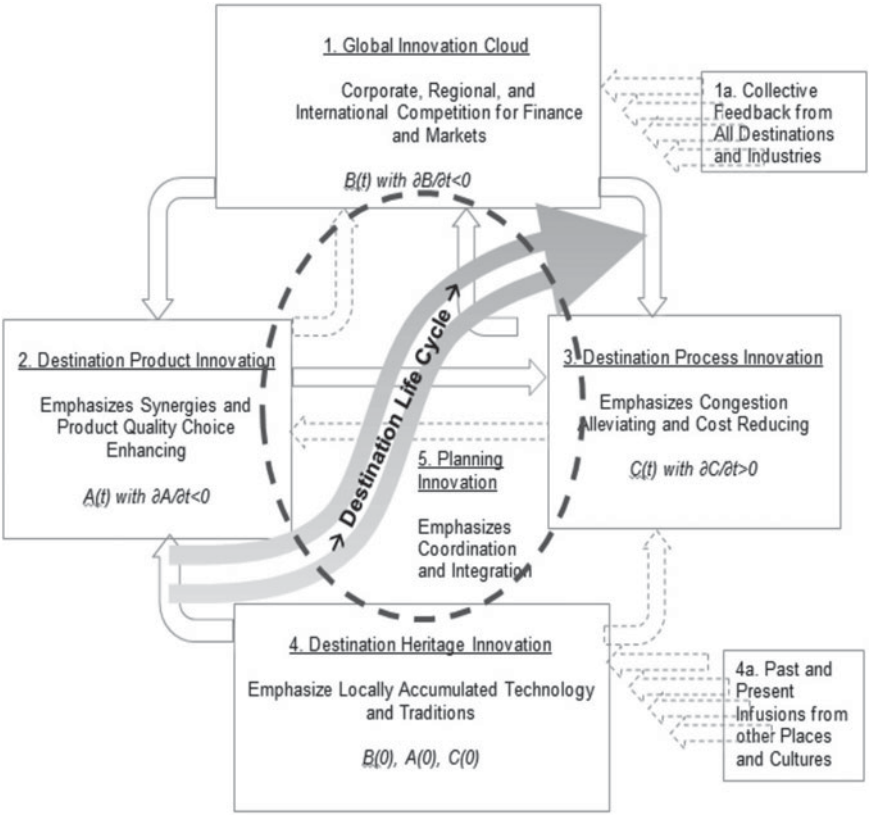


Fig. 3 Global tourism innovation cloud

curve. The curve intercepts the horizontal axis at $-A$ and C and has a maximum at $N = (A + C)/2$ indicating that attractiveness and hence revenues per room, profitability, and growth rates will increase in the period following take-off. Different market segments and competing destinations have different parameters, so the intersection between their overlapping U-curves provides the criteria for tourist switching between them.

9.2 Supply-Side

A key assumption on the supply-side is that global investors base their decision to finance new properties primarily on perceived destination-wide performance, expected profitability, risk, and market size. In practice, these are based on current occupancy rates and forecast visitors, translated into the number of new rooms to be developed. Investment is forthcoming provided the expected rate of return satisfies

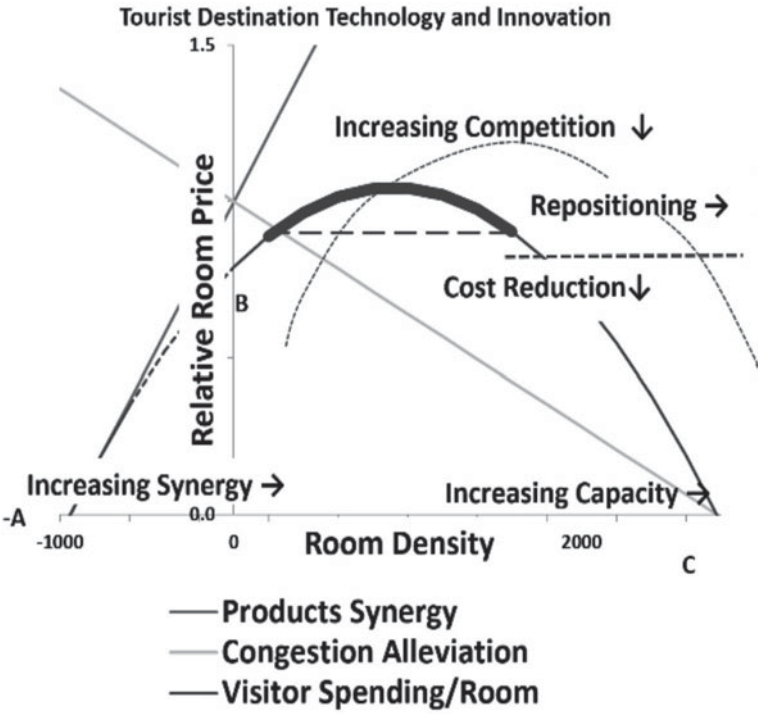


Fig. 4 Cluster synergy, congestion, and innovation

some hurdle, such as short payback horizon. Given this, the investment potentially available $K(t)$ is the product of total rooms at the resort, $N(t)$, average annual surplus per room, $p(t)$, and the maximum number of years to recoup investment, the discount horizon for global capital is y.

$$K(t) = \alpha N(t)\, p(t)\, y \tag{2}$$

The parameter α accounts for leveraging of more patient capital from secondary sources: The perceived-investment-opportunity "clearing" assumption for abundant footloose capital is that $\alpha = 1$. Profitability is the average destination-wide margin, sales $S(t)$ minus costs per room,

$$p(t) = S(t) - e. \tag{3}$$

The cost per room, e, includes all operating costs including local wages, taxes, and other expenditures, and overseas payments such as franchise fees and management. If labor is abundant locally, or through migration, then wages remain relatively

unchanged. If profitability turns negative, then disinvestment occurs, and the number of rooms declines.

If a destination's style of tourism incorporates only accommodations with h rooms, then the number of new rooms $n(t)$ to be developed or closed given the anticipated revenue stream is

$$n(t) = \{N(t)p(t)\alpha y/k\}_h \tag{4}$$

Here k is the total investment cost required per room. The subscript indicates that the number of rooms at a destination steps up or down only in multiples of h. The size of h has implications both for the initial take-off of a destination and its and volatility in maturity, as do time lags. For the time-step simulation, a key ingredient is the duration between the signal triggering a decision and the implementation and operation of that decision. For new hotel construction, this lag-period may be several years.

9.3 Time-Step Simulation

From Eq. (3), the period-to-period trajectory for the number of hotel rooms at the destination is

$$N(t+1,h) = N(t) + \{N(t)p(t)\alpha y/k\}_h \tag{5}$$

Equations (4) and (5) are combined to give the computed growth equation:

$$N(t+1) = N(t) + \{(N(t)\alpha y/k)(maB(1+N(t)/A)(1-N(t)/C)-e)\}_h \tag{6}$$

In contrast to the TALC model, Eq. (6) includes synergy from clustering, which may raise the growth potential to levels that generate cyclical, even chaotic trajectories, exacerbated or stalled by lumpy investment, and multi-year time lags.

9.4 Technical Change

The "global cloud" assumption implies systemic innovations (as opposed to discrete innovations) are transmitted across the industry. For purposes of estimation, below, these are treated as exogenous uniform time-varying changes. For example,

$$\begin{aligned} &\text{Intrinsic Attractiveness, } B(t+1) = B(t)(1+\beta);\\ &\text{Synergy, } A(t+1) = A(t)(1+\alpha);\\ &\text{Congestion, } C(t+1) = C(t)(1+\gamma). \end{aligned} \tag{7}$$

The historic technological changes to β, α, and γ are estimated from trends in the B, A, and C parameters across all destinations. They represent region-wide aggregate scale-related innovation in Caribbean tourism.

10 Parameter Estimation

The section summarizes an estimation of tourism innovation at the destination level. As explained earlier, Eq. (6) is an extension of the TALC model, which (as noted earlier) in turn is a variant of the Lorentz model. Given the generally tumultuous global background for destination tourism, these relationships refute that there is a long-run equilibrium relationship between tourism development overall and economic growth. Tourism development in a small territory is intrinsically volatile, and subject to regular disruptions, making estimation of the non-linear dynamic equations somewhat challenging. Whereas most research on chaos models deals with the mature stage after the iteration has "settled down," here we are equally concerned with all stages of take-off, development, and maturity, and the accompanying evolution of tourism technologies. This is illustrated by the two empirical examples for the island of Aruba in the next section.

Opportunities for region-wide parameter estimation are ultimately limited by sample sizes and the consistency of data and definitions across time and destinations (Cole 2009a, 2012). The Caribbean, as a regional entity has sufficient variety to provide a plausible estimation of the key parameters of the model from data on accommodation by destination, and estimates of capital costs, depreciation, construction lags, and island geographic data. Model validation is via a "two-step" process (cross section across several destinations, then longitudinal for a single destination). The parameters established for the take-off and growth stages of development lead to empirically credible trajectories in the more mature stage and are consistent with data on revenues, capital expenditures, and operating costs. The inverted U-curve shown in Fig. 4 describing the relationship between size of a destination and its attractiveness to visitors is estimated using cross-section data for Caribbean and other islands.

The parameters used for capital costs and development lags are based on the empirical literature, and statistics for visitor arrivals and spending are from regional organizations (CTO, ECLA, UNWTO), supplemented by other sources. The growth potential μ depends on $\alpha y/k$, mav, A/C, and b. We set $\alpha = 1$ assuming that all perceived investment opportunities are taken, $y = 3$ reflecting an expected return of around 30% annually, the output/capital ratio, $k = 3$ based on the "1:1000 rule" that hoteliers should charge \$1 nightly room rate for each \$1000 cost of construction per room (Rohlfs 2003; Smith 2006; PKF 2007). The time step, T, the typical time to implement a decision to develop a new property is 2-years (Koeva 2000; Maoz 2008). Since the investment horizon and output/capital ratio are similarly adjusted, the key ratio y/k is independent of the time-step. On the demand-side, based on the estimations in Cole (2009a, 2012) the ratio A/C of requisite variety (synergistic agglomeration) to

crowding (capacity) is set at 15–20% noting that the peak to intercept, given by $(1 + C/A)(1 + A/C)/4$, is sensitive to this ratio. Based on Caribbean-wide averages, the initial occupancy rate $mav = 60\%$ and costs of operations are 50% respectively of the pre-agglomeration full-occupancy annual income. The estimation of $B(t)$,$A(t)$, and $C(t)$ and their annual rates of change β,α, and γ for 20 destinations in the Caribbean illustrated in Fig. 5 are made using ECLAC and CTO data from 1987 and 2001.

Figure 5 shows the reported and model-predicted spending per visitor for each island and year. If the recorded spending is typically above the prediction, this suggests that the intrinsic attraction of the destination is above average, and vice versa, and so may be used to further dissect the contributions of access and intrinsic attractiveness. Alternatively, as illustrated below, the parameter B for a given destination and the estimated synergy and congestion parameters may be used to explore past and potential trajectories for that destination. The estimated magnitudes of the three growth parameters suggest that on average, across the Caribbean, value competition nearly negates positioning and congestion innovation: in effect, the intense global

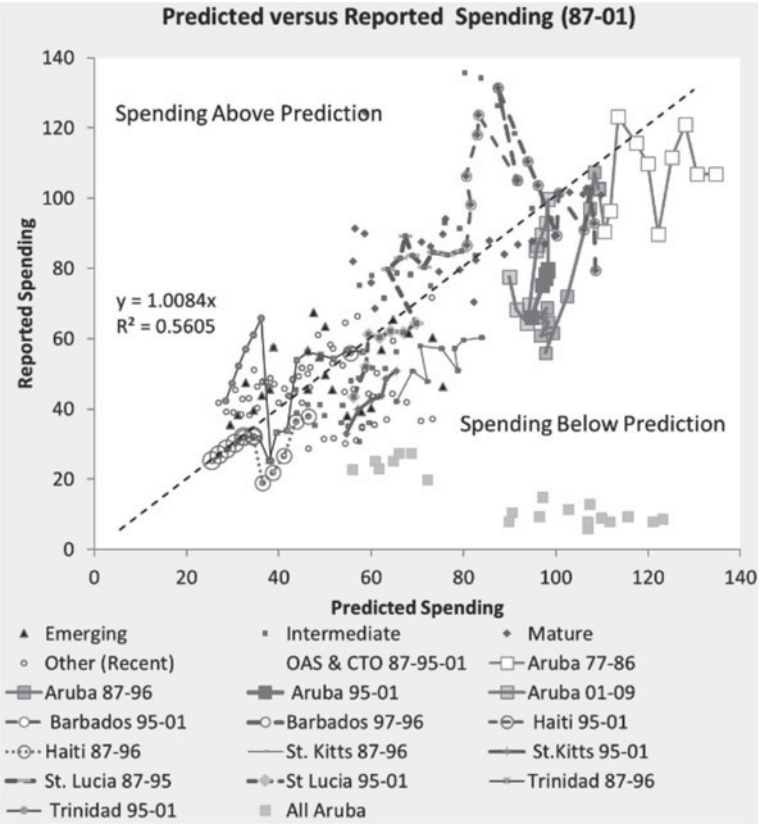


Fig. 5 A cross-island estimation for Caribbean destinations

and regional competition, empirical evidence of Baumol's "innovation arms race" cited by Hall and Williams (2008).

11 Model Trajectories

The importance of the parameters to model trajectories changes over the projected life cycle. During the take-off phase of a tourist destination, lumpiness in the accommodation stock conditions the required seeding and take-off conditions for the destination (Cole 2007). Minimally, the net expected return after subsidies and time to reach target occupancy must be sufficient to attract investors. This implies that emergent resorts with large accommodations (small N, large h) generally require public subsidies until this threshold is met. In this initial stage, the model is sensitive to small changes in parameters that might determine the success or failure of the destination. Once take-off has begun, the attractiveness of the destination is greatly enhanced through clustering of other accommodations, sufficient to generate the variety desired by visitors. With this, the pace of development is accelerated. In less prosperous islands, with limited home market, or poverty-related issues, large resort-style projects from the outset incorporate the dining and other facilities needed to enhance synergies.

As development reaches a level that the destination is perceived as overcrowded, the congestion component of the model begins to dominate the growth trajectory. At this stage, lags between the planning and operation promote excess room capacity so profitability slows and some businesses fail. Depending on precise circumstances (illustrated by variation in parameter values for characteristic accommodation, rates of return, and so on), this results in property closure, cyclical tendencies, or other volatility.

Speculation about chaos in tourism systems arises mainly from their erratic performance during the mature stage. While the saturation and congestion at a destination may be delayed by various types of technical change—changing products, improving efficiency of land-use, and so on–this does not necessarily eliminate volatility or concerns about sustainability. To the extent that mis-timing of investment is the underlying cause of volatility. Cole (2012a) provides a counter-cyclical adjustment rule to smooth the growth propensity below that expected to cause overshoot following an accelerated phase of development and remove fluctuations during the mature stage of development, and Cole and Razak (2004) proposed a slower pace of development for Aruba tied to longer-term domestic needs and population growth.

12 Empirical Application: Past and Projection for Aruba

Ideally we would test the equations against longitudinal time-series for multiple individual destinations. Unfortunately, except those for total arrivals, there are rather few

reliable life-cycle-long annual time series data sets. As explained earlier, the estimated parameters here are based on data from the Caribbean-wide destinations, from regional and international agencies. These are used as a starting point for simulation of a comparatively data-rich destination, Aruba.

Records on arrivals and accommodation in Aruba have been assembled from the beginning of international tourism in the early 1950s (Cole and Razak 2009). Visitor expenditure estimates are available only from 1972 onwards but definitions, sampling, and indexing vary considerably across sources, at least until the 1990s. The data from different sources (adjusted to consumer prices of their principal market) and the consolidated trend (averaged across all available sources for a given year) are shown in Fig. 6. For projections and other model simulations, operating costs, including investment, wages, subsidies, and so on are adjusted exogenously as appropriate.

The volatility in occupancy seen in earlier years in Aruba arose from the relative large-scale accommodation that has always characterized the Island's style of tourism, and during the 1980s from an unfortunate concatenation of local and international events (Cole 1986, 2007). Beyond the factors included explicitly in Eq. (2), massive incentives (government-backed guarantees as the core of a recovery strategy following the closing of the Island's major oil refinery) propelled a nearly threefold increase in hotel accommodation between 1985 and 1993 leading to unopened

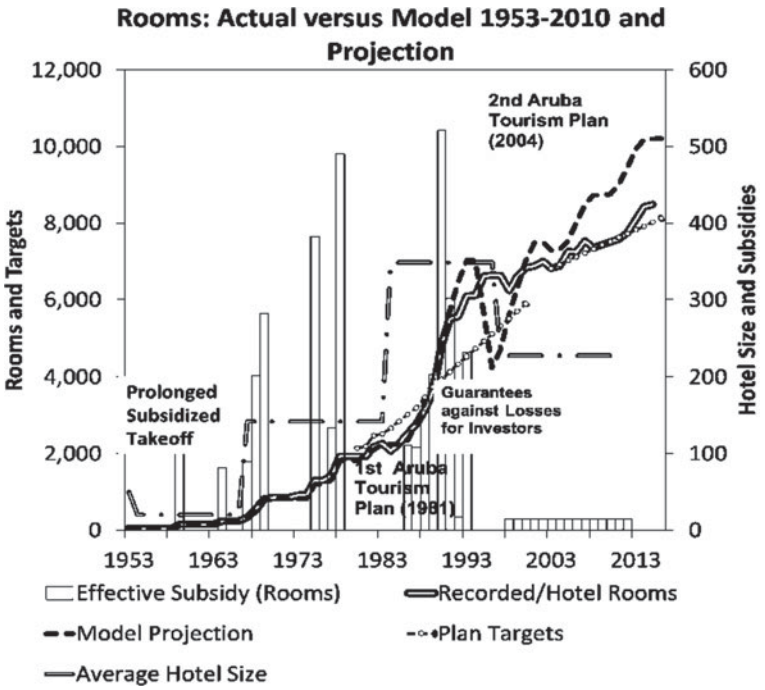


Fig. 6 Backcasting and forecasting Aruba

properties and a suspension of new development. This involved a structural shift in the composition of accommodation toward timeshare from under 20% to over 50%. While timeshare daily revenue per visitor is roughly half that of hotels, their occupancy is less affected by seasonal and other variabilities.

The model plausibly backcasts the observed early development, rapid growth overshoot, and a decade of disruptive fluctuations, at least until the early-2000s. It is apparent, however, from Fig. 6 that the post-2004 projections of hotel and timeshare rooms using the model over-estimate the reported growth of accommodation in Aruba by about 1700 rooms—approximately equivalent to 3–4 Aruba-style hotels. The explanation appears to be that, even with a slow-down on major hotel expansions, the increasing demand was taken up by new "alternative accommodation" (private homes, apartments, villas, condominiums), not included in the official accommodation statistics. The number of visitors using these "alternative" accommodations increased by 33% in 2015, comparable to growth in destinations in the USA, EU, and elsewhere. Although the "rooms" are mainly in existing properties, the advent of on-line direct marketing via AirBnB, TripAdvisor, etc., has propelled expansion of this alternative. A web search of several online sites (adjusting for size, bookings, timeshare rental, Internet growth rate, etc.) suggests that this is equivalent to about 1500 rooms. This closes the "prediction gap." Internet marketing has given old technology—B&B and private rentals—a new life and is thus another step in aggregate island-wide innovation. This is illustrated in Fig. 7.

As of the time of writing, the full implications of this innovation in tourist accommodation are unclear. Approximately half of these private rentals are close to the main tourist strip, in already-constructed homes, with the new visitors using established tourist beaches and other nearby amenities (Cole 2014). This exacerbates present crowding on the primary tourist areas. This rapid growth is relatively unfettered since, unlike the established hotels and timeshare properties, it is not governed by investor returns, public planning approvals, and industry standards that serve to moderate the pace of growth and balance development objectives. In response, to these less expensive offerings, some established hotels are shifting to more all-inclusive arrangements. This reduces spending in the local economy and the prosperity that underpins a tourist-destination's livelihood (Hepple 2019). A pressing question therefore is whether these accommodations will exacerbate congestion, and reducing the appeal, of existing clusters, or whether they can be enticed through policy to nucleate new tourism clusters and offerings offs (Razak and Cole 2019). The policy challenge for Aruba—and presumably for similar destinations—is that the extended consequence may be to undermine the existing tourism offerings and their sustainability.

13 Conclusions

This chapter has described a model of small destination tourism and estimated its main parameters using data for Caribbean islands. An empirical application for

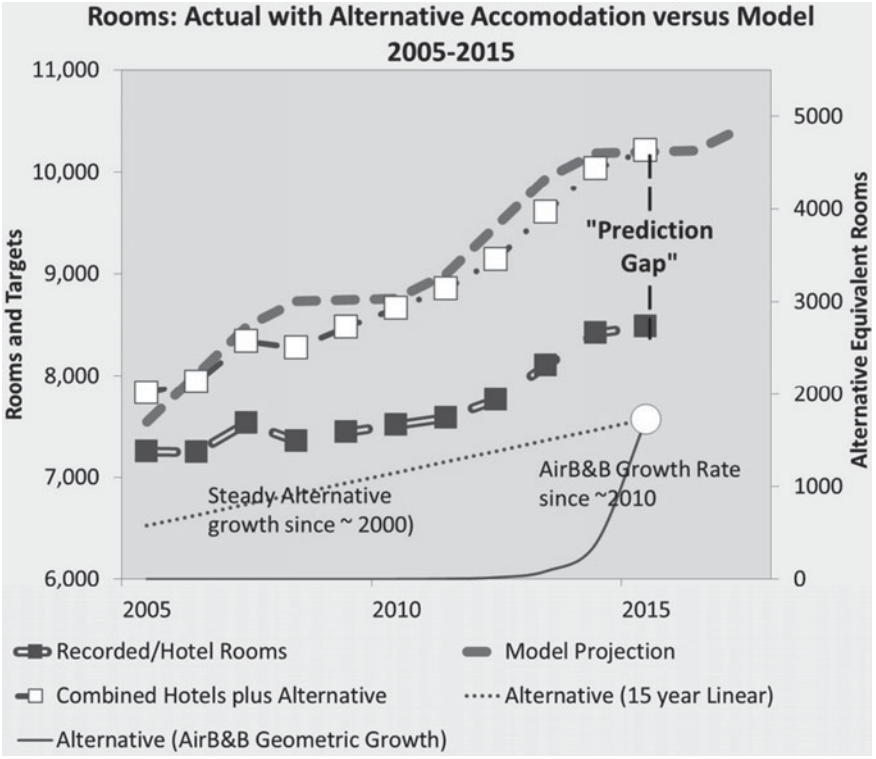


Fig. 7 Closing the prediction gap

the past and near-term for the island of Aruba was presented. As shown here, our empirical estimation supports the notion of a cluster as the underlying structure of tourism across small island destinations and implies a long-run similarity in terms of aggregate innovation across these islands, despite their distinctive attributes. Deviations from average performance depend on other variables such as market segments, marketing, specific attractions and amenities, access, safety, service, products, inputs, and policy.

The three core parameters of the model describe the intrinsic attractiveness of a destination, cluster synergies, and congestion. Aggregate innovation is incorporated as a steadily improving Caribbean-wide technical change modifying these parameters. The argument for this is that with such a globalized industry and the presence of international enterprises in most destinations sharing competitive international markets, islands share similar information and concerns, and a common pool of innovations and technology. That said, the timing of incentives for change to increase arrivals and spending, to promote new investment, and so on, depends greatly on local circumstances, as the example of Aruba clearly shows.

While there is empirical variability across destinations and over time, matching model trajectories to the observed trends have narrowed the range for parameter combinations for the clustering and associated technology change across the Caribbean. Further, the example of alternative accommodation in Aruba suggests that despite considerable differences in scale and operation from existing accommodation, they share the underlying growth parameters of the estimated model. That the assumption of a uniform return on all accommodation in Aruba is sufficient to reconcile projections with available data, again suggests that rates of return (net of risk premiums) are uniform across accommodations within islands.

Beyond structure and estimation, the tourism cluster equations provide a starting point for exploring phenomena linked to tourism chaos and complexity. For example, individual shocks, cyclical, and stochastic events may be introduced (Cole 2012b). When the system is near a critical point, a small disruption can have significant short- and longer-term outcome. The model findings also suggest rules for switching between competing products and destinations. At the regional and global levels, the size and variety of markets, untapped destinations, chains, and investors are ultimately constrained and discrete. Just as discrete and poorly-timed developments can disrupt growth at the destination level, the emergence of new destinations and products and overall worldwide constraints on markets may be disruptive at the global level.

To refine parameter estimation on the demand or supply-side and further dissect the contributions to synergy, congestion, access, intrinsic appeal, or other phenomena, it is necessary to account for the Caribbean-wide fluctuations in visitor markets and the local variations in individual destinations. This requires us to address outstanding anomalies and gaps in the available data and to disaggregate the data for multi-centered destinations, and their differential access to markets, or adopt a vintage specification for technology with implementation at each destination linked, to the pace and scale of investment. Whether, ultimately, modeling at a more detailed and reliable *empirical* description might best proceed by modeling upwards from discrete to collective properties, or downwards from the aggregate to the discrete, or both, remains an outstanding question. While the increasing availability of "big data" for individual properties, in principle, facilitates more disaggregated analysis, the empirical challenges in cleaning and reconciling data are considerable (see, e.g., Yin et al. 2019).

References

Batty, M. (2005). *Cities and complexity*. Cambridge: MIT Press.

Buhalis, D. (2000). Marketing the competitive destination of the future. *Tourism Management, 21*.

Butler, R. (1980). The concept of the tourist area life-cycle of evolution: Implications for management of resources. *Canadian Geographer, 24*(1), 5–12.

Butler, R. (2009). Tourism in the future: Cycles, waves or wheels? *Futures, 41*.

Capello, R., & Nijkamp, P. (2011). Regional growth and development revisited. In R. Stimson, R. Stough, & P. Nijkamp (Eds.), *Endogenous regional development, perspectives, measurement and empirical investigation* (pp. 301–324). Edward Elgar Publishing Limited.

Carlsen, J., & Butler, R. (2011). *Island tourism: Sustainable perspectives*. CAB International. www.cabi.org

Carlsen, J., Liburd, J., Edward, D., & Forde, P. (2008). *Innovation for sustainable tourism: International case studies*. Western Australia: Curtin Business School, Curtin University.

César, C., & Monfort-Mir, V. (2012). Measuring innovation in tourism from the Schumpeterian and the dynamic-capabilities perspectives. *Tourism Management, 33*.

Chambers, E. (2007). Tourism on the frontier of culture and place. *Futures, 41*(6), 335–426.

Cole, S. (2007). Beyond the resort life cycle: The micro-dynamics of destination tourism. *Journal of Regional Analysis and Policy, 37*(3), 254–265.

Cole, S. (2010). The regional portfolio of disruptions, protection, and disasters. *Annals of Regional Science, 44*, 251–272.

Cole, S. (2011). A logistic tourism model: Resort cycles, globalization, and chaos. *Annals of Tourism Research, 36*(4), 689–714.

Cole, S. (2012a). Synergy and congestion in the tourist destination life-cycle. *Tourism Management, 33*(5), 1128–1140.

Cole, S. (2012b). Managing chaos in nonlinear economic systems: Globalization and destination tourism. In S. Banerjee (Ed.), *Chaos and complexity theory for business management: Nonlinear dynamics*. ISI Global.

Cole, S. (2014). *Sustainability, innovation, and competitiveness in tourist destinations, forum on sustainable tourism in Latin America and the Caribbean.* Oranjestad: University of Aruba.

Cole, S. (2018). Concatenated shocks with resilience (Chap. 6). In Y. Okuyama & A. Rose (Eds.), *Modeling spatial and economic impacts of disasters*. Springer.

Cole, S., & Razak, V. (2009). How far, and how fast? Population, culture, and carrying capacity in Aruba. *Futures Journal of Policy, Planning, and Futures Studies, 41*(6), 414–425.

Cole, S., & Razak, V. (2012). Island Awash—Sustainability and social complexity in the Caribbean. In R. Phillips (Ed.), *Quality of-life community indicators for recreation and tourism management*. Springer.

Cole, S., & Razak, V. (2015). *Relocating CBP border inspections: The potential impact on tourism in the USVI*. National Center for Risk and Economic Analysis of Terrorism Events (CREATE), University of Southern California.

Decelle, X. (2004). *A conceptual and dynamic approach to innovation in tourism*. OECD.

Freeman, C., & Soete, L. (1987). *Technical change and full employment*. Oxford: Basil Blackwell.

Hall and Williams. (2008). *Tourism and innovation*. New York: Routledge.

Hepple, J. (2019). The road to sustainable tourism. In *Aruba Tourism Sustainability Symposium*, Casa Cultura, Aruba, June 14, 2019.

Hjalager, M. (1997). Innovation patterns in sustainable tourism: An analytical typology. *Tourism Management, 18*(1), 35–41.

Hjalager, M. (2006). Stages in the economic globalization of tourism. *Annals of Tourism Research, 34*(2), 437–457.

Hjalager, M. (2010). A review of innovation research in tourism. *Tourism Management, 31*(2010), 1–12.

IMF. (2014). *Revisiting tourism flows to the Caribbean* https://www.imf.org/external/pubs/ft/wp/2014/wp14229.pdf

Kim, N., & Wicks, B. (2010). Rethinking tourism cluster development models for global competitiveness. In *International CHRIE Conference*, July 30, 2010. https://scholarworks.umass.edu/refereed/CHRIE_2010/Friday/28

Krugman, P. (1991). *Increasing returns and economic geography*. Princeton.

Lorentz, E. (1963). Deterministic non-periodic flow. *Journal of Atmospheric Science, 20,* 130–141.

Lundtorp, S., & Wanhill, S. (2001). The resort life cycle theory: Generating processes and estimation. *Annals of Tourism Research, 28,* 947–964.

McKercher, B. (2018). The impact of distance on tourism: A tourism geography law. *Tourism Geographies*. https://doi.org/10.1080/14616688.2018.1434813

Miles, I. (2016). Twenty years of service innovation research. In M. Toivonen (Ed.), *Translational Systems Sciences: Service innovation: Novel ways of creating value in actor systems* (Vol. 6). Springer.

Murphy, K., et al. (2000). *An exploratory study of global issues impacting the future of tourism in Aruba.* Florida: Rosen College of Hospitality Management.

Nedergaard, N., & Gyrd-Jones, R. (2013). Sustainable brand-based innovation: The role of corporate brands in driving sustainable innovation. *Journal of Brand Management, 20*(9), 762–778. https://doi.org/10.1057/bm.2013.16

Nordin, S. (2003). *Tourism clustering and innovation: Paths to economic growth and development*. Oestersund, Sweden: European Tourism Research Institute, Mid-Sweden University.

Ozturk, H. (2009). The role of cluster types and firm size in designing the level of network relations: The experience of the Antalya tourism region. *Tourism Management, 30,* 589–597.

Patuelli, P., Mussoni, M., & Candela, G. (2014). Cultural offer and distance in a spatial interaction model for tourism. *Economics and Business Letters, 3*(2), 96–108.

Pearce, D. G. (1989). *Tourist development* (2nd ed.). Longman.

Plaza, B., Galvez-Galvez, C., & Gonzalez-Flores, A. (2011). Orchestrating innovation networks in e-tourism: A case study. *African Journal of Business Management, 5*(2), 464–480.

Poon, A. (1988) Innovation and the future of Caribbean tourism. *Tourism Management*.

Porter, M. E. (1990). *The competitive advantage of nations.* New York: Free Press.

Pratt, A., & Jeffcutt, P. (2010). *Creativity, innovation and the cultural economy: Snake oil for the 21st century?* London: Routledge.

Razak, V., & Cole, S. (2019). Aruba tourism: Maturity, life cycles, boutique hotels, and beyond. In *Aruba Tourism Sustainability Symposium*, Casa Cultura, Aruba, June 14, 2019.

Russel, R., & Faulkner, B. (1999). Movers and shakers: Chaos makers in tourism development, *Tourism Management, 20*(4), 411–423.

Shoval, N., McKercher, B., Ng, E., & Birenboim, A. (2011). Hotel location and tourist activities in cities. *Annals of Tourism Research, 38*(4), 1594–1612.

Utterback, J., & Abernathy, W. (1975). A dynamic model of product and process innovation. *Omega, 3*(6). Pergamon Press. Printed in Great Britain.

Vernon, R. (1966). International investment and international trade in the product cycle. *Quarterly Journal of Economics, 80,* 190–207.

Weidenfeld, A., Williams, M., & Butler, R. (2010). Knowledge transfers and innovations amongst attractions. *Annals of Tourism Research, 37*(3), 604–626.

Yin, L., Wu, L., & Cole, S. (2019). Synthesizing data to assess the dynamical spatial patterns of hotel development. *International Journal of Geo-Information* (forthcoming).

Exploring the Impact of Political Stability and Climate Change on Inbound Tourism Demand: Evidence from Dynamic Panel Data Analysis

Chor Foon Tang and Evan Lau

1 Introduction

In the history of tourism literature, tourism involves nothing more than travelling from one destination to another for the purpose of leisure, business and other purposes for no more than one consecutive year. Therefore, not many researchers view tourism as a pivotal income-generating sector within the economy. As such, the economic impact of tourism has always been under-estimated. In contrast to the traditional viewpoint, the role of tourism today has been given special attention due to a massive transformation of the global tourism trend. We observed that the high growth rate of world tourism is primarily due to the advent of the air carrier in the late 1950s. The number of international tourists in the world was less than 30 million in the 1950s. The trend increased drastically at the rate of approximately 6.1% per annum from 25.3 million visitors in 1950 to 1235 million visitors in 2016 (UNWTO 2017). Based on this phenomenon, there is a growing body of literature that recognises the vital role of tourism in accelerating economic growth in both developed and developing countries (e.g. Tang and Tan 2017; Tang and Ozturk 2017; Tiwari 2011; Sequeira and Nunes 2008). Therefore, knowledge on factors that influence the demand for tourism has become the central issue for policymakers and tourism-related stakeholders to identify effective tourism marketing strategies and expand the sector. Considering the positive economic impact of tourism, a considerable amount of literature has emerged around the theme of inbound tourism demand in either specific countries

C. F. Tang (✉)
Centre for Policy Research and International Studies, Universiti Sains Malaysia, 11800 USM Penang, Malaysia
e-mail: tcfoon@usm.my

E. Lau
Faculty of Economics and Business, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia
e-mail: lphevan@unimas.my

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_20

(e.g. Song et al. 2003; Narayan 2004; Tan et al. 2002; Lee 1996) or in multiple countries (e.g. Habibi 2017; Saha et al. 2017; Saha and Yap 2014; Yap and Saha 2013) using time series or panel data econometric approaches.

Among the many famous destinations for tourism, Malaysia is the rising star in Asia that has experienced a large number of international tourist arrivals from a variety of countries. Malaysia is a small open economy located in the Southeast Asian region with a land size of 331 thousand square kilometres and a total population of approximately 31.7 million in 2016. Since the establishment of the Malaysian federation in 1963, international tourist arrivals increase steadily from approximately 27 thousand visitors in 1963 to approximately 870 thousand visitors in 1973, then to nearly 1.1 million visitors in 1983. Furthermore, Malaysia is continuously listed as one of the top three most visited destinations in Asia since 1993. Due to the diversity and the uniqueness of tourism in Malaysia, it has been ranked by the World Bank as the second most visited destination in Asia in 2014, with the record of 27.4 million international visitors (Asia News Network 2016). Moreover, tourism in Malaysia has also been recognised as the National Key Economic Area (NKEA) to transform Malaysia into a high-income nation in 2020. Given the propelling trend of inbound tourism and its significant contribution to Malaysia's economic growth, the present study focuses on modelling the demand for inbound tourism. According to our survey of past literature, a number of studies (e.g. Habibi 2017; Tanjung et al. 2017; Tang and Tan 2016; Puah et al. 2014; Ooi et al. 2013; Salleh et al. 2008; Salleh et al. 2007; Tan et al. 2002) have estimated the demand model for inbound tourism in Malaysia. However, research work that specifically focuses on the effects of climate change and political stability on tourism demand is very rare in Malaysia.[1] Hence, the present study attempts to fill the research gap by providing evidence of the impact of climate change and political stability on inbound tourism demand in Malaysia. Both non-economic variables are essential for a complete picture of tourism demand in Malaysia while providing a blueprint of the national tourism agenda. In order to achieve the objective of the present study, we apply the dynamic panel generalised method of moment (GMM) to estimate the tourism demand model covering 45 tourism source countries from the period of 2005 to 2014 based on data availability.

The balance of this chapter will be organised as follows. The review of the determinants of tourism demand will be presented in the following section. Section 3 will discuss the theoretical framework, source of data, and the econometric techniques utilised in the present study. The empirical findings of the present study will be presented and discussed in Sect. 4. Finally, Sect. 5 presents the conclusion and policy recommendations associated with the findings of the present study.

[1] To the best of our knowledge, only Habibi (2017) has considered the impact of political stability on tourism demand in Malaysia, but the study also ignored the importance of climate change, thus leaving a gap for further research.

2 Review of the Determinants of Inbound Tourism Demand

In our review of the past tourism demand literature, we found sizeable empirical studies of both developed and the developing countries. In addition, the published studies on the demand for tourism have also been explored from different angles applying both quantitative and qualitative approaches. Despite the fact that the qualitative approach possesses some advantages on the naturalistic paradigm, past and also recent literature surveys on the tourism demand compiled by Peng et al. (2015), Song et al. (2009), Song and Li (2008), Crouch (1994a, b), Lim (1997), and Witt and Witt (1995) revealed that tourism demand studies are dominated mainly by the quantitative techniques, especially the time series and panel econometric approaches. In addition to methodology, the theory of consumer behaviour, or more specifically demand theory, has also clearly stated that the demand for goods and/or services is explained by income, prices, and other factors. Therefore, the determinants of tourism demand accounted for by previous studies can be divided into two major paradigms: economic and non-economic factors.

2.1 Economic Factors

By surveying the earlier studies on tourism demand, income and prices of tourism have been identified both theoretically and also empirically as major economic factors that influence the demand for tourism. Gross Domestic Product (GDP) and Gross National Product (GNP), either in real or in per capita form, are the two proxies normally used to measure the effect of income on tourism demand.[2] The relationship between income and tourism demand has been found to be positive and significant by previous studies. Moreover, previous studies have also discovered that income elasticity is more likely greater than one, suggesting that tourism is likely to be a luxury good. Tang and Lau (2017), Tang and Tan (2016), Song et al. (2010), Kadir and Karim (2009), Choyakh (2008), Garín-Muñoz (2006), Kim and Song (1998) and Lee (1996) are among the studies that yield the mentioned positive and income elastic findings.

Price (cost) is another key economic factor in explaining the demand behaviour of inbound tourism. The law of demand within the theory of consumer behaviour has stipulated that demand for tourism responds negatively to a change in the prices of tourism due to the substitution and/or income effects. The literature review distinguishes tourism prices into three main aspects: (1) the cost of living in the visiting destination, (2) nominal exchange rates and (3) the cost of transportation. Given that tourism price data are rarely available, Lim (1997) documented that Consumer Price Index (CPI) is a frequently used proxy for tourism prices to measure the cost of

[2] In some cases, particularly those studies (e.g. Tang and Lau 2017) that deal with high frequency data (e.g. monthly and quarterly), Industrial Production Index (IPI) will be used to measure income. This is because high frequency data for GDP may be unavailable.

living in the visiting destination. Nonetheless, price is a complex factor regarding which tourists may not merely consider the prices in the visiting destination, but they may also compare it with their home country's prices when making the decision of where to visit. As a result, most tourism demand studies (e.g. Tang and Lau 2017; Puah et al. 2014; Kusni et al. 2013; Ooi et al. 2013; Salleh et al. 2008; Salleh et al. 2007; Lee 1996) employed the relative price of tourism expressed as the ratio of CPI in the visiting destination to the CPI in the home country. In this sense, whenever the CPI of the visiting destination is greater than the CPI of the home country, the demand for tourism tends to be low, because tourists view the extra expense as worth being away from their home country. Another strand of the tourism demand literature combined the relative CPI with the nominal exchange rate (i.e. real exchange rate) as the proxy for the prices of tourism rather than using nominal exchange rates as an individual price indicator. This is motivated by the argument by Martin and Witt (1987) that the use of nominal exchange rate serving alone as proxy for the tourism price may provide misleading results, because the price level and rate of currency are inter-related. Therefore, the use of the nominal exchange rate to represent the prices of tourism is incomplete and difficult to accept. Compared to the earlier specification of the price of tourism, the relative CPI adjusted with the exchange rate gained the highest attention, and most studies (e.g. Shi and Li 2017; Lim and Zhu 2017; Habibi 2017; Tang and Tan 2016; Kadir and Karim 2009; Garín-Muñoz and Montero-Martín 2007) found a significant trade-off relationship between tourism demand and the real exchange rates (or the exchange rate adjusted to the relative CPI). Furthermore, the cost of transportation is another aspect of the tourism price considered in some tourism demand studies (e.g. Habibi 2017; Salleh et al. 2008; Salleh et al. 2007; Narayan 2004). Among the three aspects of the tourism prices mentioned above, the cost of transportation seems to receive less attention in the empirical literature, probably because earlier studies are more likely to find insignificant results attributed to the multicollinearity between income and the cost of transportation (Lim 1999; Stronge and Redman 1982; Quayson and Var 1982). Despite oil price and airfares being two commonly used proxies to measure the cost of transportation, the actual measurement of transportation cost depends on many other factors, such as the mode of transport, distance, seasons and classes. Owing to the complexity of the cost of transportation and the difficulties in obtaining precise measurements for it, this aspect of tourism price is frequently ignored by previous studies to avoid misleading results.

2.2 Non-economic Factors

In addition to the economic factors discussed above, the past literature showed that demand for tourism is also influenced by a wide range of non-economic factors. However, it may be implausible to review all of the non-economic determinants in this limited space. Therefore, our discussion of the extant literature in this sub-section is mainly focused on the non-economic factors related to the aim of the present study.

Many studies (e.g. Habibi 2017; Garín-Muñoz and Montero-Martín 2007; Garín-Muñoz 2006, 2007; Song et al. 2003) accommodated dynamic term (i.e. lagged dependent variable) into the demand model to capture the habit persistency/word-of-mouth effect on tourism demand. In addition, they found that word-of-mouth is one of the most important factors in explaining tourism demand. Habibi (2017) found that word-of-mouth has a significant positive effect on tourism demand in Malaysia. Likewise, Buigut and Amendah (2015), Garín-Muñoz and Montero-Martín (2007), Garín-Muñoz (2006), and Song et al. (2003) discovered a similar relationship in Kenya, Balearic Island, Canary Islands, Spain and Thailand, respectively.

The institutional quality of the visiting destination is another important non-economic factor affecting tourists' decision making. This is because it affects the level of safety and security of tourists in the visiting destination (Ghaderi et al. 2017). Literally speaking, many aspects of institutional quality exist, but we only focus on political stability, because it is closely associated with tourism demand and the aim of the present study. However, tourists' response to political stability (instability) remains a puzzle. A vast body of literature in the past suggests that political instability has an inverse effect on the demand for tourism. In the prevalence of political disturbance, tourists tend not to visit the affected country. Saha et al. (2017), Saha and Yap (2014), and Yap and Saha (2013) conducted cross-country studies using the panel data approach to analyse the effect of political instability and other determinants on tourism demand. They found that political instability has a significant inverse effect on the demand for tourism. In the context of Malaysia, Habibi (2017) found that improved political stability enhances the arrival of foreign tourists. Therefore, the study shows that political stability is positively associated with the demand for tourism. Nevertheless, a small group of studies (e.g. Ingram et al. 2013) discovered that tourists are more likely to choose high-risk tourism destinations in order to enjoy the low travelling cost.

Climate and weather have been identified and widely accepted as push-and-pull factors in motivating travelling activities (Crompton 1979). However, the findings provided by the existing literature are inconsistent. Barry and O'Hagan (1972) examined the determinants of tourist demand in Britain. They included a single climate index in the model to study the implications of climate change on the demand for tourism. Nonetheless, they found that the computed climate index is insignificant, and they argued that climate change is a complex phenomenon and covered elements like temperature, humidity, precipitation, sunshine and wind speed. Motivated by this finding, Mieczkowski (1985) introduced a single tourism climatic index (TCI) by combining several sub-indices covering temperature, humidity, precipitation, sunshine and wind speed. Amelung et al. (2007), on other hand, used the TCI to study tourism flows within the Mediterranean region and found that the tourism patterns changed in response to climate change. Moore (2010) computed the tourism climatic index (TCI), borrowing the idea from Mieczkowski (1985), to analyse the impact of climate change on tourism demand in the Caribbean. The study found that improvements in climate or good weather boost the demand for tourism. The United Nations World Tourism Organisation (UNWTO) and the United Nations Environment Programme (UNEP) (2008) have also reported that tourists are very sensitive

to climate change. Good climate motivates one to travel, whereas bad climate demotivates one to travel, because it makes tourists feel discomfort. Freitas (2003) and Lise and Tol (2002) documented that the choice of tourism destination is highly sensitive to environmental factors, while Hamilton and Lau (2005) confirmed that weather is the third most important determining factor on where and when to visit. Contributing to the literature, Day et al. (2014) found that climate change affects not only the demand for tourism but subsequently influences the performance of tourism industry in terms of payroll, employment, etc. Li et al. (2017) conducted a dynamic panel data study to examine the effect of climate change on the tourism demand of 19 major tourism cities in Mainland China among residents in Hong Kong. The researchers found that the home destination as well as the relative climate dictated the behaviour of tourism demand. Specifically, they found that tourists respond positively to destination, home and relative climate change, especially the maximum temperature. In contrast, Liu (2016) discovered that temperature and rainfall are negatively associated with tourism demand in Taiwan.

3 Theoretical Model, Method and Data

3.1 Theoretical Model

The main purpose of the present study is to investigate critically and empirically the response of inbound tourism demand in Malaysia to major economic and non-economic determinants. In an effort to achieve the purpose of the present study, we employ the theory of consumer behaviour (demand theory) as the theoretical framework to derive the tourism demand model for this study:

$$\mathrm{TD}_{ij,t} = B_0 \mathrm{GDP}_{j,t}^{\beta_1} \mathrm{P}_{ij,t}^{\beta_2} Z_{ij,t}^{\theta_i} e^{\varepsilon_{i,t}} \tag{1}$$

Here, t represents the time subscript, and $\mathrm{TD}_{ij,t}$ represents the demand for tourism in country j (i.e. Malaysia) by international tourists from the origin country i, where $i = 1, 2, 3, \ldots, 45$. $\mathrm{GDP}_{j,t}$ is the per capita real gross domestic products (GDP) of the origin country j and $\mathrm{P}_{ij,t}$ is the real effective price of tourism in Malaysia, expressed as the relative CPI in Malaysia to CPI in the home country adjusted by exchange rate. $Z' = (Z_1, \ldots, Z_n)$ is a vector of the other explanatory variables that influence tourists' choice of the visiting destination. With reference to the aim of the present study, the Z vector covers the one-period lagged tourism demand $\left(\mathrm{TD}_{ij,t-1}\right)$, political stability (PS), destination country temperature (DT), destination country rainfall (DR), origin country temperature (OT), and origin country rainfall (OR). These additional explanatory variables allow us to capture the word-of-mouth effect, the impact of institutional quality, and the climatic impacts on inbound tourism demand in Malaysia. Based on the above justification, we segregate the tourism demand models in the following double-log form:

Model 1:

$$\ln \mathrm{TD}_{ij,t} = \beta_0 + \beta_1 \ln \mathrm{GDP}_{j,t} + \beta_2 \ln \mathrm{P}_{ij,t} + \theta_1 \ln \mathrm{TD}_{ij,t-1} + \varepsilon_{i,t} \quad (2)$$

Model 2:

$$\ln \mathrm{TD}_{ij,t} = \beta_0 + \beta_1 \ln \mathrm{GDP}_{j,t} + \beta_2 \ln \mathrm{P}_{ij,t} + \theta_1 \ln \mathrm{TD}_{ij,t-1} + \theta_2 \ln \mathrm{PS}_{i,t} + \varepsilon_{i,t} \quad (3)$$

Model 3:

$$\ln \mathrm{TD}_{ij,t} = \beta_0 + \beta_1 \ln \mathrm{GDP}_{j,t} + \beta_2 \ln \mathrm{P}_{ij,t} + \theta_1 \ln \mathrm{TD}_{ij,t-1} + \theta_2 \ln \mathrm{PS}_{i,t} + \theta_3 \ln \mathrm{DT}_{i,t} + \theta_4 \ln \mathrm{DR}_{i,t} + \varepsilon_{i,t} \quad (4)$$

Model 4:

$$\ln \mathrm{TD}_{ij,t} = \beta_0 + \beta_1 \ln \mathrm{GDP}_{j,t} + \beta_2 \ln \mathrm{P}_{ij,t} + \theta_1 \ln \mathrm{TD}_{ij,t-1} + \theta_2 \ln \mathrm{PS}_{i,t} + \theta_5 \ln \mathrm{OT}_{j,t} + \theta_6 \ln \mathrm{OR}_{j,t} + \varepsilon_{i,t} \quad (5)$$

where ln denotes the natural logarithm and $\varepsilon_{i,t}$ are the estimated residuals assumed to be normally distributed. One advantage of segregating the tourism demand models is that it allows us to check for the robustness of the estimation. In line with the economic theory and the findings of earlier studies, the signs of the estimate coefficients are $\beta_1 > 0$, $\beta_2 < 0$, $\theta_1 > 0$, $0 > \theta_2 < 0$, $\theta_3 < 0$, $\theta_4 < 0$, $\theta_5 > 0$, and $\theta_6 > 0$.

3.2 Data and Its Sources

This research employs annual balanced panel data from 2005 to 2014, covering 45 tourism source countries to investigate the economic and non-economic influential factors of inbound tourism demand in Malaysia. The choice of tourism source countries is mainly determined by the availability of data. The international tourist arrivals data are collected from the CEIC database and Tourism Malaysia. However, the economic and institutional data such as per capita real GDP, consumer price index (CPI), nominal exchange rates, and political stability used in the present study are collected from the *World Development Indicators* (WDI) and the *World Governance Indicators* (WGI), made available by the World Bank. More specifically, political stability used in the present study refers to the institutional quality indicator of *political stability and the absence of violence*, which ranges from 0 to 100. Lastly, the climate data such as average temperature and average rainfall are provided by the Climate Research Unit (CRU) of the University of East Anglia. Table 1 shows the summary of descriptive statistics of each series under investigation. Based on the

Table 1 Descriptive statistics

Variable	Observation	Mean	Std. dev.	Minimum	Maximum
$\ln \mathrm{TD}_{ij,t}$	450 ($n = 45, T = 10$)	491,036	1,807,735	657	13,932,967
$\ln \mathrm{GDP}_{j,t}$	450 ($n = 45, T = 10$)	26,793.70	22,975.10	502.24	91,594.20
$\ln \mathrm{P}_{ij,t}$	450 ($n = 45, T = 10$)	3.96	4.59	1.00	29.93
$\ln \mathrm{PS}_{i,t}$	450 ($n = 45, T = 10$)	50.87	6.17	42.65	64.56
$\ln \mathrm{DT}_{i,t}$	450 ($n = 45, T = 10$)	25.75	0.13	25.47	25.94
$\ln \mathrm{DR}_{i,t}$	450 ($n = 45, T = 10$)	273.08	21.71	237.69	316.28
$\ln \mathrm{OT}_{j,t}$	450 ($n = 45, T = 10$)	16.46	9.32	−6.56	28.51
$\ln \mathrm{OR}_{j,t}$	450 ($n = 45, T = 10$)	96.23	71.25	1.83	340.91

statistics, tourism demand, per capita real GDP, temperature, and rainfall in the home country are relatively more volatile than the other series such as prices of tourism, temperature, and rainfall in the visiting destination.

3.3 Estimation Strategies

Given that the panel data structure used in the present study has a short span for time series (T) but a relatively large cross-sectional (N) dimension, the micro-panel data approach, namely the dynamic panel generalised method of moments (GMM) estimator extended by Arellano and Bond (1991), should be employed to estimate the specified tourism demand models. Moreover, the presence of the lagged dependent variable $\left(\mathrm{TD}_{ij,t-1}\right)$ in the tourism demand models further strengthen our choice of dynamic panel GMM estimator, as it helps to overcome the endogeneity problem. Indeed, Nickell (1981) has also indicated that the application of the static panel approach, particularly the fixed effect (FE) estimator to the dynamic model, may cause the downward bias estimation problem. Motivated by these reasons, we choose to estimate our tourism demand models using the dynamic panel GMM estimator.

Assuming that the tourism demand model consists of a country-specific effect element (λ_i), we can re-write the dynamic tourism demand model in compact form as follows:

$$\ln \mathrm{TD}_{ij,t} = \alpha_1 \ln \mathrm{TD}_{ij,t-1} + \varphi \ln W_{ij,t} + \varepsilon_{i,t} + \lambda_i \tag{6}$$

where W is a vector of explanatory variables (i.e. real per capita GDP, price of tourism, political stability, temperature and rainfall). Based upon the suggestion of Arellano and Bond (1991), one can eliminate the country-specific effect by taking the first difference of each variables, and the model can be re-written as below:

$$\Delta \ln \mathrm{TD}_{ij,t} = \alpha_1 \Delta \ln \mathrm{TD}_{ij,t-1} + \varphi \Delta \ln W_{ij,t} + \Delta \varepsilon_{i,t} \tag{7}$$

This approach is known as the difference GMM estimation. Nevertheless, this estimation is still biased, attributed to the correlation between the first difference lagged explanatory variable $\left(\Delta \ln \mathrm{TD}_{ij,t-1} = \ln \mathrm{TD}_{ij,t-1} - \ln \mathrm{TD}_{ij,t-2}\right)$ and the disturbance term $\left(\Delta\varepsilon_{i,t} = \varepsilon_{i,t} - \varepsilon_{i,t-1}\right)$, which is also known as the endogeneity problem. Hence, instead of taking the first difference-lagged variable that may induce the endogeneity problem, Arellano and Bond (1991) proposed utilisation of the lagged level variables as instrumental variables based on the following moment conditions:

$$E\left[\left(\ln \mathrm{TD}_{ij,t-s}\right)\left(\Delta\varepsilon_{i,t}\right)\right] = 0 \quad \text{for } s \geq 2;\ t = 3, \ldots, T \tag{8}$$

$$E\left[\left(\ln W_{ij,t-s}\right)\left(\Delta\varepsilon_{i,t}\right)\right] = 0 \quad \text{for } s \geq 2;\ t = 3, \ldots, T \tag{9}$$

Since the GMM estimator is dynamic and uses the instrumental variables to control for endogeneity bias, we must ensure that the estimate model is free from the over-identification problem and the second order of the serial correlation. These can be ensured by applying the Hansen (1982) *J*-test of over-identifying restriction and the Arellano and Bond (1991) test for serial correlation. However, the over-identification test is low power when the sample size is small; therefore, Roodman (2009) suggested a rule-of-thumb to affirm the appropriateness of the GMM estimator in which the size of the instrumental variables should not exceed the size of the cross-sectional sample.

4 Empirical Results

In this section, we attempt to present the empirical results using the four specified tourism demand models discussed in Sect. 3. Given that the error terms are heterogenous, we estimate the models with the two-step GMM estimator.[3] This is because the two-step estimator is more efficient than the one-step estimator (Arellano and Bond 1991). However, Blundell and Bond (1998) claimed that the statistical inference of the two-step estimator is not reliable, as the asymptotic standard errors associated with this estimator are downward biased. In an effort to circumvent this problem, we adjusted the standard errors of the two-step GMM estimator with the robust standard errors procedure suggested by Windmeijer (2005). The empirical results of a balanced panel dataset, covering 45 tourism source countries to Malaysia, are displayed in Table 2. Specifically, Model 1 shows the results of the baseline model on the effect of income, price of tourism and word-of-mouth on inbound tourism demand. Model 2 reports the estimated impact of political stability on inbound tourism demand. Model 3 displayed the estimated coefficient (pull effect) of the destination country climate

[3] We performed the group-wise heteroskedasticity test and also the Breusch-Pagan test for heteroskedasticity to obtain some pictures of the pattern of the errors variance of the estimated models. Consistently, we find that the value of all of the tests are highly significant, which indicates that the estimated errors variance is less likely homogenous.

Table 2 Results of Arellano-Bond dynamic panel GMM estimation

Variable	Model 1	Model 2	Model 3	Model 4
$\ln TD_{ij,t-1}$	0.154*** (0.057)	0.134** (0.057)	0.185*** (0.051)	0.134** (0.056)
$\ln GDP_{j,t}$	1.935*** (0.545)	2.302*** (0.576)	2.469*** (0.621)	2.328*** (0.578)
$\ln P_{ij,t}$	−1.406*** (0.505)	−1.139*** (0.517)	−1.182** (0.616)	−1.163** (0.521)
$\ln PS_{i,t}$	–	0.764*** (0.198)	1.305** (0.552)	0.766*** (0.200)
$\ln DT_{i,t}$	–	–	−23.908** (13.476)	–
$\ln DR_{i,t}$	–	–	−1.236 (1.024)	–
$\ln OT_{j,t}$	–	–	–	0.004 (0.077)
$\ln OR_{j,t}$	–	–	–	0.022 (0.199)
Number of instrument	39	40	42	42
Wald test	45.76***	82.23***	78.52***	82.84***
AR(1) test	−3.02***	−3.04***	−3.09***	−3.04***
AR(2) test	−0.84	−0.70	−1.29	−0.69
Hansen *J*-test	43.11	43.98	43.76	43.90

Note The asterisks ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively. Figures in parenthesis are the robust standard errors, as suggested by Windmeijer (2005)

change on tourism demand. Lastly, the findings on the impact (push effect) of the origin country climate change on the demand for tourism are presented in Model 4.

Prior to the analysis and discussion of the empirical findings presented in Table 2, it is necessary to check for the validity of the estimated models. Based on the reported diagnostic tests, we find that all four estimated tourism demand models are well fitted to the data in which the statistics of the Wald test are highly significant. Considering the presence of serial correlation in the models, the value of the AR(1) test is statistically significant at the 1% level, indicating that there is a first order of serial correlation. It is also noteworthy that the four estimated models also consistently show evidence of absence from the second order of serial correlation. The absence of the second order of serial correlation is strongly corroborated by the criteria for applying the dynamic panel GMM estimator, as documented in Arellano and Bond (1991) and Bond (2002). More importantly, we find that the Hansen's *J*-test statistics fail to reject the null hypothesis of no over-identifying restriction at the conventional significance level (i.e. 1, 5 and 10%) in all four estimated models; thus, implying that we have made a valid choice of instruments for our estimated tourism demand models. However, the Monte Carlo simulation findings reported in Bowsher (2002)

showed that the over-identification tests from either Sargan (1958) or Hansen (1982) may provide misleading results, particularly in the case of a small sample. The study documented that, when too many instruments are included, the over-identification tests are more likely not to reject the null hypothesis of over-identifying restriction. Therefore, one should use the over-identification tests with care. To ensure that our estimated models are not over-instruments and the estimated results are correct, we adopt the rule-of-thumb suggested by Roodman (2009) to control and minimise the size of instrumental variables. From the results reported in Table 2, we find that none of our estimated models has an instrument count of more than 45. Thus, the estimated models in the present study are absent from the problem of "too many instruments". All of these models enable us to surmise that our estimated tourism demand models are valid and reliable. In the light of this, we can proceed to discuss the empirical results of the present study.

The key objective of the present study is to see how inbound tourism demand in Malaysia responds to political stability and climate changes after looking into other explanatory variables (e.g. income, price and word-of-mouth). Except for some climate change factors (i.e. $\ln \mathrm{OT}_{j,t}$, $\ln \mathrm{DR}_{i,t}$ and $\ln \mathrm{OR}_{j,t}$), which are not significant, we find that other explanatory variables including the dynamic terms are statistically significant at the conventional levels (i.e. 1, 5 and 10%) in all models. Considering the impact of income (GDP), we find that it has a considerably significant effect in increasing the demand for tourism in Malaysia; this finding is supported by economic theory and also past studies (e.g. Tang and Tan 2016; Kadir and Karim 2009; Tan et al. 2002). Holding other factors constant, a 1% increase in income increases the demand for tourism in Malaysia on average by 2.258%. Given that the value of income elasticity to tourism demand is higher than unity, we can conclude that tourism in Malaysia is a luxury good to foreign tourists, and this is in tandem with the findings documented in Habibi (2017), Tanjung et al. (2017), Tang and Tan (2016), and Puah et al. (2014). In addition, our empirical findings show that foreign tourists respond inversely to a change in the price of tourism in Malaysia. The evidence of a negative relationship between price and tourism demand in Malaysia is consistent with economic theory and also the findings of the previous studies such as Tang and Tan (2017), Som et al. (2014), Ooi et al. (2013), and Tan et al. (2002). In addition, we find that foreign tourists are sensitive (elastic) to a change in the price of tourism in Malaysia, suggesting that control over tourism price will effectively attract foreign tourists to Malaysia. Everything being equal, a 1% increase in the price of tourism, on average, decreases the demand for tourism in Malaysia by approximately 1.076%.

Some recent studies (e.g. Kadir et al. 2013; Kusni et al. 2013) reported that word-of-mouth is not important in explaining the demand for tourism in Malaysia. On the contrary, our empirical results in Table 2 reveal that the estimated coefficients for the lagged tourism demand variable are positive and statistically significant at the 10% level or better in all models, which indicates that word-of-mouth plays a very important role in attracting foreign tourists to Malaysia. Moreover, this result is similar to those provided through many other tourism demand studies, such as Habibi (2017), Ooi et al. (2013), Brida and Risso (2011), Salleh et al. (2010), and Garín-Muñoz (2006). In addition, our findings also show that the estimated coefficients for

political stability have positive signs in all three tourism demand models (i.e. Models 2, 3 and 4). More specifically, everything being equal, a 1% increase in political stability increases the arrivals of foreign tourists (tourism demand) in Malaysia from approximately 0.764 to 1.305% (or average 0.945%). This result implies that an unstable political environment, such as frequent changes in the ruling government which may lead to the presence of violence and terrorism, tends to reduce the demand for tourism in Malaysia. This is because political instability is usually associated with the aspects of safety and security. Considering these aspects, Pizam (1982) noted that tourists are willing and likely to postpone or even cancel a trip or choose an alternative low-risk tourism destination in the case of political instability. Moreover, Tang and Tan (2016), Tang and Darit (2015), and Tang (2011) also discovered a similar pattern of findings in Malaysia with reference to the association between tourism and safety. Therefore, a tourism destination with a stable political environment has a better likelihood to attract foreign tourists, as they are risk adverse.[4] In the light of this, it is reasonable to find a positive relationship between political stability and tourism demand in Malaysia, which is also corroborated by the findings of Habibi (2017), Saha and Yap (2014), and Yap and Saha (2013).

Past studies in the tourism demand literature found that climate factors affect the demand for tourism, because change in climate affects the level of comfort (e.g. Li et al. 2017; Liu 2016; Moore 2010). In the present study, we include both destination and home climate, such as temperature and rainfall, in the tourism demand models to assess the impact of climate on tourist arrivals in Malaysia. Unlike earlier studies, our empirical results show that only the coefficient for destination temperature $\left(\ln \mathrm{DT}_{i,t}\right)$ is statistically significant at the 5% level. Moreover, we find that foreign tourists' choice to visit Malaysia is not influenced by home temperature and rainfall. This result implies that home climate is not a significant factor in the choice to visit Malaysia. However, it provides two vital pieces of information. First, among many determinants of tourism demand regarding either economic and non-economic factors, we find that destination temperature has the biggest impact on inbound tourism demand in Malaysia. For example, with a 1% increase in destination temperature, on average, tourist arrivals will drop by approximately 23.91%. Second, despite the findings of earlier tourism demand studies that climate change has a strong impact on tourism demand, the present study finds that not all climate factors consistently influence the demand for tourism. Therefore, the variation of findings among climate factors indicates that the application of a single tourism climate index may have the possibility to provide irrelevant results or recommendations due to the aggregation bias.

[4] However, it is also possible to obtain a negative (positive) relationship between political (in)stability and tourism demand, especially when tourists are risk takers. Indeed, Ingram et al. (2013) discovered that political instability does not affect tourists' choice regarding tourism destination, and some will purposely choose to travel during periods of political risk so as to enjoy the low cost of travelling, including accommodation and transportation.

5 Conclusion and Policy Implications

In the light of the sharp rise in inbound tourism in Malaysia, it is vital to attain a broad knowledge of inbound tourism demand behaviour. This study utilises the dynamic panel GMM approach to estimate the economic (i.e. income and price of tourism) and non-economic (i.e. word-of-mouth, political stability and climate change) factors influencing the inbound tourism to Malaysia. The findings of the present study have several important implications for policymaking. Firstly, the results of this study suggest that tourism demand in Malaysia is related to income and price elasticity, indicating that international tourists are very responsive to an economic environment in the home country and also the price of tourism in Malaysia. Therefore, when there is a global economic downturn, fewer international tourist arrivals to Malaysia are expected. Given that the tourism demand is price elastic, policymakers in Malaysia should reduce the price of tourism in order to gain higher tourism earnings, because this policy will attract more international tourist arrivals to Malaysia. Therefore, intervention policy directed towards monitoring the charges of tourism-related products such as the costs of hotels, restaurants, tourism packages, and local transport, may be promising in order to improve competitiveness and make the destination more affordable to tourists.

Secondly, considering the positive impact of the lagged dependent variable, policymakers and stakeholders in the tourism industry should focus on offering good service to tourists in order to provide them a better tourism experience, which in turn strengthens the world-of-mouth effect in tourism. Thirdly, the findings regarding political stability in the present study suggest that policymakers in Malaysia should create a harmonious, peaceful and stable political environment in order to successfully boost the arrivals of international tourists to Malaysia. Fourthly, evidence from this study shows that tourism demand is sensitive to climate change, specifically temperature, in the destination country. More specifically, tourism demand responds negatively to temperature in the destination country. In the light of this, policymakers should implement policies to mitigate environmental pollution, such as reducing carbon dioxide emissions, because they are closely associated with global warming and climate change. By doing so, the level of pollution and temperature may be controlled. In terms of marketing, this finding suggests that tourism stakeholders promote tourism in Malaysia with the right timing and warm temperatures.

Nonetheless, the analyses of the present study are based on annual data, which is likely to demonstrate low variability. Therefore, analysing the impact of climate change (e.g. temperature) on tourism demand using annual data might not be advantageous, particularly when capturing the seasonality effect. Second, this study only takes into account two climate change factors, namely temperature and rainfall, while other climate change indicators are neglected. Therefore, future study could extend the current study with high-frequency data (e.g. quarterly or monthly) and account for more aspects of climate change, such as greenhouse gasses and ocean temperature, in order to perform a comprehensive analysis of the role of climate change in tourism demand.

Acknowledgements We would like to thank the anonymous referees for their valuable comments and suggestions which have significantly improved the earlier version of this chapter. Our acknowledgement also goes to David Roodman for making the Stata codes of "xtabond2" available for us to perform the econometric analysis. Whatever errors that remain in this chapter are solely our responsibility.

References

Amelung, B., Nicholls, S., & Viner, D. (2007). Implications of global climate change for tourism flows and seasonality. *Journal of Travel Research, 45*(3), 285–296.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and application to employment equations. *Review of Economic Studies, 58*(2), 277–297.

Asia News Network. (2016). *Asia's most visited countries* . Retrieved fromhttps://www.nationmultimedia.com/news/breakingnews/30299884

Barry, K., & O'Hagan, J. (1972). An econometric study of British tourist expenditure in Ireland. *Economic and Social Review, 3*(2), 143–161.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics, 87*(1), 115–143.

Bond, S. R. (2002). Dynamic panel data models: A guide to micro data methods and practice. *Portuguese Economic Journal, 1*(2), 141–162.

Bowsher, C. (2002). On testing overidentifying restrictions in dynamic panel data models. *Economics Letters, 77*(2), 211–220.

Brida, J. G., & Risso, W. A. (2011). An econometric study of German tourism demand in South Tyrol. In Á. Matias, P. Nijkamp, & M. Sarmento (Eds.), *Advances in tourism economics: New developments* (pp. 67–78). London: Springer.

Buigut, S., & Amendah, D. D. (2015). Effect of terrorism on demand for tourism demand in Kenya. *Tourism Economics, 22*(5), 928–938.

Choyakh, H. (2008). A model of tourism demand for Tunisia: Inclusion of the tourism investment variable. *Tourism Economics, 14*(4), 819–838.

Crompton, J. (1979). Motivations for pleasure travel. *Annals of Tourism Research, 6*(4), 408–424.

Crouch, G. I. (1994a). The study of international tourism demand: A survey of practice. *Journal of Travel Research, 32*(4), 41–55.

Crouch, G. I. (1994b). The study of international tourism demand: A review of findings. *Journal of Travel Research, 33*(1), 12–23.

Day, J., Chin, N., Sydnor, S., & Cherkauer, K. (2014). Weather, climate, and tourism performance: A quantitative analysis. *Tourism Management Perspectives, 5,* 51–56.

Freitas, C. R. (2003). Tourism climatology: Evaluating environmental information for decision making and business planning in the recreation and tourism sector. *International Journal of Biometeorology, 48*(1), 45–54.

Garín-Muñoz, T. (2006). Inbound international tourism to Canary Islands: A dynamic panel data model. *Tourism Management, 27*(2), 281–291.

Garín-Muñoz, T., & Montero-Martín, L. F. (2007). Tourism in the Balearic Islands: A dynamic model for international demand using panel data. *Tourism Management, 28*(5), 1224–1235.

Ghaderi, Z., Saboori, B., & Khoshkam, M. (2017). Does security matter in tourism demand? *Current Issues in Tourism, 20*(6), 552–565.

Habibi, F. (2017). The determinants of inbound tourism to Malaysia: A panel data analysis. *Current Issues in Tourism, 20*(9), 909–930.

Hamilton, J. M., & Lau, M. A. (2005). The role of climate information in tourist destination choice decision-making. In S. Gössling & M. C. Hall (Eds.), *Tourism and global environmental change.* London: Routledge.

Hansen, L. (1982). Large sample properties of generalized method of moments estimators. *Econometrica, 50*(4), 1029–1054.
Ingram, H., Tabari, S., & Watthanakhomprathip, W. (2013). The impact of political instability on tourism: Case of Thailand. *Worldwide Hospitality and Tourism Themes, 5*(1), 92–103.
Kadir, N., & Karim, M. Z. A. (2009). Demand for tourism in Malaysia by UK and US tourists: A cointegration and error correction model approach. In Á. Matias, P. Nijkamp, & M. Sarmento (Eds.), *Advances in tourism economics: New developments* (pp. 51–70). London: Springer.
Kadir, N., Nayan, S., & Abdullah, M. S. (2013). A panel data analysis of international tourist arrivals from ASEAN countries to Malaysia. *Procedia Economics and Finance, 7,* 80–85.
Kim, S., & Song, H. (1998). Analysis of inbound tourism demand in South Korea: A cointegration and error correction approach. *Tourism Analysis, 3*(1), 25–41.
Kusni, A., Kadir, N., & Nayan, S. (2013). International tourism demand in Malaysia by tourists from OECD countries: A panel data econometric analysis. *Procedia Economics and Finance, 7,* 28–34.
Lee, C. K. (1996). Major determinants of international tourism demand for South Korea: Inclusion of marketing variable. *Journal of Travel and Tourism Marketing, 5*(1–2), 101–118.
Li, H., Song, H., & Li, L. (2017). A dynamic panel data analysis of climate and tourism demand: Additional evidence. *Journal of Travel Research, 56*(2), 158–171.
Lim, C. (1997). Review of international tourism demand models. *Annals of Tourism Research, 24*(4), 835–849.
Lim, C. (1999). A meta-analytic review of international tourism demand. *Journal of Travel Research, 37*(3), 272–284.
Lim, C., & Zhu, L. (2017). Dynamic heterogenous panel data analysis of tourism demand in Singapore. *Journal of Travel and Tourism Marketing, 34*(9), 1224–1234.
Lise, W., & Tol, R. S. J. (2002). Impact of climate on tourist demand. *Climatic Change, 55*(4), 429–449.
Liu, T. M. (2016). The influence of climate change on tourism demand in Taiwan national parks. *Tourism Management Perspectives, 20,* 269–275.
Martin, C. A., & Witt, S. F. (1987). Tourism demand forecasting models: Choice of appropriate variable to represent tourists' cost of living. *Tourism Management, 8*(3), 233–246.
Mieczkowski, Z. (1985). The tourism climatic index: A method of evaluating world climates for tourism. *Canadian Geographer, 29*(3), 220–233.
Moore, W. R. (2010). The impact of climate change of Caribbean tourism demand. *Current Issues in Tourism, 13*(5), 495–505.
Narayan, P. K. (2004). Fiji's tourism demand: The ARDL approach to cointegration. *Tourism Economics, 10*(2), 193–206.
Nickell, S. (1981). Biases in dynamic models with fixed effects. *Econometrica, 49*(6), 1417–1426.
Ooi, C. A., Hooy, C. W., & Som, A. P. M. (2013). Tourism crises and state level tourism demand in Malaysia. *International Journal of Business Society, 14*(3), 376–389.
Peng, B., Song, H., Crouch, G. I., & Witt, S. F. (2015). A meta-analysis of international tourism demand elasticities. *Journal of Travel Research, 54*(5), 611–633.
Pizam, A. (1982). Tourism and crime: Is there a relationship? *Journal of Travel Research, 20*(7), 7–10.
Puah, C. H., Thien, F. T., & Arip, M. A. (2014). Singaporean demand for tourism in Malaysia. *Economic Annals, 21,* 32–36.
Quayson, J., & Var, T. (1982). A tourism demand function for the Okanagan, BC. *Tourism Management, 3*(2), 108–115.
Roodman, D. M. (2009). A note on the theme of too many instruments. *Oxford Bulletin of Economics and Statistics, 71*(1), 135–158.
Saha, S., & Yap, G. (2014). The moderation effects of political instability and terrorism on tourism development: A cross-country panel analysis. *Journal of Travel Research, 53*(4), 509–521.
Saha, S., Su, J. J., & Campbell, N. (2017). Does political and economic freedom matter for inbound tourism? A cross-national panel data estimation. *Journal of Travel Research, 56*(2), 221–234.

Salleh, N. H. M., Othman, R., & Ramachandran, S. (2007). Malaysia's tourism demand from selected countries: The ARDL approach to cointegration. *International Journal of Economics and Management, 1*(3), 345–363.

Salleh, N. H. M., Law, S. H., Ramachandran, S., Shuib, A., & Noor, Z. M. (2008). Asian tourism demand for Malaysia: A bound test approach. *Contemporary Management Research, 4*(4), 351–368.

Salleh, N. H. M., Othman, R., Noor, A. H. S. M., & Hasim, M. S. (2010). Malaysian tourism demand from the Middle East market: A preliminary analysis. *International Journal of West Asian Studies, 2,* 37–52.

Sargan, J. D. (1958). The estimation of economic relationships using instrumental variables. *Econometrica, 26*(3), 393–415.

Sequeira, T. N., & Nunes, P. M. (2008). Does tourism influence economic growth? A dynamic panel data approach. *Applied Economics, 40*(18), 2431–2441.

Shi, W., & Li, K. X. (2017). Impact of unexpected events on inbound tourism demand modeling: Evidence of Middle East Respiratory Syndrome outbreak in South Korea. *Asia Pacific Journal of Tourism Research, 22*(3), 344–356.

Som, A. P. M., Ooi, C. A., & Hooy, C. W. (2014). Crisis typologies and tourism demand. *Anatolia: An International Journal of Tourism and Hospitality Research, 25*(2), 302–304.

Song, H., & Li, G. (2008). Tourism demand modelling and forecasting—A review of recent research. *Tourism Management, 29*(2), 203–220.

Song, H., Witt, S. F., & Li, G. (2003). Modelling and forecasting the demand for Thai tourism. *Tourism Economics, 9*(4), 363–387.

Song, H., Witt, S. F., & Li, G. (2009). *The advanced econometrics of tourism demand*. New York: Routledge.

Song, H., Li, G., Witt, S. F., & Fei, B. (2010). Tourism demand modelling and forecasting: How should demand be measured? *Tourism Economics, 16*(1), 63–81.

Stronge, W. B., & Redman, M. (1982). U.S. tourism in Mexico: An empirical analysis. *Annals of Tourism Research, 9*(1), 21–35.

Tan, A. Y. F., McCahon, C., & Miller, J. (2002). Stability of inbound tourism demand models for Indonesia and Malaysia: The pre- and postformation of tourism development organizations. *Journal of Hospitality and Tourism Research, 26*(4), 361–378.

Tang, C. F. (2011). An exploration of dynamic relationship between tourist arrivals, inflation, unemployment and crime rates in Malaysia. *International Journal of Social Economics, 38*(1), 50–69.

Tang, C. F., & Darit, S. M. (2015). Penentu makroekonomi kadar jenayah di Malaysia. *Jurnal Ekonomi Malaysia, 49*(2), 53–60.

Tang, C. F., & Lau, E. (2017). Modelling the demand for inbound medical tourism: The case of Malaysia. *International Journal of Tourism Research, 19*(5), 584–593.

Tang, C. F., & Ozturk, I. (2017). Is tourism a catalyst of growth in Egypt? Evidence from Granger non-causality and the generalised variance decomposition analysis. *Anatolia: An International Journal of Tourism and Hospitality Research, 28*(2), 173–181.

Tang, C. F., & Tan, E. C. (2016). The determinants of inbound tourism demand in Malaysia: Another visit with non-stationary panel data approach. *Anatolia: An International Journal of Tourism and Hospitality Research, 27*(2), 189–200.

Tang, C. F., & Tan, E. C. (2017). Tourism-led growth hypothesis: A new global evidence. *Cornell Hospitality Quarterly*. https://doi.org/10.1177/1938965517735743

Tanjung, A. F., Thien, F. T., Puah, C. H., Brahmana, R. K., & Sianturi, R. H. (2017). Macroeconomic determinants of Indonesian tourism demand in Malaysia. *Advanced Science Letters, 23*(4), 3159–3162.

Tiwari, A. K. (2011). Tourism, exports and FDI as a means of growth: Evidence from four Asian countries. *Romanian Economic Journal, 14*(40), 131–151.

UNWTO. (2017). *Tourism highlights* (2017th ed.). Madrid: World Tourism Organization.

UNWTO & UNEP. (2008). *Climate change and tourism—Responding to global challenges* . Madrid: World Tourism Organization.

Windmeijer, F. (2005). A finite sample correction for the variance of linear efficient two-step GMM estimators. *Journal of Econometrics, 126*(1), 25–51.

Witt, S., & Witt, C. A. (1995). Forecasting tourism demand: A review of empirical research. *International Journal of Forecasting, 11*(3), 447–475.

Yap, G., & Saha, S. (2013). Do political stability, terrorism, and corruption have deterring effects on tourism development even in the presence of UNESCO heritage? A cross-country panel estimate. *Tourism Analysis, 18*(5), 587–599.

Measuring Tourism Sustainability: The Case of Andalusia

Pilar Tejada, Isidoro Romero, and Pilar Moreno

1 Introduction

Interest in sustainable tourism has been growing in the academic community in recent decades. The United Nations declaration of 2017 as the International Year of Sustainable Tourism for Development (IYSTD) places this issue even more at the centre of the analysis and discussion, not only among scholars, but also in the political arena. In this debate, it is necessary to consider two basic premises: first, the great potential of tourism to contribute effectively towards the achievement of a sustainable development agenda and of the 17 sustainable development goals; and second, the crucial role of regional governments as key drivers for sustainable change in the territory, given their responsibilities regarding the design and implementation of tourism policies.

The general aim of this chapter is to examine the concept and measurement of sustainable tourism at regional level. To this end, the concept of sustainable tourism is first reviewed, and the various existing interpretations and study approaches are clarified in Sect. 2.

The chapter then presents in Sect. 3 the main proposals for the measurement of sustainable tourism existing to date, promoted mainly by a number of international organizations (OECD, UNWTO, European Commission, European Environment Agency, and InRouTe, to name but a few). In this regard, the initiative launched by the World Tourism Organization, *Measuring the Sustainability of Tourism* (MST), with the support of the Statistics Division of the United Nations, deserves mention. This

P. Tejada · I. Romero (✉) · P. Moreno
Department of Applied Economics I, Universidad de Sevilla, Calle San Fernando, Spain
e-mail: isidoro@us.es

P. Tejada
e-mail: ptejada@us.es

P. Moreno
e-mail: pilarmoreno@us.es

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*,
Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_21

project is striving to develop an international statistical framework for the measurement of sustainable tourism by integrating economic, social, and environmental information standards. In this way, the World Tourism Organization aims to support the credibility, comparability, and outreach of several measurements and monitoring initiatives pertaining to sustainable tourism at three different spatial levels: global, national, and sub-national.

The conceptualization and measurement of sustainable tourism from a regional perspective are explored in Sect. 4, which enables the identification of the main differential aspects that should be taken into account by the regional/local tourism authorities and practitioners.

Finally, the *System of Sustainable Tourism Development Indicators for Andalusia* (Ministry of Tourism and Commerce of Andalusia 2015) is presented in Sect. 5. This is the monitoring system developed in Andalusia (the Spanish region, NUTS 2, located at the southern extreme of the EU) for the measurement of sustainability in tourism. This statistical system comprises more than 300 indicators that cover the various dimensions of tourism activity and the particular perspectives of the various tourism actors (tourists, companies, administrations, and local population).

The measurement of tourism sustainability from a regional perspective constitutes a fundamental tool for the assessment of the impacts of tourism policy on the territory implemented by governments at sub-national level. In this respect, the chapter concludes with a set of political implications for regional authorities.

2 Definitions of Sustainable Tourism

Sustainable tourism has remained a frequent topic of discussion in tourism circles since the end of the 1980s, especially in fields such as tourism policy and planning (Bramwell et al. 2017; Garrod and Fyall 1998; Liu 2003). This term has its origin in the concept of sustainable development, which dates back to the report of the 1987 Brundtland Commission "Our Common Future" (World Commission on Environment and Development 1987), and the subsequent United Nations Conference on Environment and Development (UNCED), also known as the Rio Earth Summit (Rio de Janeiro 1992). The event was attended by 178 governments, including 120 heads of state, which underlines the universalization of the concern for environmental issues and the awareness of the need for policy action. From this first stage, one of the most widely known definitions of *sustainable development* emerges as the "*process to meet the needs of the present without compromising the ability of future generations to meet their own needs"* (WCED 1987: 43).

This concept evolved significantly, while adapting to the peculiarities of the various industries, including hospitality and tourism activities. In this way, by transposing the principles of sustainable development into the context of the tourism industry, the term "sustainable tourism" emerged. The World Tourism Organization (UNWTO) defined this term in the Euro-Mediterranean Conference on Tourism and Sustainable Development (1993) as follows:

> Sustainable Tourism Development meets the needs of present tourists and host regions while protecting and enhancing opportunity for the future. It is envisaged as leading to management of all resources in such a way that economic, social, and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity, and life-support system (UNWTO 1993: 7).

From this first definition, the concept of sustainable tourism has repeatedly been refined over the years. More precisely, various milestones by many international organizations regarding this issue merit recognition:

- The **Charter for Sustainable Tourism (1995)**. This was adopted in the first World Conference on Sustainable Tourism (Lanzarote, 27–28 April, 1995), which was sponsored by UNESCO, the European Commission, UNEP, and UNWTO. It proclaimed 18 principles and objectives, specifically referring to the ethical, environmental, socio-cultural, and economic impacts and effects of tourism (World Conference on Sustainable Tourism 1995).
- **Agenda 21 for the Travel and Tourism Industry: Towards Environmentally Sustainable Development (1995)**. UNWTO, the World Travel and Tourism Council (WTTC) and the Earth Council adopted, on the basis of Agenda 21, a draft action programme for the tourist industry (UNWTO 1997).
- The **Berlin Declaration (1997)**. This was adopted in the International Conference of Ministers on Biological Diversity and Tourism (Berlin, 6–8 March, 1997). It contained both general and specific recommendations for biological diversity and sustainable tourism (UNEP 1998).
- The **Global Codes of Ethics for Tourism (1999)**. This was adopted in 1999 by the WTO and acknowledged by the United Nations in 2001. It is a set of ten principles designed to guide key-players in tourism development (governments, the travel industry, communities, and tourists) through a voluntary implementation mechanism (UNWTO 1999).
- The **Cape Town Declaration on Responsible Tourism (2002)**. The concept of *responsible tourism* was defined in the International Conference on Responsible Tourism in Destinations (Cape Town, August 2002). One of the main findings of this meeting was that *"tourism can only be managed for sustainability at the destination level"* (International Conference on Responsible Tourism in Destinations 2002).
- The **Davos Declaration: Climate Change and Tourism—Responding to Global Challenges (2007)**. This declaration entailed a clear action commitment for the tourism sector to respond to the challenge of climate change, achieved in the Second International Conference on Climate Change and Tourism (Davos, 1–4 October 2007), and endorsed by 450 delegates from 80 countries. The Davos Declaration presented specific recommendations to the key tourism stakeholders: mitigation of greenhouse gas emissions; adaptation of tourism businesses and destinations; application of technologies to improve energy efficiency; and security of financial resources in developing regions and countries (UNWTO, UNEP and WMO 2008).

- The **10-Year Framework (10YFP) of Programmes on Sustainable Consumption and Production (2012)**. This is a global commitment adopted in 2012 at Rio + 20 Conference on Sustainable Development (Rio de Janeiro, 20–22 June, 2012). In particular, the **One-Planet Sustainable Tourism Programme** has "*the overall objective to enhance the sustainable development impacts of the tourism sector by 2030, by developing, promoting and scaling up sustainable consumption and production practices"* (One Planet Network 2019).
- **International Year of Sustainable Tourism for Development** (2017): The United Nations 70th General Assembly decided to proclaim 2017 as the International Year of Sustainable Tourism for Development (#IY2017). Therefore, in the context of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs), the UNWTO has promoted the role of sustainable tourism in development while working in collaboration with governments, the United Nations system, international and regional organizations, and other stakeholders (UNWTO 2016).

In other respects, academic research has also provided various relevant contributions on the conceptualization of sustainable tourism, which have significantly enriched the debate thereon, although not always with the level of consensus desired. In this respect, Bramwell and Lane (1993: 2) stated that *"sustainable tourism is a positive approach intended to reduce the tensions and frictions created by the complex interactions between the tourism industry, visitors, the environment and the communities which are host to holiday makers*[1]*"*.

Butler, meanwhile, adopted a long-term perspective for tourism development and defined sustainable tourism as a *"tourism which is in a form which can maintain its viability in an area for an indefinite period of time"* (Butler 1993: 29). From an exhaustive review from the Brundtland Report, this author emphasizes the difference between sustainable tourism and development of tourism in accordance with sustainable development principles (1999). In contrast, Hunter (1997) argues that the notion of sustainable tourism must necessarily be built on the basis of sustainable development and distinguishes between various interesting approaches to sustainable tourism: "*the sustainable tourism approaches can be labelled as tourism imperative, product-led, environment-led, and neotenous tourism. In the most simplistic terms, one can consider these in terms of how tourism might contribute to distinctive positions within the sustainable development spectrum, ranging from very weak to very strong interpretations"* (1997: 864).

Additionally, Liu (2003: 462) states that *"sustainable tourism requires both the sustainable growth of tourism's contribution to the economy and society and the sustainable use of resources and environment"*. It is also worth mentioning the widespread research conducted by Hall (e.g. 1998, 2010, 2011, among others), which sheds light on some of the most controversial issues surrounding sustainable tourism and dismantles several of the preconceived ideas. Hall states that sustainable tourism constitutes *"one of the great success stories of tourism research and knowledge transfer"* (Hall 2011: 649), and that *"despite the success of the concept of sustainable tourism in academic and policy discourse, tourism's contribution to*

environmental change…is greater than ever" (Hall 2010: 650), thereby paraphrasing Gössling (2002), who provided the first rigorous global review on the environmental consequences of tourism.

As a culmination of the above study into conceptualization conducted by international organizations and scholars, the broad definition of sustainable tourism proposed by UNEP and UNWTO (2005) should be emphasized, which embraces social, cultural, economic, environmental, and political issues. In order to make the tourism sector more sustainable, based on both prior theoretical contributions and ten real cases, a guide was created not only for policymakers of national or local governments, but also for international development agencies, NGOs, and the private sector, that is, for all relevant stakeholders involved. The principles and aims of sustainability of this guide are applicable to all forms of tourism and to all types of destinations, thus resolving the previous discussions regarding the scope and levels of intervention. According to this guide:

> Sustainable tourism is that tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities (UNEP & UNWTO 2005: 12).

3 Proposals for the Measurement of Sustainable Tourism

Despite the widespread attention paid to the definition and the theoretical bases for the concept of tourism sustainability over the last thirty years, the lack of practical applications towards sustainability in tourism still remains, since it is not clear whether significant changes towards sustainability are being made in practice by tourism stakeholders (Aall 2014; Buckley 2012; Hall 2011). Thus, even in certain key issues, such as that of greenhouse gas (GHG) emissions[2] (UNWTO et al. 2008), tourism is considered as one of the least sustainable economic sectors in the world (Gössling and Hall 2008; Scott and Becken 2010).

These insufficient changes and excessively slow progress (Lane 2009) can be largely attributed to the following two reasons. First, insufficient change reflects that problems regarding the conceptualization of sustainable tourism persist and that the substantial gaps in knowledge on this matter do remain (Buckley 2012; Moscardo and Murphy 2014). Undoubtedly, it is a complex and multidisciplinary process and "*lack of consensus on a single comprehensive meaning of sustainable tourism further compounded the complexity of operationalizing the concept"* (Kasim 2006: 1). Second, it is essential to take into account the inherent difficulty in measuring sustainability of tourism destinations (Asmelash and Kumar 2019; Choi and Sirakaya 2005; Liu 2003; McCool et al. 2001). In order to attain a rigorous assessment of tourism sustainability, it would be mandatory to carry out a *"constant monitoring of impacts, introducing the necessary preventive and/or corrective measures whenever necessary"* (UNEP and UNWTO 2005: 11). However, in part as a consequence of the first aforementioned reason, the need still exists for the development of measures to enable consistent assessment and monitoring of the progress of sustainable tourism

(Asmelash and Kumar 2019). As Bramwell et al. (2017) concluded, despite the efforts made in the last 25 years of research on sustainable tourism, there appears to be no international consensus on the methodology for measurement and, as a whole, results on this issue remain scarce and imply serious limitations regarding comparability.

In short, it can be stated that, in contrast to the lack of consensus on its definition, as discussed above, at least there is general agreement on the *significance of sustainability measurement*: recognition that dates back to the early nineties (Butler 1991). The main proposals for the measurement of sustainable tourism existing to date can now be examined. In recent decades, various international organizations, planners, and scholars have been working to develop suitable measurement methodologies for the management and monitoring of sustainable tourism at various territorial scales: global, national, and sub-national. Table 1 summarizes the foremost proposals.

Among the institutional attempts, a number of proposals by the UNWTO (1998; 2004; 2015), OECD (2013), and EU (2013) can be highlighted.

Since the early 1990s, the UNWTO has been a pioneer in promoting the creation and application of sustainability indicators for tourism destinations, ranging from local to national levels. In 1991, the UNWTO started an initiative to develop sustainable tourism indicators for global use. The UNWTO viewed indicators as essential tools in the tourism planning, management, and monitoring processes with the aim of providing accurate information for decision-making (UNWTO 2004). To this end, an International Working Group was formed (UNWTO and ISTC 1993) that conducted diverse studies in tourism destinations of several countries (Canada, Mexico, Holland, Argentina, and the USA, among others). As a result, a set of key and supplementary indicators were defined, along with recommendations for the creation of specific categories of destinations (coastal areas, small islands, mountain regions, cultural, ecological destinations, and so on). These experiences were collected in a practical guide for the development and use of sustainable tourism indicators (UNWTO 1998).

Table 1 Main proposal for the measurement of sustainable tourism

Author(s)	Proposal for measurement	Focus and/or application
Provided by international organizations		
European Union (2016, 2013)	European Tourism Indicators System (ETIS) for Sustainable Destinations. Suitable for all tourist destinations. It provides a toolkit, with guidelines and explanations about the indicators	Implemented in over 100 destinations (including non-EU destinations)
OECD (Dupeyras and MacCallum 2013)	They propose measuring competitiveness in tourism using only 11 core indicators, in order to be practical, manageable, and relevant	Focus is on the national level

(continued)

Table 1 (continued)

Author(s)	Proposal for measurement	Focus and/or application
UNWTO (2004)	UNWTO Guidebook on Indicators of Sustainable Development for Tourism Destinations. It describes over 40 major sustainability issues, with indicators and measurement techniques for each issue	Focus on local destinations, also covering applications at regional, national, and business levels 25 case studies
UNWTO (2015)	Statistical Framework for Measuring the Sustainability of Tourism (SF-MST) initiative. It aims to provide a standardized frame to integrate statistic data on the economic, environmental, and social dimensions of sustainable tourism	Focus on various spatial levels, from global to local, particularly, at the national level. Launched in 2015, today in progress
Provided by scholars		
Castellani and Sala (2010)	Sustainable Performance Index, to measure and evaluate the evolution of development policies. An integrated index composed of 20 indicators	Implemented in the Alpi Lepontine Mountain Community (Italy)
Choi and Sirakaya (2006)	A set of 125 sustainable indicators, in six key dimensions: economic, social, cultural, environmental, political/institutional, and technological. This study employs a Delphi technique	Focus on local and regional level
Ko (2005)	A procedure for the assessment of tourism sustainability, in terms of system quality	Four types of gradations of sustainability and two types of tourism sustainability assessment maps (TSAM) are suggested
Kozic and Mikulic (2011)	Synthetic indicators. Constructed based on normalized indicator data and multivariate analysis-based indicator weights	Applied to Croatian coastal destinations
Lozano-Oyola et al. (2012)	Indicator system and composite indicators, based on UNWTO Guidebook (2004)	Applied to cultural destinations in Andalusia (Spain)

(continued)

Table 1 (continued)

Author(s)	Proposal for measurement	Focus and/or application
McCool et al. (2001)	This study provides a tourism industry perspective on what indicators should be used to monitor sustainability policies. The research involved 108 members of the tourism and recreation industry	Applied to Montana (USA)
Vera-Rebollo and Ivars (2003)	A system of sustainability indicators. Pressure-state-response (PSR) model	Applied to a mass tourist Mediterranean destination: Torrevieja (Spain)

Later, building on this earlier work, the UNWTO published a new guidebook, which identified a large number of indicators (over 700) as the result of an extensive study on indicator initiatives worldwide, involving 62 experts from over 20 countries (UNWTO 2004). More than 40 major sustainability issues were described, such as the management of natural resources, the control of development, the preservation of cultural heritage, seasonality, the economic leakage, and climate change; indicators and measurement techniques for each of these issues were subsequently built. The guidebook also offered an adaptation for the various types of tourism destinations. Finally, it included 25 case studies, with experiences at the company, destination, national, and regional level of all continents.

More recently, in 2015, the UNWTO launched the Statistical Framework for Measuring the Sustainability of Tourism Initiative, which has become the methodological proposal at the international level with the highest degree of consensus. This contribution is discussed in a greater degree of detail in a specific subsection at the end of the current section.

Concerning the work of the OECD on measurement sustainability of tourism, the framework developed by Dupeyras and MacCallum (2013) should be borne in mind. With the purpose of driving governments to regain their tourism competitiveness, these authors proposed the practical measurement of tourism competitiveness on the national level and insisted on its close link with sustainability. Unlike UNWTO's attempts, these authors opted for a small number of indicators, in an effort to achieve practical management by countries. Hence, the measurement framework comprises only *11 core indicators*, grouped into four categories (tourism performance and impacts; ability of a destination to deliver quality and competitive tourism services; attractiveness of a destination; and policy responses and economic opportunities), together with supplementary and future development indicators. These core indicators strive to capture the basic economic contribution of tourism and the inputs of this sector.

Lastly, the European Commission has developed the "*European Tourism Indicators System*" (ETIS) for sustainable tourism. The system is designed for all tourism destinations at national and sub-national level, from EU and non-EU areas. It aims

to become a management and information tool, useful to policymakers, tourism enterprises, and other stakeholders. Hence, ETIS provides a *toolkit* with guidelines and explanations regarding the 43 core indicators, organized into four sections: (a) sustainable destination management; (b) economic value; (c) social and cultural impact; and (d) environmental impact (European Commission 2013, 2016). Using this toolkit, ETIS has been implemented voluntarily and successfully in two pilot phases since 2013 in over 100 destinations (including non-EU destinations). ETIS allows for comparison over time and between destinations.

On the other hand, a number of scholars and planners have made diverse proposals for the measurement of tourism sustainability. Notwithstanding, these proposals consist mostly of partial studies and applications to certain tourism typologies, all without homogeneity. According to the method followed, it is possible to distinguish between a non-aggregated approach, in line with main international organizations (McCool et al. 2001; Vera-Rebollo and Ivars 2003), and an aggregated approach, through the creation of a synthetic index (Castellani and Sala 2010; Kozic and Mikulic 2011; Pulido Fernández and Sánchez Rivero 2009). It is also possible to find versions of a more holistic nature that integrate both approaches (Lozano-Oyola et al. 2012), and those of greater innovation, such as those involving assessment maps of tourism sustainability (Ko 2005).

With regard to the nature of these proposals, several present a fundamentally theoretical character (Choi and Sirakaya 2006; Ko 2005), while others contain an implementation of the measurements to a specific tourism destination (Castellani and Sala 2010; Kozic and Mikulic 2011; Lozano-Oyola et al. 2012; Vera-Rebollo and Ivars 2003). For instance, Vera-Rebollo and Ivars (2003) developed a system of sustainability indicators in order to apply it to *mass tourist destinations*, specifically Torrevieja, a Spanish Mediterranean destination. These authors use a mixture of information sources: statistics, in-depth interviews with local agents, and surveys of tourists.

3.1 Towards a Standardized Statistical Framework for Measuring the Sustainability of Tourism: The SF-MST Initiative of UNWTO

The Statistical Framework for Measuring the Sustainability of Tourism (SF-MST) was launched by the UNWTO in 2015, together with the UN Statistics Division, and it remains an ongoing project. The main justification presented by the UNWTO for this project was the lack of standardized bases for the collection of relevant information at different scales of analysis, ranging from local to global levels, and particularly, at the national level.

Additionally, the adoption of the United Nations 2030 Development Agenda and the associated Sustainable Development Goals (SDGs), as well as the proclamation of 2017 as the International Year of Sustainable Tourism for Development, contributed

towards enhancing the SF-MST initiative since "*it is intended that SF-MST provides a tool to support the long-term embodiment of the IY2017 themes*" (UNWTO 2018d: 10).

As shown in Fig. 1, the SF-MST constitutes a framework for the integration of statistical data on the economic, environmental, and social dimensions of sustainable tourism. This framework will simultaneously provide: a common understanding of concepts, definitions, and related terminology; SF-MST accounts; and combined presentations. Furthermore, it is designed not only to be implemented independently from the sources and methods employed to compile the statistics, but also over time for ongoing decision-making.

For the effective implementation of the SF-MST initiative, a large quantity of data was necessary. In this respect, the International Recommendations on Tourism Statistics (IRTS 2008) and the Tourism Satellite Account (Recommended methodological framework, TSA: RMF, 2008) are particularly noteworthy. Both frameworks have contributed significantly towards integrating and organizing tourism data, which is currently more robust and more comparable (in all countries, over time, and consistent

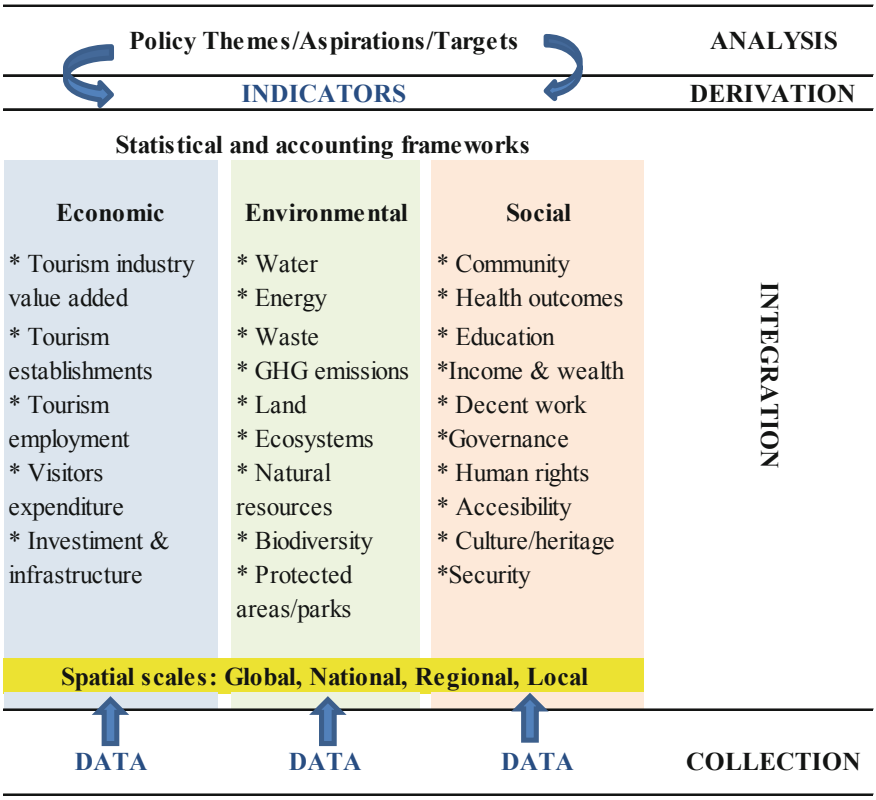


Fig. 1 SF-MST initiative at a glance. *Source* Adapted from UNWTO (2018d)

with other data based on standards). Secondly, it was crucial to integrate economic, environmental, and social statistics at destination level. Consequently, the statistical framework for MST is largely based on the integration of the CST and the Environmental and Economic Accounting System (SEEA 2012). It should be borne in mind that significant progress has been made in this area in recent years (UNWTO 2018b).

The last milestone relating to the development of this initiative took place on the occasion of the Second Meeting of the Working Group of Experts on Measuring the Sustainability of Tourism, held in Madrid in October 2018, where a chronogram with the following steps was presented. The completion of the SF-MST is scheduled between November 2019 and January 2020 (UNWTO 2018c).

4 An Overview of Sustainable Tourism from a Regional Perspective

As highlighted in the previous sections, it can be argued that the complexity and efforts involved in moving towards tourism sustainability require several spatial levels of reference to be considered at the same time: global, supra-national, national, regional, and local. The specificities of the touristic destination and the existing distribution of the tourism competencies will determine more precisely what spatial levels should be considered. However, the design and implementation of tourism policy are crucial at the most exact spatial areas associated with the tourist destination, that is, at regional and local levels. It is therefore unsurprising that both the definition and the measurement of sustainable tourism constitute crucial issues to be addressed at regional level.

The analysis of sustainable tourism from the regional perspective is a matter of interest to scholars and international organizations dating back to the nineties (Pigram 1990; Dowling 1993; Owen et al. 1993; Berry and Ladkin 1997; Hunter 1997). Regarding the formulation of sustainable tourism and the peculiarities that it presents at regional level, most of these preliminary studies focused on the tractability of the concept of sustainable tourism; that is, moving from theory into practice. Thus, Pigram (1990: 2) noted that *"despite the acceptance of sustainable tourism (…), a gap commonly exists between policy endorsement and policy implementation"* . This researcher identified the existence of a conflict of interests among the main stakeholders involved in sustainable tourism (managers, developers, and the communities), and claimed that an improvement in the education of all these groups would be the key to addressing this obstacle. Hunter (1995, 1997) also underlined the existence of a gap between theory and practice of sustainable tourism; this distance lies between the principles of sustainability and its operationalization. This limitation was a consequence of understanding sustainable tourism as a rigid framework, instead of as a paradigm that is adaptive to the changing circumstances. Dowling (1993), meanwhile, built a regional sustainable development framework, named "Environmentally Based Tourism Development Planning Model". Based on the preservation

of the environment, this proposal aimed to promote sustainable tourism by emphasizing the role of the main players (managers, tourists, and residents), and collecting their opinion as an essential step of the planning process.

It is also worth noting the contribution of Berry and Ladkin (1997). In order to examine the implementation of sustainable tourism at the regional level, these authors explored *"how the general principles of sustainable tourism at the macro-level can be translated into workable practice"* (1997: 433), by means of inquiring into the perception of sustainable tourism by the owner of small businesses in the East Sussex region in the UK. Similarly, Hunter (1997) stated the need to apply sustainable tourism at sub-national level, mainly at regional and local levels, in order to operationalize the concept of sustainable tourism development. His research highlighted the considerable difficulty experienced in achieving sustainable tourism in the absence of a strong policy of planning and control at local and regional level.

Later, Hardy and Beeton (2001) examined sustainable tourism at regional level, from the stakeholders' perspective of sustainability. Thus, local people, operators, tourists, and regulators were interviewed in the Daintree region of Queensland, Australia, in order to establish whether tourism in the region was operating in a sustainable mode. From this study, two relevant conclusions could be inferred. First, the findings suggested that the understanding of stakeholder perceptions constitutes an effective guide towards ascertaining whether tourism is being implemented in a sustainable way on a regional scale. Furthermore, management strategies at regional level should reflect the complex and heterogeneous stakeholders' perceptions. Second, it can be assumed that *"perceptions of scale have changed in relation to sustainable tourism (…) it is now considered to be attainable at local, regional, national and global levels" (…) Strategies and guidelines for sustainable tourism are now being produced not only for operations but also within local, regional and national planning"* (Hardy and Beeton 2001: 173).

Over the last decade, and as a culmination of the research conducted previously, numerous scholars have continued to delve deeper into the complex relationship between *tourism-sustainability-spatial levels*. It is worth mentioning the widespread research conducted by Hall (e.g. 1998,2008,2010,2011, among others), which sheds light on several of the most controversial issues surrounding sustainable tourism, and dismantles a number of the preconceived ideas. As a starting point, Hall (2011: 649) addresses the paradox of sustainable tourism: *"At one level, sustainable tourism is a success given the concept's diffusion among industry, government, academics and policy actors. Yet, it is simultaneously a policy failure given the continued growth in the environmental impacts of tourism in absolute terms"*.

In an attempt to overcome this gap in implementation between the goals of sustainable tourism and the increasing impacts of tourism on environmental change, this author analyses the governance systems for sustainable tourism, through the notions of policy learning and failure. From the perspective of the political arena, the problems encountered in achieving sustainable tourism present a diverse nature, such as temporality, irreversibility, complexity, and interconnectivity, or more specifically, spatiality, given that environmental impacts tend to be cross-boundary, which complicates the management of sustainable tourism (Hall 2011). As pointed out by

Hall, recovering Dover's research (1995), *"in order to make policy problems more tractable, there has been a tendency to seek to address them* via *micro-policy means that work within existing policy processes and arrangements. However, the nature of the sustainability problem is such that while policy actions may appear logical or appropriate at the micro-scale, the emergent nature of tourism systems, let alone the inherent complexity of environmental and related change, can mean that such measures may have little effect at the meso- or macro-scales (…) It also possibly suggests that if sustainable tourism policy only focuses on micro-scale solutions, then it might be doomed to fail"* (Hall 2011: 654).

Consequently, the application of the premise "think globally, act locally" could be the one of the main reasons that explains the failure of many of the sustainable tourism policies implemented to date. In this respect, it is convenient to discriminate between three scales of governance in terms of the tractability of sustainable tourism policy solutions: macro-policy, meso-policy, and micro-policy (Dovers 2005; Hall 2008, 2011). Although the regional level constitutes the ideal basis for sustainable tourism management (*"islands of sustainability"* (Hall 2011)), it is necessary to take into consideration the national and supra-national perspective simultaneously.

In this respect, Hernández-Martín (2017, 2018) claims that the problems to be addressed and the challenges faced vary significantly at different spatial levels of analysis. While, globally, climate change, the carbon footprint, and rising sea levels constitute issues that focus the concern in the area nearest to the destination in regional and local levels, the main problems to be solved are pollution, scarcity of resources, waste management, congestion, the improvement of work conditions, local wellbeing, and even loss of identity. It can be argued that both global and destination levels are closely related and that it is necessary to act on a par in both. However, it is undeniable that it is the sub-national level, whether regional or local, which is the most suitable spatial level for the policy arena, since this is consistent with prior research (Dovers 2005; Hall 2011). Bearing this idea in mind, the extended theoretical framework built by Hernández-Martín is of great practical applicability (illustrated in Fig. 2).

This framework presents a great potential for the measurement of sustainable tourism at the sub-national level, by integrating the following three approaches:

1. Demand, differentiating between visitors, non-visitors, and the total population that exerts pressure on the destination;
2. Supply, by distinguishing between the tourism industry (i.e. the set of "tourism characteristic products") and other productive sectors;
3. The spatial dimension, since it is necessary to measure the sustainability of tourism at the national, regional, and local levels.

The central idea behind this framework is that the achievement of sustainable tourism simultaneously involves the sustainability of tourist behaviour, the sustainability of tourism characteristic activities, and the sustainability of tourism destinations (Hernández-Martín 2017, 2018; INRouTe 2016).

The matter of measuring sustainable tourism at the regional level constitutes an issue of greater complexity than its conceptualization but is of undisputable relevance.

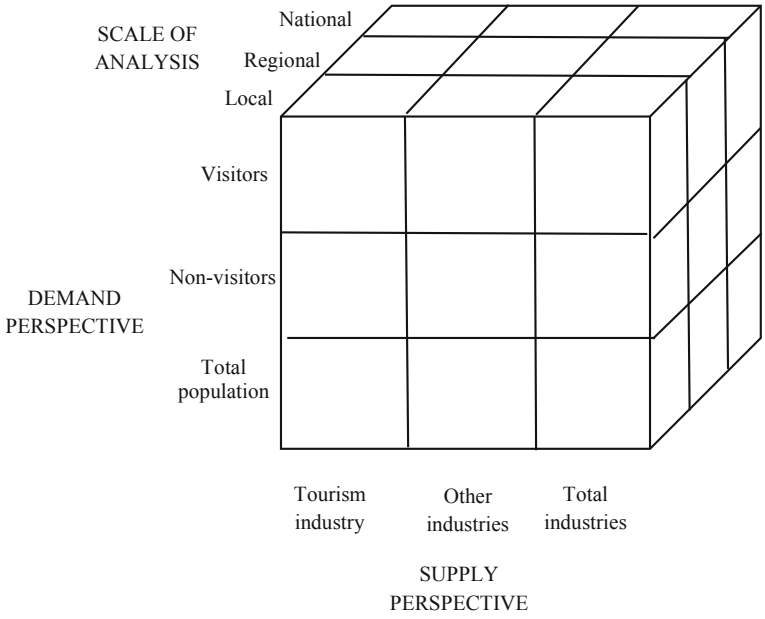


Fig. 2 Extended framework for sustainable tourism. *Source* Adapted from Hernández-Martín (2017, 2018)

Since the early nineties, many researchers have been concerned about the measurement of sustainable tourism at regional level (Owen et al. 1993; Butler 1999; MCCool et al. 2001; Gössling 2002). Butler had already argued the need for governments to "*apply sectoral and regional environmental accounting"* (1999: 16), and emphasized the measurement of the maximum number of tourists that a destination can receive, that is, its load capacity. Similarly, McCool et al. (2001) assessed the usefulness of a set of indicators of sustainable tourism in the State of Montana (USA), by differentiating between three different spatial levels: national, regional, and local. Moreover, Gössling (2002) emphasized the difficulty in finding the data which would enable the impact of tourism activities to be evaluated at regional level.

Pulido Fernández & Sanchez Rivero insisted on the idea that the application of sustainable tourism to real cases remains slow and partial, despite the *"significant progress in the definition of indicators for the sustainable management of firms and tourism destination"* (Pulido Fernández and Sanchez Rivero 2009: 281). Their research provides a weighted composite index on sustainability tourism, the ST index, whose purpose is its application as a tool to assess management at tourism destinations from a comparative perspective. On the basis of the Spanish system of environmental tourism indicators (SSETI), which is a homogeneous set of indicators available at the level of Spanish autonomous regions, Pulido Fernández & Sanchez Rivero built the ST index, which referred to four main categories: driving forces, pressures, state, and impacts. Furthermore, Lozano-Oyola et al. (2012) verified the

utility of sustainable tourism indicators as practical planning tools and specified three basic functions: "*(1) the formulation of general action plans at a regional level; (2) the definition of short-term strategies for destinations, and (3) the establishment of benchmarking practices"* (Lozano-Oyola et al2012: 666).

From the institutional perspective, and as already pointed out in the previous section, the starting premise of the UNWTO measuring sustainable tourism (MST) initiative is the recognition of the importance of the local/sub-level approach. The need to expand and improve statistics at the sub-national level is highly evident when it comes to measuring sustainable tourism, since this mission requires the assessment of the sustainability in the triple dimension (environmental, economic, and social) as well as the response to specific measures of politics on finer spatial scales. In this respect, sub-national statistics for sustainable tourism are being increasingly employed (INRouTe 2017; The Regional Government of Andalusia 2007, 2015; OECD 2013). Within the framework of the SF-MST initiative, a small but growing number of pilot studies are been conducted at the regional level. Thus, Jones, Munday and Bryan (2016) have applied the MST initiative in Wales, and more specifically for the case of Spain, Hernández-Martín et al. (2016) have adapted this framework for the Canary Islands.

5 The Case of the Andalusia Region: System of Sustainable Tourism Development Indicators for Andalusia

Andalusia is the Spanish region (NUTS 2) located at the southernmost extreme of the EU. According to the latest data available, the number of international tourist arrivals to Andalusia reached 11.95 million in 2017 (IECA 2018). Furthermore, tourism revenues were estimated at 19.2 billion € in 2016, representing 12.5% of the regional GDP (Ministry of Tourism and Sport of Andalusia 2017). These numbers underline the significance of Andalusia as a tourist destination, on a par with several European national destinations, such as Ireland and Switzerland, and international destinations, such as the Dominican Republic and Cuba (UNWTO 2018a).

The region of Andalusia is one of the main examples of the latest advances in the measurement of sustainable tourism, especially from the development and ongoing implementation of the System of Sustainable Tourism Development Indicators in 2015, under the framework of the UNWTO MST initiative. This latest achievement does not constitute an isolated milestone, but does represent the culmination of an ongoing effort that dates back to the early twenty-first century in the region.

The search for sustainable tourism in Andalusia destinations can be traced back to 2006, when the reform of the current Statute of Autonomy was approved. Under Chap. 7, entitled "Environment", article 197 states that public administrations should mainly address their policies to the development of sustainable tourism. In practice, this implies a compulsory mandate for the planning and organization of the tourist activity to be carried out with maximum sustainability criteria (Ministry of Tourism

and Sport of Andalusia 2016). At this point, it is appropriate to bear in mind that in Spain most of the competences in terms of tourism policy are transferred to the autonomous communities.

This strategic approach to tourism was first applied in Andalusia with the General Plan for Sustainable Tourism 2008–2011. This master plan pivoted on the principles of quality and sustainability, the latter understood from its triple dimension (environmental, economic, and socio-cultural), which involved the reconversion and repositioning of certain mature tourist destinations such as the Costa del Sol (Ministry of Tourism, Trade and Sport of Andalusia 2007). However, despite insisting on the need to move towards sustainable tourism, the indicators developed by the plan did not measure sustainability in a strict sense, but rather other aspects related to it and contemplated in the various action programmes (such as employment generated, tourist spending, and the seasonal distribution of tourists and employment).

The approval in 2016 and its subsequent application of the General Plan for Sustainable Tourism of Andalucía Horizon 2020 aimed "*to consolidate the overall sustainability and competitiveness of tourism as a strategic sector of the regional economy, generating quality employment and economic development" (* Ministry of Tourism, Trade and Sport of Andalusia 2016: 74). Hence, this master plan took a step forward with respect to tourism sustainability, since it was guided by the principle of *Integral Tourism Sustainability* according to which sustainability is conceived *"in a comprehensive way, taking into account not only environmental, economic and social aspects but also other dimensions and processes (cultural, institutional, territorial, technological, participatory,* etc.*) without which there can be no real sustainability"* (Ministry of Tourism, Trade and Sport of Andalusia 2016: 153). This leads to an approach towards tourism sustainability that is not an end in itself, but is a model of tourism development that is respectful to the environment and to the host community.

Among the numerous programmes of actions implemented in the agenda of this master plan, the "programme for the development of research, innovation, and modernization of the Andalusian tourism sector" included several lines of action, whereby the commitment to move decisively towards the measurement of sustainable tourism development in Andalusia is particularly noteworthy. Thus, the Sustainability Tourism Development Indicator System for Andalusia was conceived as part of the Master plan for Andalusia 2014–20, as a monitoring and evaluation tool to measure the achievements in sustainability of destinations in Andalusia. This system comprises more than 300 indicators that cover the various dimensions of tourism activity and the particular perspectives of the different tourism actors (tourists, companies, administration, and local population).

The Sustainability Tourism Development Indicator System for Andalusia, henceforth referred to as SIDTSA (its acronym in Spanish), was launched in 2015 (Ministry of Tourism, and Trade of Andalusia 2015), although its development dates back to the middle of the previous decade. In this regard, it should be underlined that while its construction is prior to the UNWTO MST initiative, the methodology used allows it to be framed within this initiative, which in turns constitutes one of its main strengths.

As previously mentioned, the publication in 2015 of SIDTSA is the outcome of a thorough and major effort at both institutional and research level (Ministry

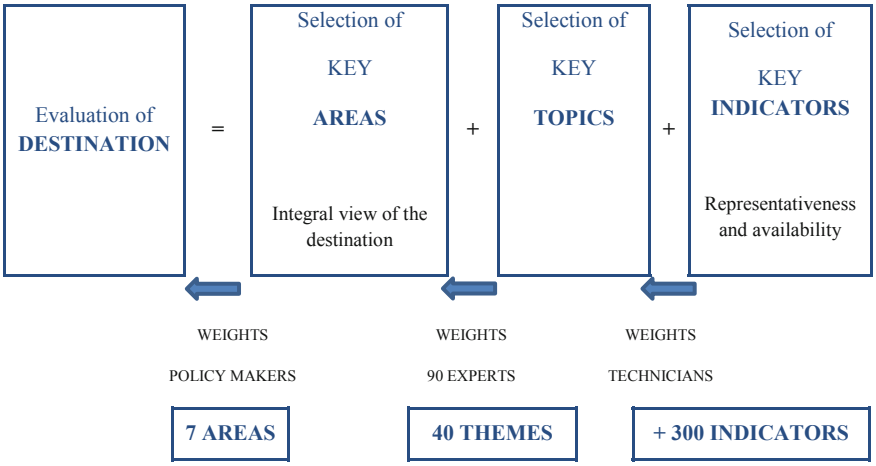


Fig. 3 Structure of the indicator system. *Source* Gallego et al. (2014)

of Tourism, Trade and Sport of Andalusia 2007; Alarcón et al. 2014; Gallego and Moniche 2014; Gallego et al. 2014). More recently, Rossi et al. (2017) have developed the technological support of the SIDTSA that will enable its implementation for Andalusian destinations.

Regarding the methodology used in designing this complex system, a hierarchical structure has been followed by differentiating between three levels of analysis: areas, topics, and indicators (Fig. 3).

The first level of analysis, the most general, comprises the key areas that provide an overview of the destination: governance, territory, vulnerability, profitability, diversification, quality, and innovation. Within each of these seven areas, the different key topics/issues that make it feasible to specify these areas have been selected. At the lowest level of the hierarchy, the most specific, key indicators have been developed, initially numbering around 300, but these have continued to increase as the system has evolved.

Not all the key areas, themes, and indicators are equally important. The relevance of each key area has been identified by policymakers at regional level, while the weights associated with each of the 40 themes have been determined by 90 renowned experts in the Andalusia tourist destination. Finally, each key indicator presents a weight assigned by the technicians who perform the calculations. Table 2 displays the different areas that reflect the sustainability of the Andalusia destination, and the key issues corresponding to each area.

For the calculation of each indicator, the reference point technique is used. More precisely, it is set for each indicator a reserve level (the minimum permissible value) and an aspiration level (the desired value) (Rossi et al. 2017). In order to capture the complexity of this system, Table 3 shows several of the main synthetic indicators for the measurement of each of the six key issues pertaining to the innovation area.

Table 2 Sustainable tourism development indicator system of andalusia (SIDTSA)

Key areas		Key topics
7 areas	Purpose	40 topics
Governance	*Evaluation of the model of government developed by the Regional Tourism Ministry in application of tourism policy. It comprises a set of indicators that define sustainable governance*	• Information and transparency
		• Cooperation of society on networks
		• Local development focus
		• Focus towards citizens
		• Efficient administration
Territory	*Examination of the sustainability of the territory, taking into consideration the existent interrelations of tourism with the environment from diverse perspectives (heritage, natural, social, economic, and institutional). Based on the European Tourism Indicator System Toolkit for Sustainable Destinations*	• Territorial cohesion
		• Human pressure
		• Quality of environment
		• Protection
		• Use of resources
		• Transport
		• Housing
		• Environmental awareness
Vulnerability	*Analysis of Andalusia destination vulnerability from an all-embracing viewpoint, starting from the premise that a strong dependence on a single factor implies a disadvantageous position for the destination with respect to the possible challenges that must be faced*	• Structure of markets
		• Segments
		• Seasonality
		• Structure of accommodation
		• Structure of transport
		• Structure of intermediaries
Profitability	*Measurement of the economic utility (profitability) of Andalusian tourism activities in order to understand its role as a strategic industry for the region*	• Competitiveness
		• Productivity
		• Employment
		• Tourism expenditure
		• Hotel revenue
Diversification	*Given that demand is heterogeneous and relies on multi-motivational and active tourists, this area aims to assess the diversification of tourism typologies*	• Product positioning
		• Complementary nature of products
		• Specialized tourism resources (sun and sand, culture, nature, health and well-being, etc.)
Quality	*Quantification of the satisfaction of demand and the performance of supply to meet tourists' demand. Thus, the indicators included in this section pursue the measurement of satisfaction from both a demand and supply perspective*	• Destination
		• Resources: beach
		• Resources: heritage
		• Resources: natural areas
		• Public infrastructures
		• Accommodation
		• Restaurants

(continued)

Table 2 (continued)

Key areas		Key topics
7 areas	Purpose	40 topics
Innovation	*Also, named technology area, it seeks to measure the incorporation of appropriate information and communication technologies (ICT) into tourism, both from the perspective of demand (potential and real), and supply*	• R&D + I
		• Internet usage
		• Online commerce
		• Customer relationship management (CRM)
		• Social networks
		• Mobile technology

Source Authors' Own based on Gallego et al. (2014); Gallego and Moniche (2014); Ministry of Tourism and Trade of Andalusia (2015); and Rossi et al. (72,017).

The technological platform developed for the SIDTSA illustrates its operability and viability (see the work of Rossi et al. 2017), while confirming its applicability as a system of indicators for the evaluation of intelligent tourist destinations. On the other hand, it should be noted that, in the coming years, as the system is perfected, the system will probably be adapted and will incorporate new variables, definitions, and sources of information or statistics.

It should be stressed that currently both the theoretical framework and the technological support of the system have been accomplished, and therefore efforts are focused on the implementation of the project[3], to assess whether the Andalusian destinations are being managed in a sustainable manner, in accordance with the comprehensive concept of Integral Tourism Sustainability. It is essential to clarify that SIDTSA is not designed to determine whether the destination is sustainable or not (Gallego et al. 2014), even less to calculate an exact value of the degree of sustainability of a tourist destination, but instead to evaluate to what extent the tourist destinations of the region evolve towards greater or lesser sustainability for a given period of reference. In this way, the application of the system will enable the detection of possible areas for improvement and the design of specific action measures by policymakers and practitioners, while refining the methodology itself, through the inclusion of new key indicators in the system.

6 Conclusion

This chapter presents the conceptualization and measurement of sustainable tourism at regional level. To this end, a review has been carried out on the various proposals for the definition and measurement of sustainable tourism, and several issues related to the regional perspective have been discussed.

This analysis reveals the existence of extensive work on the conceptualization of sustainable tourism, which has been developed over the last three decades

Table 3 Innovation area: purpose of key topics included and examples of indicators included therein

Key topics		Key indicators (59 in number)		
	Purpose		Purpose	Level of relevance and source of statistics (*)
R&D + I	Evaluate the efforts of the hospitality industry in innovation activities, the level of importance given, and the main factors that hinder innovation in enterprises. *16 indicators (mostly of high and medium relevance)*	I 101. Businesses with innovative activity-Accommodation and Food Service Activities	Understand the importance of innovative activities in accommodation and food service activities	High relevance Business Innovation Survey (IECA)
		I 104. Intensity of Investment-Accommodation and Food Service Activities	Quantify innovation spending compared to the total revenue of Andalusian accommodation and food service activity businesses	High relevance Business Innovation Survey (IECA)
Internet Usage	Measure the use of ICT by the international and national tourism demand (potential and real), as well as by the accommodation enterprises. *12 indicators*	I 210: Web personalization: Supply of Accommodation	Understand the level of existing personalization for regular users of the websites of Andalusian accommodation	Medium relevance Survey on ICT and e-commerce use in companies (INE, IECA)
E-commerce	Compute the level of use of this channel for both supply and demand in the purchase of accommodation and other relevant travel services *10 indicators*	I 304. Online acquisition of tourist products: Real demand	Understand the online purchase of tourist products/services per demand of people visiting Andalusia and using the Internet	High relevance Andalusian Tourist Situation Survey (IECA)

(continued)

Table 3 (continued)

Key topics		Key indicators (59 in number)		
	Purpose		Purpose	Level of relevance and source of statistics (*)
Customer Relationship Management (CRM)	Understand how supply uses innovation with CRM tools to obtain, store, and use information about customers for commercial and marketing purposes. *2 indicators*	I 402. Use of CRM for Commercial/Marketing purposes: Supply of Accommodation	Understand the use of CRM for Andalusian accommodation in analysing information on clients for commercial and marketing purposes	High relevance. Survey on ICT and e-commerce use in companies (INE, IECA)
Social Networks	Evaluate the use of social media incorporated in the main tourist markets and the level of use by the supply of accommodation for marketing, publicity, and image management as well as a channel for user relations. *14 indicators (mostly of high and medium relevance)*	I 506. Usefulness of Social Media: Supply of Accommodation	Understand the number of Andalusian accommodation businesses that consider social media to be highly useful for the development of trade	High relevance Survey on ICT and e-commerce use in companies (INE, IECA)
		I 513. Use of Social Media: Client Participation: Supply of Accommodation	Understand the number of Andalusian accommodation businesses that use social media to involve clients in the development and/or innovation of goods and/or services	High relevance Survey on ICT and e-commerce use in companies (INE, IECA)

(continued)

both by international institutions and in the academic sphere. However, despite the widespread attention given to tourism sustainability from a theoretical point of view, this review brings to light the lack of practical applications and the dissatisfaction regarding real progress towards sustainability in tourism. Among the main obstacles to attaining sustainable tourism, the complexity and multidisciplinary nature of

Table 3 (continued)

Key topics		Key indicators (59 in number)		
	Purpose		Purpose	Level of relevance and source of statistics (*)
Mobile Technology	Examine the use of smartphones for tourism in the process of preparing for and taking a trip. *5 indicators*	I 605. Number of Visits from Mobile Devices: Web Destination	Understand the rate of access to the destination website (www.andalucia.org) via mobile devices	Medium relevance GOOGLE ANALYTICS

(*) IECA: Institute of Statistics and Cartography of Andalusia; INE: National Statistics Institute
Source Authors' own based on data from the Ministry of Tourism and Trade of Andalusia (2015)

the concept itself and the absence of an international consensus on its measurement should be highlighted.

It is for this last reason that, after several proposals for the measurement of sustainable tourism from various international organizations, planners, and scholars, the UNWTO and UN Statistic Division started an initiative in 2015 in order to attain a standardized statistical framework for the measurement of the sustainability of tourism. Therefore, this initiative constitutes an ongoing project for the integration of statistics on the economic, environmental, and social dimensions of sustainable tourism whose finalization is planned in March 2020.

This chapter also points out the formulation of sustainable tourism and the peculiarities that it presents at a regional level. Several studies on sustainable tourism from a regional perspective also indicate the existence of a gap between the theory and practice of this process. On the one hand, the convenience of applying policies aimed at sustainable tourism at the regional level is highlighted, given the importance of the specificities of the tourist destinations and the existing distribution of tourism competencies. On the other hand, the environmental impacts tend to be cross-boundary; it is therefore mandatory to take both the national and supra-national perspectives into consideration simultaneously. The application of policies for sustainable tourism that is exclusively focused on micro-scale solutions is a short-sighted vision that would only lead to failure in the long term.

Therefore, there is an undeniable need to distinguish between the different spatial levels (supra-national, national, regional, and local) in order to face challenges of sustainability and to close the gap between the goals of sustainable tourism and the increasing impacts of tourism on environmental change. It is for this reason that a set of pilot studies are currently being conducted at the regional level, including in Andalusia (Spain). In this respect, this chapter also presents the development of the

System of Sustainable Tourism Development Indicators in the region of Andalusia, under the frame of the UNWTO MST initiative.

Notes

1. This definition was published in the first edition of the Journal of Sustainable Tourism, which was created specifically to study topics regarding sustainable tourism.
2. It is estimated to contribute approximately 5% of global CO emissions (UNWTO et al. 2008).
3. The results of this implementation have yet to be made available.

Acknowledgements This study benefits from the Project "Tourism SMEs, Global Value Chains, and Innovation" (INTURPYME), which was supported by the Ministry of Economy and Competitiveness in the framework of the Spanish National 2013 R&D Plan (ECO2013-42889-P).

References

Aall, C. (2014). Sustainable tourism in practice: Promoting or perverting the quest for a sustainable development? *Sustainability, 6,* 2562–2583.

Alarcón, P., Gallego, I., Moniche, A., Navarro, E., Ortega, G., Ruíz, E. & Tineo, A. B. (2014). *Sustainable tourism indicator system for Andalusia.* Paper presented at 12th Global Forum on Tourism Statistics, Prague, 15–16th May.

Asmelash, A. G., & Kumar, S. (2019). Assessing progress of tourism sustainability: Developing and validating sustainability indicators. *Tourism Management, 71,* 67–83.

Berry, S., & Ladkin, S. (1997). Sustainable tourism: A regional perspective. *Tourism Management, 18*(7), 433–440.

Bramwell, B., Higham, J., Lane, B., & Miller, G. (2017). Twenty-five years of sustainable tourism and the journal of sustainable tourism: Looking back and moving forward. *Journal of Sustainable Tourism, 25*(1), 1–9.

Bramwell, B., & Lane, B. (1993). Sustainable tourism: An evolving global approach. *Journal of Sustainable Tourism, 1*(1), 1–5.

Buckley, R. (2012). Sustainable tourism: Research and reality. *Annals of Tourism Research, 39*(2), 528–546.

Butler, R. W. (1991). Tourism, environment and sustainable development. *Environmental Conservation, 18*(3), 201–209.

Butler, R. W. (1993). Tourism—An evolutionary perspective. In J. G. Nelson, R. W. Butler, & G. Wall (Eds.), *Tourism and sustainable development: Monitoring, planning, managing* (pp. 27–43). Waterloo: University of Waterloo Press.

Butler, R. W. (1999). Sustainable tourism: A state of the art review. *Tourism Geographies, 1*(1), 7–25.

Castellani, V., & Sala, S. (2010). Sustainable performance index for tourism policy development. *Tourism Management, 31*(6), 871–880.

Choi, H. C., & Sirakaya, E. (2005). Measuring residents' attitude toward sustainable tourism: Development of sustainable tourism attitude scale. *Journal of Travel Research, 43,* 380–394.

Choi, H. C., & Sirakaya, E. (2006). Sustainability indicators for managing community tourism. *Tourism Management, 27*(6), 1274–1289.

Dovers, S. (1995). A framework for scaling and framing policy problems in sustainability. *Ecological Economics, 12,* 93–106.
Dowling, R. (1993). An Environmentally-based planning model for regional tourism development. *Journal of Sustainable Tourism, 1*(1), 17–37.
Dupeyras, A., & MacCallum, N. (2013). Indicators for measuring competitiveness in tourism: A guidance document, OECD tourism papers 2013/2, OECD Publishing.
European Commission. (2013). *The European tourism indicator system. Toolkit for sustainable destinations*. Luxembourg: Publications Office of the European Union.
European Commission. (2016). *The European tourism indicator system. ETIS toolkit for sustainable destination management*. Luxembourg: Publications Office of the European Union.
Gallego, I., & Moniche, A. (2014). *New utilities for regional TSA information system: Sustainable tourism indicator system for Andalusia.* Paper presented at II International Seminar on Regional Tourism: Moving towards a Regional TSA approach, Venice, 9–10th October.
Gallego, I., Moniche, A., Ortega, G., Ruiz, E., Tineo, A. B., & Ruiz de la Rúa, F. (2014). *A sustainable tourism indicator system for Andalusia: Implementation for public management*. 13th Global Forum on Tourism Statistics, Nara, 17–18th November.
Garrod, B., & Fyall, A. (1998). Beyond the rhetoric of sustainable tourism? *Tourism Management, 19*(3), 199–212.
Gössling, S. (2002). Global environmental consequences of tourism. *Global Environmental Change, 12,* 283–302.
Gössling, S., & Hall, C. M. (2008). Swedish tourism and climate change mitigation: An emerging conflict? *Scandinavian Journal of Hospitality and Tourism, 8*(2), 141–158.
Hall, C. M. (1998). Historical antecedents of sustainable development and ecotourism: New labels on old bottles? In C. M. Hall & A. Lew (Eds.), *Sustainable tourism development: Geographical perspectives* (pp. 13–24). London: Addison-Wesley Longman.
Hall, C. M. (2008). *Tourism planning: Policies, processes and relationships* (2nd ed.). London: Prentice-Hall.
Hall, C. M. (2010). Changing paradigms and global change: From sustainable to steady-state tourism. *Tourism Recreation Research, 35*(2), 131–145.
Hall, M. C. (2011). Policy learning and policy failure in sustainable tourism governance: From first- and second-order to third-order change? *Journal of Sustainable Tourism, 19*(4–5), 649–671.
Hardy, A. L., & Beeton, R. J. S. (2001). Sustainable tourism or maintainable tourism: Managing resources for more than average outcomes. *Journal of Sustainable Tourism, 9*(3), 168–192.
Hernández-Martín, R., Simancas-Cruz, M. R., González-Yanes, J. A., Rodríguez-Rodríguez, Y., García-Cruz, J. I., & González-Mora, Y. M. (2016). Identifying microdestinations and providing statistical information: A pilot study in the Canary Islands. *Current Issues in Tourism, 19*(8), 771–790.
Hernández-Martín, R. (2017). *An extended approach for MST at the subnational scale. Lessons from a pilot study*. Paper presented at 6th UNWTO International Conference of Tourism Statistics. Measuring Sustainable Tourism, Manila, 21–24th June.
Hernández-Martín, R. (2018). *Reflections on measuring the sustainability of tourism at the destination scale*. Working Group of Experts on Measuring the Sustainability of Tourism. Second Meeting, UNWTO Headquarters. Madrid, 24–25th October.
Hunter, C. (1995). On the need to re-conceptualise sustainable tourism development. *Journal of Sustainable Tourism, 3,* 155–165.
Hunter, C. (1997). Sustainable tourism as an adaptive paradigm. *Annals of Tourism Research, 24*(4), 850–867.
IECA. (2018). *Survey of the tourism situation of Andalusia.* Available via: https://www.juntadeandalucia.es/institutodeestadisticaycartografia/turismo/index.htm. Accessed Nov 22, 2018.
INRouTe. (2016). Tourism, territory and sustainability. A statistical insight at subnational levels. INRouTe.

International Conference on Responsible Tourism in Destinations. (2002). *The Cape town declaration,* Cape Town. Available via: https://responsibletourismpartnership.org/cape-town-declaration-on-responsible-tourism/. Accessed Feb 6, 2019.

Kasim, A. (2006). The need for business environmental and social responsibility in the tourism industry. *International Journal of Hospitality & Tourism Administration, 7*(1), 1–22.

Ko, T. G. (2005). Development of a tourism sustainability assessment procedure: A conceptual approach. *Tourism Management, 26*(3), 431–445.

Kozic, I., & Mikulic, J. (2011). An exploratory assessment of tourism sustainability in Croatian coastal destinations. Working Paper Series. Paper No. 11–04, University of Zagreb, Croacia.

Lane, B. (2009). Thirty years of sustainable tourism. Drivers, progress, problems and the future. In S. Gössling, C. M. Hall & D. B. Weaver (Eds.), *Sustainable tourism futures*. *Perspectives on systems, restructuring and innovations* (pp. 19–32). Routledge: New York, London.

Liu, Z. (2003). Sustainable tourism development: A critique. *Journal of Sustainable Tourism, 11*(6), 459–475.

Lozano-Oyola, M., Blancas, F. J., González, M., & Caballero, R. (2012). Sustainable tourism indicators as planning tools in cultural destinations. *Ecological Indicators, 18,* 659–675.

Ministry of Tourism, Trade and Sport of Andalusia. (2007). Indicadores sobre turismo y sostenibilidad en los destinos: Una aproximación desde Andalucía. Estudios Turísticos, 172–173, 131–139.

Ministry of Tourism and Trade of Andalusia. (2015). *System of sustainable tourism development indicators for Andalusia*. Andalusia Regional Government .Available via: https://www.juntadeandalucia.es/turismoycomercio/publicaciones/estadisticas/Sist_Indicadores.pdf. Accessed, Oct 26, 2018.

Ministry of Tourism and Sport of Andalusia. (2016). Plan General de Turismo Sostenible de Andalucía. Horizonte 2020. Volume II. Andalusia Regional Government. Available via: https://www.juntadeandalucia.es/turismoydeporte/export/sites/ctc/.galleries/Planificacion/PGTSAH-2020-volumenII-consejo-gobierno.pdf Accessed Feb 15, 2019.

Ministry of Tourism and Sport of Andalusia. (2017). *Balance del año turístico en Andalucía*. *Año 2016*. Andalusia Regional Government. Available via: https://www.juntadeandalucia.es/turismoydeporte/publicaciones/estadisticas/bata_2016.pdf. Accessed Feb 15, 2019.

McCool, S. F., Moisey, R. N., & Nickerson, N. P. (2001). What should tourism sustain? The disconnect with industry perceptions of useful indicators. *Journal of Travel Research, 40*(2), 124–131.

Moscardo, G., & Murphy, L. (2014). There is no such thing as sustainable tourism: Re-conceptualizing tourism as a tool for sustainability. *Sustainability, 6*(5), 2538–2561.

One Planet Network. (2019). *A platform for sustainable development goal 12*. Available via: https://www.oneplanetnetwork.org/ Accessed Feb 6, 2019.

Owen, R. E., Witt, S. F., & Gammon, S. (1993). Sustainable tourism development in Wales: From theory to practice. *Tourism Management, 14*(6), 463–474.

Pigram, J. (1990). Sustainable tourism: policy considerations. *Journal of Tourism Studies, 1*(2), 2–9.

Pulido Fernández, J. I., & Sánchez Rivero, M. (2009). Measuring tourism sustainability: Proposal for a composite index. *Tourism Economics, 15*(2), 277–296.

Rossi, C., Guevara, A., Navarro-Jurado, E., Caselli, J., & Perea-Median, M. J. (2017). *Caso de estudio: diseño e implementación del soporte tecnológico de un sistema de indicadores de turismo sostenible*. In J. F. Vera-Rebollo, J. Ivars-Baidal y Marco & A. Celdrán Bernabéu (Eds.), *Actas del Seminario Internacional Destinos Turísticos Inteligentes: nuevos horizontes en la investigación y gestión del turismo* (pp. 327–350). Alicante: Servicio de Publicaciones de la Universidad de Alicante.

Scott, D., & Becken, S. (2010). Adapting to climate change and climate policy: Progress, problems and potentials. *Journal of Sustainable Tourism, 18*(3), 283–295.

UNEP. (1998). *Fourth Meeting of conference of the parties to the convention on biological diversity* (UNEP/CBD/COP/4/Inf.21). Bratislava, 4–15th May.

UNWTO. (1993). *Sustainable tourism development: Guide for local planners*. Madrid: UNWTO.
UNWTO. (1997). Agenda 21 for the travel and tourism industry: towards environmentally sustainable development. Madrid: UNWTO.
UNWTO. (1998). *Guide for local authorities on developing sustainable tourism*. Madrid: UNWTO.
UNWTO. (1999). *Global codes of ethics for tourism. For responsible tourism*. Available via: https://cf.cdn.unwto.org/sites/all/files/docpdf/gcetbrochureglobalcodeen.pdf
UNWTO. (2004). *Indicators of sustainable development for tourism destinations: A guidebook*. Madrid: UNWTO.
UNWTO. (2016). *2017 International year of sustainable tourism for development*. Available via: https://www.tourism4development2017.org/about/ Accessed Feb 8, 2019.
UNWTO. (2018a). *UNWTO tourism highlights, 2018 Edition*. Available via: https://www.e-unwto.org/doi/pdf/10.18111/9789284419876. Accessed Oct 25, 2018.
UNWTO. (2018b). *Linking the TSA and the SEEA: A technical note*. Available via: https://cf.cdn.unwto.org/sites/all/files/docpdf/tsaseeatechnote.pdf. Accessed Feb 27, 2019.
UNWTO. (2018c). *Next steps*. The second meeting of the Working Group of Experts on Measuring the Sustainability of Tourism. Available via: https://cf.cdn.unwto.org/sites/all/files/pdf/wge_mst_2nd_item_6.1.pdf. Accessed Feb 27, 2019.
UNWTO. (2018d). *Statistical framework for measuring the sustainability of tourism*: *Consultation draft*. Draft prepared for discussion with the Working Group of Experts on Measuring the Sustainability of Tourism. October 2018. Available via: https://cf.cdn.unwto.org/sites/all/files/pdf/wge_mst_2nd_item_2.1_doc_0.pdf. Accessed Mar 14, 2019.
UNWTO & Industry, Science and Technology Canada. (1993). *Indicators for the sustainable management of tourism*. Report of the International Working Group on Indicators of Sustainable Tourism to the Environment Committee. Winnipeg: International Institute for Sustainable Development.
UNEP & UNWTO. (2005). *Making tourism more sustainable. A guide for policy makers*. Madrid: UNWTO.
UNWTO, UNEP & WMO. (2008). *Climate change and tourism—Responding to global challenges* . Madrid: UNWTO.
UNWTO. (2015). Statistical framework for measuring the sustainability of tourism. Available via: https://www.unwto.org/standards/statistical-framework-for-measuring-the-sustainabilityof-tourism Accessed 14 March 2019.
Vera-Rebollo, J. F., & Ivars, J. A. (2003). Measuring sustainability in a mass tourist destination: Pressures, perceptions and policy responses in Torrevieja. *Spain. Journal of Sustainable Tourism, 11*(2–3), 181–203.
World Commission on Environment and Development. (1987). *Our Common Future*. Oxford: Oxford University Press.
World Conference on Sustainable Tourism. (1995). *Charter for sustainable tourism*. Available via: https://www.institutoturismoresponsable.com/events/sustainabletourismcharter2015/wp-content/uploads/2015/06/CharterForSustainableTourism.pdf. Accessed Feb 4, 2019.

Tourism Planning and Tourism Development in the Italian Inner Areas: Assessing Coherence in Policy-Making Strategies

Daniele Mantegazzi, Maria Giulia Pezzi, and Gabriella Punziano

1 Introduction

Peripheral areas are often linked to concepts like economic marginality, depopulation, and general unattractiveness for potential investors and prospect inhabitants (Barca et al. 2014). Consequently, regional development policies in these areas generally aim to provide tools and solutions facing these issues. Two main approaches have emerged in the last decades: spatially blind and place-based (Barca et al. 2012). The first relates to interventions implemented without explicitly taking into consideration the specific geographical contexts (World Bank 2009). The second, instead, is driven by the assumption that places' specificities matter, and these specificities could be used as triggers for development policies focused on local communities (Barca et al. 2012).

This chapter is the result of shared reflections of all the authors, as it emerges from the introduction and the concluding sections. Daniele Mantegazzi and Maria Giulia Pezzi contributed together to Sections "2 From economic spaces to social places: why culture and community matter in place-based regional development"; "3 A place-based approach to local development: the Italian National Strategy for Inner Areas" and "4 Tourism development policies within the SNAI framework: setting the context". Gabriella Punziano, instead, authored the Section "5 Intersecting policy narratives and tourism development in SNAI: theoretical evidence and empirical feedback from content analysis".

D. Mantegazzi
Department of Economic Geography, Faculty of Spatial Sciences, University of Groningen, Groningen, The Netherlands
e-mail: d.mantegazzi@rug.nl

M. G. Pezzi (✉)
Gran Sasso Science Institute, Via Michele Iacobucci 2, 67100 L'Aquila, Italy
e-mail: giulia.pezzi@gmail.com

G. Punziano
Department of Social Sciences, University of Naples Federico II, Naples, Italy
e-mail: gabriella.punziano@unina.it

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_22

This chapter aims to contribute to the current debate on this topic by analysing the Italian National Strategy for Inner Areas (hereafter SNAI[1]), launched by the Italian Government in 2012. The strategy is dedicated to the application of community and place-based interventions, whose objectives are implementing well-being and access to essential services in the so-called inner areas, namely areas located fairly distant from urban centres and urban hubs. The case study is relevant for three main reasons: (1) the peripheral areas involved in the strategy have not been selected on the basis of demographic or spatial criteria, rather on the basis of their distance from the nearest urban centres providing essential services; (2) the strategy applies an innovative approach to local development through the integration of bottom-up and top-down policy-making processes; (3) the process is implemented through the production of three consecutive policy documents that serve as "textual tools" for the implementation of the strategy itself. The analysis of these texts allows us to uncover how the issues linked with peripherality are discursively constructed by the local communities, in which terms and through which policy narratives (Stone 2002).

One of the possible "solutions to peripherality", frequently emerging from the policy documents produced within SNAI, is a transition towards a more tourism-based economy (Salvatore et al. 2018). The potential success of tourism development in peripheral areas is often taken for granted on the basis of their unspoilt territorial capital, regardless of their actual structural capacities (Andreoli et al. 2017). This view creates a short circuit between spatially blind assumptions within a place-based policy approach. From a theoretical perspective, tourism development studies and regional development policies analyse tourism transition in peripheral areas following two main streams of discourse: one seeing tourism growth as a main trigger for local development, and one considering tourism as only one of the possible elements of a more structured development policy aimed at fostering essential services for the population (see e.g., Brown and Hall 2000; Garrod et al. 2006; Kneafsey 2000; Lai and Li 2012; Ndivo and Cantoni 2016; Pike et al. 2011).

The purpose of this chapter is, thus, to contribute to the extant studies on tourism development as a component of local development policies, through a mixed research strategy, at the intersections of the qualitative and quantitative traditions. More specifically, we contribute to this debate by constructing a theoretical space on which the planning documents produced by SNAI's 22 pilot inner areas can be properly classified in order to assess the coherence with respect to their goals. This theoretical space was built on the basis of a literature review carried out through an anthropological lens, highlighting the role of communities and their cultures in bottom-up, place-based, and participative policy-making strategies. This review stresses the necessity of studying policy narratives to effectively categorise planned tourism interventions within the intersections between different policy approaches (spatially bling vs. place-based) and tourism development possibilities (based on emergent or existing resources). Hence, within the tradition of socio-statistical methods, we perform a content analysis of the planning documents using textual statistics techniques. This allows us to detect the real underlying policy conceptions of each of the 22 pilot

[1] Strategia Nazionale per le Aree Interne Italiane (Italian National Strategy for Inner Areas).

inner areas under investigation. Consequently, we are able to assess the consistency between the outlined ideal development strategies for tourism—at the theoretical level—and the designed forms of tourism in the plan documents—at the empirical level.

The results of our analysis lead to unanticipated findings of unexpected forms of tourism in certain areas. Indeed, even though SNAI calls for approaches highlighting the centrality of place in the development strategy, often the forms of tourism planned by these areas reflect an imprecise knowledge of the territory and the needs of those living there. This could explain why some places succeeded more than others in drawing their development options.

2 From Economic Spaces to Social Places: Why Culture and Community Matter in Place-Based Regional Development

This section aims to introduce the reader to the conceptual framework underlying the analysis carried out in this study, identifying some key concepts related to place-based regional development policies which will be recalled throughout this contribution. In doing so, we analyse the literature on regional development through an anthropological lens. Exploiting the anthropological approach in this framework allows us to highlight how peripheries are discursively constructed, and the importance of cultural and economic factors for the implementation of local development strategies. Consequently, in the next section, we will be able to properly identify what Italian Inner Areas are and how their prospective development path has been conceived.

"Peripheries", "remote areas", and "marginal areas" are all terms that have often been used as synonyms indicating areas located at the fringes of urbanised areas, and experiencing a series of economic, cultural, and societal stresses because of their progressive depopulation trends, loss in social and economic capital, and general unattractiveness to potential investors, economic activities, and prospect inhabitants (see e.g. Barca 2009; Barca et al. 2012, 2014; Lucatelli 2015; Pezzi and Urso 2016; Pezzi and Punziano 2017; Rodríguez-Pose 2018). Indeed, peripheral areas, in contrast with more prosperous urban centres, seem to be conceived as spiralling into an increasing belief that decline and lagging-behind is a condition that leaves "no hope" for recovery (Rodríguez-Pose 2018, p. 190).

According to the sociologists Willet and Lang (2017), two main responses to the question of why peripheral areas are unable to pursue and succeed in exiting their condition are fuelling the academic debate on the issue: one is economic (their underperformance result because of structural reasons), the other has to do with knowledge/power dynamics negatively impacting on how peripheries are perceived and discursively constructed, in general state-led policy interventions (p. 258–259). The discursive/normative construction of peripheries and their inhabitants is endowed with performative agency: the definition itself of what is and what is not a periphery constructs and informs the way in which people relate to the world they live in.

A way in which such dynamics can be broken and overturned is by providing peripheral areas' inhabitants with spaces of possibility, defined as "discursive places allowing new things and ideas to emerge" (Connolly 2002). Willet and Lang (2017, p. 270) further explain this concept by stating that "if a structure is a repetition of a pattern, a space of possibility is the condition through which that pattern can be overturned". Therefore, the typical top-down development interventions could be inefficient because they tend to reiterate unbalanced knowledge/power relationships between the centre and the peripheries, subsidising a sort of paternalistic behaviour seeking to normalise a condition of economic distress perceived as not desirable (Pezzi and Punziano 2017).

From a different theoretical framework, Rodríguez-Pose (2018), in a heartfelt discussion on what to do about "places that don't matter", challenges the belief that big cities are the future. Consequently, the author also questions those policy interventions aimed at fostering development in the already "healthier" urban environments—a sort of territorial *triage*—leaving lagging regions behind (p. 191–192). More specifically, according to the author, these strategies are not advisable for two main reasons: first, not all declining areas have no economic potential; second, "shifting away attention from places in need of support to more prosperous and dynamic ones causes distress and resentment in neglected spaces" (p. 201–202).

Indeed, regional development interventions focusing on social, economic, and institutional diversity, as well as inclusiveness, have gained considerable momentum in the last decade. These strategies originated from a large debate stemming from four published reports: one by Barca (2009) tackling persistent underutilisation of potential for development in specific places; two OECD reports (2009a, b) dealing with the disparities between regions entailing unemployed potential for growth; and a Word Bank report (2009) acknowledging the unbalanced nature of growth in lagging regions. In particular, the Barca report and a subsequent article by Barca et al. (2012) have clearly set the main arguments behind the so-called spatially-blind or people-based interventions, in contrast with "place-based" interventions.

Spatially-blind "policies […] are designed without explicit consideration to space" (World Bank 2009, p.24), as if generating equal opportunities and enhancing the quality of life of citizens, could be achieved through one-fits-all interventions, regardless of where people live. This approach to regional development implies that the state designs policy interventions ignoring the specificities of the geographical contexts.

In contrast, a place-based policy "assumes that geographical context really matters, whereby context here is understood in terms of its social, cultural, and institutional characteristics" (Barca et al. 2012, p.139). Furthermore, this approach focuses on the potentialities provided by relying on the embedded local knowledge and/or culture, paired with a "sense of community" (Sen 2009). The reference to community here is functional to the understanding of the role played by community culture in place-based development policies. Acknowledging that both culture and community are two complex concepts lacking univocal definitions across disciplines, we follow Huggins and Piers (2015) and see community culture as the "overarching or dominant mindset that underlies the way in which places function in a broader societal sense, i.e. the ways and means by which individuals and

groups within communities interact and shape their environment" (p. 135). Hence, place-based development policies should not underestimate the role of culture in the outcomes of their interventions. Indeed, paying more attention to the role of community culture could help in explaining why some places succeed more than others in drawing up their development strategies. In the same way, it could explain why some communities lean towards certain development options rather than others. In fact, the desirability and feasibility of policy options are shaped by economic, political, institutional, cultural, knowledge, and power relationships, constituting the components of places as multi-layered "systems". Therefore, looking at how policy options are discursively constructed and performed, can help us shed light on the relational component between the building of economic spaces and the maintaining of social places—a process heavily relying on shared cultural norms and values, community cohesion, and collaboration. Nevertheless, it is worth noting that "due to their relative intangibility, cultural factors are often absent from analyses of economic change and development, divorcing the nature of social places from the economic spaces within which they are situated" (Huggins and Piers 2015, p. 131).

3 A Place-Based Approach to Local Development: The Italian National Strategy for Inner Areas

Building on the above definitions of peripherality and place-based regional development policies, in this section, we provide an overview of the Italian National Strategy for Inner Areas (SNAI), a place-based development strategy launched by the Italian Minister for Territorial Cohesion in 2012. It has developed from the acknowledgement of the existence of great disparities between urban hubs and their peripheral areas: the latter has indeed been facing a decrease in the services and economic capital available to the population. In fact, SNAI aims at finding an integrated approach operating as a trailblazer for the creation of a series of intervention policies to be applied to selected areas during the seven years (2014–2020) of the programme.[2] More specifically, the objectives of this strategy are implementing well-being and access to essential services in the so-called Italian Inner Areas, which have been defined as "areas at some considerable distance from hubs providing essential services (education, health, and mobility), with a wealth of key environmental and cultural resources of many different kinds, which have been subject to anthropisation for centuries" (Barca et al. 2014, p. 7).

From an operational perspective, the achievement of the objectives of the strategy is pursued through two types of actions. First, the improvement of essential services currently perceived as insufficiently accessible, and, second, the implementation of local and territorial development projects (Lucatelli 2015, p. 82). In particular, territorial development interventions may address one or more of the following issues: land protection and valorisation of natural and cultural resources (heavily relying on

[2] For more detailed information see Barca et al. (2014), https://www.agenziacoesione.gov.it/it/arint/.

tourism-enhancing strategies); implementation of agro-food systems; safeguarding of traditional know-how's and craftsmanship; and renewable energy.

The innovation of SNAI, compared to the previously adopted policy-making strategies in Italy, relies on a mix of top-down and bottom-up approaches to local development. In particular, the strategy combines the involvement of national powers with the pre-selection of project areas and with the provision of general guidelines for the strategy with the engagement of local institutions and actors drafting their development plans. This multi-level and dialogic approach to local development is based on five core innovations: (1) adjusting the standards of services provided in these areas, starting from the assumption that citizenship should imply the same accessibility to essential services in every part of the country; (2) focusing on goals and results through the elaboration of specific documents; (3) fostering association and cooperation among municipalities of the same area; (4) concentrating human and economic resources in areas where they are scarce or not very well organised; (5) using an open and participatory method to select actors, entrepreneurs, stakeholders, etc. (Fondazione IFEL 2015, p. 36–39).

Interestingly, the identification of inner areas does not rely on the selection of specific demographic parameters, rather on the consideration of their distance from urban hubs serving as service providers (measured in terms of travel time, and targeting municipalities located between 20 and 75 min from these centres). In other words, it measures the distance from cities able to ensure access to high schools, health centres with first-level emergency rooms, and at least small-medium-sized train stations. Therefore, the strategy identifies 4261 Italian municipalities as inner areas (Data from 2012; Fondazione IFEL 2015, p. 22–23). These communes account for 53% of the total Italian municipalities, covering 60% of the Italian surface, and representing 23% of the Italian population.[3] Hence, by definition inner areas may be considered as peripheral, however, they do not involve a marginal part of the Italian territory, and neither a small portion of its population.

3.1 SNAI and Its "Textual Tools"

In this subsection, we will focus on some "textual tools" through which SNAI is realised, in order to specify which policy documents have been scrutinised to perform the empirical analyses presented in the next sections.

Within this strategy, the territories are required to produce three subsequent documents, constituting the "tools" enabling the implementation of the policy interventions. The first document is a *Draft* of the Strategy, highlighting the guiding ideas resulting from a first reflection on the territorial resources, main actors and interlocutors, and development vision. The second is defined as *Preliminary* Strategy and includes an analysis of the resources already available, the possible interventions, and the viable improvement options, which could favour long-term development. Finally,

[3] https://www.agenziacoesione.gov.it/it/arint/.

the third is defined as *Area Strategy*, identifying specific actions, expected results, and indicators, constituting the reference base for the formal agreement (APQ). This final document is functional to the local implementation of the strategy and the allocation of funds.

The analysis presented in this contribution relies on the *Preliminary* documents, as they reveal the first systematised reflection on possible actions. However, a clarification on the characteristics of these texts is necessary. The territories were provided with guidelines[4] for the elaboration of their own strategy, which could be considered as a natural outcome of a policy process aimed at accomplishing both national and local development goals. The availability of these guidelines allows detecting the degree of coherence between two possible levels of analysis: the level of the existing resources, and the level of planned interventions. Nevertheless, the existence of such guidelines generated difficulties for local actors to set themselves free from this structure. This issue will be analysed in greater detail in Sect. 5.

4 Tourism Development Policies Within the SNAI Framework: Setting the Context

From the above overview of SNAI, it emerges how tourism is among the key territorial development interventions identified by the strategy in order to enhance well-being and access to essential services in these peripheral regions. Indeed, a first screening of the *Preliminary* documents produced by the 22 pilot areas highlights how most of them proposed a series of tourism-related strategies. Hence, this section examines the SNAI guidelines aiming at supporting local actors in their transitions towards a more tourism-oriented economy. This analysis highlights the importance of community participation and partnerships in the construction of planning documents, particularly, when the focus is tourism development. Collaborations, indeed, allow the holistic perspective to emerge, so that actions can be planned through their inter-sectorial connections with other aspects of the economic, cultural, and social life of an area.

4.1 Prospect Tourism Development in SNAI's Inner Areas

A document published by the Ministry of Heritage, Cultural Activities and Tourism (MiBACT) in 2016 (MiBACT 2016) provided a list of guidelines for SNAI territories, aiming at helping local actors and institutions to better frame their prospect tourism development path. The starting point is the acknowledgement of the fact that tourism

[4] Available here: https://www.agenziacoesione.gov.it/it/arint/Documenti_di_lavoro/index.html and here: https://www.agenziacoesione.gov.it/it/arint/Documenti_di_lavoro/Linee_guida_amministrazioni_centrali.html.

in the Italian Inner Areas still plays a marginal role, despite the richness of cultural goods. Consequently, the document invites the territories to reflect on three basic elements:

1. *Homogeneity vs. Diversity*: the project areas are characterised by extreme diversity and by their internal variety. Therefore, the guidelines express the need to identify the real vocation of these territories to define the best differentiating strategies. These would lead to the development of specific tourism products, which could foster collaborations among different municipalities (ibidem, p. 2);
2. Focusing on the *existing and potential demand for tourism* in these areas: inner areas in many cases have the advantage of selecting from scratch the tourism-niches better reflecting their needs (ibidem, p. 3);
3. The possible *integration of tourism and hospitality services with the essential services aimed at the local community*: tourism should not be seen as a solution to the lack of development, rather as a viable option which should be selected after careful evaluation. At this stage, tourism does not seem to be able to create a sufficient critical mass to ensure long-term local development on its own. Therefore, particular emphasis should be put on the integration of tourism-based interventions with other aspects of local development (e.g. agriculture and other production sectors), as well as with essential services, such as, internal mobility and public transport (ibidem, p. 4, 7).

Shifting from a mostly rural economy to a more tourism-oriented economy, though, is not an easy process, as Randelli et al. (2014) showed in their study on rural tourism in Tuscany, "as it involves experimentation, learning processes, new capabilities, new policies, adjustments and reconfigurations" (p. 227). Brouder (2014), in his review of current research linking regional studies and tourism, identified two main concepts: *path-dependence* and *co-evolution.* The first incorporates a historical perspective on how regions are impacted by the evolution of tourism-based economies over time, also considering the involvement of stakeholders in breaking economic lock-ins (ibidem, p. 541–542). The second entails intra-regional and intra-sectoral dynamics between mature sectors and the emerging tourism sector. In this sense, it is straightforward to understand the processes behind the development of "small scale tourism in regions where it is not the dominant sector, or where it is made up of multiple (perhaps even contesting) paths" (Brouder 2014, p. 542). These important considerations highlight the need to carefully consider whether the tourism strategies that SNAI's peripheral areas plan to offer address specific needs, and whether they are coherent with the existing local capital.

4.2 Tourism Transition and the Revitalisation of Countryside Capital

In a recent study on tourism transition in SNAI rural areas, Salvatore et al. (2018) question whether tourism can actually play a positive role as a driver of socio-economic change in peripheral areas through the enhancement and revitalisation of countryside capital. They start their analysis by acknowledging the fact that, until recently, tourism emerged as a relevant sector in the Italian peripheral areas through a hierarchical core-periphery model. This generated tourism enclaves serving as extended leisure resorts for urban hubs and metropolitan areas (ibidem, p. 42). Through the implementation of place-based development policies and the emergence of new cultural trends, these areas could reconsider their positioning in the tourism offer. Additionally, these regions had the opportunity to reassess their positioning along the core-periphery continuum, in a new and more positive way (in terms of chosen development paths and of local agency). Therefore, the authors talk about tourism transition in these terms:

(a) firstly, a cultural transformation of the rural peripheries from places of dependency and/or abandonment to ones of symbolic consumption (Jepson and Sharpley 2015); (b) secondly, a paradigm shift related to a divergent conceptualisation of remoteness based on environmental, cultural, and societal quality of life, rather than on marginality; (c) thirdly, a meaningful re-organisation of the tourist supply shifted towards common tourist products (Fiorello and Bo 2012) that are the outcome of a new planning model focusing on "community-based" tourism (Jones 2005) (ibidem).

This conceptualisation is perfectly in line with the latest note by MiBACT (Andreoli et al. 2017), aimed at offering a mid-term assessment of the typologies of tourism development plans produced by SNAI areas until December 2017. This document stresses, once again, the importance of the construction of a local economy integrating tourism with other development strategies, particularly, where tourism can only remain a marginal activity due to structural and infrastructural issues which often hinder accessibility. Following this reasoning, the above-mentioned report identifies two macro-groups classifying each of the SNAI areas[5]:

1. Areas where tourism is a *mature economy* (particularly found in the Alpine area);
2. Areas where tourism is an *emerging economy*, although at very different stages, and where SNAI is indeed an opportunity to define goals, assets, typologies, and desired outcomes (Andreoli et al. 2017, p. 4).

Additionally, this document acknowledges the existence of some critical issues yet to be addressed, and in particular, a generalised lack of analysis on the demand for tourism in these areas. Consequently, there are difficulties in identifying a tourism development model coherent with the existing local capital. Moreover, this is paired with a relative lack of consideration towards the current trends in tourism, which are increasingly focused on experiential, slow, sustainable, and aware forms of tourism

[5] For an earlier, yet more detailed, analysis on tourism development in inner areas, see Andreoli and Silvestri 2017.

(ibidem, p. 8). Hence, in order to properly develop integrated tourism strategies, a focus on the long-term sustainability of tourism projects and of tourism development is pivotal.

4.3 Tourism Development and Collaborative Efforts

The anthropologist Simonicca (2015), drawing on the long debate stemming from Jamal and Getz's (1995) analysis of collaboration theory in tourism planning, highlights the necessity for private and public actors to cooperate and build partnerships aimed at resolving conflicts between the desire for development and the protection of fragile environments and economies. Hence, cooperation and collaboration in tourism planning would simultaneously contribute to enhancing the local economy, as well as building and strengthening the local community, turning inhabited spaces into inhabited places (Low and Lawrence-Zúñiga 2003).

Although Simonicca does not directly refer to tourism in peripheral areas, he introduces an interesting perspective which helps the understanding of tourism planning processes in Italian Inner Areas. In fact, the writing of the three SNAI's policy documents (i.e. *Draft*, *Preliminary,* and *Area Strategy*) is the result of a collaborative effort between the local administration, local actors, and stakeholders, and a technical assistance, with the support of SNAI's committee. Hence, the produced texts could be analysed following an interpretive approach (à la Geertz 1973, 2008). This would allow detecting the significance that the everyday experiences of a territory, and the lives of those involved in the planning process, have on the construction of the area's Preliminary Strategy itself. In addition, SNAI texts mirror the rhetorical nature of the underlying decisional processes, which are built through the merging of collective discursive practices and dialogic spaces. These allow the construction of shared narrative identities among the actors representing local communities and places through a performative role (ibidem, p. 263).

5 Intersecting Policy Narratives and Tourism Development in SNAI: Theoretical Evidence and Empirical Feedback from Content Analysis

Building on the concepts highlighted in the above overviews on SNAI and its specific tourism development policies; in this section, we perform a content analysis on SNAI's textual tools. This allows investigating if and to what extent the actions contained in the *Preliminary* documents are coherent with the wider SNAI framework, and if the produced narratives overlap with the proposed tourism development paths. Interestingly, despite MiBACT has suggested SNAI's inner areas to reflect on their identity, on their local community, on their material and immaterial heritage and

on their economic assets in terms of prospect tourism development, and the outcomes have been diversified and, to some extent, unexpected.

5.1 Defining Policy Narratives

In the first part of our empirical analysis, we perform a content analysis on the *Preliminary* documents draft by the 22 SNAI's pilot areas. In particular, we conduct a lexical correspondence analysis (LCA) on these "textual tools" in order to detect their core tourism policy. This allows analysing how the actors who produced these documents understand and try to cope with policy problems, exploring the interactions between their knowledge of the structural features of the area, and the objectives of the policy. In doing so, we aim to posit a methodological innovation in the analysis of strategic policies by introducing a new lens in the understanding of policy narratives. More specifically, according to Krippendorf (2018, 13), content analysis extracts new meanings from a well-identified set of texts following precise structures and rules. Hence, by controlling for the regulatory structure imposed to the *Preliminary* documents, we analyse these texts as if they were real narratives, in order to extract the knowledge on existing resources and vocations of the local actors involved in the drafting of the strategy. Consequently, the application of content analysis techniques on planning textual tools can offer new perspectives in investigating policy processes. Indeed, as clarified by Stone (2002), policy narratives use storytelling to construct political tactics and typify policy matters entangled in larger cultural issues, or—alternatively—grounding such issues in the centrality of scientifically deduced numbers and facts. The goal of this strategic problem definition, asserts Stone (ibidem, p. 229), is to portray a political problem so that one's favoured course of action appears to be in the broadest public interest. Narratives in the strategic policy design are value-, community- and emotional-based; they are the lifeblood of politics, the visible outcome of differences in policy beliefs, and the visible outcome of political strategising like a socially constructed narrative.

Starting from an analysis of the strategies in tourism-related policies within SNAI, we detected five main narratives related to questions on specific tourism planning processes:

1. The *strengths and weaknesses* on which the planned strategy is built on. This links to the question: what is the strategy about? The possible answers lay between the development of new elements of attraction and strengthening the existing resources.
2. The *pursued objectives* in terms of benefits and costs. In other words, it implies asking the following question: what are the aims of the strategy? The answers range between increasing inclusiveness and sustainability of predictable costs.
3. The *dissemination* of the strategy, which relates to the question: how are the strategies communicated? The possible options are to leverage on a concrete or direct versus symbolic or abstract language.

4. The *rhetorical component*, i.e. wondering what these strategies aim to stimulate. The trade-off here is between emotionality and rationality.
5. The *level of abstraction* of the narratives, leading to the question: what are the prospect solutions? The possible answers range between objective and imaginative.

In the next subsection, thanks to the identification of these five narratives, along with their trade-offs, we will build a general theoretical scheme. This will enable us to classify the different types of tourism planning strategies emerging from the *Preliminary* documents.

5.2 Constructing a Theoretical Framework for Tourism Development Strategies

Re-elaborating the theoretical concepts addressed in the previous sections, we represent them using the *conceptual matrix tool* developed by Calise and Lowi (2010). This tool enables us to lay them on two perpendicular axes (as in Fig. 1). In particular, on the horizontal axis, we represent the opposition between the *essence* of the elaborated strategies: *place-based* or *spatially blind*. On the vertical axis, we contrapose two *perspectives* in tourism development: *path-dependence* and *co-evolution.* Consequently, we can identify four different spaces of attributes (as shown in the white rectangles of Fig. 1), each representing a different ideal-type of tourism configuration. Graphically, the conceptual matrix can be represented as follows:

The identification of these four ideal-types of tourism configuration allows us to classify the different strategies emerging from the SNAI's textual tools. In the lower-left side of the conceptual matrix, we identify those strategies adopting a *place-based* and *co-evolutive* vision of development. This type of approach is in accordance with the MiBACT's guidelines, which enhance the importance of the construction of a local economy integrating tourism with other development opportunities. This specific space of significance involves the type of tourism focusing on community-based production; sustainable and non-intensive development; and long-term vision of policy planning. This policy vision exploits tourism activities to act on the quality of life of the inhabitants and the symbolic consumption of the inhabited places. This ideal-type of tourism configuration is expected to be expressed in forms of narratives which are based on emotionality, symbolic or abstract language, and focusing on strengthening existing resources. Moreover, we predict that these narratives are strongly related to the MiBACT's guidelines, by emphasising the role of diversity, the existing demand for tourism and the integration of tourism and hospitality services with essential services for the local community. This tourism configuration, with its connotations, could theoretically be labelled as a strategy focusing on *community-based tourism.*

Moving to the upper left side of the scheme, we find those strategies adopting a *place-based* and a *path-dependence* vision of development. According to the

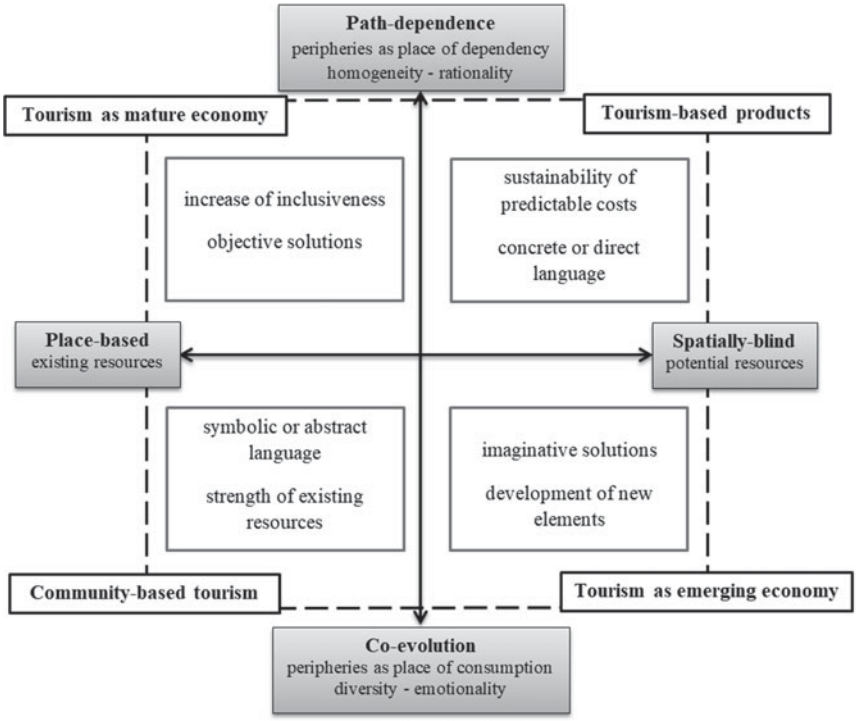


Fig. 1 Conceptual matrix showing the contraposition within the essences and the perspectives in tourism development strategies

MiBACT's guidelines, this type of approach is characterised by a tourism sector which has reached a sort of economic stability but cannot further develop due to structural and infrastructural issues. This is related to the concept of tourism niches, where the existing resources are conceived in their heterogeneity and aim to generate changes in those peripheral areas which are generally seen as places of dependency or abandonment. We expect that the policy narratives of this second ideal-type of tourism configuration are based on rationality and focused on the increase of inclusiveness, and the proposal of objective solutions. The particular connotations of this tourism configuration highlight how this approach sees *tourism as a mature economy*.

In the upper-right side of the conceptual matrix, the perspective of *path-dependency* in tourism strategies is linked with a *spatially blind* vision. In this case, the development is envisioned in the classical economic heterogeneity as a mean to identify the real vocation of territories. These types of approach deal with economic-dependency and/or abandonment of peripheral areas by insisting on intensive exploitation and a short-term policy planning strategy. The related expected policy narratives should rely on rationality, sustainability of predictable costs, and a concrete or direct language. This tourism configuration could be labelled as a strategy focusing on *tourism-based products.*

On the lower-right quadrant of the scheme, we find those strategies adopting a *spatially blind* and a *co-evolutive* vision of development, focusing on local potential, which is intended as a generic group of possible options for peripheral areas, without considering local specificities. As argued in the MiBACT's guidelines, these types of approach identify territories as places of consumption through the valorisation of potential resources. In this type of tourism configuration, we expect the policy narratives to be characterised by emotionality, imaginative solutions, and the implementation of new elements of tourism attraction. Hence, this tourism configuration, highlighting the need for innovation and novelty, is characterised by strategies seeing *tourism as an emerging economy*.

In order to properly classify the SNAI strategies according to these four ideal-types of tourism configuration, it is important to further refine our analysis by taking into consideration what Taleb (2007) called "narrative fallacy". This issue relates to the tendency of policymakers and common people to impose a coherent and plausible story on a set of facts regardless of the veracity of the story itself: a form of post hoc rationalisation devoted to connecting visitors and potential visitors. However, a good tourism strategy needs to be planned by developers or policymakers by, first, understanding the whole story of a territory, and then choosing which part of this story can be used to enhance local tourism as a trigger for local development. This is particularly important in the SNAI context, as it emerges in the MiBACT's guidelines, highlighting how one of the critical issues in the implementation of the strategy is the lack of tourism development models accounting for the existing local capital.

Indeed, considering the tourism strategies emerging from the SNAI's *Preliminary* documents imply considering policy narratives intensively focusing on a place-based approach, highlighting the centrality of place in the development strategy. Consequently, we would classify them as strategies anchored to places, and texts organised to give prominence to local and territorial resources. Hence, referring to Fig. 1, we would locate most of these strategies into the bottom-left quadrant (i.e. strategies focusing on a *community-based tourism*). Yet, we have seen that often the forms of tourism planned by the areas belonging to SNAI seem to lack a precise knowledge of the territory and the needs of those living there. As we will see later in this section, this has important implications, leading to unanticipated findings of unexpected forms of tourism in certain areas. Therefore, to properly account for the "narrative fallacy" issue, we detect the consistency between the outlined ideal development strategies for tourism—at the theoretical level—and the designed forms of tourism in the plan documents—at the empirical level—by applying a procedure of statistical text mining, developed in the next subsection.

5.3 Strategies as Narratives

From a technical perspective, the tourism strategies emerging in the SNAI documents can be considered as narratives. In fact, they are reported as written words which can

easily be documented and tracked, allowing us to analyse the related local policy-making and design processes. More specifically, these SNAI's textual tools could be conceived as narratives linked to two main levels: (1) the *level of existing resources*; (2) the *level of planned strategies*. In this sense, narrative policy analysis allows us to show how policymakers could strategically act through narratives by recognising, using, and constructing their own idea of tourism in inner areas. Acknowledging the role of political subsystems in influencing governmental decisions and resource allocation, the specific aim of this analysis is to show the power of tourism local development policies in fostering policy learning processes (Punziano and Urso 2016).

5.3.1 The Level of Existing Resources and the Level of Planned Strategies

In order to properly understand the emerging narratives from the SNAI policy documents, it is necessary to consider the relationship between the initial local level of development and the concrete possibility to implement the strategy. To do so, we perform a multiple correspondence analysis (MCA)[6] on a set of indicators structurally describing the places involved in the strategies. In particular, this analysis allows us to synthetise the variance among the different levels of development of each involved area, i.e. the *level of existing resources*, with only two latent dimensions. These two dimensions can be graphically combined to construct a factorial plane[7] (see Fig. 2), crossing:

1. The *level of development* (on the horizontal axis), with high performances in school, health system, hospitality on the right side, and low performances in the same areas on the left side;
2. The *relevant resources* (on the vertical axis), with high levels of the importance of the agricultural and productive sectors on the lower side, and high levels of the importance of the service sector, and cultural and environmental heritage on the upper side.

[6] MCA is a statistical technique summarising and visualising data tables containing categorical variables (Abdi and Williams 2010). It can be considered as an extension of the simple correspondence analysis or a generalisation of principal component analysis. Hence, we decided to use MCA because our set of indicators contains either discretised information ranging from a low to a high level (as in the case of indicators capturing the *extension of the area, population density, relevance of agricultural sector, relevance of productive sector, relevance of natural heritage, school adequacy, health system adequacy, mobility sector adequacy, digital divide level, and receptivity level*) or using qualitative indicators (such as the *kind of area*—mountainous, hilly, mixed—*associationism ability of municipalities*—simple or difficult—*presence of prospective vision of development*—if there is, or not—*existence of a leadership*—if there is, or not—*geographical area*—in the north, centre or south of Italy).

[7] We develop a factorial analysis on text with the overlap of a mixed non-hierarchical classification on the statistical software SPAD, created in the framework of the French school of *analyse des données* (Benzécri 1973).

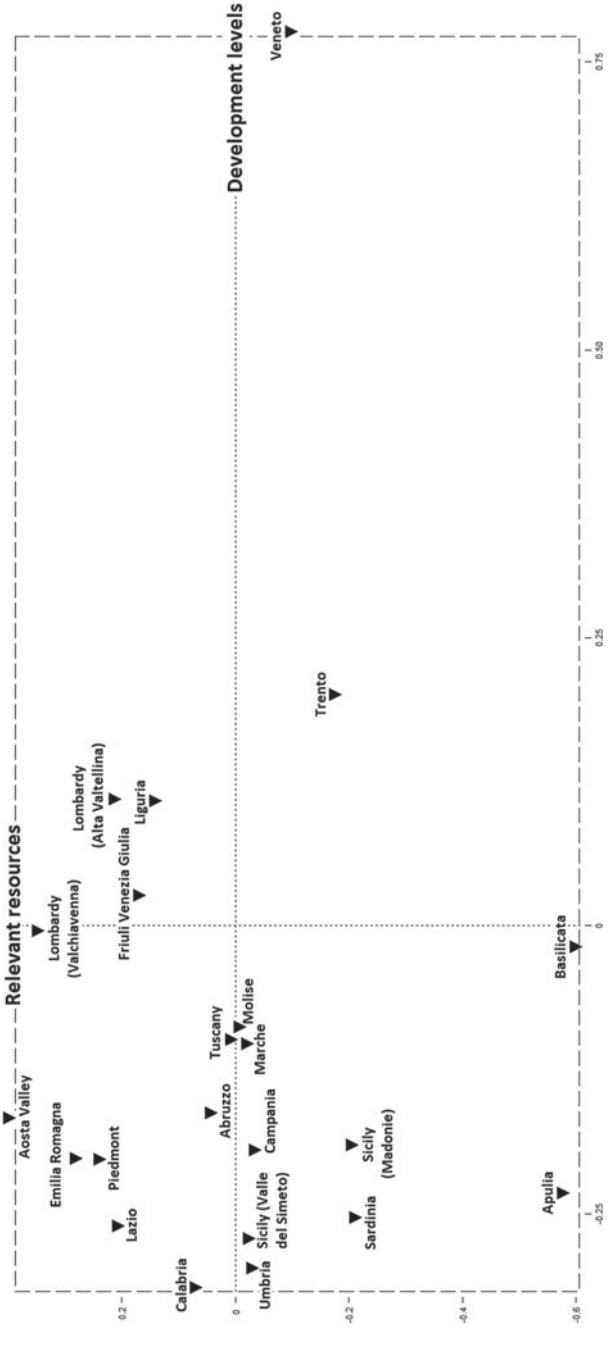


Fig. 2 Simplified factorial plane (The complete factorial plane is available in Appendix 1.) from multiple correspondence analysis on structural features and documents' characteristics of the involved SNAI inner areas. Explained inertia of the plane: 45% with two factors (32.5% on the horizontal axes and 12.5% on the vertical axes). Active variables (hidden in this simplified version): structural features. Supplementary variable: Italian regions where the SNAI inner areas are located

In the factorial plane,[8] we insert the position along these two dimensions for each of the 22 pilot inner areas. Additionally, we also include the position of the structural and territorial indicators used to give meaning to these two latent dimensions. Finally, we also perform a content analysis (Johnson et al. 2015) on the tourism strategies contained in the *Preliminary* documents, in order to classify the strategy of each inner area along a new set of conceptual categories.[9] The results of this process are also projected on the factorial plane. This allows us to identify four different types of inner areas, characterised by different levels of development, which can be described in terms of specific strengths and weaknesses, different relevant resources, which can be distinguished in terms of specific economic orientation, and different levels of planned strategies, which can be described in terms of maturity and degree of conceptual development of their tourism strategy.

More specifically, looking at the lower-right quadrant, we find the inner areas located in Trento (Trentino-South Tyrol) and Veneto—both located in the north of Italy and generally conceived as the most developed among the Italian Inner Areas. These areas are not particularly vast or populated. However, due to their mountainous configuration, they encounter significant problems in developing adequate mobility and transport sectors. On the contrary, the productive, health, and hospitality sectors are way more developed. These areas are also characterised by a low planning maturity. Nevertheless, their *Preliminary* documents show a great emphasis on tourism development strategies. Moreover, they show a great level of coherence with their initial development level. In particular, they acknowledge the inadequacy of their transport sector and plan a tourism development strategy fully integrating the development of the mobility sector.

In the upper-right quadrant, we find the inner areas located in Lombardy, Liguria, and Friuli-Venezia Giulia—again in the north of Italy. These areas show a low relevance of the agricultural sector and a high relevance of the environmental heritage and the school sector. They also encounter significant difficulties related to the ability to create associations of the involved municipalities, probably because these areas might be less cohesive. Additionally, their tourism development strategies are characterised by high levels of coherence, linking the inadequacy of the health sector with a policy design integrating its development with tourism development (through health and thermal tourism).

On the upper left quadrant, we find the inner areas located in Aosta Valley, Emilia Romagna, Piedmont, Lazio, Calabria, and Abruzzo—all located in different geographical parts of Italy. They are characterised by low levels of development

[8] Due to the graphic complexity of the output produced with the SPAD software, we present in Fig. 2 a simplified factorial plane, highlighting only the position along these two dimensions of the 22 pilot inner areas. The complete factorial plane is available in Appendix 1.

[9] The conceptual categories describing the tourism strategies contain the following qualitative variables: *design maturity, awareness of local development planning, supporting materials, imagining of the future, integration with mobility, integration with health system, integration with educational system* (all registered in a dichotomy way: yes or no), *section length* (short, medium, long), *text author* (anonymous, generic local actors, municipality union, technical agencies), *timing presentation* (first, intermediate, last), position inside the plan document (alone, scattered, in the section dedicated to local development).

and low relevance of the productive, health, and educational sectors, as well as low environmental heritage. These are middle-sized, hilly, or mixed areas, having a moderately developed transport sector and suffering from high degrees of digital divide. These areas are also characterised by a high tourism maturity, however, the integration of their tourism development strategies with other suffering sectors is not evident. Moreover, their *Preliminary* documents dedicate little space to express their specific tourism development strategy, which are partly included in other, yet more general, sections dedicated to local development.

Finally, in the lower-left quadrant, we find Tuscany, Molise, Marche, Campania, Umbria, Sicily, Sardinia, Apulia, and Basilicata's inner areas—covering the centre and the south of Italy. These are generally vast areas characterised by high levels of population density. These areas have a strong focus on the agricultural sector, with a moderate development of school, health, and productive systems, as well as low levels of digital divide, hospitality, and mobility sectors. In these areas, the tourism development strategies appear to be scattered throughout the entire *Preliminary* documents, showing that tourism is considered to be fairly connected to the other sectors. However, this does not consider the difference between the planned strategy and its concrete implementations.

5.4 *Which Tourism Strategies Are Italian Inner Areas Planning?*

In order to effectively derive from the texts the different types of tourism strategies programmed by SNAI's policymakers, we perform a lexical correspondence analysis (LCA)[10] on the above-illustrated factorial plan. The aim is to compare the latent meaning dimensions related to the various tourism development strategies, allowing us to classify the actual conceptualisations of tourism development strategies. Indeed, from the lexical correspondence analysis (LCA), we obtain the following two results: the *emerging planned tourism strategies* and the *strategical ideas that the policymakers have in mind when they are called to plan local tourism strategies.* These strategic ideas are the policy narratives through which we should be able to answer the following questions: do the narrative strategies of local policymakers explain how these groups developed alternative strategies within a pre-established regulatory framework (i.e. the provided guidelines)? How could the emerging tourism development strategies in inner areas be classified? And, how could these be classified within the produced theoretical scheme?

[10] LCA is a factorial analysis technique on textual data, devoted to produce a synthesis of the information contained in the analysed texts. It also allows graphically representing the network of associations between words and between words and texts, as well as connecting textual data and context data (Benzécri 1973; Amaturo 1989; Lebart et al. 1998).

Figure 3[11] graphically represents the results from the analysis of the *level of existing resources* and the *level of planned strategies*, upon which the words composing the sections dedicated to the tourism strategies in the analysed planning documents are projected. These words become attributes and contribute to create concrete spaces of meaning. Following this process, we highlight four classes of tourism strategies, corresponding to the planning strategies for tourism development defined in a theoretical way in Fig. 1.

In particular, in the lower-left quadrant, we identify strategies focusing on *community-based tourism*, where *co-evolution* strategies also involve education and youth occupation (highlighted by the presence of words like didactic, young, occupation). Moreover, the *place-based* vision of these strategies emerges from their enhancement of local culture and natural heritage (underlined by the presence of words like naturalistic, culture, and ground) and the incorporation of improvements in the mobility and availability of basic services for residents (related to words like resident, connectivity).

In the upper left quadrant, we identify strategies focusing on *tourism-based products*, where a *spatially blind* planning strategy is combined with a *path-dependence* perspective. This type of strategy strictly declines generic vocations—interchangeably adaptable to different internal areas—into the core of the tourism strategy: this is evident by the use of words as agro-food, wood, agriculture, local production, cultural and architectonic heritage, environment, naturalistic travel itineraries, rural, park, identity, and so on. Here, instead of a symbolic use of the narrative, we find a greater rationality and concreteness of language, particularly, focused on economic reasoning. Indeed, the narrative here is particularly focused on the following types of tourism:

- Geo-tourism or natural tourism: sustaining or enhancing the geographical characteristic of a place, along with its environment, culture, aesthetics, heritage, and the well-being of its residents (here the relevant words are environment, citizens, cultural heritage).
- Culinary tourism: based on agriculture and cuisines, which become the part of the region's brand (highlighted by the presence of words like agro-food and similar).
- Attractions-based tourism: focusing on specific facilities or sightseeing areas, often involving permanent structures or sites, e.g. museums, national parks, cityscapes, and landscapes (emphasised by words like parks, landscape, architectural heritage, UNESCO).
- Tourism with economic benefits: aiming at challenging the seasonality and the variations in employment opportunities or business revenue streams (underlined by words like entrepreneurship, innovation, reuse, and economy).

[11] Due to the graphic complexity of the output produced with the SPAD software, we present in Fig. 3 a reworked and simplified graph, highlighting only the decisive elements in the characterisation of the produced factorial space. The full graph is available in Appendix 2.

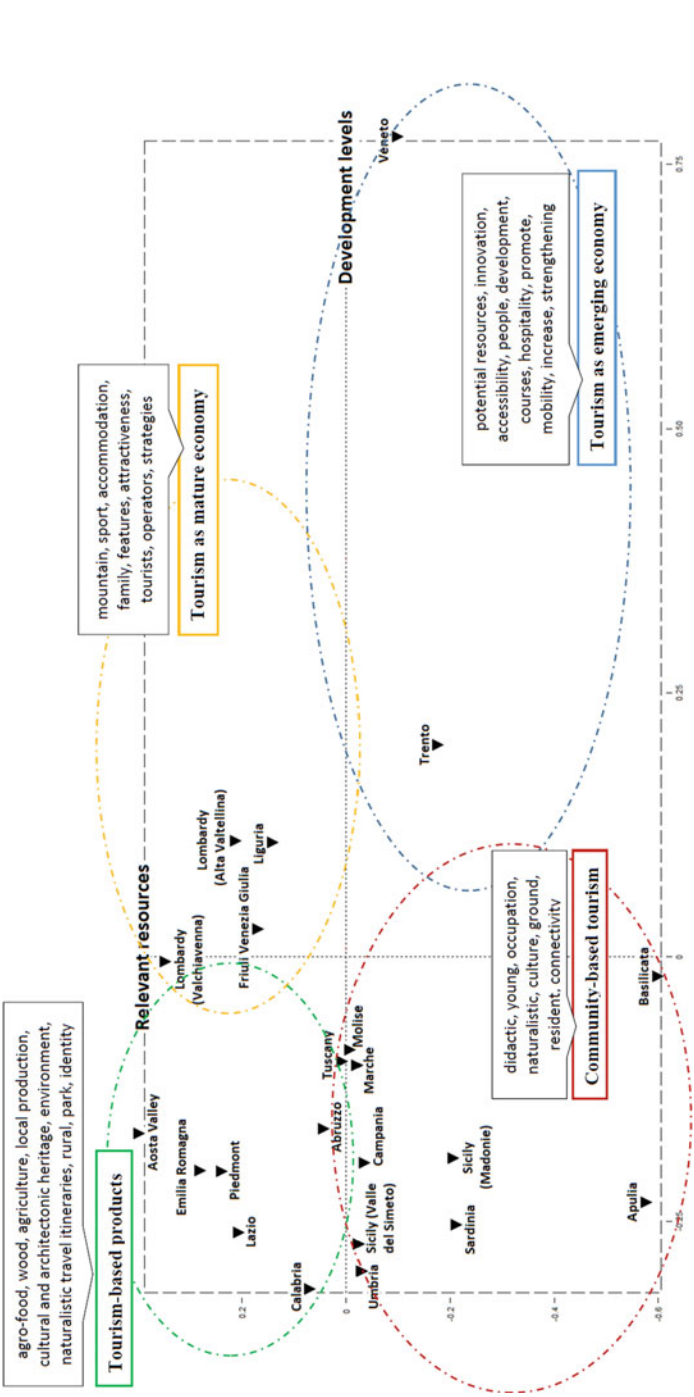


Fig. 3 Simplified factorial plane (The complete factorial graph is available in Appendix 2.) from lexical correspondence analysis with cluster analysis on tourism strategies defined inside the analysed SNAI's plan documents. This factorial graph summarises the results of the lexical correspondence analysis (about 40,000 words, 6500 different graphical forms, the percentage of distinct words 17.3%, final vocabulary made up of 250 clean graphical forms with a cut-off frequency equal to 20, 45% of extracted inertia from the first two showed factors. A non-hierarchical cluster analysis was conducted, cutting the dendrogram in four classes—representing, respectively, 18, 22, 28, and 32% of total variance—with 59% of extracted inertia. Active variables (hidden in this simplified version): words and structural features. Supplementary variable: Italian regions where the SNAI inner areas are located and the characteristics of their tourism strategies

The strategy of tourism as a mature economy fits well with the upper-right quadrant, where the place-based vocation is combined with a path-dependence perspective. In this case, the narrative emphasises the inclusiveness and objectivity of the actions put in place, and the policy governance highly depends on local actors and institutions. The relevant resources are connected to the physicality of the areas (typically mountainous) and the emerging kinds of tourism are: geo-tourism or natural tourism (specifically focusing on mountains), attractions-based tourism (through the explicit linkages to local attractions), tourism with economic benefits (through the focus on the tourism market). Moreover, this type of strategies is also focusing on:

- Experiential sportive tourism: based on local environmental heritage and opportunities to take part in sportive routes, programmes, and activities.
- Receptive tourism: developed on the realisation of accommodation facilities.

Finally, the lower-right quadrant groups strategies focusing on *tourism as an emerging economy*. In this case, a *spatially blind* planning governance, combined with a *co-evolutive* and integrated strategy, generates a space where, despite the already high performance in the touristic sector, much more could be done. The emphasis is posed on potential resources, innovation, new features, and imaginative solutions. In this kind of strategy, the focus is on the following types of tourism: tourism with economic benefits, attractions-based and event-based tourism, and geo-tourism or natural tourism. Moreover, two more complex kinds of tourism emerge from this approach:

- Ethnic or indigenous tourism: a cultural tourism appreciating or consuming visual arts and crafts, performing arts, festivals, displays and performances at museums and galleries, archaeological and historical sites and interpretative centres, heritage districts in cities. Additionally, it seeks the immersion in another culture, observing and perhaps interacting with residents and institutions.
- Tourism for specific categories: fostering improvements in accessibility for specific categories (e.g. disabled people, families), as well as enhancing and increasing networks of strategic services for the better functioning of the tourism sector.

6 Conclusion

Exploiting the tourism-related policy-making processes within the SNAI framework as a case study, this chapter examines the use of narrative strategies in defining tourism development policies, starting from local planning practices. The main objective was to investigate whether and how the planned tourism development strategies in the 22 pilot Italian Inner Areas are coherent with the more general SNAI policy framework and with the guidelines proposed by the National Strategy. Building on a literature review carried out from an anthropological perspective, we construct a theoretical space combining different policy approaches (spatially blind vs. place-based) and various tourism development possibilities (based on emergent or existing

resources). This allows us to properly categorise, through the application of textual statistics techniques, the tourism development strategies produced by the 22 pilot inner areas, considering their ability to address specific local needs and the coherence with the existing territorial capital. The results are drawn from a comparison between the structural characteristics of these areas and the textual characteristics of their produced policy documents and show different degrees of coherence. Indeed, the findings collected from our narrative analysis indicate that, in some cases, there is a mismatch between the requirements of the national policy and the actual ability of these areas to adopt the advised place-based development approach. This could explain why some places succeeded more than others in drawing their development options. Hence, even though the development strategies of these areas share the same pre-established regulatory SNAI framework (suggesting, therefore, the existence of many overlaps and similarities among the documents of these strategies), our findings highlight important differences among the analysed local strategies, mainly related to the underlying narrative approaches. This shows how the strategies outlined at the local level are characterised by distinctive peculiarities. In particular, a specific knowledge of the territory and its potentialities emerges as the key characteristic of the more mature strategies (i.e. those located in the right part of Fig. 3), while a more innovative and inclusive approach mainly characterises the other strategies, developing new spaces of possibility (i.e. those on the left side of the same figure).

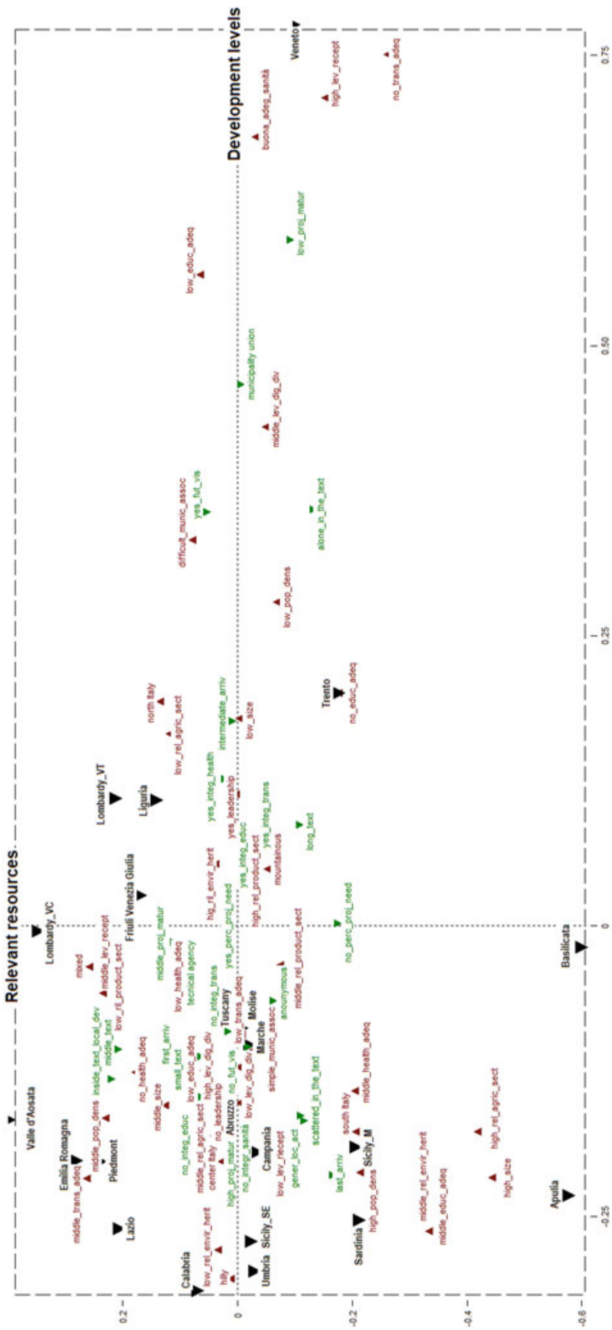
Our approach identifies four ideal-type of tourism configurations, reflecting dominant concepts within the field of regional science. The first configuration is *community-based tourism*, focusing on the specific needs of the inhabitants, so that the planned tourism development strategies include a possible enhancement in the perceived general quality of life (Okazaki 2008). The second ideal-type of tourism configuration sees *tourism as a mature economy*, assuming that policymakers know the local environments, resources, potentialities, and how to give more and more centrality to places in tourism development strategies and their institutional narratives (Barca et al. 2012). Furthermore, the third and fourth ideal-type of tourism configurations are *tourism-based products* and *tourism as an emerging economy*. Both configurations highlight the need to emphasise potential resources and imaginative development scenarios when drawing tourism development strategies. In particular, these tourism configurations see innovation as the necessary element for development and growth (Backman et al. 2017). In this sense, our analysis suggests that *tourism-based products* link to place-innovation strategies, while *tourism as an emerging economy* relates to sector-innovation strategies.[12]

[12] "Product or service innovations refer to changes directly observed by the customer and regarded as new; either in the sense of never seen before, or new to the particular enterprise or destination. Product or service innovations are perceptible to tourists to such an extent that they may well become a factor in the purchase decision" (Hjalager 2010, 2).

Building on the different empirical results emerging from this analysis, together with their connections at the theoretical level, new study-paths and many other research questions can be developed, helping us to shed light on the relational component between the building of economic spaces and the maintaining of social places.

Appendix 1

Multiple Correspondence Analysis on structural features and documents' characteristics of the involved SNAI inner areas

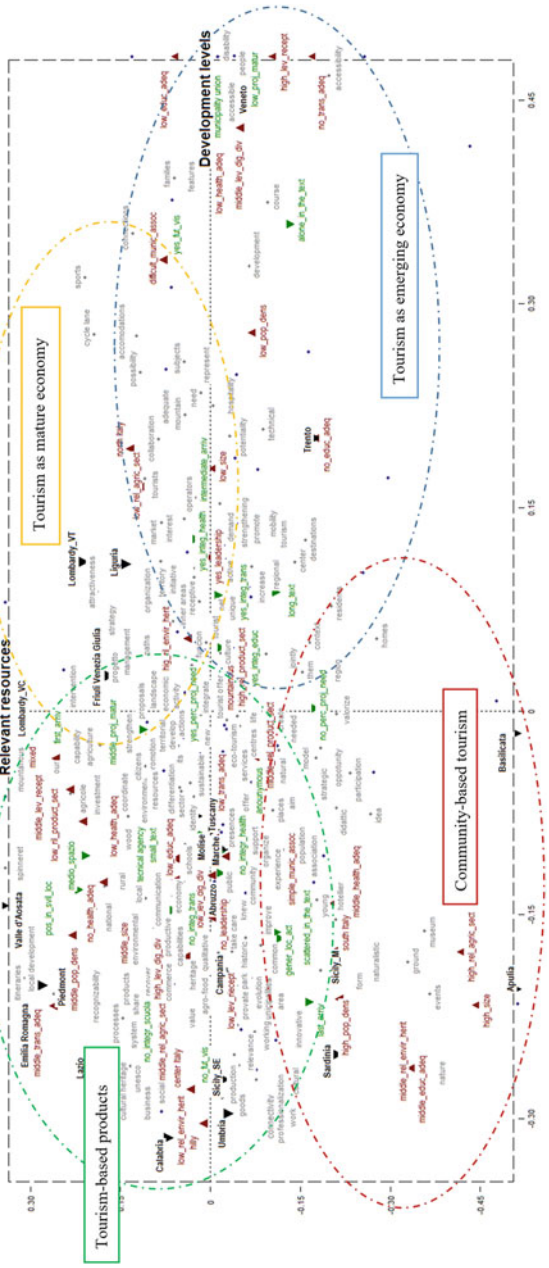

Relevant resources
Development levels
Veneto
Trento
Basilicata
Apulia
Lombardy_VC
Lombardy_VT
Liguria
Friuli Venezia Giulia
Valle d'Aosata
Emilia Romagna
Piedmont
Lazio
Calabria
Umbria
Sicily_SE
Sardinia
Sicily_M
Campania
Abruzzo
Tuscany
Molise
Marche
0.75
0.50
0.25
0
-0.25
0.2
-0.2
-0.4
-0.6

Explained inertia of the plan: 45% with two factors (32.5% on the horizontal axes and 12.5% on the vertical axes). Active variables: structural features. Supplementary variable: Italian regions where the SNAI inner areas are located and the characteristics of their tourism strategies.

Software used: Spad 5.5.

Appendix 2

Lexical Correspondence Analysis with Cluster Analysis on tourism strategies defined inside the analysed SNAI's plan documents.


Relevant resources
Development levels
Tourism as mature economy
Tourism as emerging economy
Tourism-based products
Community-based tourism
Lombardy_VC
Lombardy_VT
Liguria
Friuli Venezia Giulia
Veneto
Trento
Valle d'Aosta
Emilia Romagna
Piedmont
Lazio
Tuscany
Marche
Molise
Abruzzo
Campania
Sicily_SE
Sicily_NI
Sardinia
Umbria
Calabria
Basilicata
Apulia
0.30
0
-0.15
-0.30
-0.45
0.45
0.30
0.15
0
-0.15
-0.30
-0.45

This factorial graph summarises the results of the lexical correspondence analysis (about 40,000 words, 6500 different graphical forms, the percentage of distinct words 17.3%, final vocabulary made up of 250 clean graphical forms with a cut-off frequency equal to 20, 45% of extracted inertia from the first two showed factors. A non-hierarchical cluster analysis was conducted, cutting the dendrogram in four classes—representing, respectively, 18, 22, 28, and 32% of total variance—with 59% of extracted inertia. Active variables: words and structural features. Supplementary variable: Italian regions where the SNAI inner areas are located and the characteristics of their tourism strategies.

Software used:Sspad 5.5.

References

Abdi, H., & Williams, L. J. (2010). Principal component analysis. *Wiley Interdisciplinary Reviews: Computational Statistics, 2*(4), 433–459. https://doi.org/10.1002/wics.101

Amaturo, E. (1989). L'analisi delle corrispondenze lessicali. In E. Amaturo (Eds.), *Analyse des données e analisi dei dati nelle scienze sociali*. Torino: Centro Scientifico Editore, pp. 55–75.

Andreoli, A., & Silvestri, F. (2017). Tourism as a driver of development in the Inner Areas. *IJPP—Italian Journal of Planning Practice* , *VII*(1), 80–99.

Andreoli, A., Cuccu, O., & Silvestri, F. (2017). Nota alla Strategia delle Aree Interne: Il turismo come opportunità di sviluppo per le Aree Interne del Paese. Retrieved from: https://www.turismo.beniculturali.it/wp-content/uploads/2017/11/Nota-alla-Strategia-delle-Aree-Interne.pdf

Backman, M., Klaesson, J., & Öner, Ö. (2017). Innovation in the hospitality industry: Firm or location? *Tourism Economics, 23*(8), 1591–1614. https://doi.org/10.1177/1354816617715159

Barca, F. (2009). *An agenda for a reformed cohesion policy: A plce-based approach to meeting European union challenges and expectations. Independent report*, Prepared at the Request of the European Union Commissioner for Regional Policy, Danuta Hübner, Bruxelles: European Commission.

Barca, F., McCann, P., & Rodríguez-Pose, A. (2012). The case for regional development intervention: Place-based versus place-neutral approaches. *Journal of Regional Science, 52*(1), 134–152. https://doi.org/10.1111/j.1467-9787.2011.00756.x

Barca, F., Casavola, P., & Lucatelli, S. (Eds.). (2014). *A strategy for inner areas in Italy: Definition, objectives*. Roma: Tools and Governance.

Benzécri, J. P. (1973). *L'analyse des données* . Paris: Dunod.

Brouder, P. (2014). Evolutionary economic geography and tourism studies: Extant studies and future research directions. *Tourism Geographies, 16*(4), 540–545. https://doi.org/10.1080/14616688.2014.947314

Brown, F., & Hall, D. (Eds.). (2000). *Tourism in peripheral areas: Case studies*. Clevedon: Channel View.

Calise, M., & Lowi, T. J. (2010). *Hyperpolitics: An interactive dictionary of political science concepts*. University of Chicago Press.

Connolly, W. (2002). *Neuropolitics: Thinking, culture, speed (theory out ofbounds)*. Minneapolis, MN: University of Minnesota Press.

Fiorello, A., & Bo, D. (2012). Community-based ecotourism to meet the new tourist's expectations: an exploratory study. *Journal of Hospitality Marketing and Management*, *21*(7), 758–778.

Fondazione IFEL. (2015). *I Comuni della Strategia Nazionale Aree Interne*. Retrieved from https://www.fondazioneifel.it/documenti-e-pubblicazioni/item/4650-i-comuni-della-strategia-nazionale-aree-interne-prima-edizione-2015

Garrod, B., Wornell, R., & Youell, R. (2006). Re-conceptualising rural resources as countryside capital: The case of rural tourism. *Journal of Rural Studies, 22*(1), 117–128.
Geertz, C. (1973). *The interpretation of cultures: Selected essays*. New York: Basic Books.
Geertz, C. (2008). *Local knowledge: Further essays in interpretive anthropology*. New York: Basic books.
Hjalager, A. M. (2010). A review of innovation research in tourism. *Tourism Management, 31*(1), 1–12. https://doi.org/10.1016/j.tourman.2009.08.012
Huggins, R., & Piers, T. (2015). Culture and place-based development: A socio-economic analysis. *Regional Studies, 49*(1), 130–159. https://doi.org/10.1080/00343404.2014.889817
Jamal, T. B., & Getz, D. (1995). Collaboration theory and community tourism planning. *Annals of Tourism Research, 22*(1), 186–204. https://doi.org/10.1016/0160-7383(94)00067-3
Jepson, D., & Sharpley, R. (2015). More than sense of place? Exploring the emotional dimension of rural tourism experiences. *Journal of Sustainable Tourism*, *23*(8–9), 1157–1178.
Johnson, J. B., Reynolds, H. T., & Mycoff, J. D. (2015). *Political science research methods.* Cq Press.
Jones, S. (2005). Community-based ecotourism: The significance of social capital. *Annals of Tourism Research*, *32*(2), 303–324.
Kneafsey, M. (2000). Tourism, place identities and social relations in the European rural peripheries. *European Urban and Regional Studies, 7*(1), 35–50.
Krippendorff, K. (2018). *Content analysis: An introduction to its methodology*. London: Sage publications.
Lai, K., & Li, Y. (2012). Core-periphery structure of destination image: Concept, evidence and implication. *Annals of Tourism Research, 39*(3), 1359–1379.
Lebart, L., Salem, A., & Berry, L. (1998). Correspondence analysis of lexical tables. In *Exploring textual data* (pp. 45–79). Dordrecht: Springer.
Low, S. M., & Lawrence-Zúñiga, D. (Eds.) (2003). *The anthropology of space and place: Locating culture*. Blackwell Pub.
Lucatelli, S. (2015). La strategia nazionale, il riconoscimento delle aree interne. *Territorio, 74,* 80–86. https://doi.org/10.3280/TR2015-074014
MiBACT. (2016). *Linee Guida per la Strategia Nazionale per le Aree Interne.* Retrieved from https://www.agenziacoesione.gov.it/opencms/export/sites/dps/it/documentazione/Aree_interne/Documenti_di_lavoro/Linee_guida_Mibact_v05122016.pdf
Ndivo, R. M., & Cantoni, L. (2016). Rethinking local community involvement in tourism development. *Annals of Tourism Research, 57,* 234–278.
Okazaki, E. (2008). A community-based tourism model: Its conception and use. *Journal of Sustainable Tourism, 16*(5), 511–529. https://doi.org/10.1080/09669580802159594
OECD. (2009a). *How regions grow*. Paris: Organisation for Economic Growth and Development.
OECD. (2009b). *Regions matter: Economic recovery, innovation and sustainable growth.* Paris: Organisation for Economic Growth and Development.
Pezzi, M. G., & Punziano, G. (2017). La categoria di «distanza» come proxy delle questioni ruralità, perifericità e sviluppo locale nella Strategia Nazionale per le Aree Interne. *Sociologia E Ricerca Sociale, 20*(3), 167–192.
Pezzi, M. G., & Urso, G. (2016). Peripheral areas: Conceptualizations and policies. Editorial Note. *Italian Journal of Planning Practice VI, 1,* 1–19.
Pike, A., Rodriguez-Pose, A., & Tomaney, J. (Eds.). (2011). *Handbook of local and regional development*. Oxon: Routledge.
Punziano, G., & Urso, G. (2016). Local development strategies for inner areas in Italy. A comparative analysis based on plan documents. *Italian Journal of Planning Practices*, *5*(1), 76–109.
Randelli, F., Romei, P., & Tortora, M. (2014). An evolutionary approach to the study of rural tourism: The case of Tuscany. *Land Use Policy, 38,* 276–281. https://doi.org/10.1016/j.landusepol.2013.11.009

Rodríguez-Pose, A. (2018). The Revenge of the places that don't matter (and what to do about It). *Cambridge Journal of Regions, Economy and Society, 11*(1), 189–209. https://doi.org/10.1093/cjres/rsx024

Salvatore, R., Chiodo, E., & Fantini, A. (2018). Tourism transition in peripheral rural areas: Theories, issues and strategies. *Annals of Tourism Research, 68*(218), 41–51. https://doi.org/10.1016/j.annals.2017.11.003

Sen, A. (2009). *The idea of justice*. London: Allen Lane.

Simonicca, A. (2015). *Cultura, Patrimonio, Turismo*. Roma: CISU.

Stone, D. (2002). *Policy paradox. The art of political decision making* (Rev). NY: WW Norton & Company.

Taleb, N. N. (2007). *The black swan: The impact of the highly improbable* (Vol. 2). NY: Random House.

Willett, J., & Lang, T. (2017). Peripheralisation: A politics of place, affect, perception and representation. *Sociologia Ruralis, 58*(2), 258–275. https://doi.org/10.1111/soru.12161

World Bank. (2009). World development report 2009: Reshaping economic geoagraphy. Washington, DC: World Bank. scheme?

Tourism Taxation: Good or Bad for Cities?

Bianca Biagi, Maria Giovanna Brandano, and Manuela Pulina

1 Introduction

Public institutions raise taxes to provide goods and services, redistribute wealth amongst residents, and correct for negative externalities, which can be defined as the negative effects that an activity exerts on an unrelated third party. In the presence of market failures, governments, either nationally or locally, may raise taxes to internalize negative impacts. This is particularly true for the tourism activity, where consumers tend to purchase and make use of natural and man-made amenities, as well as public services, without directly contributing to the public budget. Amenities along with efficient public services are essential to foster both tourism-based economic growth and residents' quality of life in both the short and long run. However, during the tourism season, destinations often struggle to maintain an unaltered level of quality of life as perceived by tourists and residents. To overcome these issues, a number of large European cities have recently introduced a tourism tax. However, while local governments support tourism taxation as an instrument to increase revenues from nonresidents, private stakeholders argue on the possible loss of competitiveness caused by its application (Aguilò et al. 2005).

B. Biagi · M. Pulina
Department of Economics and Business (DISEA), University of Sassari and CRENoS, Sassari, Italy
e-mail: bbiagi@uniss.it

M. Pulina
e-mail: mpulina@uniss.it

B. Biagi · M. G. Brandano (✉)
Gran Sasso Science Institute, Social Sciences, L'Aquila, Italy
e-mail: mariagiovanna.brandano@gssi.it

M. G. Brandano
Gran Sasso Science Institute-L'Aquila, Via M. Iacobucci 2, 67100 L'Aquila, Italy

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*, Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0_23

In recent times, the debate to introduce, or reintroduce, tourism taxation in specific destinations has become a relevant and controversial issue. As reported by the World Tourism Organization (UNWTO) (1998), while before the 1960s international tourism was effectively free of taxation, currently, there are approximately 40 different types of taxes issued on the tourism sector. From an economic perspective, a tax is generally associated with a deadweight loss that may decrease the overall welfare of a given economy in terms of lower income, employment, fiscal revenue, and foreign currency. Yet, the amount of the deadweight loss is related to the domestic and international price elasticity associated with tourism demand and supply, and hence, the overall effect is not clear-cut (Bonham et al. 1992; Gooroochurn and Sinclair 2005; Sheng 2017). Therefore, a policy evaluation analysis that monitors the effects of tourism taxation is essential to establish who, if any, are the winners and losers as a result of the policy intervention. In the literature, there are a few studies that have explored the relationship between tourist flows and taxes (e.g., Mak and Nishimura 1979, and Bonham et al. 1992, for the case of Hawaii; Combs and Elledge 1979, and Arguea and Hawkins 2015, for the case of the USA). Scholars have also investigated the case of various European tourism destinations, for example, Durbarry and Sinclair (2001) in the UK, Guzmán (2004) and Aguilò et al. (2005) in the Balearic Islands (Spain), and Biagi et al. (2017), in an Italian town with a high tourism vocation and endowed with a protected marine area.

Italy is a particularly interesting case since the country is the third most visited destination in Europe (UNWTO 2017). Moreover, since 2011, under national legislation (D.Lgs. n.23/2011), town councils can levy a tourism tax. According to the Italian Observatory of Tourism Tax, in 2015 almost a quarter of all Italian tourist municipalities (i.e., a total of 940) had already introduced a tourism tax (Ista 2015). However, the law has been criticized by various stakeholders on the grounds of the market distortions it may cause.

The present work investigates how the introduction of a city tax impacts on both domestic and international tourism demands (see Biagi et al. 2017). To this aim, as a case study, three main Italian cities are considered: Rome (the capital of Italy), Florence (one of the most famous Italian art cities), and Padua (a university city, rich in arts and history and a UNESCO World Heritage Site). This analysis employs a policy evaluation technique, the synthetic control method (SCM henceforth), first used by Abadie and Gardeazabal in 2003 and applied by Biagi et al. (2017) to investigate the effects of tourism taxation. The effects exerted by the policy interventions on tourism flows are evaluated on a panel of cities considering the pre-treated period (2008–2010), the year of treatment (2011), and the post-treated period (2012–2014). The dependent variable is expressed in terms of tourist overnight stays, arrivals, and average length of stay, respectively, as recorded in the official accommodation and disentangled into the domestic and international components. The empirical findings provide an unbiased basis from which to evaluate the effects of tourism taxation that may provide direction to policymakers on the actual effects of the policy intervention.

This chapter is organized as follows. Section 2 provides a literature review on the economic models and empirical applications of tourism taxation. Section 3 describes the main categories of tourism taxes and offers an overview of the application of

these taxes in Europe. Section 4 illustrates the methodology used. Section 5 provides an overview on the case studies under analysis and details on the empirical data. Section 6 shows the empirical results. In the last section, policy implications and concluding remarks are highlighted.

2 Related Literature and Methodologies

According to Gooroochurn and Sinclair (2005), tourism taxation policy is a rather complex topic, and very few studies focus on the effects of such policies on tourism. With respect to the literature on taxation in general, the literature on tourism taxation is rather limited (Barron et al. 2001).

From a theoretical point of view, Brida and Pereyra (2009) propose a model of vertical differentiation based on the quality of hotels and take into account the effect of a lump-sum tax on accommodation. Their results demonstrate that, although a tourism tax preserves the environmental quality of the destination, the efficiency of the tax depends on tourists' willingness to pay. Sheng and Tsui (2009), using a modified simple equilibrium model of international trade, found that tourism taxation may affect welfare in a positive or negative way according to the market power held by the destination. Other works that justify the implementation of a tourism tax are provided by Piga (2003), Schubert (2009), Boyra et al. (2012), and Sheng (2017).

2.1 Methods and Applications

In the literature, two main approaches to studying this phenomenon have been used: time series or panel analysis and computable general equilibrium (CGE) models. Within the former group of studies, for the first time, Mak and Nishimura (1979) analyzed the effect of a hypothetical tourist tax levied on hotels in Hawaii and found two main results: A hotel room tax has a negligible impact on tourist demand and on tourist length of stay; moreover, they found that although this tax can generate additional tax revenue, it reduces income in the private sector. Combs and Elledge (1979), examining taxation in hotels and motels in the USA, highlighted that a small *ad valorem* tax has a rather marginal impact on the tourism sector even though it generates substantial revenues for the local government. These studies emphasize the complex nature of the tourism product and point out that an increase in taxation on one component of the tourism product may lower expenditure on the other components (see also Papatheodorou 2001). It is worth emphasizing that these early studies were often built on tourism price proxies that may lead to misleading results (e.g., Mak and Nishimura (1979) employ a cross-sectional survey in which the variable of price is not measured with precision; a priori Combs and Elledge (1979) hypothesize an inelastic demand function).

Since the 1980s, some further implementations have been undertaken in terms of the statistical properties of the economic variables (e.g., integration and cointegration status). For example, Fujii et al. (1985) used time series data for the period 1961–1980 to study the exportability of the hotel room tax in Hawaii. The authors, correcting for the first-order serial correlation, found that this tax is highly exportable but exerts a fairly large negative effect on the lodging industry output. Via a time series analysis, Bonham et al. (1992) estimated the ex post impact of taxation levied to the nights of stay in hotels in Hawaii by analyzing real net hotel revenues before and after the imposition of the tax (see also Bonham and Gangnes 1996). The novelty of this research is the use of tax data rather than survey data to measure hotel receipts. The empirical results showed that the tax effect on real net revenues is not significant. Indeed, the demand for accommodation is close to being perfectly inelastic. More recently, Arguea and Hawkins (2015) found that the tax in Florida has a distortive effect on demand in the short run, whereas the effect almost disappears in the long run.

Overall, several studies have focused on the USA because of the popularity of this tax, which is typically imposed on occupied hotel rooms. In fact, according to Bonham et al. (1992), in 1990, 47 out of 50 American states levied taxes on hotel rooms. On the contrary, in Europe, the interest in this topic is relatively recent. Durbarry and Sinclair (2001) investigated the effect of tourism taxation in the UK during the 1990s. They found that tourism expenditure has an elasticity value equal to one. This means that an increase in prices by 1% would lead to a decrease of the same amount in tourism expenditure. Guzmán (2004) and Aguilò et al. (2005) analyzed the impact of eco-taxes in the Balearic Islands (Spain), where the regional government abolished the tax in 2003 to avoid any possible loss of competition. However, according to Guzmán (2004), tourism taxation is a good solution to compensate for negative impacts exerted by tourism. Specifically, the study by Aguilò et al. (2005) highlighted that German, British, and Dutch tourists are willing to travel long distances to visit typical sea-and-sun destinations; therefore, their travel decisions may not be price sensitive.

Given the intrinsic disadvantages in employing time series data because of the availability of relatively short time spans, recent investigation has also been devoted to CGE models. Such a methodology is based on a macroeconomics setting and allows one to explore the inter-sectoral relationships. Jensen and Wanhill (2002), examining the case of value-added tax (VAT) in Danish accommodation, argue that, in recent years, the growth in tourism taxation is not welfare enhancing. In fact, governments often consider tourism taxes as "easy money" obtained from nonresidents. However, Gooroochurn (2004) and Gooroochurn and Sinclair (2005), for the case of Mauritius, confirm that issuing taxes on tourism is more efficient than taxing other sectors in terms of domestic welfare. For the case of Spain, Gago et al. (2009) make a comparison between specific taxation (e.g., hotel room tax) and general indirect taxation (e.g., VAT). The authors find that neither typology of taxation—direct or indirect—has a statistically significant effect on the economy and the tourism sector in general. Ihalanayake (2012) and Forsyth et al. (2014) analyzed the case of Australia and found a negative effect on the tourism sector as a whole. Also, Meng and Pham

(2017), using a CGE approach, showed that a carbon tax of US$23 per ton, although beneficial for the environment, exerts a negative effect on both inbound and outbound tourism real expenditures in Australia. Ponjan and Thirawat (2016) found that tax cuts on inbound tourism in Thailand improve the terms of trade and marginally stimulate the gross domestic product (GDP). Although CGE models are useful to implement policies, as a downside, these methods require large datasets and are difficult to apply at the city level. Moreover, thus far mixed results have been obtained, and hence, the actual impact on tourist flows requires further investigation.

2.2 Further Methods and Applications

To overcome the limitations of time series approaches and CGE methods, further quantitative tools can be used to address the effects of tourism taxation, such as the "difference-in-differences" (DD) method and the SCM. These approaches are based on a counterfactual framework with the advantage of allowing the comparison of two virtual decision-making units over two distinct time spans: One unit is exposed to a treatment in the second span of time, while the other unit is used as a control. In this manner, it is possible to assess the extent to which these two units diverge over time as a result of the treatment (Imbens and Wooldridge 2007).

Only recently, a few studies have employed the DD method to assess the effects of tourism policies. Garsous et al. (2017), for example, evaluated a fiscal incentive program in Brazil on local investment and employment over the time span 2002–2009. The authors provide empirical evidence that this fiscal intervention enhanced municipal tourism employment by 30%. As a further example, Falk and Hagsten (2018) propose a DD method to analyze the effect of a flight departure tax, in Germany and Austria, on flight demand. Within a panel of 310 airports in 30 European countries, over the time span 2008–2016, the findings reveal that the flight demand decreased by 9% in the year of the tax implementation (i.e., 2011) and by 5% in the following year; moreover, low-cost airlines are impacted the most by such a taxation policy.

Nevertheless, the DD method generally provides biased results with respect to the SCM, and it does not take into account sampling uncertainty caused by changes in outcomes over time, which are accounted for in the SCM (Imbens and Wooldridge 2007; Gobillon and Magnac 2016).

Abadie et al. (2010) argue that the potential applicability of the SCM, as a comparative tool, is rather extensive, especially in situations where traditional regression methods are not appropriate. For the first time, the SCM was theorized and applied by Abadie and Gardeazabal (2003) to investigate the economic impact of terrorism using the conflict in the Basque Country as a case study. Furthermore, Abadie et al. (2010) used the SCM at a regional level to analyze anti-tobacco policies in California, and to date, it is their most cited paper. It investigates the effect of California's Proposition 99, a policy intervention implemented in California in 1988 to control

tobacco consumption. The authors assessed the positive effect on tobacco consumption in the treated unit with respect to the synthetic control units. In a recent analysis undertaken by the Bank of Italy, Pinotti (2012) employed the SCM to estimate the economic performance in two Italian regions exposed to mafia activity. In the same year, Coffman and Noy (2012) applied this methodology to evaluate the long-term impact of a 1992 hurricane on the Island of Kauai (Hawaii), where the unaffected islands of Hawaii were used as a synthetic control.

Few studies employ the SCM at the country level. Lee (2011) explored the effects of the inflation-targeting (IT) policy in emerging economies using GDP growth rate data in 13 IT countries in the treatment group and 47 countries in the non-treated one. Hinrichs (2012) employed American data surveys on school enrollment to estimate the effect of affirmative action bans on education and the demographic composition of universities. Billmeier and Nannicini (2013) evaluated the impact of economic liberalization on real GDP per capita within a sample of 180 countries worldwide. Cavallo et al. (2013) examined the impact of catastrophic natural disasters on economic growth during the period 1970–2008 using a dataset of 196 countries. Abadie et al. (2015) estimated the economic impact of the 1990 German reunification on West Germany. They used GDP data on 16 OECD countries for the period 1960–2003 as a synthetic control for West Germany. Recently, Saia (2017) evaluated whether the UK trade flows would have been larger if the UK had adopted the Euro as a common currency.

In recent applications, analyses at the provincial and municipality levels have also been performed. Castillo et al. (2015) used the SCM to evaluate tourism policy on employment in the Argentinean province of Salta during the years 2003–2010. Robbins et al. (2015) and Gobillon and Magnac (2016), as already reported in the introduction, are the only authors to date that have used this methodology at the city level. In particular, Robbins et al. (2015) analyzed a crime intervention in Roanoke, Virginia (USA). The authors found that the intervention had no effect on decreasing crime rates.

Within the tourism literature, Biagi et al. (2017) assessed that the introduction of a tax on tourist accommodation has not had a negative effect on international demand, while domestic tourists are marginally affected. Notably, these results are also in line with the theoretical model by Sheng (2017), where the author finds that the division of the tax burden is significantly affected by the demand elasticity as well as the industrial structure of the local market. Indeed, tourism economies may present different characteristics that become crucial in determining the overall impact of a tourism tax. A further SCM application is provided by Li et al. (2018), who analyzed the effects of high-speed rail on domestic and international tourism arrivals within a panel of 238 Chinese cities over 11 years. The authors found that international tourism experienced a higher growth than domestic tourism.

3 Taxes on the Tourism Sector

The expression "tourism taxation" includes a large number of taxes that local and/or national governments can issue on tourists. Despite the common purpose of collecting extra revenues for the destination, taxes can be levied in different ways. The UNWTO (1998) defines two main types of taxes:

- Directly to tourists;
- Indirectly to tourists through tourism business.

The first group includes entry and exit taxes, terminal departure taxes charged in airports and ports, accommodation taxes (e.g., VAT and room tax), and environmental and food and beverage taxes. In the second group, other taxes that affect all of the economy as well as only the tourism sector are included, such as fuel, property, and corporation taxes.

According to Candela and Figini (2012), taxes on tourists can be classified into three main categories:

- Fixed (lump-sum) tax paid by tourists upon their arrival at the destination. This type of tax is generally charged to travelers in airports and ports;
- Tax proportional to the length of stay (excise tax, duty or *ad quantum* tax) paid by tourists in hotels and other types of accommodation. This type of tax can be regarded as an overnight stays tax;
- Sum proportional to the price of vacation (*ad valorem* tax or sales tax) paid by tourists as a percentage of the total price. This type of tax can be regarded as the VAT paid on tourism services.

In the next section, a summary of the main tourism taxes applied in Europe is provided. In the rest of the chapter, the term "tourism tax" refers to the hotel room occupancy tax. This tax, often referred to as the "bed tax," is charged according to the length of stay proportional to the quality of the accommodation and can be defined as a consumption-based tax.

3.1 Tourism Taxation in European Countries

In Europe, there are several countries, regions, and cities that have adopted tourism taxation. Table 1 provides an overview of the different types of tourism taxation introduced in the European Union (EU) as well as in a few non-EU neighboring countries.

In Austria, the tax varies between each of the nine provinces, and its application depends on the type of accommodation. Tourists pay a rate per night at the end of their stay. Some exceptions hold for children under 15, hospital patients, and those who are visiting close relatives. Belgium can be regarded as an interesting case since a city tax is levied on consumers in a few cities (i.e., Antwerp, Bruges, and Ghent).

Table 1 Tourism taxation in Europe

	Type of taxation	Rate in € (per person per night)	Taxable	Collection	Main cities
EU-15					
Austria	Proportional to the accommodation quality	0.15–2.18	*T*	*A*	Vienna, Graz, Innsbruck
Belgium	Proportional to the hotel level	400–2,880€ per room per year	*A*	*L*	Brussels
	Fixed tax	2.50; 2.25 (0.50 in campsites)	*T*	*A*	Ghent
					Antwerp
	Ad valorem	1.8% of total expenses			Bruges
France	Proportional to the accommodation quality	0.20–4.00	*T*	*A*	Paris, Reims, Bordeaux, Lyon, Montpellier
Germany	Proportional to the accommodation quality	1–3	*T*	–	Gottingen, Weimar
	Ad valorem	5% of total expenses			Aachen, Berlin, Cologne, Dortmund
Italy	Proportional to the accommodation quality	0.50–5	*T*	*A*	Rome, Venice, Florence, Siena
Netherlands	Proportional to the accommodation quality	0.55–4.76	*T*	–	Delft, Eindhoven, Leiden, Maastricht
	Ad valorem	4.5–5% of total expenses			Amsterdam, Rotterdam, Utrecht
	Fixed tax	3.50			Eindhoven
Portugal	Proportional to the accommodation quality	Up to 1.90	*T*	*A*	Lisbon
	Fixed tax	1 on all arrival			

(continued)

Table 1 (continued)

	Type of taxation	Rate in € (per person per night)	Taxable	Collection	Main cities
Spain	Proportional to the accommodation quality	0.75–2.50	*T*, *C*	*A*	Barcelona
EU-28					
Bulgaria	Proportional to the accommodation quality	Maximum 1.53	*T*	*A*	Sofia and main coastal cities
Croatia	Proportional to the accommodation quality	0.25–1	*T*, *C*	*A*, ships, travel agencies	Dubrovnik
		Yearly proportional share to the bed number	*O*	*L*	
Romania	Ad valorem	0.5–5% of total expenses	*T*	*A*	Bucharest
Slovakia	Proportional to the accommodation quality	0.50–1.65	*T*	–	–
Slovenia	Proportional to the accommodation quality	0.60–1.25	*T*	*A*	Ljubljana, Vaneča, Vino, Focovci
Non-EU countries					
Russia	–	1–3	–	–	St. Petersburg, Moscow
Switzerland	Proportional to the accommodation quality	0.50–6.00	*T*	Tourist authority, Municipalities	All cantons, except Zurich, Basel-Landschaft, Thurgau
		12.43–82.84 per beds	*O*		
Ukraine	Ad valorem	1% of total expenses (breakfast excluded)	*T*	*A*	Kiev, Ivano-Frankivsk, Kamianets-Podilskyi, Lviv, Lutsk, Odessa, Republic of Crimea

Note *T* Tourists; *A* accommodation; *C* cruisers; *L* local authority; *O* owner of holiday homes
Source Authors' elaboration on European Tourism Association Web site (https://www.etoa.org/events/policy/regulation-and-taxation)

Since 2014, the city of Antwerp has earmarked the tax revenue for street and museum maintenance, information services, mobility improvement, urban revitalization, and safety. Alternatively, in Brussels the tax is levied on producers: Hotels pay an amount to the local authority on the basis of the quality and number of rooms supplied.

In France, the *Taxe de séjour* has been applied since 1910. It is a city tax and the revenues are used to develop and improve tourism infrastructure, increase accommodation supply, and preserve the environment. This tax varies on the location and type of accommodation. However, the rate is the highest in five-star hotels (*cinq étoiles hotels)*, whereas it is lower in the other types of hotels and holiday camps. In Germany, the so-called *Kurtaxe* can be autonomously issued by the Länder, which can decide its rate. Since 2010, there has been an exponential growth in issuing tourism tax; this policy may be due to the need to counteract the loss of revenues because of a decrease in VAT. In most cities, the tax is of a fixed amount (*ad quantum* tax), and only a few municipalities levy an *ad valorem* tax (i.e., a fixed share of the total expenses on accommodation). Berlin and Hamburg introduced tourism taxation in 2013. In the Netherlands, a tourism accommodation tax (*Toeristenbelasting)* is levied in most municipalities. The type of taxation depends on the city; in some cases, it is *ad valorem*, while in others it is proportional to the quality of accommodation. In Switzerland, individual cantons choose what type of tourism taxation to issue. All cantons, with the exception of Zurich, Basel-Landschaft, and Thurgau, levy tourism taxes. In the canton of Aargau, the law permits levying a tax only on health centers. Either the tourism authorities or the municipalities collect the tax. Currently, most cantons are considering increasing their tax rates. A further tax is levied yearly on second home owners, and it is based on the number of beds. The entire revenue is used to finance accommodation infrastructure as well as tourism information, entertainment, and other tourism services. In Spain, a tourism tax was levied in 1999 only in the Balearic Islands as an environmental tax. This taxation was repealed in 2003. In 2012, Catalonia employed a tourism tax that varies according to the quality of accommodation. Moreover, cruise passengers pay 2.50 Euros upon their arrival at a regional port. In 2011, the UK planned the introduction of the so-called bed tax. After criticism from tourism sector associations, the government stopped its implementation.

In Italy, the tourism tax "*Imposta di soggiorno*" was first introduced in 1910 only on thermal resorts and seaside destinations. In 1938, it was extended to other tourist destinations and was repealed in 1989. More than 20 years later, in 2011, the tax was reintroduced at the city level (D. Lgl. n. 23/2011). According to recent legislation, only municipalities with certain characteristics can issue a tourism tax, including being a provincial capital, being part of a group of municipalities, or being a tourist municipality or an art city. The tax is paid by overnight visitors, who, according to the definition, can be considered as tourists and hence registered in "official" accommodations such as hotels, campsites, bed and breakfasts (B&B), tourism resorts, and hostels. In 2011, the national government introduced another type of tourism tax issued on various types of boats. This port tax (*Imposta di sbarco*) can be levied by towns located on small islands, such as Capri (the luxury tourist destination in the Gulf of Naples).

4 Methodology

In this policy evaluation analysis, the "treated" group comprises a set of units targeted by the policy, while the "non-treated" units represent the counterfactual, or the control, group that does not apply the policy (or treatment). In the majority of the policy evaluation techniques, the difficulty is in the choice of the counterfactual group, which has to be as similar as possible to the treated unit.

The originality of the SCM is the use of a "composite" control group. This is not a specific preexisting group of units chosen a priori but is an artificial group employed as a comparison. From a theoretical perspective, the control consists of a set of J (e.g., individuals, firms, cities, provinces, regions, countries), where each j is weighted by $W = (w1,\ldots, wj)$, which is a $(J \times 1)$ vector of nonnegative weights whose sum equals one. This is called the "synthetic control" group and consists of an average weighted by an algorithm where the scalar w_j corresponds to the relative weight of each j under analysis in the control group. Each value of W generates differences in the synthetic control so that the choice of a valid subset of control units is crucial to minimize the differences between the synthetic control and the treated unit before the treatment. The basic idea is that the future path of the synthetic control group mimics the path that would have been observed in the treated unit in the absence of the treatment. Specifically, the weights are chosen such that the synthetic control most closely resembles the actual one before the treatment (Abadie and Gardeazabal 2003).

In more detail, this methodology employs a sample of $J + 1$ units, where $j = 1$ is the treated unit of interest, and units $j = 2$ to $j = J + 1$ are the potential units of comparison. The sample used is a balanced panel comprising the units observed for the same time period $t = 1, \ldots, T$. Without loss of generality and for simplicity, it is usually assumed that only one unit is treated. In the case of multiple units affected by the treatment under analysis, Abadie et al. (2015) suggest that the methodology should be applied separately to each of the treated units. Moreover, there are two relevant features of the control group outcomes:

1. They are thought to be driven by the same structural process as the treated unit.
2. They are not affected by structural shocks during the time span under investigation.

Let X_1 be a $k \times 1$ vector and X_0 a $k\,x\,J$ matrix of the pre-treatment values related to the treated unit and control group characteristics, respectively. Vector (1) represents the differences between the pre-treatment characteristics of the treated unit and the control group, which is weighed by W:

$$X_1 - X_0 W \tag{1}$$

To better match the two groups, the magnitude of this difference needs to be minimized. Abadie et al. (2003, 2010, and 2015) state that W^* should be chosen so as to minimize (2):

$$\sum_{m=1}^{k} v_m (X_{1m} - X_{0m} W)^2 \tag{2}$$

where v_m is the weight that reproduces the relative importance assigned to the mth variable after measuring the divergence between X_1 and $X_0 W$; X_{1m} is the value of the mth variable for the treated unit; and
X_{0m} is a $1 \times J$ vector of the values of the *mth* variable for the control group.

In addition, let Y_{jt} be the outcome of j at time t. It is possible to define Y_1 as a $T_1 \times 1$ vector and Y_0 as a $T_1 x\ J$ matrix of the post-treatment outcome values for the treated unit and for $j + 1$ units, respectively. Consequently, the synthetic control estimator of the treatment effect corresponds to a comparison between the post-treatment outcomes of the treated unit and the counterfactual.

Using the predictors (X_1 and X_0) measured in the pre-treatment period, weights are selected so that the resulting synthetic control can minimize the root-mean-square prediction error (RMSPE henceforth) in the pre-treatment period. Indeed, the RMSPE measures the lack of fit between the path of the outcome variable for any particular unit and its synthetic counterpart. The aim of the analysis is to measure the effect of the treatment on the post-treatment outcomes.

This methodology consists of two main steps: (1) Create the synthetic control, and (2) calculate the counterfactual outcome $Y_{jt}^1 = Y_{jt}^0$, where Y_{it}^0 is the outcome matrix for the control group. By comparing the counterfactual to the treated unit, outcome treatment effects can be eventually evaluated, such that:

$$\alpha_{jt} = Y_{jt}^1 - Y_{jt}^0 \tag{3}$$

Finally, to evaluate whether the results obtained by the SCM are robust, a *placebo* study is also employed. Specifically, following previous studies by Abadie and Gardeazabal (2003) and Abadie et al. (2010, 2015), the estimated effect of the treatment is compared with a possible effect in the non-treated units. In this manner, the SCM is iteratively applied to every unit of the counterfactual sample. The effect (either positive or negative) of a policy exerts an effect if the path of the treated unit is significantly different from that of the control group. When the treated unit is in line with the average of the other units, the policy does not have an actual impact.

5 Data and Empirical Application

Italy ranks third in European destinations for international arrivals and ranks fifth in the world (UNWTO 2017). According to the Eurostat data, the most visited region in 2016 was Veneto, followed by Tuscany and Emilia Romagna. At a provincial level, Venice, Bolzano, and Rome were the three most visited areas in 2016 (Table 2). Notably, this is the most disaggregated data that the National Institute of Statistics

Table 2 Top 20 provinces for overnight stays in Italy (year 2016) and application of tourism tax

Ranking	Province	Overnight stays	Tourism tax in 2011
1	Venice	34,419,316	Yes
2	Bolzano	31,318,441	No
3	Rome	27,977,371	Yes
4	Trento	16,930,768	No
5	Verona	16,535,416	No
6	Rimini	15,573,708	No
7	Milan	14,429,660	No
8	Florence	13,939,421	Yes
9	Naples	13,138,924	No
10	Brescia	10,017,216	No
11	Livorno	8,172,611	No
12	Turin	6,813,686	No
13	Ravenna	6,429,137	No
14	Grosseto	5,700,053	No
15	Savona	5,633,311	No
16	Salerno	5,627,245	No
17	Olbia-Tempio	5,294,085	No
18	Padua	5,288,318	Yes
19	Perugia	5,165,794	No
20	Udine	5,146,857	No

Source Authors' elaboration on Istat and Ista data

(Istat) provides in terms of tourist demand. For this reason, in the present analysis, data at the provincial level are used as a *proxy* for the municipality level.

As shown in Fig. 1, after the national law was introduced in 2011, cities applied the tax at different times. During the first year of the policy intervention, six provincial capitals introduced the tax: Venice, Rome, Florence, Padua, Ancona, and Catania (black in Fig. 1). This figure has increased during the years under analysis: 35 in 2012, 44 in 2013, and 48 in 2014 (see Fig. 1: areas highlighted in light gray). According to the latest figures available, in 2017, 51.7% of all Italian provincial capitals had adopted a tourism tax (in total 61 cities).

To analyze the possible effect of the policy intervention on tourist flows, the present analysis takes into consideration three Italian cities that were amongst the first six provincial capitals to introduce the tax: Rome, Florence, and Padua. As shown in Table 2, in 2016, these three cities ranked within the first 20 positions for overnight stays. Specifically, Rome was third, Florence eighth, and Padua eighteenth.

Such a choice aims at evaluating three different typologies of cities, located in different regions and characterized by distinctive tourist flows. Rome is at the same time the capital of Italy, a large metropolitan city, one of the most famous tourist

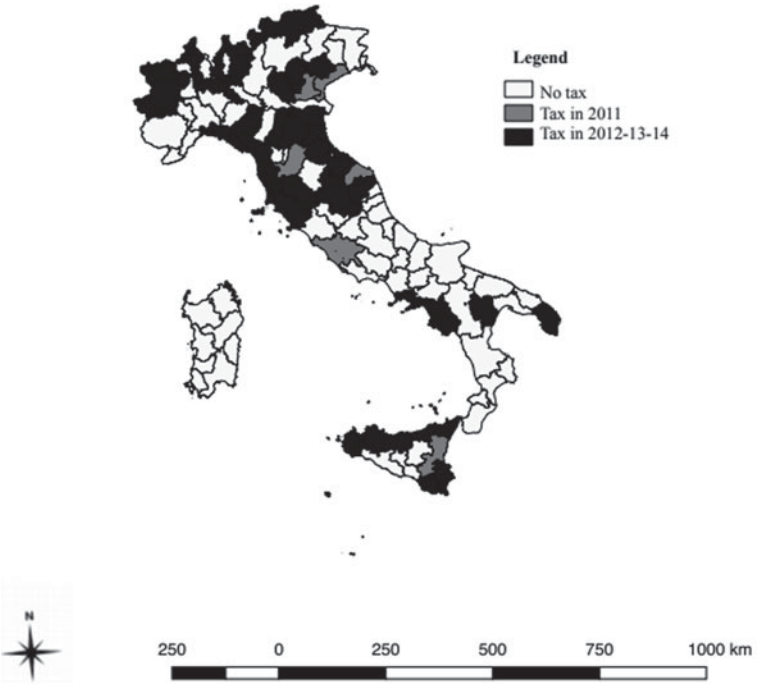


Fig. 1 Italian provincial capitals that introduced the tourism tax after the D.Lgs. n.23/2011. *Source* Authors' elaboration on Istat and Ista data

destinations in the world, the center of Roman history, rich in archaeological sites, and the location of the Vatican State. Traditionally, Florence is considered an art city, the capital of the Renaissance, and, nowadays, famous for the presence of a fashion and design-manufacturing cluster. In fact, as remarked by Lazzeretti et al. (2017), the image of Florence is changing thanks to the fashion industry, and this increases its appeal as a tourist destination. Padua, located in the northeast of Italy, is a university center, an art city, and a religious destination due to the presence of the Basilica of S. Anthony; moreover, it is one of the UNESCO World Heritage Sites. According to the national law, each city applies different tax rates (see Table 3 in the Appendix).

The application of the SCM consists of comparing tourist flows in these three cities (as the "treated" units) with the tourist flows in other cities that have not applied a tourism tax within the time span under investigation (i.e., the "synthetic counterfactual" or the "non-treated" units). To effectively construct the counterfactual group, only provincial capitals are considered, and cities that applied the tax in the years 2012, 2013, and 2014 are excluded from the sample. The list of all the cities included in the counterfactual is illustrated in Table 4 (see Appendix). As tourism demand indicators, three distinctive variables are analyzed as follows: overnight stays, tourist arrivals, and length of stay for the domestic and international components, respectively. Overnight stays and tourist arrivals are weighted according to the

size of the population to remove possible heterogeneity due to the different dimensions of these cities. Moreover, the predictors included in the model are as follows: number of tourism accommodations, GDP per capita, population density, distance from the nearest airport and port, a dummy variable that takes the value of one if the municipality is located near the coast, and a dummy variable that takes the value of one if the municipality is a tourist city. A complete list of variables, descriptions, and sources is provided in Appendix (Table 5).

6 Empirical Results

As found in other studies, the SCM is a useful tool for comparative analyses, and as already remarked, its application is possible considering only one treated unit at a time. In this section, the main results obtained, using the STATA command *syhnt* (Abadie et al. 2003) for the cities of Rome, Florence, and Padua, respectively, are presented.

6.1 Rome: SCM and Placebo Results

Figures 2, 3, and 4 show the SCM results as well as the placebo outcomes for the case of Rome. The statistics RMSPE is minimized, and it approximates 0.000 in all the cases analyzed. This indicates that the synthetic counterfactual adequately mimics the path of this destination in the pre-treatment period. Another relevant statistic is the number of control units that the algorithm takes into consideration in the construction of the "synthetic Rome." In the majority of cases, all the cities in the sample are retained, proving that the units are all contributing to the creation of the most similar synthetic control.

In the graphs of overnight stays and arrivals (Figs. 2 and 3), the outcome for the city of Rome (continuous line) decreases after the year of treatment (2011) with respect to the synthetic control (dashed line) for the domestic (Figs. 2a and 3a) and international (2b and 3b) components. The placebo tests, shown on the right side of the figures, do not confirm the negative effect although for international overnight stays and arrivals the result is not clear-cut.

Regarding the length of stay (Fig. 4a, b), the analysis shows a rather constant trend. Tourists in Rome stay on average 2.8 days, and this pattern does not change after the public intervention. The absence of a treatment effect is also confirmed by the placebo analysis.

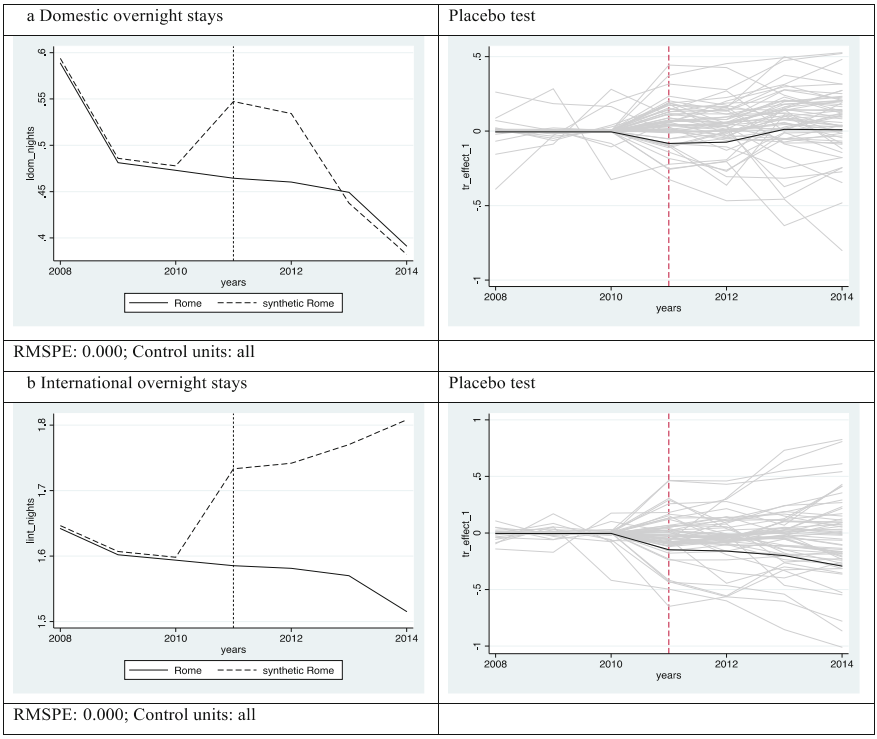


Fig. 2 Overnight stays in Rome versus synthetic counterfactual and placebo study. Years 2008–2014. *Note* Figures on the right report the tourist overnight stays recorded in the city divided into domestic (a-graph) and international (b-graph). The continuous line indicates the treated unit, while the dashed line represents the synthetic control. Figures on the left report the percentage gaps between the simulated and the observed time series for the treated (in bold) and the control (in gray) units; RMSPE = root-mean-square prediction error

6.2 Florence: SCM and Placebo Results

Figures 5, 6, and 7 show the SCM results and the placebo analyses for the case of Florence. The RMSPE is minimized, and once again it approximates 0.000 in all the cases. The only exception is for the international arrival indicator (see Fig. 6; RMSPE = 0.191), where the synthetic counterfactual, represented only by the city of Trento, does not adequately mimic the path of Florence in the pre-treatment period. As in the previous analysis, the number of control units that the algorithm takes into consideration in the construction of the "synthetic Florence," in the majority of cases, includes all the cities in the sample, confirming that all the units are contributing to the creation of the most similar synthetic control. In only two cases, this number collapses to those very few cities which present the highest homogeneity with Florence in terms of tourist flows (Fig. 5b and 6b).

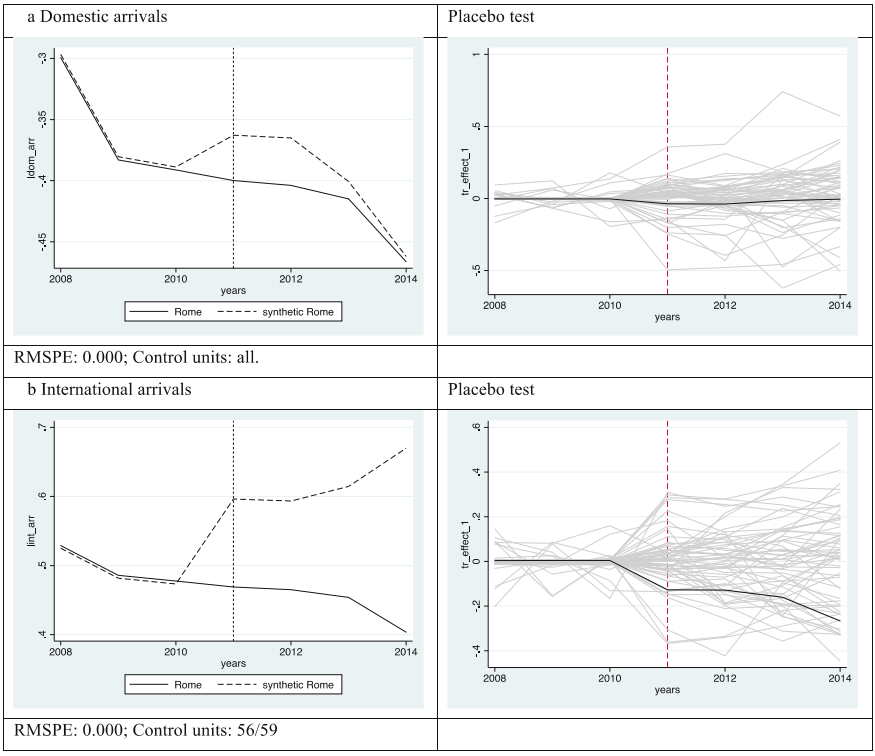


Fig. 3 Arrivals in Rome versus synthetic counterfactual and placebo study. Years 2008–2014. *Note* Figures on the right report the tourist arrivals recorded in the city divided into domestic (a-graph) and international (b-graph). The continuous line indicates the treated unit, while the dashed line represents the synthetic control. Figures on the left report the percentage gaps between the simulated and the observed time series for the treated (in bold) and the control (in gray) units; RMSPE = root-mean-square prediction error

In the graphs of overnight stays and arrivals (Figs. 5 and 6), the outcome of Florence (continuous line) increases after the year of treatment with respect to the synthetic control (dashed line). However, the placebo analysis does not confirm this gap; in fact, the trend is in line with the majority of other cities that do not apply the tax.

As far as length of stay is concerned (Fig. 7), the analysis shows a slightly negative trend after 2011, from an average of 2.8 days before the treatment to an average of 2.7 days after the treatment. On the whole, the placebo analysis indicates that this trend is similar to that of other cities. Hence, it is further confirmed that the tourism tax has not had a significant impact as in the case of Rome.

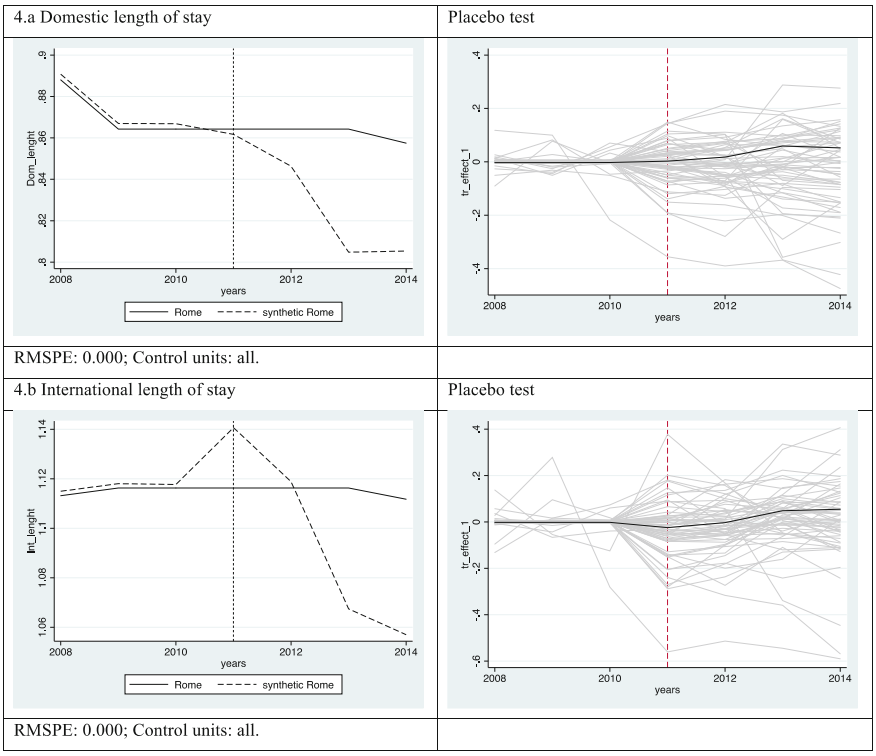


Fig. 4 Length of stay in Rome versus synthetic counterfactual and placebo study. Years 2008–2014. *Note* Figures on the right report the tourist length of stay recorded in the city divided into domestic (a-graph) and international (b-graph). The continuous line indicates the treated unit, while the dashed line represents the synthetic control. Figures on the left report the percentage gaps between the simulated and the observed time series for the treated (in bold) and the control (in gray) units; RMSPE = root-mean-square prediction error

6.3 Padua: SCM and Placebo Results

Figures 8, 9, and 10 present the SCM results and the placebo analyses for the case of Padua. The statistic RMSPE is minimized, and once more it approximates 0.000 in all the cases; this outcome can be regarded as the ability of the "non-treated" group to mimic the pattern of Padua in the pre-treatment period. Also in this case, the number of control units that the algorithm takes into consideration in the construction of the "synthetic Padua," in the majority of the cases, includes all the cities in the sample. Hence, there is reason to assess that all the units contribute to the creation of the most similar synthetic control. The findings suggest that there is no evidence of a significant effect of the public intervention on each indicator of the tourism demand. This result is also confirmed by the placebo analyses.

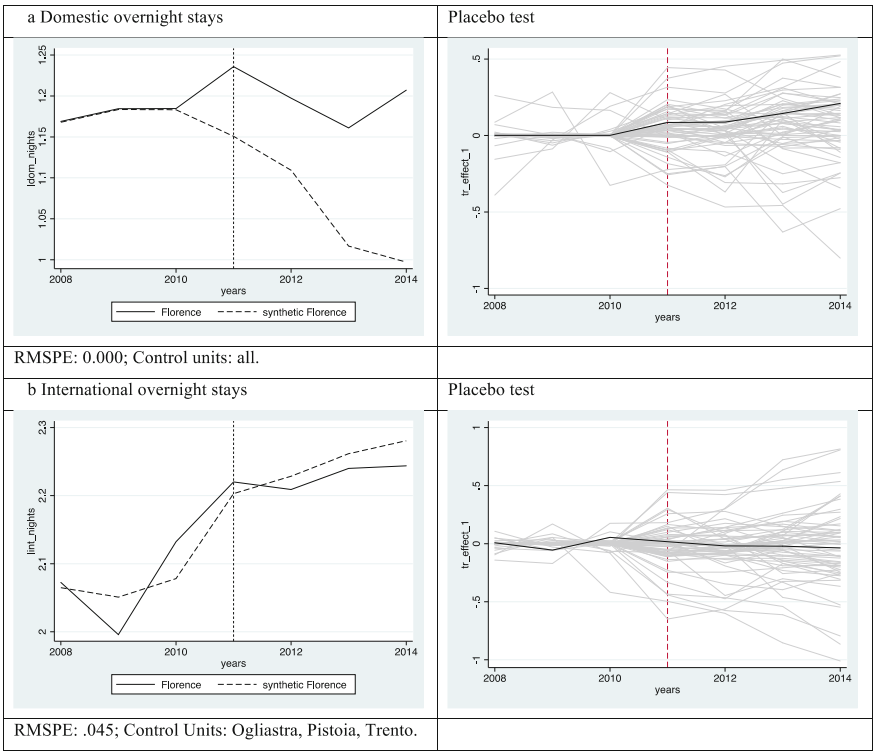


Fig. 5 Overnight stays in Florence vs. synthetic counterfactual and placebo study. Years 2008–2014. *Note* Figures on the right report the tourist overnight stays recorded in the city divided into domestic (a-graph) and international (b-graph). The continuous line indicates the treated unit, while the dashed line represents the synthetic control. Figures on the left report the percentage gaps between the simulated and the observed time series for the treated (in bold) and the control (in gray) units; RMSPE = root-mean-square prediction error

7 Conclusions

This chapter has provided an overview on tourism taxation underpinned by an extensive literature review. It has emerged that the most of studies conducted have focused on the USA, while the interest in this line of research is relatively recent in Europe, and mixed findings are often found. Indeed, further research needs to be carried out on this specific topic in an attempt to find a possible generalization on the effects exerted by the public intervention on this economic sector and the economy as a whole.

An empirical application has also offered insight into the impact of a city tourism tax on tourism demand in three Italian destinations (namely Rome, Florence, and Padua). The tax has been criticized on the basis of possible market distortions and loss in terms of competitiveness. To this aim, based on the theoretical work developed

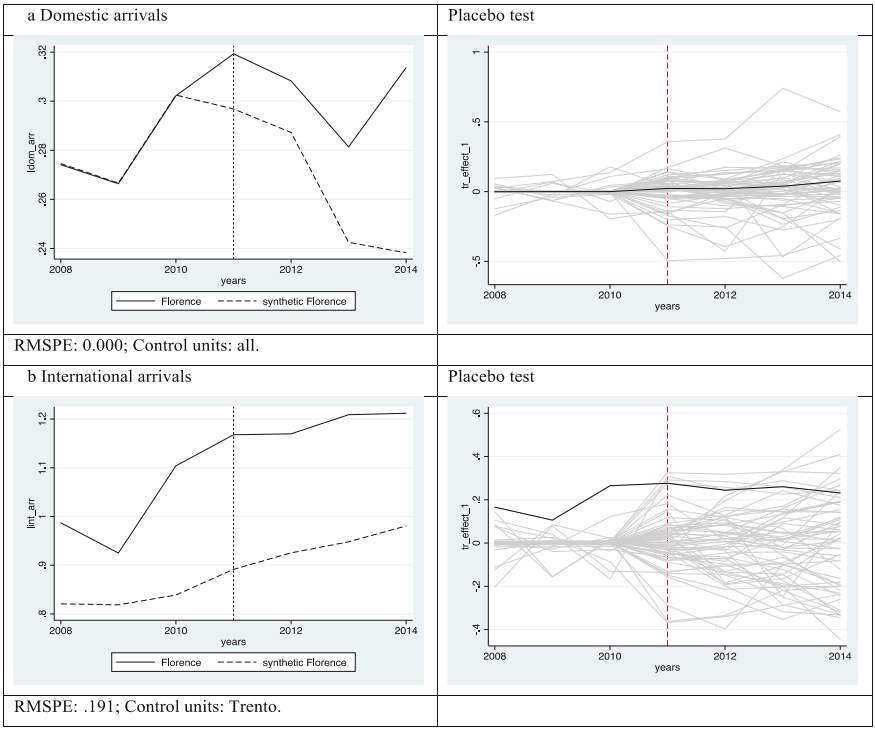


Fig. 6 Arrivals in Florence vs. synthetic counterfactual and placebo study. Years 2008–2014. *Note* Figures on the right report the tourist arrivals recorded in the city divided into domestic (a-graph) and international (b-graph). The continuous line indicates the treated unit, while the dashed line represents the synthetic control. Figures on the left report the percentage gaps between the simulated and the observed time series for the treated (in bold) and the control (in gray) units; RMSPE = root-mean-square prediction error

by Abadie and Gardeazabal (2003), an SCM was applied to three main indicators of tourism demand, including tourist overnight stays, arrivals, and length of stay. This methodology can overcome several limitations accounted for in other approaches, such as time series analysis (e.g., the use of short time spans that does not allow one to assess possible shocks and long-run dynamics; endogeneity issues); static CGE methods which are difficult to be employed at the city level; and DD approaches which may provide biased results and do not take into account uncertainty. Furthermore, in the present research, a placebo analysis was also run to test for possible pattern variation between the "treated" unit and the "non-treated" group after issuing the tax.

In all the three case studies, the findings show that tourists do not seem to be sensitive to price increases. Particularly, Florence and Padua do not show any negative effect exerted by the public intervention, while, in the case of Rome, tourist overnight stays and arrivals do not present such a clear-cut outcome but instead a possible

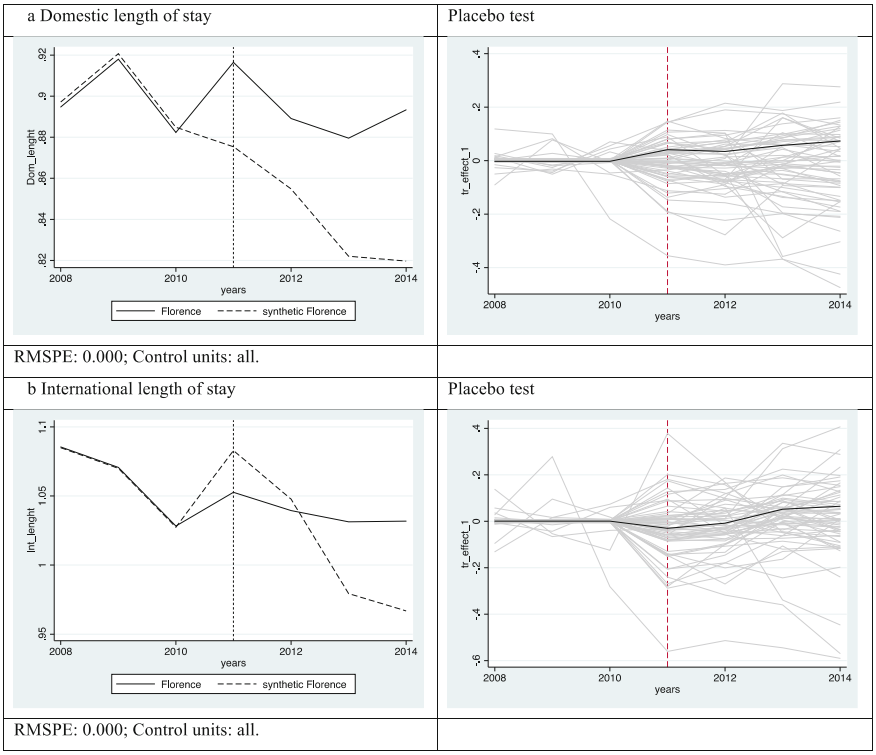


Fig. 7 Length of stay in Florence vs. synthetic counterfactual and placebo study. Years 2008–2014. *Note* Figures on the right report the tourist length of stay recorded in the city divided into domestic (a-graph) and international (b-graph). The continuous line indicates the treated unit, while the dashed line represents the synthetic control. Figures on the left report the percentage gaps between the simulated and the observed time series for the treated (in bold) and the control (in gray) units; RMSPE = root-mean-square prediction error

(although rather weak) negative effect. The latter results may be due to the amount of the tax applied, which ranges from two to three Euros per person per night; notably, this tax represents the highest amongst European capital cities.

The findings provided in the present chapter are in line with other empirical studies finding that tourism taxation does not exert a negative effect on tourism demand (Mak and Nishimura 1979; Combs and Elledge 1979; Bonham and Gangnes 1996; Gooroochurn 2004; Gooroochurn and Sinclair 2005; Aguilò et al. 2005; Perelli et al. 2011; Biagi et al. 2013, 2017). Hence, there are grounds to believe that tourism demand, especially in cultural tourism destinations, is rather price inelastic. It is worthwhile noting that due to the unavailability of official data on tourism demand at the city level, the exercise proposed in this chapter uses data at the provincial level. Yet, aggregate data may not capture possible distortions of tourism demand within the provincial territory. Indeed, it appears likely that the effect of the tax may be embodied within a certain province due to substitution effects amongst destinations therein.

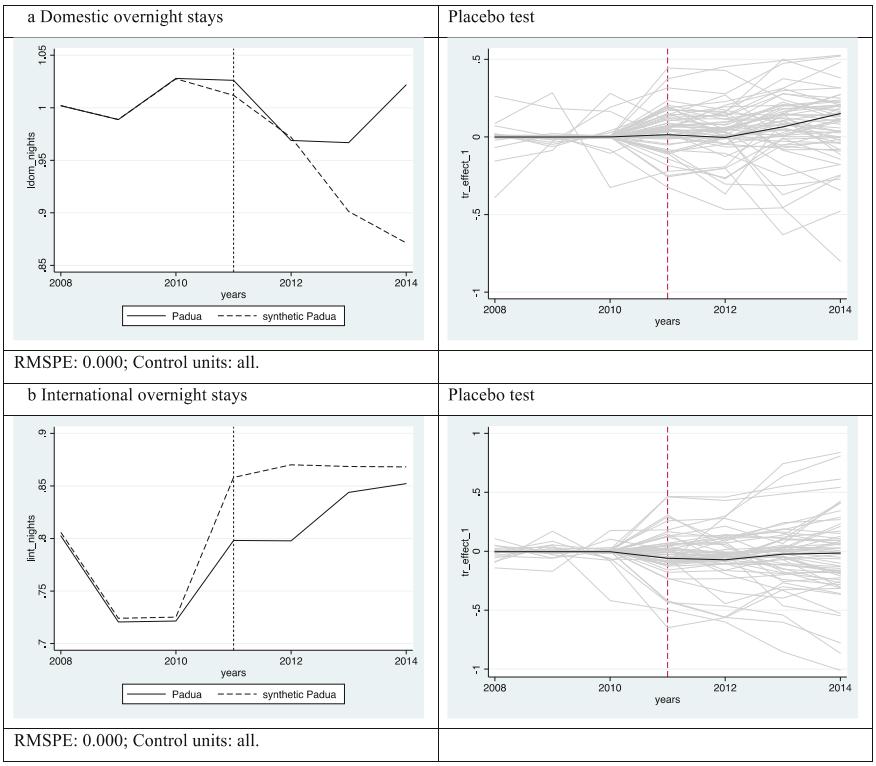


Fig. 8 Overnight stays in Padua vs. synthetic counterfactual and placebo study. Years 2008–2014. Note: Figures on the right report the tourist overnight stays recorded in the city divided into domestic (a-graph) and international (b-graph). The continuous line indicates the treated unit, while the dashed line represents the synthetic control. Figures on the left report the percentage gaps between the simulated and the observed time series for the treated (in bold) and the control (in gray) units; RMSPE = root-mean-square prediction error

When more disaggregated data are available, the SCM would allow policymakers to monitor the effect of the policy and to properly account for the benefits and costs of the public intervention. As such, the results can be considered as case- and data-specific.

Overall, the papers accounted for in the present literature review suggest the important role exerted by tourism on the economy but also the need to internalize negative externalities on the destinations and, hence, the consequential potential benefits generated by tourism taxation. In this respect, further investigation and generalization of the findings are needed within this thread of the research.

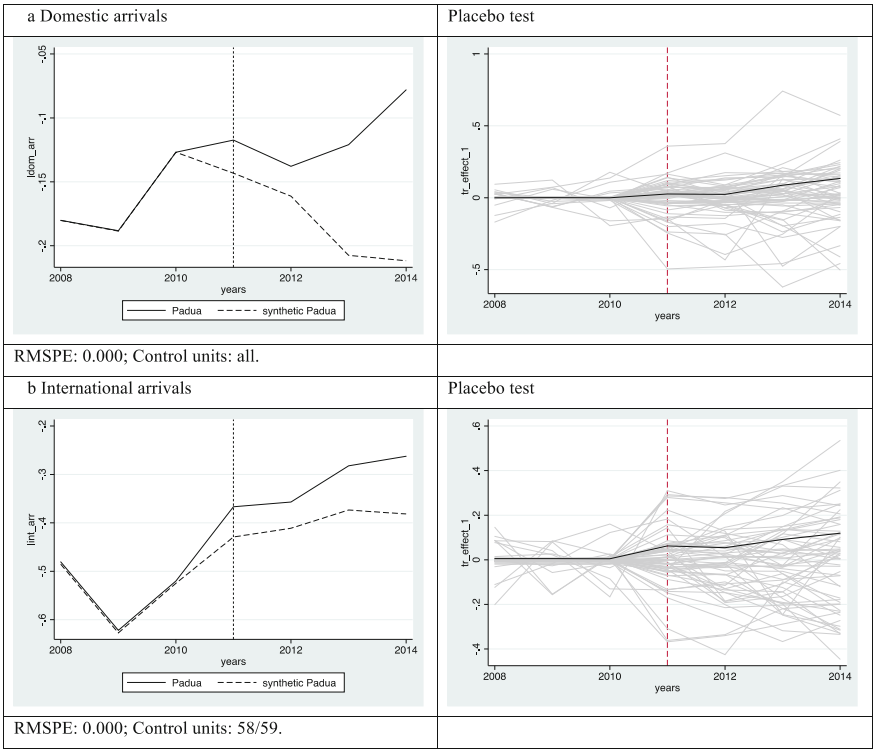


Fig. 9 Arrivals in Padua vs. synthetic counterfactual and placebo study. Years 2008–2014. *Note* Figures on the right report the tourist arrivals recorded in the city divided into the domestic (a-graph) and international (b-graph). The continuous line indicates the treated unit, while the dashed line represents the synthetic control. Figures on the left report the percentage gaps between the simulated and the observed time series for the treated (in bold) and the control (in gray) units; RMSPE = root-mean-square prediction error

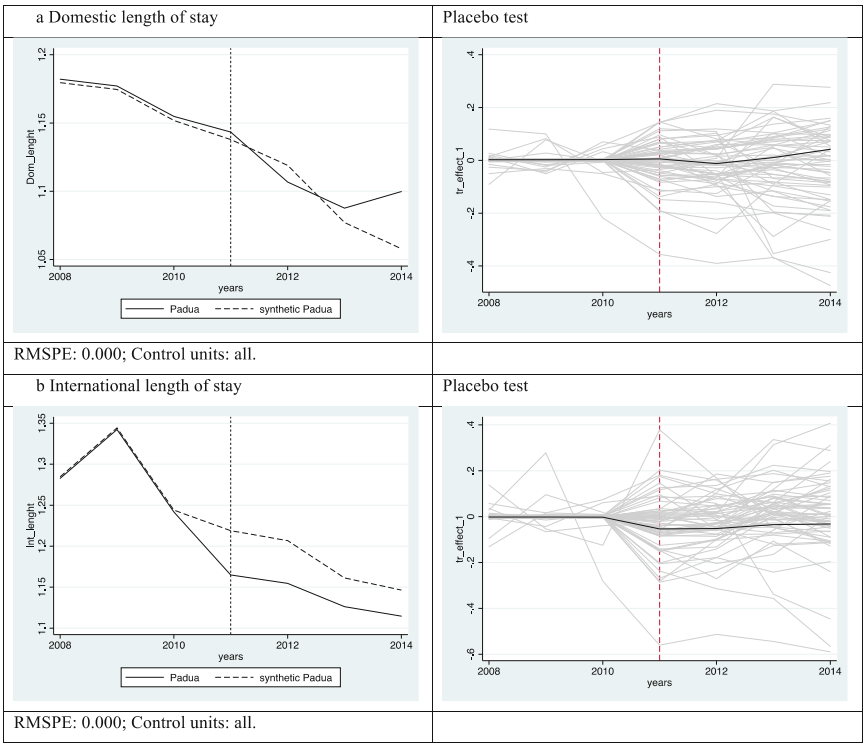


Fig. 10 Length of stay in Padua versus synthetic counterfactual and placebo study. Years 2008–2014. *Note* Figures on the right report the tourist length of stay recorded in the city divided into domestic (a-graph) and international (b-graph). The continuous line indicates the treated unit, while the dashed line represents the synthetic control. Figures on the left report the percentage gaps between the simulated and the observed time series for the treated (in bold) and the control (in gray) units; RMSPE = root-mean-square prediction error

Appendix

See Table 3, 4 and 5.

Table 3 Tourism taxation in Rome, Florence, and Padua (in Euros). Years 2011–2014

	*Hotel	**Hotel	***Hotel	****Hotel	**** Hotel	B&B	Camping	Others
Rome	2.00	2.00	2.00	3.00	3.00	2.00	1.00	2.00
Florence	1.00	2.00	3.00	4.00	5.00	–	1–2.00	1–4.00
Padua	1.00	1.50	2.00	3.00	3.00	1.00	–	1–3.00

Table 4 List of the municipalities included in the counterfactual group

1.	Agrigento	2.	Alessandria
3.	Arezzo	4.	Ascoli Piceno
5.	Asti	6.	Avellino
7.	Bari	8.	Belluno
9.	Benevento	10.	Brescia
11.	Brindisi	12.	Cagliari
13.	Caltanissetta	14.	Campobasso
15.	Carbonia-Iglesias	16.	Caserta
17.	Catanzaro	18.	Chieti
19.	Cosenza	20.	Cremona
21.	Crotone	22.	Cuneo
23.	Enna	24.	Foggia
25.	Frosinone	26.	Gorizia
27.	Imperia	28.	Isernia
29.	L'Aquila	30.	Latina
31.	Mantova	32.	Medio Campidano
33.	Nuoro	34.	Ogliastra
35.	Olbia-Tempio	36.	Oristano
37.	Pavia	38.	Pescara
39.	Piacenza	40.	Pistoia
41.	Pordenone	42.	Potenza
43.	Prato	44.	Reggio Calabria
45.	Reggio Emilia	46.	Rieti
47.	Rovigo	48.	Sassari
49.	Savona	50.	Taranto
51.	Teramo	52.	Terni
53.	Trento	54.	Trieste
55.	Udine	56.	Varese
57.	Vibo Valentia	58.	Vercelli
59.	Viterbo		

Table 5 List of variables

Name	Definition	Period (years)	Type of variable	Source
Domestic overnight stays	Number of nights spent by resident in Italy tourists in a tourist accommodation establishment	2008–14	Dependent	Istat
International overnight stays	Number of nights spent by nonresident in Italy tourists in a tourist accommodation establishment	2008–14	Dependent	Istat
Domestic arrivals	Arrivals of resident in Italy tourists at a tourist accommodation establishment	2008–14	Dependent	Istat
International arrivals	Arrivals of nonresident in Italy tourists at a tourist accommodation establishment	2008–14	Dependent	Istat
Domestic length of stay	Domestic arrivals/domestic overnight stays	2008–14	Dependent	Istat
International length of stay	International arrivals/international overnight stays	2008–14	Dependent	Istat
Accommodation	Total number of tourist accommodation establishments	2008–14	Predictor	Istat
GDP per capita	Gross domestic product at current market prices in purchasing power standard (PPS) per capita	2008–14	Predictor	Eurostat
Density	Density of population per square kilometer	2008–14	Predictor	Our elaboration
Coast	Dummy variable that values one if a city is located in proximity of the coast and zero otherwise	Time invariant	Predictor	Istat

(continued)

Table 5 (continued)

Name	Definition	Period (years)	Type of variable	Source
Tourist municipality	Dummy variable that values one if a city is defined as a tourist city and zero otherwise	Time invariant	Predictor	Our elaboration
Distance from the airport	Distance from a city to the nearest airport	2008–14	Predictor	www.maps.google.com
Distance from the port	Distance from a city to the nearest port	2008–14	Predictor	www.maps.google.com

References

Abadie, A., & Gardeazabal, J. (2003). The economic costs of conflict: A case ctudy of the Basque country. *American Economic Review, 93*(1), 112–132.

Abadie, A., Diamond, A., & Hainmueller, J. (2010). Synthetic control methods for comparative case studies: Estimating the effect of California's tobacco control program. *Journal of the American Statistical Association, 105*(490), 493–505.

Abadie, A., Diamond, A., & Hainmueller, J. (2015). Comparative politics and the synthetic control method. *American Journal of Political Science, 59*(2), 495–510.

Aguilò, E., Riera, A., & Rossello, J. (2005). The short-term price effect of a tourist tax through a dynamic demand model. The case of the Balearic Islands. *Tourism Management, 26,* 359–365.

Barron, G. N., Kerr, B., & Wood, R. C. (2001). Arguing for and against tourism taxation: Insights from the Scottish context. *Scottish Affairs, 37*(1), 72–87.

Biagi, B., Brandano, M. G., & Pulina, M. (2013). La tassazione turistica: Il caso della Sardegna. In V. Ficari & G. Scanu (Eds.), *Tourism taxation: Sostenibilità ambientale e turismo fra fiscalità locale e competitività* (pp. 28–59). Torino: G. Giappichelli Editore.

Biagi, B., Brandano, M. G., & Pulina, M. (2017). Tourism taxation: A synthetic control method for policy evaluation. *International Journal of Tourism Research, 19,* 505–514.

Billmeier, A., & Nannicini, T. (2013). Assessing economic liberalization episodes: A synthetic control approach. *The Review of Economics and Statistics, 95*(3), 983–1001.

Bonham, C., & Gangnes, B. (1996). Intervention analysis with cointegrated time series: The case of the Hawaii hotel room tax. *Applied Economics, 28,* 1281–1293.

Bonham, C., Fujii, E., Im, E., & Mak, J. (1992). The impact of the hotel room tax: An interrupted time series approach. *National Tax Journal, 45,* 433–441.

Boyra, J., Pazienza, P., & Vila, M. (2012). Arguments in favor of taxing tourism: The Lanzarote case study. *Tourismos: An International Multidisciplinary Journal of Tourism*, *7*(2), 401–415

Brida, J. G., & Pereyra, J. S. (2009). Tourism taxation and environmental quality in a model with vertical differentiation. MPRA Paper No. 25305

Candela, G., & Figini, P. (2012). *The economics of tourism destinations*. London: Springer.

Castillo, V., Garone, L. F., Maffioli, A., & Salazar, L. (2015). Tourism policy, a big push to employment? Evidence from a multiple synthetic control approach. IDB Working paper series n. IDB-WP 572

Cavallo, E., Galiani, S., Noy, I., & Pantano, J. (2013). Catastrophic natural disasters and economic growth. *the Review of Economics and Statistics, 95*(5), 1549–1561.

Coffman, M., & Noy, I. (2012). Hurricane Iniki: Measuring the long-term economic impact of a natural disaster using synthetic control. *Environment and Development Economics, 17,* 187–205.

Combs, J. P., & Elledge, B. (1979). Effects of a room tax on resort hotel/motels. *National Tax Journal, 32,* 201–207.

Durbarry, R., & Sinclair, T. (2001). Tourism taxation in the UK. Discussion Paper Series 2000/1, Christel DeHaan Tourism and Travel Research Institute, University of Nottingham

Falk, M., & Hagsten, E. (2018). Short-run impact of the flight departure tax on air travel. *International Journal of Tourism Research.* https://doi.org/10.1002/jtr.2239

Fujii, E., Khaled, M., & Mak, J. (1985). The exportability of hotel occupancy and other tourist taxes. *National Tax Journal, 38,* 169–177.

Gago, A., Labandiera, X., Picos, F., & Rodriguez, M. (2009). Specific and general taxation of tourism activities. *Evidence from Spain. Tourism Management, 30*(3), 381–392.

Garsous, G., Corderia, D., Velasco, M., & Colombo, A. (2017). Tax incentives and job creation in the tourism sector of Brazil's SUDENE area. *World Development, 96,* 87–101.

Gobillon, L., & Magnac, T. (2016). Regional policy evaluation: Interactive fixed effects and synthetic controls. *the Review of Economic and Statistics, 98*(3), 535–551.

Gooroochurn, N. (2004). *Tourism taxation: A theoretical and empirical investigation.* Paper presented at ECOMOD international conference on Input-Output and General Equilibrium, Data, Modeling and Policy Analysis, Brussels

Gooroochurn, N., & Sinclair, T. (2005). Economics of tourism taxation. Evidence from Mauritius. *Annals of Tourism Research*, *32*(2), 478–498

Guzmán, T. (2004), *Environmental taxes in Spain.* Research Papers n. 5/04, Department of Social Sciences, Roskilde University, Denmark

Hinrichs, P. (2012). The effects of affirmative action bans on college enrolment, educational attainment, and the demographic composition of universities. *The Review of Economics and Statistics, 94*(3), 712–722.

Imbens, G. W., & Wooldridge, J. M. (2007). What's new in econometrics? NBER, Lecture Notes 10, Summer 2007

Ista, M. (2015). L'imposta di soggiorno, Osservatorio sulla fiscalità locale. Istituto Internazionale di Studi, Formazione e Promozione Turistico Alberghiera Giovanni Colombo, Roma

Jensen, T. C., & Wanhill, S. (2002). Tourism's taxing times: Value added tax in Europe and Denmark. *Tourism Management, 23*(1), 67–79.

Lazzeretti, L., Capone, F., & Casadei, P. (2017). The role of fashion for tourism: An analysis of Florence as a manufacturing fashion city and beyond. In N. Bellini & C. Pasquinelli (Eds.), *Tourism in the City* (pp. 207–220). Switzerland: Springer.

Lee, W. (2011). Comparative case studies of the effects of inflation targeting in emerging economies. *Oxford Economic Papers, 63*(2), 375–397.

Li, L. S. Z., Yang, F. X., & Cui, C. (2018). High-speed rail and tourism in China: An urban agglomeration perspective. *International Journal of Tourism Research.* https://doi.org/10.1002/jtr.2240

Mak, J., & Nishimura, E. (1979). The economics of a hotel room tax. *Journal of Travel Research, 17*(4), 2–6.

Meng, S., & Pham, T. (2017). The impact of the Australian carbon tax on the tourism industry. *Tourism Economics, 23*(3), 506–522.

Papatheodorou, A. (2001). Why people travel to different places. *Annals of Tourism Research, 28,* 164–179.

Perelli, C., Sistu, G., & Zara, A. (2011). Fiscalità locale e turismo. La percezione dell'imposta di soggiorno e della tutela ambientale a Villasimius. Quaderni di ricerca CRENoS 2011/01

Piga, C. A. (2003). Pigouvian taxation in tourism. *Environmental and Resource Economics, 26*(3), 343–359.

Pinotti, P. (2012). *The economic costs of organized crime: Evidence from southern Italy.* Working Papers Bank of Italy n. 868

Robbins, M., Saunders, J., & Kilmer, B. (2015). A framework for synthetic control methods with high-dimensional, micro-level data. Evaluating a neighborhood-specific crime intervention. RAND Working Paper WR-1080-NIJ

Schubert, S. F. (2009). Coping with externalities in tourism—A dynamic optimal taxation approach. MPRA Paper No. 16736

Sheng, L. (2017). Factors determining the success or failure of a tourism tax: A theoretical model. *Tourism Review, 72*(3), 274–287.
Sheng, L., & Tsui, Y. (2009). Taxing tourism: Enhancing or reducing welfare? *Journal of Sustainable Tourism, 17*(5), 627–635.
UNWTO-World Tourism Organisation. (1998). *Tourism taxation: Striking a fair deal*. Madrid: World Tourism Organisation.
UNWTO- World Tourism Organisation. (2017). Tourism barometer, *15*(1)

Concluding Remarks

Oliver Fritz, Mauro Ferrante and Özge Öner

This book explores tourism from very different angles with space as the common ground: Tourism is deeply embedded in different spatial levels—the destination, the region and the nation all together providing specific and unique elements of an environment which shapes the touristic experience (for a discussion, see Dredge and Jenkins 2003). Understanding the spatial dimension is a key to designing appropriate tourism policies and developing supply to meet ever-changing demand in an industry that has shown above-average growth rates on a global scale for many years. Several contributions have explored local and regional supply conditions and the spatial dependence under which tourism firms operate. In that context, competition among firms goes hand in hand with cooperation since it is a bundle of goods and services in a destination/tourism region which makes up the experience tourists are searching for.

Evidence for the economic significance of tourism, not only but especially for economically lagging regions, has been presented in various dimensions: While the broader economic impact of a tourism destination is radiating across industries and space (see e.g. Wagner 1997), specific economic effects have also been revealed. Tourism plays a key role in migrants and individuals with a foreign background with regard to their integration into the labor market (see Janta et al. 2012). In addition to the economic benefits as the dominate effect of tourism activities, wider socioeconomic and ecological impacts have received more and more attention recently (e.g. Lenzen et al. 2018; Deery et al. 2012). Tourism often generates large ecological footprints and is one sector in need for adaptation both with respect to mitigation

O. Fritz (✉)
WIFO—Austrian Institute of Economic Research, Wien, Austria
e-mail: oliver.fritz@wifo.ac.at

M. Ferrante
University of Palermo, Palermo, Italy
e-mail: mauro.ferrante@unipa.it

Ö. Öner
University of Cambridge, Cambridge, UK
e-mail: oo263@cam.ac.uk

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*,
Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0

but also the potential consequences of climate change. Furthermore, overtourism and its adverse effects on the welfare of residents in tourist locations have been widely discussed in pre-COVID times (e.g. Fritz and Maier 2019). As tourism is thus required to become more sustainable, a broad set of indicators is needed to monitor and evaluate the industry in specific destinations and regions.

Impacts of that kind are generated by tourism activities which are quite different in nature: Events like country fairs, but also cultural events attract large number of visitors and have not only become an important source of income for some destinations but also serve as a marketing tool for tourism organizations which increasingly use them to attract visitors some of which may return to stay for more extended vacations (see Getz and Page 2016). Culinary products are not only considered a (necessary) complement of other touristic activities but have become attractions on their own in some locations. As the industrialization of food production widened the gap between producers and consumers and standardized flavors nationally and even globally, enjoying locally produced food products like beer, wine and others, make up unique touristic experiences with tourists enjoying unique styles and flavors and in-depth knowledge about production processes (see Ab Karim and Chi 2010). Activities like these, but also strategies directed toward segmentation of visitors may also serve to tackle the problem of seasonality, which is not unique to tourism but especially relevant in that sector. Events can act as pull factors able to attract tourism demand in off-season periods. Moreover, from a regional perspective, events may help tourism regions still relatively unknown to national and/or international visitors to increase demand while their economic impact is likely to be reduced in popular destinations due to crowding out of other potential visitors. Segmenting visitors will help reducing seasonality by, for example, offering special packages for retired people, couples without children or business workshops (see Jang 2004). These efforts are supported by a trend toward more frequent, but shorter holidays and tourists' intentions to avoid overcrowding in terms of both seasons, but also places.

As the industry matures and standardized tourism packages are more and more replaced by locally and regionally differentiated attractions, but also because the degree of competition between destinations has intensified, knowledge about the demand side and thus the preferences and behavioral pattern of (potential) visitors is a key for an effective destination management. This applies to very different forms of tourism ranging from cruise ship travel to beach holidays and sightseeing trips. Modern technology like tracking devices has thereby assisted in generating data to gain new insights into, for example, the mobility pattern of different groups of travelers within a destination (Shoval and Isaacson 2009).

Regional science, like economics in general, has widened its theoretical models and empirical toolbox over the years to cope with various analytical needs. Many of these tools have been applied in tourism research when information about the spatial characteristics of the industry is of interest. Input–output analysis is one of those methods extensively used in regional science; it was originally designed for the national level by Leontief and his peers (Leontief 1936, 1944) and has been transferred to the regional level by Isard (1951) Input–output modeling provides valuable information about the economic impact of any change in final demand (e.g.

by expenditures of outside visitors) and reveals the intra-regional and interregional linkages at the sectoral level. Like many other methods common in regional science, it is now also applied in tourism economics to quantify the wider economic effects generated by tourism in both sectoral and spatial terms. While input–output modeling is more and more being replaced by other types of models that use input–output tables as database (econometric input–output models, CGE models), they are still popular due to the ease of use. Applications in tourism are manifold, and references include, among many others, Fletcher (1989) for input–output modeling, Masouman et al. (2018) for the application of an econometric input–output framework or Meng et al. (2017) who provide an overview of CGE applications in the field of tourism.

Spatial considerations found their way into econometrics for the first time when Jean Paelinck addressed the Dutch Statistical Association in 1974. Spatial econometrics—applied in numerous contributions in this book—has now become a standard method in regional science, but also in tourism to analyze spatial interdependence as researchers in many different fields recognized that "space matters" (see e.g. Yang and Wong 2012, or Romão and Nijkamp 2019). Supported by an increasing availability of spatial data and new technologies like GPS, work on how space affects the choices of both tourism suppliers (e.g. with respect to location, price decisions, etc.) and visitors (e.g. with respect to their movements around and between destinations) has generated new important insights into the functioning of the tourism system and thus supported destination and regional tourism marketing and tourism policies alike.

Another example is the gravity model, derived from Newton's law of gravity, applied in international and interregional trade, based on the idea that trade flows are based on economic sizes and distances between two units. It has also been applied in tourism with various degrees of complexity to estimate tourist flows (see e.g. Santana-Gallego et al. 2016; Santeramo and Morelli 2016; Lorde et al. 2016; Xu et al. 2019). Other methods equally popular in regional science and tourism include survival models (e.g. Gémar et al. 2016; Lado-Sestayo et al. 2016; Aguilar and Díaz 2019), graphical models (Ferrante et al. 2017) and causal inference approaches (Deng et al. 2019; Shahbaz et al. 2018; Tang et al. 2016) to mention but a few.

Instead of concentrating on one specific aspect of tourism, the book thus covers a very wide range of topics for which the authors apply various kinds of analytical tools of both a qualitative and quantitative type. Its contributions thus reflect the large diversity of the field of tourism research—a diversity needed to gain a comprehensive understanding into the complex nature of both tourism supply and demand, its interactions but also policy options for managing the future development of destinations and regions but also correct for externalities. Such externalities like environmental degradation, social problems and overtourism have increased in significance as tourism has grown worldwide at an unprecedented speed.

It is thus obvious that numerous future challenges lie ahead, and new strategies need to be found to tackle those. Pandemics will not only lead to temporary shutdowns of tourism-related firms and travel restrictions when they occur but may leave a long-lasting impact on travel behavior and consequently supply conditions. In times of "normal" demand conditions, on the other hand, overcrowding requires convincing concepts to reconcile tourism activities with social and ecological standards at the

level of destinations and regions. Above all, the threat of climate change requires serious global mitigation efforts which will not only impair travel by an increase in transport cost, especially for air travel, but also force tourism companies to contribute their share to a reduction in CO_2 emissions. In addition, a changing climate, which seems inevitable, will require comprehensive adaptation measures, but may, despite all such actions, worsen the competitiveness of some destinations (e.g. in hot southern countries) to the benefit of others (e.g. in cooler northern countries). Tourism in a world dedicated to fight against and adapt to climate change may thus look vastly different from tourism experienced until today.

The scientific community will play a key role in providing the analytical foundations on which policy makers will rely on in tackling those challenges. In that context, local and regional aspects of tourism on the one hand and tourism as a key sector for local and regional economies on the other will receive a lot of attention. We hope this book provides good examples on how the fields of tourism and regional science can be merged and will inspire others to succeed along that path.

References

Ab Karim, S., & Chi, C. G. Q. (2010). Culinary tourism as a destination attraction: An empirical examination of destinations' food image. *Journal of hospitality marketing & management, 19*(6), 531–555.

Aguilar, M. I., & Díaz, B. (2019). Length of stay of international tourists in Spain: A parametric survival analysis. *Annals of Tourism Research, 79,* 102768.

Deery, M., Jago, L., & Fredline, L. (2012). Rethinking social impacts of tourism research: A new research agenda. *Tourism Management, 33*(1), 64–73.

Deng, T., Hu, Y., & Ma, M. (2019). Regional policy and tourism: A quasi-natural experiment. *Annals of Tourism Research, 74*, 1–16.

Dredge, D., & Jenkins, J. (2003). Destination place identity and regional tourism policy. *Tourism Geographies, 5*(4), 383–407.

Ferrante, M., Abbruzzo, A., & De Cantis, S. (2017). Graphical models for estimating network determinants of multi-destination trips in Sicily. *Tourism management perspectives, 22,* 109–119.

Fletcher, J. E. (1989). Input-output analysis and tourism impact studies. *Annals of Tourism Research, 16*(4), 514–529.

Fritz, O., & Maier, K. (2019). Wenn Reisende zur Belastung werden. Eine ökonomische Einordnung des Phänomens Übertourismus und der tourismuspolitischen Optionen zu seiner Bekämpfung. *WIFO Monatsberichte (monthly reports), 92*(11), 821–831.

Gémar, G., Moniche, L., & Morales, A. J. (2016). Survival analysis of the Spanish hotel industry. *Tourism Management, 54,* 428–438.

Getz, D., & Page, S. J. (2016). Progress and prospects for event tourism research. *Tourism Management, 52,* 593–631.

Isard, W. (1951). Interregional and regional input-output analysis: A model of a space-economy. *The review of Economics and Statistics*, pp. 318–328.

Jang, S. S. (2004). Mitigating tourism seasonality: A quantitative approach. *Annals of Tourism Research, 31*(4), 819–836.

Janta, H., Lugosi, P., Brown, L., & Ladkin, A. (2012). Migrant networks, language learning and tourism employment. *Tourism Management, 33*(2), 431–439.

Lado-Sestayo, R., Vivel-Búa, M., & Otero-González, L. (2016). Survival in the lodging sector: An analysis at the firm and location levels. *International Journal of Hospitality Management, 59,* 19–30.

Lenzen, M., Sun, Y. Y., Faturay, F., Ting, Y. P., Geschke, A., & Malik, A. (2018). The carbon footprint of global tourism. *Nature Climate Change, 8*(6), 522–528.

Leontief, W. (1944). Output, employment, consumption, and investment. *The Quarterly Journal of Economics, 58*(2), 290–314.

Leontief, W.W. (1936). Quantitative input and output relations in the economic systems of the United States. *The Review of Economic Statistics*, pp. 105–125.

M. Ferrante et al. (eds.), *Regional Science Perspectives on Tourism and Hospitality*,
Advances in Spatial Science, https://doi.org/10.1007/978-3-030-61274-0

Lorde, T., Li, G., & Airey, D. (2016). Modeling Caribbean tourism demand: an augmented gravity approach. *Journal of Travel Research, 55*(7), 946–956.

Masouman, A., & Harvie, C. (2018). Regional economic modelling through an embedded econometric–inter-industry framework. *Regional Studies, 52*(9), 1237–1249.

Meng, S., & Siriwardana, M. (2017). Application of CGE modelling to tourism. In *Assessing the economic impact of tourism* (pp. 61–81). Palgrave Macmillan, Cham.

Romão, J., & Nijkamp, P. (2019). Impacts of innovation, productivity and specialization on tourism competitiveness–a spatial econometric analysis on European regions. *Current Issues in Tourism, 22*(10), 1150–1169.

Santana-Gallego, M., Ledesma-Rodríguez, F. J., & Pérez-Rodríguez, J. V. (2016). International trade and tourism flows: An extension of the gravity model. *Economic Modelling, 52,* 1026–1033.

Santeramo, F. G., & Morelli, M. (2016). Modelling tourism flows through gravity models: a quantile regression approach. *Current Issues in Tourism, 19*(11), 1077–1083.

Shahbaz, M., Ferrer, R., Shahzad, S. J. H., & Haouas, I. (2018). Is the tourism–economic growth nexus time-varying? Bootstrap rolling-window causality analysis for the top 10 tourist destinations. *Applied Economics, 50*(24), 2677–2697.

Shoval, N., & Isaacson, M. (2009). *Tourist mobility and advanced tracking technologies.* London: Routledge.

Tang, C. F., Tiwari, A. K., & Shahbaz, M. (2016). Dynamic inter-relationships among tourism, economic growth and energy consumption in India. *Geosystem engineering, 19*(4), 158–169.

Wagner, J. E. (1997). Estimating the economic impacts of tourism. *Annals of Tourism Research, 24*(3), 592–608.

Xu, L., Wang, S., Li, J., Tang, L., & Shao, Y. (2019). Modelling international tourism flows to China: A panel data analysis with the gravity model. *Tourism Economics, 25*(7), 1047–1069.

Yang, Y., & Wong, K. K. (2012). A spatial econometric approach to model spillover effects in tourism flows. *Journal of Travel Research, 51*(6), 768–778.