Nancy Hoalst-Pullen
Mark W. Patterson
Editors

The Geography of Beer

Culture and Economics

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Beers from where? I think
Explains the culture of drink
Oh! how wallets shrink.

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Editors and Contributors

About the Editors

Nancy Hoalst-Pullen is a Professor of Geography at Kennesaw State University and received her Ph.D. in Geography from University of Colorado at Boulder. She enjoys practicing the art and science of homebrewing Belgian- and German-style ales, travels the world to meet people in the beer industry, and delivers experiential and applied talks on the geographies of beer. She is the co-author of *National Geographic Atlas of Beer*, a smart, comprehensive book with stunning photography, great storytelling, and intriguing destinations that makes you love and appreciate beer, brewing, and everything in between.

Mark W. Patterson is a Professor of Geography at Kennesaw State University. He has co-published three books on beer, including *National Geographic Atlas of Beer* in 2017 and the first edited volume of *The Geography of Beer: Regions, Environment and Societies* in 2014.

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(Re)visiting Geographies of Beer

1

Mark W. Patterson and Nancy Hoalst-Pullen

Abstract

Beer has been an integral part of many cultures over the millennia. As a hearty social lubricant that also provided nutritional sustenance, beer has played important roles in celebrations, rituals, and social structures. The amalgamation of the four ingredients that create beer—water, malted grains, yeast, and hops (*Humulus lupulus*)—vary across time and space, and reflect the societies in which they are found. As such, this volume explores the geographies of beer by examining the cultural impacts and economic trends that have intersected, diverged, and shaped the current beer landscape (beerscape). Each chapter underscores the similarities and divergences within these beerscapes, from local to global scales of analysis, and from a diversity of perspectives and locales.

Why Beer Matters

The earliest known origins of beer are currently traced to modern-day Israel, where sometime between 11,700 and 13,700 years ago the Natufians—a stone age prehistoric culture of nomadic hunter-gatherers—fermented a variety of grains for rituals and cultural feasts (Liu et al. 2018). From a geographic perspective, this origin story is not at all surprising, given how cereal grains like barley and wheat were first domesticated during this climatically unstable period within the crescent-shaped region that included Mesopotamia and West Asia (Tanno and Willcox 2006).[1] The ancient beers were made from germinating the grains, mashing and heating the malt, and fermenting the mixture via exposure to wild airborne yeasts (and likely bacteria). The result was likely a far cry from today's beer styles—a non-hopped, low alcoholic concoction with the consistency of watery porridge or gruel (Liu et al. 2018).

Beer has been an integral part of many cultures (Hoalst-Pullen and Patterson 2017), commonly for celebrations, rituals, and maintaining power relations and social hierarchies. For example, Egyptian rulers paid their workers in beer—roughly four to five liters a day—to build the pyramids (Standage 2010). Such volumes translate into the need for technological advancements in brewing and the need for massive brewing facilities. Some scholars argue that without beer, the pyramids would not have been built (Bostwick 2014).

In the Middle Ages (500AD–1500AD), control over ale[2] production and raw ingredients in Europe were often equated with power. While small ale was made in the home, the quality was inferior to the monastic ales brewed by monks within their confines. Beer was ideal for most—a hearty social lubricant that provided nutritional sustenance to the masses. The Catholic Church controlled much of the beer production and distribution during the Middle Ages, due in part to its monopoly on *gruit,* a mélange of various herbs like sweet gale (*Myrica gale*), mugwort (*Artemisia vulgaris*), horehound (*Marrubium vulgare*), and Calluna heather (*Calluna vulgaris*).[3] The botanical mixture provided flavorful medicinal properties for healing and antiseptic properties for preservation (Hoalst-Pullen and Patterson 2017). Sometimes, however, the use of herbs created hallucinogenic,

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[1]This region is colloquially referred to as the "Fertile Crescent" due to its geographic shape.

[2]Medieval beer and medieval ale were both created using malted grains, water, and yeast, but beer had the additional ingredient of hops (*Humulus lupulus*).

[3]The word *gruit* originates from a region found within modern-day Netherlands, Belgium and westernmost Germany. Because of its inherent association with the beer produced, gruit referred to both the botanical mixture and the monopoly of sale.

narcotic, or even aphrodisiacal side effects. But its role in society was firmly established—ale was used for tithing, commerce, and taxes. Ale raised funds for the Church, providing a monetary source that further promulgated its influence over much of Europe. No surprise then that Church advocated for alcohol consumption and rejected the notion that alcohol abuse was a sin.

But one thing the Church did not advocate for was hops. Once considered a prolific, undesirable weed, hops (*Humulus lupulus*) provided much of the same properties of gruit—it flavored the beer (bitterly) and preserved it well. However, hops provided two distinct advantages over gruit. First, it acted more like a sedative, which was preferred by those rebelling against the papal excesses. Second, it was not taxed. Thus, as European royalty untangled itself from the Church and the business class grew, beer guilds were formed and grew to become powerful political forces in society. Seafaring explorers, colonizing far off lands in the name of a Crown (and later, for the monetized transportation of individuals) recognized the importance of having hopped beer available for consumption. In fact, the earliest colonial settlers in the New World often included a brewer, whose task was to provide settlers of all ages with the dietary staples of beer and ale. Indeed, there is no doubt that beer played a critical (geographic) role in history.

Why Geography Matters

Geographers often incorporate the notion of spatial differentiation in their studies; that is, how do phenomena vary across space? Beer provides an apt subject for such investigations. Take the common and popular beer style, the India Pale Ale (IPA). Cornell (2010) offers an in-depth study on the history of IPA, which is steeped in geography. Beer drinkers today are familiar with several IPA styles, which bear such geographic monikers as West Coast, East Coast, New England, English, and Pacific, to name a few. These varieties are in part influenced by a given "terroir"—created by climate, soils, and farming practices—to create an assemblage of specific grains and hops that influence the color, smell, taste, and mouthfeel. It explains how the same hop varieties can taste different when grown in different locations?

Water and yeast can have the same effect. The hardness of water can influence the taste of beer—with softer waters preferred for crisp clean lagers in Bohemia while harder, mineral-rich waters accentuate the bitterness of hoppy ales. For some beers, the location is everything—spontaneous fermentation beers such as lambics ferment using only the yeast found in the air of the local environment.

Of course, the contrary can be true. It can be argued that beers are no longer a product of their geography, as any beer style can be made in any location. This complexity is seen with the buying of independent breweries by large conglomerates, or the global distributions of brands. Indeed, why can one purchase a Heineken or Guinness seemingly anywhere, but your favorite local beer isn't available for purchase at the nearby grocery store or corner pub?

Indeed, the beer industry has grown and changed significantly since we first published *The Geography of Beer* in 2014. At that time, there were just under 4,000 breweries in the U.S. In 2019, there are over 7,500 breweries in the U.S. (Brewers Association 2019), and more than 9,400 in Europe (Brewers of Europe 2019). A recent survey by Alltech and the Brewers Journal estimated over 19,000 breweries worldwide (Alltech 2019). While it is tempting to assume these upward trends will continue, perhaps it is time to step back, reflect, and ponder how we arrived where we are today. Marketing, demographics, beer writing (books and blogs), and beer offerings have all played important roles in the upsurgence and success of the modern (craft) beer movement. The book explores the geography of beer, with particular emphasis on the cultural impacts and economic trends that have intersected, diverged, and shaped the current (local to global) beerscape.

Structure of the Book

There are 16 chapters in this volume, which are arranged into two broad topics, namely, culture and economics. The authors hail from a wide range of scholarly disciplines (geography, anthropology, economics, marketing, and business) and professions (professors, professional writers, and chief economist, to name a few). Regardless of their backgrounds, however, all highlight the underlying geography of beer as it relates to culture, society, history, economics, and policy.

In the first section of the volume entitled Culture, the authors explore the intersection of beer and various societies. Beer shapes and is shaped by most cultures. Cornell opens with his chapter exploring the birth and dissemination of porter from its root in the early 1700s in London. As porter spread to all continents—save Antarctica—brewers keyed in on making local variations that used local ingredients (e.g., Baltic Porter, Danish Porter, American Porter). Indeed Cornell's narrative is replete with geography. O'Brien continues by examining the use of localism in marketing beers in Surrey, UK. He looks at the use of symbols and features found in the natural and human landscapes and their role in helping to sell beer. In the following chapter, Deal takes the reader to the Cook Islands of the South Pacific, where he investigates a local beer called tumunu, and its evolving role in island culture as globalization becomes more prevalent. We return to Europe in the next chapter, as Wojtyra et al.,

write about the Polish craft beer revolution. They explore the spatial distribution of key beer hotspots in Poland that have contributed to the country's recent beer movement. Next, Watson and Broemel investigate the uneven growth of the craft beer sector in Florida. By examining cultural diffusion and local politics regarding distribution trends, they seek to uncover the reasons for uneven growth, and how these findings compare to other states. Finally, Myles et al. examine the recent shift toward low alcohol (e.g., near, session) beer and attempt to reveal the sociocultural motivations and current patterns of production and consumption.

The second section, entitled Economics, moves into the economic realm, with several authors exploring the economics of beer from various perspectives and locales. In Chap. 8, Kind and Kasier start off the section by examining the hop industry in Hallertau, and speculate on the economic impacts of climate change on the crop. Knudson et al. also look at the hop industry, particularly the dispersion of the U.S. hop industry. The authors note that despite the expansion in New York and Michigan, the Pacific Northwest will continue to dominate this industry. The next chapter, authored by Garavaglia, investigates the burgeoning craft beer industry in Italy. He traces its historical roots and reviews the economic factors influencing its subsequent growth and development. In Chap. 10, Maltby et al. analyze publicly-traded, small capitalized breweries. Their analysis concludes that such firms simultaneously draw on elements of both the small, craft, and traditional producers, and large, publicly-traded corporations. The following chapter by Cabras explores the growth of the craft beer sector in the European Union. He notes how differing laws and economics have impacted the industry's growth across the EU. In Chap. 13, Yeager and Gatrell identify the factors influencing locations of smaller microbreweries and brewpubs in the U.S. Midwest. They conclude the location of microbreweries is affected by different factors than those influencing the location of brewpubs. Next, Dense turns our attention to the economic impact of craft beer festivals, with specific focus on the Oregon Brewers Festival and its economic impact on and for the local community. Poelmans and Ostyn's chapter investigates business strategies employed by Belgian breweries, and conclude that geography is indeed a significant factor in influencing business decisions. Finally, Watson examines factors affecting the location and density of breweries in the U.S. Through a political lens, he explains the interplay of economic interests, political coalitions, and regulatory conditions as they influencing decision on where to locate new breweries.

The authors approach their study of beer from their own backgrounds, yet geography underlies each chapter. Moreover, culture and economics create the unifying theme for this volume. The nuances found within each chapter clearly underscore the diversity of the beer landscape, from local to global scales of analysis and perspective. Clearly, this volume and its predecessor are just the tip of the proverbial iceberg when it comes to examining beer geographies, and underscores the impact and importance of geography on explaining, representing and recognizing the spatial patterns and processes related to the culture and economics of beer.

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Part I
Culture

Porter for the Geography of Beer

2

Martyn Cornell

Abstract

Early in the eighteenth century the Brown Beer brewers of London, responding to market forces that threatened their predominance in the capital, began to instigate changes in their production methods that would result in the development of a strong, dark brew that became known as porter, after its first big customers, the street and river porters. The new drink turned out to be suitable for production on a much larger scale than had been possible, enabling the leading porter brewers to grow to a size never seen before, and it was also remarkably stable and long-lasting, meaning that as, the eighteenth century continued, the London porter brewers were able to sell their beer to wider and wider circles of customers, and become the first to extensively penetrate not just markets in Britain beyond the capital, but overseas markets, including the Baltic, North America and the East Indies, and eventually Africa and Australasia. Thus porter became the first "world" beer, drunk on every continent. Local brewers reacted to the appearance of this popular rival brew from London by making porter themselves: in Ireland from 1740, in North America from 1762, in Sweden from 1789, in Russia from 1790, in Germany from at least 1822, in South Africa, in India, in Australia and New Zealand, so that porter became the first beer to be brewed around the world as well. But by the end of the nineteenth century porter was in retreat in its country of origin, and declining in popularity abroad. It vanished entirely in Britain in the Second World War, and from Ireland in 1973, holding on only in a few overseas markets, such as Sweden and Poland. However, the "craft beer revolution" that began in the mid-1970s saw brewers turn to reviving old styles of beer, and porter has since seen a renaissance, with more brewers making porter now than for many years.

Origins

The shorthand instructor and doggerel writer Thomas Gutteridge, who lived in East London around 1740–1762, would be totally forgotten today if it was not for a short verse he wrote about a brewer called Harwood, who ran the Bell Brewery in Shoreditch,[1] which was printed in the *Gentleman's Magazine* in 1788,[2] and which went:

Harwood, my townsman, he invented first
Porter, to rival wine, and quench the thirst;
Porter, which spreads its fame half the world o'er,
Whose reputation rises more and more,
As long as porter shall preserve its fame,
Let all with gratitude our parish name.

Gutteridge was wrong on two counts. There is no evidence at all to suggest porter was a simple and heroic invention by any single individual. Neither is there any to show that the Bell brewhouse, which was only the 23rd largest in London in 1786, producing 16,862 barrels of strong beer a year,[3] well behind the capital's largest brewer, Samuel Whitbread, on 130,000 barrels a year, had anything to do with the development of porter. However, he was correct in saying that its fame was widespread: even by the 1780s, porter was not just being drunk from Pittsburgh to St Petersburg and beyond, it was increasingly being imitated.

Porter actually began around 1712 as a development of London Brown Beer, probably the most popular style of

"The most universally favoured liquor the world has ever known"—the rise, fall and rise again of porter, the first global beer.

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[1]Brown (2015).

[2]The Gentleman's Magazine, London, vol 63 pt II issue 5, November 1788, p. 958.

[3]Monckton (1966).

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malt liquor in the capital at the start of the eighteenth century, being "generally used among the labouring class of men".[4] The development in Derbyshire of malting with coke some time around the middle of the 1640s[5] allowed pale malts to be made reliably for the first time. Although—or perhaps because—pale malt from coke-fired maltings was more expensive than wood-dried brown malt, the new pale ale, bright and sparkling, became popular among the country gentry, and when the gentry began to reside in London more than they had in the past they brought the taste for pale ales with them.[6]

Challenged by the popularity of this new style, the brewers of the "heavy and glutinous"[7] brown beer responded by attempting to produce a brighter, more mellow drink themselves, aging their product for longer, to give it more time to clear, and hopping it more, relying on hops' preservative effects to allow the beer to age longer without turning sour. An anonymous writer using the name "Obadiah Poundage" wrote in the *London Chronicle* in 1760 an account of the development of the improved brown beer which said that more age, better malt, better hops, and the use of isinglass brought about a noticeable improvement, and "Tho' it was slow at first in making its way … in the end the experiment succeeded beyond expectation. The labouring people, porters, etc., found its utility, from whence came its appellation of porter, or Entire Butt."[8]

The name's origin came from the beer's popularity with the Street Porters and Fellowship Porters of London, who delivered parcels and moved good around the streets of the capital and on and off ships and barges moored in the Thames,[9] tiring work which required a prodigious intake of calories. Porter began as very much a local style of beer, brewed for a localized, London customer base, made with London well and river water that, although brewers did not understand it at the time, was particularly suited for producing dark beers, because of its high calcium carbonate content[10] and with raw materials from neighboring counties to London: brown malts produced from East Hertfordshire barley, grown no more than 30 miles from the capital, malted in towns such as Ware and brought to London by wagon train down the former Ermine Street or by barge down the River Lea,[11] and hops from Kent, shipped in hoys, small coastal sailing vessels, up the Thames to warehouses at Southwark.[12]

Its development turned out to have a number of unexpected but welcome advantages for the porter brewers. The new style of beer was more robust than rival malt liquors, which meant that it could be brewed for a longer season (before the development of technologies to cool brewing vessels, brewing ale and beer normally stopped after April, when it became too warm to brew successfully and only began again after September as the weather cooled) and in larger vessels. Porter was, thus, the first beer suited to large-scale production. Larger-scale production lowered costs, and enabled the big porter brewers to find the capital to invest in tying up stocks of beer for two years or more to mature it.[13] The biggest 10 or 12 London porter brewers grew to dominate the trade: by 1785 they were brewing three pints in every four made in London, and by 1830, 17 pints in 20.[14]

As their own market became saturated, even with London's booming population, the big London porter brewers looked to markets further away, which in turn stimulated brewers in other towns and cities—and countries—to start making porter themselves (Figs. 2.1 and 2.2).

Expansion Across Great Britain

The Red Lion Brewery at St Katharine's, to the east of Tower Bridge, owned by Alderman Henry Parsons, became the first porter brewery known to export its beer to continental Europe. In 1730 it was reported the "the K. of France has given Alderm. Parsons leave to import his beer into France duty free, which we hear will be worth him 2 or 3000 l. p. ann."[15] However, this was an early and isolated example of porter's expansion outside Britain: and even at home the growth of markets outside London appears to have been slow in starting. The earliest mention so far discovered for the sale of London porter away from the capital comes from 1735, when the owner of a newly opened tavern called the New Greenwich in Gateshead, on the south side of the Tyne, boasted that he had in stock not just "genuine Scarborough Spaw Water, carefully bottled at the Well", but also "a Stock of right London Porter".[16] Robert Patten at the Bull's Head in Fishamble Street, Dublin announced in 1739 that he had "just Imported another choice Quantity of genuine London Porter, brewed

[4]Tuck (1822).
[5]Houghton (1727).
[6]Combrune, Michael, An Historical Account of the English Brewery, unpublished MS, 1762, Beinecke Library, Yale University, Osborn c. 602, quoted in Sumner (2008).
[7]Tuck, p. 4.
[8]Ditto.
[9]For a discussion of the importance of the many thousands who worked as porters in London to the economy of the capital from the fifteenth to the nineteenth centuries, see Stern, Walter M, The Porters of London, Longmans, 1960.
[10]Hough et al. (1971).
[11]Mathias (1959, p. 436).
[12]Ditto, p. 507.
[13]Mathias (1959, p. 11).
[14]Mathias (2013).
[15]Grub Street Journal, 4 June 1730.
[16]Newcastle Courant, Newcastle upon Tyne, Saturday 31 May 1735, p. 3.

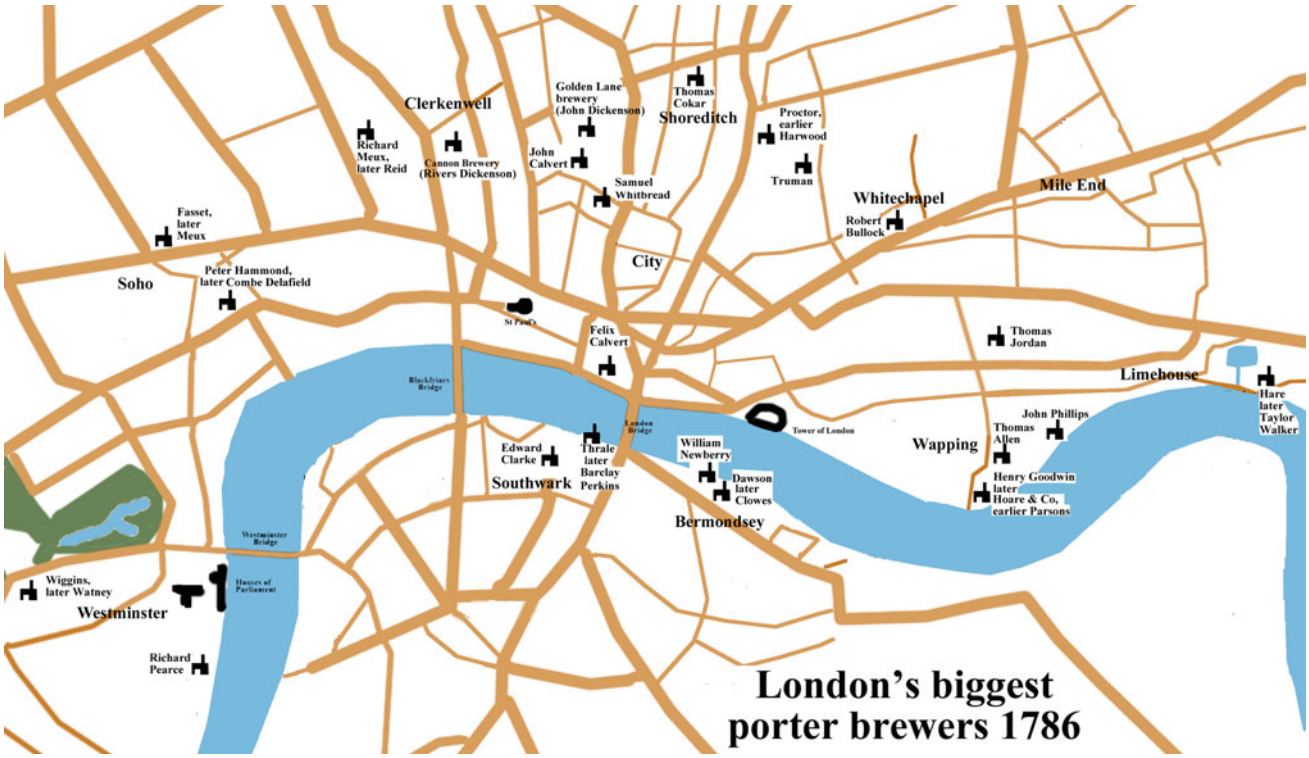

Fig. 2.1 Porter brewing in London stretched from Hyde Park in the west to Limehouse in the east

particularly for his own use",[17] the earliest mention so far known of porter on sale in Ireland. In 1742, Adam Grundry told the world that he had moved from the King's Head in Salford to the Angel Inn in the Market Place in Manchester, where he sold "London Porter, very fine and stout".[18]

The first brewers outside London to attempt to make porter in an attempt to stop imports stealing the local market seem to have been in Dublin, where a newspaper in 1740 boasted that the local porter "greatly excels" the London original.[19] In England, the first bid to offer a regional rival comes from Thomas Elliott in Sheffield, South Yorkshire in 1744. His advertisements for his new brew attempted to deal with two clearly common prejudices against porter made elsewhere than the capital, that it could not match the London brew because its brewer did not have the same skills as London porter brewers and it was not brewed with London water. Elliott told his prospective customers that his brewer was "regularly Bred a Common Brewer, being served seven years apprenticeship to that trade in London, so that there is no difference between the London Brew'd Porter and his but the water of this place, which is far superior to the New River in London for the Purpose, and he does venture to say that in the brewing season it is equal to the Thames for the brewing of the brown Beer."[20]

In Edinburgh, which had been under siege from Thames-side porter brewers from at least 1745, when ships were arriving in Leith harbor with cargoes of porter from London,[21] local brewers had organized themselves sufficiently so that in 1756 a retailer in the Lawnmarket in Edinburgh could offer for sale "Good Scots Porter" (brewer unnamed, but quite possibly Archibald Campbell of the Argyll Brewery, Cowgate, Edinburgh, whose brewery, founded around 1740[22] was certainly making porter in 1780[23]). By 1758, the Edinburgh Philosophical Society, which was set up in 1737 with the aim of "Improving Arts and Sciences and particularly Natural Knowledge," was attempting to encourage the fightback by offering a prize of a silver cup worth three guineas for the best hogshead of porter brewed that year, to be judged in March 1760[24] (which suggests porter was expected to be at least 18-months old). Other Scottish cities were also taking London porter: Glasgow by

[17]Dublin Journal, 29 January 1739, p. 4.
[18]Evening Post, London, 19 January 1742.
[19]Dublin Journal June 10 1740, p. 3.
[20]Leeds Mercury, op cit.
[21]Caledonian Mercury Tuesday 16 April 1745, p. 3.
[22]Donnachie (1979).
[23]Caledonian Mercury Wednesday 9 February 1780, p. 2.
[24]Aberdeen Press and Journal, Tuesday 9 May 1758.

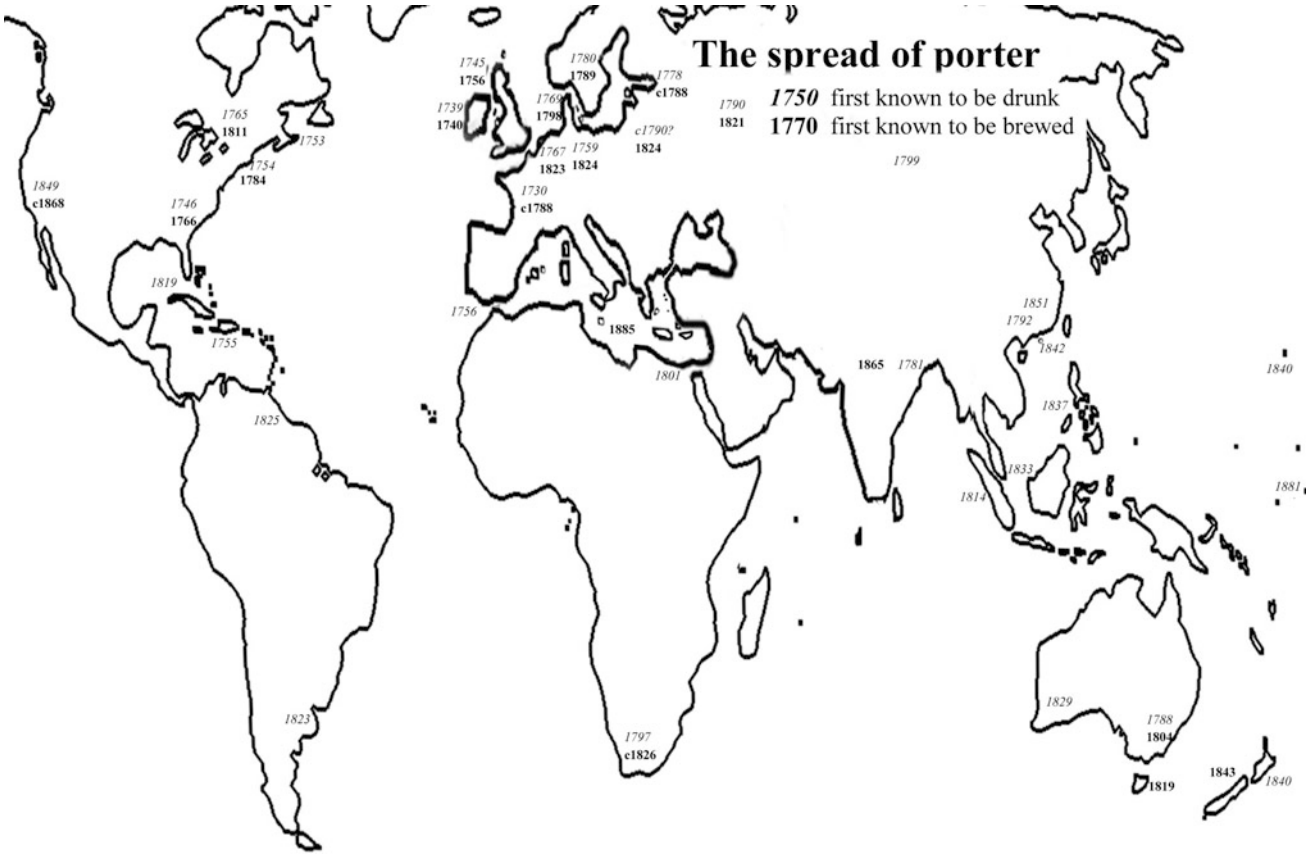

Fig. 2.2 Porter spread over 120 or so years to become the first beer to be drunk on six continents

1750,[25] Aberdeen by the following year,[26] Dundee by the year after that.[27] But as Scots brewers tried to beat off competition from London, their product frequently failed to satisfy: a retailer in Edinburgh in 1778 had to confess that "the common run of Scots porter" had a "burnt taste so much and so justly complained of".[28]

In England, the same story played out, but on a generally larger scale. In the West Country, both Bath and Bristol became centers of porter brewing. Samuel Sayce, from Shopshire, opened a wine and spirits winehouse in Horse Street, Bath in 1772,[29] and had widened out into brewing ales and porter by 1776,[30] making his own malt (a fire destroyed his malt kiln in 1777[31]). A few years later, in 1780, James Warren opened Warren's Porter and Amber Brewery at Lower East Hayes, Bath, declaring that "The principal design in erecting this brewery was the production of fine Porter," and with pure Avon river water "porter brewed at Bath will in every respect be equal to what is manufactured in London."[32] The Avon, of course, provided the brewers of Bath with the means to ship their beers out, as well as the means to brew their beer. In 1782 a broker in Bristol was advertising for sale "32 Barrels of Warren's Porter, about eighteen months old, brewed on Perpose [sic] for bottling for the West Indies."[33] By 1785 Bath porter was being advertised for sale in Philadelphia, alongside the London article, Bristol beer and Taunton ale.[34]

In Bristol, there was a dedicated "Bristol Porter Brewhouse" from at least 1778, when it was advertised for sale.[35] In 1788, seven Bristol businessmen, led by Jacob Wilson Ricketts and Philip George, came together to form a partnership to acquire the Bristol Porter Brewery.[36] From the

[25]Ditto, Tuesday 5 June 1750.
[26]Ditto, Tuesday 15 October 1751.
[27]Ditto, Tuesday 28 November 1752.
[28]Caledonian Mercury Wednesday 14 January 1778.
[29]Bath Chronicle and Weekly Gazette, Thursday 3 September 1772, p. 1.
[30]Fawcett, Trevor Bath commercialis'd: shops, trades and market at the 18th-century spa, Ruton, 2002, p. 15.
[31]Hampshire Chronicle, Monday 7 April 1777, p. 3.
[32]Bath Chronicle and Weekly Gazette, Thursday 24 February 1780, p. 3.
[33]Bristol Journal, 7 September 1782, p. 2.
[34]Independent Gazetteer, Philadelphia, Pennsylvania, 11 June 1785, p. 4.
[35]St James Chronicle, London, 7 April 1778, p. 3.
[36]Richmond and Turton op cit.

start, the partnership was involved in the export business: even before they acquired it, an employee had been sent by the Bristol Porter Brewery to Ireland in 1784 to develop the market for Bristol porter there.[37] In March 1789, George was able to tell his fellow partners that 80 barrels were being shipped to Cork, the same number to Waterford and 100 more to Liverpool.[38]

The following year, 1790, the Bristol shipping records show P George & Co sending out 18 shipments of up to 40 casks of porter at a time, to destinations including Quebec, Jamaica, Grenada, St Vincent, and Bordeaux, as well as, closer to home, the Isle of Man, Cork, Youghal, Galway, Londonderry, and Wexford. Bristol by now had a steady trade in exporting porter, with at least one shipment a week in 1790, mostly via independent merchants sending mixed cargoes to destinations including, in addition to those served by the Bristol Porter Brewery, Baltimore, New York, Maryland, Boston, Dublin, Barbados, Antigua, and Honduras. A large market also developed in Havana: one single shipment of porter from George's in April 1819 totalled 600 barrels, the biggest shipment ever recorded from Bristol before 1830.[39]

Ireland

In Dublin, the main variety of malt liquor consumed, even in the early eighteenth century, was Brown Ale, more lightly hopped than the Brown Beer popular in London.[40] London porter brewers were exporting to Ireland by 1739 at the latest, when a retailer in Dublin, Robert Patten at the Bull's Head in Fishamble Street was boasting that he had built a warehouse in the rear of his house where "Gentlemen may have the Satisfaction" of viewing his genuine London porter "neat in the English casks".[41]

Local brewers were swift to respond with their own version, and the *Dublin Journal* boasted in June 1740 that "It is universally allowed that the Porter or Beer, brewed in this Town, greatly excels that, in every Respect, which is imported from London."[42] But one of the big problems Irish brewers faced was that they were paying duty of four shillings six pence a barrel, while English exports, until 1741, paid just 1s 3d import duty per barrel, and received a drawback on the malt and beer tax they had paid in England (though freight charges were as much as 3s a barrel).[43] In 1741 the import duty was raised to 2s 10d per (32-gallon ale) barrel. The quality of London porter means drinkers preferred the English product even at a higher price, and the efficiencies of the big London porter brewers meant their costs were lower per barrel than Irish brewers could manage and they could make profits despite incurring freight and import charges.

To encourage the locals to compete, in 1753 the Dublin Society, founded, like the Edinburgh Society, to encourage improvements in the arts and sciences, offered a premium of £10 for the person who brewed "the most and best beer in imitation of London porter". One of the three largest Dublin breweries, Joseph and Ephraim Thwaites, of Cork Bridge, claimed in 1763 that after "repeated and expensive attempts" they had finally brought the brewing of Irish porter to perfection, but British imports were threatening their business, and they presented a petition to the Irish House of Commons calling for a restriction on imports, in order to assure the future of the Irish brewing industry.[44]

In 1773 the Corporation of Brewers and Maltsters in Dublin took another petition to the Irish House of Commons, which heard George Thwaites, Master of the corporation, and also of Cork Bridge, declare that because of tax differences and rebates upon export "the English Brewer can afford to sell his Porter cheaper here than in England or than the Irish Brewer can possibly brew it."[45] Two other "considerable" brewers also spoke, Mr Andrews and Mr Arthur Guinness, who both said that "on Account of the great Advantages the English Brewer had over the Irish" they had considered setting up breweries in Wales to supply the Dublin market.[46]

Dublin brewers worked on improving their product, and in 1776 a brewer called James Farrell enticed over from one of the big London porter breweries, Reid's of Clerkenwell, a "very able" brewer called John Purser.[47] Purser helped Farrell brew 7,500 barrels of porter in one year, and judging by the list of leading Dublin brewers—George Thwaites, Patrick Sweetman, Edward Atkinson, Alderman Nathaniel Warren of Mill Street, Thomas Andrews, as well as Farrell—who wrote testimonials for him, he also advised a swath of others in the Irish capital on how to make London-style porter before he died in 1783.[48] It took another 22 years of campaigning, but eventually, in 1795, the Irish parliament abolished the beer tax, giving the country's brewers a better chance of fighting the English invaders. The growing skills of the Irish porter brewers, coupled with the effect of the

[37]Mathias (2013, p. 228).
[38]Pudney, p. 104.
[39]Mathias (1959, p. 193).
[40]Warburton et al. (1818).
[41]Dublin Journal January 29, 1739, p. 4.
[42]Dublin Journal June 10, 1740, p. 3.
[43]Mathias (1959, p. 152).
[44]Guide to St James's Gate Brewery, Arthur Guinness Son & Co, Dublin (1928, p. 12); Lynch and Vaizey (1959).
[45]Journals of the House of Commons of the Kingdom of Ireland, Irish House of Commons, Dublin, Volume 16, (1774, pp. 182–3).
[46]Ditto.
[47]Guinness and Arthur's (2008).
[48]Ditto, p. 114.

removal of the beer tax, finally stemmed the tsunami of English porter hitting Irish ports. By 1818, it was reckoned that "for some years no English porter has been imported into Dublin", and Dublin was producing 300,000 barrels of "porter, etc." a year, with 30,000 barrels of that sent to other parts of Ireland and 1,000 barrels sent abroad.[49]

Northern Europe

Porter was being drunk in Russia by the 1770s, when the traveler William Coxe, who visited St Petersburg in 1778, wrote of his experiences of dining at the homes of noble Russians that "I never tasted English beer and porter in greater perfection and abundance."[50] Three years later, in 1790, another young traveler, Charles Hatchet, visited Moscow, and found a club in operation in the city with 300 English, French, and Russian members where billiards and cards could be played, and wine and porter drunk.[51] The average imports of porter and English beer into St Petersburg between 1780 and 1790, according to William Tooke, chaplain to the English merchants in the Russian capital, were worth 262,000 roubles a year, when the rouble was five to the pound sterling.[52]

Brewing had been taking place in St Petersburg almost from the moment the city was founded, with Peter the Great giving instructions in 1717 for a brewery to be built for supplying the Russian fleet. But the first porter brewery in the city appears to have been founded by an English merchant and entrepreneur, Noah Cazalet, in or around 1787. The Cazalets were Huguenots from Languedoc who had fled to England after the Edict of Nantes, giving Protestants in France the right to practice their religion free from persecution, was revoked by Louis XIV in 1685.[53] Noah was born in December 1757 and came to St Petersburg in his early 20s.[54] He opened a rope factory in St Petersburg, and also a brewery making beer "in the London manner", according to his son, another Peter, writing in 1817 to the Russian Minister of Internal Affairs, who declared that his father had started the brewery "about 30 years ago." If the Cazalet brewery was not brewing porter from the start, it certainly was by the time Peter Cazalet wrote to the minister, since he boasted that he had improved the brewery's product "to such a degree that it is little inferior to English beer and porter"[55] and "in a short time Russia will not have to take London porter."[56]

Nicholas Cazalet died in 1800 in St Petersburg "of a spotted and putrid fever," according to the *Gentleman's Magazine*,[57] but his businesses continued. Meanwhile, the Cazalets had a rival as St Petersburg's porter brewers, and one backed by royalty. Abraham Krohn was born in 1766 in the village of Poseritz, on the Baltic island of Rügen, just off the North German coast, and at the time part of Swedish Pomerania. In 1781, aged 15, he became an apprentice in the court bakery in St Petersburg. One of his duties was to bring the Empress, Catherine II, her breakfast bread every morning. It was presumably through this contact that in 1795, aged 29, family tradition says he was given 30,000 rubles seed capital by the Empress, and land belonging to the Alexander Nevsky Monastery on the left bank of the Neva, to start a porter brewery.[58]

Krohn's business partner was a brewer called Friedrich Danielson (or Danielsen), who is said to have had 15 years' experience in an English brewery, but about whom very little is known. In 1821, Krohn and Danielson applied to, and were granted permission by, the Minister of Finance "to start in Moscow a plant for brewing beer similar to English kind on the pattern of their plant in St Petersburg." In 1848 St. Petersburg was hit by a serious cholera outbreak, and the commercial pressures this brought prompted a merger between the Krohn and Cazalet concerns under the name of Cazalet, Krohn and Co, with the Krohn brewery in St Petersburg closing and production concentrated at the Cazalet site.[59]

The export of porter from London to cities such as Danzig—the Sound Toll Records show that between 1790 and 1799 an average of nine ships a year with cargoes including "øll" or porter traveled from the Thames to the Prussian port—encouraged the drink's popularity in Poland, so that one commentator complained that "thousands" of barrels of English grain, in the form of porter and beer, were entering Poland every year, when the country had a grain surplus of its own, and could not, because of tariffs imposed by the British government, sell its surplus corn to Britain.[60]

The imposition by Napoleon of the "Continental System" blockade on British exports in 1806 brought a stop to shipments through the Sound of beer from London to Baltic ports such as Danzig, Königsberg, and Riga from 1807 until the French Emperor's fall in 1814. Trade picked up immediately: in 1815, 17 ships sailed from London to Danzig with beer among their cargoes.[61] Then in 1824 imports of porter

[49]Warburton, Whitelaw and Walsh, pp. 999–1000.
[50]Coxe (1784).
[51]Hatchett, Charles, Notebook V, f27, quoted in Cross (1997, p. 41).
[52]Tooke (1800).
[53]Hardy (1906).
[54]Thompstone (1992).
[55]Gvichia and Sarnova (2000).
[56]Gvichia (1997).
[57]Gentleman's Magazine, vol 70 pt1 May (1800, p. 486).
[58]Krohn (1888).
[59]Ditto.
[60]Lipoński (1978).
[61]Sound Toll Records.

into Poland were banned, and Polish brewers, after a short discussion on whether the water of the Vistula could match that of the Thames, began making porter themselves. At least a dozen breweries in Warsaw turned to porter-making, including one that made only English porter and ale, the Fabryka Porteru i Piwa Angielskiego ("English Porter and Beer Factory"), run by Wojciech Sommer,[62] opened in 1827. The porter exported to Poland looks to be what would have been called a "double brown stout" in Britain, around 7 or 8 per cent alcohol by volume, rather weaker than the "imperial" stouts popular at the Russian court: a Polish publication from 1867 compares the strength of "piwem podwójnem", double beer, such as "porter angielski" to "Salvator or Bockbier from Munich," which was an 8 per cent abv beer.[63]

Porter remained popular even after 1831 or so, when Bavarian style lager beers began to find an increasing market in Poland. To differentiate their product, Polish brewers such as Okocim called it "porteru krajowego", "national porter".[64] But as Polish brewers turned increasingly to bottom-fermentation beers with the growing popularity of Bavarian and Bohemian styles, as opposed to top-fermentation beers in the English fashion, so the porter made in the country became a bottom-fermented beer as well.[65] Porter continued to be brewed in Poland as a bottom fermented, strong (8 per cent abv) , heavily flavored beer throughout the twentieth century: however, although porteru krajowego as an expression dates from at least 1866,[66] the English beer writer Michael Jackson, writing in the 1990s,[67] dubbed the style "Baltic porter", the name by which it is now known, even in Poland.[68]

The Swedish botanist Bengt Bergius claimed in 1780 that in Sweden "a lot of English beer varieties have started to be seen on some of the wealthy tables, especially English porter, which is now brewed as good here in Stockholm."[69] Nothing more seems to be known of porter brewing in Stockholm: instead the title for first porter brewery in Scandinavia looks to go instead to Gothenburg, on the country's west coast. The Swedish East India Company, *Svenska Ostindiska Companiet,* or SOIC, was founded there in 1731, and the SOIC liked to carry porter on its ships on the voyages to the Far East, as it survived the journey well—in 1782, according to the register of Gothenburg town dues, part of the cargo of the brig Götheborg consisted of "16 Oxhovden Porter" (an "oxhuvud" was the equivalent of the English hogshead, though rather smaller, at 45 gallons/200 L) bought by Patrick Alstromer on behalf of the Swedish East India Company. Perhaps to cater for Swedish sailors who had acquired the taste on voyages with the SOIC, porter was on sale in a bar in Gothenburg in 1786.[70]

The next year, 1787, one of Gothenburg's licensed brewers, Nils Öhrwall, applied to transfer his brewer's rights to William Knox, a Scotsman born in Dunbar in 1751, to allow him to start brewing porter in Gothenburg. Knox was eventually granted burgher's rights as a porter brewer in 1789, and built a brewery next to the Vauxhallen, the Gothenburg pleasure gardens named after the pleasure gardens in London.[71] However, his brewery was apparently tiny, contributing only one per cent of all the excise duty gathered in Gothenburg, and in 1796 Knox went bankrupt.[72]

It took another foreigner, Abraham Lorent, to build what would become Gothenburg's most successful porter brewery. He was the son of a Hamburg trader, Carl Albert Lorent,[73] descended from a Hungarian family called von Lorenz.[74] Abraham was running a sugar refinery in Copenhagen in 1807 when the British bombarded the city, and his was the only house in his row not burnt down. Because of this he was accused of being in the pay of Britain. Lorent left Denmark as a result and moved across to Gothenburg in 1808.[75] Buying land at Klippan, on what was then the western edge of the town, he built a new sugar refinery, which quickly began to make considerable amounts of money, so that by 1812 he was described as "living in the greatest splendour".[76]

In 1811 Lorent began building a porter brewery at Klippan. As with Knox, the local brewers' Guild objected, and it took two years, to 1813 to get the necessary permissions, the "privilege", for the brewery. It seems to have taken

[62]Lipoński, op cit.
[63]Gazeta Przemysłowa no 53, Krakow, Poland (1867, p. 3).
[64]Kurjer Lwowski 10 Jan, 1914, p. 11.
[65]Jackson (2007).
[66]Zbiór Przepisow Administracyjnych Królestwa Polskiego Wydział Spraw Wewnętrznych i Duchiownych.m Część I (Collection of Administrative Regulations of the Kingdom of Poland,. Department of Internal and Spiritual Affairs, Part I) vol III, Warsaw 1866, p. 474.
[67]Jackson, Michael, Beer, Dorling Kindersley, London, 1998, p. 118.
[68]Kopyra, Tomasz, Piwo: Wszystko co musisz wiedziec (Beer: Everything you need to know), Znak, Kraków, 2016.
[69]Bergius, Bendt, Tal, om Läckerheter, Både i sig sjelfva fådana och för sådana ansedda genom Folkslags bruk och inbillning. Hållet för Kongl Vetenskaps Academien Vid Præsidii nedlåggande Den 3 Maj 1780 (A talk on delicacies, both in themselves and those that are considered so by the people's use and imagination. Held for the Royal Academy of Sciences by the president's decree on 3 May 1780) vol 1, Stockholm, 1785, p. 267. Author's translation.
[70]Ashton (2003).
[71]Thunaeus (1970).
[72]Ditto.
[73]Carlson, Gösta, Majorna: en resa genom fem seke (Majorna: a journey through five centuries), Tukan Förlag, Gothenburg, 2014, p. 52–53 l, Tukan Förlag, Gothenburg, 2014, p. 52–53.
[74]Fredberg, Carl Rudolf Andersson Det gamla Göteborg: lokalhistoriska skildringar, personalia, och kulturdrag (Old Gothenburg: local historical depictions, personalities, and cultural features), Bröderna Weiss boktryckeri, Gothenberg, 1921, p. 40.
[75]Thomson, op cit.
[76]Ditto.

even longer after that for all the rest of the red tape to be cut through and the first porter was brewed in Lorent's new brewery in Klippan only in 1817—fortuitously, just after the King of Sweden, Charles XIV, had banned all imports of foreign porter into Sweden.[77] The new brewery thrived, and in 1820 the King of Sweden made a visit. Lorent had installed a large vat at the brewery, holding 36,000 "kannor" (1,100 hectoliters, around 670 UK barrels), for maturing his porter, which was turned into a breakfast room for the king, the crown prince and their entourage, with lamps hung on the walls. King Charles was so thrilled by this adventure, apparently, that he offered Lorent a medal.[78]

By the 1830s the brewery had become easily the largest Sweden had ever seen, with an output of 23,500 hectoliters/14,360 imperial barrels a year.[79] But Lorent died on a trip to England in 1833, the brewery went into receivership, and in June 1836, the porter brewery and the sugar business were sold at auction to a young Scot, David Carnegie junior, then just 23, whose family had been involved in commerce in Gothenburg for almost 90 years. Carnegie's porter came to dominate the Swedish market,[80] and was also sold abroad: in 1850 it was claimed that "much is sent to England, and sold as English porter."[81] It was advertised, for example, in the *Worcester Skandinavia*, a Swedish-language newspaper in Worcester, Massachussetts, in 1905 [82] and in Vancouver in 1912, where drinkers were assured that "Carnegie's Swedish Porter" was "prescribed generally by the medical profession on all occasions on account of the rich nutriment it contains and it's [sic] nerve-steadying value … an ideal bracer-up after *La Grippe* [sic, again]."[83] Other markets for Carnegie porter included Argentina, where it was imported by a firm called Brander, Bergström & Co, the West Indies, and the Dutch East Indies (today Indonesia).[84]

Beer from London was occasionally exported to Denmark in small quantities from the end of the 1730s, and "London porter øll" was being sold by a store on Boldhusgade in Copenhagen in 1769.[85] It seems likely some of the larger shipments from London to the Danish capital that were recorded simply as "øll", such as the 129 oksehovede on a ship passing through the Sound on August 13, 1776, or the 248 oksehovede on a ship passing through on September 9,1777, were actually porter. With increasing amounts of London porter reaching Denmark, inevitably the local brewers decided to fight back with their own version. In March 1798, one Copenhagen newspaper was advertising Danish porter in bottles, "tightly packed and sealed", brewer unnamed,[86] and the same ads would run for four years. It looks as if the King's Brewhouse, by the Frederiksholms canal in Copenhagen, originally set up to supply the Danish armed forces with beer and later leased to commercial brewers, was the main, and perhaps only, source of Danish porter. Advertising a price increase in 1811, the brewery listed Danish porter or bitter beer as one of its products.[87] In 1815 the brewery's administrators decided to announce to the public that it had two-year-old porter available at 25 rigsbank daler the tønde (135 l/30 imperial gallon casks).[88]

The same year Copenhagen-brewed porter was evidently being exported to the Danish West Indies: that December a newspaper in Christiansted, St Croix, capital of the Danes' Caribbean colony, was advertising an auction of 10 "tønde" of Danish porter, the property of the late Captain L von Petersen.[89] In 1831 the Kongelige Landhusholdningsselskab, the Royal Danish Agricultural Holdings Company, was set up in 1769 to encourage agriculture and commerce in the country, offered a gold medal to anyone able to produce porter as good as, and about the same price as, "gode engelske Porterøl", and teach others how to do the same.[90] But it appears Denmark was unable to sustain the sort of fair-sized porter brewery Sweden had thrown up: instead the Danish drinker would embrace the Bavarian lager beers introduced in the 1840s by JC Jacobsen at his new Carlsberg brewery.[91] Danish brewers would continue to brew porter: but even in 1904, the Ny Carlsberg brewery in Copenhagen could only advertise its own porter with a cringe, calling it "the one known to be closest to the English".[92]

[77]Morning Chronicle 25 April 1817, p. 2.
[78]Carlson, pp. 54–55.
[79]Beskrivning över Göteborg med omnejd (Description of Gothenburg and surrounding area), Förlags AB Fournir, 1939, pp 448–451.
[80]Beskrivning över Göteborg, op cit.
[81]Hurton, William, A Voyage from Leith to Lapland: Or, Pictures of Scandinavia in 1850, London, 1851, Volume 2, p. 271.
[82]Worcester Skandinavia, Massachusetts, 26 December 1906, p. 2.
[83]Daily British Colonist, Victoria, British Columbia, March 11 1912, p. 2.
[84]Bodman (1938).
[85]Kiøbenhavns Kongelig alene priviligerede Adresse-Contoirs Efterretninger 15 November 1769, p. 8.
[86]Ditto, 28 March 1798, p. 2.
[87]Glamann (1962).
[88]Ditto, p. 49.
[89]Dansk Vestindisk Regierings Avis, Christiansted, St Croix, 21 December 1815, p. 4.
[90]Den til Forsendelse med de Kongelige Rideposter privilegerede Danske Statstidende, Copenhagen, 12 March 1831, p. 5.
[91]Ditto.
[92]Samfundet, Copenhagen, 12 January 1904, p. 1.

Western Europe

In November 1759, three months after the Anglo-Hanoverian victory at the Battle of Minden, 50 or so miles south of Bremen, the Marquis of Granby, one of the British Army's senior commanders, ordered at his own expense a thousand barrels of porter to be sent to Germany "for the use of the Common Soldiers",[93] possibly the first timer porter was available in Germany. London porter was certainly on sale in Hamburg, along with "Bourton Ale", in 1794, at the premises of Heinrich Christoph Seebohm in Kleinen Beckerstasse.[94] German brewers, too, began making rival versions: "alter deutscher Porter", "aged German porter", was being offered for sale in Hamburg in 1824, brewer unnamed.[95] Porter was being brewed in Bremen by 1828, and compared favorable to "real English porter" by a visitor.[96]

However, porter in Germany was to take on a character very different from the "everyday drink of the working man" it was in Britain. By 1867 a brewer in Leipzig, Carl Grohmann, was advertising his "Deutscher Porter" specifically as a "Gesundheitsbier", or health beer, and claiming it had been "widely used" in cholera sanatoria and military hospitals the previous year and "brilliantly proved its ancient reputation"—testimonials available for inspection if required.[97] A decade and a half later, in 1883, the Hollack Brothers brewery in Dresden declared its Deutscher Porter an effective expectorant and cough suppressor, while in 1889 another brewery from the city, the Bürgerliches Brauhaus Dresden-Plauen, was claiming that its own Deutscher Porter was an "excellent drink for nursing and blood-poor women, for stomach sufferers and convalescents."[98] It was a Germanic forerunner of the "Guinness is good for you" campaigns of the 1930s.

London porter was available in "vaatjes"—kegs—in Amsterdam in 1767,[99] and again at some point, Dutch brewers look to have begun brewing porter themselves. "Eene Porter-en Ale-bier brouwerij" in Charlois, a suburb of Rotterdam, in the occupation of T Lee (an English-looking name), was advertised for sale with all its equipment and stocks of malt, hops, porter and ale in August 1823.[100] All the same, the beer continued to be imported into the Netherlands, with, for example, the owner of the Brabant "Koffyhuis" in Amsterdam in 1813 offering "opregt [genuine] Engelsch Poorter" as well as "Brabandsche en anderen Bieren".[101]

Despite Henry Parsons exporting porter to France as early as 1730, it looks to have taken a long time before any French brewer began brewing the black English beer. The first appears to have been Jean-François Santerre, one of a family of brewers from Cambrai, whose father had moved to Paris to run a brewery in the Faubourg St Marcel. Jean-François and his brother Antoine-Joseph bought a brewery in the Faubourg St Antoine in 1772,[102] which became the largest brewery in Paris, and which was visited by Henry Thrale, the great Southwark porter brewer, in 1775. Jean-François traveled to England to study porter brewing, and came back to open a brewery shortly before 1789 with his brother in Sèvres, on the outskirts of Versailles, specifically to make porter.[103] It supposedly remained the only porter brewery in France for a long time, making beer that "could not be distinguished from British beers".[104]

North America

Beer was being exported for sale almost certainly from the earliest days of British settlement in North America, and exports were running, probably, at thousands of barrels a year by the early eighteenth century: in one week alone in 1728, for example, 20 tuns of beer left London for New England.[105] What style of beer this was, however, was mostly unrecorded. The first mention of porter in America comes from an account by an anonymous visitor to Virginia in 1746, who found available, alongside "excellent wines, good brandies, rum", "here and there … English porter, which is imported generally in Bottles."[106] London porter was on sale in 1751 in Maryland[107] and Philadelphia, "fine rack'd … by the dozen",[108] and porter, origin not given was also on sale in New York the same year

In 1749 an immigrant workman in Halifax, Nova Scotia wrote home to his mother in England that while "there is not

[93]Universal Chronicle and Weekly Gazette 17 November 1759, p. 4.
[94]Hamburger Nachtichten, 2 Juky 1794, p. 3.
[95]Hamburger Nachrichten 1 May 1824, p. 6.
[96]Weber Karl Julius, Deutschland, oder Briefe eines in Deutschland reisenden Deutscher (Germany, or letters from a German traveling in Germany), vol 3, Stuttgart, 1828, pp. 745–6.
[97]Leipziger Zeitung: Amtsblatt des Königlichen Landgerichts und des Königlichen Amtsegerichts Leipzig sowie der Königlichen Amshauptmannschaft (Leipzig Times: Official Journal of the Royal District Court and the Royal Office of Leipzig), Leipzig, 1867, p. 253.
[98]Berliner Tageblat 31 December 1889, p. 4.
[99]Haerlemse Courante 13 June 1767, p. 2.
[100]Ditto 28 August 1823, p. 2.
[101]Advertentiën, aankondigingen en verschillende berigten van Amsterdam, 2 November 1813, p. 5.
[102]Bournon (1906).
[103]Monnier (1989).
[104]Carro (1847).
[105]Stamford Mercury 29 February 1727–8, p. 2.
[106]Itinerant Observations in America, The London Magazine and Monthly Chronologer, Volume 15, July 1746, p. 572. This account is occasionally dated to 1736, thanks to a typographical error in the William and Mary College Quarterly Historical Magazine, Vol XV, No 4, April 1907, p. 215.
[107]Maryland Gazette, Saturday 29 May 1751, p. 3.
[108]Pennsylvania Gazette, Sunday 9 May 1751, p. 2.

its Fellow" to equal Halifax "in the world", with abundant fish and fruit, and "good Rum at 3 s a gallon and red and White Port a Shilling a Bottle," "there is one Thing wanting, which is, a pot of good London Porter and Purl".[109] However, just four years later porter was being sold, along with pale beer, "at Samuel Shipton's without the North-gate" in Halifax.[110]

Growing imports of porter, and growing estrangement from Britain, eventually encouraged an originally Dublin-born American entrepreneur, lawyer and plantation owner, John Mercer, of Marlborough, Stafford County, Northern Virginia,[111] to start brewing porter commercially, the first known porter brewery outside the British Isles. In May 1766, aged 62, he took an advertisement in the Virginia Gazette to promote the Marlborough Brewery's "strong Beer and Porter at 18d and ale at 1 s the gallon, Virginia currency, in cask, equal in goodness to any that can be imported from any part of the world, as nothing but the genuine best Malt and Hops will be used."[112]

Mercer revealed that he had spent "near 8000 l to bring my brewery to its present state", and went on to say that "The severe treatment we have lately received from our Mother Country [undoubtedly a reference to the Stamp Act of 1765, introducing deeply unpopular taxes, and other revenue-raising legislation imposed on the colonies by London], would, I should think, be sufficient to recommend my undertaking (though I should not be able to come up to the English standard, which I do not question constantly to do.)"

Mercer's brewery failed to thrive, and after his death in 1768 its equipment, which included "a copper that boils 500 gallons, several iron bound buts [sic] that contain a whole brewing each, coolers, &c &c and a quantity of new iron hoops and rivets for casks of different forms, lately imported," was eventually put up for sale in 1770 by his eldest son, James.[113]

The next stab at brewing porter in America, which proved much more successful than Mercer's, actually came from the son of a leading London porter brewer. Robert Hare was born in 1752, the third son of Richard Hare, a partner in the Ship brewhouse in Limehouse, by the Thames in East London, which in 1786 was the 16th largest brewery (of 161) in the capital, making 28,400 barrels a year.[114] In 1773, aged 21, Robert Hare had entered a co-partnership with a London wine merchant, James Warren, to open a porter brewery in Philadelphia, with Warren putting up some of the "very large sum of money" required.[115] Hare arrived in Philadelphia in June the same year, taking with him £1,500, supposedly a gift from his father,[116] and a small notebook filled with porter brewing recipes.[117]

Early September 1774 an announcement appeared under the banner "AMERICAN PORTER", that "Robert Hare and Co will begin their sale, at the Porter brewery in Water-street, near Vine-street, on the first of next month, of PORTER in bottles … ditto in casks for exportation, at 40 s per barrel."[118] Hare rapidly gained a reputation for his beer. John Adams, then in Philadelphia for the Second Continental Congress, wrote in September 1776, just before the second anniversary of the Water Street brewery's porter going on sale for the first time, that Hare had made himself "famous by introducing the Brewery of Porter into America." [119] George Washington was another fan, ordering "a gross of Mr Hairs best bottled Porter" in July 1788. Washington's secretary, Tobias Lear, ordered another three gross to be delivered to Mount Vernon, the president's Virginia plantation, in 1790, and called it "the best Porter in Philadelphia".[120]

In 1791 casks and bottles of Hare's porter were on board a ship that sailed from Pennsylvania to Canton, and remained "perfectly sound and good" for the whole 19,000-mile voyage, with the bottled porter "improved by the voyage".[121] Another ship carried both English and Philadelphia porter to the same Chinese city, and, an American publication wrote, "not the least superiority could be perceived in the former over the latter."[122] Philadelphia porter continued to travel around the world: in 1807 merchants in Calcutta, after tasting some of it taken out as ship's beer, place an order for 60 hogsheads.[123] By 1811, as well as Philadelphia porter being "the common table drink of every family in easy circumstances" in its home city, "great quantities" were being exported to other states.[124]

The first dedicated New York porter brewer seems to have been Samuel Atlee, who began leasing a brewery in the

[109]Derby Mercury Friday 20 October 1749, p. 2.
[110]Halifax Gazette Aopril 21 1753, p. 2.
[111]Watkins (1968).
[112]Williamsburg Gazette Friday 2 May 1766, p. 4.
[113]Watkins, p. 61; Williamsburg Gazette November 8 1770, p. 7.
[114]Monckton, pp. 207–218.
[115]Hazard, Samuel, Pennsylvania Archives Selected and Arranged from Original Documents, 1853, Vol VII, p. 113.
[116]Baron, Stanley, Brewed in America: A History of Beer and Ale in the United States, Little Brown, Boston, 1962, p. 114.
[117]The notebook still exists and is currently in the possession of the Historical Society of Pennsylvania.
[118]Pennsylvania Packet Monday 5 September 1774, p. 3.
[119]Warren-Adams Letters: Being Chiefley a Correspondence Among John Adams, Samue Adams and James Warren, vol 1 1743–1777, Massachusetts Historical Society, 1917, p. 273 (note: this is a different James Warren to Robert Hare's business partner).
[120]Baron, p. 116.
[121]The American Museum or Universal magazine, July 1791 pp. 7/8.
[122]Ditto.
[123]Mease (1811).
[124]Ditto.

West Ward, on what were then the outskirts of the city, between the Hudson river and Greenwich Street in the spring of 1784. It had previously been run by George Harrison, Richard Nicholls, and James Leadbetter, but had been empty and idle since just before the Declaration of Independence.[125] The brewery was trashed by troops from both sides during the Revolution, and its equipment stolen, but it had been refitted by Richard Harrison, son of George, in November 1783, after British troops had finally left New York. Atlee, who had been born in Somerset in 1737, had worked as a distiller in Walcot, near Bath, before he and his partner were declared bankrupt in 1782. He then emigrated to New York, arriving in October 1783. Just eight months later he was advertising in the *New York Packet*: "AMERICAN PORTER Samuel Atlee & Co Porter Brewers", and promising that "the porter is entirely made from the produce of this country."[126]

Much of the geographical expansion of porter drinking was simply following the flag: as the British empire expanded around the globe, Britons' favorite drink went with it. In 1760, two years after the capture of Louisbourg on Cape Breton Island, exports of porter in bottles and hogsheads were being made to the new garrison town.[127] Similarly, within three years of the capture of Quebec City in Canada by British forces in 1765, Samuel Sills was selling "the best bottled porter" at the London Tavern in the Upper Town to "the Civil and Military Gentlemen in this Garrison".[128]

However, despite the efforts of importers, the products remained expensive; a British officer in Quebec wrote to a friend in London in November 1782 complaining: "Malt liquor is very valuable, a bottle of porter, at the best hand, is worth 10d, and in a public house, 1 s 6d."[129] A local response took a while: John Molson, who joined a brewery partnership in Montreal in 1783, in part, it appears, because he had seen London porter on sale in Canada for a greater price—six guineas a hogshead—than diluted West Indian rum,[130] seems to have started by brewing only ale and table beer, but was certainly supplying customers with porter by 1811.[131]

The East and South

Britain occupied Cape Town in 1795 to ensure it did not come under the control of Paris after French revolutionary forces overthrew the Dutch Republic. How quickly porter arrived at the Cape after this is not known, but it was certainly there when Andrew Barnard, who had been appointed as colonial secretary to the governor of the Cape Colony, Earl Macartney, arrived with his wife Lady Anne in 1797, for she brought "a little stock" of porter with her. It may not have lasted long: Lady Anne wrote in alarm to a friend back in London that at the first ball she arranged, the Dutch and British guests drank five dozen of her bottles of porter, and her supply would not "stand many such attacks".[132]

Britain acquired the Cape permanently from 1806, and very probably regular supplies of porter were subsequently sent from London for the soldiers stationed there, either by the government or by private entrepreneurs—porter had arrived in Egypt in 1801 when an enterprising trader fitted a ship out with beer "on spec" for the British troops who had just expelled Napoleon's forces.[133] There were British-run breweries in the Cape Colony from the start of colonization, with John Mackintosh & Co founding the Cape Brewery in 1820. But the first known porter brewer in the colony was a Swede, Jacob Letterstedt, who founded the Mariendahl (or Mariedahl) Brewery beside a spring in Newlands, on the edge of Cape Town.[134] Letterstedt, originally Lallerstedt, born in 1796, was a former distiller who had come to South Africa to flee his debtors. He was described as a brewer of Rondebosch in 1826, and by 1829 he was telling readers of the South African Directory and Advertiser that his Newlands Pale Ale was "equal to any ale in the world in warm climates at £3 £s a hogshead … Porter the same price."[135] The following year he was advertising that ale and porter "in Cask or Bottle, Warranted to keep in any climate", could be bought at his Rondebosch brewery, and also at the wholesale store, No 42 Hout Street, Cape Town.[136]

The largest and most long-lasting overseas market for London porter was India, most of it for the troops who helped enforce British rule. While the officers, like Thackeray's Major Gahagan[137] drank India Pale Ale, the ordinary soldiers drank what Rudyard Kipling called in his *Barrack Room Ballads* poems "canteen porter", a subsidized drink at three annas a quart, to try to keep them off the spirits.[138]

[125]Trudgen and Samuel (1992).
[126]Ditto, p. 1321.
[127]Public Ledger 21 May 1760, p. 3.
[128]La Gazette de Québec, 30 June 1768, quoted in Perron, Mathieu, Le Parlement du peuple: enjeux politiques et sociaux des tavernes, auberges et coffeehouses du district de Québec (1759–1775), Université de Sherbrooke, April 2014, p 105.
[129]Morning Post and Daily Advertiser 26 December 1782, p. 2.
[130]Denison (1955).
[131]Woods Shirley E Jr, The Molson Saga 1763–1983, Avon, 1983, p. 45.
[132]Barnard (1910).
[133]London Volume 4, edited Charles Knight, 1843, p. 15.
[134]Rosenthal, Eric, Tankards & Traditions, Cape Town, 1961, p. 66.
[135]Rosenthal, p. 70.
[136]Walton, James, The Josephine mill and its owners: the story of milling and brewing at the Cape of Good Hope, Historical Society of Cape Town, 1978, p. 51.
[137]Cornell (2015).
[138]The Times of India 28 September 1888, p. 7.

When porter was first sent out to India is unknown. Beer was being exported from London to the East Indies from at least 1728,[139] but the earliest definite mention of porter being on sale does not occur until 1781, when Messers Huggins and O'Donnell were offering porter for sale from their new warehouse "to the Southward of the great Tank" in Calcutta.[140]

The porter exported to India probably contained more hops than "domestic" porter right from the start. The specific name "East India Porter" was in use by 1797.[141] However, the earliest known record of East India porter being brewed by Barclay Perkins of Southwark, from May 1805, shows that while it had 80 per cent more hops than the company's "ordinary" porter, it was actually rather weaker, with 4.81 per cent alcohol by volume, against 5.28 per cent for the standard brew.[142]

The orders from the government were substantial, both singly and in total: in December 1851, for example, the East India Company was seeking tenders for 1,000 hogsheads of "export London porter,"[143] and in 1858 consignments of ale and porter for the troops in India supposedly totaled nearly £1 m in value.[144] Between 1854 and 1863 the London brewer Whitbread sold just over 308,000 barrels to the government in India, most of it porter for the troops.[145]

However, by now India's own breweries had started to offer serious competition. The first man to open a brewery in India was Henry Bohle, in 1825, in Meerut, some 40 miles north-east of Delhi, and home to the second-largest East India Company garrison.[146] Almost nothing is known about Bohle, who was born around 1784 and died in 1851,[147] and whose surname suggests his family origins were in Northern Germany.[148] He was undoubtedly drawn to start brewing in Meerut because of the large number of thirsty British soldiers there. But a town where the average temperature even in January is 71.4 °F/22 °C was not a good place to try to run a brewery using early nineteenth century technology. In 1829 Bohle moved his brewing operation to the hill station of Mussoorie, in the foothills of the Himalayas, 180 miles north of Delhi, and at an elevation of around 2,000 meters/6,500 feet, where annual temperatures average just 64 °F/18 °C, and where a convalescent depot for British soldiers had been opened two years earlier,[149] again supplying potential military customers. Bohle was joined in the business around 1834 by his son-in-law, John MacKinnon, born in Elgin, Scotland in 1806,[150] who had been a schoolmaster in Mussoorie, and production climbed to, at times, 120 barrels a month.

By 1841 it was producing around 660 barrels of beer a year, all consumed locally,[151] though it looks as if most or all of it was pale ale for the officers rather than porter for the men: that year Bohle wrote to the Agri-Horticultural Society in Calcutta to tell them that he had found a ready sale among the officers and their families resident at Mussoorie, "and thinks that if he were duly encouraged he could brew a superior description of beer for the canteens."[152] After Bohle's death MacKinnon continued brewing at Mussoorie, wherein 1860 his beer was "said to be of excellent quality".[153] Around 1865 he finally received the due encouragement his father-in-law had sought, when the government contracted with the Mussoorie brewery and one of its rivals, the Murree Brewery Company (founded in 1860 at Ghora Gali, near Murree, in Punjab, another British Army sanatorium town, 2,300 meters/7,500ft up in the Inner Himalayas) to supply beer to canteens at the same rate paid for English beer, "to encourage a young industry".[154]

The soldiers were slow at first to rate "hill beer", but by 1874 the *Times of India* was able to report that "Her Majesty's troops in the Hills and at Umballa" (a garrison town 120 miles north of Delhi) had "taken kindly" to the beer from Henry George Meakin's brewery in Kasauli, another cantonment town, 30 miles south of Simla in the Himalayan foothills, at a height of 1,600 meters (5,200ft), and "actually prefer it to the beer supplied to the Commissariat from home. This is a strong test, for Her Majesty's forces are the keenest of critics everywhere … and find faults in such things as beef, bread and porter, which are frequently beyond the ken of their Commanding Officers."[155] Meakin actually called its porter "Canteen Issue": an analysis in 1882 of porters from six different Indian brewing companies found it had an abv of 6.81 per cent, exactly the same as imported porter from the London firm of Taylor Walker,[156]

[139]Stamford Mercury February 15 1727/8, p. 2.
[140]Hickey's Bengal Gazette or The Original Calcutta General Advertiser, issue 19, Saturday 3 March 1781.
[141]Dublin Evening Post Saturday 18 March 1797, p. 2.
[142]Pattinson 2010, p. 232.
[143]Morning Post, London, Friday 12 December 1851, p. 1.
[144]Sydney Morning Herald Friday 16 November 1860, page 8.
[145]Hughes (2006).
[146]Watt (1891).
[147]The Indian News and Chronicle of Eastern Affairs 1851, p. 394.
[148]Hanks and Hodges (1988).
[149]Bodgeot (1907).
[150]The Indian Archives Vols 9–12, National Archive of India, New Delhi, 1958, p. 101.
[151]The Bengal and Agra Annual Guide and Gazetteer for 1842, Calcutta, Vol II pp. 255–256.
[152]The Asiatic Journal and Monthly Miscellany for British and Foreign India, China and Australasia, WH Allen and Co, London, 1841, Volume 35, p. 199.
[153]Homeward Mail from India, China and the East, Saturday 15 December 1860, p. 6.
[154]The Times of India 28 September 1888, p. 7.
[155]The Times of India 28 April 1874, p. 2.
[156]Crookes (1882).

though almost 30 per cent stronger than a typical porter on sale back in London.[157]

By the 1880s the Indian government had ceased importing English beer, and in 1889 it bought almost 105,000 barrels of Indian-brewed beer for the troops, most of it probably porter, out of a total production of beer in India of just under 143,500 barrels. In 1891 there were 25 breweries in India (though 15 of those were owned by just three companies), of which 12 had been established since 1879, and eight since 1870.[158] Around half were in the Himalayas.

Porter also followed the troops to Singapore, where it was on sale at the Navy Hotel in 1833.[159] Singapore was then used as a base for attacking Java and Borneo, to where a total of 17 hogsheads and 86 dozen or porter were exported from the city in the year ending April 30, 1835 [160]; and Manila, to where 13 hogsheads and 412 dozens or porter were exported from Singapore in 1837.[161] Porter may, thus, have been part of the "good beer" sent from Manila with other supplies to the British merchant fleet waiting off Hong Kong island in September 1839 while London and Beijing argued over imports of opium to China.[162] Porter was certainly available on Hong Kong in April 1842, not quite a year after the British seized the island, when Alexander Matheson of the trading company Jardine Matheson was complaining that beer, porter and pickles were "pouring into this market, ten times as much as a whole army could consume", with the company's newly built godown in Hong Kong "full of the stuff".[163]

It was presumably via Hong Kong that Shanghai was supplied with porter, with the drink on sale at a meeting at the city's racecourse in April 1851,[164] and Whitbread's London porter, specifically, on sale at the godowns of a Shanghai importer called Smith, King & Co in 1853.[165]

In Australia, when on the arrival of the First Fleet at Botany Bay in January 1788, porter was used for loyal toasts and toasts "to the Colony".[166] A lack of raw materials, especially hops, meant that although porter continued to be exported to the new colony[167]—where, in 1803, it was retailing for between 5 s and 6 s a gallon—drinkers had to wait until 1804 to be able to try locally brewed porter. That December, Patrick Larken's Colonial Brewery in Sydney was advertising "London Porter prepared after the system of the British Breweries", and pale brown and amber ales as well as twopenny.[168] Porter brewing had arrived on its third continent.

Larken seems to disappear soon after, however, and Australia's porter drinkers continued to rely on exports from London. Then in November 1819, the people of Van Diemen's Land (as Tasmania was still known) were informed that "Mr Austin, a settler residing in the district of Glenarchy [just to the north of Hobart], has for a considerable time past been brewing very good porter, which has met a rapid sale."[169]

It appears, however, that colonial porter was failing to dislodge the imported variety. The *Sydney Gazette* complained in 1829: "It is often remarked as a matter of great surprise, that so little Colonial beer is now manufactured, to what formerly used to be … It is a subject much to be regretted to see so much English porter annually imported here, and nine months out of the twelve sold at from £9 to £10 per hogshead. If a good wholesome beverage were manufactured in the Colony, so that every poor man or family could procure it at a moderate price, we are convinced that not one-half the quantity of London porter, which is at present used, would then be consumed. Besides, the majority of the people in this Island cannot afford to purchase London porter, the retail price being 1 s. 6d. in town, and 2 s per quart, in the country."[170]

Porter also arrived in New Zealand at the same moment British immigration began. The Britannia Hotel and Stores, "the first shop in Port Nicholson" (an early name for Wellington Harbour), was advertising "ale and porter in cask and bottle" on April 18, 1840,[171] just three months after the first settlers had arrived from Europe.[172] The official price list shows prices twice to four times those back home: Barclay Perkins porter at £7 10 s to £8 10 s a hogshead, a little over 8d a quart even at the lower rate, and £1 to £1 2 s per dozen from the bottler Dunbar, against 6 s a dozen in Britain.

The earliest porter brewery to open in New Zealand was not in Wellington but Nelson, across Cook Strait to the south, first settled early in 1842. By October 1843 a Maltese settler called Paolo Portella and his business partner, Charles

[157]Pattinson, p. 454.
[158]W, pp. 126–7.
[159]Singapore Chronicle and Commercial Register 19 September 1833.
[160]Ditto 30 April 1835.
[161]Singapore Free Press and Merchantile Advertiser 25 January 1838.
[162]Hoe et al. (1999).
[163]The Opium War 1840–43, Peter Ward Fry, University of North Carolina Press 1998, pp. 324/5.
[164]North China Herald 12 April 1851, p. 1.
[165]Ditto 26 February 1853.
[166]Hughes (1998).
[167]See e.g., Sydney Gazette and New South Wales Advertiser Saturday 2 April 1803, p. 3.
[168]Ditto 23 December 1804.
[169]Hobart Town Gazette and Southern Reporter Saturday 20 November 1819.
[170]Sydney Gazette and New South Wales Advertiser Thursday 12 February 1829, p. 2.
[171]New Zealand Gazette and Britannia Spectator 18 April 1840.
[172]Tonk, Rosemarie, 'A Difficult and Complicated Question': The New Zealand Company's Wellington, Port Nicholson Claim, p. 45, in Hanmer, David and Nicholls, Roberta, eds, The Making of Wellington 1800–1914, Victoria University Press, Wellington, New Zealand, 1990.

James Pelham, had opened the Nelson Ale and Porter Brewery in Trafalgar Square and were selling ale and porter at 3 s a gallon, "in quantities not less than two gallons".[173] Porter was being brewed in Wellington by 1847, when a fire broke out in the malt kiln at May's brewery in the town while malt was being dried to make porter, which required a much higher heat than for making common malt.[174] Fortunately, the fire was contained by prompt action from the brewery's neighbors and a detachment of the 99th Regiment of Foot from the nearby barracks. The Albert Brewery in Auckland was advertising porter in 1851,[175] and the first brewery in Dunedin, started by James Burke, a coal importer, on the west side of Otago harbour in 1856, began by producing both ale and porter.[176]

Gradually porter seems to have been replaced by brown stout, a term for the strongest sort of porter that first appears in the late 1730s but takes off in the 1830s. The *New Zealander* newspaper in Auckland in 1847, for example, carried adjacent advertisements for Partington & Co's "unrivalled brown stout and ale" from the Albert Brewery and "ale and brown stout of the first rate quality" from Wood and Rogers's Auckland brewery in Coopers' Bay.[177] Porter was also losing out to ale: at an agricultural exhibition in Canterbury, on the South Island, in 1868 there were eight entries in the ale category, and only two from porter brewers, with the judges declining to give either a first prize.[178] Over the next decades, mentions of porter decline, so that just before Christmas 1890 there were advertisements for porter in just three New Zealand local newspapers, only one of then locally brewed, against adverts for ale in 16 papers, and stout in four. Ten years later, in 1899, there were no Christmas advertisements for porter in New Zealand newspapers (and just three for stout).

Decline and Rebirth

What was happening in New Zealand was a reflection of what was happening back in Britain, as demographic changes saw generations of porter drinkers die out, to be replaced by younger drinkers who preferred mild ale: except that, given New Zealand's younger, immigrant European population, this was happening faster than in the UK.

In 1843 the Scottish journalist William Weir called porter "the most universally favoured liquor the world has ever known," declaring that "porter drinking needs but a beginning: wherever the habit has once been acquired, it is sure to be kept up … all nations know that London is the place where porter was invented, and Jews, Turks, Germans, Negroes, Persians, Chinese, New Zealanders, Esquimaux, Copper Indians, Yankees and Spanish Americans are united in one feeling of respect for [porter's] native city."[179]

By the end of the nineteenth century porter had indeed circled the globe: American-brewed porter was on sale in Buenos Aires in 1823[180] and London porter was available in Honolulu, Hawaii by 1840.[181] Porter had reached California by 1849, the year after the official annexation of the territory by the United States, at the latest,[182] and was eventually being brewed in the Golden State: of San Francisco's nine breweries in 1868,[183] at least one, Lyon & Co's Empire brewery, was making porter at one point.[184] British-brewed stout was on sale in Samoa in 1881.[185] Southern Europe had remained fairly resistant, though Truman had made some exports to Lisbon,[186] the Dublin brewery Findlater & Sons, founded in 1852, sent a specially brewed export stout to Gibraltar, Malta and Cyprus.[187] In Malta itself, where there was a strong British military presence from the start of the nineteenth century, a local businessman, Antonio Despott, signed an agreement in 1885 with a Dubliner living in Valetta, Stannus Geoghegan, that led to the founding of the Lion Brewery,[188] which by 1886 was producing XXX Invalid Stout, as well as East India Pale Ale.[189]

However, even when Weir was writing, porter had begun a long decline in its native city. In 1823, porter output in London hit 1.8 million barrels, after a continual rise that had lasted 50 years. But this was its peak: by 1830 porter production would be down 20 per cent on its 1823 level.[190] Over the next half-century, as London's population rose more than 130 per cent, from 1.66 million to 3.83 million, production of porter drifted slowly down, while production of mild ale rocketed. At Truman Hanbury and Buxton's brewery in Brick Lane, on the eastern side of the capital, for example, output of porter fell from an average of 200,574

[173]Nelson Examiner and New Zealand Chronicle, Volume II issue 85, 21 October 1843.
[174]New Zealand Spectator and Cooks Strait Guardian, Volume III, Issue 203, Saturday 10 July 1847.
[175]Daily Southern Cross, Volume VI, Issue 409, 30 May 1851.
[176]McLauchlan (1994).
[177]New Zealander, Volume 3, Issue 112, 26 June 1847, p. 4.
[178]Canterbury Press vol XIII issue 1751, 12 November 1868.
[179]London Volume 4, edited Charles Knight, 1843, p. 16.
[180]National Gazette (Philadelphia) 29 January 1823, p. 3.
[181]The Polynesian, Honolulu, 6 June 1840.
[182]Alta California, San Francisco, 1 February 1849, p. 4.
[183]Daily Alta California, San Francisco, 29 August 1868, p. 6.
[184]Oakland Tribune 15 July 1874, p. 2.
[185]Samoa Times and South Seas Gazette, vol 4 issue 190, 19 March 1881, p. 3.
[186]Mathias (1959, p 1954).
[187]Barnard (1889).
[188]Refalo (2009).
[189]Sammut, Edward, The Saga of Simonds Farsons Cisk, Malta, 1988, p. 18.
[190]Mathias (1959, p. 545).

(Imperial 36-gallon) barrels a year in 1830–34 to 179,949 in 1875–79, while ale grew from 29,841 barrels a year in 1833–34 to 299,848 in 1875–79.[191]

In the UK, however, sales of porter continued to fall, not helped by the production restrictions and tax rises of the First World War, which saw a general drop in the strengths of all beers produced in Great Britain. (Ireland, still in the UK until 1922, saw its beer industry less harshly treated.) After the war, porter began disappearing: Steward & Patteson, the Norwich brewery, was typical, dropping all production of porter (which it had made to a gravity of 1054 in 1914) from May 1918 and replacing it with a "stout" of a lower gravity, than its prewar porter, 1047 OG.[192] In 1920 Watney Combe Reid, an amalgamation of three big former London porter brewers, produced no porter for sampling at the Brewers' Exhibition, for the first time ever.[193] Over the next half-century, porter production in the United Kingdom dwindled away to nothing, with the last brewing of the style taking place at Whitbread's Chiswell Street brewery in London on June 18, 1941.[194]

The brewing of porter lasted rather longer in Ireland, but the Guinness brewery in Dublin, which had continued making it for sale in Ulster, stopped brewing it in 1973.[195] Versions of porter continued to be made in other countries, such as Sweden, Poland,[196] France,[197] the United States[198] (notably Yuengling and Stegmayer in Pennsylvania) and Canada (both Molson and Labatts),[199] all places, as we have seen, where brewing the style had been exported. In 1974 the Anchor Brewing Co in San Francisco, California, introduced a bottom-fermented version of porter originally at an original gravity (OG) of 1071, the first "revived" porter.[200] Still the beer was not available in its country of birth. However, in 1978, after the beer writer Michael Jackson had called porter "a lost, though not forgotten beer",[201] two small English breweries, Penrhos in Herefordshire and Timothy Taylor in Keighley, Yorkshire, began brewing porter again.[202] The following year one of the growing number of new small American breweries, DeBakker Brewing Co of Novato, California, started up with just two beers, an ale and a porter[203]—probably the first "microbrewery" porter in the United States. By 2017 there were around 140 breweries in the UK making a porter,[204] and many hundreds more in the United States. The beer that almost disappeared was back.

[191]Gourvish and Wilson (1994).
[192]Gourvish (1987).
[193]Janes (1963).
[194]Thompson (1943).
[195]Jackson (1977).
[196]Robertson (1983).
[197]Ditto, p. 185.
[198]Ditto, p. 66.
[199]Bergen, Roger, "Porters: Then and Now" Brewing Techniques 1 (3), September/October 1993 pp. 14–19.
[200]Ditto.
[201]Jackson, ibid.
[202]Cornell, Martyn, Amber Gold and Black, The History of Britain's Great Beers, History Press, Stroud, 2010, p. 77.
[203]Robertson, p. 59.
[204]Protz, Roger (ed) Camra's Good Beer Guide 2018, Campaign for Real Ale, 45th edition, 2017, pp. 987–1021.

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The Branding Geography of Surrey Craft Breweries

3

Justin O'Brien

Abstract

The craft beer industry has effectively leveraged the consumption trend of localism as an expedient and pragmatic competitive position against established and once nearly omnipotent national and international big beer brands, who were able to benefit from production and marketing economies of scale. A key differentiator for smaller scale beer producers is their agility in developing new batches of products and bringing them to market, which presents an interesting and highly dynamic brandscape to study. Not unsurprisingly, therefore, beer product branding often draws its inspiration from "local", utilizing ideas from history, humor, myths and stories, ingredients and, of course, tangible physical and intangible sociopolitical geography. This chapter seeks to review the beer label brand architecture of craft breweries in the United Kingdom (UK) County of Surrey. It will examine the craft brewer use of names (brewery and beers) and naming associations (signs and symbols) embedded in their graphical identities and contrast findings against the top-selling UK beer brands. This visual content analysis based research aims to better understand the pervasiveness of local geography in Surrey craft beer brands.

Introduction

> It's very easy to set up a brewery and make beer—the start-up costs are low. But consistently making quality beer and selling it is tough. In the early days, local pubs want to support you, so you get a burst of sales, you buy more kit and brew more beer. But then a mile down the road, someone more local than you begins brewing.
>
> Twickenham Fine Ales, Director Ben Norman. (Bounds and McClean 2016, p. 1).

In the pre-Facebook age, craft beer's typified imagery of trains, craggy moors, fantasy, and lazy sexism appealed to a core middle aged, male demographic (Naylor 2017). Stoked by a small business tax break and embraced by hipster Millennials and Generation Z's, craft beer has become a fast growing and highly lucrative market segment. According to Mintel (2013), two-thirds of drinkers now believe it is worth paying more for a quality beer experience. In highlighting the importance consumers attach to heritage, provenance, and transparency, SIBA's (The Society of Independent Brewers 2017) Chief Executive Mike Benner said the demand for flavorsome craft beer has never been greater, and he believes that customers should be confident when they choose an artisan beer, that it is indeed local and not a marketing conceit (Sutton 2017). Strong growth and price premiums, in what was a declining sector, has more than piqued the interest of both the establishment and thirsty entrepreneurs. If making beer is as straightforward as Twickenham Fine Ale's Ben Norman indeed claims, what are the special ingredients needed to sustain a successful craft enterprise?

The aim of this visual content analysis is to review the relatively new and dynamic microbrewery scene that has reemerged in Surrey, juxtaposed against the UK's top ten selling brands. The chapter commences by reviewing the different appeals of craft and national beer brands. The case for a beer terroir is briefly examined before notions of sense of place and neolocalism are examined, illustrated with three examples of proximal identity. Geographic brand associations are then explored ahead of an investigation of the marketing of faux locals. The literature pertaining to local name associations is briefly scrutinized before outlining a short summary of Surrey County's geography. A visual content analysis research approach is used to study fifteen Surrey craft

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breweries, and two example vignettes are deployed to illustrate brand storytelling. The geographic rootedness of Surrey craft beer is weighed in comparison to the UK top ten beer brands. In conclusion, the chapter supports U.S. and Canadian research indicating that craft brewery imagery is more likely to leverage parochial geography to inculcate a sense of place and highlights the greater local emphasis typically put on the brewery name, beer styles and constituent ingredients.

Local Craft Appeal Over Global Brands

Davvetas and Diamantopoulos (2016, p. 61) argue that, "consumers perceive global brands as superior to local brands" in strongly functional product categories where opportunities exist to exploit character and symbolism. Decades of efficiency-driven industry consolidation has resulted in just five beer manufacturers accounting for half of world beer consumption (Roach 2016). Moreover, in 2016, only four players produced 70% of UK's beer volume; Heineken (21%) and InBev (20%), Molson Coors (19%). and Carlsberg (10%) (Euromonitor 2016). However, Hall (2016, p. 1) posits that "UK consumers are increasingly choosing craft beer over mass produced offerings", attracted, they say, by compelling local brand stories that are supported by perceptions of superior flavor, quality and choice, notably from seasonal brews. Value sensitive, leading supermarkets have even replaced some globally branded products with more premium and local craft options (Euromonitor 2016). Southwark Brewing Co. Managing Director Peter Jackson reaffirms this stating "Nothing is more appealing than choice" (Waller 2015, p. 1). Australian research (Kelsey 2017) underscores the UK originating global phenomenon, noting that 64% of surveyed drinkers preferred to know about the brewery ownership and 99% were happy to buy craft beer from an independently owned brewery.

Fortunately for independent brewers, says Hall (2016), small scale production qualities are difficult for mega breweries to compete with. Waller (2015) notes that craft brewers with their "handmade" and local propositions have been successful in commanding a substantial price premium (up to double), but advises that national distribution can be incredibly competitive. Eberts (2014) warns of U.S. geographic over reach: a number of successful, but over extended, micros lost their local community connection (Tremblay et al. 2011). Following a global phenomenon, Evans (2017) noted a consumer demand-driven explosion in the UK craft beer, with breweries expanding 300 to 2,000 breweries in 2016, a high watermark not seen since 1930's (Monaghan 2017). Some consumers are rejecting bland multinational beer brands and the rhetoric can be strong, blaming Big Beer companies (6 million barrel plus annual production, Reiley 2017) for commoditizing and bastardizing beer (Evans 2017). This is an anti-corporate narrative that is popular among the locavore,[1] sustainability, slow food movements according to Jones and Harvey (2017).

However, Mintel (2016) research indicates that 30% of UK consumers do not understand what the term craft beer actually means. McFarland (2015) describes craft beer as "fundamentally about flavour and taste," an artisan antidote to big, bland brands. While Jim Taylor, of The Little Beer Corporation, prefers the "Chief Executive Officer as brew-master" definition (Williams 2015, p. 1). Woolverton and Parcell (2008) suggest that craft beer differentiation is based on beer style and geographic region, while Mintel insight (2016) identifies that the four most frequently mentioned dimensions (>40% respondent ratings) comprise: unique flavor; high quality ingredients; time-intensive or careful production and small batches.

Is There a Case for a Beer Terroir?

Yool and Comrie (2014) ponder whether the well-established concept of "terroir", the taste that comes from a place, should be reserved only for wine. Emily Stephens from the Frensham Brewery highlights their "inspiration from British ingredients and flavour profiles, wild botanicals and all things country." Additionally, wild regional yeasts can also contribute to geographic distinctiveness, for example, lambic brewing (spontaneous fermentation) in the Zenne Valley, Belgium (Oevelen et al. 1977; Yool and Comrie 2014). "There is a sense of pride at taking raw, native ingredients and converting them into something magical that gives people enjoyment" states Williams persuasively (2015, p. 1). Of course, historically, beer was produced for local consumer markets, linked to natural resources (Gatrell et al. 2014) and its distribution was constrained by transportation and storage challenges. These days' beer ingredients can be sourced globally; malt, hops and even yeast are easy to dry store and transport, while, for reasons of production practicalities, wine production often takes place adjacent to the soil where the raw material is nurtured (Yool and Comrie 2014).

Geologically influenced groundwater, typically representing more than 90% of a beer, can bring a distinctive mouthfeel and flavor thanks to the high constituent levels of dissolved minerals. Smith (2008) states that hydrogen dioxide has three significant impacts on beer production: firstly, the water ions impact the efficiency and flavor of the extracted wort; secondly, the inherent bitterness, which impacts the quantity of hops required; and finally, the intrinsic source water flavor, which is a function of the balance of dissolved

[1]A locavore is defined as someone who is keen to consume locally produced food (Cornell 2014).

mineral and organic matter. It is important also to note that untreated water contaminants and chlorine can create off-flavors too. However, Palmer (2016) claims that good beer can be made in any water, but highlights that low mineral, surface water (e.g., the often celebrated ingredient of mountain spring water) gives brewers a freer hand in deciding how best to optimize their beer's mineral balance.

While hops, a fundamental taste differentiator, are said to draw distinctive flavors from their growing environment, breweries do not typically cultivate their own (Schnell and Reese 2014). A rare example is Hogs Back Brewery in Tongham, Surrey who revived the County's historic Farnham White Bine hop production (Darren 2015). Another US innovation is wet hop harvest brewing (Rehmer 2017), where brewers seek to emphasize agricultural connectedness using high quality, freshly picked hop buds, reinforcing epicurean delight with earth-cycle seasonality. Enterprising British craft brewers, such as Paddy Johnston at Windsor and Eton Brewery, are at ease layering their story telling with local, national, and international ingredient provenance; Thames river tap water, East Anglian Fuggles malt and exotic sounding, internationally sourced hops (O'Brien 2016). Evidence, perhaps, that suggests a taste of place can indeed be inculcated from the combined geo-variations of the craft beer "terroir" (Yool and Comrie 2014).

Sense of Place

Schnell and Reese (2014) posit that craft drinkers consume not a brand but an idea that is firmly rooted in a sense of place, capitalizing on a hypermobile society's desire to reconnect with the idea of a specific locale. Powerful location related storytelling can engender positive associations with a consumption experience, connecting with the geography inside people's heads (Crang 1998), an opportunity contemporary microbrewers enthusiastically embrace as they seek to connect their unique sense of place with the core of their essence (Eberts 2014). Local images and stories are used "often proudly and self-consciously" as a means of promoting their beers (Schnell and Reese 2014, p. 167). Paddy Johnston, head brewer at Windsor and Eton Brewery, stated from a cost perspective, they would have preferred to locate in a much cheaper industrial unit in nearby Slough, but only by being firmly anchored in the British Queen's home town could they authentically articulate their stories with the heritage-rich meanings embedded in the name Windsor (O'Brien 2016).

A clear sense of place can evoke powerful feelings of belonging in consumers (Flack 1997). Schnell and Reese (2003) noted a trend to reconnect with local, unique, and personal experiences and it is perhaps the need for a stronger emotive appeal that is one of the drivers behind larger beer companies heeding to the force of local. Persyn et al. (2010) give the example of AB Inbev, at the time the world's largest brewer, canceling its planned move of the production facilities for Hoegaarden, a popular Belgian white beer, from its original Hoegaarden village location to Jupille because of the strong protestations from consumers, employees, and the local community. For craft brewers, the place offers a rich, creative context, an enduring, humanized co-creative narrative, and authenticity of local craft origins with genuine local appeal that can help foster a strong and loyal community (Hede and Watne 2013).

Powerful examples underscoring the value of place in craft branding are illustrated in this rhetoric from Surrey Hills and Hop Art. Surrey Hills' Ross Hunter proudly boasted that 95% of their brews are imbibed within 15 miles (24 km) of their manufacturing base, strong local credentials when compared against the UK's Society of Independent Brewers (2017) member survey showing that 65% of consumption took place within 40 miles (64 km) of origin. Tony Scardarella, Director at the now defunct Hop Art, explained that "Strong links with pubs and outlets that support local is vital so we need to supply a consistent high quality, locally produced product that people recognise and trust" (Williams 2015, p. 1). Three example breweries who leverage their coastal location to project a strong geographic identity, Sharp's, Purbeck and Nynäshamns, are now briefly discussed by way of illustrating the value of sense of place can deliver to brands.

Nynäshamns Ångbryggeri (brewery), located by the sea south of Stockholm in southern Sweden, uses its evocative, rugged coastal environment as the inspiration for its wide range of traditional beer labels. They share a common color palatte of nostalgically old-fashioned pastels with a nearly subliminal, color washed outline map of the rugged peninsular that is the inspiration for the beers' identities (Source: author research visit; Nynäshamns Ångbryggeri AB n.d.)

The Isle of Purbeck Brewery leverages its Jurassic coast, world heritage topography, using the natural environment to connect a local identity with its five core beers: the Best Bitter label has striking mirrored sea horse images floating in the sea, Fossil Fuel shows an ancient ammonite on the beach; Solar Power is illustrated with the limestone stacks of Harry's rocks; Studland Bay Wrecked features a holed, washed up rowing boat on the golden sand beach; and the Purbeck IPA, features a pristine ocean liner, a cognoscenti insider reference to the original purpose of the long life pale ale that needed not to spoil on the long sailing to India (Source: author research visit; Isle of Purbeck Brewery n.d.).

Sharp's Brewery, founded 1994 in Rock, Cornwall uses its Cornish marine environment to inspire a range of evocative

beer names, creating a powerful craft brand prior to selling out to Molson Coors. For example, their flagship Doom Bar ale, UK's top-selling ale, with 7% market share (Statista 2016), is named after a dangerous sandbank in the Camel estuary near the brewery's base at Rock. Other ales include Sea Fury whose name is inspired by the crashing Atlantic seas and fishermen who wanted a stronger ale, Cornish Coaster comes from a traditional Cornish fishing boat and Atlantic Pale Ale references the regional importance of the ocean (Sharp's Brewery n.d.).

First termed by cultural geographer Flack (1997), neolocalism is defined as "a conscious effort by businesses to foster a sense of place based on attributes of their community" (Holtkamp et al. 2016, p. 66). Cornell (2014) argues that origin and localism, emphasized by ingredients and marketing, are powerful pull factors for craft beer drinkers. Gatrell et al. (2017) posit that the craft brewing industry's enduring success has come from its exploitation of a trio of coalescing elements: nature; place; and identity. This is achieved, often, by the application of local names and imagery in branding, a commitment to environmental sustainability and on-going social and community engagement (Holtkamp et al. 2016). Positioning beer as an experience, not just a drink, Barajas et al. (2017, p. 155) noted that "increasingly, like wine connoisseurs, craft beer drinkers seek out the local connection between their favorite beverage and the place where it was brewed" and Cornell (2014) highlights that consumers value the positive feeling achieved when giving their money to neighbors rather than international conglomerates.

Geographic Brand Associations

> Brands and branding embody an inherent spatiality.
> Pike (2009, p. 8)

Marketing and production scale efficiencies facilitated the development of national and international brands (Watson 2015). Hede and Watne (2013) believe that sense of place is an essential element of brand strategy and has been retained to some degree in lager brands such as Pilsner Urquell, Kronnenbourg 1664 and even Budweiser, whose names reference their Czech and French origins. But global marketing strategies can quickly become irrelevant, when the consumption experience becomes too remote from its origins argue Quelch and Jocz (2012). Perhaps because, as Brown (2010) elucidates, consumers prefer humanized brands, national and international brewers have more often chosen more globally mobile family owner names and brewmaster mythologies. UK leading beer brands, dominated by owner and brewer names, include: Carlsberg, Tennent's, Foster's, Carling, Peroni, Stella Artois, and John Smith's. These brands appear to have deliberately severed their geospatial links in exchange for scale production and marketing efficiencies, production consolidation resulted in the termination of numerous local beer production facilities and local brands, which precipitated the dissipation of any inherent sense of place in their brand meanings.

However, microbrewery expansion in recent years was partly derived from a societal desire to reject popular culture's smothering homogeneity (Schnell and Reese 2003). Local craft brands can legitimately project highly resonating and interconnected values and meanings, which can promulgate a manifest sense of identity linked to place (Eberts 2014). Murray and Kline's (2015) research found that community connection, thirst for unique beer experiences, and satisfaction, were the three strongest factors in brand loyalty for rural brewery visits. Watson (2015) highlighted personal connections from taproom service interactions, speed-to-market innovation through special batches and the use of local branding and ingredients as important competitive advantages. With the use of local beer and brewery names, pump ring and bottle labels and the choice of local ingredients "craft breweries draw from their place of establishment to shape their own identity….. References are often geographical but sometimes historical or cultural" (Nevert and Lapointe 2017, p. 37). Local geographic entanglements encompassing both the authentic and fictional may be used in a variety of forms including: material, symbolic, discursive, visual, and aural posits Pike (2009).

Faux Locals

Engineered, stretched and even false associations, of course, are nothing new in marketing. Plain, old-fashioned puffery or the clever application of smoke and mirrors, call it what you will, it seems that not every beer lives up to its carefully crafted perception. Foster's lager has long been promoted outside Australia as the quintessential Aussie beer, but many native Antipodeans would not give a XXXX for its geographic credentials (News 2015). Ironically, and very much in line with its tongue in cheek brand personality, John Smith's presents an openly embellished backstory of its heritage (John Smith's n.d.). Moreover, when Karan Bilimoria carefully sculpted Cobra, a less gassy lager adorned with Indian semiotics, to accompany spicy curries for the UK market, its Polish, and latterly brewed under licence in Burton-on-Trent, UK production provenance went under the radar (Bilimoria and Coomber 2007).

Unsurprisingly the premium pricing and volume growth experienced by the craft sector has been highly coveted by the large capacity beer manufacturers (big beer) and Budweiser, having lost two-thirds of its sales volume since 1988 (Yakob 2017), responded by developing crafty propositions (discrete sub-brands masquerading as craft beers that hide or

obscure their big beer production credentials). Examples include: the west coast exclusive Pacific Ridge and a "made only for Texans" Zeigenbock, which was labeled with the lone star state's outline and flashing a strong linguistic nod to the region's significant ethnic German community. However, other craft-like concoctions, such as Red Wolf and Elk Mountain, flopped. Miller introduced Icehouse and Red Dog and created two entirely made-up breweries; Plank Road Brewery and Tenth and Blake. Molson Coors faired better with its Killian's Red and Blue Moon, obscuring its big beer owner credentials, with only the telltale "brewed in Golden, Colorado" buried in the rear-facing small print (Schnell and Reese 2014). In Europe, Carlsberg launched a range of beer styles under its founder's name, J.C. Jacobsen, a strategy also adopted in Australia by James Squire, as established brewers sought to offer more choice by broadening their beer style portfolio (Sammartino 2018). However, for the large part, it seems beer drinkers are often just too savvy to swallow the crafty cover-up of big company credentials.

Having largely failed to develop their own credible craft beers, large brewers started to purchase scaled up microoperations and run them independently (Schnell and Reese 2014; Reiley 2017). As a result of this strategy the pluralization of the Australian craft beer marketplace has been rather stymied by big beer acquisitions of the more successful crafters, Kirin bought out Little Creatures and SAB Miller acquired Matilda Bay (Sammartino 2018). Craft beer aficionados have been vocal condemning big beer takeovers of craft brewers such as London Greenwich Brewing Company, Camden Brewery, Wicked Weed, Lagunitas, Funky Buddha and Pirate Life. Camden's acquisition saw Brew Dog's very public, and perhaps self-serving, decision not to stock crafty beers for "selling out" (Anderson 2015; Farrell 2015; Wan 2017; Reiley 2017). Yakob (2017) adroitly postulates that the counter culture craft beer choice, that seeks to consciously reject global brand values, is rendered moot if the brewery is taken over by a behemoth. However, average consumers are unlikely to be aware that big beer owns brands such as Shock Top and Blue Moon states Reiley (2017) unless social media empowered campaigning groups can generate sufficient publicity. Eberts (2014) laments big beer's stealth activities, buying up independent microbreweries, inculcating neolocal identities for existing products and the bastardization of neolocalism, citing the extreme example of a complete fabrication, Minhas Creek Brewing Company, a nonexistent location for an internationally imported beverage. Although, as O'Brien and Waehning (2018) note, the itinerant gypsy brewing model allows for even a craft brand to develop without using a rooted manufacturing location, rather undermining the local sense of place many associates with the idea of craft credentials. Examples of craft gypsy brands include: Mikkeller, To Øl, Yeastie Boys, Mountain Goat, The Grifter Brewing Company and Boatrocker (Maitland and Sammartino 2012; Sammartino 2018).

Schnell and Reese (2014) argue persuasively that, if indeed beer taste was the fundamental differentiator, then the faux micros, such as Magic Hat, Goose Island, Leinenkugel and Breckenridge, would have had more success (Allyn n. d.). The big national and international brewing companies simply "don't build on place ties in the same way that the microbreweries do," a key component of craft brewing's successes is more about supporting local, a veritable souvenir of place says Eberts (2014, p. 198).

Local Name Associations

Craft brewers are adept at neolocalism, connecting places with products, using nearby location names and landscape features, people, events, industries, folklore or other esoteric ideas and icons for inspiration when creating brand images and to help root themselves in the local cultural environment (Matthews and Patton 2016; Paulsen and Tuller 2017). For example, One Mile End's beer names are drawn from well-known local heritage sites (such as the Royal London Hospital) and personalities. (Department for Communities and Local Government and Marcus Jones MP 2015, p. 1). Microbreweries themselves, note Schnell and Reese (2014, p. 185) "… help to create living narratives of place, distinctiveness and belonging," even going as far as to suggest that a fair sense of the local natural environment and landscape can be gathered from merely examining the names and artwork on beer labels. In an extensive subjective study of Canadian beer, Eberts (2014) noted that, although not all microbreweries used neolocal brewery names, they were significantly more likely to do so than large breweries. Eberts also identified when evaluating individual beer brand names, that microbrewers continued to overweight local associations. Schnell and Reese (2014) believe that tapping into expressions of neolocalism, the sense of pride in community and the shared sense of place that is differentiated by local knowledge, can foster a sense of being part of a truly unique insiders' club, a form of selective marketing for the few, not the many. Reinforcing these ideas, Rupert Thompson, the Director of Hogs Back Brewery (named after the pig-outlined hill that dominates their horizon) said, "we're building a long-term business in a village in Surrey, using local ingredients, employing local people and supplying local pubs" (Williams 2015, p. 1). Moreover, one of the shortcomings of a highly mobile society can be the lost sense of local connectedness, small scale brewers are also able to imbibe their marketing with neolocalness through special event beers, tourism (e.g., beer trails, brewery tastings) and community economic development (Eberts 2014).

Surrey County: Between Coast and Capital

As one of England's most wooded (22%) counties, Surrey forms part of the Weald, a block of land that is situated to the south of the river Thames in England; adjoined by greater London and the counties of Kent, Sussex, Surrey, Hampshire, and Berkshire (Bird et al. 2006). The name Surrey comes from the Saxon for south ridge although it became known as Sudergeona, meaning southern (Visitsurrey n.d.). Perhaps its most significant historical claim to fame is hosting the signing of the great charter (Magna Carta) at Runnymede in 1215, in a Thameside meadow between Windsor and Staines (Visitsurrey n.d.). Politics has continued to play a significant role in determining the shape of modern-day Surrey; boundary tinkering has seen the London Boroughs subsume the north-east of the historic County (including the towns of Croydon, Sutton, Wandsworth, and Richmond) and the addition of orphaned Spelthorne from the defunct Middlesex. London's two major airports, Heathrow and Gatwick, have been administered just outside Surrey's borders in contemporary times, which Bird et al. (2006) suggest was politically motivated.

Economics of Surrey

Since Roman times Surrey has been an important hinterland for London, but also a frontier region or buffer zone sandwiched by Kent and Wessex and between the areas to the north and south Thames (Bird et al. 2006). Surrey is the second smallest shire in the South East with 73% of its land defined as greenbelt, set aside land where development is tightly controlled (Surrey County Council 2013). Historically Surrey was an important hop growing area (9% of national production in 1959), although perhaps rather dwarfed by production in Sussex, Hampshire, and Kent. The most popular variety, the delicately flavored Farnham White Bine hops, withered due to mildew and were replaced with more resilient cultivars in 1929. Economic mobility was initially provided by the river Thames and supplanted by high-density London rail connections (Surrey boasts connections to seven London terminals) and major arterial roads including the London orbital M25 supporting a network of high-speed links to major coastal settlements (Surrey County Council 2013, 2015). Residents are well educated and relatively affluent with only London generating a higher income tax take. High levels of employment from commuters (20% to London, 9% to Heathrow airport) and industries such as manufacturing, pharmaceuticals, finance, engineering and the creative, computer, gaming industries provide substantial employment opportunities within the County (Surrey County Council 2013). A strong local economy, with house prices that are double the national average, is perhaps one explanation as to why Surrey is the most expensive place in UK to buy a pint of beer, 20p more than London (Siddique 2017).

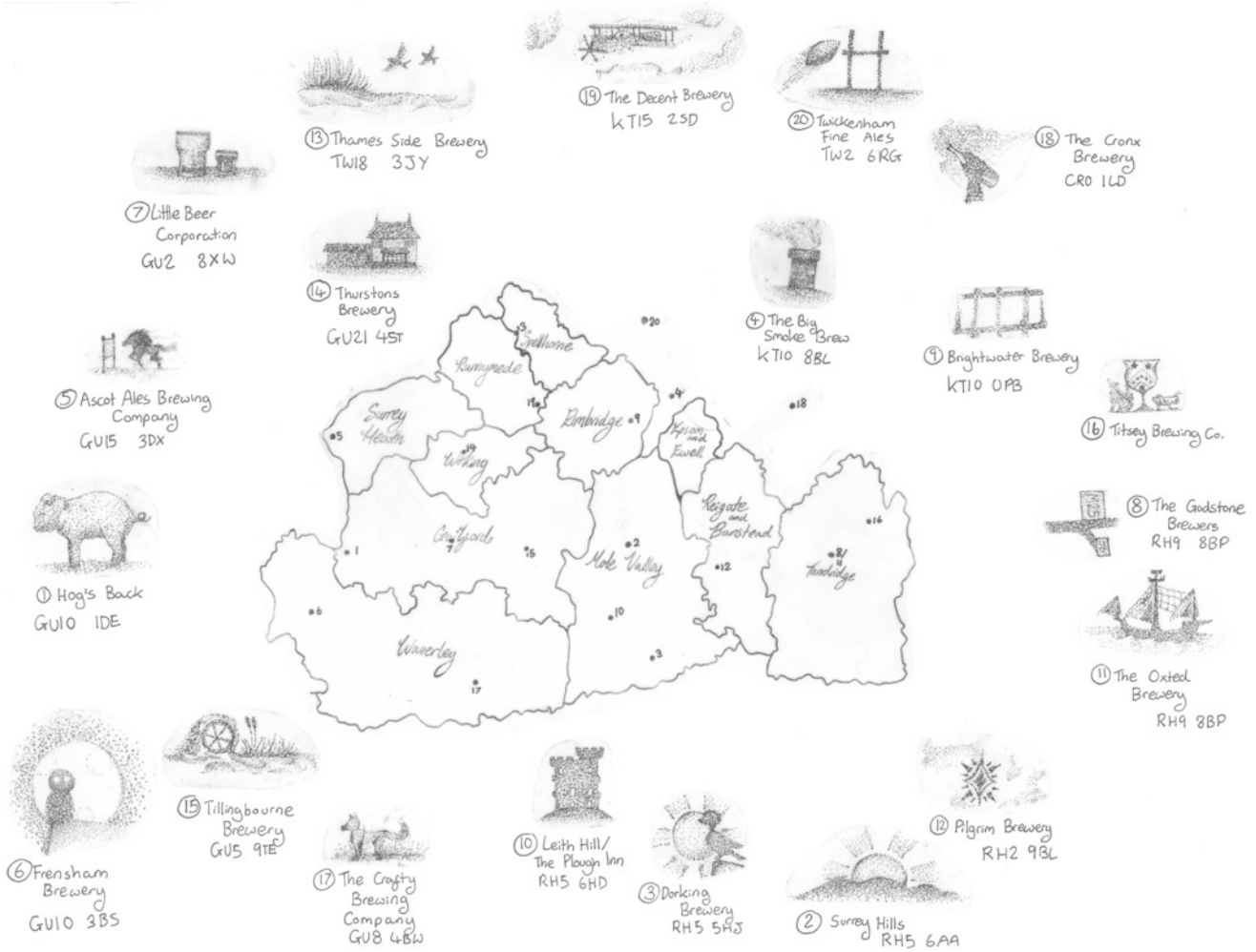
Physical Geography of Surrey

The physical geography of Surrey is dominated by flat heathland, the chalk hills known as the North Downs and the Mole and Wey river valleys that feed into the Thames waterway. Despite the County's proximity to the London metropolis, it boasts numerous beauty spots including Box Hill, whose untouched woodlands played host to Olympic cycling during London 2012, Leith Hill the south-east's highest point (294 m) and Frensham ponds (Visitsurrey n.d.). A quarter of the County has been designated as an Area of Outstanding Natural Beauty (ANOB), in two distinct areas known as the Surrey Hills and High Weald (Surrey County Council 2015), it also possesses a range of intimate, small scale farmlands. The landscape, boasting 21 different landscape characteristics, is that of a lowland, which is bisected by two east-west ridges at its widest points, the North Downs chalk which is situated to the south of the Thames basin and greensand rock that forms the high point at Leith Hill. Four distinct areas of chalk are shadowed by four greensand zones to the south. Three types of clay lie between the chalk hills and the trio of sandscapes that predominate in the northwest heathlands. Numerous bodies of natural and manmade water are found around the Thames and three distinctive Weald environments lie along the County's southern borderlands (Surrey County Council 2015).

Surrey's landscape has been inspirational to the literary greats, including Carroll, Christie, Conan Doyle, Austen, and Dickens. Surrey's sense of place is particularly notable in the work of HG Wells (The War of the Worlds), JM Barrie (Peter Pan), and EM Forster. In Forster's "A Room with a View," Surrey village life in Abinger Hammer is compared with that of Florence (Williams 2017) and in Hammer Mild the quintessential Surrey village idol is also venerated by Surrey Hills Brewery. Given the County's rich and varied topography, comprising chalk and greenstone hills, river valleys and flat heathland, it would appear to be a highly fertile area with which to investigate the geographic branding associations of local craft brewers (Map 3.1).

Research Approach

A four-step process was used to initially identify breweries, then collect available secondary data, before direct connections with owners were initiated, and concluding with a



Map 3.1 Craft breweries in Surrey, UK Map created by Kat Erwood

visual and textual content analysis. First, an extended Internet search was used to identify a comprehensive list of all Surrey Craft breweries, using substantive listings from the Campaign for Real Ale (CAMRA) (Breweries (n.d.) and Surrey Life magazine (Williams 2015) as the primary sources. Contextual brand stories and imagery were collated using web-based promotional and news sources. In a few instances, perhaps to be expected in a very nascent or particularly small operation, the publicly available materials were quite scant. Three identified breweries were found to have closed and these were discounted. Ascot town is administered in Royal Berkshire; however, the brewery that takes its name is physically based in Camberley on the western border of the Surrey and therefore legitimately included.

Euromonitor industry data was used to identify the top-selling UK beer brands and a web-based analysis of their visual identity was undertaken to offer a comparison. Codo Design (n.d.) suggests a practical and accessible brand infrastructure framework comprising a main logo, secondary logo and iconography, color palette and typography. Drawing on brewery website and social media hosted content, these dimensions were used to collate and synthesize secondary research findings in the first instance. The beer labels, the crucial shop window identity, on bottles and pump rings were analyzed using a textual and visual content analysis, similar to that adopted by Hede and Watne (2013), Schnell and Reese (2014), and Eberts (2014). Perhaps a function of size and profile, Surrey craft breweries did not feature in a range of beer industry texts that were investigated. Brewery owners were contacted using a blend of telephone, email, and Facebook and were invited to answer a number of questions pertaining to the brewery and beer names. The researcher sought to develop a strong understanding of geography-related brand meanings. Maguire et al. (2017) posit that the intangible brand narratives become embodied through the personal, passionate performances of the storytelling during beer tastings, through label

design and through social media. Therefore, uncovering as many of these owner narratives as possible was considered fundamental in developing a more coherent understanding, particularly to elucidate the hidden meanings contained in insider only names and stories that uninitiated outsiders would not likely comprehend and that form part of the community appeal (Schnell and Reese 2014). The researcher's local Surrey geographic and business knowledge was found to be useful during the study, but of course personal subjectivity and imperfect information is an explicitly recognized limitation.

Valuable research focussed on craft beers in the USA (Schnell and Reese 2014) and Canada (Eberts 2014) highlighted the challenges in attempting to categorize craft beer's sense of place. Schnell and Reese (2014) identified wildlife, local landmarks, historic events, famous people, but found deeper sub-categorization problematic in their large, national approach as they struggled to unpick the interconnected web of meanings. Interactions with brewery owners were found to be helpful in uncovering specific examples of storytelling pertaining to the invisible landscape, comprising additional dimensions such as folklore, history, local knowledge which were layered with history and meaning (Schnell and Reese 2014). Maguire et al. (2017) found that craft brewer stories blended their own biographies and tastes with local characters, heritage, and landscape and this was most clearly evidenced by Thames Side owners' love of birds, inspiring a range of avian-themed beers. Not every theme or meaning could be identified, some beers remained uncategorized and there is, of course, some degree of subjectivity. To this end, sophisticated quantitative analysis measurements have not been used in reporting the findings, lest they overstate the meaningfulness of findings. The research design attempted to overcome the stated limitations to some degree by using the author's own County of residence (albeit large) and with direct brewery interactions to supplement secondary sources.

Storytelling

The following section uses two, short illustrated vignettes, drawn from the primary research, to demonstrate how the owners from Tillingbourne and Thames Side use their connection to the local community in presenting their brand.

Tillingbourne Brewery Limited, Lee Nicholls

Tillingbourne is not the name of a village or hamlet but of a river that runs from Leith Hill, the highest point in South East England, to Shalford. In the sixteenth century, the majority of all the gunpowder made in the south was from the area. Initially, beers were named after features on the Tillingbourne river; Falls Gold, after the waterfall, The Source, after the spring of the river and AONB as we are in the middle of this area of outstanding natural beauty. Not all the beers use local monikers, a couple of ingredient related names are off the wall, like Hop Troll and Whakahari. The brand is strongly connected to and regarded as a product of the Surrey Hills area (Niininen et al. 2007). Owner Lee Nicholls said, "Locals are proud to have local beers named after areas and features of where they live".

[primary data source: owner interview]

Thames Side Brewery, Andrew Hayward, and Michele Gibson

Named after its location on the bank of the River Thames in Staines-upon-Thames, Thames Side Brewery is a small microbrewery providing quality beer for the local community. The owners work and live on the Thames and were inspired by the river birds they came into contact with. Socially, the brewery not only supports the community by providing the best of ales, they also help organize river cleanups. In conjunction with River Charity Thames 21, a contribution is made to the Swan Sanctuary in Shepperton for every pint of White Swan sold. Staines-upon-Thames was well known for the quality of its water. Many mineral water producers and brewers were historically located in the area, but the last surviving brewery, Ashby's, closed its doors over 80 years ago. "The community loves the fact that there is now a local brewery back in Staines and in their lives". While the beers so far have concentrated on the river bird theme, it would be possible to expand the range, there are many other options open.

[primary data source: owner interviews]

Geographic Rootedness of Surrey Craft Beer Versus the Top Ten

UK's top-selling beers were found to emphasize a singular brand identity, while Surrey craft providers utilized the duality of brewery name juxtaposed with the beer name. As suggested by Brown (2010), UK volume market share data (shown as a % after brand name below) from Euromonitor (2016) illustrates the prevalence of anthropomorphic brand names: Carling (13%), Foster's (11%), Stella Artois (8%), Carlsberg (4%), Guinness (4%), John Smith's (3%) Peroni Nastro Azzurro (2%) and Tennents (2%) over place names Budweiser (4%) and Kronnenbourg (3%). The top ten UK beers' identities were dominated by bold colors and adorned with paired back crests, shields, crowns, and icons. Tag lines were infrequent, limited to Carling's "The taste of Britain" a pointed reference to its top-selling position and Budweiser's

claim to be the "King of Beers". Heritage was referenced clearly with founding dates prominent on half the beers' imagery, and featured by Peroni Nastro Azzuro three times, perhaps using longevity of production to put across ideas of trust, reliability, and quality. Kronnenbourg and Budweiser's names, of course, make reference to their point of geographic origin, but only Stella Artois emphasized its brew facility in Leuven. John Smith's use of the "extra smooth" refrain was the only beer observed to present a functional attribute, and surprisingly, beyond a stylized three-leafed hop in the green dominated Carlsberg visual identity, none of the other beers featured strong references to ingredients. More often than not, the beer style (predominantly lager) was absent and the most striking observation about the top ten beers' visual identity constructs was the overarching focus on the brand name, with the brewer's name (when not the same) lost in the small print.

The majority of the fifteen Surrey craft breweries studied used their town or village location in as their business name, with two each linked to local hills and rivers and just two chose more esoteric identities. Little Beer was the only non-geographically named business, but its Guildford connectedness was emphasized in other ways. One "stretched" geographic identity was uncovered, the horse racing themed Ascot brewery is located in not so far away Camberley, Surrey. These findings conform with research from Schnell and Reese (2014) and Eberts (2014), who noted that craft breweries overweighted localness in their naming.

Surrey craft breweries were found most frequently to use ingredients when naming their beers, but also popular were linkages to beer styles, place names, fauna, and culture in line with Gatrell et al. (2017) and Holtkamp et al. (2016). Other multiple themes included countryside, flora, history, industry, man-made geography, and just a single example of mythology, a hop troll. In aggregate, a little over half the identified themes pertained to a local sense of place, while just under half were related to beer styles and ingredients. Of the fifteen craft breweries labels studied, the vast majority used a font size hierarchy positioning the beer name as primary and brewery name secondary, only three gave equal billing and just three used the brewery name ahead of the brand name. Only four companies did not place the beer style and/or tasting note on their label, although this information may have been telegraphed by the beer name and imagery. Only three companies did not clearly show the beer strength (usually the alcohol by volume percentage, ABV%) (Table 3.1).

Table 3.1 Location details of Surrey Craft Breweries

Company name	Postcode	Brewery location	Founded	Website/Fb
Hogs Back	GU10 1DE	Tongham	1992	hogsback.co.uk
Surrey Hills	RH5 6AA	Dorking	2005	surreyhillsbrewery.co.uk
Dorking Brewery	RH4 1HF	Dorking	2008	dorkingbrewery.com
Ascot Ales	GU15 3DX	Camberley	2007	ascot-ales.co.uk
Frensham Brewery	GU10 3BS	Frensham	2014	frenshambrewery.co.uk
The Little Beer Corporation	GU2 8XW	Guildford	2012	littlebeer.co.uk
Hop Art	GU34 4PX	Farnham	2014	hopartbrewery.com
The Godstone Brewers	RH9 8JH	Godstone	2015	thegodsontebrewers.com
Brightwater	KT10 0PN	Claygate	2013	brightbrew.co.uk
Leith Hill	RH5 6HD	Coldharbour, Dorking	1996	ploughinn.com
Oxted Brewery		Oxted	2016	theoxtedbrewery.co.uk
Pilgrim	RH2 9BL	Reigate	1982	https://www.facebook.com/Pilgrimbrewery
Thames Side Brewery	TW18 3JY	Staines-upon-Thames	2015	thamesidebrewery.co.uk
Thurstons Brewery, The Horsell Brewery Company	GU21 0PB	Horsell, Woking	2012	thurstonsbrewery.co.uk
Tillingbourne Brewery	GU5 9TE	Tillingbourne	2011	www.tillybeer.co.uk

Concluding Summary

Perhaps the results are unsurprising. The leaders, predominantly well-understood lager brands, were carefully crafted national and international brands supported by substantial promotional campaigns and powerful distribution agreements, whose carefully engineered identities and intangible associations, rather than product attributes, have been key differentiators. Big beer needs to connect its point-of-sale proposition with the drinkers' prior brand associations and likely previous consumption experience, tapping into top of mind awareness that has been inculcated through years of careful marketing exposure. Conversely, with minimal or zero advertising support, craft beer producers need to simultaneously encourage and educate potential customers who they are *and* explain their relatively unknown product. And in so doing, encouraging novelty seeking, discovery consumption that ideally generates low cost and highly impactful word-of-mouth recommendations from self-appointed brand advocates. Hence the need for craft marketers to offer up a more sophisticated, self-educating brand identity that simultaneously explains key tangible product attributes and projects memorable local characteristic associations.

Having noted the surge in interest for craft beer and its relative appeal over global blands [*sic*], this chapter unpacked the popular ideas of sense of place and neolocalism, while gently supporting the case for recognizing beer terroirs. Key topics of both local and geographic brand associations were addressed and were followed by

consideration of some ethically dubious examples of faux beer marketing. A brief overview of Surrey's sociocultural and topography was also presented. Visual and textual content analysis of evidence from the study of fifteen Surrey craft breweries was found to support similar US and Canadian research, indicating that craft brewery imagery is more likely to leverage parochial geography to inculcate a local sense of place. It also highlighted the greater emphasis craft brewers typically put on the brewery name, constituent beer styles and ingredients, juxtaposed sharply against seven of the UK's big ten more anthropomorphic identities. These findings seem to underscore the differentiating prevalence of local provenance in Surrey craft breweries, in their frequent use of geographic place names in the company identity but also, some wider physical topographic features including rivers and hills.

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Tumunu, the Bush Beer Bar Tradition of Atiu, Cook Islands

4

Richard Deal

Abstract

This chapter explores the tradition of tumunu on Atiu in the southern Cook Islands. Tumunu, which literally means "trunk of the coconut tree," are drinking establishments hidden in the bush of the island where home brew is produced and drunk. This chapter will first briefly examine the role of kava in the Pacific and its replacement with alcohol. The growth in alcohol use led to the development of the tumunu, which arose to hide the production and consumption of alcohol because it was prohibited. The five tumunu that existed in 2014, as well as two recently closed ones, are mapped and compared. Next, the changes in the tumunu in the recent past are examined. Brewing ingredients have changed from mainly indigenous oranges to imported malt extract since the 1980s. The similarity of social practices relating to the tumunu and to the consumption of kava on other Pacific Islands is pronounced. These social practices are changing as the society changes, and from the presence of tourists at the tumunu, which are promoted as a tourist attraction on the island.

Introduction

Tumunu, literally "the trunk of the coconut tree" in Cook Islands Maori, is a term for the term for a place where home brew is drunk on the island of Atiu in the Cook Islands. The term comes from the container the beer was often brewed in and served from, which was a hollowed-out portion of a coconut tree trunk, although now a plastic bucket in normally used. The beer itself is known as bush beer, because the tumunu were hidden in the bush of the island to avoid detection from island authorities enforcing prohibition laws. It is also known as orange beer, as oranges were traditionally the main ingredient.

Atiu is a small island roughly 200 km north of Rarotonga, the capital and most populous island of the Cook Islands, a country in Polynesia (Figs. 4.1 and 4.2). Atiu is about 26 km^2 and 20 km in circumference. The island is a makatea, a raised coral island with cliffs on or near the coast (Fig. 4.3). There is another raised area in the center, where the population of about 400 is located. Between the center and the edge is a lower area where most of the cultivation occurs. Although all the population lives in the center of the island, it is divided into five villages: Teenui, Mapumai, Tengatangi, Areora, and Ngatiarua. Prior to European settlement, each village was located in a different part of the island, on lower ground (Tanga 1984).

Traditionally kava, a drink made from the roots of *Piper methysticum,* was the main ceremonial and social beverage on the island. After missionaries suppressed kava in the mid-1800s, alcohol replaced the use of kava. Alcohol production had been introduced to the region by Europeans and was spread further by natives traveling between islands (Mokoroa 1984). Alcohol was also disapproved of by missionaries and outlawed, so the production and consumption of alcohol moved to the tumunu, which were hidden deep in the bush of the island, in order to avoid detection and prosecution for violating the law.

While similar bush beer was drunk on many islands in the Pacific, it has largely been replaced by commercially brewed alcohol due to the rise of a cash economy and a reliance on imported foodstuffs. On Atiu, the tradition of the tumunu remains, although it has changed greatly due to sociocultural changes on the island. Tumunu are still nominally hidden, but they are very easy to find. They have grown more elaborate as they became more permanent. Drinkers at a particular tumunu were formally small close-knit groups of mainly related people, while tumunu now function much like

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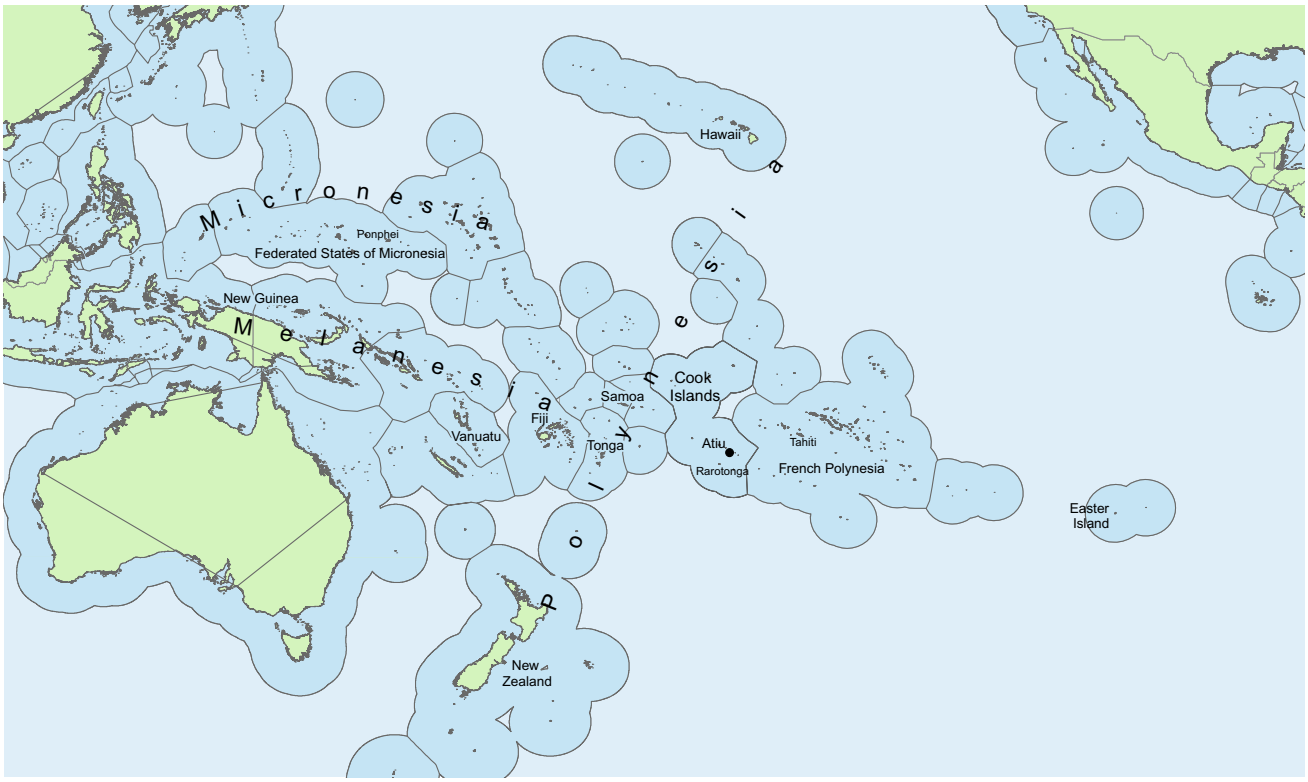

Fig. 4.1 The location of the Cook Islands

bars in other areas, with people choosing to go to the location of their choice. A final change in the tumunu is the promotion of the tumunu among tourists to the island, which has brought a new, although relatively small clientele.

Kava

Many Pacific Island societies traditionally consumed kava. Kava is made from the roots of a pepper plant, *Piper methysticum.* Depending on the region, the roots are either chewed, grated, ground, or pounded into a powder. Water is run through the resulting material. This results in a cloudy liquid which is then drunk. The effects of kava are calming, numbness, and tiredness. Kava may also make the drinker sensitive to light and sound (Lebot et al. 1992).

Kava was grown throughout the Pacific, including most of Melanesia, parts of Micronesia, and almost all of Polynesia, except for Easter Island and some atolls that lacked suitable soils (Brunton 1989). The cultivation of kava declined after European contact and the conversion of the islands to Christianity. It is now grown in just a few countries of the Pacific, mainly Fiji, Samoa, Tonga, Vanuatu, and some parts of Papua New Guinea and Pohnpei in the Federated States of Micronesia (Lindstrom 2004).

Oliver (1989) described two patterns of traditional kava consumption in the Pacific. On Samoa, Tonga and Fiji and other nearby islands, kava was made from dried roots and served relatively weak and most often ceremonially. In contrast, kava from Eastern Polynesia, Vanuatu, and New Guinea was prepared from fresh (green) roots and made with less water, producing a stronger drink that tended to be drunk without ceremony.

Kava was traditionally the main ceremonial beverage in the Pacific as the Pacific was one of the few regions that had no alcohol prior to European contact (Lemert 1964). After European contact, missionaries attempted to stop the consumption of kava, which was accomplished in most of Polynesia, and other areas. This was done for several reasons. One was that missionaries likened kava to alcohol, which they also generally disapproved of. Kava was said to allow users to talk to the spirits of ancestors, which the missionaries associated with witchcraft (Lindstrom 2004). Kava was also used on ceremonial occasions in many areas, so halting its consumption would weaken the power of traditional chiefs and strengthen the position of the church

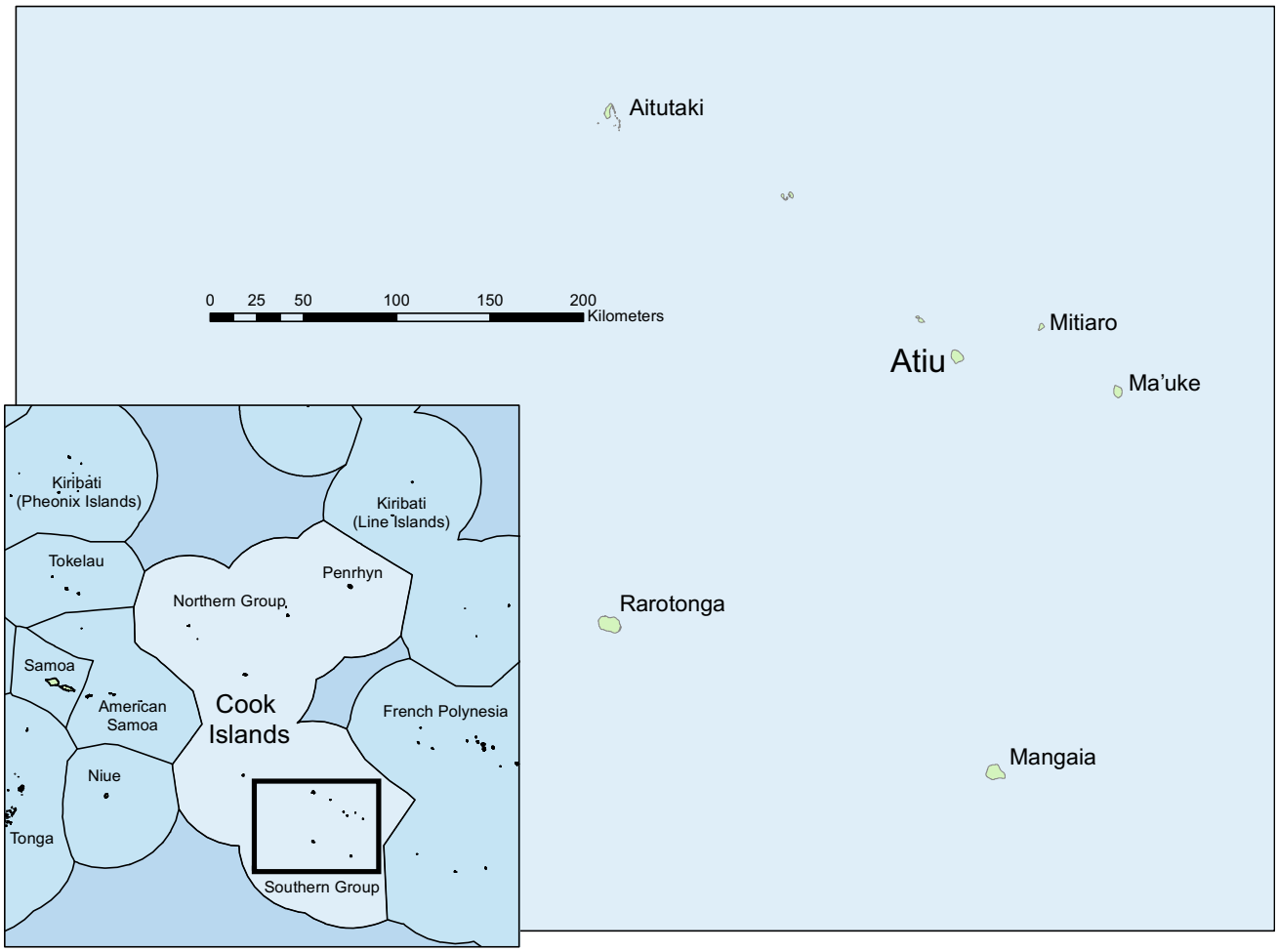

Fig. 4.2 The location of Atiu

(Lebot et al. 1992). In the Cook Islands, kava was consumed at chiefs' council meetings, but details about its use are lacking because it "was suppressed so quickly and thoroughly by the mission that no observations were made of its importance" (Gilson 1980, p. 15).

Kava's use has become more informal over the years. Several authors describe drinking kava in a circle, with a woman serving it to a male and his friends as an important part of courtship in Tonga in the recent past (Feldman 1980; Lemert 1962). Feldman (1980) and Lindstrom (2004) described kava clubs in Tonga and Fiji, where people go on a regular basis to drink kava in a circle. In Samoa, markets in most towns have a kava vendor. In Apia, there is a barman with a bucket and people sit in a circle. People drink from a coconut shell and must drink the entire cup at one. The barman distributes a round in order around the circle and then waits for a time before beginning the next round. When a person arrives, the barman will give that person several cups immediately, rather than waiting for the next round. While the details vary from place to place, most authors mention kava being served in order around a circle from a cup made from a coconut shell (Lemert 1964; Feldman 1980). Many also mention the importance of drinking the entire contents of the cup without removing it from the lips (Gregory et al. 1981; Feldman 1980; Lemert 1962).

Kava's role in preserving culture has been noted in several countries. Urbanowicz predicted kava drinking in Tonga would increase in the future as a way to "maintain and perpetuate Tongan unity and identity" (1975, p. 46) against the forces that were acting on and changing Tongan society in the late twentieth century. Kava in Vanuatu has a similar role. In Villa, the capital, kava bars advertise that kava is from a particular island (Lebot et al. 1992). This attracts patrons who are migrants from those islands, who seek to maintain their traditional cultural identity while living in the city far away from their home villages and islands.

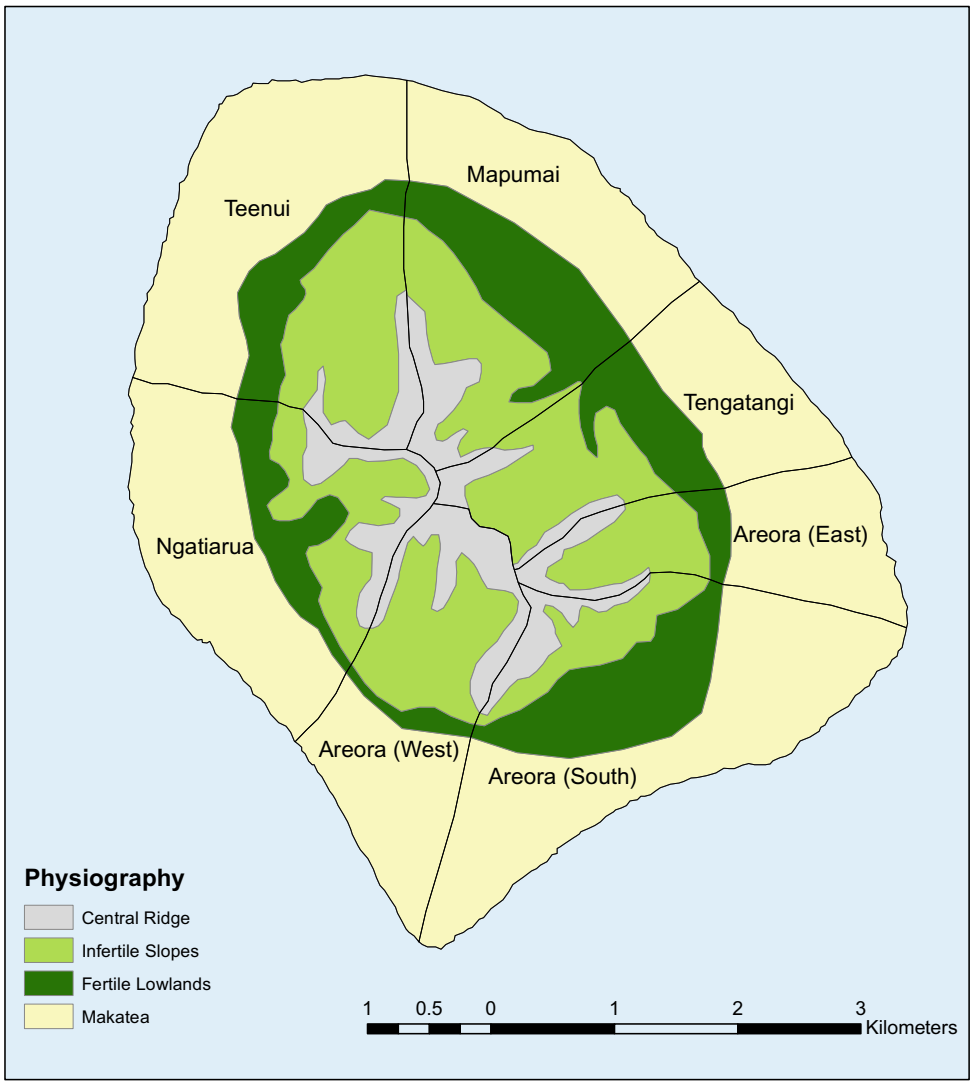

Fig. 4.3 The physiography of Atiu (after Tanga 1984)

Growth of Alcohol

After the missionaries suppressed kava, the use of alcohol took the place of kava (Lebot et al. 1992). Lemert (1964) suggests that alcohol production was brought to Hawaii around 1800 by escaped convicts from Botany Bay. In Hawaii, ti (*Cordyline fruticosa*) roots were distilled to make a drink called okole hao. This drink was then brought to Tahiti and nearby islands, where it was replaced by a drink called kava anni, which was an alcoholic beverage made from oranges. Lemert (1964) says this was brought to the Cook Islands in 1848, where it became known as orange or bush beer. Other authors give slightly differing accounts, with Mokoroa (1984) stating bush beer was brought to the Cook Islands in the 1850s from Tahiti, and others saying Cook Islanders visiting relatives in Tahiti bought bush beer back in 1850 (Lemert 1976). Regardless of how alcohol came to the Cook Islands, by 1860, brewing of bush beer became widespread (Gilson 1980).

Bush beer was drunk throughout the Cook Islands. It was most common on Atiu, but was present on other islands, including Rarotonga, Aitutaki, Mangaia, and Penrhyn (Lemert 1962; 1976). Early beer was primarily made with the juice of oranges, which had recently been introduced to the islands. Other sugars could be added, especially honey and bananas (Lemert 1976; Gilson 1980). The sediment from a previous batch was added to be sure there was enough yeast for fermentation. The beer could be brewed in a hole in the ground lined with leaves, and old barrel, or from a hollowed-out tree trunk (Lemert 1976).

Alcohol became the main ceremonial beverage. Lemert (1962) says the earliest form of alcohol consumption in Polynesia was to consume it at various feasts and festivals. In French Polynesia, located to the east of the Cook Islands, large festivals of this sort, which were a continuation of

traditional feasts, continued for 60 or 70 years until roughly 1920. The link between alcohol and kava is summed up by Lemert who says, "the prototype for patterns of alcohol consumption in all areas of Polynesia, except New Zealand, is found in the kava circle" (1964, p. 363). He divides alcohol consumption patterns into three types: festive, which today consists of large family or village gatherings on special occasions, but are descended from traditional feasts, which is most clearly expressed in French Polynesia; ritual-disciplined, in which set patterns are followed by the drinkers, which developed in the Cook Islands, as exemplified by tumunu on Atiu; and secular, which he describes as a group of people drinking to find a release without any ritual involved, as is common in Samoa.

Origins of the Tumunu

In the mid-1800s, alcohol was drunk on Atiu at large festive occasions called kava patu (Lemert 1976). These were similar to the festivals on Tahiti and consisted of large groups of several dozen people. They were reciprocal events in which the host of a particular feast would compete with the hosts of other feasts to provide more food and drink than the other hosts and more than the guests could consume. There was much dancing and singing at the events, which could last several days. These are modified versions of traditional Polynesian feasts, which continued even after the adoption of Christianity.

Later, drinking was done at secret locations in the bush. These were called pange kava on other islands (Lemert 1976), but normally these were called tumunu (coconut trunk) on Atiu, after the vessel used to hold the beer (Mokoroa 1984). Drinking went into hiding due to church disapproval and prohibition laws. There were many laws passed to restrict alcohol in the Cook Islands in the 1800s. In the 1870s prohibition was the law, but by 1890, it was routinely ignored in Rarotonga, which had many saloons. In 1889, after the formation of a British Protectorate, the importation of liquor was banned without permission of the resident commissioner. At first, the distribution of liquor to natives was banned, while manufacturing and consuming bush beer by natives or Europeans resulted in a fine. In 1891, saloons in Rarotonga were closed, bush beer was banned throughout the Cook Islands, and liquor could only be bought by someone with a permit (Gilson 1980). These regulations never ended the production of bush beer, but did manage to send the use of bush beer into hiding. In 1899, there was another attempt to limit imports. In 1915, alcohol was banned, unless imported and distributed to non-natives by the resident commissioner. In 1921, all sales were banned except for medical purposes (Gilson 1980).

While these repeated attempts at prohibition did not work effectively to end drinking, they did force the tumunu deep into the bush. The tumunu were exclusive places for men, as women were not allowed to visit them. The penalty for drinking alcohol was a fine, so it had to be done clandestinely. Drinkers were now "outlaws", whereas previously they had only been "sinners" (Mokoroa 1984, p.75). Fines and arrests for alcohol offenses continued, but it never stopped bush beer drinking, as the native police officers did not want to enforce the laws too harshly to avoid strained relations with the rest of their community (Gilson 1980).

Bush beer has declined in most places in the Pacific and today Atiu is the only stronghold in the Cook Islands. Declines have been attributed to various causes. Orange blight, which greatly reduced the number of oranges available, is one cause. Another is the availability of commercial alcohol (Lemert 1962). Changes in laws allowing the purchasing of alcoholic beverages and the growth in wage employment provided a way and means to buy and consume alcohol legally.

Lemert (1976) attributes the survival of the tumunu on Atiu to a number of factors: the isolation of the island, slower response to missionization due to chiefs having a greater influence on the church than chiefs on other islands, and providing men a place to express their traditional warrior aggressiveness in a society that no longer had warfare between islands. Mokoroa (1984) gives very different reasons for its survival. He states the tumunu are based on traditional cultural institutions and kinship ties. Tumunu are places to teach younger men about traditional arts; he refers to the tumunu as "bush beer school." He stresses the importance of tumunu in regulating drinking, as the tumunu are highly structured. This prevents much alcohol-related violence. The tumunu are places for men to discuss village affairs, similar to a town meeting. Thus, the tumunu are far more than places to socialize.

Tumunu Today

The tumunu have changed greatly over the years. The tumunu became far less secretive. Social changes have also resulted in a change in the composition of who attends the tumunu. Brewing methods have changed due to new raw materials being available. Finally, Atiu is much more linked to the wider world than it was several decades ago.

In 1985 after visiting dignitaries visited a tumunu, the locations of the tumunu were moved into the villages as the tumunu no longer felt they had to remain hidden. This resulted in an increase in drinking and a loss of the tight-knit nature of the tumunu. After complaints and some prosecution, they moved back out of the villages (Tumunu nd).

While the tumunu moved back out of the village, they were not as hidden as before. Most are relatively near the village now.

The numbers of tumunu have varied over the years. Historically, there were large numbers, as they each formed from a tight-knit group of mainly related people from a single village. Lemert mentions that one village (of the five) had six tumunu (1976). As of an unspecified date circa 1990 there were eleven (Tumunu nd) . A travel guide from 2000 says there are eight (Hunt et al. 2000). In June 2014, during a field visit by the author, there were five tumunu operating on the island: Walking Dead, Vaitamina, Teponui, Rising Sun, and Vanilla (Fig. 4.4). There were also two recently closed tumunu: Aretou, and Amos. The author visited each tumunu and recorded its location with a handheld GPS unit in order to place them on the map. A report in October 2015, lists five tumunu: Aretou has reopened, while Vanilla is not listed (Tutaka12 2015).

The tumunu open during the visit are near the village, and with one exception, Vanilla, very close to roads. Vaitamina is just off the main road which goes to the airport, near the edge of a large sports ground. There are no trees between it and the road. Walking Dead, a bit further up the same road, is set back among some trees, but is just visible from the road at the dirt path that goes to it. This was the only one the author needed help to find, but the people at the house almost across the road pointed it out. Teponui, which is also clearly visible from the road, is on a small road that branches off from a main road out of the village. Rising Sun is just past the last house on its road. It is clearly visible from the road, which as it leaves the village becomes a dirt track that goes to one of, if not the largest, area of taro patches on the island, and eventually to the coast. Vanilla is on a small track, which starts as a path on the main road just next to a house. Once the house has been passed, it becomes a wide track that is very easy to follow to the tumunu, which is a

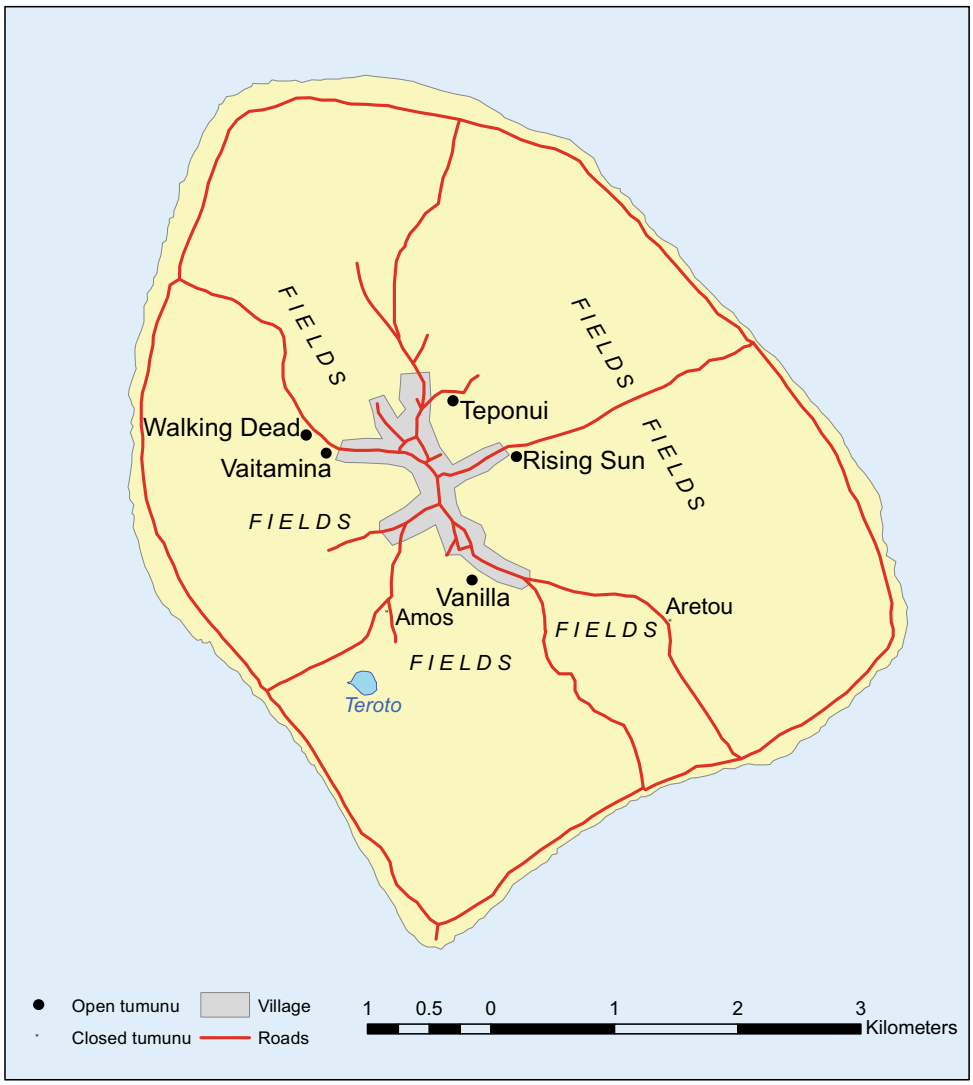

Fig. 4.4 The locations of the Tumunu **on Atiu**

Fig. 4.5 **a** Walking Dead, **b** Vaitamina, **c** Teponui, **d** Vanilla Tumunus

few minutes' walk down into a valley and then up a hill on the other side.

The two closed tumunu were much further from the village. Aretou is about one and a half kilometers out of the village. It is on a dirt track that goes to another area of taro patches and other fields. It is also clearly visible from the road. Finally, Amos is most remote. It is about one kilometer out of the village near the intersection of two roads near Lake Teroto, the only body of water on the island, which also has many taro patches near it. At the time of the fieldwork, it had only recently been closed and it was found by looking for a hut in the area that people had described as its location. A hut was located and it had recently discarded empty malt extract cans, so it was obviously the correct location.

The structures of the tumunu have grown more elaborate now that they are no longer clandestine (Fig. 4.5 and Table 4.1). The structure is similar to older Pacific homes, before blockhouses became common. They tend to have tree trunks for columns, while most of the timbers supporting the roofs are milled lumber. Most have concrete floors and Teponui also had tiles on the portion of the floor where people drink. All have corrugated roofs except for Teponui, which had a traditional thatched roof. Almost all have partial walls built to waist or chest level.

In addition to the area for drinking, several have other structures. Three have small storage rooms that can be locked. About half have a separate structure for brewing. Teponui also has a separate concrete block toilet building. At

Table 4.1 Comparison of the tumunu structures

Tumunu	Floor	Roof	Walls	Brewing	Other
Walking dead	Crushed stone	Corrugated	Corrugated	Outside	
Vaitamia	Concrete	Corrugated	Thatch	Separate structure	
Teponui	Concrete, partially tiled	Thatch	None	Separate structure	Storage, toilet
Rising sun	Concrete	Corrugated	Lumber	Space in rear	Storage
Vanilla	Concrete	Corrugated	Corrugated	Lean-to	Storage
Aretou	Concrete	Corrugated	None	Separate structure	
Amos	Concrete	Corrugated	Corrugated		

least four have electricity (all but Vaitamina definitely do), including Vanilla, which is quite a distance off the road.

Brewing

Historically, the beer was produced mainly with orange juice, although other local sources of sugar were used, such as honey and banana. Older accounts described the brewing process as consisting of simply squeezing the oranges to get the juice, then adding any other sugar to be used, then adding yeast. The beer was then covered and allowed to ferment (Mokoroa 1984; Lemert 1976). Lemert says sugar (presumably refined, as he also mentions honey and banana) was added by 1910. Mokoroa simply mentions honey or sugar being added. Several drinkers at Vaitamina said malt extract was used beginning in the 1980s. This was attributed to malt extract being easier than oranges to ship to Atiu from Rarotonga once there were no longer enough fresh oranges on Atiu due to the decline of the orange groves.

The author observed the brewing process at Teponui. Two large cans of malt extract were added to a bucket. The brand used was Maltexo, in 1500 g cans. Two other cans of this malt were boiled for 30 min along with about a handful of dried hops. The malt and the boiled malt were combined, and water was added. Ten bags of refined white sugar (approximately two kilograms each) were stirred into the mixture. More water was added to fill the bucket, which was a five-gallon bucket. When the mixture had cooled enough, the sediment from a previous batch was added. The bucket was then covered and allowed to ferment for about five days. The process was similar to other tumunu. Everyone asked said they only use malt extract, sugar, and hops. There was only one brand of malt extract at the shop, so everyone used the same extract. This was confirmed by looking at the trash at the various tumunu. The cans were often left in piles at each tumunu, so it was possible to see them at most of the locations. In addition to the tumunu, there was a home brewer on the island who used to brew at Teponui. He followed the same procedure, except he used more hops. He said that sometimes the shop ran out of hops, so the tumunu used very little or no hops at those times. He had his own hops supply imported from New Zealand. He also put his beer in plastic soda bottles and kept them in his refrigerator, partly to extend the life of the beer, but mostly because he liked to drink cold beer.

The resulting beer is served unfiltered, so it is a bit cloudy. The color varies from dark golden to light orange-brown and is quite hazy. The flavor varies from tumunu to tumunu, as each is using the yeast from their previous batches, and from day–to-day, as the beer continues to ferment until it is drunk. The flavor is reminiscent of a Belgian tripel with a strong alcohol aftertaste. The author tried the beer at each tumunu. Some tumunu's beer was a bit sweeter than at other tumunu. Presumably, this was younger beer and there were still a lot of unfermented sugars in the beer. One tumunu's beer, which was far hazier than the other beers had a slight sour tang, reminiscent of a lambic.

Social Setting

Each tumunu had different opening times. Each tended to be open on certain days of the week. They typically opened late afternoon and stayed open for several hours. They opened much earlier on the weekend, particularly Teponui, which was open all Saturday afternoon. Not surprisingly, they tended to be less crowded during the week than on the weekend, as many people work during the week. The average age of the people at the tumunu tended to high during the week, with most people over 50. The clientele was also entirely male. During the weekend, there was a far younger clientele, with most of them being men under 30. There were also several females at Teponui on both Friday and Saturday. Most of them were fairly young, but one woman helping with the brewing was about 50. The women

were greatly outnumbered by males. This is to be expected, as historically women were not allowed to go to the tumunu. Mokoroa (1984) speaks only of men in his description of the tumunu. Other authors specifically mention the exclusion of women in order to avoid violating traditional cultural mores (Lemert 1976).

While the hours were more-or-less fixed, it also depended on the people of the tumunu. Vanilla was closed one day it was supposed to be open. Vaitamina was open on Friday morning because one of the regulars was flying off the island, so the tumunu was opened to celebrate his departure. Since people were there anyway, the tumunu remained open after he left.

People at the tumunu were arranged in a large circle. In most places, the seats were a series of long benches. The ritual involved was the same at each tumunu. The barman sat at the head of the circle. In front of him was a bucket with the beer. He filled a small cup made from part of a coconut shell with the beer and handed it to the person seated next to him. The person must drink the entire cup at once. The cup was handed back to the barman, who then refilled the cup, and handed it to the next person. This continued until everyone has had a cup of beer. He then covered the bucket and waited for some period of time before starting the next round. If a person arrived later, he or she was usually given one or more cups immediately, rather than waiting until the next round. People may refuse a cup if they feel they have had enough. The barman did not drink himself and controlled the pace of the drinking. His job was to ensure people do not drink too much. The procedure for drinking bush beer is very similar to Polynesian kava ceremonies and modern drinking of kava as described in the kava section. In fact, Mokoroa (1984) states that the Atiu tumunu drinking customs are a substitute for the traditional kava drinking customs.

This has not changed much from earlier accounts, except now women may be present. Mokoroa (1984) described the same procedure. He stressed the role of the barman in controlling how much people drink and stopping them if they have had too much. Lemert (1962) described essentially the same procedure. There are two other main differences between these accounts of decades ago and the present. One is the religious component has declined. Both of these accounts talk of a prayer being said, hymns being sung, and even Bible readings taking place. Today, there was often a short saying of grace, but nothing as long or formal as these earlier accounts. The other main difference is that people were expected to all arrive at the same time and both mention procedures for how to deal with latecomers. Today is more informal, and people arrive and leave as they want.

Traditionally, people drank at a tumunu with other people from their village and not with people from other villages. This was done to make it easier to know when to go (traditionally everyone was expected to arrive at about the same time) as the men would likely be working in the fields together. It also strengthened the social bonds as everyone was related and also made it easier to resolve any disputes, as they are were from the same extended family (Mokoroa 1984). Keeping the drinkers from one village also made it easier to keep the location secret so police did not interfere and so that outsiders would not steal the beer. Today, people drink at the tumunu of their choice. Teponui was the most popular in 2014. It had the best facilities. Walking Dead was said to be where all the alcoholics drunk. Aretou shut down because the brewer there didn't want to brew any longer and changed to drinking at Walking Dead. The home brewer used to brew at Teponui but left to make home brew because he felt he was doing too much of the work himself and that others did no work and drank the beer.

Traditionally, the beer would be brewed with oranges collected from nearby trees. Each member was expected to take turns collecting oranges and squeezing and preparing them. Today, the beer is made from malt extract, refined white sugar, and dried hops which are all imported and require cash to buy. Instead of providing labor, people may buy supplies and bring them. Alternatively, people may "donate" money for the next batch. Officially, this is done because the law now allows people to brew for personal use, but not to sell alcohol. This is also probably due to Polynesian cultural sensibilities and ideas of reciprocity. In other places in Polynesia, people have refused money from the author as payment for some item, but were perfectly happy to accept a "donation for the family" in its place, as they would rather give a gift and receive a gift in return than sell a good. Brewing by donation is just another way to tie the tumunu with traditional cultural practices and perhaps this becomes more important as the economy changes to a more commercial system.

Future of the Tumunu

The bush beer on other islands has disappeared, while the tumunu are still going strong. The availability of cash to buy commercial beer has caused a decline in other places, but how has Atiu's tradition survived? One drinker at Vaitamina stated he drank bush beer because it was cheap. He said he spent $10 a week at the tumunu, while beer started at $2 a bottle in the shop. While this is true, it is also true on other islands where bush beer was formerly made. The association of the tumunu with maintaining cultural ties is an important reason cited. Both Mokoroa (1984) and Lemert (1976) empathized the role of tumunu in handing down traditional knowledge.

Another important reason is tourism. People travel to distant locations to experience other cultures. Baldacchino

(2010) examined the existence of commercial breweries on small islands. He concluded that a major reason for their existence is due to tourism, with wanting authentic experiences. This includes sampling local foods and beverages. Other authors, while not studying islands, have noted the ways in which breweries use their unique setting as a way to promote their brands. Schnell and Reese (2014) looked at the names of beers produced by American microbreweries that used some local imagery (historical figures, landmarks, etc.) and concluded that this attachment to place is stronger than ever. Other authors have also noted the use of an attachment to place in promoting breweries (Paulsen and Tuller 2017; Jones and Harvey 2017; Eberts 2014)

Tourism is certainly in important influence on the tumunu. A prominent local citizen and entrepreneur, Roger Malcolm, owns Atiu Villas, one of the hotels on the island. He saw promoting the tumunu as a way to draw tourists to the island. He also thought that they were not tourist-friendly places as they existed (R. Malcom, personal communication, June 13, 2014). As a result, he came up with the Tumunu Tukata as a way to clean up the tumunu. The competition rates them on cleanliness, attractiveness, friendliness, order, and other categories relating to the experience at the tumunu. He felt by doing this, tourists would be able to feel comfortable going to the tumunu, and it would draw more tourists by allowing them to have a unique experience. This was originally an annual competition, but is now held irregularly. He stated that this was due to the goal of improving the tumunu being achieved and the difficulty of having neutral judges, who must be from off-island to avoid charges of favoritism. While the numbers of tourists are still small, the tumunu have succeeding in increasing the numbers of tourists who visit.

Perhaps there is no single answer as to why the tumunu survive. Many of the explanations given apply to many islands in the Pacific and those islands no longer have a bush beer tradition. Perhaps a better way to think of the survival of the tumunu would be to compare them to regional breweries in the United States. Out of the thousands of pre-prohibition breweries in the United States, just a handful survived to the current time. These breweries have been revitalized and sales of beers from many of these surviving breweries has risen dramatically after the craft beer boom (Yenne 2003; Tremblay and Tremblay 2009). As people seek localism in their beer, regionals have grown. The tumunu may be similar. Just as a particular brewery survived through some quirk of history, the tumunu happened to survive on Atiu. With the increased emphasis on localism in beer, they are now undergoing a renaissance, as locals want to maintain their traditions and as tourists want to have an experience they cannot have anywhere else.

Conclusion

Tumunu, the bush beer bars of Atiu, Cook Islands occupy a unique position in the history of beer. They originated after kava was suppressed by missionaries and alcohol was introduced to the islands. As alcohol was restricted or banned, the beer began to be brewed in secret locations in the bush, leading to the birth of the tumunu. These developed into a highly structured environment for the consumption of bush beer. The social practices were highly influenced by the practices involved with kava, which the beer replaced.

While bush beer declined in other regions, it remains strong in Atiu. The tumunu have evolved with the island. They are no longer secret and are open to anyone, including women, who never formerly drank at the tumunu. The locations have moved closer to the villages and to the road and the structures housing the tumunu have become quite elaborate. The brewing methods have changed to using malt extract, refined sugar, and dried hops.

At the same time, the tumunu have retained an attachment to the culture of Atiu and that of wider Polynesia. The procedure and ceremony involved with drinking still closely resemble that of kava drinking, both historically, and with contemporary kava use on other islands. The arrival of international tourism has added a new raison d'etre to the tumunu. Tourists looking for an experience unique to the location of their travels, with the help of people looking to promote the local tourism industry, have been going to the tumunu, which give Atiuans another incentive to maintain the tradition of the tumunu.

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The (R)evolution of the Craft Beer Scene in Poland After 2010

5

Bartosz Wojtyra, Łukasz Grudzień, and Jan Lichota

Abstract

The main aim of this work is to present the development of the craft beer scene in Poland, especially in the years 2010–2018 with an emphasis on the so-called "Polish craft beer revolution." After a period of an economic transformation in Poland in the 1990s and 2000s, when the brewers' scene experienced the domination by large foreign brewing companies in the privatization process and numerous small breweries were liquidated, in the period 2010–2018 the number of new breweries including contract breweries increased from 70 to 372. Based on the quantitative and qualitative investigation, the authors present the origins, causes, key trends, and effects of the "Polish beer revolution". In the first part of the chapter, we focus on the characteristics of the brewing industry in Poland since the 1990s regarding the background of the changes that occurred after 2010. The next part discusses the emergence and course of the craft beer revolution in Poland. Then, the brewing scene in Poland during the beer revolution is studied from a geographical point of view. The emphasis was put on the spatial distribution, intensity, and dynamics of the phenomenon in Poland's regions. The last part outlines the cultural and societal effects of the craft beer revolution in Poland.

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Introduction

While probably less known than some of its neighbors, Poland has been an important beer region on the world map. Beer has been widely produced for centuries, and Poles contributed to the beer culture through the invention of the Grodziskie beer style or by cultivating traditions connected with brewing the Baltic Porter. Nowadays, the country confirms its important status with leading statistics on the production and consumption of beer.

Since the beginning of the 1990s after the communist regime collapse, the Polish brewing industry evolved to being dominated by three concerns: Asahi, Carlsberg, and Heineken (earlier also SAB Miller). They control about 80% of the polish beer market. The entrance of large foreign breweries had an impact on the technology used for beer production, beer quality, as well as subsequently the assortment of beers available (Chlebicka et al. 2018).

According to resource partitioning theory, as an industry takes on an oligopolistic structure, it often produces more and more homogenous products, depending on the economic scale of production, distribution, and marketing (Swaminathan 1998; Nilsson et al. 2019). Although the world of beer styles is extremely rich, the most often produced and sold type in the twentieth and at the beginning of the twenty-first century in Poland was and still is the International Pale Lager. The prevalence of this type resulted in the creation of a niche market for beer brewed in different styles, popular among more demanding and aware clients who desire new tastes, quality, and styles of beer (Rao 2008). As a result, it led to the development of the phenomenon called "the craft beer revolution" in many countries including Poland (e.g., Carroll and Swaminathan 2000; Murray and O'Neill 2012; Patterson and Hoalst-Pullen 2014; Elzinga et al. 2015; Chlebicka et al. 2018; Esposti et al. 2017; Swinnen and Garavaglia 2018; Wojtyra and Grudzień 2017; Fastigi et al. 2018).

The term "craft beer revolution" originated in the USA and is used to describe the changes in America's craft beer market since 1965 when Fritz Maytag rejuvenated Anchor Steam Brewery (Acitelli 2013). The phenomenon was also the result of home brewing legalization in 1979. In the same period in the United Kingdom "The Campaign for Real Ale" (CAMRA) was founded. It was an independent voluntary consumer organization which was opposed to the growing mass production of beer and the homogenization of the British brewing industry. Nowadays, the craft beer revolution relates to the dynamically growing number of microbreweries, brewpubs, and contract breweries on the market, that are producing a new wave of craft beers that are in many ways the opposite of the popular mass-produced lager (e.g., Acitelli 2013; Hindy 2014; Elzinga et al. 2015). Beers appearing on the market are the variation of all beer styles according to official nomenclature (BJCP 2015). Many times historical types of beer are recreated and the brewers tend to use ingredients and additives that are less widely known. "The craft beer revolution" is both the increase in quantity in terms of the number of brewery entities on the market and the new unique types of beer (not the production scale) and the change toward the quality—new beer styles, supporting the quality and the relation between the maker and the product, with attention paid to ingredients, speciality, and uniqueness (Wojtyra and Grudzień 2017).

The main aim of this work is to present the development of the craft beer scene in Poland, especially in the years 2010–2018 with an emphasis on "the Polish craft beer revolution," including an indication of the phenomenon origins, and the change in the number and spatial distribution of breweries over time. Analyzing these trends from a geographic perspective allows us to see which regions have to lead the "Polish craft beer revolution" that gained importance in 2011. Moreover, the work involved a discussion on the impact of the beer revolution on social and cultural aspects.

Due to its limited temporal dimension, the research on the Polish beer market has mainly been focused on the impact made by largest brewing companies in the country, namely, Kompania Piwowarska, Grupa Żywiec, and Carlsberg Poland (e.g., Huculak 2004; Boratyńska 2009; Borowska 2009; Gołaś and Ścibek 2010; Fudaliński 2013; Łoboś and Szewczyk 2013; Andrzejewska and Firlej 2013; Kopeć and Mitera 2014; Klimek 2014). Moreover, the literature examining the Polish craft beer scene is only just developing (Podeszwa 2015; Chlebicka et al. 2018; Łużak 2017; Maszkowski and Wysokiński 2017; Wojtyra and Grudzień 2017).

The study used statistical data from the Polish Central Statistical Office reports for the factors including the supply of the domestic market and the consumption of some consumer goods. As a starting material for the identification, characterization, and assessment of changes in the number and the locations of breweries "The Beer Map" was used. The map was founded by a group of Polish "beergeeks" famous for their development of the craft beer market in Poland. Furthermore, other information comes from the Polish Association of Homebrewers. The data were verified through Internet sources (Ratebeer, Untappd App, brewery websites, social media channels, etc.) and interviews with people associated with Polish breweries. The collected data on the Polish craft beer revolution is shown by way of charts and choropleth maps.

The remainder of this chapter is divided into five sections. In the next section, the Polish beer market has been characterized (types of breweries, main investors tycoons, production, and beer consumption) . In the second part, attention has been paid to the emergence and course of the craft beer revolution in Poland. The next section is devoted to present a geographical approach in Polish craft beer scene research. Then the cultural and social effects of the changes in the Polish beer market are discussed. Relevant conclusions are drawn at the end.

Background of Changes: Characteristic of Polish Beer Market

Brewing traditions are deeply rooted in Poland. Thanks to the Celts and Germans beer on Polish soil was known long before the arrival of the Slavs and Christianity, probably around the fifth century. As a separate branch of craft, brewing has been developing since the 14th century. However, over the centuries its role and consumption levels have changed significantly in comparison to stronger drinks such as wine and vodka (Szymański 2018).

Modern brewing history after the industrial revolution had a similar course on the Polish territories annexed by the Austria, Prussia, and Russia between the end of the eighteenth century and the end of World War I as in the rest of Europe. On each of these territories various breweries were established, with some "jewels in the crown" like the breweries in Elbląg, Żywiec, Okocim, or the Haberbusch and Schiele brewery in Warsaw (Puś 1984; Chlebicka et al. 2018; Szymański 2018). In the interwar period in the present territory of Poland, there were about 185 breweries, and production amounted to 2.6 million hL in 1929 which gave 9th place in Europe and 11th in the world. However, the consumption at the level of 8.5 L of beer per year was relatively low, and many breweries fell at that time. The Second World War had a crucial impact on Polish territory as well as on the breweries. The changes in the borders and the disappearing of many breweries were a direct consequence of the war rage. The economic reconstruction of the country after the conflict took decades, and the brewing

industry was highly centralized by the state. Whereas in 1939 in Poland there were 91 breweries, in 1990 only 79 were active (Huculak 2010).

Undoubtedly, the Polish brewing industry after 1989 was part of strong global trends which resulted in the spectacular takeovers, the creation of large brewing groups, and the changes in production volume and supply, in the product quality and the model of its distribution, what follows in the measurable statistics concerning the consumption. The changes resulting from these strong globalization processes in the beer market in Poland led to having three major brewing companies account for over 82% of the volume of beer sales in the country (Huculak 2004). In 1990–2010 many small breweries collapsed or were incorporated into larger brewing companies. The process of consolidations and expansions of global beer corporations and privatization in Poland were similar to the situation in other Central and Eastern European countries (e.g., Swinnen and van Herck 2011; Howard 2014).

From the beginning of the twenty-first century until 2008 in Poland, there was a systematic increase in beer production (Fig. 5.1). In 2016, almost four times more beer was produced than in 1990. After the period of stabilization in 2007–2010, there was a successive increase in total beer production to over 40 million hL annually. According to the 2017 production data, Poland is ranked 3rd in Europe, behind Germany and the Great Britain (The Brewers of Europe 2018). The data include only entities employing more than 49 persons, thus the production volume coming from all small breweries is not included.

The beer consumption has been steadily increasing in the period between 1990 and 2017 reflecting the trends related to the production and distribution. Since the beginning of the 1990s, the consumption has increased threefold and after 2010 it has stabilized above 90 L per capita. According to the 2017 production data, Poland takes the 4th place, behind the Czech Republic, Austria, and Germany, with a value of about 97 L per capita (The Brewers of Europe 2018). Since the economic transformation in the early 90s, the beer sector in Poland experienced the highest dynamics of beer consumption in Europe. From 1990 to 2014 beer consumption changed from 30,5 to 98 L per capita. Firstly, it was an effect of a successful restructuring process and introduction of large investment programmes in the companies controlled by foreign investors. The marketing practices have been changed and the quality standard of beer has risen (Chlebicka et al. 2018). Secondly, between 1990 and 2017 a significant change in the alcoholic beverages model has been observed. Beer became the most popular beverage in the country, due to changes in consumer preferences favoring lower alcohol strength drinks (Fig. 5.2). Additionally, one of the main reasons for beer consumption growth is increasing incomes and standard living in Poland. The annual dynamics of the increase in GDP per capita in PPP between 1990 and 2017 was 6%.

The brewing industry in Poland plays a significant role not only in the production and alcohol sales market but also in the entire economy. The influence of this sector on the agri-food industry is considered extremely important (Fudaliński 2013; Brewers of Europe 2018). The added value generated by the brewing sector in 2017 reached 19.4 billion PLN.[1] In 2017 the brewing sector generated indirectly about 157,500 jobs (Browary Polskie 2018).

Thanks to many sales outlets, high consumption per capita, good brand awareness of existing main breweries, and an increased wish for local and regional products, the situation on the Polish beer market is very good for brewers of all kinds. Intensive development is a result of the technological level raise in the industrial large breweries.

The growth was also possible thanks to a favorable tax regime for small producers established in the mid-1990s. Until 2018, reduced excise duty rates applied depending on the volume of beer sales throughout the year, with a breakdown of up to 20,000 hL, up to 70,000 hL, up to 150,000 hL and up to 200,000 hL of beer. Since 2018, there is only one threshold regarding the excise tax exemption distinguishing small breweries (producing up to 200,000 hL per year) and large (over 200,000 hL).

The abovementioned tax thresholds have become the basis of unofficial, but appearing in Polish literature, classification of breweries into three basic groups (Wojtyra and Grudzień 2017):

(1) small—annual production of up to 20,000 hL,
(2) medium—annual production at the level of 20,000 hL up to 200,000 hL,
(3) large—annual production at the level above 200,000 hL.

and contract/client breweries which are a completely different type described below (Fig. 5.3).

The rich diversity of names describing different breweries provides a challenge for the classification. We came across the following terms: local brewery, home brewery, traditional brewery, mini-brewery, regional brewery, and the like. In fact, in Poland one current definition of craft brewery or craft beer doesn't exist. Therefore, it appears that the proposed division shows the difference between breweries in Poland in an appropriate way.

Within the first group, we count small-scale breweries, including microbreweries, restaurant breweries, and brewpubs (Fig. 5.4). There is not one recognized definition of microbreweries in the field of research and the existing ones

[1] 1 USD = 3,8 PLN (2019-04-09).

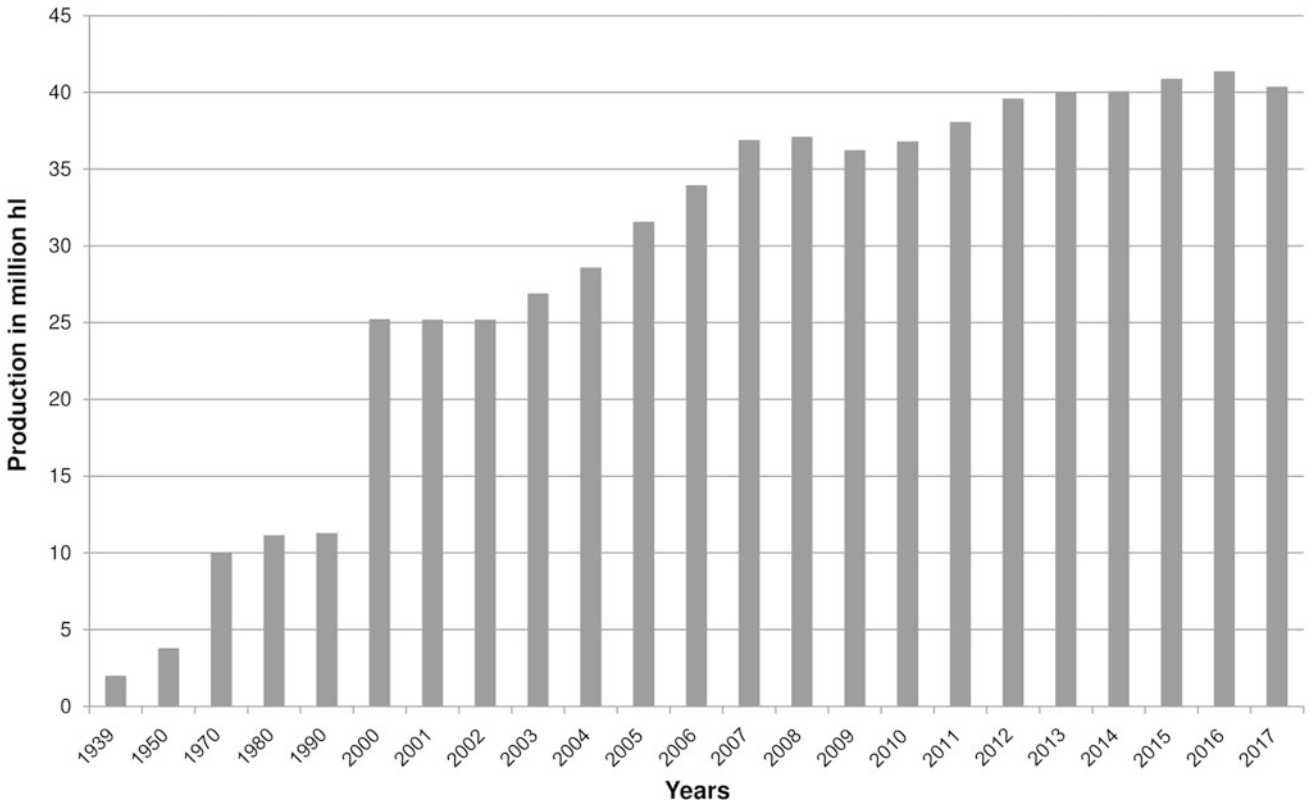

Fig. 5.1 Production of beer in Poland between 1939 and 2017. *Source* own elaboration based on Statistics Poland (2019) data, Boratyńska (2009) and Klimek (2014)

are extremely vague. Most often, it is described as a small, independent brewery, brewing beer on a smaller scale than large companies, paying close attention to the quality, a wide choice of ingredients, and the traditional brewing method. For the research, a microbrewery is usually a plant brewing beer within the limited annual volume. In our work it is 20,000 hL.

A restaurant brewery is a type of a small brewery which is the combination of a brewing plant with an eating-place. Brewing takes place in front of guests in one of the restaurant rooms and the beer itself, usually a draught one, is a part of the restaurant service, whereas it is rarely distributed outside an eating-place.

In Poland, a brewpub is associated with a pub which serves beer of its own production, and it does not have a special restaurant offer by the definition close to the view of Oliver (2011) according to which a brewpub is simply a brewery which serves and sells beer at the place of production.

Medium breweries in Poland, often called "regional breweries" are breweries that produce 20,000–200,000 hL of beer annually (Fig. 5.5). Nowadays 17 breweries belong to this group. All of them were founded before 2000 (including seven in the nineteenth century). Three of them were reactivated after 2010, during "the Polish beer revolution". Most of the medium breweries are members of the Polish Regional Breweries Association.

The three main players on the Polish beer market are included in the group of large breweries. Kompania Piwowarska—since 2016 part of Japanese Asahi group (earlier SAB Miler), Grupa Żywiec (part of Heineken), and Carlsberg Poland (part of Carlsberg), with over 82% share in the volume of total beer sales in the country are primarily responsible for the high production results, supplies, and the consumption of beer in Poland. The large breweries in Poznań ("Lech"), Białystok ("Dojlidy") and Tychy ("Tyskie Browary Książęce") belong to Kompania Piwowarska. Grupa Żywiec has five large breweries located in Elbląg, Warka, Cieszyn, Leżajsk, and Żywiec. Carlsberg Poland manages three large breweries established in Szczecin, Sierpc, and Brzesko. Other brewing companies in Poland that have kept an important market share are Browar Van Pur, Łomża, Perła Browary Lubelskie, and Browar Namysłów (Fig. 5.5). 20 of the 22 current large breweries were founded before 1990.

The last group, contract breweries are brewing initiatives producing beer using production capacities hired from a stationary brewery. Contract breweries have their own

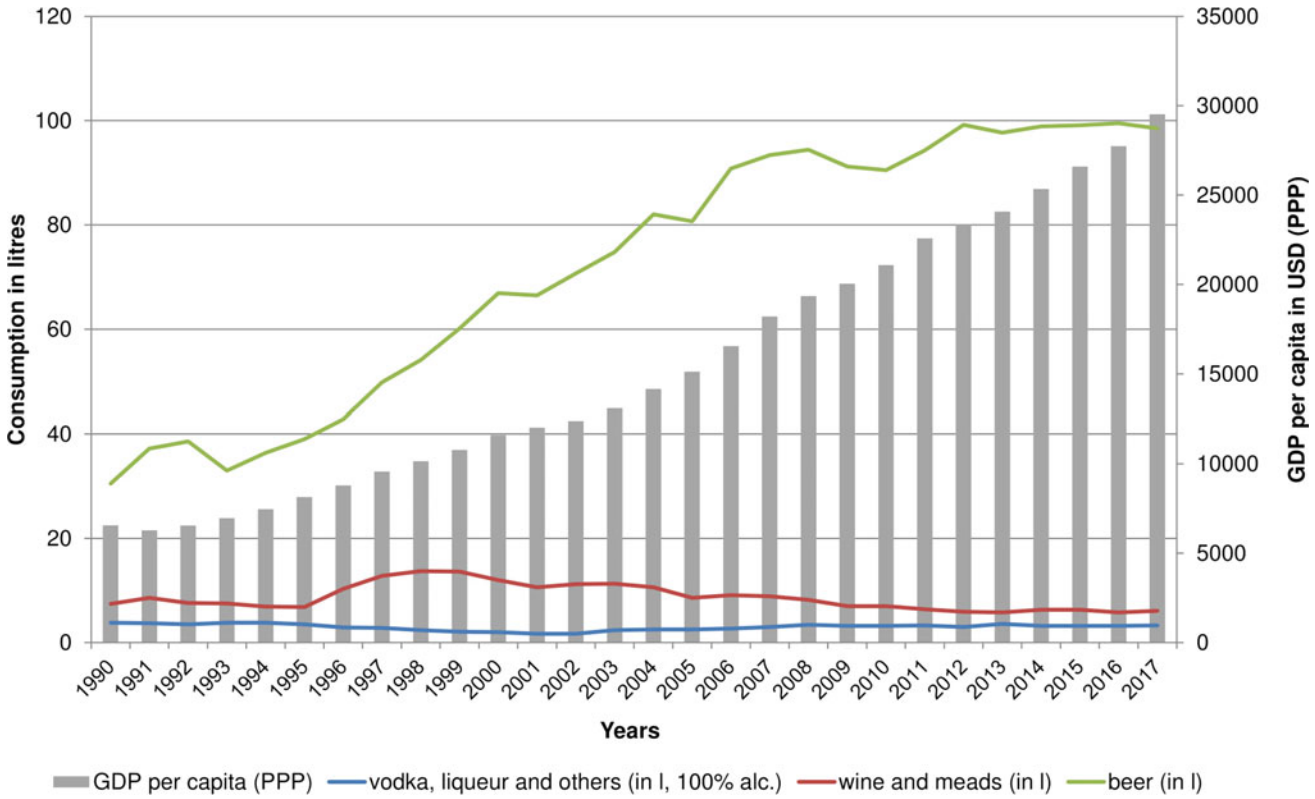

Fig. 5.2 Consumption of alcoholic beverages compared to GDP per capita in Poland between 1990 and 2017. *Source* own elaboration based on Polish Central Statistical Office and World Bank data

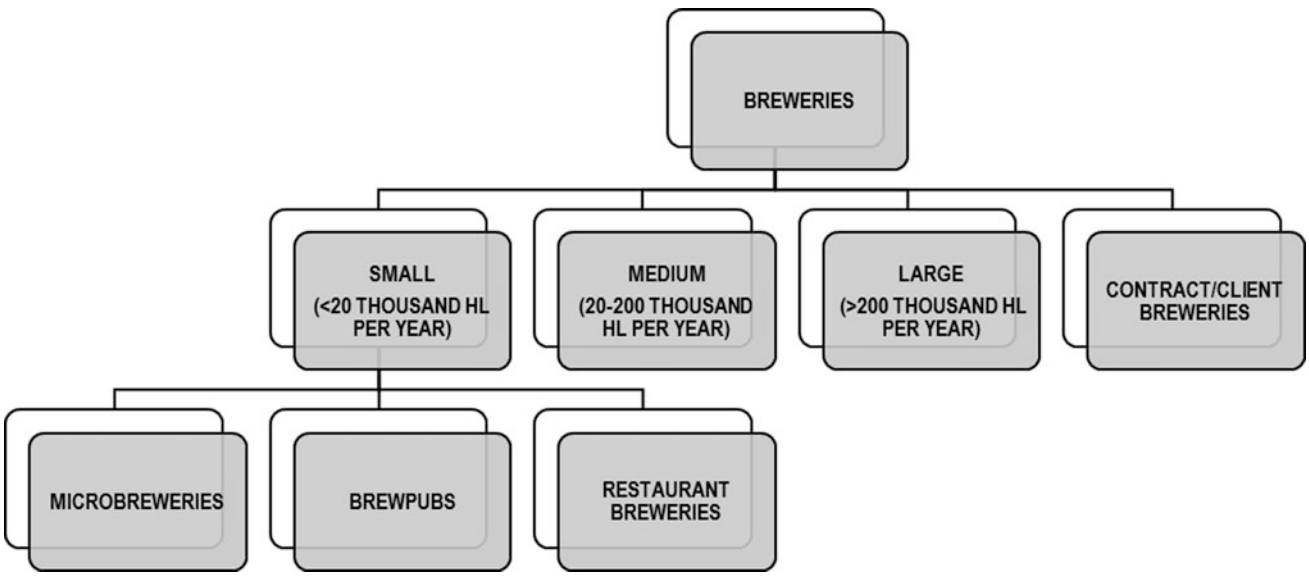

Fig. 5.3 Types of breweries in Poland. *Source* own elaboration

brewers who develop recipes and prepare beer independently. This form of brewing activity results in mutual benefits between a stationary brewery which does not fully use its production capacity and can rent it, and people who want to share their brewing ideas with a wider group. The contract brewery is the activity of brewers who have entered into a contract with one or several stationary breweries to periodically rent equipment and space to brew their own recipes.

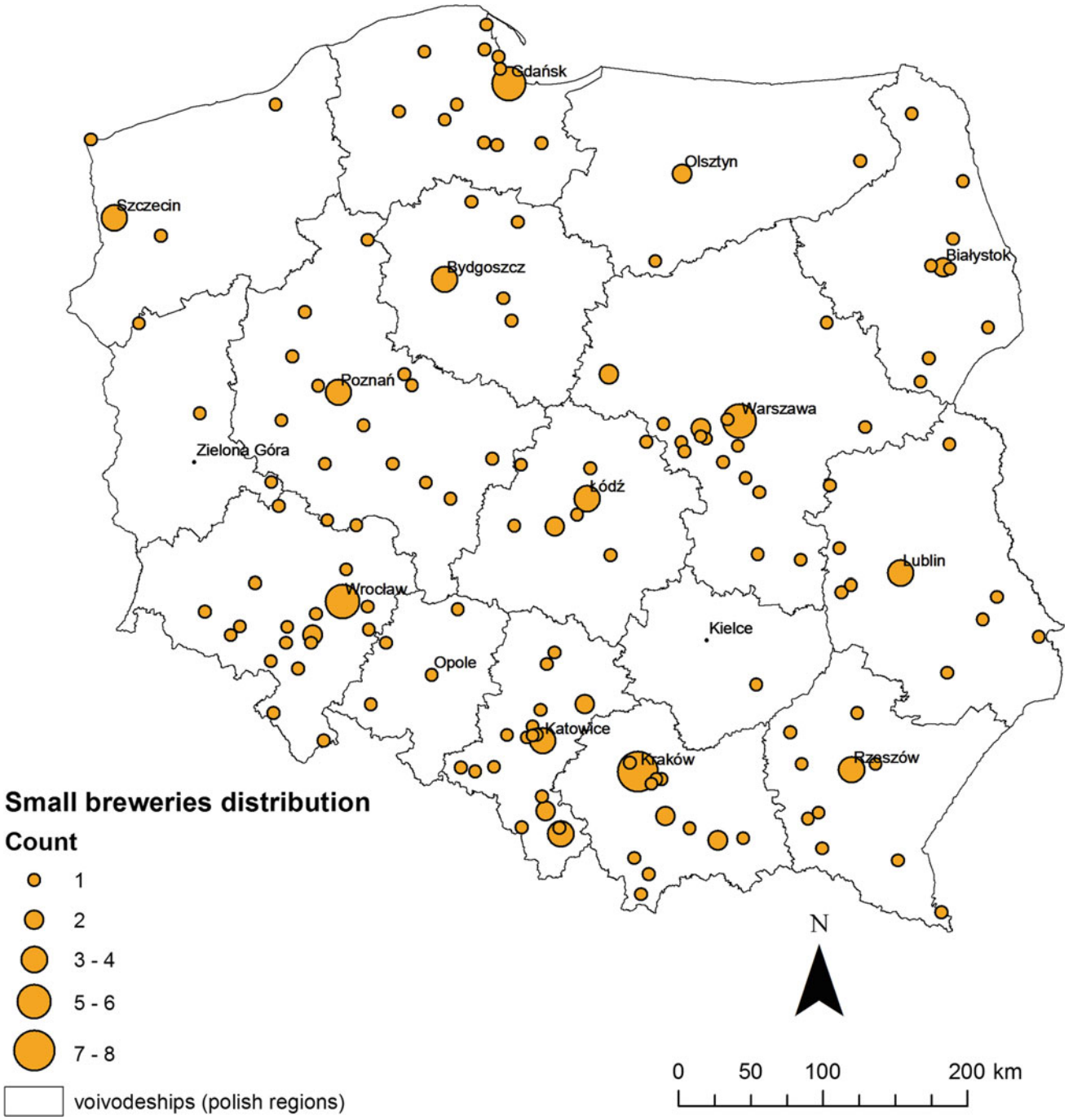

Fig. 5.4 Small breweries distribution in Poland in 2018. *Source* based on The Beer Map, data from browar.biz (Online: [The Beer Map] https://link.do/lvbI3, access: 2019-04-10, [browar.biz] https://www.browar.biz/forum/showthread.php?t=112045, access: 2019-04-10), and the authors own data collection

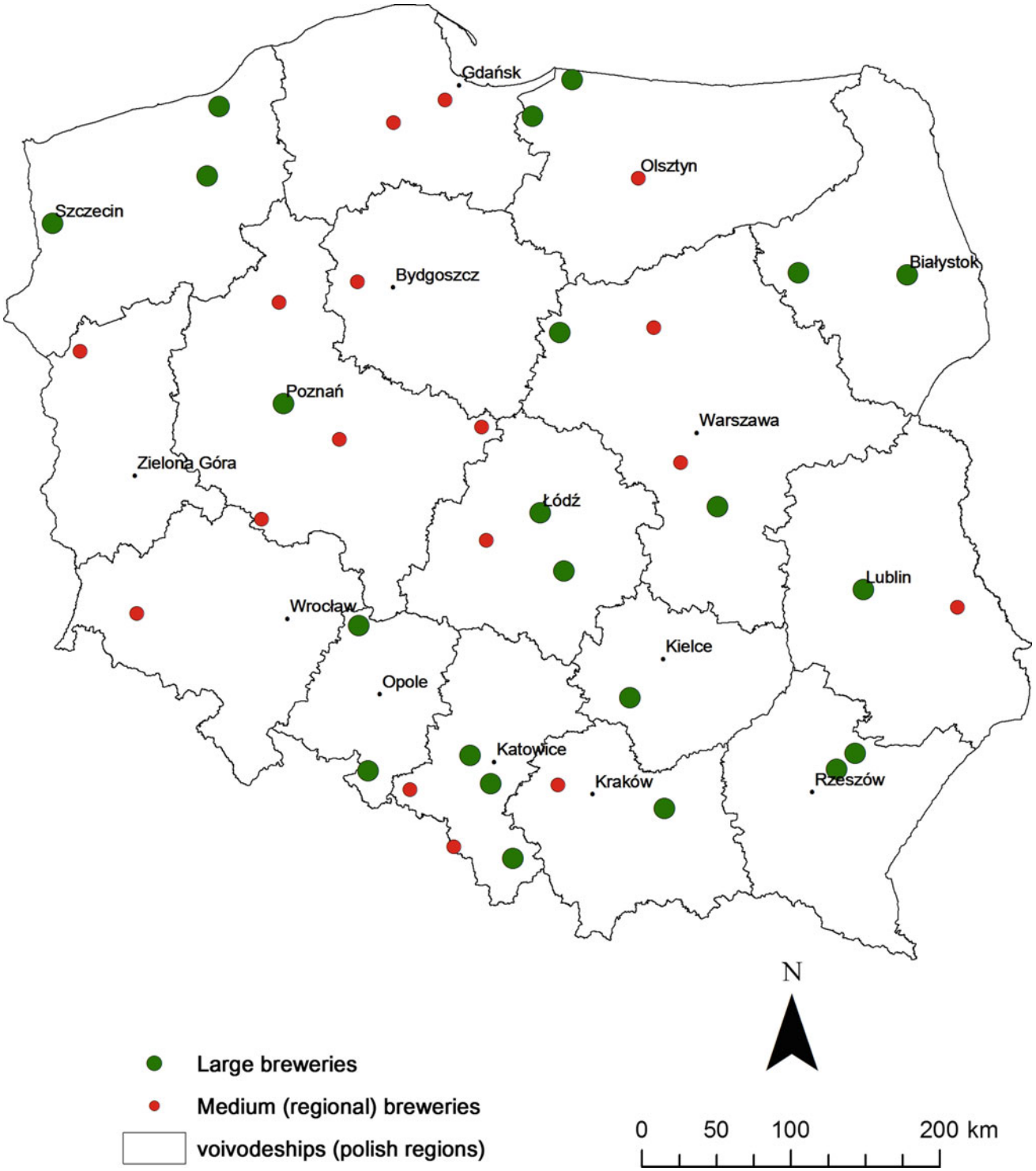

Fig. 5.5 Large and medium (regional) breweries distribution in Poland in 2018. *Source* based on The Beer Map and the authors own data collection

In fact, microbreweries, restaurant breweries, brewpubs and, rarely, medium (regional) breweries produce craft beers. The growing number of these microbreweries are intrinsically a part of the rising Polish craft beer revolution.

The Emergence of the Craft Beer Revolution in Poland

The Polish beer industry since the 2010s has been gradually perceived among the important craft beer markets in the world. After two decades (1990–2010) when the Polish beer market was dominated by large foreign investors the trend has changed for small breweries.

The establishment of the first contract brewery "Pinta" is the commonly accepted beginning of the craft beer revolution in Poland.[2] The brewery Pinta started on 28th March 2011.[3] They were responsible for the introduction of the first new-wave craft beer on the Polish market called "Atak Chmielu" (Hop Attack) in the American India Pale Ale style. It was the first beer in this style on Polish market ever. It is important to emphasize that the Pinta owners were experienced homebrewers and they decided to commercialize the products of their hobby.

The period after 2011 is manifested by the dynamic development of craft breweries led to the increase of the number of breweries (Table 5.1, Fig. 5.6), and the sales of craft beer have been steady and growing, even if their share in total volume is low. The Polish craft beer revolution also describes an increase in the consumers' interest and demand for the products of small craft breweries (microbreweries, brewpubs, restaurant breweries) , and a series of social, cultural, and economic effects resulting from this phenomenon.

The number of breweries in Poland has grown dramatically, from 70 in 2010 to 372 in 2018. The growth has been particularly impressive in the years 2014–2016. In subsequent years, the recorded increases were also clear, even if not so high. However, the number of new breweries in the market grew regularly. Between 2010 and 2018 the average annual increase was 23%. What's more, in comparison to 1990s, the growth in the number of breweries excluding contract and clients breweries was also impressive—from 65 in 2010 to 238 in 2018. In the meantime only 9 breweries were closed in Poland. Moreover, in comparison with 2010, the number of large breweries did not change, so only small brewers are responsible for the growth.

The contract breweries dimension in the Polish beer revolution is worth to emphasize. While in 2010 there was no brewing entity of that type, in 2018 there were 119 of theirs. Most of these are activities started with home brewers who decided to commercialize their hobby, because of the low entry and exit barriers. The contractors don't need to buy and utilize an expensive brewing installation.

The period 2010–2018 allowed to observe market development trends with the increase in the number of newly established contract breweries, as well as of those companies that did not succeed and were forced to suspend or end their activities. The small scale of production and sales, as well as growing competition and consumers' requirements, became an obstacle in maintaining profitability. For some, contract initiatives would have often been a short adventure for home brewers who wanted to present their skills and products with commercial brewing. For others, contract activity was just a stage on the way to opening their own microbrewery, e.g., Bazyliszek Brewery, Kraftwerk Brewery, Waszczukowe Brewery, Inne Beczki Brewery, Kazimierz Brewery.

The development of all the breweries has been boosted by the dynamic sales of craft beers in Poland. All of the newly created breweries focus on the brewing of new wave beer, referring to the tradition of the "beer revolution" and present a wide portfolio of beers in various styles, especially the top-fermented beers. Sales figures doubled each year until 2018, when the first signs of market slowing were noted. Currently, craft beers have about 0.5% share in the total sales of volume beer in Poland.[4]

The number of new beer brands that appeared in Poland after 2013 is impressive (Fig. 5.7). In 2018 the number of beer premieres exceeded 2000 unique products. The most popular groups of styles are India Pale Ales (530), Pale Ales (296), Stouts (266), Sour Ales (163), and also Barrel Aged Beers (202). The most fertile breweries present about 40 new beers annually. The innovation dynamics have also been replicated by the three main brewing companies which started to diversify a portfolio and gradually introduced a new style. However, their offer is still sparing in comparison to craft breweries.

According to the Brewers Association, collaboration is a hallmark of the modern craft brewing scene and is one of the strategies that allows craft breweries to compete successfully against large brewing concerns (Nilsson et al. 2018). International cooperation in brewing in Poland is also growing every year. The number of cooperative brews at national level in 2018 amounted to 65 and it was four times higher than in 2015. While in 2015 there were 12 international cooperative brews, 59 have been registered in 2018.

[2]Depending on the data, sometimes an ephemeral initiative called Stary Kraków (Old Cracow) operating in the years 2005–2007 is cited as the first contract brewery; yet, its foundation was not successful and did not bring external results.

[3]Online: http://www.browarpinta.pl/en/about-us.html; access: 2019-05-10.

[4]Online: [Nielsen Report] https://www.nielsen.com/pl/pl/insights/reports/2018/beer-revolution.html, access: 2019-04-12.

Table 5.1 Number of breweries in Poland in 2010–2018 *Source* based on The Beer Map and the authors own data collection

Type of brewery		Year								
		2010	2011	2012	2013	2014	2015	2016	2017	2018
large breweries	Total	22	22	22	22	22	22	22	22	22
	Newly opened	0	0	0	0	0	0	0	0	0
	Closed	0	0	0	0	0	0	0	0	0
Medium (regional) breweries	Total	15	15	15	14	14	16	16	17	17
	Newly opened	0	0	0	1	0	2	0	1	0
	Closed	0	0	0	2	0	0	0	0	0
Microbreweries and brewpubs	Total	9	9	11	14	23	40	62	82	103
	Newly opened	0	0	2	3	9	17	22	21	22
	Closed	0	0	0	0	0	0	0	1	1
Restaurant breweries	Total	19	27	34	49	54	71	77	87	96
	Newly opened	1	8	7	16	6	17	7	10	11
	Closed	0	0	0	1	1	0	1	0	2
Contract and client breweries	Total	5	6	11	17	38	61	92	103	134
	Newly opened	3	1	6	11	24	33	42	29	40
	Closed	0	0	1	5	3	10	11	18	9
Total (no contract and client breweries)	Total	65	73	82	99	113	149	177	208	238
	Newly opened	1	8	9	20	15	36	29	32	33
	Closed	0	0	0	3	1	0	1	1	3
Total (contract and client breweries included)	Total	70	79	93	116	151	210	269	311	372
	Newly opened	4	9	15	31	39	69	71	61	73
	Closed	0	0	1	8	4	10	12	19	12

Prior to 2010, there was no relationship between the Polish craft beer sector growth and the domestic production of malt and hops. The wish to be linked to local suppliers by the brewing market newcomers after 2010 led to the increased interest in Polish hop varieties and malt use, helping Polish hop plantations which suffered economically in the 2000s. The use of historical and experimental Polish hops, e.g., Izabella, Oktawia, Tomyski, Iunga, Magnat, Puławski, Zula, or Polish Cascade appeared on the market.[5]

The combination of a few interrelated dimensions has played a key role in the emergence of Polish craft beer revolution:

- growing popularity of hand-made, good quality, and niche products,
- globalization and related glocalization and neolocalism, justifying the penetration of markets, products, innovations, as well as the society's response to the quantity and quality of mass products; goods produced in connection with the local community (Siemieniako et al. 2011; Holtkamp et al. 2016; Bell 2017),
- a need of variety among the consumers because of mass-produced and standardized on big scale concerns beers ("anti-mass production movements;" Hayagreeva 2008),
- the development of the Internet and other alternative communication channels what follows to the diffusion of innovation,
- an increase in consumers' income, rich people have started to search for new, better products; they wanted to signalize their higher financial status,
- Millennials generation (Moore et al. 2016), young adults live and think completely differently than previous generations, they use the opportunity to choose, look for flavors, and are not afraid of experiments,[6]
- as in the USA, the craft beer revolution was born in craft breweries which were a result of interest in homebrewing (Chlebicka et al. 2018).

[5]Online: [Portal Spożywczy] http://www.portalspozywczy.pl/alkohole-uzywki/wiadomosci/coraz-wiecej-polskich-odmian-chmielu,135496.html; access: 2019-05-10.

[6]Online: [Birofilia Report] https://birofilia.org/uploads/oryginal/5/0/9ab7e22e_birofilia_raport_millenialsi_a.pdf, access: 2019-04-12.

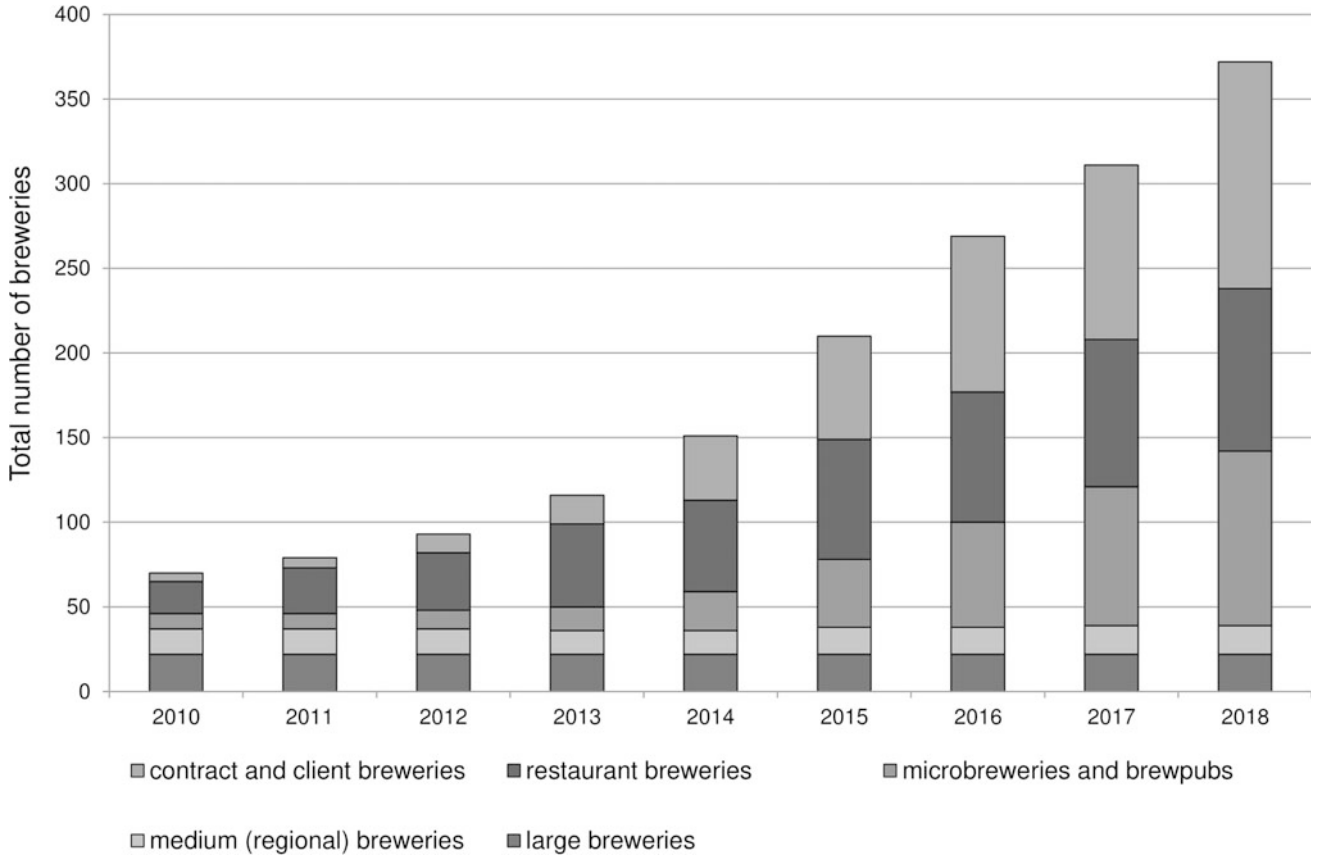

Fig. 5.6 Change in the number of breweries in Poland during Polish craft beer revolution. *Source* based on The Beer Map and the authors own data collection

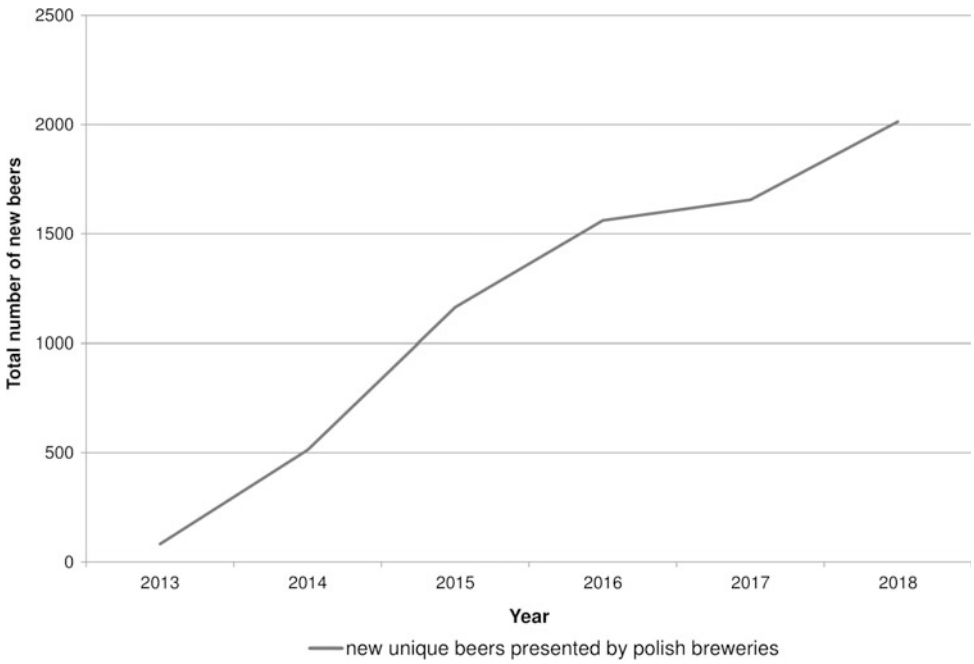

Fig. 5.7 Unique beers presented annually by Polish breweries on Polish beer market between 2013 and 2018. *Source* Piwna Zwrotnica Blog

People who drink craft beer prefer that beverage instead of mass-market lager for a lot of reasons, including its greater variety in terms of styles and flavors; the independent, local, creative and small-scale nature of that industry (Nilsson et al. 2018). Therefore, the reasons are similar to the origin of emergence the craft beer revolution in other countries, e.g., Italy, the USA or Spain. In countries where good quality beer is commonly accessible, the craft beer revolution develops more slowly and has distinct strategy, e.g., in Germany or Czech Republic.

Polish Craft Beer Revolution–Geographical Approach

The Polish beer revolution impact is also visible in terms of geography (Figs. 5.8 and 5.9). Breweries created until 1990, and especially 20 of them whose creation dates back to the nineteenth century are clearly evenly spread throughout Poland. It might be said that each region had its own brewery. Small clusters of breweries were distinguished by regions such as the Wielkopolskie voivodeship, and Śląskie voivodship,[7] as well as the region around Warsaw (the capital of Poland).

In the period of the beer revolution after 2010, the breweries increased especially in the proximity of urban agglomerations. It should be noted that the beer revolution occurs primarily in richer regions, hence in the peripheral areas of the country. Especially in the east of Poland, there are much fewer breweries (compare to Fig. 5.10). The Warmińsko-Mazurskie, Lubuskie, and Opolskie voivodeships remain a relative beer desert on the map of Poland.

Taking into account the number of breweries per 100,000 inhabitants in individual voivodships, it should be stated that peripheral voivodships are characterized by the highest rate: in the south Śląskie and Dolnośląskie, in the north Pomorskie, and in the east Podlaskie and Mazowieckie. On the other hand, the lowest number of breweries per capita is in Lubuskie and Świętokrzyskie voivodeships (Fig. 5.11).

The regions whose capitals are the largest cities in Poland prevail in the statistics. In Mazowieckie voivodeship it is Warsaw (1st place in terms of the number of all inhabitants), in Małopolskie–Kraków (2nd place), in Dolnośląskie–Wrocław (4th), in Pomorskie–Gdańsk (6th). The lowest number of breweries per capita lies in regions whose capitals are relatively small cities, e.g., in Świętokrzyskie–Kielce (17th place), in Lubuskie–Zielona Góra (24th), and Gorzów Wielkopolski (30th; Central Statistical Office 2018). Therefore, the most intense beer regions are located in the south of Poland where the population density is also the highest. Most breweries, usually restaurants, are created in large urban centers (Warszawa, Gdańsk, Kraków, Wrocław, Poznań; Fig. 5.12), due to the customer base and supply level.

A similar situation applies to contract breweries which are established mainly in the largest cities. Region capitals such as Warsaw, Kraków, Poznań, and Wrocław dominate the scene. Nonetheless, further observations permit to establish where contract breweries effectively brew and how they manage their distribution.

From the geographical point of view the location of breweries in Poland, it can be noticed that they are usually located in cities (in 78% of cases), especially in large cities (in 42% in cities over 100,000 inhabitants), and also in regions with the highest level of socioeconomic development.

The location of breweries may also be associated with the function of the town where they are created, in particular with the tourist function. The southern part of Poland, with a high density of breweries, is a largely mountainous area with outstanding natural and tourist qualities. Some breweries use in their identity those beneficial factors, e.g., Miedzianka Brewery, Ursa Maior Brewery. In the Śląskie voivodeship brewers may refer to the industrial traditions of the region (Upper Silesian Industrial District).

While it is quite typical in Polish comparisons to make the division between the "rich" western Poland and the "poor" eastern part, this distinction is not clearly marked among brewers, since breweries are founded in all regions. Additionally, there are also no clusters of breweries in places associated with the occurrence of raw materials for beer production, such as the Lubelskie voivodeship or Opolskie voivodship where hops are cultivated (Central Statistical Office 2018).

Cultural and Societal Effects of Craft Beer Revolution in Poland

The changes that occurred in the Polish beer market have been made possible by the openness and growth of the economy, the influence of foreign examples, the availability of communication channels, increased people's mobility, as well as the high degree of acceptance to changes by the consumer. These changes in consumer patterns, thanks to the increase of income, larger spread of beer drinkers age, as well as more frequent presence of beer in households, created favorable circumstances for new entrants.

During the craft beer revolution in Poland the spread of beer festivals and the approach of various breweries to public openness responded to a demand for increasing beer tourism in Poland. The presence of beer from smaller

[7]Polish administrative regions of the highest row.

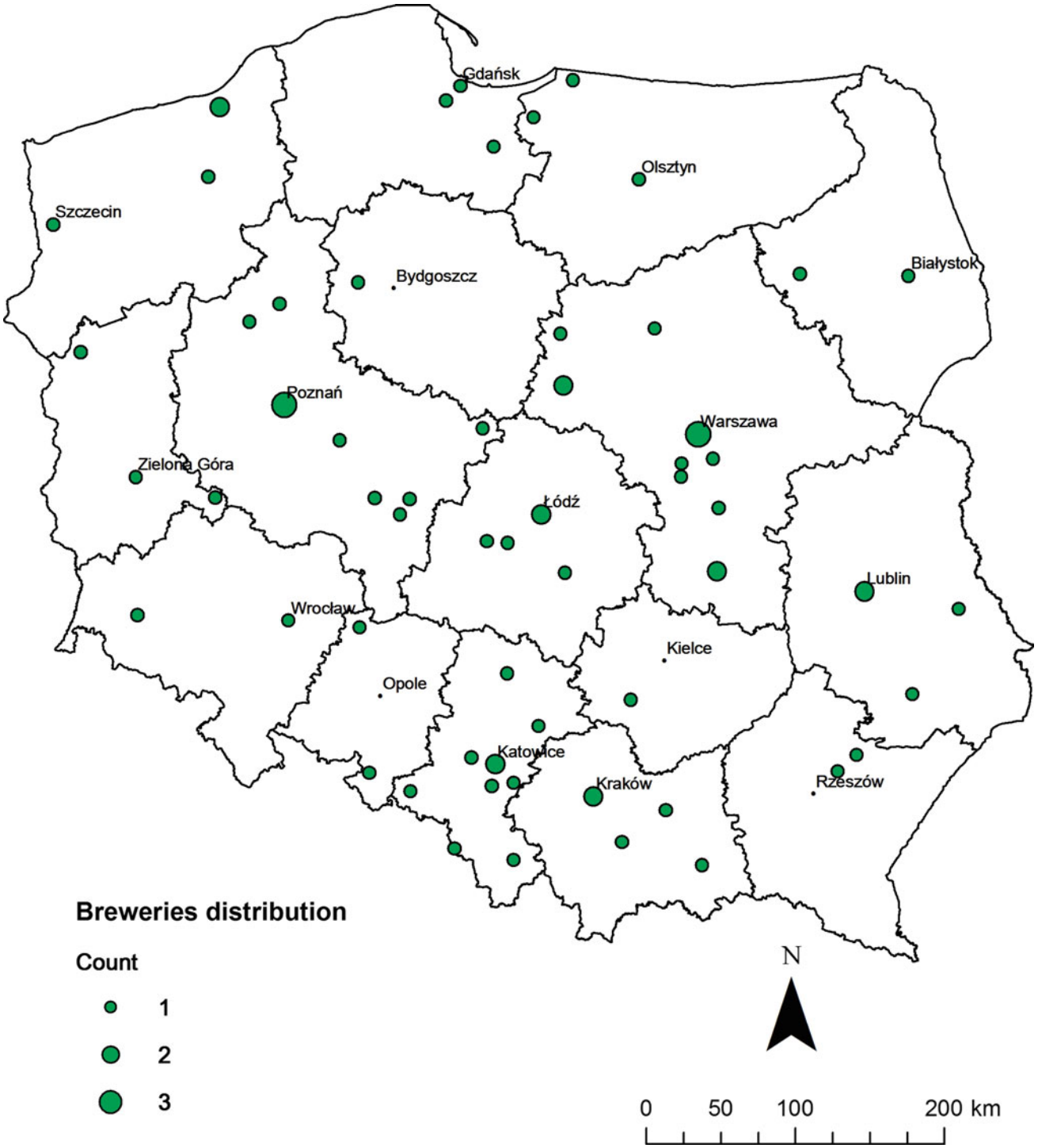

Fig. 5.8 Breweries distribution in Poland in 2010. *Source* based on The Beer Map and the authors own data collection

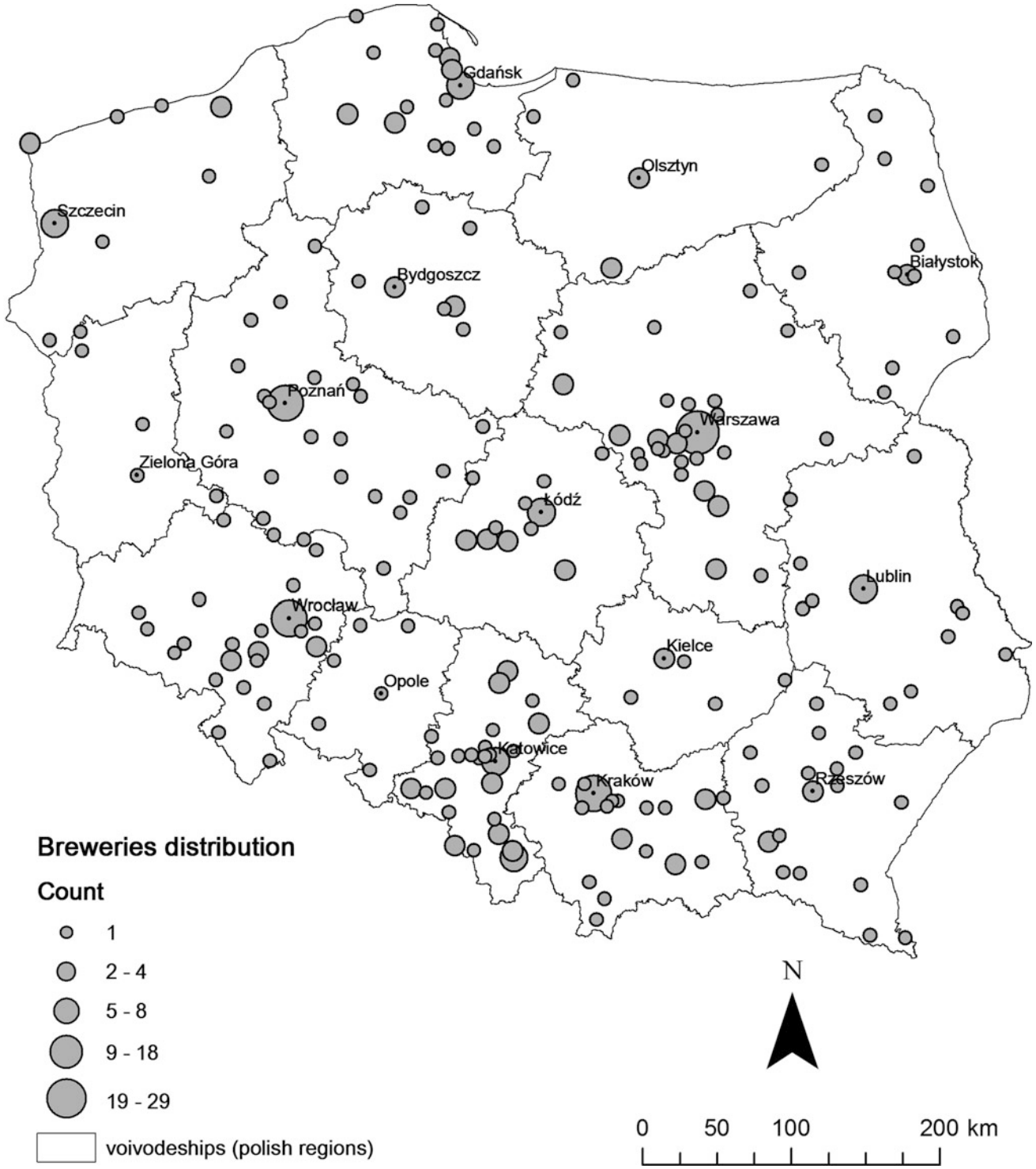

Fig. 5.9 Breweries distribution in Poland in 2018. *Source* based on The Beer Map and the authors own data collection

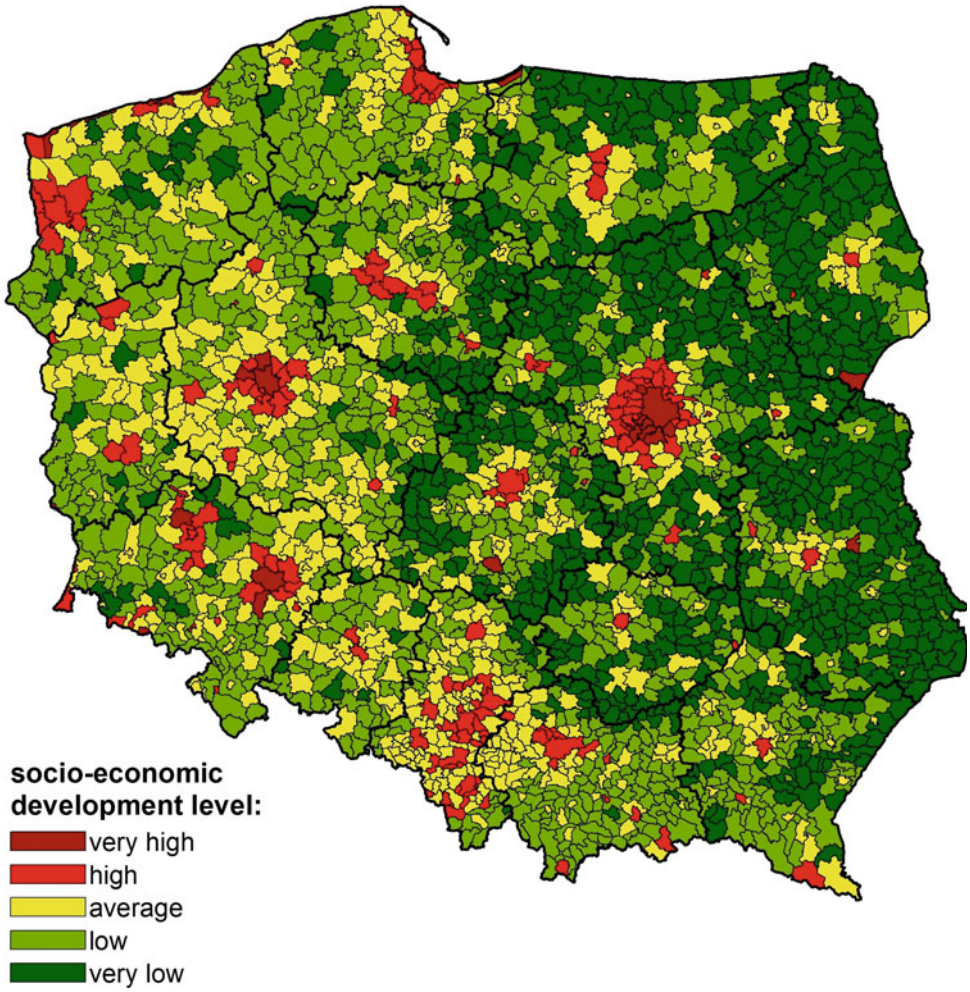

Fig. 5.10 Socioeconomic development level in Polish communes in 2016. *Source* Perdał (2018)

breweries has gone beyond beer festivals to fuel other food and regional events. The wide availability of gatherings, as well as the easy spread of information through the Internet permitted to respond to increasing demand from the public. This was followed and complemented by the opening of specialized shops (554 in 2018) and the offer increase in bars, largely thanks to multitaps (636 in 2018).

According to researchers most beer tourism driven trips took place various times during a year, they are mainly day trips (58%), with visits of regional, national, and local breweries. The main motivation is the discovery of new beers, and related places. The main source of information about beer market is the Internet (Charzyński and Podgórski 2017).

The growing number of festivals across the country have also lead to their larger geographical presence and for many of them changing their role. These changes concerned the introduction of talks, presentations, open contests, or homebrewers battles. Also, the attitude of local authorities changed from reluctance to support or tolerance. The number of new Polish nationwide beer festivals increased every year since 2010 (Fig. 5.13). From 9 existing in 2013 there were 48 beer focused events in 2018. Some of them became known in whole Europe, e.g., Warsaw Beer Festival or Wrocław Good Beer Festival (taking place at football stadiums).

The proximity allowing to meet people who are responsible for creating beer by the consumers enhances the craft beer culture and stimulates a producer, a crafter, a manufacturer, to be close to beer drinker. In the biggest competition in Poland for craft breweries "Kraft Roku" held in Poznan, a craft beer is defined as a product of a brewery where a brewer is known by its full name.

The benefit of such close relationship proved to be effective when in 2018 Inne Beczki Brewery was founded by crowdfunding only in 11 days. Stakeholders deposited 400,000 PLN. So far, no other entity starting a business in Poland has been able to collect such a sum in the same way.

In the absence of widespread popular books in polish and scarcity of popular magazines ("Piwowar" is the only magazine for homebrewers in Poland) the Internet and social media have been key factors in the propagation of

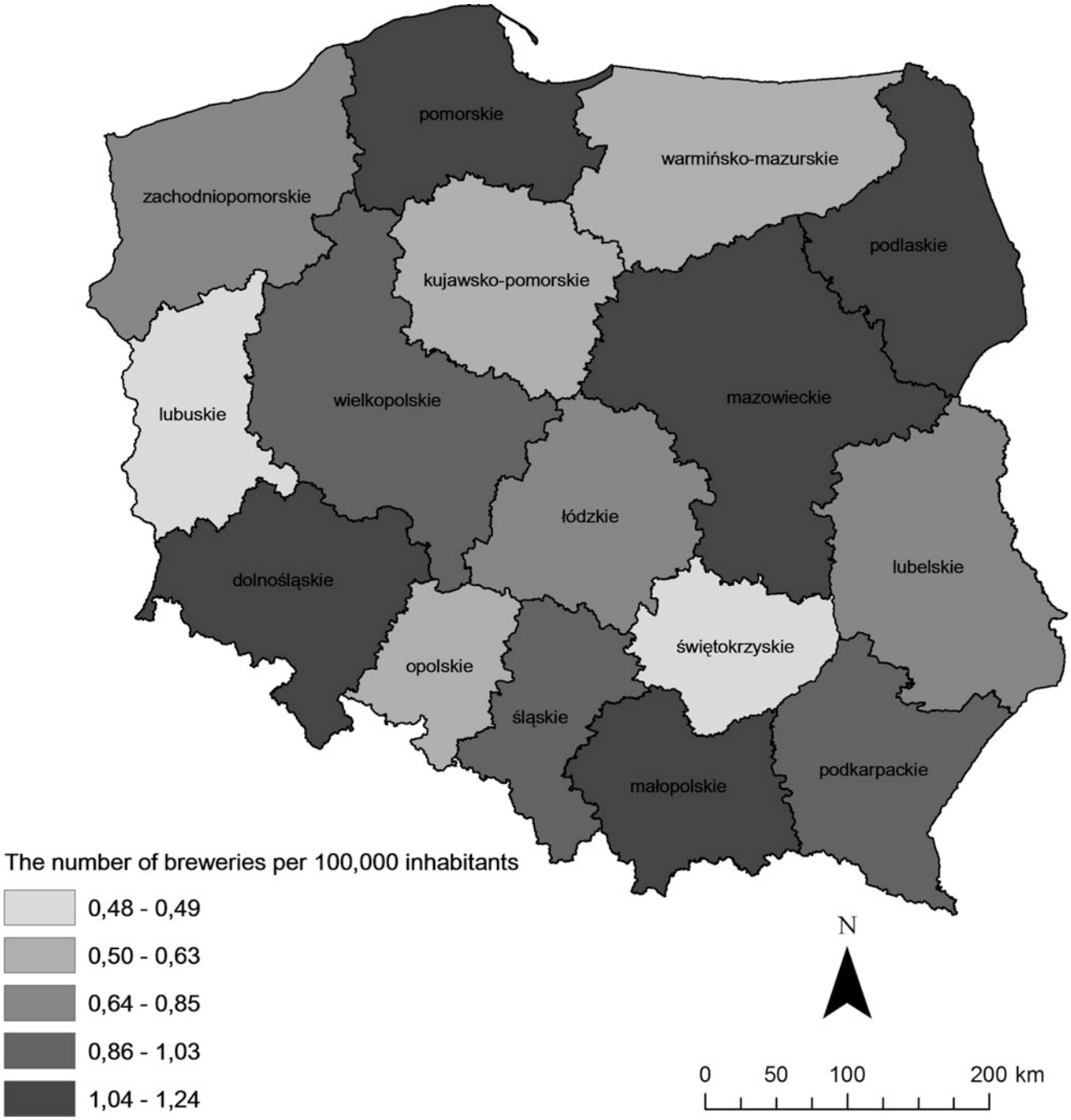

Fig. 5.11 The number of breweries per 100,000 inhabitants in Poland regions in 2018. *Source* own elaboration

beer knowledge and exchange of experiences among beer drinkers. The creation of internet forums, blogs, and social media-specific channels filled an existing gap, as well as matched the speed of information delivery, crowdsourcing, and interconnectivity among beer drinkers and breweries Acitelli (2013) claims that collaboration was particularly valuable for the early home and commercial craft brewers.

Written blogs, e.g., Minibrowary.pl, MalePiwkoBlog, or Beervault, and later videoblogs drove the presentation of all new beers entering the market and creating thereby a space for "beergeeks". These descriptions have been complemented by stories related to events, such as new festivals, brewery tours or premieres of new beers propelled the interest in beer. Consequently, social media became a lively

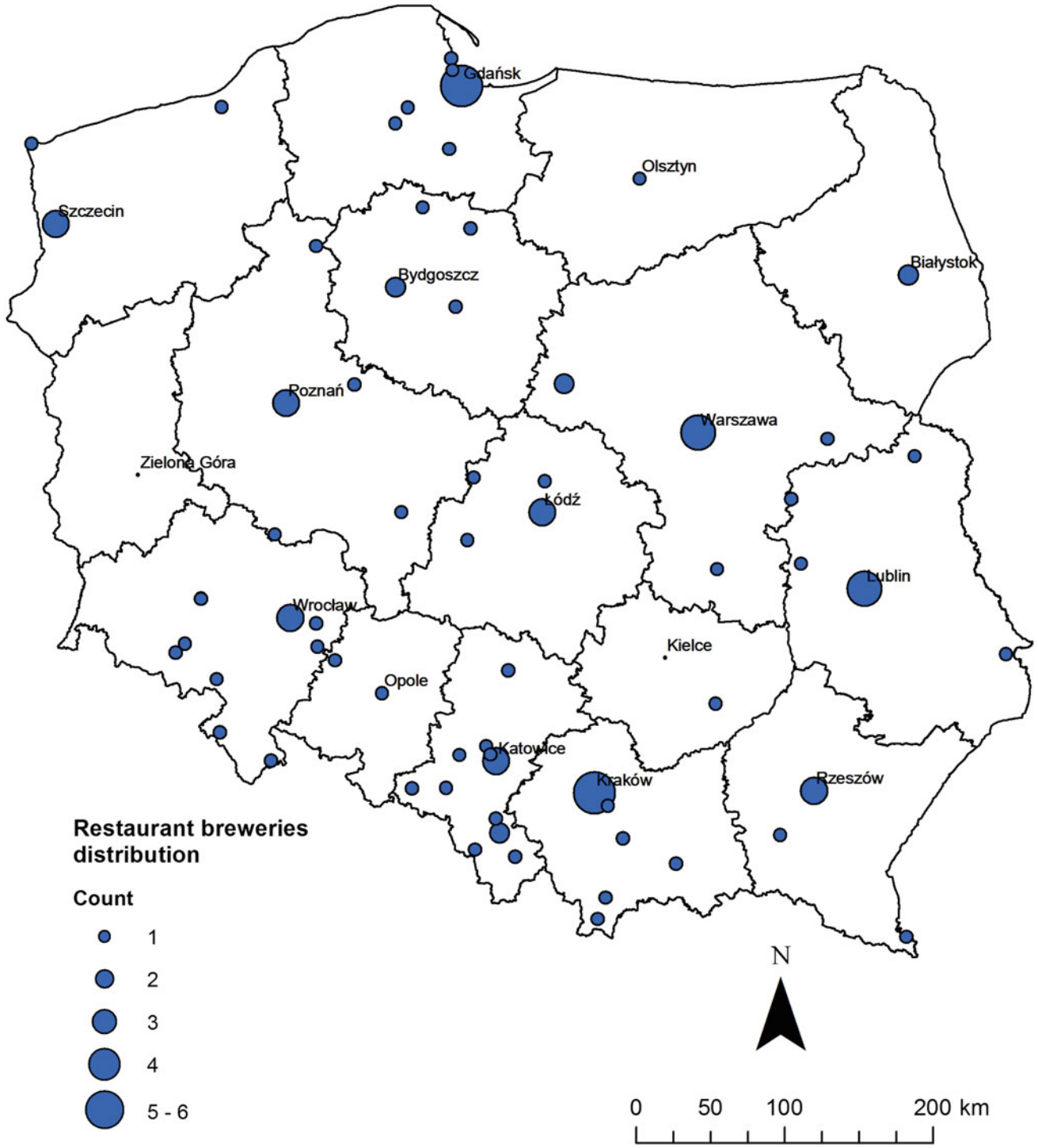

Fig. 5.12 Restaurant breweries distribution in Poland in 2018. *Source* based on The Beer Map and the authors own data collection

forum for exchange on those items and further enhanced the beer Internet scene.

Among these trends, the Polish blog and its corresponding Youtube Channel "Blog Kopyra" (115,200 subscribers and 45,515,529 views—April 2019), became an absolute leader at world level. Its author, Tomasz Kopyra—international beer judge, brewer, created in 2009 a formula of videos where alternatively were given news about the most recent beers, global trends, summaries of events. The blog and films have evolved over time and other blogs included video material; however, no other channel has found an equal echo among beer drinkers.

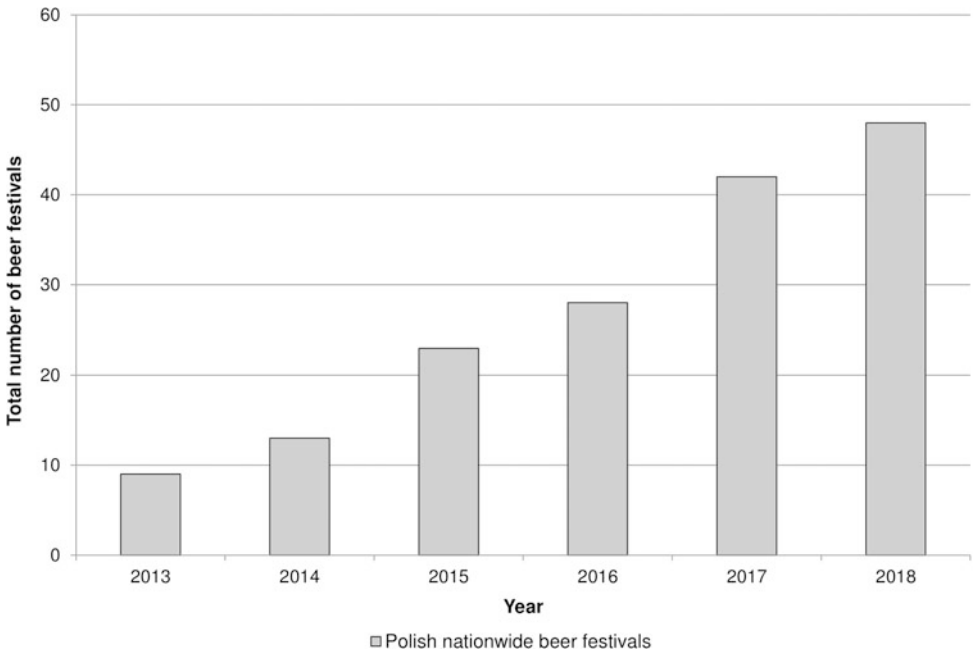

Fig. 5.13 Number of beer festivals in Poland in period 2013–2018. *Source* Piwna Zwrotnica Blog

The reinforcement of the public activities has also been an aim for the Polish Homebrewers Association (1,200 members in 2018[8]). The association and its members through the Internet platform and mainly at local events has resulted in a domestic certification programme for beer judges, numerous sensory trainings, enhancing the homebrewers competitions and the realization of the BJCP exam in Warsaw. In October 2017 the association inaugurated its official seat in Warsaw where further education activities have been foreseen.

Education for brewers in Poland has been present at various food technology faculties and at industry conferences and trainings. Going beyond the existing conferences and short courses, official postgraduate studies open to all have been launched in 2016 by the University of Life Sciences in Wroclaw and the Agricultural University in Cracow, and in 2018 at the University of Opole.

Conclusions

The number of breweries in Poland grew from 28 to 199 in just 8 years (2010–2018) due to the "beer revolution." A new phenomenon also emerged, such as the appearance of contract breweries in large scale—companies producing beer on hired brewing installations in existing stationary breweries. In the described period around 130 contractors set up the brewing business. Polish craft beer revolution is also linked with the expansion of home brewing, the emergence of new beer festivals, specialty shops and pubs selling craft beer, as well as growing importance of the cultivation of a new hop variety, etc.

Moving from homebrewing to commercial production was accompanied by an offer diversification in the market and a continuous evaluation of present beers by consumers on social media. High quality beers, from rare and most often more expensive ingredients (special yeast strains, malt, hops varieties imported from around the world) compared to mainly lager beers, also helped in creating a good image of diversity appealing to consumers.

However, the "beer revolution" is primarily a qualitative change changing the perception of beer and still has a small impact on the overall production and sale of beer in Poland, but a much larger in the related industries, such as graphic design, labeling, communications, and distribution.

The cultural trends related to beer tourism, consumer awareness, and communication channels have been essential in changing the geographical perspectives of brewers. Looking at the trends presented in this chapter the authors forecast that these microbreweries may become a noticeable player on the beer market, as it was the case of the United States and several Western European countries. This is confirmed by the growing interest in craft brewing in the media, the increasing consumers' awareness on beer varieties and the public authorities' activities toward breweries.

[8]Online: https://birofilia.org/historie/rok-2018-w-pspd.html, access: 2019-04-13.

The market evolution through this period was overall very positive for Poland, leading to a diversity increase of beers, higher investments in marketing tools and changing the image of beer among consumers and media all over the country. However, the craft beer market in Poland is still a growing and developing market, even if there are some first signs of stabilization, moving it to the phase of maturity such as: reducing the growth rate of new contract breweries, transforming part of contract brewers into physical breweries, organizing market players in a new association.

The existing problems that still need to be addressed refer to the relatively low awareness about the product among a large part of consumers, beer brands overload, the lack of regularity in the product taste, problems with quality. Craft beers are still very expensive beverage in Poland. The cheapest craft beers cost around 4 times more than most lager beers on the market and the situation did not change between 2011–2018. These are problems which small breweries should focus on in the near future in order to best use the "beer revolution" effect.

Different forecasts undertaken by larger brewers show an unfavorable situation for Poland, in demographic terms, due to a population decrease resulting from the low birth rate. No indicators allow predicting a change in those trends, especially in view of new breweries announcing the start of their activities in 2019.

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Planting the Seed: Innovation Diffusion of Craft Breweries in Florida

6

April A. Watson and Erin T. Broemel

Abstract

Though the craft brewing industry has witnessed significant growth in the last two decades, Florida saw a delay in craft brewery development, from very few breweries in the 1990s to an exponential increase in the mid-2010s. Though geographers have examined consumers' interests in beer, none have questioned why growth is uneven in Florida, and, moreover, what role economics, identity, and politics play in the establishment of craft breweries. This study sought to understand why Florida lagged behind most of the U.S. in craft brewery expansion. We hypothesized that the unique features of the craft brewing industry (strong interpersonal connections, economic strategies, geography, politics, and identity) created both a means and hindrance to diffusion. Using qualitative and quantitative methodologies, this exploratory study concentrated on 87 microbreweries operating from 2013 until early 2016. Informal, unstructured and/or semi-structured interviews were conducted with 26 craft brewery employees, and participant observations were collected at 14 beer industry-focused events. We used diffusion analysis to understand the spread of craft breweries, considering the role of external and internal influences on permeation. Results indicate that Florida craft brewing follows a unique pattern of distribution contrary to most models, as craft brewers rely on internal sources of influence. The social aspect of brewing is the predominant influence of diffusion. As craft brewing is social, it is noted that the initial pause in growth stems from possible risk reluctance by early adopters. Despite internal influence growth, external influences may have created barriers. Florida's legal restrictions limited expansion for craft breweries due to distribution boundaries. Craft breweries saw an exponential increase following the lessening of beer-related laws. Future research is needed to determine if this phenomenon is true across other regions of the United States.

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Introduction

Craft breweries are generally small setups focusing on production of unique styles or flavors of beer (Bastian et al. 1999; Alonso et al. 2017). In the last two decades, the craft brewing industry has witnessed significant growth in numerous countries (Brewers Association 2015a). Growth has been no less so significant in the United States, yet this progression has had very uneven geographic expansion, as numerous authors have noted (c.f. Elzinga et al. 2015; McLaughlin et al. 2014; Reid and Gatrell 2015). Florida also had notable expansion in the volume of craft beer produced, growing by almost ten times, with brewery numbers jumping to 143 by 2015 (VinePair 2015). As a state of high migration increases, Florida has witnessed a net population gain of 84% from 2010 to 2012, with noteworthy growth in foreign-born populations, (Gibson 2014; Watson 2016) and a significant impact from the tourism industry, producing $51.14 billion in 2012 according to Florida TaxWatch (2013). However, there has been a lag in breweries built in Florida, with relatively few craft breweries existing in the 1990s to exponential growth in the mid-2010s (Baginski and Bell 2011). Yet, the question arises of just why craft brewing took off relatively slowly in Florida, and far behind other states. In 2014, the state ranked 43rd in breweries per capita; however, the economic impact of the craft brewery in the state was $2.056 million, placing Florida 8th in the nation (Craft Brewers Association 2014). In 2011, Baginski and Bell noted that the Southern region ranks among the lowest in total craft breweries. In 2015, Florida appeared in the top fifth of states on *total* craft breweries, but, as noted above, ranks 43rd in breweries per capita. Some as yet unidentified

factors must play a role in the differences between total numbers and economic impact.

Geographers have expounded on the consumers' love of beer: why people drink, what they drink, and where. These researchers have examined the rise of craft beer and breweries from the perspective of neolocalism, or a return to an "authentic" local product (c.f. Flack 1997; Schnell and Reese 2003). In addition, much of the research on craft breweries' distribution examines the role of population size and characteristics (c.f. Elzinga et al. 2015; Reid and Gatrell 2015; McLaughlin et al. 2014). Despite these studies, little attention has been given to innovation diffusion among craft brewers.

Background

Innovation diffusion. Diffusion of Innovation (DOI) Theory, originally conceived by E.M. Rogers in 1962, is one of the fundamental social science theories. It explains how, over time, an idea or product gains momentum and diffuses (or spreads) through a community. The ultimate result of the diffusion is that people, as part of a social network, adopt a new idea, behavior, or product. When people accept the new idea, product, etc., they change their behavior, doing something different than they did before. The key to adoption, then, is the perception that the new idea, product, etc. is innovative. It is through the peoples' perception that diffusion is possible (LaMorte 2019).

When an innovation, such as craft brewing, is introduced into a geographic area, three discernible segments of acceptance follow, irrespective of the size of the region. Stage One is the spatial dissemination phase, which is typified by adoptions of that innovation by apparently haphazard geographic patterns of adopters, with the preponderance situated near the diffusion center, but many at major distances away. Stage Two is the spatial diffusion process phase, which involves a continuing spread of adoptions outward from the vicinity of the diffusing center but is also characterized by a significant "neighborhood effect"; the adoption of a new innovation by neighbors of the original Innovator. Stage Three, the maximum penetration phase, happens as holes are filled by the rest of the adopting population and the diffusion process is concluded (Allaway et al. 2003).

The innovation of ideas is spread through different means across the landscape, as either a contagious (cascade or "snowball" effect) or in a hierarchical fashion. In economic terms, we might think of innovation as part of a process, in which considerable change is introduced to an industry, where new thoughts and behaviors are first introduced, shared among like-minded individuals, then these ideas are acted upon and reproduced. This diffusion of *ideas* is what is important for innovation to occur in the business sector, rather than merely the creation of, for example, new plants or equipment, or new leadership (Robertson 1967).

With the introduction of an innovation, the question then becomes who is the most likely to adopt and share this idea. Adoption of a new idea, behavior, or product (i.e., "innovation") does not happen instantaneously in a social network; rather it is a *process* whereby some people are more likely to accept the innovation than others. Researchers found that people who adopt an innovation early have different characteristics than people who adopt an innovation later (LaMorte 2019). Rogers (1995) describes five categories of Innovators in terms of their acceptance of new innovations (Fig. 1). Innovators, the first stage of diffusion, include people of high social status, financial stability, and those people willing to take a risk. Early adopters also have high social status and advanced education. They use judicious espousal of innovations to maintain a central position in communications. Early majority adopters take up innovations considerably after Innovators and early adopters, although they still maintain higher social status and contact with early adopters. Later majority adopters' approach new innovations with more caution and skepticism than previous adopters, and may have little social status and lack in opinion leadership. Laggards tend to stick to traditions and resist change (Rogers 1995).

Numerous authors have contributed to the theory of innovation diffusion as well as S curve theory (c.f. Schumpeter 1939; Fisher and Pry 1971; Hatten and Piccol 1973). One of the first of these studies was done by Ryan and Gross (1943). The authors studied the diffusion of hybrid corn in Iowa and noted that the adoption rates of new hybrid corn species among Iowa farmers initially was slow but increased rapidly over a short span of time. They went on to examine the role of internal and external influences on the spread of the innovation and found that the use of the new hybrid corn by neighbors had the most influence on the eventual adoption of the innovation by the farmers. Internal influence, in this case, mattered more than external influences. However, the authors uncovered that each channel—internal and external—served different functions. Mass communication, such as the radio, functioned as the basis of preliminary information, while interpersonal networks functioned as the influence over the farmers' decisions to adopt. Ryan and Gross also found that the rate of adoption of hybrid seed corn followed an S-shaped curve, shown in Fig. 2. This S curve reflects the innovation decision process (or rate of acceptance), in that an innovation is created, shared, reached maximum saturation, and then fell out of favor as a new idea arises. The S curve can refer to both adopters of an innovation, or to the innovation itself.

Models of diffusion. Considering models of innovation diffusion, then, one must include the influence of both

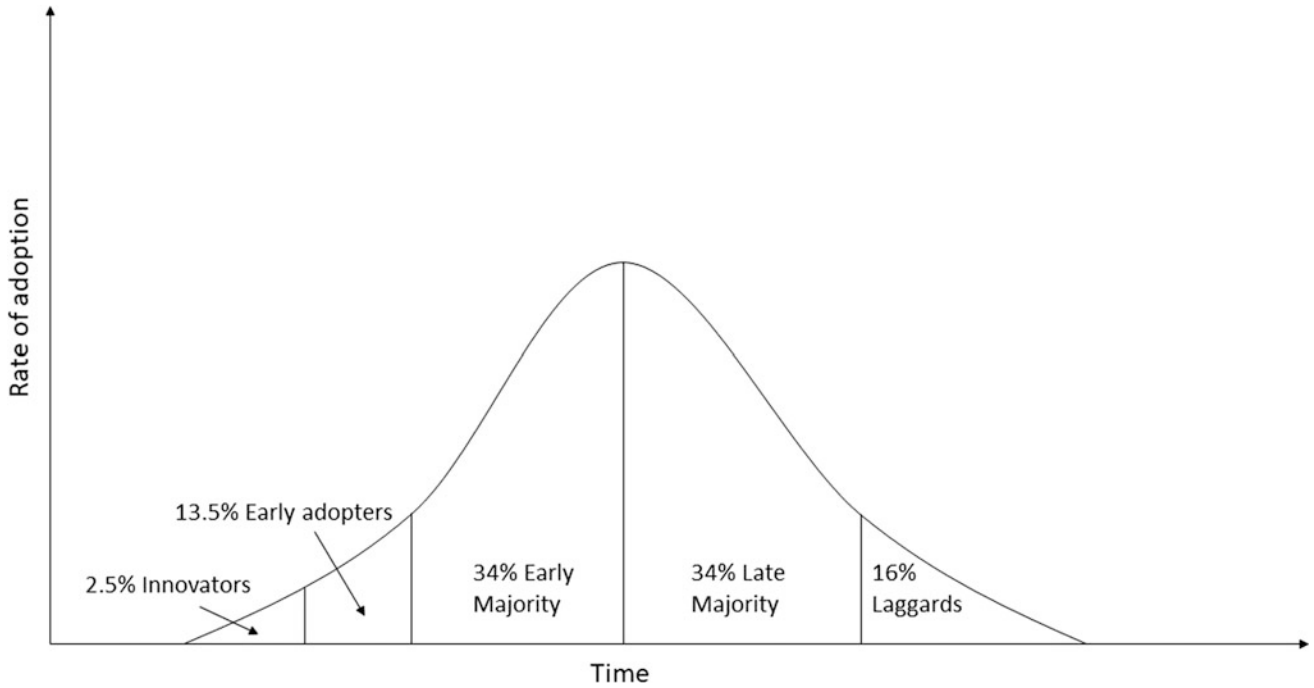

Fig. 1 Adapted from Rogers (1995) categories of innovation diffusion

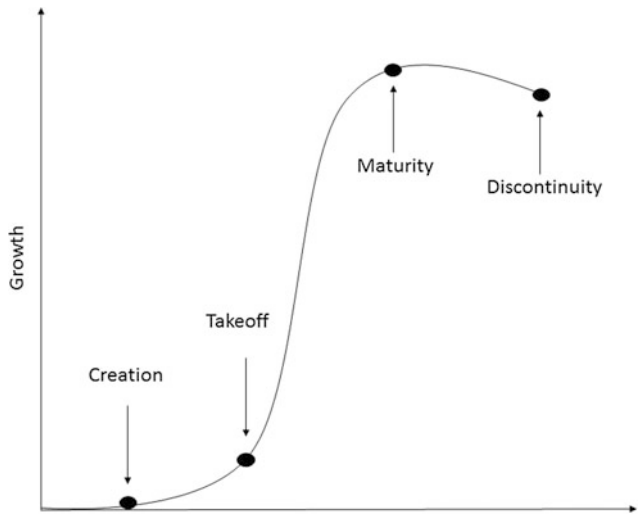

Fig. 2 S curve of innovation (adapted from Heijer 2010)

external influence (outside the personal network of the adopter) and internal influence (inside the personal network of the adopter). External influence can include multiple sources, such as social media, television, newspapers, or advertising. Internal influence is the influence of friends, neighbors, business partners, or even competitors. Mixed influence models of diffusion consider the influence of both external sources (such as advertising) and internal sources (such as word of mouth) to spread the innovation on the landscape (Mahajan and Peterson 1985). Previous research indicated that persuasive individuals (for example, the Early Adopters of Rogers' model) are more influenced by external sources, which they then convey to less-influential individuals (Thompson 1967).

Crucial in understanding how new products and technologies are diffused in the market is the Bass Model (Bass 1969). The Bass Model predicts whether an adopter of an idea is an Innovator or an imitator depending on the timing of adoption, which in turn depends on the Innovators' flexibility and influence. The model has been widely used in product sales' forecasting, and as of 2004 was one of the top ten most frequently cited papers in the history of *Management Science* (Hopp 2004). Research has found that most often the distribution of the Bass Model is exponential, although it may also have logarithmic distribution. Subsequent research revealed that the Bass Model dovetails very well with Rogers' (1995) diffusion theory, thus the model can be used to predict the adoption category shown in Fig. 1 (Mahajan et al. 1995).

Numerous authors have suggested the importance of originality and uniqueness, especially in production and types of beers, aiming for a niche market representing a small (and growing), yet specialized consumer segment (Bastian et al. 1999). Thus, it is not surprising that craft breweries' volume share of the market has been consistently increasing (Brewers Association 2015b). While craft breweries have surged in economic importance, exploration of innovation in this sector is scarce. The existing literature on this topic has focused primarily on qualitative surveys

(Alonso et al. 2017). As such, this study explores how craft brewing is adopted as an innovation by the brewers themselves, divorced from the consumer end. Using the Bass Model and Rogers' model of innovation diffusion, we seek to understand the growth of the craft brewing industry in Florida, as a preliminary case study.

Methodology

This exploratory study concentrated on microbreweries and brewpubs in Florida, which were members of the Florida Brewers Guild (FBG) as of December 2015. The FBG is open to any Florida craft brewery, and functions as both a social and political connector for craft brewers in the state. The FBG operates as a nonprofit trade association, focused on assisting craft brewers throughout the state of Florida with legal representation and educating the public about the brewing business in Florida (Florida Brewers Guild 2016).

The study population for this research included 87 different microbreweries and brewpubs in the state of Florida that were members of the FBG from 2013 to early 2016, out of a total of 143 craft breweries in existence at that time (see Appendix). We used a combination of qualitative and quantitative data collection methodologies, in early 2013 to early 2016. The qualitative portion included fieldwork doing informal, unstructured, and/or semi-structured interviews, as well as participant observation (Bernard 2011). We conducted 26 interviews with brewmasters, brewers, and employees of breweries, as well as participated in 14 festivals and industry-focused beer events (see Appendix for list). We asked these participants questions about their identity, connections to other brewers and their surroundings, as well as information about any potential barriers to entry, such as politics or economic concerns.

Data Analysis Methodologies

Diffusion Analysis. One of the basic questions of this study examined the spread of craft breweries across Florida in a seemingly uneven spatial pattern. We used several models of innovation diffusion to consider this disparity. These diffusion models predict the number of adopters that will exist in the system at a given point in time. The equation used for the mixed influence model is

$$\frac{\mathrm{d}N(t)}{\mathrm{d}t} = g(t)(m - N(t))$$

In this case, $\frac{dN(t)}{d(t)}$ is the rate of diffusion, $N(t)$ is the cumulative number of adopters of the innovation at a given point in time, m is the ultimate number of adopters, and $g(t)$ is the change agent, or the coefficient rate of diffusion. In a mixed influence model, $g(t)$ is equal to $p + qN(t)$. The equation then becomes

$$\frac{\mathrm{d}N(t)}{\mathrm{d}(t)} = \left(p + \frac{q}{m}N(t)\right)(m - N(t))$$

where $N(t)$ equals the cumulative number of adopters at time t, m is the ultimate number of adopters, p is the coefficient of innovation, and q is the coefficient of imitation (Mahajan and Peterson 1985; Kijek and Kijek 2010). The value of p and q used in this study are the generalizations described by Mahajan et al. (1995), with p value of 0.03 and q value of 0.038. For the value of m, the ultimate number of adopters, this study uses data from a study done by Taylor et al. in 2014 on craft brewing in Florida, which predicted the maximum number of craft breweries in Florida as 550, based on the number of breweries per capita in other states.

We also considered the role of *only* internal influence. This examined the impact of only brewers' communications with each other and without the influence of media. This is valid because preliminary research indicated that craft brewers often have no advertising other than social media, festival attendance, and word of mouth. The background analysis also revealed that brewers become connected to the network (i.e., become a brewer) by first attending homebrewing clubs. Thus, internal influence on craft brewers may be more significant than external influence of mass or social media.

For the internal influence model, the equation becomes

$$\frac{\mathrm{d}N(t)}{\mathrm{d}(t)} = \left(p + \frac{q}{m}N(t)\right)(m - N(t))$$

where the p value is 0.

We used each of these models to see which type of growth (linear, logarithmic, exponential, or polynomial) has the best fit. We used the R-squared (R^2) value to determine the reliability of the trendline. A trendline is most reliable when its R-squared value is at or near 1 (Yamane 1973). A polynomial trendline is a curved line that is used when data fluctuates, for example, for analyzing gains and losses. An exponential trendline suggests that either growth or loss values rise or fall at increasingly higher rate. Thus, either type of trendline might model changes in the dataset.

In order to develop these models, we took information on the foundings (when the brewery opened) of craft breweries in Florida and the foundings of the craft breweries belonging to the FBG, in order to develop a time series of brewery creations throughout the state of Florida. For this part of the analysis, we considered both the FBG and all craft breweries, to see how the model changed depending on inclusion/exclusion of breweries outside the guild. We gathered information on brewery foundings from the

qualitative research, from Walen (2014) and DeNote (2015), as well as from the brewery websites and Facebook pages. One aspect that needed to be specifically addressed was the exact start date of the brewery founding. Some breweries considered their founding date as the day on which they applied for their federal license, others reported their founding date as the day they opened the doors of their taprooms, and still others report the founding date as the day they began brewing beer. For this study, we used the date of founding that the brewers themselves accepted as their founding date.

We also utilized the innovation diffusion analysis theory proposed by Rogers (1995) by giving each brewery an adopter category based on the time of the brewery opening. We assumed 550 total craft breweries in the state of Florida as the maximum, then used the categories by Rogers to separate the breweries into the Innovator categories. The influence models were compared to the Innovator category of the brewery as well as examined in the context of the region in which it was located.

We then entered GIS-based information of brewer location, brewery foundings and the dates of the foundings. Using ArcMap, we constructed a density map illustrating the frequency of brewery occurrence in a given city location using the Point Density tool in ArcMap. This tool calculates the density of a point in a given neighborhood. We used major cities in Florida and estimated that the city boundaries would extend 20 miles from the center. Each item's value is used to determine how many times that point counts. For example, if an item's value is 3, then that point counts 3 times in the density analysis.

Results

Spatial distribution. Understanding the disparity in spatial distribution of craft breweries in Florida and what that means in terms of the craft brewers' connections to one another revealed notable patterns. Of the 87 breweries included in the guild, 69 of those are microbreweries, with 36% in the Central/South region (see Fig. 3). By taking the estimated number of total craft breweries in Florida, 550, and using the percentages of Rogers' adopter categories, there should be 13 Innovators. As of the end of 2015, Florida had still not reached the Early/Late Majority Stages described by Rogers (1995). Thus, all of the breweries studied through 2015, regardless of type, are either Innovators or Early Adopters. Between 1996 and 2009, only 13 craft breweries existed in Florida. These thirteen breweries are considered Innovators (representing 2.5% of 550 total predicted craft breweries), and five of these were brewpubs, or 38% of the Innovator category. Of the 74 Early Adopters (representing 13.5% of the 550 total predicted craft breweries), 70 of these were microbreweries.

Considering spatial expansion, each region is well represented by the Innovators. There was one Innovator in the North (Panhandle) region, four Innovators in the Northeast region, six Innovators in the Central/South region, and two Innovators in the South region (Table 1).

In terms of where the craft breweries appeared, Fig. 4 shows the distribution of craft breweries in the state were most likely to occur in major cities, including the Tampa Bay area, Orlando, Fort Lauderdale, and Jacksonville. As of 2015, density of breweries was indeed concentrated in major city areas. This is in line with previous research, which suggested that metropolitan areas are most attractive for craft breweries.

Figure 4 illustrates where growth occurred and where it did not, and the effective date of founding as well as the type of brewery established, and where. Most of the development is concentrated in coastal areas such as the First Coast (Jacksonville), the Gold Coast (Miami area) and the Gulf Coast (Tampa Bay area) and in the big tourist spot, Orlando. There is little growth initially in areas such as Tallahassee, the state capital; Pensacola; or St. Augustine. Figures 5, 6 and 7 demonstrate the uneven expansion of the breweries across Florida hierarchically.

When examining the diffusion of breweries into Florida, it is evident that entry was slow between the 1990s to the early 2000s. Dunedin Brewery (brewpub) opened in 1996 in Dunedin, Florida (in the Tampa Bay area), making it the first craft brewpub to join the guild. Florida Beer (microbrewery) began in 1997 in Titusville, and the Doble family founded Tampa Bay Brewing Company (brewpub) that same year in the Tampa Bay Region. Other brewpubs and microbreweries followed suit, albeit slowly. The distance was also considerable between some of these breweries, such as Brewzzi (brewpub) in Boca Raton, Florida and the next brewery founded, McGuire's Irish Pub (brewpub) in North Florida. 650 miles lie between these two breweries.

Growth remained slow between 2003 and 2011, with breweries beginning to "fill in" throughout the state. Brewery startups from that time increased to only 23 (Fig. 6). Again, these new breweries were concentrated in larger cities. It is during this time that the microbrewery began to gain in popularity in the state.

From 2011 to the end of 2015, Florida witnessed a virtual explosion of growth (Fig. 7). The number of craft breweries in the guild nearly quadrupled in that time. After overcoming what appeared as an initial resistance to the adoption of the

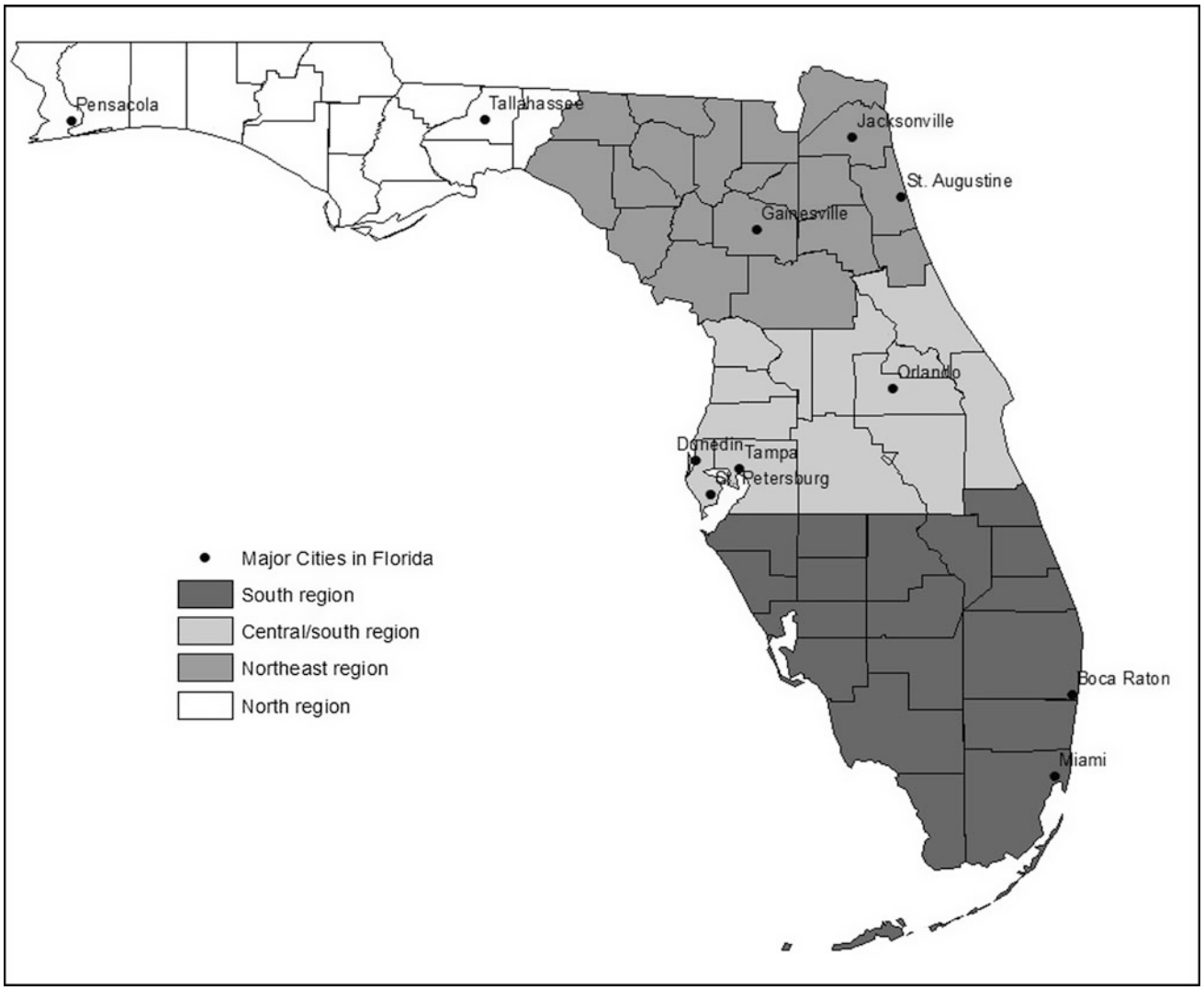

Fig. 3 Regions and key cities of Florida

Table 1 Distribution of craft breweries per region, with adopter categories (adapted from Rogers 1995)

Region	# of microbreweries	# of contract brewers	# of brewpubs	# of regional brewers	# of Innovators	# of early adopters
North	4	0	2	0	1	5
Northeast	11	1	4	0	4	12
Central/south	37	2	4	1	6	38
South	18	1	2	0	2	19

innovation (craft brewing), growth occurred rapidly throughout the state. By 2015, Florida had a vastly expanded craft brewing landscape.

By comparing these figures, diffusion in the state of Florida *did* follow a hierarchical diffusion pattern. In 1996, there was a single FBG member in existence in Tampa. By 2003, craft breweries expanded to other major Florida cities, including the Miami/Boca Raton area, the Tampa Bay area, Orlando, and Jacksonville. By 2011, there was continued expansion via contagious diffusion and the neighborhood effect. Growth continued in larger cities, but by that point, expansion had spread outward from the initial innovation center (the bigger cities) into mid-sized areas of Florida such as Gainesville and the Fort Myers/Naples area. By the end of

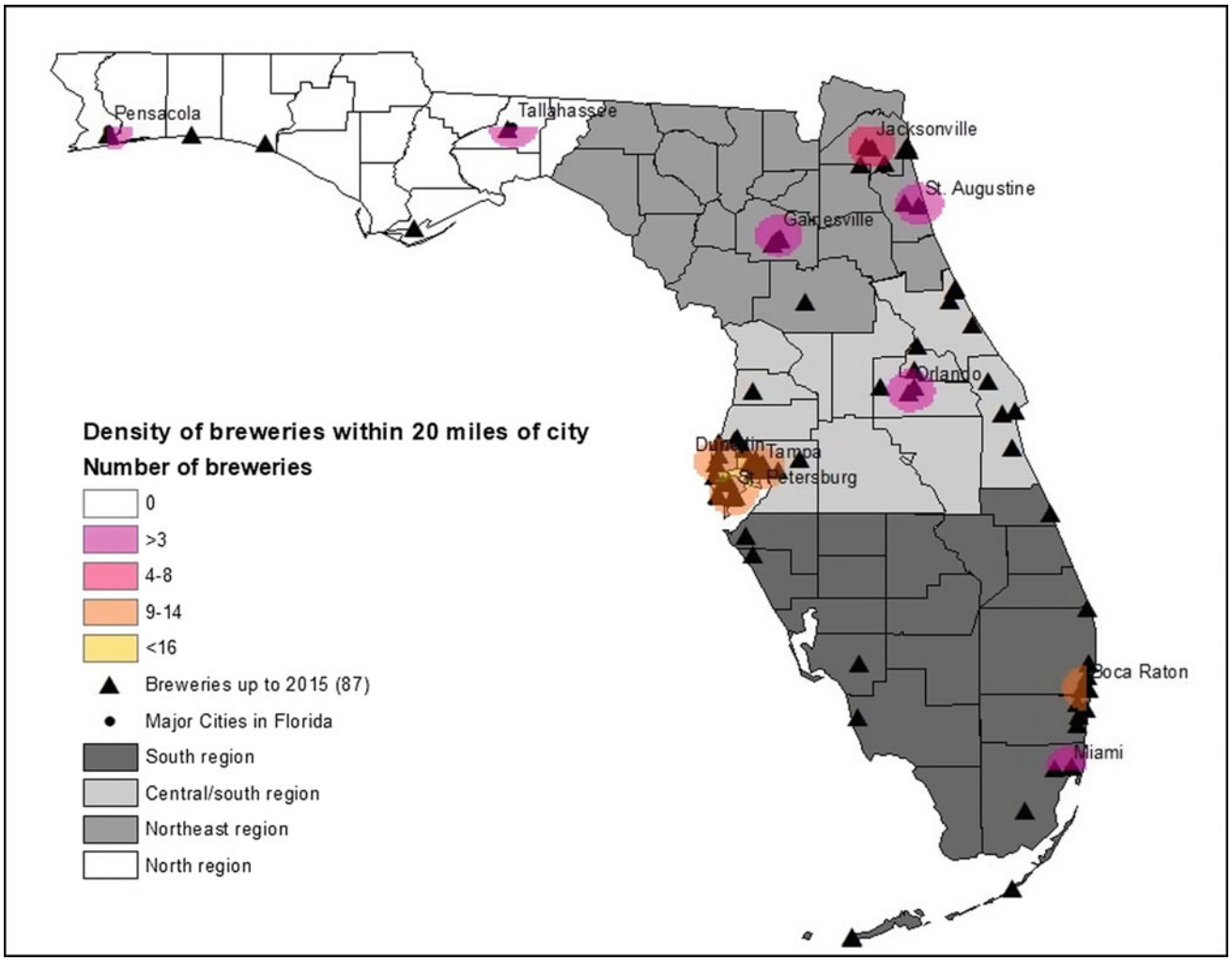

Fig. 4 Density of Florida craft breweries

2015, craft breweries had expanded even further throughout the state (Fig. 7).

Diffusion Models. Figure 8 represents the reality (versus a model) of growth in Florida of number of craft breweries founded in Florida (that participated in the Florida Brewers Guild) from 1996 to 2015. This growth was nearly flat until 2011. However, after 2011, craft brewery foundings doubled, then nearly quadrupled by the year 2015. An exponential trendline fitted to the graph had an R^2 value of 0.9078, while the R^2 for the polynomial trendline is 0.8984. In this case, the exponential growth trendline represents the best match model (the R^2 value is closest to 1). If one compares this graph to the S curve mentioned above (see Fig. 2), growth also appears to adhere to that pattern.

Figure 9 shows the mixed influence model of brewery diffusion. The R^2 for the polynomial trendline is 0.9103, while the R^2 for the exponential trendline is 0.7659. In the mixed influence model, predicted growth starts out higher than what actually occurred. In 1996 (time period 1), there was a single FBG brewery founding. The mixed influence model predicts 17 brewery foundings for this time period. Notably, in 2011 (time period 16), the model comes close to predicting reality. The model predicts 24 brewery foundings; in reality, 23 breweries were founded at this time. After 2011, actual growth expands more rapidly than the mixed influence model predicted. The polynomial growth curves fit well with the mixed influence model; however, actual growth of Florida breweries fits better with exponential growth trends, which gives rise to the sharp change seen in Fig. 8. Thus, the mixed influence model might not be a good representation of the observed growth rate of Florida craft breweries.

Figure 10 shows the graph of the internal influence innovation diffusion model. The internal influence model

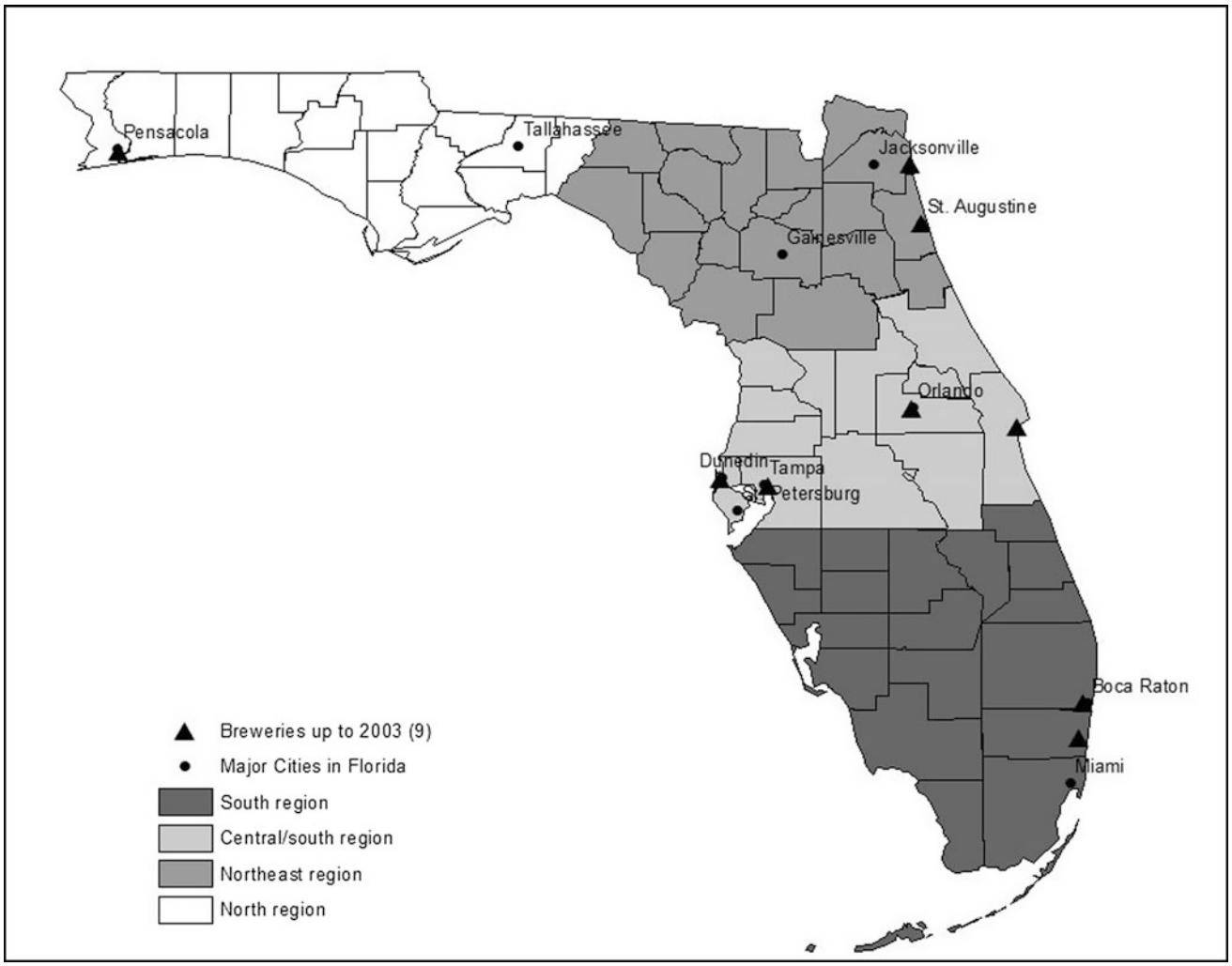

Fig. 5 Craft breweries in the state of Florida up to 2003

appears to more accurately predict the initial spread of craft breweries with slow growth. However, actual craft brewery growth expanded with much more exponential growth than the internal influence model predicts. The R^2 value of the polynomial trendline is 0.9065, where the exponential trendline's R^2 value is 0.9086, which is not significantly different from one another. In an internal influence model, there is some force acting internally on the individuals in the system that drives them to adopt an innovation. In this model, much as in reality, growth was initially slow and rapidly accelerated in the number of adopters.

In looking at the three results together, neither the mixed influence nor the internal influence models capture the rapid growth rate that *occurred* in the Florida craft beer scene through 2015 (Fig. 8). Figure 11 compares the three graphs, and considers both an exponential trendline and a polynomial trendline for the observed FBG growth rate vs the models. While the polynomial trendline provides a good fit, with an R^2 of 0.8978, the exponential growth line still gives a better fit, with an R^2 of 0.9053. The polynomial line still provides the best fit for both the mixed influence and internal influence models.

Florida does include numerous other breweries that were not part of the FBG during the study period. Diffusion of an innovation, such as the idea of craft brewing, would not per se be limited by inclusion in the Guild; rather, continued ideas and new innovations might pass along through Innovators in a geographic space. Figure 12 shows the actual growth rate of all craft breweries in the state of Florida, versus the internal influence model and the mixed influence model. The observed growth rate of all Florida craft breweries again appears to have an exponential growth rate. The R^2 for the exponential trendline is 0.9325, indicating once more a sharp increase. The mixed influence model again is a

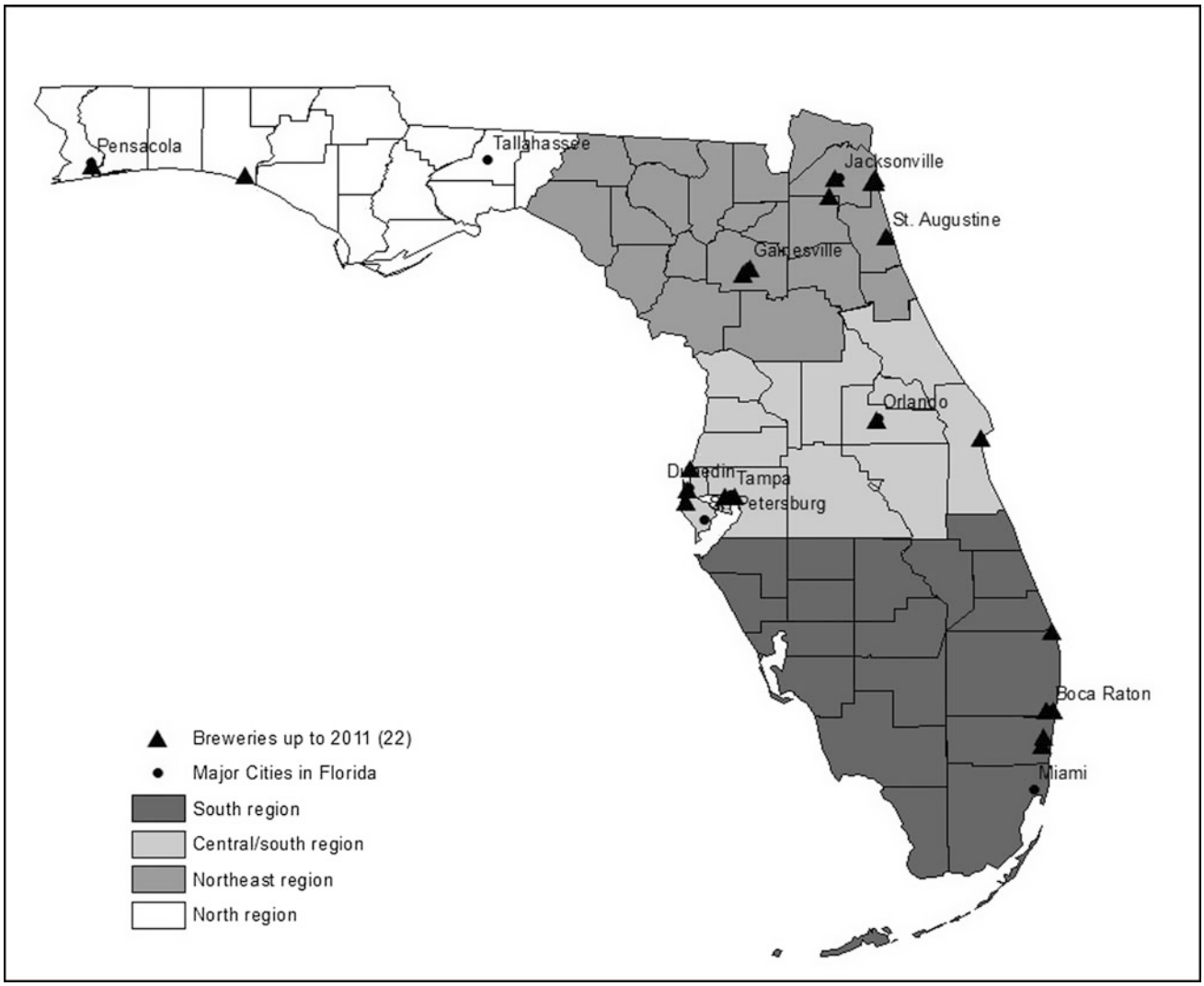

Fig. 6 Craft breweries in the state of Florida up to 2011

more gradual rate of change, with the R^2 for the exponential trendline of 0.8438. The internal influence model fits better for the exponential growth curve seen with all of the Florida craft breweries included, with an R^2 of 0.9273. With all of the craft breweries included in the increase rate, the super-exponential expansion is even more apparent (Fig. 9). The numbers of craft brewery foundings sharply increased relative to either of the models. In addition, as Fig. 12 illustrates, the growth trends to the right, with little to no growth, to then a rapid upward trend.

Qualitative data. Interviews with FBG brewers revealed interesting patterns about identity, economics, and political concerns of Florida craft brewers. Of the 26 interviewees, a few commonalities emerged (Table 2). See Appendix for the list of brewers/breweries interviewed.

There are a series of archetypes that fit the background of the Florida craft brewer: the scientist, the artist (often a chef), and the business person. For example, Darwin's Brewery themes their space around food and their tagline states, "Chef inspired". Matt from Darwin's Brewery mentioned that they even work with the local restaurant Indigenous to create chef inspired creations.

Often these categories overlapped and repeated throughout the investigation. These archetypes hold true even for individuals who the researcher only observed rather than interviewed. Many of the interviewees commented on these facts. For example, Todd of Tampa Bay Brewing Company commented that "…Brewers…we are chemists, chefs, mechanics…why? Because we love beer!" Ron of Veterans United mused that he had met science driven brewers, like

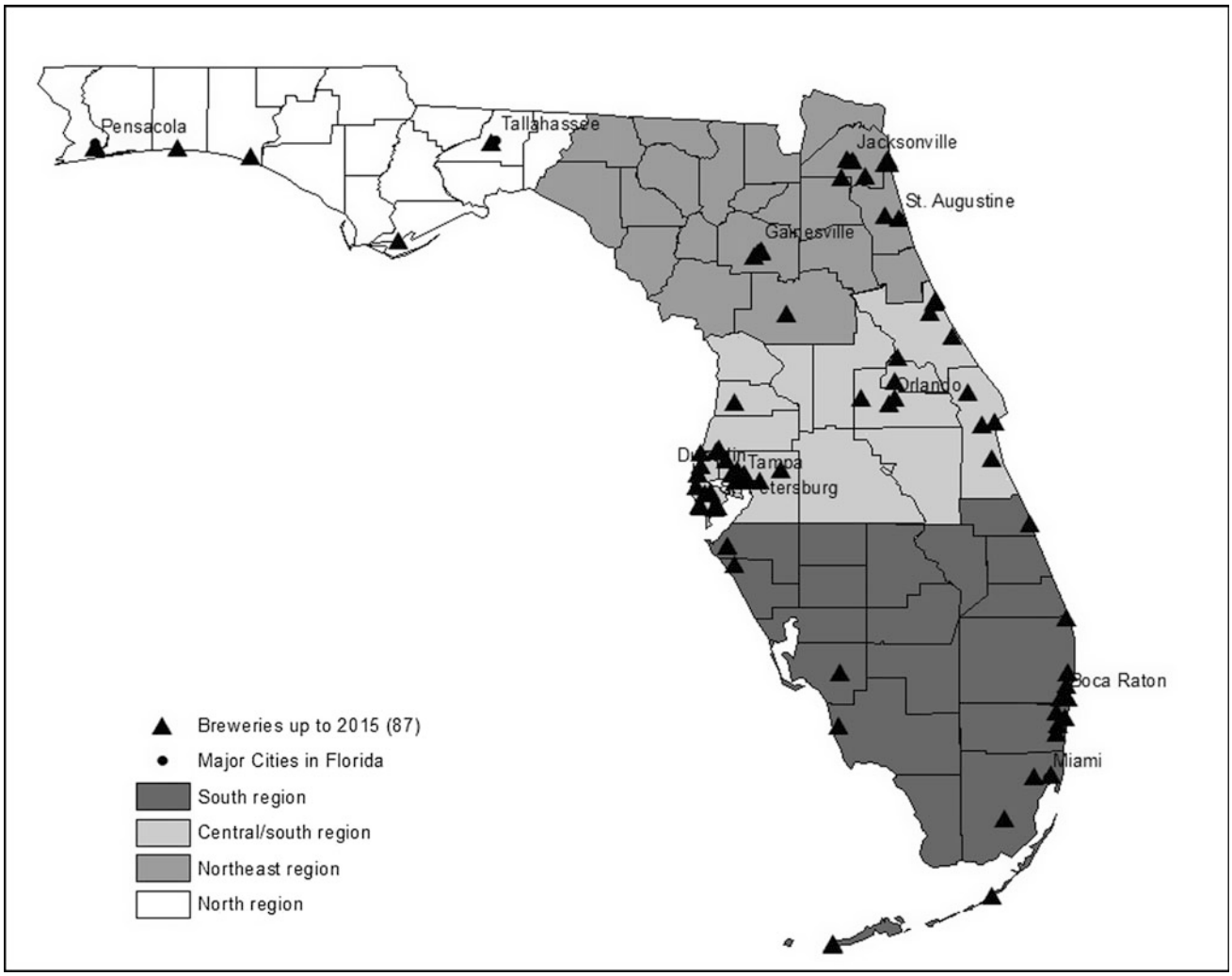

Fig. 7 Craft breweries in the state of Florida up to 2015

himself, and artistic brewers. His head brewer, James had "…artistic flair…so we balance each other out."

In this sample, respondents tended to be males in their late 20s to mid-50s. There were a few female respondents, and as such worth noting. Of the females, four were part of a husband and wife team that created the brewery. Many of the brewers mentioned their wives and how instrumental they were in starting the brewery. Several of the brewers shared a similar story of a home brew system given to them as a gift from their wife that propelled them into the craft brewing world.

Of the people interviewed, 69% of the interviewees indicated they had a college degree of some kind. Craft brewers appeared aware of the role of identity in their community, as a driver of economic upturn as well as gentrification. Yet perhaps this educational background made them less uncomfortable than they might have been otherwise; they acknowledged that they held these innovative roles in changing cityscapes and the economy around them, and had notable thoughts on why craft beer has proven so pervasive in the American cultural landscape.

By far, the most often talked about point in the interview process involved the concepts of community and collaboration. This included the intra-brewery collaborations, and the connections with the larger community around the brewery. These community members did not even need to necessarily love beer; rather just understand the role the craft brewery can play in aiding the community, such as with Community Redevelopment Agencies (CRA).

In terms of frequency of mention, during the interviews, brewers mentioned the word or concept of "community" the most of any other term. 100% of brewers mentioned the

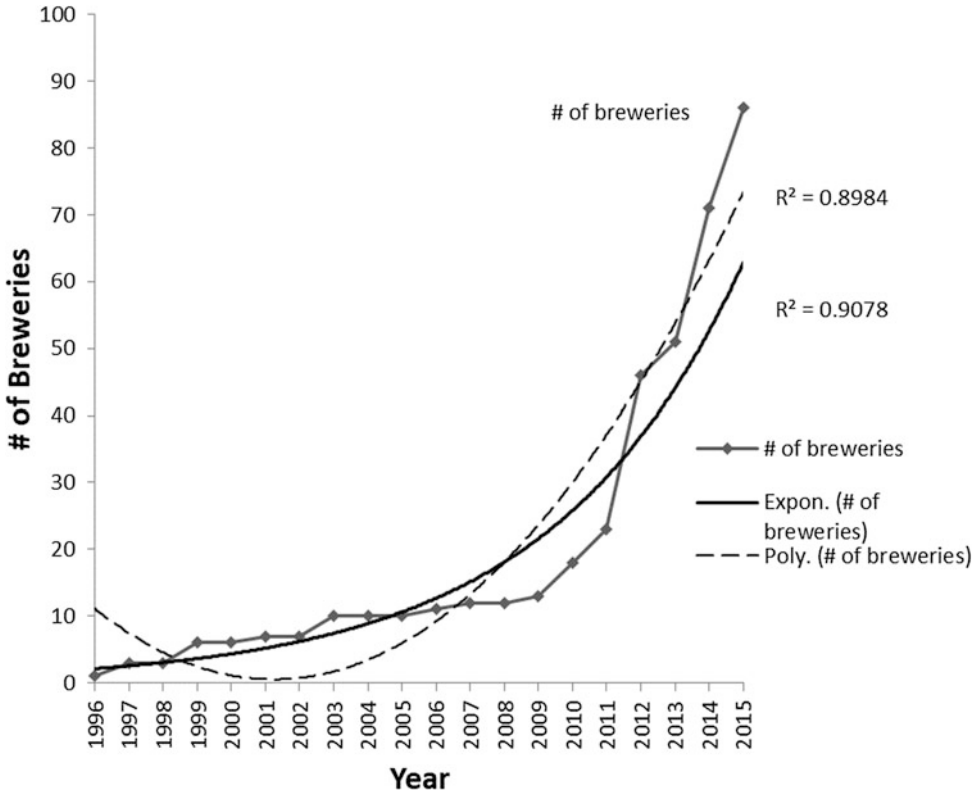

Fig. 8 The growth rate of Florida craft breweries that are also members of the Florida Brewers Guild, comparing exponential and polynomial trends

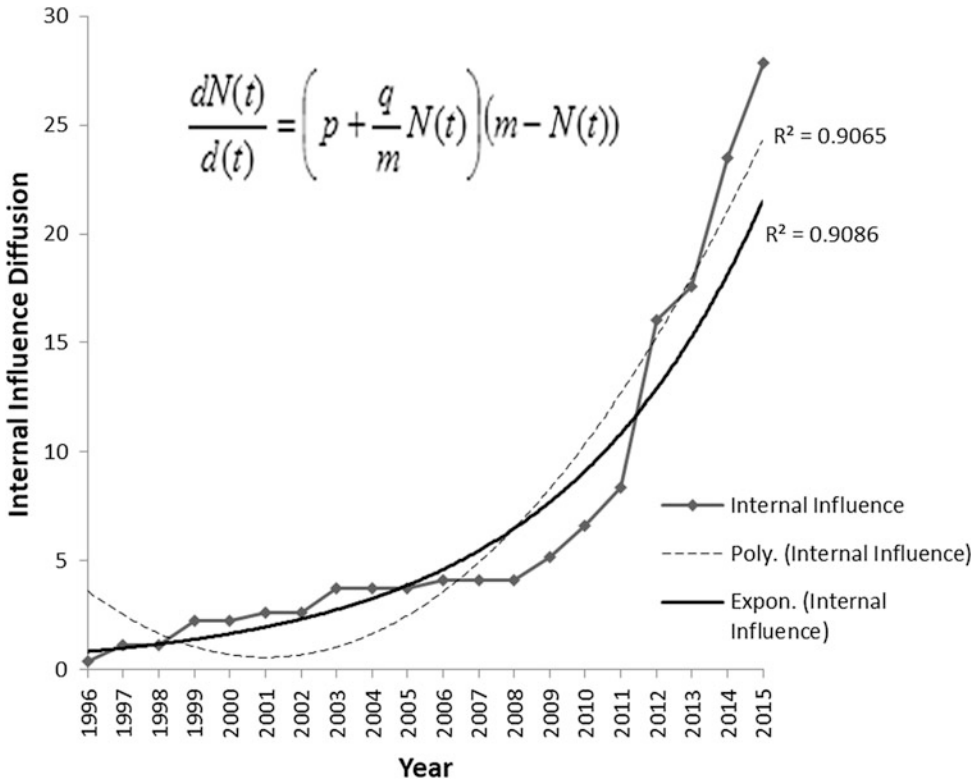

Fig. 9 Graph of the mixed influence model of innovation diffusion (equation shown)

Table 2 Frequency of Interviewee responses

Categories	Attributes	Frequency of response
Identity		
- Gender	• Interviewee's identifiable gender	85% male 15% female
- Background	• Homebrewer	65%
	• Chef	15%
	• Engineer (worked in this field prior to starting brewery)	35%
	• Microbiology (specific to beer production)	7%
	• Training in Germany	15%
	• Apprenticeships (formal or informal)	23%
	• College degree (of any type)	69%
Collaboration	• With other brewers	62%
Community	• Mention of the word or concept of community	100%
	• Collaboration with community	65%
Politics	• State level (growler size fight and taproom issue)	31% (answers dependent on date of founding-some after passing of new laws, see discussion)
	• Zoning/licenses from city/county	54%
Place	• From the area	37%
	• Attended school	52%
	• Other	11%

"craft beer community." This included customers, both local and nonlocal, supporters of the business, and other breweries. When the brewers mentioned community, often it involved invocation of place. Leigh from 3 Daughters said "The geography of beer is very comparable to wine in the 80s. We had 4 wines, and it went to 40–50 wines. We really started spreading our wings…. We want to be a great regional brewery, and leaders in the community."

When asked about barriers, Florida's laws were frequently mentioned, as were zoning issues. Results are mixed about whether breweries have city or county support. In many cases, the city or county business development or CRA's aided the craft brewers, only to have zoning boards or permitting boards hold up the process. Some cities and counties offer much assistance and guidance to the breweries. For example, the City of Oakland Park worked with Funky Buddha to create a Culinary Arts district. John of Funky Buddha stated that this project

> …was years in the making. The redevelopment assistant was looking to create a thriving downtown. They had a hard time attracting someone…they needed to bring in someone who can sustain themselves. K.C. (the owner of Funky) met with the RMA at a meeting in D.C. They decided on a location that night!

In addition, the presence of other brewers greatly aids the process. This is twofold: the other, more established brewers clear the way for newer brewers to enter the area, and aid the newer brewers in terms of legal or political issues surrounding the process. For example, Matt of Pinellas Ale Works (PAW) offered that "…Other breweries were free with their information…. always offering to help when they can. In fact, the already established breweries' reception was the more the merrier!" Matt stated that in general, the city and county were overall "…Positive. People have to do their job, so we just have to follow the rules and be patient."

In many places, breweries face political and legal bumps in the road on the way to establishment. For example, Tito of Biscayne Bay Brewing shared that the City of Doral was "difficult…there are not many other craft breweries here… they asked us to put fire sprinklers under the tanks! This makes it a long process, but we can't fight it." He also shared, however, that "…A lot is happening in Doral…we came in at the right time." Ron of Veterans United shared that Jacksonville "is the fastest growing area for craft beer, but the city is not necessarily supportive. One group is: Visit Jacksonville. They understand tourism, but the government is stuck in the 1970s and 1980s." He stated though,

"Jacksonville and the state…it's a lot like wine. Attitudes take a while to change." Julie of Pair O' Dice said, "Cities don't understand breweries…they equate them to a restaurant." 26° Yonathan also expressed this same frustration when choosing a space in Fort Lauderdale, that the city wanted them to attach food to the brewery. Food, it seems, makes beer a safer risk.

To establish themselves, and in order to navigate the tricky process of city, county, and federal permitting, licensure, and zoning issues, brewers join the Florida Brewers Guild (FBG). When asked about why they chose to join the Guild, overwhelmingly brewers stated they joined because they wanted legal representation and help. Devon of 7venth Sun served on the board of the FBG, and noted a study done by the Economics department at the University of Florida, created specifically to explore the economic and political issues facing FBG members (Taylor et al. 2014). She stated that the Guild helped to "centrally unify brewers. It gives us a stronger and louder voice. We can get more specific…about government regulations." This was an opinion shared by most, for example, Reimy of Brewzzi stated that "…the Florida Brewers Guild helps us have a voice in legislation." The Guild also provides resources for new brewers as Christine from Marker 48 shared, "They have tons of resources, and can help you meet other brewers…it's a way to connect."

Discussion

Craft brewing in Florida follows a different sort of diffusion than the traditional models of internal influence or mixed influence explain (Figs. 9, 10, 11 and 12). These models suggest that either only internal sources of influence matter to the diffusion of an innovation, or that a combination of external influences and internal influences affect adoption rates, respectively.

Rogers (1995) diffusion analysis study assumes that Innovators/Early Adopters in a system do so because of the influence of external sources such as television or social media (external influence). However, interviews with Florida craft breweries suggest that internal influences such as homebrewing clubs had more influence on the spread of craft breweries than any type of advertising. Homebrewing clubs, or any propagator of innovation, represent channels by which information moves on the landscape. Innovation diffusion depends on the passing along of information to new, potential adopters of that innovation. Once the actors in the system adopt the new innovation, in what way do they remain cohesive?

Craft brewing is different than technological innovations, for example, because craft brewing is inherently a more social act than adopting a new computer technology. Although one might adopt the practice of craft brewing, new

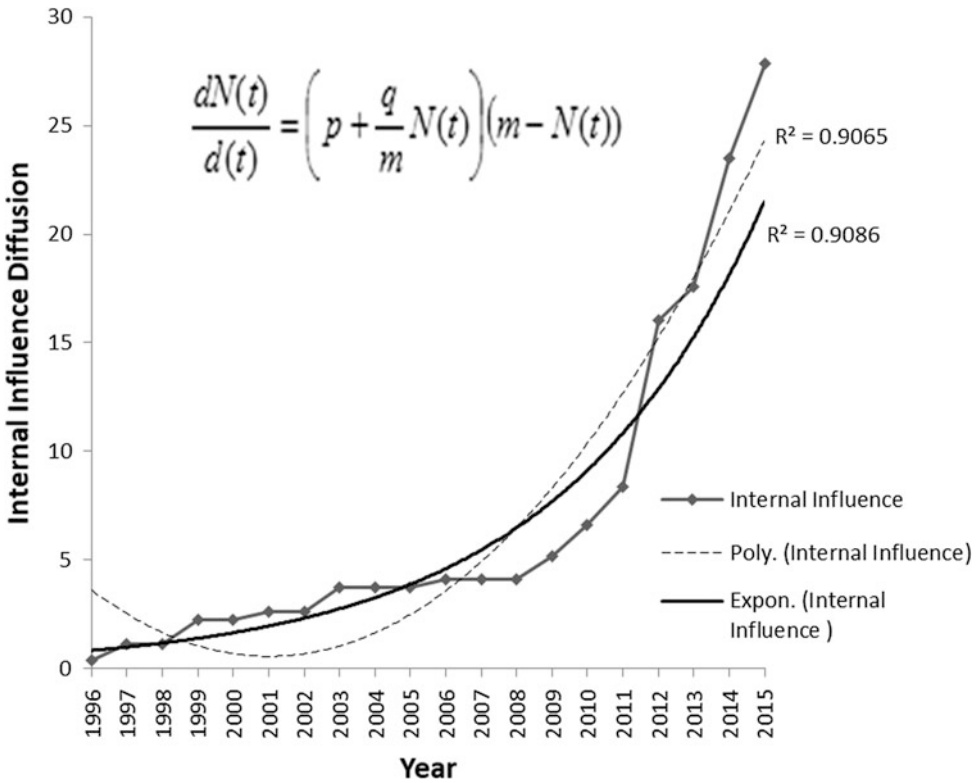

Fig. 10 Graph of the internal influence model of innovation diffusion (equation shown)

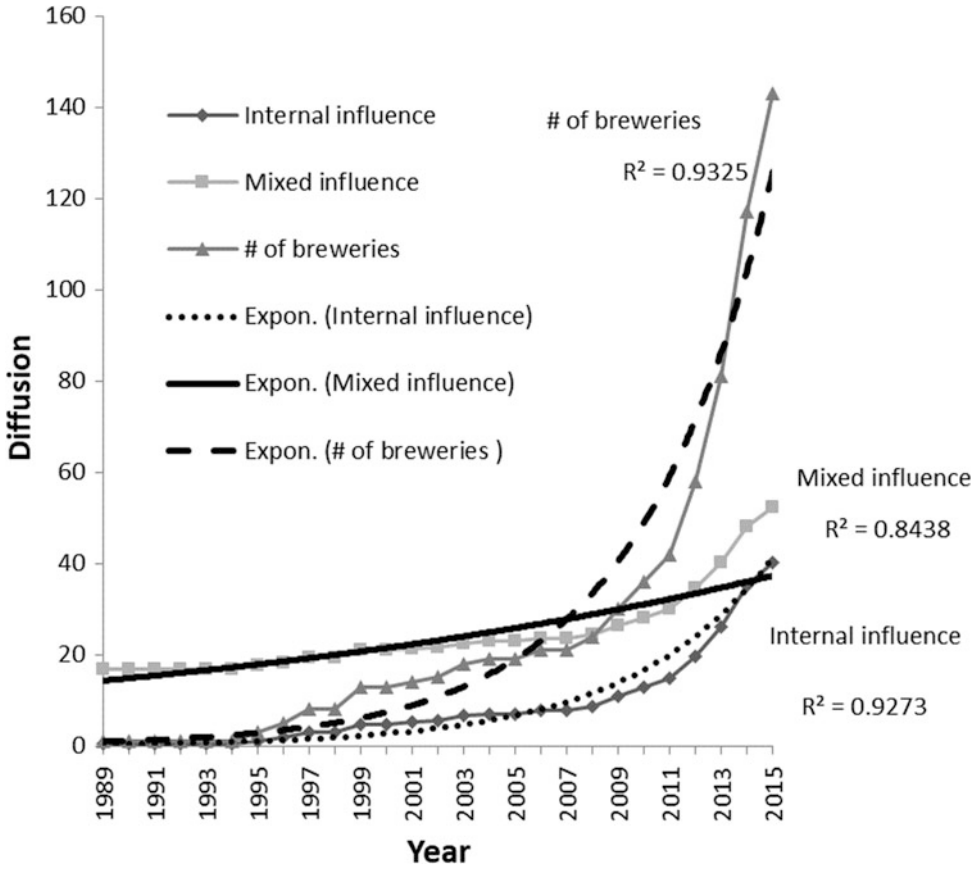

Fig. 11 Graph comparing the innovation diffusion models and the reality of growth of FBG breweries

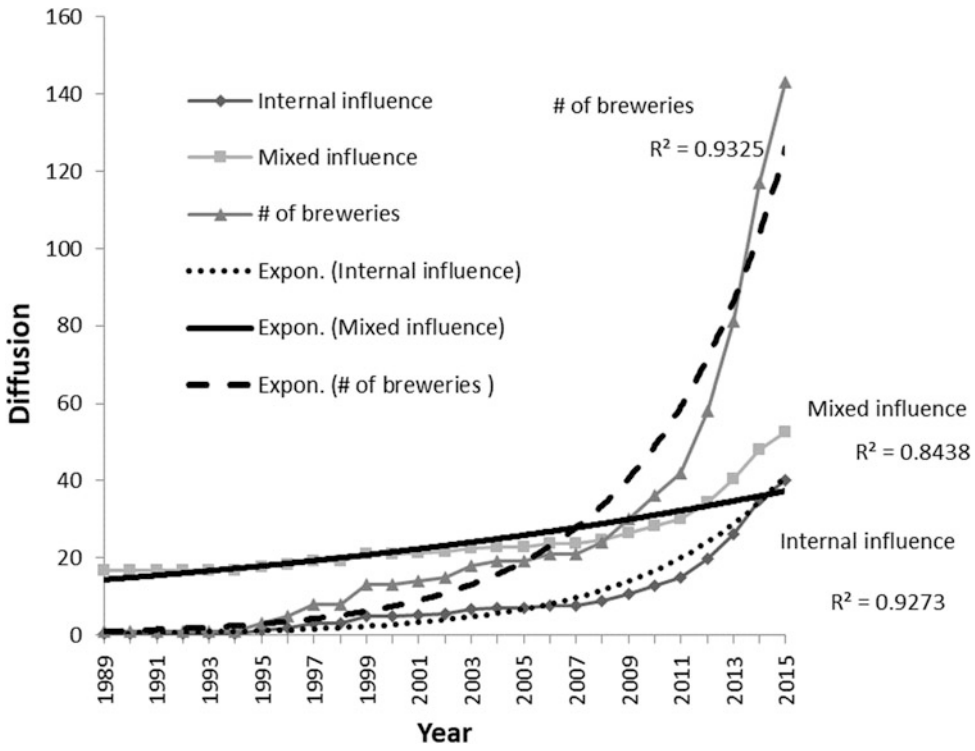

Fig. 12 Graph comparing observed FL brewery foundings to innovation models, with the exponential trendline shown

styles, techniques, ingredients, and methods continually change. Unlike most diffusion studies focused on marketing a new product, craft brewing does not per se involve purchasing new items, but instead needs a source of novelty, or the interjection of new ideas into the system. In addition, barriers to entry, as well as other hindrances to entry, such as licensing and permissions from federal and local officials, may prohibit adopters from fully embracing craft brewing, which in this case means actually opening a craft brewery.

Comparing the actual growth rates of craft breweries to Rogers' (1995) model of innovation adopters, this initial lag may reflect reluctance on the part of the adopters to take a risk, a lack of exposure to the Innovators, or the need to learn new skills and/or gain social acceptance for the innovation before the innovation adoption will accelerate. It is also possible that other factors, such as economic or political barriers, prevent adopters from fully accepting the innovation.

Florida craft brewery expansion is driven by a process that involves learning from others, which is often slow to expand, but once adoption occurs, may accelerate at a fast pace (Young 2009). It is also probable that this process is a combination of complex factors which are not immediately apparent from the diffusion models. With knowledge gleaned from interviews and observations of craft brewers in Florida, the external model or even the mixed influence model makes less sense than the internal influence model, that it is needed for social acceptance and learning that led to the initial lag in craft brewing expansion. External influence gives knowledge of the craft brewing industry, such as a festival or from a brewer's website. However, advertising for craft brewers on any platform is rare, other than social media, which is free. Word of mouth, more than advertising or mass media, helped spread craft brewing across Florida's landscape.

The diffusion of craft brewing resembles that of the classic hybrid corn diffusion model done by Ryan and Gross (1943). This adoption by direct observation led to an initial slow growth followed by rapid expansion. The hybrid corn model suggests that innovation requires a few adopters to make a risky decision to adopt a new process, who then serve as models for the people in the social system around them to first learn from, and then to make a rational choice to adopt the practice. "People will want to see how it works for others over a period of time before trying it themselves. These are variously known as social learning models or social learning models based on direct observation" (Young 2009, p. 1900). In the Florida craft brewing movement, some of the same forces acted on the adoption of craft brewing as an innovation. Rather than observing risk in the adoption of the process, craft brewing inherently involves a learning curve. This may indicate the strength of internal influence and social learning (i.e., learning by imitation). Thus, the expansion of the Florida craft brewing tradition fits with the hybrid corn model, an initial exposure to the innovation, followed by an observation and learning period, and then rapid adoption.

The study of craft brewers in Florida revealed that although the early innovation process involved perhaps experimentation on one's own, eventually the individual would either join a homebrewing club, visit homebrew shops, or volunteer to work at a brewery as an informal apprentice in order to eventually found their own brewery. For example, observation at beer festivals demonstrated this transition from homebrewer to business owner. Many brewers begin brewing as homebrewers, and then compete at homebrewing competitions, which often occur simultaneously with festivals celebrating craft beer. Most brewers do not begin alone; rather, they participate in these festivals/competitions, and then attract the attention of other brewers and investors. Larger, influential brewers try the homebrewers' beers, offer advice, critique, or even jobs/apprenticeships at the more established breweries. Festivals offer both verbal, and nonverbal visual clues as to who is important in the network, what elements of place attachment get shared, and the ways to go from homebrewer to established brewery. Even if brewers had some exposure to the concept of craft brewing, often they need and desire additional training to make marketable products. Additionally, the process of craft brewing involves time, patience, and physical labor. Personal choice, as well as a desire to connect with others in general, may have influenced the decision to connect with other like-minded individuals. Festivals act as points of contagion and as points of reinforcement and encouragement. Homebrewers brew in their kitchen or garage, participate in homebrew competitions at a festival, then get the attention of larger brewers and/or the community, and from here "get the brewery bug," i.e., the desire to open their own physical brewery. Larger brewers often help, offering encouragement and guidance, especially those in closer geographic proximity.

External influences of a region may create barriers to the diffusion of craft brewers in Florida, which might also explain why there was a long lag in craft brewery expansion. Florida did have legal restrictions that prevented distribution of beers of different sizes. These bottle size laws in Florida, as well as the three-tier distribution laws, limited growth for Florida breweries, and brewers "had to scratch and claw for every gain they made (DeNote 2014, p. 11)." Because Florida has a three-tier system, beer cannot be sold directly

Table 3 Innovator qualities (adapted from Rogers 1995)

Innovator category (Rogers 1995)	Qualities
Innovators	High status; financial stability; risk taker
Early adopter	High social status, advanced education; maintain central position in communications
Early majority	Take up innovations considerably after Innovators and early adopters still maintain higher social status and contact with early adopters
Late majority	Approach new innovations with more caution and skepticism than previous adopters may have little social status and lack in opinion leadership
Laggards	Tend to stick to traditions and resist change

from the producer to the consumer. In this case, even another craft brewer is considered a consumer. In addition, for decades, packaged beer in Florida came in just three sizes—12 oz, 16 oz. or 32 oz. However, the law changed in 2001, with an unintentional result: it permitted beer to be sold in any container up to a quart, or a gallon or more—but not in between (Scherberger 2012). The introduction of Lee's law changed that picture to an extent, which removed the restrictions of container size. However, the three-tier system remains in place (Table 3).

With some of the external restrictions removed, innovation had more ability to spread throughout Florida. Recall the five categories of Innovators:

When looking at the qualities of the Innovators and Early Adopters, the diffusion pattern makes more sense. Early Adopters tend to have the maximum amount of estimation leadership, as well as using the astute implementation of innovation to sustain dominant communication (Rogers 1995). Innovators may take risks and have financial solvency, but Early Adopters have the power of sway over ideas and diffusion. When influential breweries enter the landscape, they dominate the network, i.e., Cigar City. Cigar City might represent an individual/brewery that sparked other brewers to follow suit and begin a craft brewing business. This seems to be partially due to Cigar City's strong effect on other brewers. 23% of respondents said that they participated in an apprenticeship. Participants most often stated that this apprenticeship was with Cigar City or with someone who had previously worked at Cigar City.

In Florida, the earliest Innovators are people who came from a brewing tradition, with some dependence on food production. The first two brewpubs established themselves geographically in places of potential, on opposite sides of Tampa Bay. The initial Innovators of craft brewing in Florida were most likely brewpubs, such as Dunedin Brewery, which reflects a strong connection to Scotland, and Tampa Bay Brewing Company, whose founders, the Doble family, had run a pub in England prior to settling in Tampa. Indeed, Dunedin is the sister city to Stirling in Scotland. This also included McGuire's Pub in Pensacola, and A1A Ale Works in Jacksonville. Brewpubs might reasonably be seen as having more financial stability (another business to fall back on if brewing fails) as well as high status (connections elsewhere).

However, what the Florida beer scene seemed to need was a brewery that had a central position in communicating with other breweries. These were more likely to be microbreweries than a brewpub, but Florida had few microbreweries until 2003. A long lag occurred between the founding of Florida Beer Company (the earliest microbrewery) in 1997, to the founding of Orlando Brewing in 2003. During this time, homebrewers began forming clubs to participate in social learning, thereby diffusing ideas. But risk-taking was necessary to leap from homebrewing to starting a microbrewery. While Rogers (1995) describes the earliest Innovators as risk-takers, with connections to scientific sources and financial stability, these earliest Innovators in Florida emerged slowly. It was not until roughly 2009 when Florida experienced the end of the Innovator period (thirteen craft brewers). Brewpubs by nature have only on-site production with no off-site sales, thus while these brewpubs represented the desire of brewers for craft products to gain further attention across such a large landscape, brewers needed a way to distribute. As Joey Redner shared in DeNote's (2014) book, the early days of Florida craft brewing centered on brewpubs, which, while good, could not distribute off-site. Consequently, the Florida beer scene needed microbreweries. Possibly what occurred when influential brewers such as Cigar City entered the scene is what Robertson (1967) called the two-step model. Inherent in Rogers' schema is that Innovators are outside social norms, representing just 2.5% of the total. Rogers' inferences suggest that Innovators are peripheral members of the community, at least at first. Communication with other brewers, though, can reduce risk,

especially if one begins in a social club or as an apprentice. With the introduction of socially integrated persons who are in a more advantageous situation than others to engage in communications and to innovate, these ideas are more likely to circulate.

Conclusion

From initial observations of craft brewery gains in Florida, we noted that Florida's growth rates moved in a very uneven fashion, from a period of stagnation to rapid expansion. With this observation in mind, we examined why this might be the case and what, if any, barriers might exist in the growth of craft breweries in the state to cause such an uneven diffusion. We hypothesized that the unique features of the craft brewing industry, that of strong interpersonal connections, economic strategies of participation and collaboration, as well as the geography of politics and identity, served as both the means and a hindrance to that diffusion. We further posited that it was the ability of the craft brewer to not only take a risk, but also to exert influence over others, that helped move the craft brewing tradition throughout the state.

Future research. This research represents only one state in the United States, and consequently may not apply to other regions. While intriguing, this is preliminary data only, and further research is necessary to add substance to the conclusions. As of the conclusion of this work, there was little to no data about innovation diffusion and the craft brewing industry, thus this is a question that should be explored in the future. Size of the brewery (in volume of beer produced or in sales) was not necessarily factored into this study, and forthcoming work is needed where this variable is considered. The types of craft brewery (microbrewery, brewpub, contract brewer, or regional craft brewer) were included in the study, but future work might run the diffusion models on each type individually instead of including all types together.

The authors also made use of certain assumptions which, with further investigation, may not hold true. For example, the value of p (innovation coefficient) and q (imitation coefficient) used in this study are generalizations described by Mahajan et al. (1995), with p value of 0.03 and q value of 0.038. However, in most cases, diffusion-based models will develop their own number for the value of p and q. For the value of m, the ultimate number of adopters, this study assumed the ultimate number of craft breweries (which includes all categories of craft breweries) in Florida as 550, based on the number of breweries per capita in other states. More work is necessary to validate these numbers.

Appendix

List of Florida Brewers Guild Members as of the end of 2015

Name	Type	Date of founding	Adopter category (per Rogers 1995)	Interviewed?
Region 1: North (Panhandle)				
McGuire's Irish Pub	Brewpub	2003.04	Innovator	No
Pensacola Bay	Microbrewery	2010.11	Early adopter	No
Grayton Beer Co	Microbrewery	2011.05	Early adopter	No
Props Craft	Brewpub	2012.05	Early adopter	No
Proof brewing	Microbrewery	2014.05	Early adopter	No
Oyster city	Microbrewery	2014.08	Early adopter	No
Region 2: Northeast				
Ragtime Tavern	Brewpub	1993.06	Innovator	No
A1A Ale Works	Brewpub	1999.01	Innovator	No
Orange Blossom	Contract	2003.01	Innovator	No
Swamp Head	Microbrewery	2009.12	Innovator	No
Pinglehead	Brewpub	2010.03	Early adopter	No
Engine 15	Microbrewery	2010.07	Early adopter	No
Intuition Ale Works	Microbrewery	2010.11	Early adopter	No
Alligator Brewing	Microbrewery	2011.4	Early adopter	No
Green Room	Microbrewery	2011.8	Early adopter	No
First Magnitude	Microbrewery	2012.03	Early adopter	No
Aardwolf Brewery	Microbrewery	2013.03	Early adopter	No
Veterans United	Microbrewery	2014.08	Early adopter	**Yes**
Infinite Brewing	Microbrewery	2015.03	Early adopter	No
Zeta Brewing	Brewpub	2015.04	Early adopter	No
Central 28	Microbrewery	2015.07	Early adopter	No
Ancient City	Microbrewery	2015.08	Early adopter	No
Region 3: Central/South				
Dunedin	Brewpub	1996.10	Innovator	Yes
Florida Beer	Microbrewery	1997.01	Innovator	Yes
Tampa Bay Brewing Co	Brewpub	1997.02	Innovator	Yes
Orlando Brewing	Microbrewery	2003.05	Innovator	Yes
Saint Somewhere	Microbrewery	2006.11	Innovator	No
Cigar City	Regional Craft	2009.01	Innovator	Yes
Barley Mow	Microbrewery	2011.11	Early adopter	No
7venth Sun brewing	Microbrewery	2012.01	Early adopter	Yes
Darwin's on 4th	Microbrewery	2012.01	Early adopter	Yes
Southern Brewing	Microbrewery	2012.05	Early adopter	No
Two Henrys	Microbrewery	2012.05	Early adopter	No
Three Palms	Microbrewery	2012.07	Early adopter	No

(continued)

Name	Type	Date of founding	Adopter category (per Rogers 1995)	Interviewed?
Florida Avenue	Microbrewery	2012.07	Early adopter	No
Hourglass Brewing	Brewpub	2012.08	Early adopter	No
Rapp Brewing	Microbrewery	2012.09	Early adopter	Yes
Big Storm	Microbrewery	2012.01	Early adopter	No
Green Bench	Microbrewery	2013.09	Early adopter	No
Intracoastal Brewing	Microbrewery	2013.09	Early adopter	No
Bugnutty	Microbrewery	2013.09	Early adopter	No
Ormond Brewing	Microbrewery	2013.09	Early adopter	No
Brew Bus	Contract	2013.10	Early adopter	Yes
Pair O' Dice	Microbrewery	2013.10	Early adopter	Yes
R Bar	Brewpub	2013.10	Early adopter	No
Wild Rover	Microbrewery	2013.11	Early adopter	No
3 Daughters Brewing	Microbrewery	2013.12	Early adopter	Yes
Motorworks	Microbrewery	2014.01	Early adopter	Yes
Tomoka Brewery	Microbrewery	2014.01	Early adopter	No
New Smyrna Beach Brewing	Microbrewery	2014.01	Early adopter	No
J Dub's	Microbrewery	2014.02	Early adopter	No
Six Ten	Microbrewery	2014.02	Early adopter	No
St. Pete Brewing	Microbrewery	2014.04	Early adopter	No
Redlight Redlight	Microbrewery	2014.04	Early adopter	No
Daytona Beach	Microbrewery	2014.06	Early adopter	No
Orchid Island	Microbrewery	2014.08	Early adopter	No
Coppertail	Microbrewery	2014.09	Early adopter	No
Escape Brewing	Microbrewery	2014.09	Early adopter	No
Stilt House	Microbrewery	2014.10	Early adopter	No
Angry Chair	Microbrewery	2014.11	Early adopter	No
Playalinda	Microbrewery	2014.11	Early adopter	No
Mad Beach	Microbrewery	2014.12	Early adopter	**Yes**
Crooked Can	Microbrewery	2015.03	Early adopter	No
Carrollwood	Contract	2015.06	Early adopter	No
Marker 48	Microbrewery	2015.11	Early adopter	**Yes**
Pinellas Ale Works	Microbrewery	2016.01	Early adopter	**Yes**
Region 4: South				
Native Brewing	Contract	1999.01	Innovator	No
Brewzzi	Brewpub	2001.05	Innovator	Yes
Funky Buddha	Microbrewery	2010.02	Early adopter	Yes
Tequesta	Microbrewery	2011.10	Early adopter	Yes
Due South	Microbrewery	2012.05	Early adopter	Yes
Naples Beach	Microbrewery	2012.11	Early adopter	No
Ft. Myers Brewing	Microbrewery	2013.02	Early adopter	No
Wynwood	Microbrewery	2013.09	Early adopter	**Yes**
Barrel of Monks	Microbrewery	2013.11	Early adopter	No
Saltwater	Microbrewery	2013.12	Early adopter	No
Bone Island	Microbrewery	2014.01	Early adopter	No
Biscayne Bay	Microbrewery	2014.09	Early adopter	**Yes**
Florida Keys	Microbrewery	2015.01	Early adopter	No
J. Wakefield	Microbrewery	2015.01	Early adopter	No
Miami Brewing	Microbrewery	2015.01	Early adopter	Yes
Copperpoint	Microbrewery	2015.05	Early adopter	Yes
Concrete Beach	Microbrewery	2015.05	Early adopter	No
Bangin' Banjo	Microbrewery	2015.09	Early adopter	No
Waterfront Brewery	Brewpub	2015.09	Early adopter	No
Accomplice	Microbrewery	2015.11	Early adopter	Yes
26°	Microbrewery	2015.9	Early adopter	Yes

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Low Gravity on the Rise: A Sociocultural Examination of Low Alcohol Beer in the United States

7

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Abstract

Although the trend in craft brewing over the past several decades has been toward bigger, bolder brews, often positioned as a specific counterpoint to bland, light-colored, mass-distributed macro brands, "small", low gravity, and nonalcoholic beer varieties are on the rise. Using examples from the United States (US), this paper explores the increasing demand for low- to no-alcohol beer, surveying the sociocultural motivations for, and contemporary patterns of, the production and consumption of "near" or "session" beer. Based on a review of scholarly and popular literature, social media mentions, and regulatory restrictions, this paper identifies and describes the factors driving the growing demand for low gravity beers, such as: dietary and health preferences, regulation and taxation, mounting awareness and acknowledgment of the dangers of drinking and driving, and an overall decrease in social stigma associated with non-alcoholic beverages. In the competitive craft brewing industry, it is imperative that producers understand their markets. Indeed, the benefits of expanding low- to no-alcohol beer production could be significant for breweries of any size. This paper explores both opportunities and challenges associated with the rise in popularity of low- to no-alcohol beer, and traces the contours of who stands to gain from growth within this particular beer segment.

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Introduction

Why Low- to No-Alcohol Beer?

Similar to stating a preference for decaffeinated coffee, expressing a preference for low- to no-alcohol beer might provoke a reaction akin to "What's the point?" However, there are reasons a person might prefer decaffeinated beverages to their caffeinated counterparts, just as there are reasons a person might prefer low- to no-alcohol beers over their alcoholic counterparts. For example, consider individuals who want to engage in a prosocial activity but *cannot* drink alcohol (due to alcohol intolerance or potential pharmaceutical interactions), *will not* drink alcohol (for religious or personal reasons), seek to *moderate* their intake either for the sake of health or fitness (athletes, health-conscious individuals, those who may be or are pregnant), or seek to retain the ability to be responsive or responsible (such as designated drivers, heavy machinery operators, or "on-call" workers) (Brányik et al. 2012; Sohrabvandi et al. 2010; Thompson and Thompson 1996).

While the US is known for its mass-produced/distributed, relatively tasteless, light-colored lagers (Dighe 2016; Reid et al. 2014) the US beer scene took a decisive turn toward smaller production/distribution, heavier (i.e., higher gravity) beers that were bolder and had more character in the late twentieth century, beginning in the mid-1980s (Acitelli 2017; Hindy 2014). And yet, motivated by factors like those listed above, there has been an influx of popular calls for and accounts of either drinking "lighter" beers and/or not drinking at all (Blenkinsop 2016; Hamdan 2017; Singh 2017). Within the craft beer segment, another trend is also visible: so-called "session" beers—those that are lower in alcohol and, thus, suitable for longer drinking sessions (Bernstein 2013)—have become firmly established in the market (Holl 2012; Gordon 2016).

As a result, brews that are typically low(er) in alcohol by volume (ABV) , such as gose, Helles (lager), Kölsch, saison,

pilsner, and "session" beers of all types (including, commonly, session IPAs) are increasingly visible, available, and popular both in pints and in pop media print (Gordon 2016; Wagner and Metzger 2017). For example, sales of the "session IPA" style increased 450% from 2013 to 2014 (Bernot 2015). But even as we notice more beers that are lower alcohol in popular journalism stories and in bottle shops and taprooms around the nation, we wondered: *How prevalent is this trend?* And, if present, *how can the trend be described and characterized?*

Methods

Our study is comprised of two related efforts: starting with a literature review and analysis of secondary data, we discuss *the history (and future) of low alcohol beer*. Our approach is multi-pronged and cross-disciplinary, and consists of a survey of popular, journalistic, and academic writing on the topic of low- to no-alcohol beer, including blog reviews, news articles, podcasts, peer-reviewed literature, industry reports, and an examination of the US regulatory landscape. In particular, our analysis of the US regulatory landscape as related to beer and ale, investigates how historic and contemporary regulation shape beer production and consumption. This part of our study aims to answer the following questions:

- What is the history (and future) of the brewing industry, especially as related to low alcohol beer?
- How does historic and contemporary regulation shape beer production and consumption across space and place?

Second, we conduct a preliminary analysis of geographic social media data related to low- to no-alcohol beers to determine if any *geographic or temporal patterns* of public interest are evident. Given the perceived rise in the discussion of low- to no-alcohol beer in scholarly and popular culture articles, we hypothesized this trend may also exist in geotagged social media.[1] An earlier attempt to map "beer cyberscapes" demonstrated that such digital geographies of alcohol are possible (Zook and Poorthuis 2014), leading us to similarly investigate spatial and temporal footprints of low- to no-alcohol beer. This part of our study centers on the following questions:

- What terms do people use when talking about (low alcohol) beer on social media?
- Are there any temporal or geographic patterns associated with the mention of low alcohol beer on social media?

To answer these questions, we extracted and analyzed the main themes present in mentions of low alcohol beer and beer in general in a sample of geographic social media data, using Twitter—a popular, public social media platform—as our data source, and mapped the spatial and temporal footprint of the same dataset. To obtain this sample, we first compiled a list of keywords commonly used to describe low- to no-alcohol beer (we use the term "low alcohol" to refer to this entire category of beer throughout the rest of the paper for brevity) based on our collective professional expertise, personal discussions with academic experts, a survey of the scholarly and popular literature, and a qualitative survey of the language used by breweries. Our final list of terms consisted of the following items: "session beer", "session ipa", "session ale", "gose", "berliner", "kolsch", and "beer", with the latter included as a control keyword to capture interest in beer in general. We then used Google Trends to determine the time of the year associated with periodic spikes in Google search queries (a possible proxy for general public interest) involving the keywords from our list. Using the Twitter Developer tool (Twitter Developer 2017), we obtained a 95–100% sample (Twitter API throttling rates vary with the overall fluctuations in the volume of data, with peak Twitter usage times associated with higher rates of throttling) of all geocoded tweets produced in the US during the similar time period (July 10 to July 31, 2017).

The rest of the paper presents the results of our analysis, with each individual component discussed in order.

Background

History of Beer and Brewing in the US

Alcohol is woven into the social fabric of modern life; numerous texts recount the religious, political, economic, and cultural roles that wine, beer, and spirits have played in the establishment and maintenance of civilizations through time (Burns 2004; Gately 2008; Standage 2005). Although the close relationship between fermentation and civilization is not necessarily problematic—after all, "…alcohol is a colorless liquid that has, in itself, no material, cultural, or moral value"—the role of alcohol in society is complicated by the sometimes contradictory values ascribed to it over time and space (Phillips 2014, p. 1).

In the US, part of the complicated history of beer includes a geographically dispersed, successful, regionally- to locally based beer scene (Acitelli 2017), followed by a period of Prohibition that devastated the industry (Acitelli 2017). Data collated by the Brewers Association (2016) shows that after

[1]Researchers are tapping into pre-existing or "found" materials like social media to spatially map data for exploratory analysis, each source providing specific opportunities (albeit accompanied by a host of unique problems) (Pauwels 2019).

Table 1 "Big" versus "small" beer. *Produced by Author Myles*

	BIG beer	SMALL beer
Size(/quantity) of production and/or distribution	Large production and/or wide distribution	Small production/distribution
strength (ABV Percent/gravity)	Low ABV	High ABV

a peak in US brewing at the end of the nineteenth century, there was a near-complete disappearance of breweries in the country, notably from 1920 to 1932. However, the repeal of Prohibition in 1933 precipitated a noticeable uptick in these establishments (2016b). And, as regulations across the country were loosened or removed altogether, a time of rapid increase in production and consumption of beer emerged (Poelmans and Swinnen 2012).

As social drinking became popular and normalized[2] again following Prohibition (Acitelli 2017), American brewers like Budweiser specialized in, and uncovered a latent market for, light-colored, low(er)-ABV beer (Dighe 2016). Of course, the renormalization of social drinking didn't occur in one fell swoop. Instead, it was through a combination of technological improvements and the expansion of the geographic market in the late 1800s and early 1900s (Howard 2014). For example, improvements to the pasteurization process (yielding longer storage potentials), transportation and distribution infrastructure (trains, automobiles, highways), and packaging (bottles, tin cans, aluminum) all contributed to the decline in the number of small brewers. Incidentally, those improvements also led to the growth of breweries that could effectively leverage technological developments to scale up their operations, thus increasing production and consumption (Acitelli 2017; Howard 2014).

This burst of production and consumption—especially in an economic context of size-focused business growth—led to major industry consolidation (see Table 1), birthing large-scale producers, or "big beer" (Acitelli 2017; Howard 2014). The emergence of "big beer" was part of a rapid and widespread market consolidation occurring in the US and global beer industry (Howard 2014), wherein large corporate conglomerates (the two largest being AB InBev and MillerCoors) brewed large-batch, widely distributed, largely homogenous, well-known products (Acitelli 2017; Bland 2017; D'Aversa 2017; Howard 2014; Koch 2017; Reid et al. 2014).

From Consolidation to Specialization: Moving from Small to Big and Back Again

Despite the large number of microbreweries today, the bulk of industry production and sales (in part because of distribution patterns) is still tilted toward the big conglomerates and against craft brewers (Koch 2017; Davis 2013).[3] An analysis of brewers from 1947 to 2015 indicates that as craft breweries[4] increased in number, the macro-brewers decreased in number (Elzinga et al. 2015). And yet, "big beer" producers still hold the bulk of the consumer market in terms of sales and production by volume. Dighe (2016) argues the overall preference for light beer in the US is long-standing; even during the colonial beginnings of the country, even when ales were predominate, "small" (i.e., lower alcohol) beer was both popular and utilitarian. Spanning the centuries that followed the creation of the nation, lighter-colored, low alcohol beer has dominated the US market, with the market share for more complex beers not exceeding 13% over time (Dighe 2016). Current figures show the market share of craft breweries at 12.2% by volume in 2016 in the US (Shoup 2017), echoing the long-standing predominance of larger corporate breweries in the country.

As comprehensive as the consolidation and homogenization of beer in the US was, that homogenization ultimately led to the contemporary "craft beer revolution" (Hindy 2014), which re-popularized local production and consumption. Whether long-standing or not, contemporary craft brewers are on the offense against the trend toward corporate lagers and they have targeted the large conglomerates that produce them (Hindy 2014; Take Craft Back nd; Taylor 2016). Aligned with this offensive effort, in 2017 the US-based Brewers Association initiated a "… tongue-in-cheek crowdfunding campaign to raise $213 billion to purchase Anheuser-Busch InBev…to draw attention to the lack of transparency and growing disparity in marketplace influence between small and independent brewers

[2]Even during Prohibition, alcohol was consumed, however, such products were consumed and made at home; the repeal of Prohibition returned alcoholic beverages to the public arena (Phillips 2014; Burns 2004; Gately 2008).

[3]There were a total of 5301 operating breweries in the US in 2016 (Shoup 2017), a number that increased to 6000 in 2017 (Rosen 2017; Brewers Association 2017).

[4]Here, we use "craft breweries" to reference breweries that brew craft beer, an umbrella category that includes nanobreweries, microbreweries, brewpubs, contract breweries, regional breweries, and large breweries that brew craft beer, such as the Boston Beer Company (Kleban and Nickerson 2011).

and Big Beer" (Brewers Association 2017). The crowdfunding campaign garnered $3,846,780 in pledges, but was ultimately unsuccessful, collecting less than one percent of one percent of their goal (0.001806%), demonstrating just how big "big beer" is (Take Craft Back nd).

Nevertheless, despite a clear disparity in size and financial power of "big" versus "small" breweries, the rise of the craft brewing industry is notable (Rosen 2017). In 1983, there were 14 craft brewers in the US (Elzinga et al. 2015). By 2017 the total number of brewers reached a record high of more than 6,000 (Brewers Association 2017). And, as indicated by the continued buy-up of successful microbreweries by macro-brewers seeking a foothold in the craft sector, small-scale breweries have the corporate power players worried (D'Aversa 2017; Davis 2013; Taylor 2016; Wagner and Metzger 2017). Based on these metrics, there has been a small, but notable, movement in the United States away from the homogenized, low alcohol, "yellow fizz" of the mid- to late twentieth century (Reid et al. 2014; Tremblay et al. 2005) to a "refined" craft beverage that is more colorful, more flavorful, and more alcoholic (Choi and Stack 2005).

The "revolution" in craft beer (Hindy 2014) is characterized by its sophistication and specialization; the segment produced a dizzying array of brands and styles and moved the market toward "bigger" (meaning bolder, stronger) brews (Bernstein 2013). This led to a paradox in the industry such that large-scale producers (so-called "Big Beer") are known for making "small" (low in alcohol and, ostensibly, low in flavor) beer and smaller breweries are known for making "big" (more flavorful, higher in alcohol) beers (Table 1).

As craft breweries specialized and large breweries (and corporate conglomerates) grew bigger, a wholesale industrial divide between "big" and "small" emerged (Howard 2014; Watson 2015). However, whether "big" or "small", the literature is clear: the craft beverage brewing industry in the US "has displayed tremendous growth" (Mathews and Patton 2016, 275) and has "exploded in the market" (Kline et al. 2017, p. 2), such that the US "…has gone through a complete beer makeover" over the past 30 years, including transformations in production, distribution, and consumption patterns. The massive growth of the industry inspired innovation in production related to quantity and quality, focusing on the taste of the beer itself (Elzinga et al. 2015; Hindy 2014; Choi and Stack 2005). To succeed in the industry during this era of innovation meant breweries had to either get bigger or get more focused (Watson 2015):

> Extreme brewery consolidation…caused…an opportunity structure: large firms became so consolidated and focused on the center of the marketplace that…smaller firms (in this case small, independent breweries) [came] along to succeed in niches [the big breweries] were forgetting (localized products, diverse styles, etc.)

As such, beer in the US has become "sophisticated" and breweries can "offer innumerable and exclusive varieties of their product[s]" (Mathews and Patton 2016, p. 276), facilitating continued growth and differentiation. Improving the quality and increasing the availability of low alcohol beers can be seen as part of that continued growth and differentiation (Euromonitor International 2017).

The Scholarly Pursuit of Beer

Academic and popular texts (Burns 2004; Gately 2008; Hindy 2014, Patterson and Hoalst-Pullen 2014b; Peyton 2015; Standage 2005) describe the rise of beer in the US—both literally in terms of production, and figuratively in terms of cultural significance. This movement is evident in the ownership structure changes, production practices, distribution models, and national consumption patterns over the past several decades (Howard 2014). And although scholarship surrounding the patterns of beer production and consumption began in the 1990s (Withers 2017), scholarship related to beer and brewing has been further legitimized as the complex geographies of beer and their implications have become more clear (Patterson and Hoalst-Pullen 2014a).

The rapid growth of craft breweries has prompted popular consternation and scholarly curiosity regarding both the consolidation of breweries into large corporate conglomerates (Batzli 2014; Elzinga et al. 2015; Howard 2014) and the socioeconomic implications of alternative producer proliferation (Kline et al. 2017; Patterson and Hoalst-Pullen 2014b; Reid and Gatrell 2017). Scholarly efforts explore the rapid growth of the craft brewing segment of the beer industry (Reid et al. 2014; Mathews and Patton 2016; Withers 2017), the proliferation and differentiation of producers (Patterson and Hoalst-Pullen 2014b), attendant increases and variation in consumption (Kline et al. 2017), and impacts to economy and environment (Reid and Gatrell 2017; Schnell and Reese 2014; Slocum et al. 2018). Contemporary beer scholars also investigate the implications for localized place names in craft brewing (Fletchall 2016; Schnell and Reese 2014), the practice of using of local and regional inputs (Myles and Breen 2018; Schnell and Reese 2014), and the economic and community impacts (for better or worse) of craft brewing in places large and small (Kline et al. 2017; Slocum et al. 2018; Toro-González et al. 2014; Myles 2020).

Table 2 Typology of beers based on relationship of original to final gravity. *Adapted from Lars Meyers (2009)*

	Low FG	High FG
Low OG	Dry, light-bodied, low alcohol beer (crisp lagers, wheat beers, etc..)	Dry, full-bodied, high-alcohol beer (e.g. Abbey ales)
High OG	Sweeter, full-bodied beer with high(er) alcohol potential, though not always high in alcohol	Brews that are likely sweet, but may or may not be well fermented (rarely seen in a commercial product)

Part I: On the History (and Future) of Low Alcohol Beer

The Gravity of Gravity: How (and Why) to Characterize Beer by Density and/or Alcohol Content

The alcohol by volume (ABV) of a beer is important for both regulatory and consumption purposes, as alcohol content is one common mechanism for controlling the availability and use of alcoholic products; as such, ABV is a required figure on most beer labels and brewers must conform to established legal limits (see Part II). From the consumer perspective, knowing ABV values can inform beer choice, allowing consumers to gravitate toward higher or lower alcoholic brews to their preference (Bernstein 2013).

Related to ABV is the concept of beer "gravity", a measurement that expresses the relative density of the liquid compared to water. ABV is calculated by measuring the difference between the "original gravity" (OG) and "final gravity" (FG) of a beer (Bernstein 2013; Brewer's Friend 2017; Burnham et al. 2017; Lars Meyers 2009). ABV (alcohol content), gravity units (density measure), and bittering units (determined by the amount and efficiency of included hops) are used to describe essential characteristics and qualities of a given beer (Bernstein 2013; Burnham et al. 2017).

The gravity of a beer is telling: It conveys information about the style, body, and sweetness of a beer (Brewer's Friend 2017; Lars Meyers 2009). Lars Meyers (2009) describes the typical characteristics that result from various differences between high or low original and final beer gravities, ranging from dry, light-bodied beers to sweet, full-bodied ones and how that relates to alcohol content (Table 2).

In short, the differences in alcohol content of various beers is about more than just alcohol; it is also about taste, refining production, and the overall pursuit of a quality brew that matches the brewer's vision and consumer expectations. Indeed, popular accounts of low alcohol beer in recent years note that, "…big brewers see strong potential for weak beer" (Blenkinsop 2016). Small-scale brewers in the US are jumping on board as brewers and consumers seek to make "teetotaling trendy"[5] (Blenkinsop 2016; Hamdan 2017; Singh 2017). It seems discerning craft beer connoisseurs are beginning to give the segment a try; a recent reviewer even went so far as to provide a list of "10 Not-Bad NonAlcoholic Beers" (Goldfarb 2017).

Furthermore, low alcohol beer in the US follows a centuries-long brewing tradition that tended toward accessible (i.e., not overpowering), relatively low alcohol, "small beer" during the pre- and (especially) post-Prohibition eras (Dighe 2016). In the US, beer was (and is) seen as "…a temperance beverage, consumed for different reasons and deserving different treatment from intoxicating drinks like whiskey and rum" (Dighe 2016, p. 755). Consumers in the US are beginning to (re)appreciate that beer without (or with less) alcohol in it shares similar benefits to alcoholic beer, enabling moderate (or non-)drinkers to participate in the craft beer movement (Wellbeing Brewing Company 2017). Perhaps, after "30 years of moving in one direction"—away from "undifferentiated, light-colored, low-flavored beer" and toward dark, hoppy, and/or high-alcohol beer—"the palate pendulum is [now] swinging back in the other direction" (Rotunno 2015).

Thus, if the improved taste and real or perceived health benefits of low alcohol beer can be effectively conveyed to potential consumers (and those who influence them[6]), low alcohol and alcohol-free beer could be a small, but lucrative, production niche (Blenkinsop 2016; The Thinking Drinkers 2017; Thompson and Thompson 1996). Euromonitor International (2017, p. 8) reports that the low alcohol segment "saw robust growth" since 2012, including 5% growth in 2016 alone; they continue, noting that low alcohol, "…is set to be the second fastest growing beer category between 2016 and 2021," following dark beers, the only segment currently growing faster. Although the low alcohol segment is still tiny compared to its alcoholic counterpart(s), especially in the US (Euromonitor International 2017), it is arguably still worthwhile to consider the implications of the growing potential for low alcohol beer. This is especially true given the economic and cultural significance of the beer industry in the country from its inception through contemporary times.

[5] "Teetotaling" is a colloquial term that refers to a complete abstinence from alcohol.

[6] Thompson and Thompson (1996) find that social ("subjective") norms are a strong indicator of consumption.

On the Health and Economics of Low Alcohol Beer

The Brewers Association noted that small and independent craft brewers contributed $67.8 billion to the US economy in 2016 (2017a). And although these numbers provide a sense of the scope of the economic impact of craft brewing, the overall impact of the beer industry is perhaps less clear than proffered by industry spokespeople and enthusiasts. The production and sale of alcohol can be beneficial culturally and economically (Reid and Gatrell 2017; Slocum et al. 2018); however, the consumption of alcohol can also result in a number of socially problematic behaviors and outcomes. Alcohol is a mind-altering substance that has been a part of human life and culture for millennia (Gately 2008; Phillips 2014). While a small volume of alcohol generally gives the drinker "a sense of well-being, and further drinking can lead, in turn, to feelings of euphoria, relaxation of social inhibitions," ingesting the substance in larger quantities can lead to a "loss of balance and coordination, slurred speech, vomiting, and loss of consciousness," including, sometimes fatal alcohol poisoning (Phillips 2014).

The externalities of alcohol use (and abuse) include lost work days, salary, or overtime; the cost of health and wellness treatment; and a burden borne by the public for expenses related to accidents and criminal justice proceedings (Cesur and Kelly 2014). Such public and private expenditures are not always factored into economic calculations promoting the value of alcohol-based industries (Cesur and Kelly 2014). In addition, the patterns and implications of industry growth vary from the micro- to macrolevel (Cesur and Kelly 2014), such that even when microlevel economic and community impacts are notable (Kline et al. 2017; Slocum et al. 2018), the larger social or economic costs may be obscured.

Economic calculations are further complicated by the fact that national economic structures and international globalization influence consumer behaviors in a nonlinear fashion: as per capita income increases, people tend to drink more beer within low- to middle-income brackets, but as income rises beyond the middle-income bracket, demand for alcohol falls (Colen and Swinnen 2016). Colen and Swinnen (2016, pp. 191–192) attribute the inverse u-shape relationship of alcohol-to-affluence to "an increased awareness of and concern about the potential negative health effects of alcohol consumption," similar to other income-dependent awareness-changes related to other health-related consumption behaviors, such as smoking and obesity.

Attention to health and other social consequences of drinking are also noted in behavioral literature. Thompson and Thompson (1996) investigated intentions, attitudes, subjective norms, and behaviors of respondents as related to nonalcoholic beer consumption through the theory of planned behavior approach and data from the United Kingdom (UK). They noted that "the market for low alcohol and alcohol-free beers soared" in the 1980s due to increased attention to the problems associated with drinking and driving and changing preferences related to overall health, including increased attention related to calorie content and the risks over-consumption (Thompson and Thompson 1996, p. 35).

Indeed, Thompson and Thompson (1996) as well as Euromonitor International (2017) identify health as one of the two most important drivers for participants in their study ("expectations of taste", being the other important factor). The explicitly health-promoting element of (low alcohol) beer is also noted. For example, Brányik et al. (2012, p. 494) describe the health benefits of consuming moderate amounts of beer and note that alcohol-free beers can, "…claim [the] beneficial effects of healthy beer components with a simultaneous effect of the lower energy intake and [a] complete absence of [the] negative impacts of alcohol consumption." Globally, low alcohol and nonalcoholic beers are also "… positioned as an alternative to soft drinks, which are traditionally high in sugar" (Euromonitor International 2017, p. 8). Additionally, low alcohol beer is made with a small and identifiable—and often non-artificial—list of ingredients, which plays into the product being perceived as a healthy (or healthier) alternative to fully alcoholic and soft (but otherwise highly processed) drinks (Euromonitor International 2017).

On Taste, Production, and Attracting Consumers

Reflecting the burgeoning interest in, and presence of, low alcohol beer (Brányik et al. 2012; Sohrabvandi et al. 2010; Thompson and Thompson 1996), attention has been directed at improving the production and quality of low alcohol products. The brewing process can be complicated and technological (Bamforth and Stewart 2010),[7] making it difficult to brew high-quality, low alcohol beer that tastes good

[7]There are several methodologies for removing or reducing the alcohol present in beer and/or arresting fermentation to prevent increases in alcohol due to fermentation (Catarino and Mendes 2011; Catarino et al. 2006; Pfisterer et al. 2004). For example, Sohrabvandi et al. (2010) and Brányik et al. (2012) describe in detail how to dealcoholize beer or arrest fermentation to prevent alcoholization in the first place. Sohrabvandi et al. (2010) define four types of nonalcoholic beer production: fermentation-free brewing, dilution procedure, alcohol removal/dealcoholization, and restricted alcohol fermentation. Similarly, Brányik et al. (2012) provide thorough descriptions of several different mechanisms used to produce low alcohol beer, including ethanol removal (both thermal and membrane processes) and restricting ethanol formation.

(Lipinski 2012).[8] However, taste was the second key characteristic that influenced consumer perspectives of—and inclinations to drink— low alcohol beer. Thompson and Thompson (1996) noted that if the beer tasted good the participants were more likely to drink it, and the study participants appreciated having the option of healthier nonalcoholic beer. These consumer perspectives are reflected in contemporary advertising for low alcohol beer. An Erdinger Alkoholfrei ad (Erdinger 2018) argues that the drink "not only tastes fantastic, but is also healthy" and the description of the product goes on to outline the various beneficial qualities of the beverage. Taste is major component of consumer behavior, and thus is a driver of the low alcohol beer market.

Since taste is such an important component of making low alcohol beer palatable (literally and figuratively) to the consumer (Catarino and Mendes 2011; Sohrabvandi et al. 2010; Thompson and Thompson 1996), several technical studies are dedicated to improving the production protocols and eventual flavor of low alcohol beer. Specifically, Brányik et al. (2012, pp. 503–504) describe how to improve the sensorial properties of alcohol-free beer through the use of additives, post-treatments, and blending. While Catarino and Mendes (2011), also noting how the poor taste of many low alcohol beers deters consumers, go into depth testing the efficacy of a particular method for alcohol reduction in order to draw some conclusions about how to create a (more) palatable <0.5 vol.% nonalcoholic beer.

Thompson and Thompson (1996, p. 43, 45) note that such improvements to production—and the "demise of weaker brands" (i.e., brewers who rushed the market with inadequately developed products)—have improved the taste and quality of low alcohol beer. However, perhaps because this has not been well-communicated to the consumer (Thompson and Thompson 1996), there is still a hesitancy to consume low alcohol/nonalcoholic products in lieu of alcoholic options. Moreover, since drinking and driving has been established as an extremely dangerous practice, even the presence of relatively palatable options is not always sufficient to lure potential consumers. For example, some designated drivers prefer to be seen conspicuously *not drinking* than risk the appearance of consuming a beverage that looks like a beer, potentially (further) diminishing the appeal of alcohol-like products for public consumption (Thompson and Thompson 1996). It would seem, then, that despite improvements to technique and taste, perceptions of and consumption patterns within the low alcohol segment are slow to change.

[8]Lipinski (2012) opines that Budweiser is not given enough credit for brewing a consistent, relatively palatable, low alcohol product—especially at the scale at which it is produced.

On Future of the Low Alcohol Market Potential in the US and EU

Production and marketing challenges aside, Catarino and Mendes (2011) and Sohrabvandi et al. (2010) note the market for nonalcoholic brews has nevertheless grown; for example, Beer Advocate now (2018) lists 455 beers from brewers big and small around the world under the heading of "low alcohol", which only includes beers with an ABV under 1%. Indeed, what even constitutes "low alcohol" or "nonalcoholic" beer varies. In the EU, categories include "alcohol-free beers (AFBs) containing $\leq 0.5\%$ alcohol by volume (ABV) , and to low alcohol beers (LABs) with no more than 1.2% ABV" (Brányik et al. 2012, p. 494). In the US, to be considered "alcohol-free", there must be no alcohol present, while another category (<0.5% ABV) includes "so-called nonalcoholic beer or 'near beer'" (Brányik et al. 2012, p. 494). Guidelines are even stricter in countries with religious prohibition (Brányik et al. 2012; Euromonitor International 2017). In addition, beer can simply be made "lighter" to make it more suitable to managing alcohol consumption for whatever desired purpose, without necessarily conforming to low/no alcohol regulations and restrictions (as indicated by the proliferation of "session" beers).

And, while Brányik et al. (2012) explains that even though the low alcohol segment did not perform as well as hoped when it emerged in the late twentieth century, European sales of low alcohol brews rose by 50% from 2007 to 2012, which is fitting since Europe is farther ahead in terms of production expertise and public acceptance of low alcohol products (Singh 2017). For example, Euromonitor International (2017) identifies several British and Canadian microbreweries with low or no alcohol products or product lines. Carlsberg, for example, has been steadily building its low alcohol beer lineup (Morton 2014). Additionally, Heineken released a 0.0% ABV beer to much acclaim in the EU in 2017 (Pomranz 2017), two full years ahead of the US release in 2019. Upon its US release, Jonnie Cahill, Chief Marketing Officer for Heineken USA argued:

> For the US, the time has come for an innovation that disrupts the category and offers a new take on how and when people enjoy beer…Heineken 0.0 brings an incredible beer taste to the non-alcoholic space and opens a world of opportunity for people to come together and enjoy a brew that expands drinking occasions—not limits them (Break Thru 2019).

As producers continue to build the no/low alcohol market segment, it is helpful to consider the early days of its production and marketing. For example, Brányik et al. (2012, p 494) describe the following industry efforts in late twentieth century to build the production and marketing for low alcohol products: exploit low alcohol production

potential, provide alternative nonalcoholic products, and increase accessibility in countries that forbid alcohol consumption.

Euromonitor International (2017, p 17) echoes these suggestions, describing "the gradual but distinct change in emphasis in non/low alcohol beer in mature Western markets," such that low alcohol beer is no longer positioned as the "…'last resort' choice for those who might like to drink but cannot…but as an option that could appeal to consumers more widely." The Euromonitor International (2017) report notes that marketing the positive aspects of the product by highlighting what the consumer gains ("styles, flavors, varieties of hops, etc.…") rather than what the consumer loses (i.e., alcohol) is an effective means of building the consumer base.

Attention to the opportunities of the segment could be useful as brewers big and small seek to fill the low alcohol product niche. Despite early and ongoing challenges, innovations in production (Mielgard 2001) and sophistication related to taste (Choi and Stack 2005) have facilitated the growth of this segment. Moreover, craft brewers in particular are poised to fill the gap. Even though "…historically, nonalcoholic beers have suffered from a perceived lack of taste or quality," entry into the market by craft breweries, those with reputations "for high-quality, flavourful beers", could prove to be a boon to the category overall (Euromonitor International 2017, p. 14). Just as consumers view various kinds of alcoholic beverages differently, and as their perceptions of them change over time (Unwin 1992), the potential for low gravity beer is on the rise.

The Role of Regulation in Consumption

Despite, or perhaps because of, its popularity, alcohol is a controlled substance in many places in the world, including the US. Alcohol regulations around the world, including in the US, include prohibitions and limitations related to production, distribution, and consumption (D'Aversa 2017; Ornstein and Hanssens 1985; Phillips 2014). In the US, regulations on alcohol are determined at the federal level, the state level, and at an even finer resolutions. While some states regulate on the basis of alcohol volume or consumer demographics, others drive regulation through controls on distribution and sales. In the US, modern-day liquor laws are still tied to seventeenth century religious ideals, which helped to mold the nation's cultural expectations surrounding high- and low alcohol beverages. D'Aversa (2017) indicates that the strength of the craft beer industry in the US is notable in not just because it is flourishing, but because it is flourishing despite an outmoded and stifling regulatory system in the country.

Various studies have analyzed the efficacy of different kinds of restrictions and prohibitions and demonstrated the link between state controls and consumer practices and outcomes. For example, a 2017 study compares the consumption rates in Norway and the Czech Republic, and argues the differences can be attributed to regulation[9] (Hnilicová et al. 2017). Karlsson and Österberg (2007) discuss the variation in alcohol control policies in Europe and categorize them according to strictness and analyze how they relate to national consumption patterns. Ornstein and Hanssens (1985) examine liquor control law efficacy in the US and argue that, for beer, minimum legal drinking age and Sunday sales were the two primary areas by which beer could be regulated most effectively (in contrast to liquor, which is better controlled through pricing). Taxation on sales is also common regulation, and, in Europe at least, the duty/excise tax on alcoholic products is seen as a push factor for the development of lower ABV beers (Naylor 2012; The Thinking Drinkers 2017).

Part II: On the Geographic and Temporal Patterns of Social Media (via Twitter)

Data Collection

Twitter (www.twitter.com) is a microblogging platform that allows users to post 280-character messages called "tweets". The archive of tweets, known as the "Twittersphere", extends back to the platform's 2006 founding. Twitter can serve as a valuable research tool, as it captures certain aspects of human activity, including membership in certain communities (Herdağdelen et al. 2013; Evans 2010), current interests and trends (Michelson and Macskassy 2010), and the current "mood" of a particular market (Bollen et al. 2010, 2011). Twitter also has the potential to *drive* consumer behavior as it is seen by some as more effective at reaching an audience than other media outlets (Ju et al. 2014) and appears to function as an information channel between market leaders and consumers, with microbreweries being an example of the kind of company that could benefit from access to such capabilities.

For this study, we seek to

1. confirm that conversations about low alcohol beer exist in the Twitterverse,
2. document the most common narratives associated with mentions of low alcohol beer,
3. document the difference(s), if any, between the narratives associated with mentions of low alcohol beer and beer in general, and

[9]Note also that the regulation drives up price in Norway, thus consumption differences are affected twofold.

4. document the general shape of spatial and temporal footprint associated with mentions of low alcohol beer.

Results and Analysis

As mentioned earlier, we compiled a list of keywords commonly used to describe low- to no-alcohol beer based on our collective professional expertise, personal discussions with academic experts, a survey of the scholarly and popular literature, and a qualitative survey of the language used by breweries. This list of keywords was then used to isolate the social media messages (tweets) related to low alcohol beer. This process was iterative—our initial (pilot) list of terms included "session beer", "session ipa", "low gravity", "no alcohol", "nonalcoholic", "alcohol-free", "low alcohol", "near beer", "small beer", and "ale". For the time frame studied, most of these keywords resulted in few matches (<200); the exception was the search for "ale", which returned 3,782 tweets. After reading the total number of tweets matching the initial pilot list of query terms (totaling 4,147), we found that many people talked about beer they were drinking by naming the label and/or beer style.

Our second search returned 20,816 tweets for "beer" and 1,565 for the other keywords describing low alcohol beer styles. In order to investigate the ABV of beer mentioned in our dataset, we read a sample of 200 tweets. We checked beer percentages that were less than or equal to 5% ABV for styles that are traditionally known as low alcohol, and settled on the following styles to define low alcohol beer: session beer (ale, IPA), gose, berliner, and kolsch (80% were less than or equal to 5% ABV) , lager, saison, and pilsner.

We read an additional 413 tweets and found that many people did not mention ABV explicitly. Sixty-six percent of these tweets were posted to Twitter through the social drinking app Untappd (The Untappd Team nd). The general format for a post was "Drinking a [beer label] @brewery and @location." Others posted using Instagram (21%), some posted with Beer Menus (a platform allowing users to search for location of specific beer labels) (2%), and some posted with Swarm (a platform allowing users to share location and experience with friends) (1%). Only two tweets in this sample were posted directly to Twitter.

In general, in both samples the term "beer" was often mentioned in the brewery or pub name or part of a hashtag (i.e., #beer, #craftbeer, #localbeer, #TXbeer). These messages originated from either Untappd or Instagram (and were automatically forwarded to Twitter by the respective platform), with roughly 90% of all matching messages split evenly between the two. Posts from Instagram typically included a picture of the beer (with or without food), or mention of some other activity (i.e., eating), and the use of multiple hashtags. Thus we can say that low alcohol beer was mentioned consistently, although well-established terms such as "near beer", "small beer", or "low gravity" were rarely used.

For the qualitative analysis, all tweets that matched the search terms were used; we did not use a sample. The temporal (Figs. 1 and 2) and spatial (Figs. 3 and 4) footprints of low alcohol beer and beer in general appear similar —both were mentioned primarily on the weekend, throughout the afternoon, increasing into the evening, and with less frequency after 5 pm CST. The low alcohol beer mentions amount to about 7.52% of all beer mentions (for

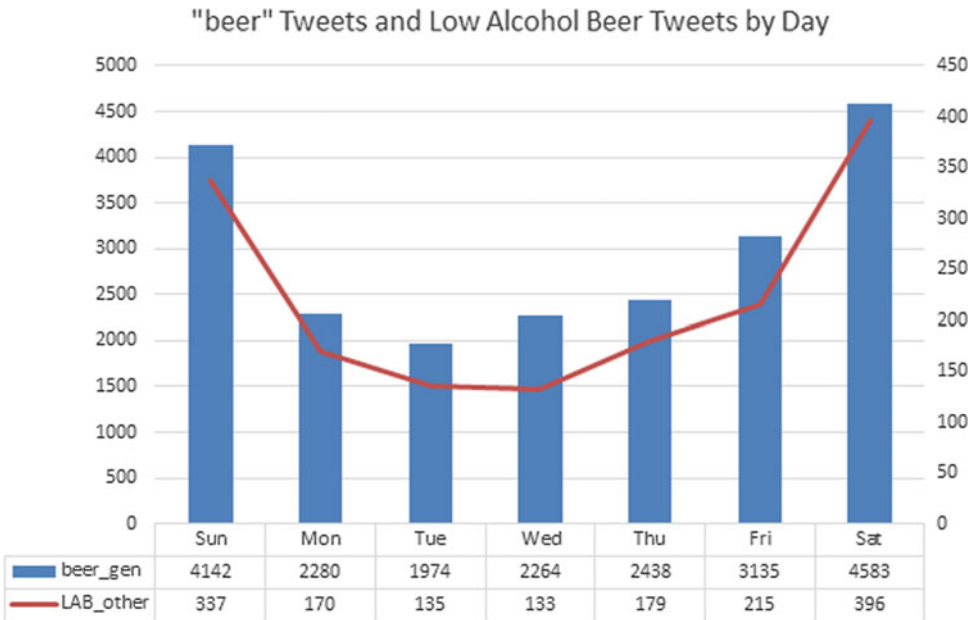

Fig. 1 Beer and low alcohol beer tweet counts by day of week. Left vertical axis corresponds to the count of tweets mentioning the keyword "beer." Right vertical axis corresponds to the count of tweets mentioning the low alcohol beer keywords. *Histogram created the authors using Microsoft Excel 2010, 2018*

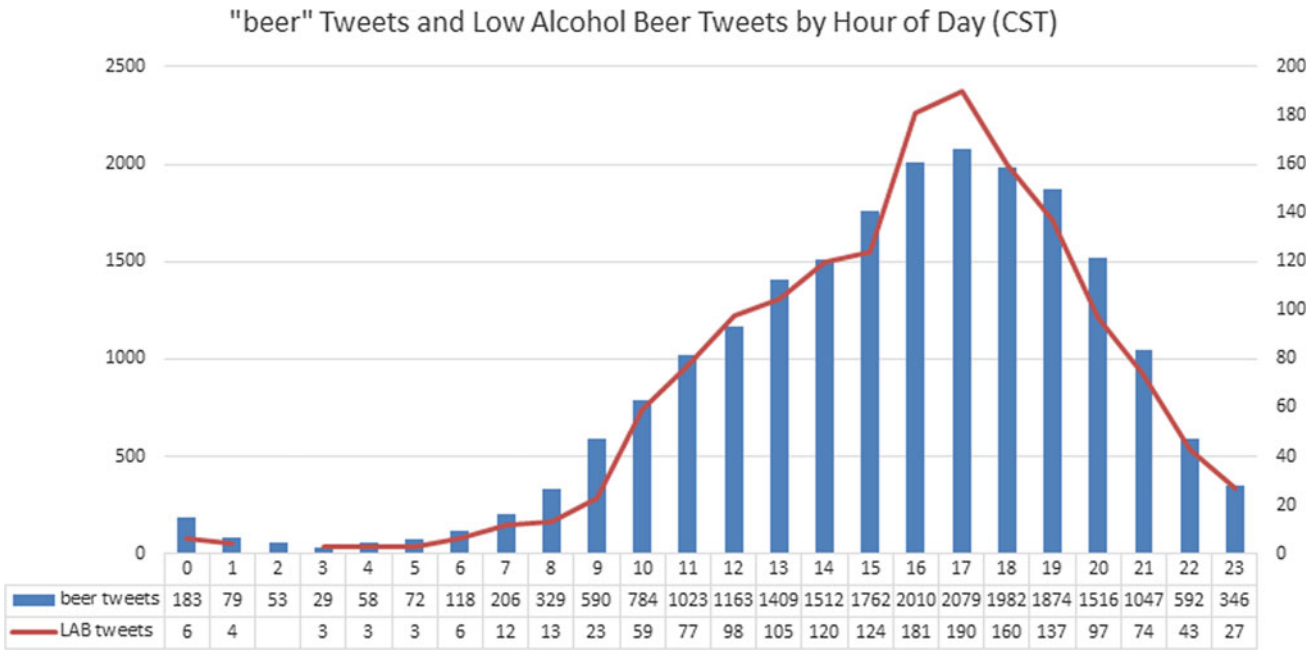

Fig. 2 Beer and low alcohol beer Twitter tweets by hour of day. Left vertical axis corresponds to the count of tweets mentioning the keyword "beer." Right vertical axis corresponds to the count of tweets mentioning the low alcohol beer keywords. *Histogram created by the authors using Microsoft Excel 2010, 2018*

the period of time surveyed within the US). The map in Fig. 4 captures a few broad regions that appear to have a higher rate of low alcohol beer mentions compared to the national average. Hotspots exist[10] in Utah, Colorado, Arizona, Nebraska, Arkansas, South Carolina, and on the Washington-Idaho border.

Limitations and Opportunities for Future Social Media-Based Research

Limitations in these results and the subsequent analysis relate to two things: (1) the number of tweets we could manually read for the purpose of this study and (2) challenges regarding how to define low alcohol beer in terms of a specific ABV, since a systematic pattern did not appear in this analysis. Based on our initial findings, we are working to identify and fuse other data sources to better explore specific questions such these (i.e., the prevalence and implications for differing ABV beers). Indeed, the challenges posed by this research have already inspired further work on the topic; see Savelyev, Wiley, Myles, and Goff (forthcoming) for a broader assessment of the utility of using social media data for geographic beer research.

Discussion and Conclusion

Low alcohol beer in the US suffers from an image problem. Although the US has a long history of producing lighter, bubbly brews, the so-called "American lager" is not always a point of pride, especially for "sophisticated" craft beer brewers and drinkers. Nevertheless, there are a number of palpable factors indicating an increasing interest in, and availability of, low(er) alcohol beer in the country. Based on a survey of the literature (popular, scholarly, technical, and industry-related), relevant regulatory rules across space, and social media mentions, it is clear that the availability and popularity of this product segment is on the rise.

This phenomenon is partially attributable to production improvements and public perception changes toward low- to no-alcohol brews, both of which can be observed at national, state, and local resolutions. Technical innovations that open the taste and profile possibilities of such brews, paired with the contemporary social context for beer and brewing in the US, facilitate a rising recognition of the (public) benefits of palatable low ABV beer. Factors leading to the increased acceptance of low alcohol beer in the United States include:

[10]We hypothesize the hotspots in these areas reflect the phenomena identified in a pilot study we conducted, which investigated the regulations on beer and alcohol by volume. For example, laws governing the sale of beer with ABV >5% drive consumers from Utah to Wyoming to seek out more alcoholic beverages. Similarly, we investigated beer-related festivals and conferences and found a high concentration of those events by participants in Oregon, California, Colorado, and North Carolina. Future research is needed for a robust examination of these patterns.

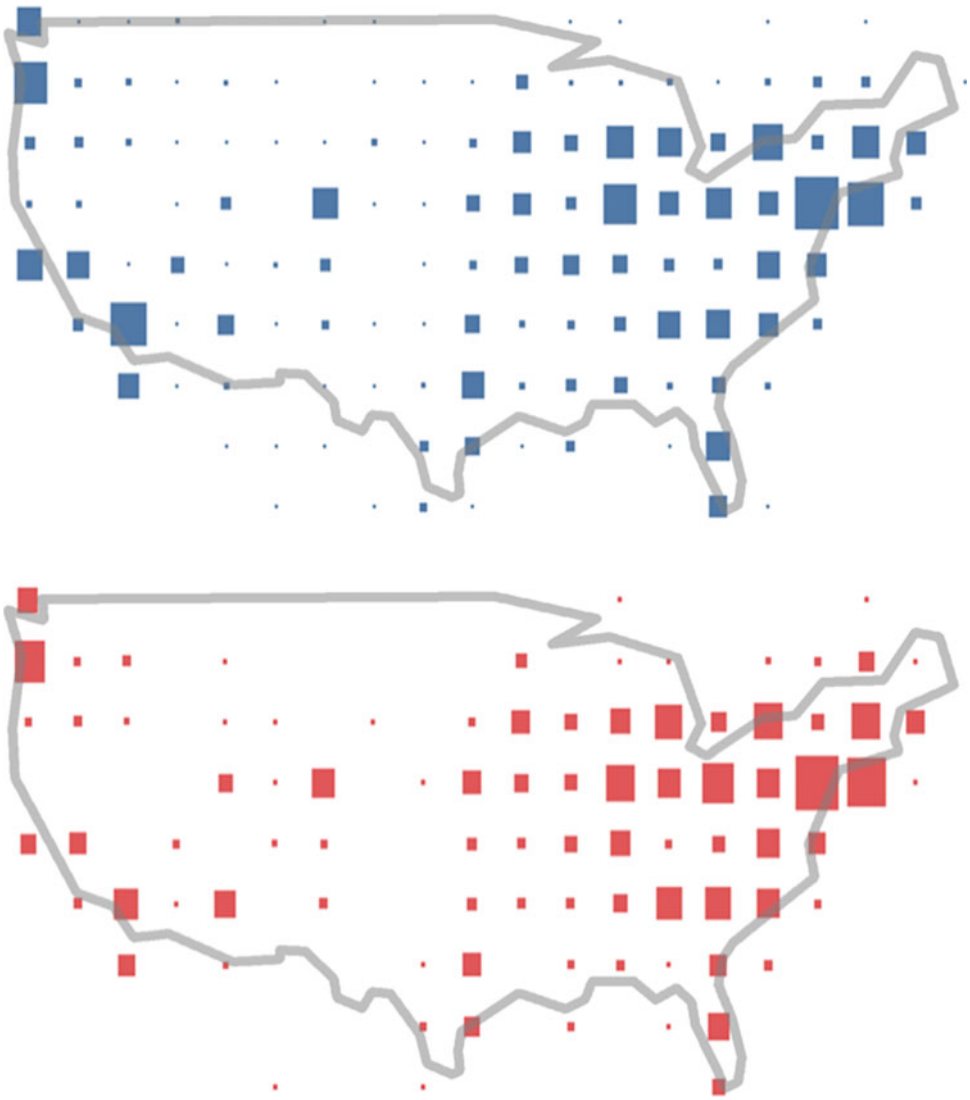

Fig. 3 Heat map of mentions of "beer" keyword (top) and mentions of low alcohol beer keywords (bottom). *Maps created by the authors using Tableau v. 18.2, 2018*

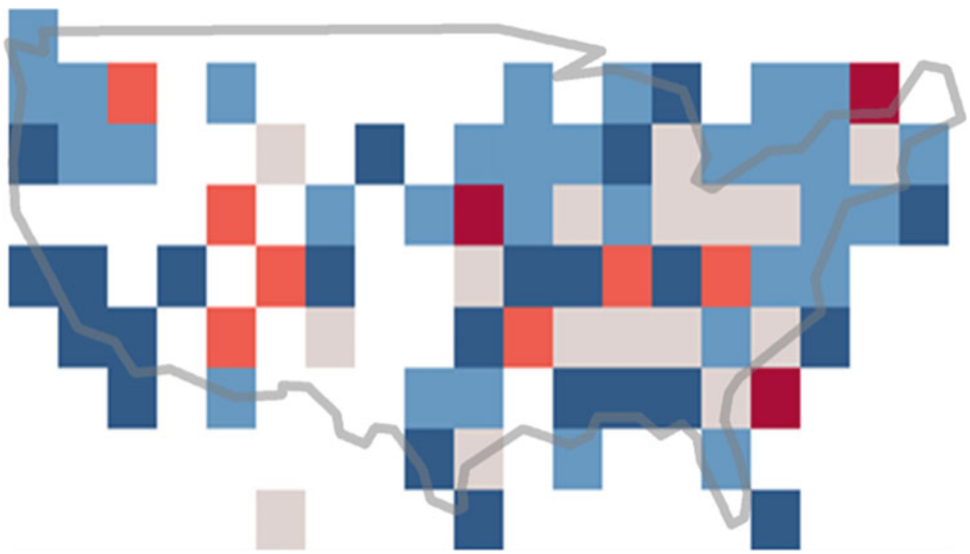

Fig. 4 Ratio of low alcohol beer mentions to overall "beer" tweet mentions (the count of the former divided by the count of the latter). Red and blue shades highlight the deviation above and below the average ratio of 7.52% (7.52 mentions of low alcohol beer for every 100 mentions of "beer" keywsord). *Maps created by the authors using Tableau v. 18.2, 2018*

growing awareness of the health impacts of alcohol consumption; mounting acknowledgment of the dangers of drinking and driving; ongoing regulation and taxation pressures at state and local levels; and an overall decrease in social stigma associated with the beverages, especially given the long history of "near" and "small" beers in the US.

While the "big" brewers in the US (formed by global conglomerates) seem poised to dominate this niche due to their historical prevalence and familiarity with producing lighter beers, "small" brewers (local, craft producers) are well-positioned to make their mark in this segment as well. Our Twitter analysis demonstrates that mentions of both "beer" and "low alcohol beer" follow similar temporal and spatial patterns to one another, even though consumers are not using terms like "low gravity" or "near beer" to describe lower alcohol beers. Instead, consumers using social media —Untappd as the main posting platform, and Twitter as the main re-posting platform—are more likely to post information about the brew being consumed, rather than relying on terms that describe low alcohol beer. Thus, the collective characteristics of beer (including ABV) are the salient descriptors that drive the social media narrative, rather than mentions of alcohol content alone. The communication pattern observed in this study can be leveraged to good effect for craft breweries—these breweries can be more nimble, specialized, and focused than macro-breweries, allowing them to pivot toward popular styles for consumers more easily. Moreover, our results indicate relevant posts about beer overwhelmingly occurred on premises at drinking establishments that serve craft beer. The growing potential of the low alcohol segment, nestled within a competitive craft brewing market, means brewers of any size could be well served to better understand the history of and future for low alcohol beer production and consumption.

In sum, the increasing quality and availability of low alcohol options is part of the transformation and development of brewing across the US and suggests a shift in the overall character of American brewing, a trend that could be explored through future research. This trend is also relevant from a place-based perspective—state- and local-level regulations influence the quality and availability of low alcohol offerings, as evidenced by the European market examples offered above. The long-standing cultural and economic predominance of American lagers was met with a form of fermented resistance from craft brewers, pushing the market toward bigger, bolder brews. Nevertheless, the concept and utility of lighter beers have not been lost. Perhaps, then, low alcohol beer is one way of reconciling big and small—in all their connotations—in the US brewing industry and beyond.

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Part II
Economics

Heat, Hops, Hallertau: Exploring Implications of Climate Change for the German Beer Sector

8

Christian Kind and Theresa Kaiser

Abstract

In the past decades, the beer sector has faced many changes, among them the rise of global beer corporations, the declining demand in many industrialized nations, growing thirst for beer in Africa and Asia, numerous crop failures of hops and barley and the rise of craft beer breweries. While some of these trends might not last, one of them is here to stay, according to the Intergovernmental Panel on Climate Change (IPCC): even if greenhouse gas emissions are reduced drastically, with the changing climate there will be more droughts and extreme weather events in many regions of the world in the coming decades. This affects the productivity of agriculture and will impact the financial bottom line of the actors in the beer sector. Economic research shows that the impacts of climate change will have dire consequences on the global economy if adaptation to those changes is not undertaken (e.g., Stern Report 2006; Tol 2009). However, little is known about the consequences of extreme weather events and climatic changes for the beer sector. Anecdotal evidence and data for prices of barley and hops suggest that prices for both products, especially hops, are sensitive to droughts, hail, and heavy rain events. Using time series on temperature and precipitation, soil moisture and crop yields, in this article we investigate how climatic conditions in one of the world's most important hop growing regions, the Hallertau in Germany, have changed over the last decades. Focussing on two specific extreme weather events, we investigate, how they affect hops output. Furthermore, we analyze how farmers have responded to the changes.

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Introduction

The beer sector has faced many changes and shifts in recent years: the emergence of multinational beer corporations, declining demand in many industrialized nations, growing thirst for beer in Africa and Asia, numerous crop failures of hops, and barley as well as the blossoming of craft beer breweries. Some of these trends might reverse or fade away but according to the Intergovernmental Panel on Climate Change (IPCC) one is here to stay: even if greenhouse gas emissions are reduced radically, with the warming climate we will still see more droughts and extreme weather events in many regions of the world—for decades to come. This affects the productivity of agriculture and will also have an impact on the different actors along the value chain of the beer sector.

Economic research has shown that the impacts of climate change are going to have dire consequences on the global economy if adaptation to those changes is not undertaken (e.g., Stern Report 2006; Tol 2009). There has also been some research on how different economic sectors are affected by climate change (Heymann 2007; Auer et al. 2008; Ehmer and Heymann 2008). The wine sector has received significant attention by the research community: The impacts of climate change on the wine sector have been analyzed at length (see for example Jones et al. 2005; Mozell and Thach 2014; Moriondo et al. 2013) and much is known about grape farmer's and winemaker's perception of climate change and their responses to the various impacts of this phenomenon (see for example Battaglini et al. 2009; Holland and Smit 2010; Webb et al. 2012).

But little is known about the possible extent of future consequences of extreme weather events and climatic changes for the beer sector. Even though anecdotal evidence suggests that in the last 15 years the quality and quantity of hops and barley harvest have already been affected by weather extremes that will become more frequent and more intense with climate change. There is also very limited

knowledge on how actors in the beer sector perceive these changes and how they are reacting to them. But with still only slow progress on reducing greenhouse gas emissions (UNEP 2017), it seems likely that the impacts of climate change will become more relevant to the beer sector. The topic is of particular importance because hops—an essential ingredient for beer—is a fairly weather-sensitive crop and at least 60% of global hop production is concentrated in only two small areas: the Yakima Valley in Washington State in the northwest of the USA and the Hallertau, a region in the center of Bavaria in the south of Germany.

In order to approach this complex and underexplored topic, in this article the authors will analyze the relevance of past and future weather extremes for the hop production in the Hallertau region. First, we introduce the Hallertau region and its long history of hop production. Then, we elaborate on the sensitivity of hops to weather extremes before touching upon past and future changes of the climate in Hallertau. Using hail storm from 2009 to 2011 as well as drought conditions in 2015 as examples, we show how weather extremes affected the Hallertau hop production in the past. Eventually, we present how different actors have responded to these impacts so far and discuss barriers to adaptation before concluding with a wider outlook on the relevance of the findings for the whole beer sector.

Hop Production in the Hallertau Region

The Hallertau region is located between 48° and 49° north and lies in the Cfb climate zone (according to the Köppen–Geiger climate classification). This means a moderately warm climate with evenly dispersed precipitation throughout the year, which accounts for perfect growing conditions for hops (also see Chap. 3). Hop production in the Hallertau region was first documented in 860 AD (STMELF 2016). Back then, hop farming was mainly done for local breweries and taking place on a very limited scale. At this time, hops were not necessarily needed for beer brewing because before the Bavarian purity law (established in 1516) many other ingredients could be used to produce beer. A strong growth of the brewing industry in the middle of the nineteenth century led to an increase in hop demand. By that time, goods could be transported by train which allowed a more concentrated cultivation of hops (Pinzl 2017). By 1885, the Hallertau region had become the largest hop growing area in Germany. It was not only the suitable growing conditions—moderate climate and fertile soil—that established the Hallertau region as such a large hop growing area; The innovative farmers in the region also contributed to this: they were the first who, for example, improved the scaffold constructions for hops by using wire in addition to wood and they invented a two-story kiln to dry the harvested hops (Rasche 2008).

Due to protective tariffs of the United States and Russia on hops imports during World War I, the overall demand for German hops started to decline and the hop production was reduced from then on (Hopfenpflanzerverband Hallertau e. V. 2017). During World War II, hop farmers were only allowed to cultivate a certain area because of state regulated acreage control. It was only after the war, that the Hallertau region became the largest and most important hop growing region in the world. In 2016 there were 931 hop growers in Hallertau and the total hop growing area was 15,510 ha with harvest yields of 36,953 tons (LfL 2017a, b; Hopfenring e.V. 2016) (Fig. 8.1).

Sensitivity of Hops to Extreme Weather

Hops are a very weather sensitive crop. For good yields, hops need certain temperatures, for example frost-free conditions from the end of April to mid-September as well as moderate sunshine without hot spells. Regarding precipitation, hops need abundant rainfall during the summer (around 100 mm per month in June, July, and August) while heavy precipitation events or hail can seriously harm the crops. Hop plants also need to be sheltered from the wind (Verband Deutscher Hopfenpflanzer e.V. 2017).

A study conducted by researchers of the renowned agricultural research center Thünen Institute (Gömann et al. 2015) provides an excellent overview on climate-related hazards that have an impact on hops. In the following section we will summarize their most important findings.

Temperature

As mentioned above, hops need moderate temperatures in order to grow. Late frost in April or May for example can lead to the loss of new shoots. Usually hop plants sprout again—but with a bit of delay. And this causes additional work because the new shoots have to be wrapped around the wire again in order to grow up the scaffold. Not only too low but also too high temperatures can have a negative impact on hops. Heat increases the development of spider mites which damage the plant. Furthermore, the effects of certain pesticides can be limited because the hop leafs build a stronger protective layer during extreme heat. Hops also can get sunburned. Those damages mainly affect the leafs in the upper part of the plants. But overall, yield affecting damages mostly appear in combination with water shortage (Gömann et al. 2015).

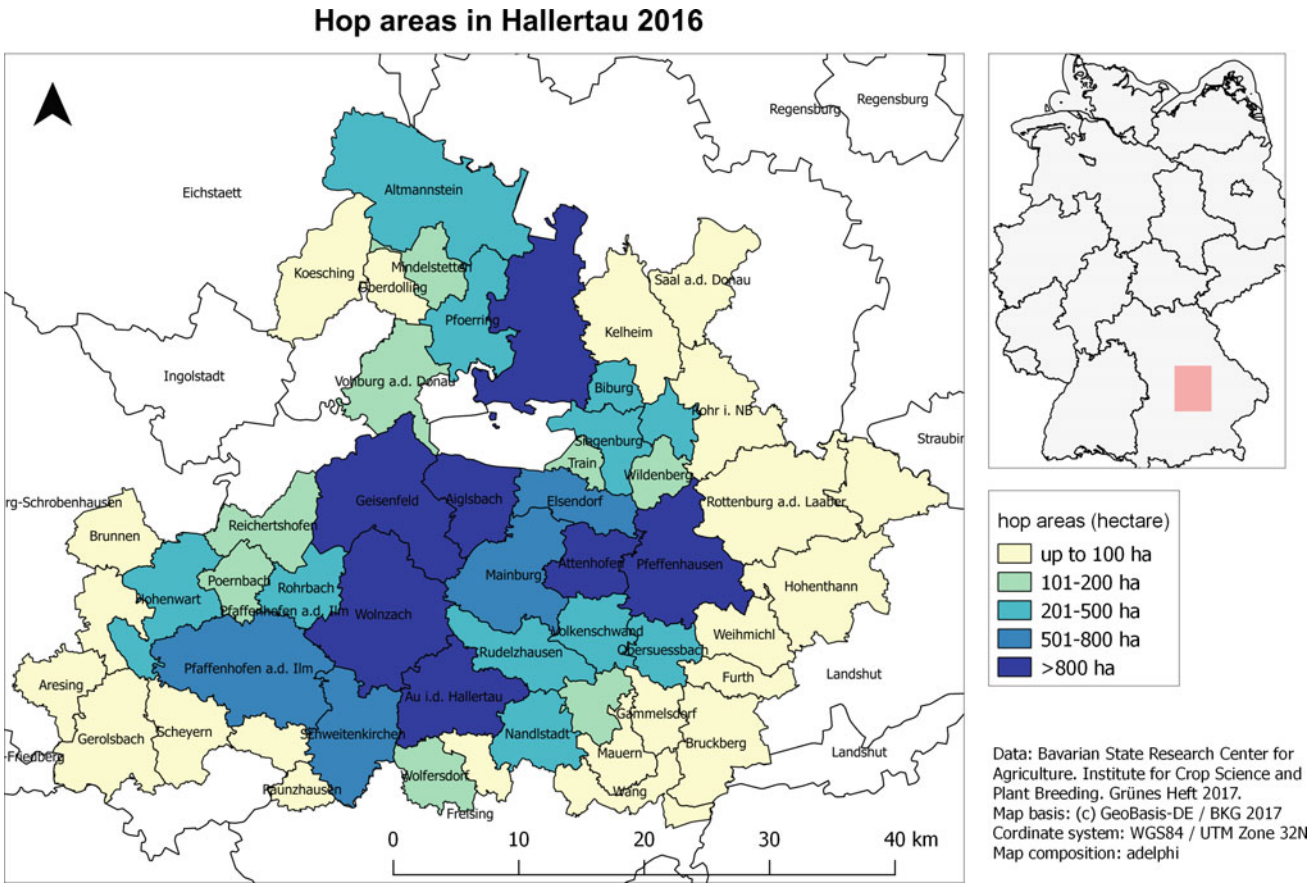

Fig. 8.1 Map of hop cultivation in Hallertau in 2016

Table 8.1 Extreme weather events that have an impact on hops and relevant threshold values (Gömann et al. 2015)

Extreme weather event	Threshold values	Relevant time period
Late frost	$T_{min} \leq -5$ °C per day	April–May
Drought	$\leq$ 15–30 mm Precipitation per month	March–October
Continuous precipitation	$\geq$ 100 mm precipitation per week	March–September
Extreme (heavy) precipitation	$\geq$ 25 mm precipitation per hour or per day	May–September
Heat	$T_{max} \geq$ 8–30 °C ($\geq$ 7 days)	June–August

Water Availability

As with thermal conditions, hops need moderate moisture and cannot tolerate any extremes. While a lack of soil water content impedes the availability of and absorption capacity for nutrients, flooding and waterlogging and the accompanying soil moisture saturation can lead to a lack of oxygen as well as a lack of nutrients in the soil. A lack of oxygen can increase the risk of crown rot which can lead to decreased shoots, decreased vitality, increased stress sensitivity, disturbance of nutrient uptake, and even withering. A lack of nutrients in the soil can lead to a decreased transpiration and photosynthesis activity, delayed development of shoots flowers and umbels. Furthermore a lack of soil water content affects the application of pesticides. When using plant protection (e.g., against primary downy mildew infection or soil pests) those pesticides might stay in the upper soil levels and plants cannot absorb enough. Massive flooding and waterlogging at the end of August and at the beginning of September can also mean a serious threat for hop farmers. With intense rainfall and wet soils hop fields might not be accessible for harvesting machines which means a delayed harvest and a decreased quality of hops. Waterlogging can furthermore lead to soil erosion and soil sealing. Young plants are more vulnerable to flooding and waterlogging than older ones. Continuous rain can also increase the risk of infection (especially primary infection) with downy mildew (Gömann et al. 2015).

Other Extreme Weather Events

Other extreme weather events that can have a negative impact on hops are hail and storms. Both can lead to mechanical damage of hop plants. Hail can damage new shoots, leafs, vines, flowers, and umbels of a hop plant. The degree of damage depends on the development stage of the hop plant. The later during the growing period the hail event occurs, the larger the damage for the plants and of course the yield. Hail damage can then also lead to a high infection rate with "peronospora humuli", a fungal disease. Storms are especially dangerous for those hop plants that have reached the height of the scaffold already (Gömann et al. 2015).

The provides an overview of extreme weather events that have a negative impact on hops and the particular threshold values (Table 8.1).

Observed Climatic Changes with Relevance for the Hop Production in Hallertau

Experts in hop research and production are aware of the challenges that climate change holds for hop cultivation. Dr. Michael Möller, CEO of the German Society of Hop Research and Dr. Peter Doleschel, Head of the German Institute for Crop Science and Plant Breeding point out in a joint statement that "the challenges due to climate change now facing hop cultivation and hop research are ever more evident, and it is becoming increasingly imperative to devise new ways of adapting cultivation methods, plant protection management and breeding efforts to suit the changing situation" (LfL 2016). To approach this topic we start by presenting the climatic changes in the region that can be observed already.

Temperature Changes

Different studies and analyses show a general increase of warm temperature extremes and a decrease of cold extremes. While the number of cold days and nights in Germany has decreased since the 1950s, the number of warm days and nights has increased (Deutschländer and Mächel 2017). And not only the number of warm days has increased: according to an analysis of 54 European weather stations conducted by Della-Marta et al. (2007a, b, as cited in Deutschländer and Mächel 2017) the length of summerly heat waves has doubled in western Europe between 1880 and 2005 and the frequency of very warm days (95th percentile of daily T_{max}) has tripled.

Daily temperature data of 43 meteorological measuring stations from 1891 to 2012 in Germany show that heat days occurred more frequently in the south of Germany than in eastern or northern Germany. In the south of Germany hot winds are responsible for a higher frequency of heat waves than in eastern Germany (Deutschländer and Mächel 2017). Research also shows that the likelihood of a dry and hot summer or of an extremely dry vegetation period in southern Germany that has more than doubled compared to the time before the 1970s (StMUV 2015).

When looking at temperature data from Bavaria, those trends can be observed as well. In the period from 2011 to 2015 a rising number of warm years including heat waves and extremely high temperatures can be recognized. Three of these five years (2011, 2014, 2015) make it on the list of the ten warmest years on record in Bavaria (since 1881) (LfU 2016). Overall, the mean annual temperature in Bavaria has increased by 1.4 °C from 1881 to 2014 (StMUV 2015).

Changes in Precipitation

With respect to precipitation there are large regional differences in Bavaria. The mean annual amount of precipitation (reference period 1971–2000) is 945 mm. Lower values can be found in middle and northwestern Bavaria (600–700 mm), around Würzburg even under 600 mm. Above average precipitation values can be found in secondary mountains (Spessart, Jura, Fichtelgebirge, Bayerischer Wald) as well as in the foothills of the Alps with up to 1,800 mm per year (StMUV 2015). From 1881 to 2014 annual precipitation in Bavaria has increased by 10%, but this increase is not distributed equally around the year. In fact, winter precipitation has increased by 28% while during summer, mean precipitation does not show any trend (spring: increase of 12.6%, fall increase of 8.7%, StMUV 2015). Analyses regarding heavy rain events show an increase for the hydrological winter half year (1932–2010). Data shows a highly significant increase for north-eastern Bavaria. For the summer half year no significant trends can be identified (StMUV 2015).

Furthermore different analyses show that the potential for the development of thunderstorms and hail storms in all of Germany has increased significantly over the past 30 years (Kunz et al. 2009; Mohr and Kunz 2013).

Projected Climatic Changes with Relevance for the Hop Production in Hallertau

Looking ahead, the following main climatic changes with importance for hop cultivation in the region can be identified.

Projected Temperature Changes

With respect to temperature changes, the trend that could be observed in the past is very likely to continue in the future. Research shows that in Germany warm temperature extremes will increase in the future while the number of frost days will decrease (Matulla et al. 2014 as cited in Deutschländer and Mächel 2017). Based on three regional climate projections, researchers found that especially during the second half of the twenty-first century an increase in dry-periods and low-water-periods during summer has to be expected in the South of Germany (StMUV 2015). Projections also show an increase of up to 14 heat days (days with a maximum air temperature of ≥ 30 °C) in Bavaria for the period of 2021–2050 (StMUV 2015). Projections also show a rise of the mean annual temperature in Bavaria. For the near future (2021–2050) a rise of +1 to +2 °C and for the distant future (2071–2100) a rise of +2 to +4.5 °C is projected (StMUV 2015).

Projected Changes in Precipitation Patterns

The mean annual precipitation is likely to increase in northern Bavaria and the northern regions of southern Bavaria in the distant future (2071–2100) while winter precipitation will increase and summer precipitation will decrease. For the nearer future (2021–2015), however, the projections yield rather large bandwidths: winter precipitation can vary from −5% to +15% (regarding the reference period from 1961 to1990) and summer precipitation from −10% to +10% (in some regions −15% to +15%) (StMUV 2015). The number of heavy rain events is likely to increase in most regions of Germany (Volosciuk et al. 2016; Becker et al. 2016).

Due to their complex genesis, it is difficult to project changes in the possibility of hail events. Kapsch et al. (2012 as cited in Kunz et al. 2017) estimate the number of hail days per year for Germany and expect a slight increase of hail days in the future (2031–2045). Mohr (2013 as cited in Kunz et al. 2017) also projects an increase of hail probability with significant changes in the south of Germany. Gerstengarbe et al. (2013) combine a statistic model with insurance data and project a substantial increase of hail damage for the next decades (as cited in Kunz et al. 2017).

Impacts of Weather Extremes on Hop Production

As it has been shown, the number of hot days is very likely to increase in the Hallertau region while in the long-term summer precipitation will decrease and arrive more often in quick and heavy rain showers. Furthermore, across Germany hail events are likely to become slightly more frequent. To arrive at an idea of what this means for the beer sector and the Hallertau region, in the following section we look at the impacts of a past drought and two hail events.

Drought in Hallertau in 2015

Between 2011 and 2016, the Hallertau region suffered from extremely dry weather conditions twice. While in 2015 the first half of the year was characterized by ideal growing conditions for hops, the second half started with dry and hot weather. Apart from the lack of rain, more than 30 days with maximum temperature of over 30 °C caused serious harm to hop crops. In July, the monthly average temperature of 21.1 °C (weather station Hüll) was 4.2 °C higher than the long-term mean and 2.5 °C above the mean of the last ten years. July and August of 2015 also had a significant lower amount of precipitation than it was the case during the past 10 years in the same months. With only 27.6 mm in July (and only 43.4 mm in August), the amount of precipitation was 87.9 mm lower than the average of the last 10 years (in August: 80.7 mm) (LfL 2016). Figures 8.2 and 8.3 show how in 2015 precipitation during the summer months was much lower than average, while temperatures significantly exceeded the 10- as well as the 50-year average.

As a result, flower and umbel production were greatly reduced and with the delayed harvest the low expectations regarding yield and alpha-acid content were confirmed. The hop harvest fell far short—by more than 10,000 tons—of the harvest in 2014. This amounted to a yield loss of 26.4% despite an increase in acreage which made 2015 one of the worst hop harvest years in decades. When taking a closer look at the Hallertau region, figures show that yields per hectare decreased from 2,293 kg/ha in 2014 to only 1,601 kg/ha in 2015. The high temperatures did not only cause a decrease in the quantity of hops but also in quality due to reduced alpha-acid content.

Most brewers have long-term contracts with hop growers or hop traders which could not be delivered because of the low hop yields. Prices on the free market rose which was especially hard for less established brewers or craft beer brewers who need flavor-intense hops and often do not yet have long-term contracts with hop traders or hop farmers.[1] In mid-November almost all free-market-hops had been sold in the Hallertau region. Contract prices for 2015 were at an average of 4.34 EUR/kg (Joh. Barth & Sohn 2016) and, on

[1]According to Florian Perschel, Barth-Haas in: Craft-Brauerein. Das neue Bier-Gefühl. Spiegel Online vom 23.04.2016, Autor: Alexander Demling.

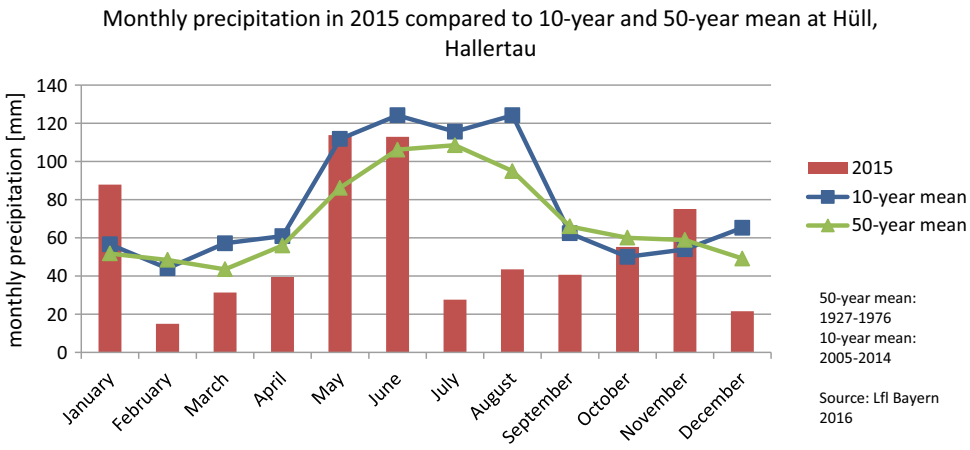

Fig. 8.2 Monthly precipitation in 2015 compared to the 10-year and 50-year mean at the weather station Hüll in Hallertau. Data: LfL Bayern 2016, graph: adelphi

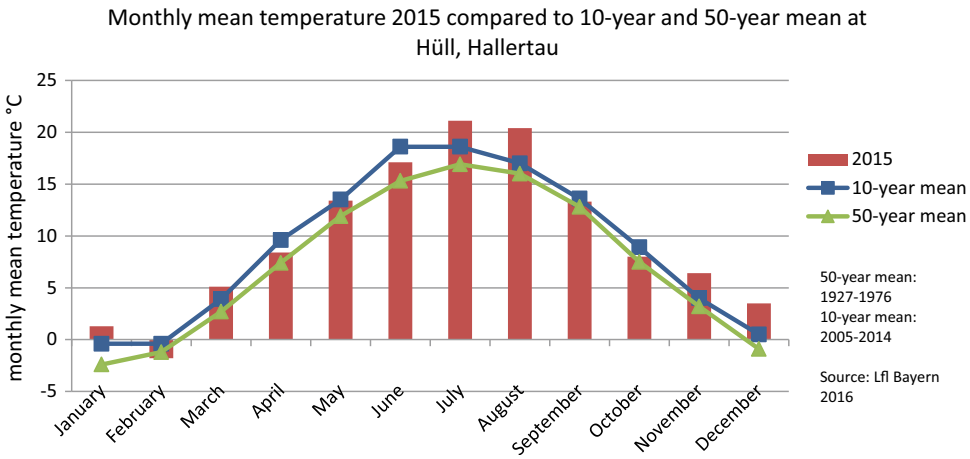

Fig. 8.3 Monthly mean temperature in 2015 compared to the 10-year and 50-year mean at the weather station in Hüll, Hallertau. Data: LfL Bayern, graph: adelphi

average, hops on the spot market were sold for 6.50 EUR/kg—this was a rare occurrence since spot market hop prices are usually significantly lower than contract prices. The low yields did not have an immediate impact on the 2015 contract prices but contract prices for future years increased depending on hop types.

Despite the rising prices, most hop growers suffered great economic losses. In many cases the income of the 2015 year harvest could not cover the expenses of hop growers. According to estimations of the German Hop Growers Association, the losses for German hop growers amount to 50 Million Euros for 2015.[2] Hop traders had difficulties to fulfill their supply contracts since hop stocks were already emptied due to drought conditions in the past years.

Hail in Hallertau in 2009 and 2011

When the Hallertau region was hit by a hailstorm on June 6, 2011 it was already the third year in a row where an extreme hail event led to massive crop failure. Around 500 ha were in the main corridor of the hail storm with yield losses (compared to a normal harvest) from 70 to 100%. In total, 1,500 ha of hop acreage were affected by hail damages (Global Malt 2011). Despite those damages and yield losses, the 2011 harvest was a good one which is mainly because of very favorable growing conditions throughout the year (BSELF 2011). Farmers that were affected by the hail storm received help from the Bavarian Ministry of Finance that allowed affected businesses an interest-free delay of tax payment, and an adjustment of preliminary tax payments.[3]

In 2009, the massive hailstorm "Felix" destroyed around 4,000 ha of hops in the southern part of the Hallertau region at the end of May. Yield losses were in the range of up to 20% of the 2008 harvest (34,331 tons in 2008 and only 26,422 tons in 2009, Joh. Barth & Sohn 2009). According to

[2]Johann Pichlmaier, President of German Hop Growers Association on the 2015 hop tour in Hallertau http://www.sueddeutsche.de/muenchen/freising/hopfenbauern-beklagen-grosse-verluste-dolden-im-hitzestress-1.2625345.

[3]Minister of State Helmut Brunner, Press Conference.

Niedermeier (2010), around 70 to 80% of the affected areas were insured but only few hop growers can afford full coverage. Usually growers only insure the yield areas and do not purchase coverage for tender areas from which nothing is harvested. For the later areas, the risk is often borne by the grower alone. In the event of a hail storm, affected businesses can then suffer a total loss plus an additional year without yield (which is not covered by insurance) if the tender areas are damaged (Niedermeier 2010; Lindloff 2009). After the hail storm in 2009, new plants had to be planted in 2010 since no planting stocks were available. The cost of new planting and maintenance in the first year amounts to an average of 3,300 EUR per hectare (Niedermeier 2010). Apart from the yield loss the increased workload and the cost of spraying and fertilizing agents have to be taken into account as well. That is why even fully insured businesses suffered financially from the hail storm.

Responses of Hop Research and Farming to Weather Extremes

Extreme weather events that impacts hop production have affected hop farmers in a direct way which in turn affected hop traders and brewers. These different groups of actors have responded to past shocks in a variety of ways.

Introduction of the Alpha-Clause

The summer of 2003 was a particularly hot and dry one in Europe. The crop losses in the Hallertau were even larger than in 2015 and many hop traders could not deliver on their contractual obligations for providing hops to breweries. That year, many traders had to file for bankruptcy and only three hop traders in Germany remained in the market. To avoid such crass developments in the future, in 2005 the sector came to a game-changing agreement: hop growers, traders, and brewers in Germany came together and developed the so-called "alpha-clause". This is a clause that was to be included in all delivery contracts on hops in Germany from then on and according to this contractual clause, in years with crop failure, hop traders are not legally obliged to comply with their contracts with breweries. In this clause, crop failure is defined as 15% less alpha-acid content than the 10-year average. Breweries can then choose between accepting a smaller amount of hops than originally agreed upon (without contractual penalty for the hop trader) or insist on the amount defined in the contract but pay a higher price. Thanks to this alpha-clause that was developed in 2004, after the 2003 drought, the economic losses in 2015 were more evenly spread between hop growers, traders, and breweries.

Irrigation

The alpha-clause is not the only way in which the industry adapted to the more pressing issue of droughts: hop growers also started to deal with changing climate condition by introducing irrigation for the hop fields. Before 2005, only very few hop plantations were under irrigation. However, by 2015 around 20% of hop acreage in Germany was put under irrigation (Graf and Beck 2015, data for only the Hallertau region not available) which helps to deal with dry spells. It is usually drip irrigation but the installation of such systems is costly. Another barrier lies in the fact that every farmer needs permission from the water authorities for extracting groundwater and the overall amount of water that can be extracted in one region is fixed. To deal with costs for groundwater extraction and irrigation, some hop farmers in Hallertau are cooperating in setting up irrigation systems ("Gemeinschaftsbewässerung"). To improve the effectiveness and efficiency of irrigation approaches, different research activities are being undertaken at local universities (see for example Graf 2016).

Research on More Drought Resistant Hop Varieties

Furthermore, there are a number of research projects regarding drought resistant hop varieties at the Hopfenforschungszentrum Hüll (Center for hop research Hüll) . But the research takes time and many trials need to be done before farmers can plant a new hop variety. For some of the more engineered varieties these days, farmers need to pay an annual fee.

Other Approaches

Especially for dealing with hail, many farmers in Hallertau have purchased hail insurance. Some of them are also using special nets to protect their crops against hailstones (Krengel et al. 2015). Brewers themselves are trying to diversify the hop varieties that they use and aim at establishing long-term delivery contracts. Those who are new in the business and are struggling to get such contracts, try supporting each other by trading leftover hops in years where the supply is scarce, trade is often taking place in online forums or online marketplaces (Demling 2016).

Conclusions and Outlook

It could be shown that hop production in Hallertau and thus an essential part of the beer sector has been negatively affected by extreme weather events in the past. Both quality

and quantity of the hop harvest were affected. It could also be shown that those weather extremes that were relevant in the past (heat, lack of rainfall, hail) will become more frequent and/or more intense with climate change. Experts in the field are aware of this challenge and some hop farmers have already responded to these impacts. Estimating whether the current efforts are sufficient is difficult due to the uncertainty surrounding the future impacts of climate change. But, looking at past impacts, it seems likely that efforts for adaptation needs to be intensified if one wants similar crops outputs in the future under a different climate.

As the hop prices are usually determined before the harvest and are often locked-in in long-term contracts, it seems likely that it is mainly the hop farmers and the traders who suffer financially if crops are affected by extreme weather. And it is the farmers who are paying for most of the available adaptation options. However, the market prices for hops went up steeply in those years with poor harvests, benefiting those actors who are selling hops outside of contractual arrangements. This in turn means that less established breweries who do not yet have long-term purchasing contracts suffer as well in those years with poor harvests.

What could not be established is in how far consumer prices are and could be affected by extreme weather events and their influence on the hop harvest. Furthermore, it would be interesting to investigate what impacts climate-related crop failures in Hallertau could have for the beer sector outside of Germany. Or what it would mean for the global beer sector, if climate-related crop failures in Hallertau and Yakima Valley happened in the same year.

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The Geographic Dispersion of Hop Production in the United States: Back to the Future?

9

William Knudson, J. Robert Sirrine, and John T. Mann

Abstract

The U.S. has long been a major producer of hops. Hops were first produced in New England and New York, and then in the Great Lakes Region. Since the late nineteenth century, the Pacific Northwest has been the dominant producer of hops. However, due to the growth of the craft beer industry there has been an increase in hop production in several states, particularly states that were once major producers such as New York and Michigan. However, due to climatic and economic factors, the Pacific Northwest states of Washington, Oregon, and Idaho will likely remain the major producers.

Introduction

Primarily due to an increase in the production of craft beer, there has been an increase in the production of hops. Hops are used to add bitterness and enhance the aroma of beer. Craft beers tend to use more hops than traditional lagers produced by larger brewers. There is also increased interest in locally produced beers that use locally sourced ingredients. One response to this interest is increased geographic dispersion of hop production due to the increased geographic dispersion of craft beer production. The states of Washington, Oregon, and more recently Idaho, continue to dominate hop production. Interestingly, many of the states with new hop acreage were large producers in the late nineteenth century.

In many respects the U.S. hop sector is moving "back to the future". In addition to the increased interest in locally sourced inputs, most craft beers use more hops than traditional pilsners produced by large breweries. These trends create opportunities for hop production beyond the U. S. Northwest. If these trends continue they could impact the global hop market because, depending on the year, the U.S. is the largest or second-largest producer in the world.

There are climatic and economic factors that may impact the production of hops in the U.S. While the demand for hops is increasing, so is the supply, which raises the potential for overproduction and an associated collapse in the price of hops. This situation has occurred in the past, for example, the farm price of hops fell from more than $2.00 a pound in 1984 and 1985 to less than $1.50 a pound in the late 1980s and early 1990s (USDA 1989, 1998). Climatic factors may also play a role in limiting the geographic dispersion of hops. Hops are susceptible to diseases like downy mildew, which are more prevalent in humid growing regions, resulting in greater costs of production. The comparatively low humidity of the Northwest, specifically Washington and Idaho, makes this region exceptionally well suited to hop production, and this region is likely to continue to be the dominant production region. Production in states that at one time were major producers—New York, Michigan, Wisconsin, and California may also successfully develop a commercial scale hop industry. Few other states with the possible exception of Colorado or Minnesota are unlikely to increase production beyond a small or hobby scale.

Increased Demand for and Production of Hops

The demand for hops in the U.S. has been increasing primarily due to the increased production of craft beers. According to the Brewers Association, a craft brewery trade group, in 2017, there were 6,372 breweries and brewpubs in the U.S., an all-time record (Brewers Association 2018). While the craft beer market has been growing for some time,

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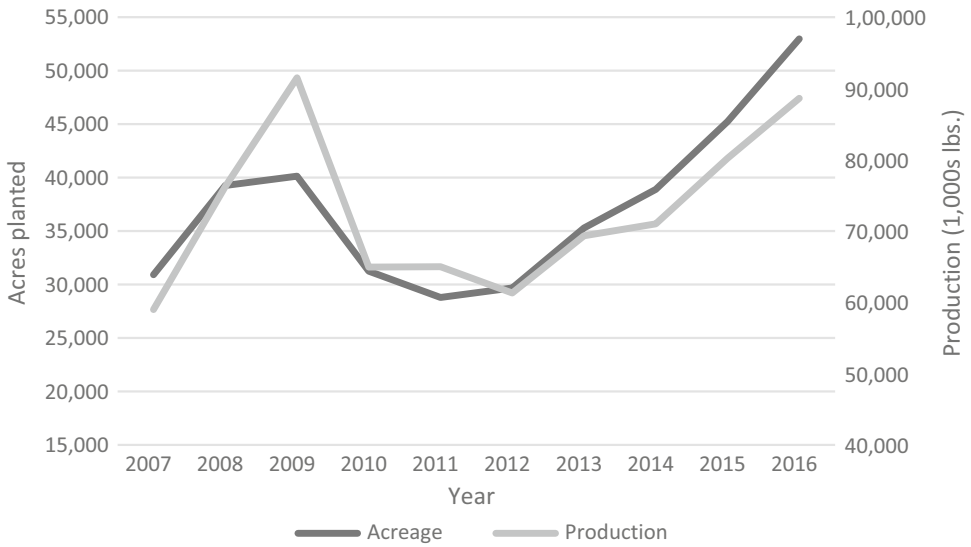

Fig. 1 U.S. hops acres planted and production 2007–2016. *Source* George (2018)

it is now an important part of the U.S. beer market. In 2016, craft beer sales accounted for 21.8% of all sales in dollar terms and 12.3% in volume terms (Brewers Association). In 2010, only 5.2% of the beer sold in volume terms were craft beers (Mintel, p. 30). Within the craft sector, brewpubs, defined as a restaurant-brewery that sells 25% or more of its beer on site, and microbreweries, defined as firms that sell less than 15,000 barrels or 465,000 gallons of beer, are growing the fastest. Additionally, large brewers are also introducing craft style beers that will increase the demand for hops.

Many craft style beers, specifically India Pale Ales (IPAs), use a great deal of hops compared to traditional American pilsners. While craft beer accounts for slightly more than 12% of all beer produced by volume, they account for nearly 50% of total U.S. hop usage (Watson 2016). Another trend in the hop industry is the sheer number of hop varieties used by brewers. In 2009, craft brewers used 90 different hop varieties; by 2014 that figure had risen to 132 (Watson 2016).

Some brewers prefer locally sourced ingredients, such as hops, provided quality standards are maintained and the price for local hops isn't excessive. A 2011 survey of Michigan brewers indicated that 55% would be willing to pay a 1–10% premium for locally grown organic hops (Sirrine et al. 2011). This indicates that producers in emerging regions need to have similar costs of production as established hop producers. Another consideration is the increased geographic dispersion of beer production, which is likely to lead to an increased dispersion of hop production. Many consumers have a preference for locally produced products and this appears to be particularly important for consumers of craft beer (Sirrine 2017).

From 2012 through 2017, U.S. hop acres harvested grew from 29,683 to 55,785 acres, an 88% increase, and production increased from 58.91 million pounds to 106.24 million pounds, an 80% during the same time period (George 2016, 2018). According to the USDA National Agriculture Statistics Service, harvested acreage is expected to increase by an additional 6.4% in 2017. The fact that output has not increased as fast as acreage is due to several factors: (1) growers are producing hops varieties with lower yields (George 2018); (2) recently planted hops (baby hops) produce lower yields; and (3) producers that are new to hop production may lack the management expertise to maximize yields.

Another trend is the alteration in the mix of hops produced. In 2012, approximately 50% of the hops produced were high alpha varieties and 50% were aroma/dual purpose hops (George 2018). By 2016 more than 80% of the hops produced in the U.S. were aroma/dual purpose (George 2018). This is due to the increased demand for aroma hops by craft brewers (Galinto and Tozer 2015).

Figure 1 shows the growth in hop acreage and production in the U.S. from 2007 to 2016.

The left axis shows the number of acres planted in hops from 2007 through 2016, and the right axis shows the level of production. The two lines show that, with the exception of the excellent crop year of 2009, output and acreage track fairly closely. Since 2013, the rate of growth for acreage has increased faster than output. From 2007 through 2016, acres ranged from a low of 28,787 in 2011 to a high of 52,980 in 2016; an increase of more than 84%. There has been a consistent increase in acreage since 2012.

Hop production increased rapidly from 2007 through 2009, declined between 2009 and 2012, primarily due to a

reduction in acreage, and then increased fairly dramatically from 2012 through 2016 where output increased from 61.32 million pounds to 88.62 million pounds. This represents an increase of 44.5%.

The Role of the U.S. in Global Hop Production

Globally, from 2007 through 2016, acreage devoted to hop production increased from 122,010 to 134,700 an increase of 10.4%. All of this increase is due to increased acreage in the U.S., which rose from 30,911 acres in 2007 to 52,980 in 2016. This represents an increase of 71.4%. The trend in hops acreage by major producing countries is shown in Fig. 2.

There was a dramatic increase in acreage in the U.S. from 2014 through 2016, and as a result the U.S. surpassed Germany whose acreage has been comparatively flat. Acreage in Czechia has been relatively constant at slightly higher than 10,000 acres, and the acreage in China has been trending downward, from 11% of global acreage in 2007 to 4% in 2016. Except for a large increase in 2014, acreage in the rest of the world has also been trending down.

In terms of production, the U.S. still slightly trails Germany. In 2016, Germany accounted for 40% of global production while the U.S. trailed slightly behind at 37% (George 2018). From 2007 to 2016, production in the U.S. increased from 59.0 million pounds to 88.6 million, an increase of 50.2% (George 2018). Globally the U.S. share of hop acreage varied from 25% in 2007, 2010, and 2011 to a high of 39% in 2016. The U.S. has long been a major producer of hops, accounting for about 20% of the world output at the turn of the twentieth century (U.S. Census Bureau 1900). Acreage in Germany, the other major producer of hops, has remained stable over the same period at about 33 to 34% of total world acreage. The U.S. is an increasingly important source of global hop production.

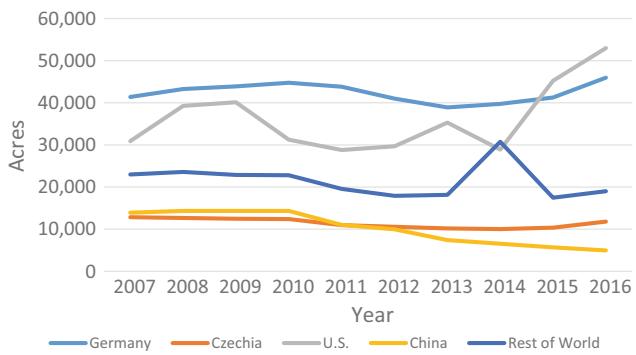

Fig. 2 Hop acreage by county 2007–2016. *Source* George (2016, 2018)

Hop Physiology

Hops are photoperiod dependent. Daylength determines the annual stages of production (dormancy, emergence and spring regrowth, vegetative growth, reproductive growth, harvest, preparation for dormancy). The timing of each stage can vary by growing location and cultivar. Because daylength throughout the growing season is determined by latitude, latitude plays an important role in hop production. While hops can be grown in nearly every climate, commercial hop production generally occurs between the 35th and 55th parallel (Mahaffee and Pethybridge 2009). Hops also require 5–6 weeks of freezing to near-freezing temperatures for ideal growth and yield. Emergence and spring regrowth is signaled by increasing daylength and temperatures. From May to early July there is vegetative growth in the main vine. From early–mid-July the majority of growth occurs in lateral branches. When vegetative growth ceases and the plant focuses on reproduction, cone production is determined by decreasing hours of daylength and the number of "nodes" on the plant. This usually occurs in late July–August.

Harvest usually occurs from mid-August through late September (Turner et al. 2011, pp. 1646, 1647). Hops grown in latitudes below 35° may achieve the appropriate number of nodes when daylength is short enough in the spring resulting in a "split crop" or top crop resulting in subpar yields. Hops grown in higher latitudes, above 55°, may not have enough time during the vegetative growth period prior to the switch to reproductive growth, resulting in subpar yields.

Historical Geography of U.S. Hop Production

Historically, the majority of commercial hop production in the U.S. has occurred along a narrow band north of the 40th parallel and south of the 50th parallel, with additional limited production in the Sacramento Valley of California. Production in the U.S. extends back to colonial times. Massachusetts led production until 1840, when New York became the dominant producer for several decades. By 1879, there were three major production regions, the Northeast (including New York), the Great Lakes region, and the Northwest. In 1879, New York had the most acreage devoted to hops at 30,072 and Wisconsin was second with 4,430 acres (U.S. Census Bureau 1880). Advances in rail transport allowed for the early establishment of hop production on the West coast. California was the third-largest producer in 1879 and production began increasing in Oregon and Washington. In 1879, Oregon had only been a state for 20 years and Washington was still a territory. By 1909, production had shifted to the Pacific Northwest (including

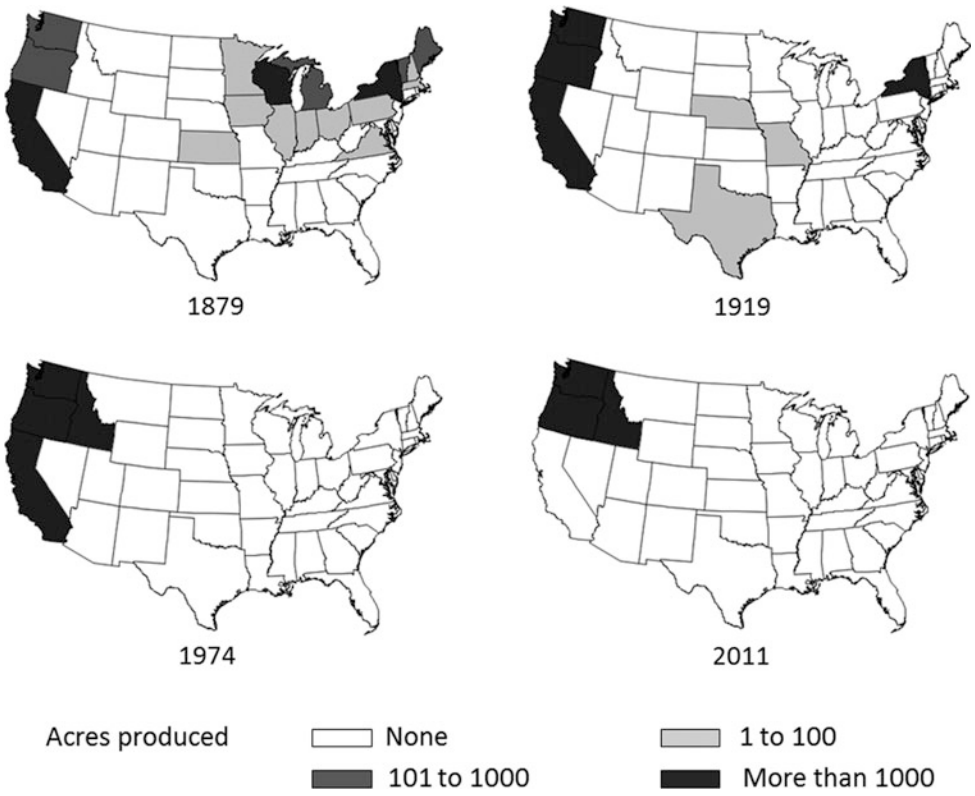

Fig. 3 Historical U.S. hop production 1879–2011. *Source* U.S. Census Bureau; Census of Agriculture 1880, 1920; U.S. Agricultural Statistics 1975, 2012

Northern California) and New York and Wisconsin declined in importance (U.S. Census Bureau 1910). Worldwide, by the turn of the twentieth century, the U.S. had become the second-largest producer of hops in the world behind Germany (Kopp 2014).

Figure 3 shows the production of hops by state over the past 140 years.

By 1919, production had left the Great Lakes Region and acreage in New York had fallen to 1,024 acres. The largest producer was California with 8,118 acres. Acreage in Oregon increased from 304 acres in 1879 to 5,629 and acreage in Washington more than doubled from 534 to 1,129. In the forty years from 1879 to 1919, acreage and output declined (U.S. Census Bureau 1920). It should be noted that there were several factors for this decline. Disease and insect pressure reduced acreage in the Eastern U.S. and a growing temperance movement culminated in the passage of the 18th Amendment in 1919, which established prohibition, and subsequently reduced the demand for hops.

In the years after the repeal of prohibition, the Northwest remained the dominant producer of hops. Washington state became the leading producer, Idaho increased production, and acreage in California declined. This could be due to several reasons: the Pacific Northwest is less likely to suffer from mildew diseases than more humid climates, there may have also been a disinvestment in hop producing and harvesting equipment in the Northeast and Midwest during Prohibition; also other crops such as corn may have become more profitable to produce in New York and the Midwest after Prohibition. This is an area for further research. In 1974, Washington accounted for more than 67% of all the hop acreage in the U.S. By the 1987 census, only Washington, Oregon, and Idaho produced hops.

Between 2011 and 2016 there was a fairly dramatic expansion in the number of states that produced hops. This is shown in Fig. 4. This figure may not account for all states that produce hops, there may be other states that currently produce hops on an extremely small scale that are not shown in Fig. 4.

From 2011 to 2016 the number of states that had at least one acre devoted to production rose from three to 28. Former major producers New York, Michigan, Wisconsin, and California each had more than 100 acres devoted to hop production. There is a very good chance that these states will continue to increase the size of their industries if current market trends continue and the number of breweries increase. A headwind to this growth is the apparent decrease in demand of publicly available varieties of hops. Some of these states have large craft beer industries and as Fig. 4 shows, have the proper climatic conditions to grow hops. Colorado is an interesting case. Despite the fact that Colorado is at the southernmost latitude with respect to where

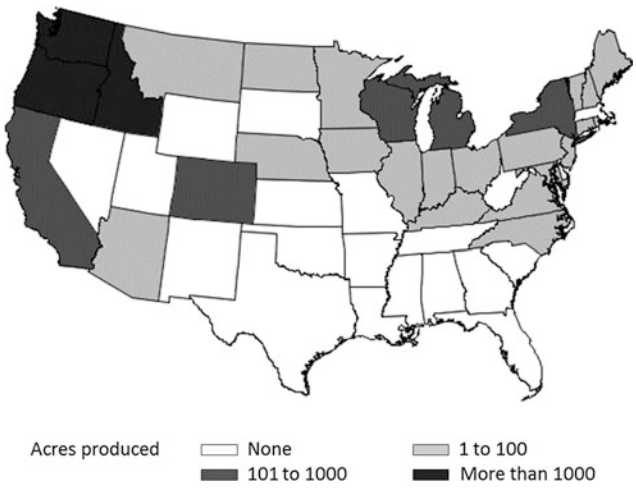

Fig. 4 Acres devoted to hop production 2016. *Source* George (2018)

hops are grown, in 2016, the state had 200 acres in hop production and a vibrant craft beer sector with 387 craft breweries (Hendee 2017).

Figure 5 shows the acreage devoted to hop production from 1992 through 2017. Acreage was steady during the early to mid-1990s and declined in the late 1990s through the mid-2000s. Acreage increased dramatically in 2008 and then declined from 2009 through 2011, from 2013 through 2017 the growth in hops acreage has accelerated.

In 2011 total hop acreage was 29,787, by 2017 it had risen to 55,785 acres. In 2011, all the hops produced in the U.S. were in Washington, Oregon, and Idaho. Most of the increased acreage between 2011 and 2017 occurred in the Pacific Northwest (PNW). This is likely because commercial scaled farms in the PNW were able to take advantage of economies of scale, climatic conditions well suited to hops production, and knowledge of the supply chain to take advantage of the increased demand for hops. Acreage in the other states increased from zero to 2,503; output outside of the PNW now accounts for 4.5% of the nation's total.

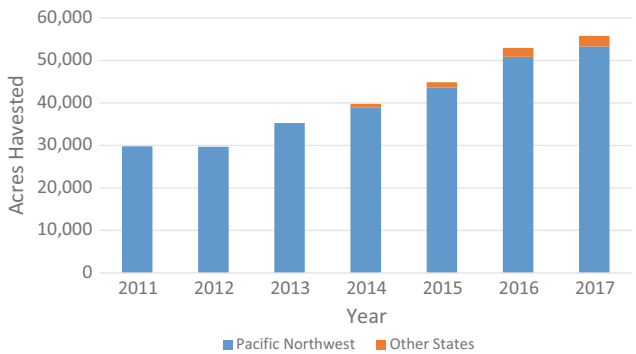

Fig. 5 U.S. hop acres 2011–2017. *Source* George (2016, 2018)

A few states now producing hops do so on an experimental or hobby scale, and their potential for establishing a commercial sized industry is limited. This includes eastern states south of the Ohio River (Kentucky, Virginia, and North Carolina).

The vast majority of hop farms in the U.S are north of the 40th parallel, although there are some producers that grow hops south of the 40th parallel, particularly along the East Coast. There are comparatively few farms in Washington, Oregon, and Idaho, which indicates that they are very large compared to those in other states. The primary growth in the number of farms is in the Great Lake Region including Minnesota, Upstate New York and along the eastern shore of Lake Michigan. These states, especially New York and to a lesser extent Michigan, were major hop producing states in the late nineteenth century. They are located at a latitude that make commercial hop production feasible. The increased interest in locally produced beer from locally sourced ingredients has helped spur the demand for hops in this region.

There are some interesting clusters of hop farms throughout the U.S. In the Midwest, the area around Madison, Wisconsin, and along Interstate 35 from the Twin Cities south has several farms. Wisconsin was also at one time a major hop producing state and there is increased interest in craft beer in that state. Minnesota is an interesting case, while there is also increased interest in locally produced beer, Minnesota has the advantage of having a somewhat less humid climate compared to most other Eastern states. There is also a cluster just East of San Francisco in the Sacramento Valley. In the East there is increased activity in Vermont, and in Virginia relatively close to Washington DC. Most of these farms are very small or hobby operations.

Challenges for Hop Production in Re-emerging Regions

Hops are susceptible to a number of diseases. Downy mildew (*Pseudoperonospora humuli*) and powdery mildew (*Podosphaera macularis*), are the most serious diseases resulting in lower yields and in some cases unmarketable hops (Brown, n.d.). While selection of virus and disease free plants and resistant cultivars can reduce the incidence of some diseases, growers in regions with high humidity and rainfall face a higher incidence of disease compared to growers in arid regions, and must take proactive measures to ensure optimal production.

The most effective way to reduce the impact of disease is through the use of fungicides. There are both conventional fungicides and fungicides that meet organic standards available. Organic fungicides, namely copper, are not labeled for enough applications for it to work in high

pressure years. Improved management techniques can be used to improve the possibility of success in states east of the Mississippi. Also, many new hop producers outside of the (PNW) have limited crop management experience, especially with such a specialized crop, and the potential for lower yields is likely greater than in well-established hop growing regions. This lack of experience puts developing regions at a competitive disadvantage compared to the Pacific Northwest.

The final barrier to the increased dispersion of hop production is the development of proprietary varieties of hops in the Northwest. These varieties are increasingly popular with brewers, and growers in emerging regions cannot obtain access to these varieties without entering into an agreement with the owners of the varieties. The Northwest has a well-established supply chain that other regions of the country are still developing.

Potential Overproduction

Although the craft beer sector has shown tremendous growth over the last several years, this trend will not continue indefinitely. While most, if not all, analysts believe the sector will continue to grow, some believe the rate of growth will decline. IBISWorld estimates that the sector will grow by a compound annual growth rate of 4.4% from 2016 through 2021 (Petrillo 2016). If hop production increases at a faster rate, there will eventually be downward pressure on prices. Downward pressure could also result if consumers move away from beers with a strong hop flavor to varieties that are more malt focused. Another potential source of downward pressure on price is the possibility for the increased use of hop extract instead of pellets. This could allow brewers to use hops in a more concentrated form, which would reduce the overall demand for hops. This is already occurring for bittering hops.

Despite this concern, hop prices moved upward in the past five years. The price of hops is shown in Fig. 6.

While Fig. 6 shows the general trend in the price of hops, actual hop prices vary widely depending on the variety. Some varieties appear to be highly profitable, while the price of others may not cover the cost of production. From 2002 to 2016, prices ranged from a low of $1.86 per pound in 2003 to a high of $5.72 per pound in 2016. In the early 2000s, prices were below $2.00 per pound; prices spiked in 2008 due to a shortfall in global production and have steadily increased since 2011. Currently, it appears that strong demand is supporting the price of hops despite the increase in production. The fact that many brewers, especially larger brewers, have multiyear contracts also support hop prices. This is especially true of the more popular, proprietary varieties.

Despite higher prices, hop farming, like most of agriculture, is not a high margin industry. A cost of production study conducted by Washington State University estimated that the break-even price for an established large-scale hopyard was approximately $5.32 a pound, if the farmer does not own the land outright, and about $4.94 a pound if the farmer owns the land (Galinto and Tozer 2015). This implies that most hop growers suffered losses in the early 2000s and prices need to be maintained at or near their current levels if output is to be maintained. Cost of production studies conducted on behalf of USA Hops indicate

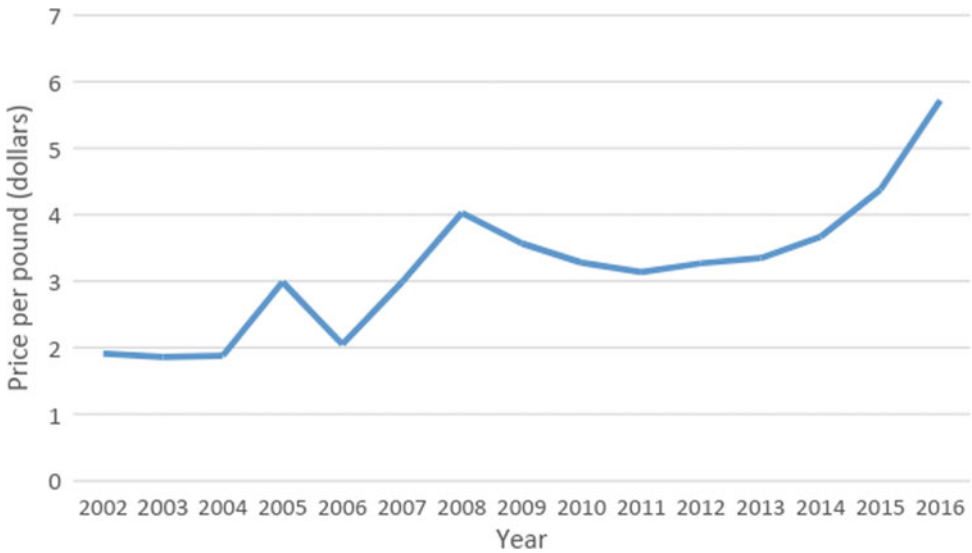

Fig. 6 The price of hops U.S. 2002–2016. *Source* USDA (2004–2016)

that the break-even price for smaller producers is higher than for larger producers (https://www.usahops.org/growers/cost-of-production.html 2015).

Growers in states like New York, Wisconsin, and Michigan may have slightly lower cost of production because in some cases land values are lower than they are in the Yakima Valley of Washington, which should be noted is higher than other parts of the PNC. However, the yields in these re-emerging regions may not be as high for new growers. Conversely, growers in the Northwest possess economies of scale that offset the higher land costs.

In order to assure a stable supply of hops, most brewers enter into contracts with growers. Farmers who decide to grow hops without a contract face the potential of not finding a market for their output. From 1937 to 1985 the U.S. had a marketing order for hops. Marketing orders are designed to manage stocks to insure that there is sufficient stability to prevent wide price and production fluctuations. However, since 1985 contracts have been the primary way farmers find buyers and brewers secure a source of hops.

A growing trend in the beer supply chain is vertical integration of brewers owning hop farms. For example, Anheuser-Busch InBev owns about 30% of the hop acreage in Idaho, and as a result of its purchase of SABMiller, controls the production of hops in the small but growing South African hop market. Rogue brewery, a craft brewer in Oregon, also owns a hop farm.

Conclusion

In many respects, the hop market is reverting to what the industry looked like in the mid to late nineteenth century. While the Pacific Northwest is, and will remain, the dominant production region, and more and more states are producing hops on a commercial scale. States that were major producers in the late nineteenth century, New York, Wisconsin, and Michigan have the best potential to reestablish a commercial hop industry.

The growing geographic dispersion of hop production is due to a number of factors. The first and most important is the growth of the craft beer industry. This has increased the demand for hops disproportionately to their market share because many craft beers feature hops as a major ingredient. This is likely to continue, at least in the near future although it is very unlikely that the current rate of growth of the craft beer segment will continue indefinitely.

Despite these positive market forces, the potential for weed infestations and disease outbreaks are higher in the eastern U.S. than in the Northwest. Higher humidity increases the likelihood of diseases like downymildew. One reason the Northwest dominates hop production in the U.S. is because it has a climate and latitude well suited to hop production. Another potential barrier to the growth of hop production is the substitution of hop extract for hops, which could also reduce the demand for hops in the future.

Even though the hop industry in the U.S. is growing, hop production remains a narrow margin business and small changes in supply or demand could lead to large price changes. As a result of this instability, the entire beer system has adopted a number of operating principles. Vertical integration appears to be another emerging technique that is being used by brewers to ensure that they have a supply of hops and that these hops meet their quality and flavor standards.

The U.S. is a major producer of hops ranking either first or second in global production depending on yields. The U.S. has more acres devoted to hop production than any other country. Combined, the U.S. and Germany produce more than 70% of the world's hops. While currently on a small scale, the increased geographic dispersion of U.S. hop production could impact the world hop market.

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Performance and Strategy of North American Small-Cap Breweries

10

Neil Maltby, Jennifer Alex, and Mark MacIsaac

Abstract

Within the competitive landscape of the North American beer industry are seven publicly-traded, small capitalized brewers. These firms appear to draw on elements of both the small, craft, and traditional producers on the one hand and the large, publicly-traded corporations on the other. This chapter examines the financial performance of these seven companies, which are headquartered across Canada and the United States in Boston, MA; Boone, NC; Ukiah, CA; Portland, OR; Surrey, BC; Calgary, AL; and Kitchener, ON. The chapter begins with an introduction to the industry. Following this, an overview of the relationship of strategy, craft brewers and the geography of differentiation is provided. This is important because it appears publicly-traded brewers veer from a focus on local geographies by listing on stock exchanges, at least in terms of ownership. The literature of craft brewers and finance is also reviewed. The chapter then provides an overview of how the analysis was completed and about which firms' company financials are provided and analyzed, from which a consideration of strategy is developed. Lastly, some other opportunities for further research are provided. Particularly noteworthy in the financial analysis is the performance of one small-cap brewer, the Boston Beer Company. Boston Beer consistently shows strong financial results, and there are indicators that its success is based on its ability to achieve the benefits of large-brewer scale while retaining the brand appeal of a small, craft brewer. This leads to discussion of the strategic positioning of the various brewers by size, and suggests that Boston Beer may be "thriving in the middle."

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Introduction

The North American brewing industry includes publicly-traded small capitalized ("small cap") firms which are listed on stock exchanges yet cater to the craft beer market. These firms compete with stock market stalwarts like Anheuser-Busch InBev SA/NV (AB InBev) on the one hand and local, artisanal microbreweries and brewpubs on the other. As publicly listed entities small-cap brewers are therefore distinctly positioned. From a financial perspective, listing is a significant, long-term and potentially risky event in the life of a firm. Given the challenge of accessing capital a public listing may address financial needs but createperformance expectations in a very public and liquid forum. Additionally, from a strategic perspective, listing on a stock exchange could undermine a craft brewer's distinctive strategic identity and positioning and impact consumers' perception. How, then, have these small-cap brewers performed? This chapter provides an analysis of seven North American publicly-traded small-cap brewers for the 2013–2015 period. To begin, the chapter provides an overview of the North American beer industry during this period. Several theoretical considerations relevant to these companies are discussed, followed by an overview of how the analysis was completed and about which firms. Company financials for the 2013–2015 time period are provided and analyzed, from which a discussion of performance and strategy is developed.

The North American Beer Industry, 2013–2015

The North American beer industry during the 2013–2015 time period was a large, competitive market driven by low growth rates, changing consumption patterns, industry consolidation, and rivalry. According to MarketLine, 2014 North American retail sales were approximately $111 billion (MarketLine 2015b, c, d). The Brewers Association estimated 2015 U.S. retail revenue alone at $106 billion in sales including gastro pubs (Brewers Association 2015a, b).

However, growth rates in the U.S. averaged only 0.8% over the same time period (MarketLine 2015b). Slowing growth rates in North America were a crucial factor in the competitive landscape. While large, multinational conglomerates like AB InBev and SABMiller earned 53.1% and 30.7% shares of the U.S. market, respectively, the firms faced slow growth in consumption rates. U.S. growth was primarily in the craft beer segment, with a 12.8% increase in production to over $22 billion in sales (MarketLine 2015b). Of the 4,269 brewers operating in the United States during this time, 99% or 4,225 were craft brewers (Brewers Association 2015a, b). There were about 695 brewers in Canada in 2016 (Beer Canada) . While Canada's trade association, Beer Canada, does not regulate "craft" status, using the American percentage approximately 680 would likely qualify as "craft".

Industry concentration was and remains a key competitive force (Tremblay et al. 2005). Tremblay and Tremblay (2005) assert that the largest beer companies like AB InBev and SAB Miller captured dominant market shares through organic growth in scale production and advertising. These firms certainly used selective acquisitions to address niche demand and reduce competition; craft breweries like Goose Island Beer Co. in the U.S. and Sleeman Breweries in Canada were purchased by AB InBev and Sapporo Breweries Ltd., respectively (Krashinsky 2015). However, industry concentration was largely the result of expansion rather than acquisitions. Competitive pressures did lead AB InBev to announce a USD $107 billion merger with SABMiller in November 2015; this deal was consummated in October 2017 (Nurin 2016). While rivalry in the industry was strong (MarketLine 2015a, b, c, d), the styles of beer and corresponding price points suggest that the industry was sub-segmented into the mass market, imports, and craft beer (Tremblay and Tremblay 2011). As such big brewers competed against big brewers, and craft brewers faced most direct rivalry from imports and regional craft brewers.

It was in the midst of massive multinationals and private craft brewers that a handful of North American breweries operated as publicly-traded "craft" producers. For purposes of this discussion, a publicly-traded small-cap brewer is defined as a brewer that has listed on a stock exchange, has a market capitalization of less than USD $2 billion, and may present themselves as a craft brewer. The question then arises, is a publicly-traded brewer actually still a craft brewer? Within the industry there are conflicting views. The Brewers Association has redefined what is and is not a craft brewer twice in the last decade in an attempt to clarify the volume and process that distinguishes small producers from larger more standardized beverage producers. References to "craft" in this report use the Brewers Association definition, which specifies small, independent brewers with

- Annual production of less than 6 million barrels of beer.
- Less than 25% of ownership is held by a non-craft brewer (Brewers Association).

At stake is a brewer's right to lay claim to the tradition, differentiation and brand power that could help it succeed. The definition has led to conflict in the industry. For example, the Craft Brew Alliance, which produces Widmer Brothers and Redhook brews, is no longer considered a craft brewer due to the more than 30% ownership stake held by AB InBev. This re-categorization led the CEO of Craft Brew Alliance to lash out at the industry association for what he referred to as bashing beer (Furnari 2014). Apart from the obvious complications the new definition means for the company's name, leveraging the "craft" of craft beer ensures built-in cache for the Alliance and any small producer. All of the publicly-traded companies in our sample claim to be craft brewers or at least craft style. Yet, many consumers and producers regard "the IPOs of IPAs" (Seattle Times 2014) and consolidation by big beer companies as a sellout of the integrity of the craft tradition.

Several theoretical considerations emerge from this distinct group and these will form the focus of the next section. The study of publicly-traded craft beer companies draws from the fields of strategy and financial performance. Firms that pursue niche strategies may pursue a specific geographic target market.

Theoretical Considerations

In describing business strategy, Michael Porter proposes four generic strategies upon which firms compete: cost leadership or differentiation, applied either broadly to the overall market ("cost leadership" or "differentiation") or focused on a specific market niche ("cost focus" or "differentiation focus") (Porter 1980). Porter argues that to be successful, a company or business unit must achieve one of these generic strategies. Otherwise, the company or business unit is "stuck in the middle" of the competitive marketplace: neither unique enough to command a premium price nor inexpensive enough to compete on the basis of cost. Some research suggests a combination of the generic strategies may occasionally be successful (Campbell-Hunt 2000); Toyota, Honda, and Apple are sometimes cited as examples as companies that successfully utilize both cost leadership and differentiation, sometimes referred to as "hybrid strategy" . Porter argues that such success is usually a temporary state (Porter 2008; Hodgetts 1999).

Within the Porter framework, it is worth noting that localism is among the many means by which a firm may achieve differentiation focus.

Differentiation and Geography in the Beer Industry

The beer industry appears to follow Porter's theory. Research suggests the craft industry leverages differentiated, focused niche strategy (Kleban and Nickerson 2017; Murray and O'Neill 2011). The drivers of differentiation include brewing styles and distinctive flavors that draw from both artisanal tradition and innovation. But the product and process are not the only factors. Branding is another means by which brewers differentiate themselves in the eyes of consumers (Gatrell et al. 2017). Branding may be "especially critical for smaller more local firms that occupy niche markets" as these brands share a "socio-spatial landscape that is simultaneously a link to place" (Gatrell et al. 2017, p. 362). Craft beer brands often utilize local names and images (Mathews and Patton 2016; Schnell and Reese 2014). This link is developed through the use of names and imagery of historic significance, local industry, and the natural environment (Feeney 2015). Eberts (2014), for example, found brewery and beer names are "used to convey multiple layers of meaning or values, and this can include an appeal to consumers' sense of identity. For many, this identity is inextricably tied to place" (192). In doing so, breweries may humanize brands through a sense of place (Hede and Watne 2013). From a strategic perspective, spatially derived names and brands may help small, local brewers differentiate their brands.

Schnell and Reese (2003, 2014) argue that craft brewers are deeply rooted in local communities and regions, not only in terms of distinctive beer flavors, names, and brands derived from local history, but also in terms of consumers' relationships with microbrewers as institutions of the local community. That is, the local context is a part of the distinctive experience of consuming beer. In one of the few empirical works, Wesson and Neiva de Figueiredo (2001) used regression analysis to show the importance of local sales to firm performance as measured by revenues for 34 microbreweries. The authors defined local as the percentage of a brewery's sales that were generated within the nearest metropolitan area. While various measures could be used to establish focus, they argue geography is part of the discrete strategic choice in the brewery industry. They found the higher the percentage of local sales the better the firms' performance, suggesting "entrants are better off to serve only a small, well-focused segment of the market" (p. 400).

While "local" serves as an important basis of strategic focus for craft brewers, it is also a point of importance for consumers who drink local beer as a way to connect with their local communities and create "place" (Cabras and Bamforth 2016). Many consumers craved local products with distinctively local flavors, beer names, and social settings. Flack (1997) argues that microbreweries satisfied a craving for the local as much as the changing tastes of beer connoisseurs. Geographical focus enabled the craft beer industry to create rootedness, or a sense of belonging that ensured loyalty (Schnell and Reese 2003, 2014). Furthermore, some regard the craft beer industry as a social movement in which consumers consider themselves part of a community of self-aware experts and advocates who consciously challenge deceptive or inauthentic brewers produced by nonlocal global multinationals (Carroll and Swaminathan 2000). Mr. Steve Hindy, author of The Craft Beer Revolution, co-founder of Brooklyn Brewery, and Board Director of the Brewers Association, argues that the craft beer "revolution" was a "quest by a band of Davids to bring down the Goliaths" by returning to artisanal roots (Hindy 2014, p. 1). Brewers and consumers began to demand authentic beer from authentic brewers that used traditional and/or innovative brewing styles and ingredients, with distinctive flavors and rooted in the local community. Gatrell et al. (2017) argue that authenticity is socially constructed by brewers and consumers. In doing so a distinct relationship of value and values is co-created. Within Porter's theory, authenticity became a means for brewers to differentiate themselves among a focused segment of the market. Lastly, small breweries may leverage production flexibility advantages that allow brewers to vary flavors quickly, and to respond to customer demand more frequently (Tremblay and Tremblay 2005).

Financial Performance and the Beer Industry

Given such industry dynamics, how have brewers performed financially? Research about brewers is fragmented and generally focused on big brewers. That said, anecdotal and non-systematic assessments can be found among craft beer authors who, while acknowledging that finances are important, implicitly frame them following the passion of their craft. Founder and past president of the Brewers Association Mr. Charlie Papazian writes, "For craft brewers, money and profit are necessary and important, but are not the driving force for their vision and decision-making. That is the fundamental reason why craft beer is different from the 'product' made by very large beer manufacturers" (Papazian 2016, p. 11). Building on this philosophy, Mr. Dick Cantwell, founder and head brewer of Elysian Brewing Company, argues that passion "…is what gets us into this crazy and rewarding business" (Cantwell 2013, p. 4). Biraglia and Kadile (2017) investigated passion as a driver of

homebrewers launching businesses. Passion, or the intense positive feelings and motivations associated with an activity, was a key driver of entrepreneurial intention and the inception of a business for hobby homebrewers. Hindy (2014) argues that many in the nascent industry were "quietly aware that no one was making any money with craft beer" (p. 43) because the primary motivation was to brew good beer. Of the companies that went public in the mid-nineties, Hindy writes that earnings decline led to stock depreciation and that the "IPO window" for craft brewers closed (p. 101). Interestingly, though, he also suggests that Boston Beer was a "small brewer who knew how to make both good beer and real money" (p. 52).

Wesson and Neiva de Figueiredo (2001) used revenue to assess performance, avoiding profitability as a relevant measure for the firms in their data set. The authors argue profit and asset measures may not be the best indicator for new entrants focused on growth, though frankly, they also note the challenges of accessing data and construct revenue data for their firms based on assumptions. The Brewers Association collects financial data from some of its members and shares some through its website and publications. Systematic analysis of craft brewery financial performance appears limited, perhaps in part because the culture of the industry is so oriented to purpose over profit.

Analysis of larger breweries is slightly more developed and offers more empirical rigor. Elzinga (2004, p. 90), notes the "largest brewers have been more profitable than the industry average" since the mid-sixties. The top four brewers in the United States outperformed all others since 1964 in terms of accounting profits and associates the driver of this performance to economies of scale. Size, then, is a key driver of profitability. Cost savings from economies of scale are cited by several authors. Elzinga (2004) and Elzinga and Swisher (2011) argue that firms enjoy sharp declines in unit costs up to about 4,000,000 barrels per year, while Tremblay and Tremblay (2005) identify 1,200,000 barrels. Of the seven firms in this study only Boston Beer operated at these volumes, with the firm producing around 4,000,000 barrels over the 2013–2015 time period.

Tremblay and Tremblay (2005) and Madsen et al. (2012) offer two particularly important contributions. Building on the size premise, Tremblay and Tremblay (2005) suggest that in terms of profitability larger firms tend to outperform smaller firms and that performance is linked to strategy. In support of the second point, the authors note the demise of regional breweries as the result of an inability to compete with larger brewers on cost, yet not having the points of differentiation of craft brewers. In a separate work Tremblay and Tremblay (2011) note that as a brewer grows it derives production cost advantages from scale, yet this same growth may contribute to the firms losing their connection to local communities. As such, growth has strategic implications. In their analysis of global mergers and acquisitions (Madsen 2012) assesses the performance of the four leading brewers globally for the period 2000–2009 in comparison to the 200 largest breweries worldwide as part of an investigation of market power hypothesis. That is, as the market becomes consolidated leading firms should enjoy better profitability. The authors used EBIT margin, Return on Assets, Return on Shareholder funds, and Total Assets per employee to analyze AB InBev, SAB Miller, Heineken, and Carlsberg. Interestingly, AB InBev experienced the highest growth but produced the lowest returns relatively. As a group the top four did not perform significantly better than the 200 breweries by all measures, though each did by one or more measures. The authors provide one of the few examples of empirical financial analysis of the industry, but omit small craft firms from consideration. It appears, then, that the financial performance of craft brewers has not been rigorously developed.

Public Listing and the Beer Industry

It is the "public" status of companies that distinguishes the firms of this research from similar-sized private brewers. As a result of being publicly-traded, shares of ownership are widely available via stock exchanges, and the governance of firms is subject to listing requirements and investor and market scrutiny. As publicly held organizations, financial performance reporting is more transparent than that of private firms and corresponding firm value is more transparent that that of private firms. An emerging body, small-cap research investigates the listing motivation and financial performance before and following the listing of smaller publicly-traded firms. Firms go public for (potentially) many reasons (Pagano et al. 1998). Primarily, firms can overcome borrowing constraints and access a larger pool of financial capital, enable private holders to liquidate and/or diversify their holdings, to benefit from stock market discipline required of management, and to benefit from company and product advertisement. Pagano et al. (1998) offer support for the finding that IPO firms experience underperformance in the 3–5 years following the offering. Specific to small-caps, Locke and Gupta (2008) find new listings underperform the market for approximately a year and a half following their listing. The authors also conclude, like Jaskiewicz et al. (2005), that larger firms perform better than smaller firms. The market perception of firm value may be associated with information asymmetry, that is, the transparency of company-relevant information for investors (Lowery et al. 2010).

Cabras and Bamforth (2016) note that a "minority of microbreweries decided to compete with large brewers on a much larger scale, increasing their output and enlarging their

Table 1 Company groupings by market capitalization

Grouping	Market capitalization
Large-caps	+$10 billion
Mid-caps	$2 billion–$10 billion
Small-caps	$300 million to $2 billion
Micro-caps	$50 million–$300 million
Nano-caps	Below $50 million

range of products by investing significantly in innovation and marketing. This choice, however, poses some questions in relations to the types of beers offered, and whether these breweries can continue to be identified and perceived by consumers differently from mass producers" (p. 635). Specifically, as such firms grow in scale they risk erosion of points of differentiation that have contributed to their past success.

What further distinguishes the firms of this research is their decision, at some point in their history, to list on a stock market. The firms continue to present themselves as small, craft brewers, yet at the same time take on the obligations and practices common to publicly-traded firms. Notably, shareholders expect transparency of information about financial performance and the ability to liquidate holdings more easily if the firms' performance is unsatisfactory. How well, then, do publicly-traded small-cap brewers perform financially? As a starting point for examining this group of small firms, this chapter will provide an analysis of the strategic and financial performance of seven listed North American brewers using 2013–2015 results. The process by which this analysis was completed is described next.

Data and Methodology

Companies featured in this analysis were generated from Yahoo Finance listings of publicly-traded brewers. Only companies headquartered in North America and listed on a North American stock exchange over the 2013–2015 period were included[1] (as such, American Brewing Company, Brisset Beer International and Evans Brewing Co. were not included because they were only listed for part of the analysis period). Firms with a market capitalization exceeding $2 billion were not included. Market capitalization is a common measure of company value and size, calculated using stock price and the number of outstanding shares. Companies are frequently grouped according to market capitalization by size. For purposes of this article, market capitalization categories from Investopedia were used as set out in Table 1.

Based on the criteria, four American brewers and three Canadian brewers were included in the sample. No Mexican brewers met the criteria. By comparison, the best-known brewer, AB InBev, had a June 2016 market capitalization of over $184 billion (Yahoo Finance). The seven companies included in this report, however, were a group of small, micro, and nano-cap brewers. These brewers had a collective 2015 market capitalization of $3.16 billion, less than 2% of the size of AB InBev. Even this overstates the size of the average firm in the sample: excluding the Boston Beer Company, the largest company that had 2015 market capitalization of only $314 million. Firms with a market capitalization exceeding $2 billion were not included; the exception being the Boston Beer Company which generally hovered around small-cap status for most of its listing during the three-year period, was included in the S&P Small-Cap index until 2016, and, at the time of writing, had a market cap of about $2 billion.

Following the example of Tremblay and Tremblay (2005) and Madsen et al. (2012), the selected firms were assessed using fundamental analysis of the companies' revenue, profitability, assets, debt, and equity. Fundamental analysis includes an examination of information presented in annual reports and financial statements. The analysis of this information provides an understanding of the intrinsic value of a firm (EuroInvestor). The measures used included Return on Sales (ROS), Return on Assets (ROA), Return on Equity (ROE), and Earnings per Share (EPS). Furthermore, comparisons were used to assess relative performance, including

- AB InBev—the leading brewer in the world, a large-cap company listed on the NYSE, and a key player in the industry and representative of the "bigger is better" premise
- Brewery Operations Benchmarking Survey 2014 featuring 14 organizations in the 15,000+ barrel category (Brewers Association)

[1]American Brewing Company, Brisset Beer International and Evans Brewing Co. were not included because they were only listed for part of the analysis period.

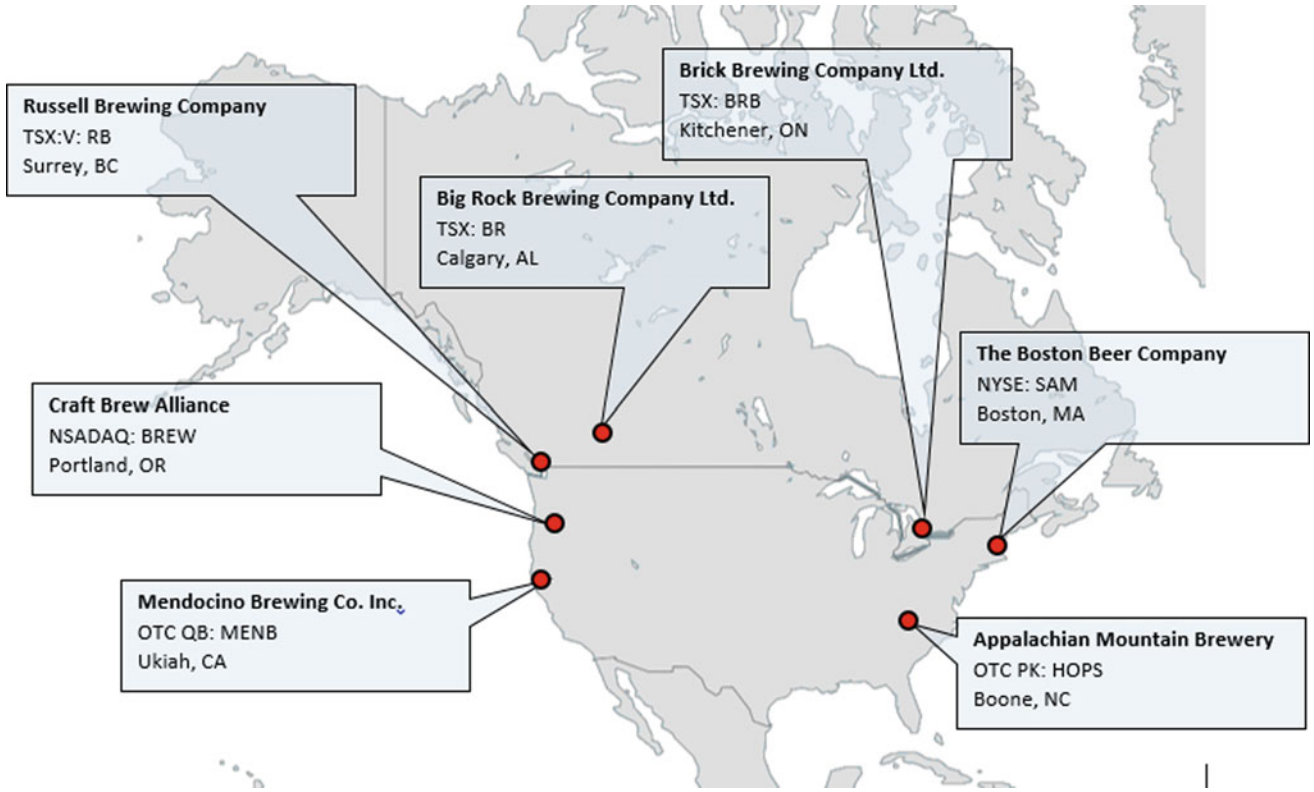

Fig. 1 Small publicly-traded North American breweries

- General comparisons to Tremblay and Tremblay (2005) and Madsen et al. (2012).

Given the nature of the brewery industry, "per barrel" or BBL figures were also used. Volume sales amounts provided in Hectoliters were converted to barrels at a rate of 1.17 Hectoliters per barrel. All figures are cited in U.S. dollar (Canadian dollar amounts were converted to USD using year-end closing exchange rates). The research of this study is based on a small sample size and descriptive fundamental analysis. There is no regression or predictive financial modeling employed. The results of this study cannot be generalized and there is no intent to predict future results within or outside of this sample.

As noted above North America was home to seven publicly-traded yet small brewing companies. The firms are listed in Fig. 1 while Table 2 presents the short form name of each of these breweries as they will be referenced throughout the chapter as well as examples of product names. This is noteworthy as some of the work done by Gatrell et al. (2017) and Feeney (2015) is supported by these various breweries' choice of product names.

The firms varied in size, ranging from nano-caps with a market capitalization less than $50 million to small-caps over $2 billion. Table 3 presents the size of the firms using the stock price and shares outstanding of each firm's 2015 year-end. Four of the firms were the smallest of the small among publicly-traded companies—two of which traded on low-volume OTC exchanges and one which traded on an entrepreneurial-oriented venture market as part of the Toronto Stock Exchange.

The companies in our sample range in more than just market capitalization and financial performance. The firms also vary considerably in product offering. Brick for example focuses on narrow product line, while Boston Beer and its subsidiaries boast a much more diverse offering. Further to the branding literature, many of these brewers' product names have ties with local geography, history as well as cultural references.

The market capitalization for Big Rock dropped from $105 million in 2013 to just over $34 million as of December 30, 2015. For the majority of the firm's listing during the 2013–15 time period, Big Rock operated as a micro-cap brewery and will be categorized as such in this report. Craft Brew Alliance eclipsed the $300 million market capitalization in the last year, edging into the small-cap category. In recent years, though, it had operated as a micro-cap. Lastly, Boston Beer had generally been considered a small-cap brewer though its market cap exceeded $2 billion for several months. 2016 resulted in a drop in stock

Table 2 Overview of small publicly-traded North American breweries

Company name	Selection of product names
Appalachian Brewery "Appalachian"	Scarlet Rose, Spoaty-Oaty, The Roots Cider, Boone Creek, Long Lead, Mystic Dragon
Big Rock Brewery Inc. "Big Rock"	Citradelic IPA, Warthog Ale, Scottish Heavy Ale, Rock Creek Peach Cider, Rhine Stone Cowboy, Alberta Genuine Draft
Brick Brewing Co. Limited "Brick"	Salted Caramel Radle, Waterloo Pilsner, Waterloo Dark, Waterloo Amber
Craft Brew Alliance "Craft Brew"	
Kona Brewing	Fire Rock Pale Ale, Hanalei Island IPA, Longboard Island Lager Kanaha Blonde Ale
Widmer Brothers	Russell Street IPA, Extra Special Bitter, Upheaval IPA Drop Top Amber
Red Hook Brewing	El Sonido, Rantum Scoot Ale, Peaches for Me IPA Bicoastal IPA
Cisco Brewers	Whale's Tale Pale Ale, Russian Imperial Stout, Cisco Pedaler Rumple Drumkin
Wynwood Brewing	Father Francisco, La Rubia
Mendocino Brewing Co. Inc. "Mendocino"	Butte Creek Organic Pale Ale, Kingfisher Premium Lager, Blue Heron Pale Ale, Peregrine Pilsner
Russell Breweries Inc. "Russell"	Belgian Golden Strong, Happy Little Brut, East Coast IPA, Angry Scotch Ale, Blood Alley Bitter, Eastern Promises
The Boston Beer Company Inc. "Boston Beer"	
Angel City Brewery	Angel City IPA, Sunbather, Angel City Pilsner
Coney Island Brewing Co.	Mermaid Pilsner, Merman IPA, Beach Beer, Coney Island Lager
Concrete Beach	Havana Lager, Sola Lager, Mas Hops, Stiltsville Pilsner
Sam Adams	New England Pale Ale, Bavarian Lager, Rebel IPA, Boston Ale, Sam Adams Light, New World, American Kriek, Stony Brook Red

Source Compiled by Authors using Company Websites

Table 3 Market capitalization of small publicly-traded North American breweries

Company	Year end	Stock price	Shares outstanding	Market capitalization	Market cap category
Appalachian Mountain Brewery	Dec 31	$2.83	8,038,115	$22,747,865	Nano
Big Rock Brewery Inc.	Dec 30	$5.00	6,875,928	$34,379,640	Micro
Brick Brewing Co. Limited	Jan 31	$1.99	34,945,058	$69,540,665	Micro
Craft Brew Alliance	Dec 31	$16.42	19,152,000	$314,475,840	Micro
Mendocino Brewing Co. Inc.	Dec 31	$0.22	12,611,133	$2,774,449	Nano
Russell Breweries Inc.	Jun 30	$0.07	87,083,788	$6,095,865	Nano
The Boston Beer Company Inc.	Dec 26	$205.40	13,185,000	$2,708,199,000	Small

Table 4 2015 financial performance of small publicly-traded North American breweries, $USD

Company	Revenue	Net profit
Appalachian Mountain Brewery	$1,735,418	$(319,532)
Big Rock Brewery Inc.	$28,519,558	$(774,323)
Brick Brewing Co. Limited	$26,710,315	$1,132,187
Craft Brew Alliance	$204,168,000	$2,218,000
Mendocino Brewing Co. Inc.	$31,691,900	$(1,148,500)
Russell Breweries Inc.	$6,363,783	$1,284,466
The Boston Beer Company Inc.	$959,934,000	$98,414,000

price, bringing the firm's market capitalization back down to the $2 billion area. It is therefore considered a small-cap firm for this research.

2015 financial performance for these seven firms varied considerably as indicated in Table 4. Notably, three of the firm experienced losses, and only Boston Beer generated substantive earnings.

Fundamental-based analysis of the firms' financial performance will be provided in the next section.

Analysis

Analysis will be provided using (1) Earnings Before Interest, Tax, Depreciation and Amortization (EBITDA) and (2) Net profitability-based analysis. From the analysis completed in this review it was found that the profitability of the larger capitalized firms AB InBev and Boston Beer was much better than smaller capitalized firms, though small private craft brewers present the most lucrative revenue per barrel and EBITDA per barrel results.

EBITDA Analysis

First, profitability data on a per barrel basis is presented in Fig. 2 which sets out revenues, cost of goods sold (COGS), and EBITDA per barrel.

In terms of revenue on a per barrel basis, it appears smaller craft brewers leveraged a differentiated product with higher prices. Private craft brewers and nano-caps (which are similar-sized in terms of production) generated around $300–350 per barrel, in some cases three times the amount of AB InBev which generated revenues around $100 per barrel. Micro-cap and the small-cap brewer Boston Beer fell in between in terms of average revenue per barrel at around $220. It would appear, then, that as brewers grew in size by both market capitalization and production they were able to generate less revenue per barrel.

When it comes to cost the pattern reversed among the firms studied. AB InBev produced at the lowest cost per barrel, at almost one-third the cost per barrel of the next best performing firms. The cost performance of the other categories followed capitalization size. Private craft brewers, somewhat surprisingly, had a better average cost per barrel than nano-caps and as a result had a better revenue and cost relationship. Clearly, however, AB InBev used economies of scale to leverage cost leadership.

Profitability as measured by average EBITDA showed less of a pattern by size. Profitability generally followed size, with two exceptions; private craft brewers generated the most lucrative EBITDA per barrel among the group; and Boston Beer slightly outperformed AB InBev on a per barrel basis. In terms of the former, there is no way to ascertain if private craft brewers converted EBITDA into net earnings as the data was not disclosed in the Brewers Association statistics. Regarding the latter, the profitability of Boston Beer can be further analyzed in subsequent sections.

Table 5 provides another indication of profitability in the form of EBITDA as a percentage of Net Revenue. For every dollar of revenue AB InBev generated it earns $0.40, far outperforming the other firms presented below. The data lends support to the idea that bigger brewers perform better than smaller. That said, the private craft brewers generated lucrative margins, and Boston Beer also far outperformed the other small-caps. Madsen et al. (2012) used EBIT measures for the 2000–2009 period and so direct comparison is not possible. However, a loose comparison is provided as well.

Net Profitability Analysis

The next section shows net profitability analysis for the publicly-traded companies in terms of Return on Sales (ROS), Return on Assets (ROA) and Return on Equity (ROE). Please refer to Table 6. In terms of ROE and ROS, AB InBev led all companies in the sample from 2013 to 15, with an ROS ranging from 22 to 38% and an ROE ranging from 21 to 30% over the three-year period. Boston Beer showed a comparable ROE to AB InBev and a good, consistent profitability in terms of ROS at around 9%. It was

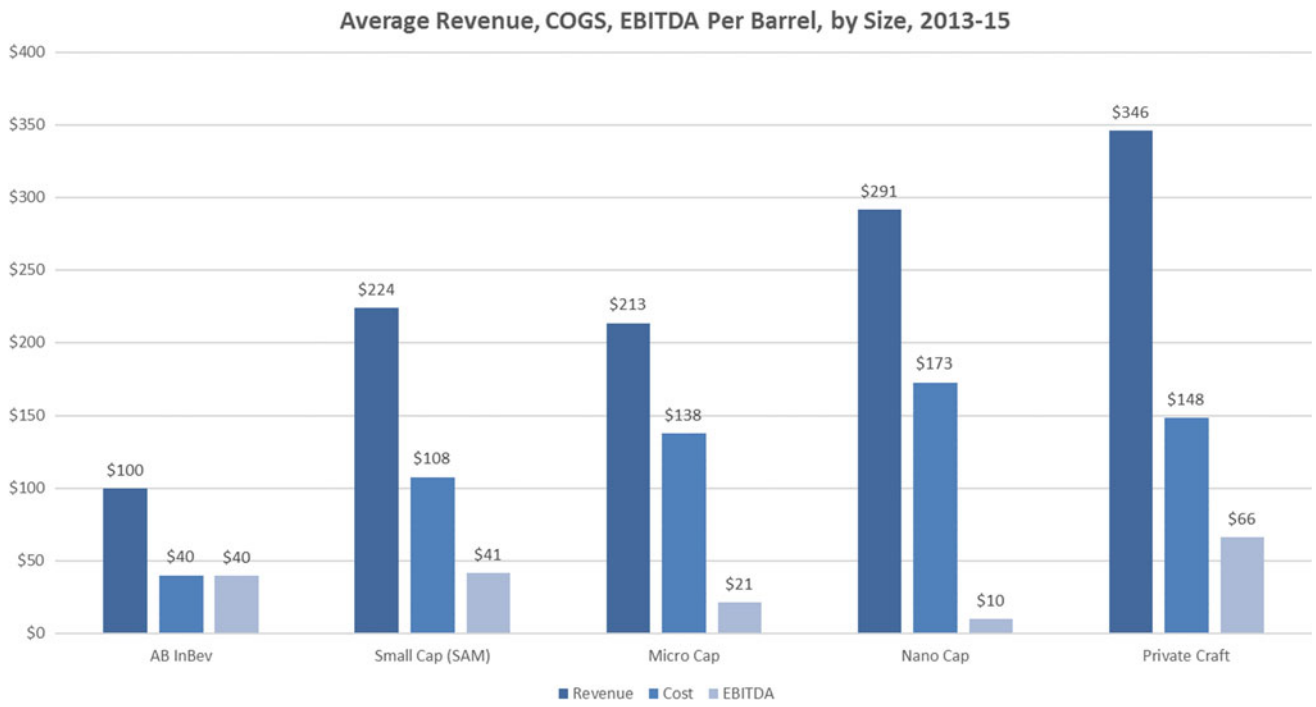

Fig. 2 Profitability analysis per barrel

Table 5 EBITDA as a percentage of net revenue

Average EBITDA per barrel, by size, 2013–15	
	EBITDA % Rev
AB InBEV	40.0%
Small cap (SAM)	18.3%
Micro-cap (BR, BRB, BREW)	9.9%
Nano-cap (RB, MENB, HOPS)	3.4%
Private craft	19.1%
Madsen et al. (2012) 10-year average EBIT, 2000–2009	
	EBIT % Rev
AB InBEV	19.3%
SABMiller	12.9%
Heineken	17.4%
Carlsberg	10.7%
200 very large breweries	12.6%

relatively more effective at leveraging assets, generating an ROA double that of AB InBev. Boston Beer also outperformed it larger rival when it came to earnings per share, generating $7.46 compared to AB InBev's $5.05 in 2015.

Using these basic measures, both AB InBev and Boston Beer show strong profitability, far above that of the nano- and microbreweries in the sample. Micro-cap firms hovered around marginal profitability. Craft Brew, Big Rock, and Brick Brewing demonstrated ROS results around 1–5% fairly consistently over the three years, though the Brick reported challenges in the 2015 year. ROA, ROE, and EPS tell a similar story over the same period. The nano-caps Russell, Appalachian, and Mendocino struggled with losses over the three years. Appalachian and Mendocino reported net losses each year, whereas Russell struggled with losses in 2013 and 2014 and achieved a thin profit margin in 2015.

Table 6 2015 ROS, ROA, ROE, and EPS by size

	Profitability			
	ROS (%)	ROA (%)	ROE (%)	EPS$
Nano				
Appalachian Mountain Brewery, 2013	−22.47	−19.87	38.98	−0.02
Appalachian Mountain Brewery, 2014	−20.30	−18.60	342.75	−0.02
Appalachian Mountain Brewery, 2015	−18.41	−25.85	84.83	−0.04
Mendocino Brewing Co. Inc., 2013	−2.46	−4.55	−84.81	−0.07
Mendocino Brewing Co. Inc., 2014	−4.52	−8.24	331.08	−0.12
Mendocino Brewing Co. Inc., 2015	−3.68	−6.74	71.99	−0.09
Russell Brewing Company, 2013	−8.10	−7.63	−14.97	−0.01
Russell Brewing Company, 2014	0.82	0.85	1.41	0.00
Russell Brewing Company, 2015	20.18	19.75	25.81	0.02
Micro				
Big Rock Brewing, 2013	6.13	5.98	8.52	0.40
Big Rock Brewing, 2014	1.70	1.30	1.62	0.08
Big Rock Brewing, 2015	−2.72	−2.09	−2.86	−0.11
Brick Brewing Company Ltd., 2013	1.39	1.13	1.62	0.01
Brick Brewing Company Ltd., 2014	3.84	3.10	4.06	0.03
Brick Brewing Company Ltd., 2015	4.24	3.26	4.49	0.03
Craft Brew Alliance, 2013	1.09	1.15	1.76	0.10
Craft Brew Alliance, 2014	1.54	1.72	2.67	0.16
Craft Brew Alliance, 2015	1.09	1.17	1.87	0.12
Small				
The Boston Beer Company lnc., 2013	9.52	15.85	23.30	5.47
The Boston Beer Company lnc., 2014	10.05	14.99	20.81	6.96
The Boston Beer Company lnc., 2015	10.25	15.25	21.34	7.46
Large				
AB INBev, 2013	38.24	11.66	29.87	8.90
AB INBev, 2014	24.01	7.93	20.83	5.64
AB INBev, 2015	22.63	7.33	21.58	5.05

Both Appalachian and Mendocino reported negative earnings and equity positions, resulting in false positive Return on Equity ratios.

Net profitability, then, appears to move along the spectrum from nano-cap to larger cap companies. On the one end, nano-caps are not profitable, but as one moves along the scale companies become more consistently and significantly profitable.

Discussion

Research about financial performance of brewers has generally focused on large brewers and suggests profitability that improves with size (Tremblay and Tremblay 2005; Madsen et al. 2012). The results of this research about publicly-traded small-cap brewers tends to support this premise. As firm size, as measured by market capitalization, increased so did profitability.

Notwithstanding the above, size is not a perfect indication of profitability for these firms. First, when examined using EBITDA per barrel analysis, and in contrast to Elzinga's (2004) findings, the smallest craft brewers were most profitable. These firms appear to inflate profits using a high-priced strategy characteristic of premium-product niche producers and thereby generate the highest EBITDA per barrel of any of the firms analyzed in this study. Would these earnings translate to Net Income? Are the earnings representative of niche strategies of craft brewers in general? Further research would be needed to determine answers to these questions. Second, when examined using ROE, ROA, and EPS calculations, Boston Beer is comparably or more

profitable than its far larger rival AB InBev. While certainly larger than the other small-cap firms, it is considerably smaller than the largest brewer in the world. It appears the firm achieved a size that still allows it to leverage decent revenue per barrel coupled with decent costs per barrel to achieve premium profitability relative to other firms. As a result of these findings, a more nuanced understanding of profitability emerges from this research, one which recognizes profitable potential regardless of firm size.

In terms of strategic considerations, research about strategy suggests craft brewers leverage geographically focused niche differentiation ("differentiation focus", per Porter 2008) whereas larger firms compete based on scale production and cost management. Analysis of publicly-traded small-caps tends to support this literature, but again with a notable exception. Revenue and profitability analysis supports private craft brewers as tentatively successful differentiators (Kleban and Nickerson 2017, Murray and O'Neill 2011). Cost and profitability analysis supports AB InBev as a successful cost leader (Elzinga 2004). Revenue, cost, and profitability analysis support micro- and nano-caps as "stuck in the middle" poor performers (Porter 1980). Perhaps with the transition from a primarily differentiation strategy to one where cost management becomes an increasingly important element, these firms struggle. Small-caps often struggle in the years following their listing (Locke and Gupta 2008). During this time of transition from private to public entity brewers may also be transitioning from one strategy to another. The smaller cap firms market themselves as craft brewers, but cost per barrel data suggests they have yet to obtain efficiency to offset any lost differentiated market positioning. But, as noted above, this same analysis suggests the "middle" positioning of Boston Beer produced consistent (three-year), lucrative profitability. Has it found the sweet spot of scale and differentiation? When examined across all measures, rankings and interpreted results, the best performing company of the firms of this sample was Boston Beer. On a per barrel and dollar-basis, Boston Beer was most effective among small public companies at translating EBITDA to net earnings and a return for shareholders. The firm is still considered a "craft" brewer by the Brewers Association and maintains a medium level of revenue per barrel among the firms in the sample, both of which suggest elements of a differentiation strategy. While MarketLine (2015a) considers Boston Beer's lack of scale as a weakness, this assessment is not supported by the numbers. Cost per barrel was second lowest, trailing only Ab InBev, and gross margin was highest among publicly-traded firms. The company was as profitable and by some measures more profitable than the industry dominant, cost-leading AB InBev, even though its sales and production were a fraction of the larger firm.

The Boston Beer example may provide evidence in support of recent calls to consider the viability of hybrid strategies. Whereas firms such as Toyota and Apple execute hybrid strategy successfully on a large scale, Boston Beer may represent a smaller scale example. Is this a deliberate strategic decision, or the consequence of the firm simply in transition resulting from growth? Has their position as a differentiator been undermined by the emergence of so many craft brewers, forcing them to reposition in the marketplace? Is this sustainable into the future, or is this temporary, as Porter suggests? While financial analysis seems to confirm the cost leadership and differentiation points noted above, further research may be required to ascertain the strategic nature of Boston Beer's positioning.

Publicly-traded small breweries experience another important transition that has implications for differentiation through localism and authenticity. Every business can be assessed for its ownership, direction, and management and the relationship of these stakeholders that forms the corporate governance of an organization (Gillan 2006). The owner/managers of small craft firms typically live within the communities in which they conduct their operations. Craft breweries that undertake public listing invite ownership beyond the local community. The shares of ownership of publicly-traded companies can be purchased and held by a geographically diverse group of individuals and companies. Big Rock Brewery is a brewery from Alberta listed on the Toronto Stock Exchange and an American OTC exchange. Boston Beer has professional investment shareholders including Goldman Sachs Group, Inc., The Vanguard Group, and Dimensional Funds Advisors. The largest shareholder of the Craft Brew Alliance Inc. is AB InBev. With the public listing of craft breweries comes the de-localization of ownership, direction, and management. De-localization of ownership erodes the differentiation of spatially derived names and images and may, for some consumers, break the relationships that were developed from "almost sacred" understanding of the "deeper meaning" of authentic, neolocal craft brewing (Gatrell et al. 2017, 362).

The findings of this study are clearly constrained by the small sample size and the absence of predictive statistical analysis. The private craft comparison data cannot be taken as representative of U.S. craft brewers in general. Differentiation is a broad concept that extends beyond the measures is used in this chapter, and little in the way of focus analysis was completed.

Conclusion

The remarkable growth in the craft beer industry has changed the competitive landscape and raised questions about the financial position and performance of breweries. With so much attention placed on multinational giants and so much interest in craft brewers, it is easy to lose sight of firms in the

middle. Cabras and Bamforth (2016) suggest a call for research about microbrewery business models and strategies. This chapter profiles seven companies that present themselves as craft brewers while accessing funds through public markets. This model differs from geographically focused, niche differentiators like craft brewers and cost leaders like AB InBev. Financial analysis indicates that many of the brewers in this chapter are underperforming, raising questions about the viability of the model they have undertaken. Many of these firms struggled with financial performance over the 2013–2015 period, lending support to past research which focused on achieving profitability through size or niche offerings. However, bigger isn't necessarily better. The most successful firm by most measures was Boston Beer, small in comparison to AB InBev but large compared to microbreweries. Boston Beer appears to have generated consistent, attractive returns, but this appears to be unique to the group.

In light of the strategies and financial performance of these firms, small-cap craft breweries, and perhaps publicly-traded small-cap firms in other artisanal industries, may require distinct theoretical consideration (Ang 1991). They are at the crossroads of contentious approaches to financing. The strategy of publicly-traded small-cap artisanal companies seemingly aims to balance all that is craft and with what some deride as commercial craftiness. Coupled with the financial performance challenges observed in this group of firms, and the dangers of operating in the void between accepted strategic theory, serious questions emerge about the expectations of shareholders in public markets versus customers seeking craft beverages.

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The Emergence of Italian Craft Breweries and the Development of Their Local Identity

11

Christian Garavaglia

Abstract

The entry of craft breweries has transformed the Italian beer industry. In 1988, a massive flow of craft breweries started to compete with mass producers. The craft's nature and the local orientation of craft brewers are the key aspects of their success. First, the sentiment and attachment to the concept of a "craft" gave to craft beer a meaning that goes beyond the beer itself. Second, the ability of craft brewers to form connections to local places creates a sense of distinctiveness that satisfies the desire of consumers to re-establish connection to local places, communities, and economies, tending toward neolocalism. These attributes differentiate their products from mass-produced beer, giving a strong identity to craft breweries. Craft brewers have developed strategies to strengthen such attributes by using local ingredients such as fruits in beer and by intertwining the worlds of wine and beer.

Introduction

Italy has always been a Mediterranean country oriented toward wine production and consumption. However, Italy is among the regions that display the most remarkable changes in alcohol consumption in the last decades. In particular, the consumption and production of wine have been sharply declining, while beer consumption and production have been gradually increasing.

Notwithstanding the increase in the consumption and production of beer, the number of large factories declined from 35 in 1975 to 14 in 2015. However, from the late 1980s, the craft beer revolution has transformed the industry. A massive entry of new, small craft breweries occurred throughout the 1990s and the 2000s. Nowadays, Italy is among the countries with the highest number of breweries per capita worldwide (Garavaglia and Swinnen 2018a).

This chapter investigates the birth and diffusion of craft breweries, focusing on the nature of their craft and their local orientation. We argue that the sentiment and passion attached to the notion of a "craft" gives craft beer a meaning that goes beyond the beer itself. Moreover, the ability of craft brewers to create connections to local places creates a sense of distinctiveness and uniqueness that gives strong identity to craft breweries. The diffusion of craft breweries manifests the attitude of neolocalism that has developed in the last decades, affording craft breweries increasing success in Italy. This success might be interpreted as a reaction to the competition between craft versus industrialization and between local versus global. Craft breweries have developed strategies to sustain their image of "craft and local." One of these strategies concerns the use of local ingredients in brewing beer. The peculiarity of Italian craft brewers relates to their ability to create links to the world of wine. As such, an investigation of the intertwining of the beer and wine spheres is one of the main contributions of this chapter.

This study is based on different sources of data. There are no official statistics on the craft beer market in Italy. The most detailed source of data and information is the website www.microbirrifici.org, which constantly registers and updates the number of new openings and closures, with the collaboration of many beer enthusiasts. We matched the data provided by this website with the data of the Slow Food beer guides, the Annuario della Birra and the Assobirra reports. In case of missing data or mismatches, we obtained data from craft breweries' websites, Facebook pages, emails, or made telephone calls. In addition, we conducted personal interviews with craft brewers, particularly the first entrants. The resulting data and information were first used to examine the temporal changes in the number of craft breweries (microbreweries and brewpubs) from 1988 to 2015. Second, we

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mapped the location of each craft beer producer to display the spatial distribution of establishments over time. Finally, the interviews and publicly available information were used to identify the most relevant styles and products in the Italian craft beer market.

The chapter is structured as follows: in section "Industrial Dynamics and the Evolution of the Italian Brewing Industry" we briefly present the dynamics of the Italian beer industry, while section "Craft Brewing in Italy: From International Connections to the Development of Local Ties" discusses the emergence and diffusion of craft brewing in Italy, analyzing international connections and the development of local ties. Section "Glocal" Competition discusses the strategic responses of mass producers to the success of craft beer, while section "Conclusion" presents the conclusions.

Industrial Dynamics and the Evolution of the Italian Brewing Industry

The Italian beer industry displays similar evolutionary dynamics as many other industries in most of the industrialized countries. Many industries display an evolutionary pattern that goes through stages characterized by a fragmented structure to a more concentrated one as the industry ages (e.g., television, automobiles, tires, and radio producers in the United States) as explained by the industry life cycle model (Klepper 1996, 1997). Economies of scale in production and marketing, together with mergers and acquisitions, have been considered the main determinants of the domestic consolidation of breweries (Garavaglia and Swinnen 2018a). After World War II, national leaders emerged and the degree of industry concentration significantly increased in almost all countries. Some of these leaders soon became international in their scope. A gradual process of globalization characterized the evolution of the beer industry in the last decades. Recent data attribute to the world's top four leading firms more than 50% of the market share (Howard 2014; Madsen and Wu 2016).

The evolution of the Italian beer industry conforms to the evolutionary dynamics discussed above. After World War II, bigger domestic firms emerged and dominated the market, acquiring smaller producers and exploiting economies of scale in production and marketing. Subsequently, during the 1980s and 1990s, foreign multinationals massively entered the Italian market, taking further steps toward increased concentration. Figure 1 shows the increase in industry concentration from 1950 to 2010 based on the C4 index. The consequences were a gradual decrease in the number of producers and the

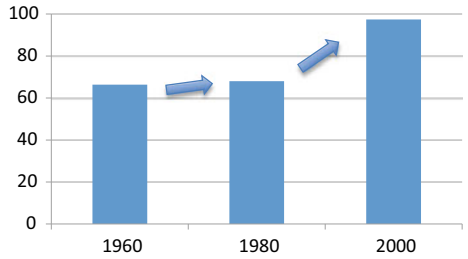

Fig. 1 C4 index (%), 1950–2000. *Source* Author's computations and Colli (1998). Imports share excluded

homogenization of beer. All the top-selling brands in the mid-1990s were standardized and homogeneous lager beer (Garavaglia 2018).

While the industry was dominated by a few multinationals, in the late 1980s to the beginning of the 1990s, a wave of small craft producers started to enter the market, thus causing the number of producers to increase once more (Fig. 2). Garavaglia (2018) analyzes the causes behind the entry of craft breweries in Italy. Among other causes, two factors have been credited with craft breweries' success against globalization and in countering industrialization and mass production, including the reawakening of the spirit of craftsmanship on the one hand, and the recent rediscovery of the importance of a sense of place and connection with the local communities, on the other hand. These factors created a fertile ground for the entry of new, small, and local craft firms.

The process of globalization in advanced economies eroded the importance attached to the distinctiveness of local economies and spaces, causing products and economic environments to become more and more standardized. Shortridge (1996) was among the first to recognize a remarkable move in the opposite direction in the United States. This is called "neolocalism."

New, small firms are often considered as practicing a "craft", as opposed to the functioning, view, and mission of large factories (Inkson 1987; Johnson 2009; Sennett 2008;

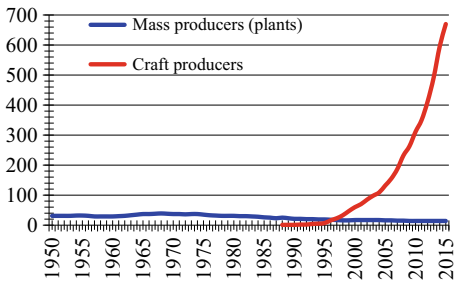

Fig. 2 Number of breweries (mass producers plants and craft breweries), 1950–2015. *Source* Author's computations

Crawford 2009; Micelli 2011). While the industrial production has evolved toward customization and de-personification of goods, the "craftsman" has put himself in continuous relation to the customers, increasingly exploiting exclusive products and expressing sentiments as passion and emotions in the craft.

Craft breweries are able to embody the characteristics of craft and local. In conclusion, the advent of the craft producers has revolutionized the beer market in Italy, as in many other countries (Garavaglia and Swinnen 2018b).

Craft Brewing in Italy: From International Connections to the Development of Local Ties

The International Geographical Connections

The first attempts of craft brewing in Italy started in the late 1980s to the beginning of the 1990s. During these decades, there were gradual social, cultural, and economic changes in the industrialized societies, which also played a key role in determining changes in the consumption of food and beverages. The consumption and production of beer are part of this broader narrative.

Among these changes, the 1980s and the 1990s were crucial decades in terms of the international integration of people and economic relationships. In 1985, Belgium, France, Germany, Luxembourg, and the Netherlands signed the Schengen Agreement, documenting these states' agreement to progressively remove controls at their common borders and to introduce freedom of movement for all citizens. The Schengen Agreement has been extended over time. Italy signed it in 1990, although it did not go into effect until several years later. In addition, the mid-1980s marked the beginning of the process of the European air transport's liberalization, with the gradual implementation of measures that established different stages of deregulation between 1983 and 1992 (Arrigo and Giuricin 2006). This facilitated the movement of people in Europe and made it less expensive, in addition to the development of low-cost airline services. For example, these airlines transported <3 million passengers in 1994, but this figure rose to 14.8 million in 1999, 40 million in 2002, and more than 150 million passengers in 2007 (Cepollina and Parola 2008). According to Istat, during the 1980s, tourism, for the first time, began to play a socially relevant role. The types of holidays changed, and the number of citizens visiting foreign countries constantly increased over the years. During the 1980s to the 1990s, the internationalization of people and the forms of communication expanded consumers' knowledge about goods and food products, including beer. Besides the standard lager beer, Italian consumers became progressively aware of new varieties, like the English ales, Irish stouts, Belgian Trappist, and Abbey beer. The feasibility of beer production on a small scale, with the distribution of beer at the local level, has always been a tradition in other countries like Germany, Belgium, and Great Britain. However, this was a "new" discovery for Italian consumers, whose travels provided an opportunity for them to increase their knowledge of the drinking habits abroad.

Moreover, during those times, new models of consumption were diffused, together with the spread of a new form of distribution that was in contrast to the traditional Italian osterie and Caffè bars. Specifically, pubs proliferated during the late 1980s and the 1990s, further broadening the culture and knowledge of beer. Irish pubs, English pubs, French- and Belgian-style brasseries, and German taverns were typical examples of the new models of consumption during those years. Patterns of consumption gradually changed; young people, in particular, started to discover and try new varieties of beer.

The dynamics of the import of beer in Italy from the 1970s to the 1990s was in line with this trend. Beer imports registered a dramatic increase during this period as shown in Fig. 3. This reveals, on the one hand, the increasing economic integration among countries and, on the other hand, the increasing penetration of differentiated types of beer into the Italian beer market, where the standard lager prevailed. In other words, the foreign influence gradually exerted its impact on the Italian beer market, and the Italian demand progressively expressed preferences for a greater variety in beer products.

Moreover, the stories of pioneer firms reveal international connections. For instance, the stories of the first entrepreneurs show how the pioneers of craft brewing in Italy were directly or indirectly influenced by the foreign beer culture, through their travels to traditional beer-oriented regions, where they were intrigued by the foreign experience of the existing microbreweries and where they came into contact with people working in the beer industry.

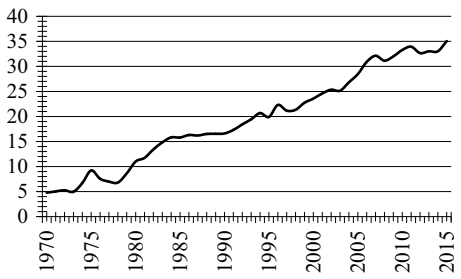

Fig. 3 Import share (%) in the Italian beer market from 1970 to 2015. *Source* Author's computations of Assobirra data (various years)

The International Influence on the Pioneer Brewers

Nine craft breweries entered the Italian beer market between 1988 and 1995. The first interesting aspect related to how international influence provided stimulus to the pioneer entrepreneurs. Most of these entrepreneurs reported influence or inspiration from foreign examples of craft brewing. In what follows, we present the results of the interviews with the founders of the first Italian craft breweries.

The pioneer was the brewpub SensoUnico in Torbole (TN) on Lake Garda in 1988, which produced the beer Orabräu. The brewpub was founded by Gianfranco Oradini and his brothers in collaboration with the famous Bavarian Luitpold, which supplied the production equipment and know-how of brewing beer (Monarca 1991).

In January 1991, Peppiniello Esposito opened the microbrewery St. Josef in Sorrento (NA) after working for several years in Bavaria, Germany (Nasini 1991), where he was inspired by the German culture and quality of beer.

The third entrant was the microbrewery Aramini Brauerei, opened in 1992 by Renzo Aramini, a former bartender, near Asti (Bearzatto 1993).

Industrie Birre Speciali(I.B.S.) was founded in 1993 in Capoterra (CA) in Sardinia by Adis Scopel, a brewmaster who had worked in some breweries in Germany and for several years at the historic plant of the Italian beer Ichnusa.

In 1994, two other craft brewers entered the market. Modesto Bottone founded the Brew Mood Ale House microbrewery in Sant'Angelo in Formis of Capua (CE). He used to visit his brother in the United States, where he came in contact with many homebrewers, particularly with the Northampton Brewery in Massachusetts, where he had the opportunity to acquire some training. When he came back to Italy, he decided to start his business in beer brewing on a very small scale. Bruno Ioan founded the Mastro Birraio brewpub in San Giovanni al Natisone (UD). The founder used to travel frequently for commercial reasons before founding the brewpub and declared that he was inspired by some microbreweries in Budapest, Hungary. In fact, the first brewmaster he employed came from Hungary.

The other three craft breweries were Mastro Birraio Lind Beer in Argelato (BO), Turbacci in Mentana (Rome), and Greiter in Merano (BZ), which opened in 1995.

Many of the first craft breweries started producing a lager-style beer, different from the mass-produced lager, as it was unfiltered and/or unpasteurized. This tendency showed that the influence from foreign traditions still existed, particularly that of Germany. The differentiation attached to the early craft breweries was both because of the novelty of this phenomenon and because of the intrinsic diversities of their beer with respect to the pasteurized and micro-filtered mass-produced lager. However, this degree of differentiation between craft and mass-produced beer was less significant than what developed a few years later, when Italian craft brewers were able to break away from the constraints of the foreign traditions and jump into a more creative and free setting.

The localization of the first craft breweries did not follow any particular criterion, mostly being based on the personal residence of the entrepreneurs. Therefore, the spread of the first craft breweries was quite dispersed, as shown in the first map in Fig. 4.

Diffusion and Localization of Craft Breweries

The role of the pioneering firms was crucial in establishing a new, viable path. The followers defined and refined what the pioneers had created and explored. Thus, the role of the first followers became as important as the first entrants in shaping the path of the diffusion of the new organizational form (i.e., craft brewing).

The first manifestation of a new organizational form lacks legitimization, suffering from the "liability of newness" effect. As the organizational form proliferated, its legitimacy rose. Firms established during periods of rising legitimization found it easier to attract capital and customers and identify proper suppliers and employees. Moreover, they faced fewer institutional impediments (Carroll 1997). While the legitimization effect increased, further opportunities associated with this organizational form opened up. The first wave of craft beer producers needed time to convince an increasing number of customers about the quality of their products and also to refine their products. Moreover, many of them suffered because of a lack of legislation concerning the production of beer on a small scale, such that small artisanal firms were subjected to the same finance laws and authorization requirements as large national firms. Gradually, craft brewers gained success, and the number of craft breweries continuously increased.

The number of craft producers registered a dramatic increase after 2005, as shown in Fig. 2. The largest part of craft beer producers consisted of microbreweries. In 2015, there were 518 active microbreweries and 152 brewpubs, with an estimated total market share of the craft beer at 3.3% (Ravelli and Pedrini 2015). The localization of the first craft breweries was geographically dispersed, while the successive diffusion concentrated more in the northern regions. Figure 4 shows the towns where at least one craft beer

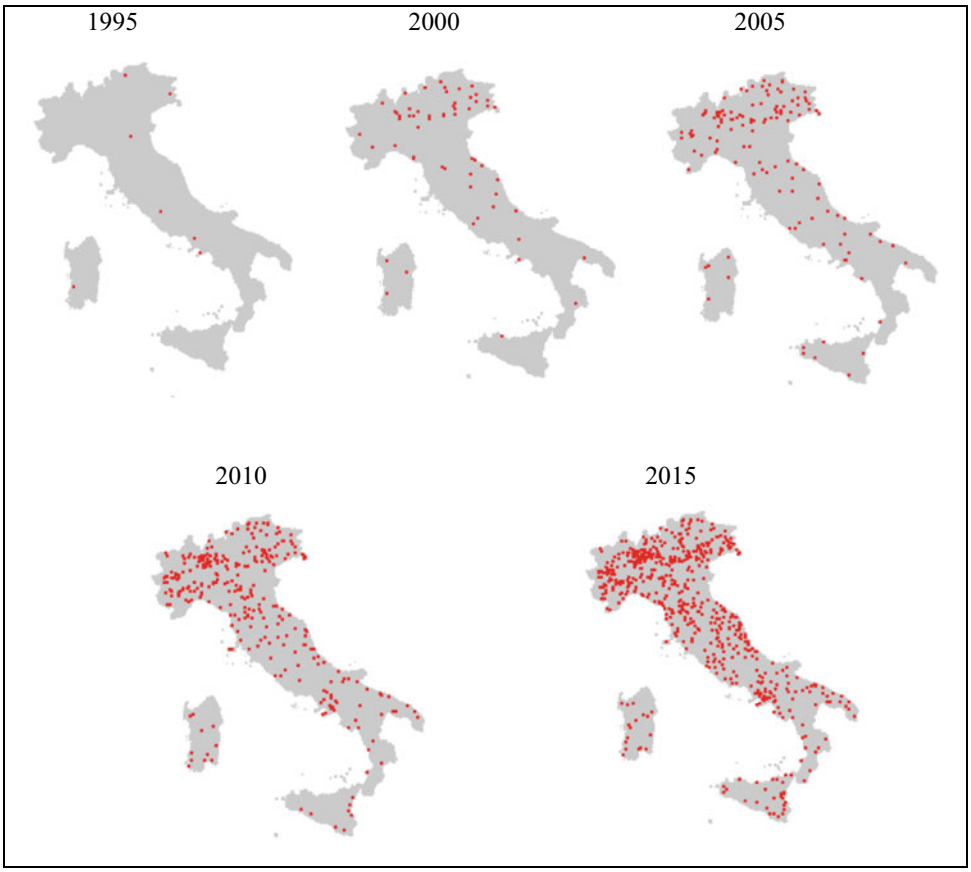

Fig. 4 Localization of craft breweries, 1995–2015

producer existed. These data demonstrate both the geographical diffusion of craft breweries from 1995 to 2015 and the increasing concentration in the northern part of the country. It is clear from the maps that the exponential increase in the number of craft breweries occurred after 2005, as also shown in Fig. 2. Figure 5 shows the localization of craft beer producers among the 20 Italian regions, with Lombardy and Piedmont regions having the highest number of producers at 109 (16.26%) and 74 (11.04%), respectively. These results are not a surprise since Northern Italy has always been the most advanced area of the country, as well as the territory where the consumption of beer has been historically more diffused.

The Development of Local Identity

If the influence of the foreign examples of craft brewing and the traditions of foreign countries served as inspiration and stimulus for knowledge creation, both among Italian pioneers of craft beer production and consumers, we argue that at the heart of the craft beer's success in Italy is the ability to create a truly innovative environment and a deep sentiment around craft beer production and consumption. On the one hand, the lack of a deep-rooted tradition could imply scarce availability of skills and knowledge about beer production. On the other hand, this could generate an environment free of constraints and more open to exploration and experimentation. Taking inspiration from the foreign beer culture, combined with the creativity of the Italian food culture, craft brewers gradually produced the conditions for developing a distinct identity for the Italian craft beer movement.

There are three crucial factors for understanding the success of the craft beer phenomenon in Italy: the rediscovery of the meaning of the craft and its emotional dimensions, the novelty of the products supplied, and the people's desire to revitalize a sentiment of community linked to local places.

First, the craft beer producers contributed to the rediscovery of the concept of "craft." The notion of craft evokes sentiment and passion. Beer craftsmanship has been a means through which a new generation of young beer enthusiasts started to relate to their own work with embodied and affective engagement, revealing meaning, and personal identity (Sennett 2008). Thurnell-Read (2014) claims that a "craft" is emotive and embodied. In a paper about the diffusion of craft brewing in the United Kingdom, Thurnell-Read (2014) concludes that the notion of craft served as a means of addressing the personification of skills, as well as emotions, such as passion and satisfaction, at work

Fig. 5 The distribution of the number of craft breweries in Italian regions, 2015

in the brewery. In craft production, the goods are seen as manifestations of the maker's identity. Craft products represent the combination of cognitive and physical skills of the maker with the materiality of ingredients and equipment of production, as well as the identity of the local places: "*knowledge and skills are sensed and displayed through the tangible process (the smell and sight of the fermentation vessels during brewing) and outcome (the taste and appreciation of the final beer) at work in the brewery setting,*" (Thurnell-Read 2014). A large part of the first entrepreneurs and brewers in the Italian craft beer segment were young people "in love with" the idea of producing something new for the Italian scene. Craft brewers expressed themselves in their products, demonstrating passion and creativity (Fastigi and Cavanaugh 2017). They were producing something that they personally enjoyed.

Second, the early craft beer producers were firstly consumers in search of something new. The natural consequence was that, after decades of consolidation of breweries and homogenization of the product that led to the prevalence of very similar types of lager beer (according to their organoleptic characteristics), these early producers started to produce something different, with more distinctive flavors than the lager produced by the mass producers thus satisfying the preferences of a new wave of consumers. The brewers Giampaolo Sangiorni (Birrifcio Lambrate) and Agostino Arioli (Birrifcio Italiano) claim that pubs during the 1980s contributed toward communicating to young people that there were interesting types of beer worldwide. Nicola Gabrielli (Arte Birraia) believes that the 1980s to the 1990s were the first years when young people started traveling internationally and experiencing the traditions of the foreign beer and pubs. According to Guido Taraschi (founder of the Centrale della Birra craft brewery and the first President of the Italian Association of Craft Brewers, Unionbirrai), "*In those years, people were ready for something new and different; people were tired of the standard products.*" The absence of linkages to any tradition helped the brewers express their identity and creativity in production, shaping the "new variety" of beer. Scott Morton and Podolny (2002) emphasize how producers' preferences contribute in shaping the selection of products in the market as well as consumer preferences, creating variety and a high degree of differentiation among products. If nowadays beer

consumers have familiarity about the styles Indian Pale Ale (IPA), American Pale Ale (APA), Porter, Imperial Russian stout, saison, Vienna, Koelsch, gose, and others, it is due to the great availability of these types of beer supplied by craft brewers. Only a small percentage of the total beer supplied by Italian craft breweries belongs to the pale lager-style (13%, according to Savastano et al. 2009). Moreover, most craft breweries have gradually enlarged their portfolios of beer, introducing new beers characterized by different styles every year. If we consider the totality of craft beer available in the market, we could refer to the hyper-differentiation defined by Clemons et al. (2003) as the increased importance of being truly different. Hyper-differentiation can be described as "*the art of reducing the importance of price as the principal determinant of customers' selection among alternative goods and services.*" Beer is a highly differentiable product. In a study on craft beer in the United States, Clemons et al. (2006) claim that the move toward hyper-differentiation increases product diversity, which ultimately increases prices and consumer satisfaction. The authors conclude that in markets that are responsive to hyper-differentiation strategies "*it may be particularly important to design a product that at least some consumers love, rather than developing a middle-of-the-road product that consumers neither love nor hate.*" This can be described as a strategy of resonance marketing, according to which, when a product provides a unique degree of customer resonance it can be sold at extremely attractive margins (Clemons et al. 2006). This contributes to the increase of the supply of different varieties in the market. This result clearly contrasts with the strategy of the mass producers whose products aim to appeal to a large set of consumers.

Third, the increase in the variety of the beer supplied happened mainly with an orientation to local markets. Like in other cases, Italian craft breweries frequently invoke geography and specific places in their brand names, thus highlighting their connection to these places. This strategy is part of what is known as "neolocalism." Guido Taraschi (Centrale della Birra) believes that the Italian beer market was flat, and the new, unique ideas of success were related to a franchising Irish or English pub. This stimulated the first wave of entrants to make something different but local. The current Italian beer scene is plenty of examples of beer linked to some local identities. We identify at least three dimensions of linkages between beer and spaces: the use of a dialect in the name of the beer, the name of the geographical places in the name of the firm/brand, and local ingredients in beer production. While the first two dimensions represent a clear "marriage" between beer and places, the latter is the most interesting because of its additional impact on the intrinsic characteristics of the beer. With a craft beer, consumers are not drinking a brand but an idea; this idea is often the connection to a place (Khermouch 1995) and the connection to the identity of people who employ their craft knowledge in production.

Year by year, craft brewing increasingly attracted the attention of consumers to craft beer. Consumer interest in the beer culture, the story of these products, the ingredients used, the connection to local communities, and the stories of Italian craft producers themselves was piqued. Consumers started to participate in local cultural associations and engage on blogs and websites about craft beer, discovering more new stories, new varieties of beer, and new producers. There was active attention, far beyond the pleasure of consuming a good product, which gave the consumers a crucial role in contributing to the diffusion and maintenance of the craft beer segment in Italy, similar to what happened in the 1970s in the United Kingdon with the CAMRA consumer movement (Mason and McNally 1997; Danson et al. 2015).

Connection to a Place and the Use of Local Ingredients in Beer Production

The use of beer names and images that reflect the places where they are produced to create local identities and attachment to places has been employed by many craft breweries in various countries. Schnell and Reese (2003) and Schnell (2013) analyze the practice of the American craft breweries of using historical figures, local characters, landmarks, historical and climatic events, nostalgic images of yesteryear, historical lifeways, and images of nature in their names and the artwork on their labels to consciously create a process of neolocalism. Locally rooted names and images create a sense of belonging to a unique place for people who live there and also a chance to share with other people one's pride for the place's distinctiveness.

Italian craft brewers have followed these strategies. Given the smaller geographical extension of Italy compared with the United States, our discussion enriches the investigation of Schnell and Reese (2003) and Schnell (2013), pushing even further the potential of using local images, characters, and histories to create local loyalty and identity.

Furthermore, our analysis goes beyond the scope of Schnell and Reese (2003) and Schnell (2013) because we emphasize another strategy of craft breweries to actively create a connection to places, thus fostering neolocalism: the use of local ingredients in beer brewing.

Schnell (2013) points out that breweries and wineries construct localness in different ways: "*While wineries generally ascribe their rootedness to the very soil and climate their grapes are produced in (though some import grapes from elsewhere to carry out their craft) , brewers usually draw their raw ingredients from elsewhere; barley and especially hops, are grown in geographically concentrated areas, and hops are said to similarly gain a large part of*

Fig. 6 Examples of the utilization of chestnuts and fruits in the artwork of the labels; Birra Amiata, Montegioco, and Loverbeer breweries

their character from their terroir. Beer brewers thus rely on different means to evoke localness: the art of brewing itself, and the narratives of a place they employ in their marketing." By contrast, we describe how the availability of a wide array of typical agricultural products in Italy and the Italian biodiversity have provided Italians, who are known for their creativity in food production, the opportunity to conduct various experimentations in beer brewing to enable creating a sense of localness and attachment to a place. The most relevant cases relate to the use of chestnuts, the use of fruits, and the links to wine in beer production. In addition, we acknowledge the diffusion of agricultural breweries as a way of connection to local spaces.

The use of chestnuts is of course not new in beer production. However, the Italian case is particularly interesting because of the varieties and differentiation of the chestnuts (Castellotti and Grassi 2011). Some of these have been identified, according to the European legislation (EEC Regulation 2081/92, replaced by EC Reg. 510/2006), as protected designation of origin (PDO) and protected geographical indication (PGI) products to tie the characteristics of the chestnuts to a place. These European certifications guarantee that the quality of the products is based on their link to a particular territory. Craft brewers extensively use chestnuts to enrich and characterize the flavor of their beer. A significant example is the beer *Bastarda Rossa* produced by Birra Amiata brewery in Tuscany, which uses the PGI chestnut "Castagna del Monte Amiata." The label in Fig. 6a clearly evokes the use of chestnuts.

The use of fruit in beer refers to a well-known Belgian practice. Italian craft brewers seem to have enjoyed this field of experimentation. The use of fruit in the Italian craft beer has been vast, including cherries, cassis, peaches, pears, apples, apricots, blueberries, plums, raspberries, blackberries, currant, passion fruit, strawberries, figs, pomegranate juice, pineapple, mango, and maracuja (Camaschella 2017). The ways by which the fruit is used in production and the styles of the beer are also disparate. One of the most relevant examples is given by the Montegioco brewery, a small producer strongly linked to its territory, which has largely used fruit in its beer. The Quarta Runa beer is one of the most well-known in this category, produced with the PDO peaches of Volpedo (Volpedo is a small village near Montegioco) (Fig. 6b). The Loverbeer brewery is also engaged in the use of fruit: the beer *Saison de l'Ouvrier Griotta* is a spontaneous fermentation type of beer that uses cherries (Fig. 6c). Other notable producers are Birrificio Italiano with their beer *Scirès*, which is probably the first relevant beer produced with the adjunct of fruit (it uses the famous cherries from Vignola), and the Birrificio Lariano with their various experimentations, such as *Marén*, *Berries*, and *Fambrus*, which are aged in wooden barrels.

As stated above, the most interesting case refers to the links between beer and wine. The innovativeness of Italian brewers in this field has been recognized by the famous Beer Judge Certification Program–2015 Style Guidelines (BJCP), which included the first Italian beer style, that is, the Italian Grape Ale (IGA). IGA is defined as "*a communion between beer and wine promoted to the large local availability of different varieties of grapes across the country. They can be an expression of territory, biodiversity, and creativity of the brewer.*"

Italy can benefit from an immense heterogeneity of grapes. Each cultivar destined for winemaking has very specific characteristics. This natural richness allows brewers to create various characteristics for their beer. In addition, the production techniques vary. Brewers can choose to use grapes or wine must, which can be normal, partially fermented, concentrated, or cooked; and select its percentage for use in the brewing process. The fermentation may also significantly vary: using yeast for beer, yeast for wine, or without yeast, as in the lambic style. The variability of

organoleptic characteristics that originate from these combinations is vast. The strategic aspects related to IGA beer are the extraordinary possibilities of product hyper-differentiation and the creation of a strong link with the territory (Turco 2017).

Some of the very first and relevant examples of IGA beer are made by the Barley craft brewery in Sardinia. For example, the beer *BB10* is an imperial stout produced with the cooked wine must of *Cannonau*, a typical wine of the Sardinia region. The beer *BBevò* is a barley wine, enriched by the cooked must of *Nasco*, an autochthonous vine of the area near Cagliari, where the brewery is settled. *BB7* is an IGA beer produced with the addition of the fresh flower must (flower must is considered the finest part of grape juice) of local aromatic white grapes. Then, it is concentrated by vacuum evaporation at low temperature. The Italian Association of Craft Brewers, Unionbirrai, organizes the annual beer competition "Birra dell'Anno" (Beer of the Year) to recognize the best Italian beer in various categories. In the last three editions, the winner in the IGA category was La Fenice craft brewery. In 2017, the winner was the *Ira Brut*, produced using must of the famous wine of the area Franciacorta, where La Fenice brewery is located. In 2018, the IGA category was divided into two: the White IGA and Red IGA categories. La Fenice brewery won in the former in 2018 with the beer *Brewine Riserva 2016* and won in the latter in 2019 with the beer *Brewine Rosé*.

The IGA style is not the only example of the intertwining of beer and wine. Italian brewers have increasingly experimented on the use of wooden barrels for the maturation of beer due to the availability of barrels previously used for wine. This is a salient interesting aspect because the beer takes organoleptic flavors not only from the wood of the barrels but also from the wine that was in those barrels.

The most well-known experimentations in this field have been made by one of the oldest Italian craft breweries, Baladin. The founder of Baladin, Teo Musso, has always paid attention to its territory. Baladin is in the heart of one of the most important areas of wine production in Italy, the Langhe, where among others there are important producers of Barolo and Barbaresco wine. Teo Musso has taken inspiration from the world of wine in some of his beer. In the brewery, it is possible to find a cellar totally dedicated to beer in wooden barrels, named "Cantina Baladin." Here, beer age in barrels previously used for great Italian white and red wine, called *Lune* and *Terre,* respectively. The strategy to challenge wine consumers as well is evident both from the characteristics of the beer and the packaging (Fig. 7a, b). Another experimental beer of Baladin is called *Metodo Classico*, shown in Fig. 7c. This beer is produced according to the wine production process for sparkling wine, *méthode champenoise*. This method requires a secondary fermentation in the bottle, during which the wine (beer in the case of Baladin) is left on the yeast for months. The yeast acts on the sugar, thereby creating carbon dioxide and high pressure in the bottle. At the end of this process, the cap is removed to eliminate the excess yeast, and then replaced. This method permitted Baladin to create a sparkling beer and to provide the sensation of drinking sparkling wine but with the flavors of malt and spices used in the production of beer wort.

Some other notable examples are *Ultima Luna* beer, aged for 48 months in Amarone wine barrels by Birrificio Ducato, *Bang Bretta* by Birrificio Italiano, *Barley Wine* of Gjulia brewery, and the single batch productions of Stradaregina brewery.

Finally, a typology of craft brewery is termed "agricultural brewery" if the production is connected with the provision of raw materials through agricultural activity. In 2010, the Italian Government in the Ministerial Decree 5 August 2010 included beer for the first time among the agricultural products. The tendency to cultivate barley and hops in-house has gained attention both from brewers and farmers, such that this type of organization has significantly diffused, mainly promoting further entries by the existing farmers and also stimulating some existing craft breweries to devote effort to becoming an agricultural brewery. Agricultural brewery, by definition, develops a very strong connection to local economies and communities, very similar to the sentiment toward the production of local farmers. The Confederation of farms, Copagri, has been very active in supporting the production of agricultural beer. Copagri promoted the creation of the Consortium of firms COBI in 2003 (Consorzio Italiano di Produttori dell'Orzo e della Birra). COBI runs a malt house in Ancona in which members of COBI give their barley to the malt house (where the barley is malted) and get back the malt to produce beer. Thus, craft breweries do not need to develop a malt house internally. The functioning of this system requires the malt that breweries receive be obtained using barley provided by the members of the Consortium. This addresses problems related to the treatment of limited quantities and excess of variability across years owing to a common sowing plan, decided and managed by the Consortium. This system however, loses the ideal link of the breweries with their own local territories through the use of their own barley. Moreover, in 2011 Copagri registered the collective trademark "Birragricola" that can be used by the associates (Fig. 8): the image clearly highlights the barley, and the name birragricola italiana signals the links to both agriculture and the territory.

Another interesting aspect relates to hops growing in Italy. The growing of hops parallels some features of the growing of grapes because of the importance of the genetic varieties of land and climatic conditions on the characteristics and quality of the final product. The idea of using locally grown hops can create further strategic opportunities to establish local ties with the territories. In 2016, the Italian Ministry of Agricultural, Food, and Forestry Policies

Fig. 7 Some examples of beer connected to wine, as produced by Baladin brewery. The size of the bottles is 50 cl for *Lune* and *Terre* and 75 cl for *Metodo Classico*

Fig. 8 Logo of Birragricola

financed the research project "Luppolo.it." This project is coordinated by the Council for Agricultural Research and Economics (CREA) and represents the first national research study on hops growing in Italy. The goal of the project is to improve the sustainability and competitiveness of Italian beer via the qualitative improvement of the raw materials, with the aim of producing 100% made in Italy craft beer (Carbone 2019). The estimated surface area dedicated to hops growing is 56 hectares (Amoriello 2019). Between 2006 and 2017, 88 firms started hops cultivation; 71% of these started in the last 5 years.

To conclude, the ability of many Italian craft brewers to create a connection to places and local identities has followed —and is following—the strategy of using local ingredients in beer brewing. The most remarkable aspect is the links between beer production and wine, which has given birth to a new style: the IGA. This is a clear confirmation of the increasing role played by Italian craft beer producers in the world.

Our discussion provides evidence that we are now a step forward with respect to Schell's (2013) argument, as expressed in the beginning of the paragraph. Italian craft brewers have proven so far to go beyond marketing itself as a means to evoke localness: particularly the use of local ingredients, the connections to grapes and wine, the increasing attitude to grow (and use) local hops, and create a concrete way of localness linked to the *terroir*.

"Glocal" Competition

Italian craft breweries have evolved since their first appearance in the market in 1988. They gradually developed strategies to increase the variety of beer styles produced, strengthening the perception of product differentiation as opposed to the homogeneous mass-produced lagers. Moreover, they created connections and ties to the local places and communities. The success of craft breweries and their local vocation has been considered a geography-related reaction to industrialization and globalization. The future of

the craft beer movement depends on the ability of breweries to maintain these passionate sentiments and attachment to craftsmanship and to localness.

Mass producers also have a key role in the dynamics of the beer industry and the craft beer segment. Initially, the mass producers did not believe that craft breweries could be a real threat. Hence, they did not react seriously. However, craft breweries continued to gain larger market share and attain success among consumers. Therefore, the mass producers have started to take strategic action.

First, big breweries introduced craft-style beer in the market. The recent reaction of the Italian market leader, Heineken Italia, is evident. Heineken owns (among others) the traditional national brands Moretti and Ichnusa. In 2015, Moretti launched new types of beer called "regionals." These are types of lager beer flavored with some local ingredients, for example, barley and spelt from Tuscany for the Moretti *alla Toscana*, blueberry and rice from Piedmont for the Moretti *alla Piemontese*, apples from Friuli Venezia Giulia for the Moretti *alla Friulana*, and flowers blossom from Sicily for the Moretti *alla Siciliana*. Previously, in 1999, Heineken, through the Ichnusa brand, produced *Spirtu*, a flavored beer with myrtle, and in 2006 *Jennas*, an unpasteurized lager (Garavaglia 2010). These are manifest attempts of the management of Heineken to create a local connection to their Italian brands and directly compete with the craft beer. The more recent reactions have been more resolute. The Italian Parliament[1] defined the requisites of craft beer, requiring that the beer does not undergo pasteurization and micro-filtration during the production process. In 2017, Heineken Italia launched a new version of its brand Ichnusa, named Ichnusa Non Filtrata, an unfiltered lager. In addition, Heineken Italia started to produce new styles, never produced before: under the Moretti brand they launched a Weisse beer, La Bianca, in 2016 and an IPA in 2018 (named Italian Pale Ale).

Another mass producer, Carlsberg Italia, has reacted gradually, returning its positioning in the market. In the last few years, the company has reshaped the image of its Italian brand Poretti that has been advertised and named with a more "craft" and local image than it had before. Specifically, the name was changed from "Industrie Poretti" to "Birrificio Angelo Poretti," using the name of the founder to recall the Italian tradition, and using "Birrificio" instead of "Industrie," thus, giving a craft-like sentiment. Moreover, under the Poretti brand, new typologies of beer have been launched lately, such as an IPA, a Blanche, pale ale, and honey beer.

The second-largest producer in Italy is Peroni, which is now owned by Asahi. In 2017, they introduced a new beer called *Peroni Cruda*, an unpasteurized lager. In 2017, a new unfiltered beer (called *Prime Brew*) was launched under the premium brand Nastro Azzurro. Peroni also started to produce varieties never produced before, like the *Peroni Gran Riserva La Bianca*, a Weisse-style beer in 2018.

Moreover, multinationals have recently started to emphasize the role of some ingredients to underline the importance of the intrinsic characteristics of their beer. For instance, Peroni reports "100% Italian malt" in its labels, caps, and boxes. A similar communication that emphasizes the use of Italian malt has been employed by the brand Moretti (owned by Heineken). It is interesting to interpret this strategy of multinationals as a way to create a sense of place and place attachment in beer brewing in Italy, similar to the sentiment expressed by craft breweries. However, craft breweries evoke small local traits and communities in their beer, brands, and use of ingredients, while the concept of "local" for the multinationals relates to the regional or national (Italian) identity.

Carlsberg also started to emphasize the role of ingredients in particular hops. Two types of Poretti beer—Poretti and Splügen—were renamed in 2007 with a number and the name "Luppoli" (i.e., hops) , thus conveying the increasing use of hops in the beer. This change emphasizes the ingredient, intending to give more importance to the organoleptic characteristics and to highlight the quality of the product. Carlsberg commissioned a research team to Astra Ricerche to assess consumer feedback on the choice to emphasize the hops. According to 94.5% of the respondents, hops are a fundamental ingredient for producing good beer.

Meanwhile, most craft breweries have gradually enlarged their portfolio of beer, introducing every year a new type or style of beer, pursuing a hyper-differentiation strategy (Clemons et al. 2006). Following this route, craft breweries foster the increased importance of being truly different in a highly competitive market, reducing the importance of price as the principal determinant of customers' selection among products. Hops give an opportunity to further characterize the beer due to their aromatic and flavorful impact. We contend that the rising use of locally produced hops may help craft brewers increase product differentiation in the future.

An alternative reaction of the mass producers has been the strategy to move directly into the craft beer market through acquisitions. This strategy has been widely pursued in many countries by almost all big multinationals. The initial acquisitions had a national scope, and recently, they have become international. In Italy, some well-known craft brewers have already been acquired. The first and surprising

[1]See Collegato Agricoltura, DDL (Disegno di Legge) n. 1328-B available at: http://www.senato.it/japp/bgt/showdoc/17/DDLPRES/965677/index.html. The definition is: craft breweries are small (i.e., the annual production does not exceed 200,000 hectoliters), having independent (i.e., a brewery that is legally, economically, and physically independent of any other brewery and does not operate under license) producers whose beer does not undergo pasteurization and micro-filtration during the production process.

acquisition was that of Birra del Borgo by AB-Inbev in 2016. Afterward, other well-known craft breweries were acquired. For instance, Molson Coors acquired Birradamare; Duvel Moorgat bought a 35% stake of Birrificio del Ducato; Dibevit, (Heineken group) acquired Hibu craft brewery; and the Belgian Caulier merged with the Italian Toccalmatto. Some critics consider the strategies of the macro producers as a signal of weakness, given the increase in the craft beer's market share, such that if they cannot be beaten, buying them becomes the easiest strategic response.

The aspect of independent ownership is crucial for the craft beer philosophy: the prerequisite of independence is the most common requirement acknowledged across countries (and probably the only one) in the definition of what a craft brewery is (see Garavaglia and Swinnen 2018a, for a discussion on the definition of craft brewery in various countries). The loss of this prerequisite is tantamount to losing the nature of the craft brewery. The most inflexible consumers of craft beer have harshly criticized these acquisitions and consider them a betrayal of the craft beer's origin. Garavaglia and Swinnen (2018b) name the acquired craft breweries "ex-craft." After the announcement of the acquisitions, some publicans have decided to withdraw the "ex-craft" beer from their taps. Many consumers stopped consuming these types of beer. Many craft brewers criticized colleagues who have become their "ex-friends." For example, when Birra del Borgo was acquired by AB-Inbev, Teo Musso (Teo Musso is the founder of the Baladin craft brewery, who is considered a leader among the visionary entrepreneurs of craft beer in Italy) declared that he would never sell the Birra del Borgo brand again in his pubs. Jean Van Roy, owner of the Brasserie Cantillon, also no longer invited Birra del Borgo to the well-known beer festival Quintessence in Bruxelles after the announcement of the acquisition.[2] The beer writer Stephen Beaumont[3] claims that the impact of these acquisitions is physical, emotional, and intellectual: physical for the probable change of taste, emotional because of the change of personal relationship between consumers and owners, and intellectual because of the so-called "locavore" behavior,[4] which is incompatible with the idea of spending money that gives profits to multinationals. As a consequence, consumers choose not to support the acquired brewery but rather move their patronage to another craft brewery.

The current reaction of Unionbirrai is clear and inflexible, inviting the independent craft breweries to stop participating in events attended by "ex-craft" breweries or macro breweries, thus emphasizing the differentiation and invoking the importance of their independence.[5]

Sam Calagione, the founder of US craft brewery Dogfish Head, sharply underlines the importance of the independence of craft breweries, arguing that "*true craft brewers are brewers first, business people second*," whereas mass producers are "*run by nothing but business people*" (Allyn 2015). We claim that the words of Calagione represent a clear exemplification of what we discussed in section "Conclusion": craft beer means much more than beer; craft beer embodies the personal identities and stories of the brewers; craft beer is an idea that recalls people and local places. We believe that these aspects embody the strategic points that craft brewers must continue to uphold to continue growing and keep mass producers away from direct competition and "craftwashing" (Howard 2018).

Conclusion

The advent of craft brewing has revolutionized the competition in the beer industry in almost all industrialized countries (Garavaglia and Swinnen 2018a). This chapter investigates the origin and diffusion of craft breweries in Italy. These aspects are examined through the lens of geographical connections, both in terms of the dynamics of the origin phase and the development phase of craft brewing in Italy. This is an original contribution of this study. In particular, the discourse describes the initial international connections and then analyzes the success of craft breweries and their strategy of establishing local ties with the territories. The use of local ingredients represents the most widely used strategy to develop a rooted local identity with the territory. Surely, the creation of a new style of beer, the IGA, represents an affirmation of the creativeness and quality of Italian craft breweries in the international scene. The use of wine must and grapes gives both distinctiveness and localness to the brews, thus representing an important strategic leverage for craft brewers. Moreover, using wooden barrels (previously used for wine) for the maturation of beer has also enlarged the opportunities to interlink beer and wine. This extends the strategy of creating craft beer with a distinct and local character. The chapter presents agricultural breweries and the increase in hops cultivation as two other strategies that influence the competition in the beer market. Again, both these choices seem to benefit from a connection to the territory. The connection with the

[2] http://www.gamberorosso.it/it/vini/1024660-birra-artigianale-revolution-cosa-sta-succedendo.

[3] https://www.beverfood.com/documenti/potenti-multinazionali-innamorano-birrifici-artigianali_zwd_80922/.

[4] According to the Cambridge Dictionary, locavore refers to people who only eat food that is grown or produced in their local area.

[5] http://www.startingfinance.com/la-birra-artigianale-italiana-sfide-successi/.

territory has been reawakened also by the large breweries, which disregarded for decades the links with the local communities to focus instead on multinational brands and strategies. Nowadays, these large breweries are implementing tactics to compete with craft breweries, specifically by launching new types of beer with a crafty image and by acquiring craft breweries, thus adding interesting dynamics to the competition in the beer industry.

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Craft Beer in the EU: Exploring Different Markets and Systems Across the Continent

12

Ignazio Cabras

Abstract

Micro- and craft breweries have registered a significant growth across Europe in the last two decades, but the EU beer market presents a high level of variation mainly associated with different regulatory frameworks and consumers' preferences in each EU country. By addressing the variety of breweries, fiscal systems and consumers' attitudes across the continent, this chapter examines the diversity of EU national beer markets, providing an overview of a wide range of issues affecting the development of micro- and craft breweries within the EU beer and brewing industry.

Introduction

In recent years, the number of micro- and craft breweries has increased almost everywhere in the European Union (EU hereafter). As described by Garavaglia and Swinnen (2018), the terms "craft brewery" and "microbrewery", alongside similar others, tend to refer to breweries which brew different types of beer on a small scale, distinguishing them from larger mass-producer breweries that "often have been in business for more than a century and have survived the consolidation process of the twentieth century" (p. 14). Generally, these breweries tend to have a much local focus in terms of beer distribution and services, although this description includes a broad spectrum of breweries. In the UK, micro- and craft breweries are usually identified as those brewing less than 5,000 hectolitres (hl) per year, and employing no more than 10 employees (Bamforth and Cabras 2016). However, in Italy, craft breweries ("*birrerie artigianali*") are those having an annual production up to 60,000 hl per year (Garavaglia 2018).

Despite the variety of definitions across Europe,[1] micro- and craft breweries control just a marginal portion of the EU beer market, which remain dominated by large conglomerate and multinational brewers. Regardless, their number has increased significantly in many EU countries in recent years. In the United Kingdom (UK hereafter), data provided by the Society of Independent Brewers (SIBA) indicate that the number of micro- and craft breweries grew from less than 150 in 1980 to more than 1,700 in 2016, conquering nearly a tenth of the British market, traditionally dominated by a few national large brewers (SIBA 2018). Other countries have experienced a similar growth since the early 2000s, although with sharper and more rapid trajectories, such in the case of Czech Republic and Ireland (Balach 2013; Feeney 2016). Even nontraditional beer-drinking countries, such as France and Spain, saw the numbers of micro- and craft breweries growing from just a few dozen breweries to hundreds in the past 15 years. This growth has expanded EU consumers' tastes and preferences with regard to different types of beers, and enlarging potential commercial opportunities associated with craft beers within the food and drink sector (Cabras 2018).

This chapter explores and examines the micro- and craft beer scene in the EU, its historical development and main features across different member states. The author examines the diversity of EU national beer markets, focusing on the variety of tax systems, and the peculiarities in consumers' tastes and preferences across the continent. Opportunities

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[1]This issue may not apply to other countries and/or geographical areas. In the United States, for instance, the Brewers Association (2016) defines craft brewers as small brewers (annual production of 6 million barrels of beer or less) operating in the form of independent business (less than 25% of the craft brewery is owned by a beverage alcohol industry member that is not itself a craft brewer).

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and threats for breweries are discussed in light of recent national and developments within the EU beer and brewing industry.

Brewing in Europe: A Brief Historical Overview

It is likely that fermentation techniques in Europe initially spread from Egypt in 3500 BC (Brewer and Teeter 2007), although the first evidence of outcomes from brewing processes in the continent appears date back to 3000 BC in ancient Greece, where beer satisfied demand from lower social classes, while aristocracy tended to consume wine (Hornsey 2013). Greek merchants' routes and commercial trade post facilitated the diffusion of beer across the Mediterranean Sea. Brewing activities were tightly regulated in the Greek society; beer making became a state monopoly with the pretext of combating the public abuse of alcoholic beverages and beer sales severely taxed. The differentiation between beer and wine continued during the Roman expansion, starting from 250 BC. However, Romans soon started to despise beer and its drinkers, indicated as "uncivilized" or "barbarians" (Nelson 2005).

With the emergence and expansion of the Roman Empire, from around 100AC, commercial routes for wine flourished across Roman provinces and controlled areas. The production and consumption of beer and mead, an alcoholic beverage obtained by fermenting honey with water (sometimes mixed with fruits, spices, grains, and hops) remained popular among the Germanic and Celtic populations occupying the Northern and Eastern Europe (in the regions now forming Germany and Poland), across the British Isles and in Scandinavia. With the rise of Christianity and the Catholic Church (314–800 AD), wine increased its importance as preferred drink mostly due to its prominence within Christian religion. The spread of the Holy Roman Empire from around 800 AD led to the proliferation of monasteries across Europe. Cooler climate made it easier to grow barley instead of grapes, determining the emergence of "monastic brewing" in the Middle Ages, which spread to the British Isles, Germany, Scandinavia, and the Flemish regions (Unger 2004). Many monasteries located in Northern Europe became centres of brewing, while monasteries located in Southern Europe continued to produce wine. Monks brewed beer predominantly for their own consumption or to restore guests and pilgrims, as unsanitary water conditions and the lack of potable water made low-alcoholic ales a common imbibe (Poelmans and Swinnen 2011). German monks started to introduce hops to their brews in order to increase the preserving time for beer and to counterbalance the rather sweet flavor of the malt (Unger 2004). The use of hops to the brewing process slowly spread to other parts of Europe, and local governments started to levy taxes in association with its use (Poelmans and Swinnen 2011).

Between 1200 and 1400 AD, the production of alcoholic beverages in the continent remained influenced by climatic factors, which determined whether grapes and vineyards could be cultivated, and therefore where wine could be produced. Consumption trends remained heavily associated with social classes, with beer and mead mostly drank by less affluent people. Though less prominent than in the Northern Europe, beer was consumed in various areas of France, Spain, and the Italian mainland (Poelmans and Swinnen 2011). Consumption trends of beer and wine in the Middle Age created a European North–South divide which still last in present days. With the Council of Trento (1514) and during the years of the Reformation, Protestantism took root in the Northern Europe and Britain, while the Roman Catholic Church maintained his influence and control on Southern Europe, vast parts of Eastern Europe, Scotland, and Ireland. Protestants tended to have a negative attitude toward alcoholic beverages and saw imbibing as an incentive to sin; moderate alcohol consumption was more tolerated in Catholic societies, where wine was part of the daily diet and consumed at any level or class (Engs 2000).

In the late eighteenth and during the nineteenth centuries, technological discoveries and improvements such as the introduction of refrigeration and the development of Pasteurization techniques dramatically changed beer brewing in Europe. By controlling the brewing process, the environment and type of fermentation, and the type of yeast culture, brewers were able to obtain a "standardized" product, something that could not be achieved in the past (Hornsey 2013). In addition, the expansion of the steam engine and the invention of the "chilled iron mold" enhanced opportunities for mass production and consumption as well as large scale packaging and distribution, determining the industrialization of brewing as a production process. The expansion of infrastructure and railway networks accelerated the diffusion of beer in continental Europe. Better packaging and faster transport means increased the quantity and quality of distributions, enlarging markets and enhancing the importance of beer as a global product (Hornsey 2013; Stack et al. 2016).

Between WWI and WWII, beer production and consumption were affected significantly (Gourvish and Wilson 1994). The war effort resulted in a great shortage in supply for brewers, who had to cope with rising prices of grains combined with a general scarcity of other raw materials. Governments issued laws to limit the distribution and consumption of alcoholic drinks, pushing larger brewers to diversify into alternative products, such as soft drinks

(Gourvish and Wilson 1994). After WWII until the early 1980s, the number of independent brewing companies across the world decreased steadily, while concentration in beer national markets resulted in the rise of major corporate players almost everywhere in the world. Traditional brew-houses or brew-pubs, places that brewed their own beer mostly in a brewery on site or nearby their premises, disappeared almost completely, either purchased by larger breweries or ceasing activity. The effects derived by concentration in the market started to be most significant during 1970s and 1980s. Heineken, Carlsberg, Guinness (now Diageo), SAB-Miller, and ABInBev (now both parts of Anheuser Bush INBev) increased their market shares, arriving to control almost all production and distribution of beers in Europe between 1990 and 2000s (Stone and McCall 2004).

The Rise of Micro- and Craft Brewing in Europe

Worldwide consolidation processes affecting the brewing industry in Europe continued toward the years after 2000. However, aside from mergers and acquisitions involving whole businesses (as well as divisions/portions of companies), the number of breweries, mostly small and independently owned businesses, registered a significant increase almost everywhere in the continent, although this expansion varied significantly across EU countries (Garavaglia and Swinnen 2018).

In the UK, the movement developed and consolidated in three "waves", as described by Cabras and Bamforth (2016). The first wave (1970s–1985) was generated by the Campaign for Real Ale (CAMRA), a movement of beer-lovers created in 1974 who campaigned for the revival of "real ale" (cask-conditioned ales brewed by traditional methods) versus mass-produced beers supplied by large multinational companies. CAMRA's relentless activities and campaigns increased the domestic demand for real ales in the UK, creating and progressively enlarging a customer base which attracted new firms to enter the British beer market. The second wave (1990s–2000) saw an increase of entrepreneurs entering the market, incentivized by the affordability of more efficient and more cost-effective brewing equipment. However, the formation of large retailing companies, namely "*pubcos*", as an indirect effect of the so-called "Beer Orders",[2] reduced opportunities for new breweries to expand their supply network (Preece 2016). Finally, the introduction of fiscal support and incentive for smaller brewers in the third wave (2000–2010) granted them a lower tax levy than large brewers,[3] resulting in a sharp increase in the number of micro- and craft breweries. The number of UK breweries has been growing steadily since 2010, although at a progressively slower pace compared to figures registered in the third wave.

The case of UK served as an example for the development of micro- and craft breweries in the Netherlands, where a small group of Dutch beer-lovers set up a Dutch craft beer consumer organization similar to CAMRA, which later became an association named as "PINT" in 2001. The focus of PINT was and still is the production, consumption, and distribution of traditional beers. Its campaigns and activities provided an ideal platform for new demand of craft beers in the country, enlarging the consumers' basin for these types of beers. In Belgium, the creation of Zythos ("*De Objectieve Bierproevers*"), a beer consumer organization in 1984, started to stimulate demand for craft beers in the country (Garavaglia and Swinnen 2018). In Spain and Italy, craft beer associations started to appear during the 1990s, playing an important role in promoting craft beers among local consumers, and fostering craft beers demand and supply in the two countries (Garavaglia and Swinnen 2018). The rise of beer-lovers movements across Europe and the creation of brewers' networks, whether initiated by consumers' associations or business organizations based in different EU member states, provided a fertile terrain for the development of national micro- and craft beer sectors, defining new market segments in which young breweries targeted and served a progressively increasing consumer base.

Figure 12.1 shows the number of breweries between 2010 and 2016, elaborated from figures provided by the Brewers of Europe (2017). In some countries, such as the UK, the number of breweries nearly tripled within the 7 years' time span. Similar levels of growth have been registered in Czech Republic, where the number of breweries passed from 151 to nearly 400, and even more in Ireland, where the number of breweries grew from 26 to nearly 100. Overall, the number of businesses operating in the EU beer industry more than doubled in the 6 years considered, growing from little more than 4,400 to nearly 9,370.

Numbers related to micro- and craft breweries with an annual production below 1,000 hl are reported for some countries in Fig. 12.2. Significant patterns of growth can be identified for countries such as France and Italy: just a few dozen breweries operated in each country in the early

[2]Approved by Parliament in 1989, these orders forced largest brewers to either sell or free a large number of their pubs from being tied to them. While intended to break the monopoly of larger breweries, their main outcomes was that newly formed estate companies (pubcos) bought large stocks of pubs at cheaper prices, with pubs then run as managed businesses supplied by a very limited range of breweries (Preece 2016).

[3]See next section.

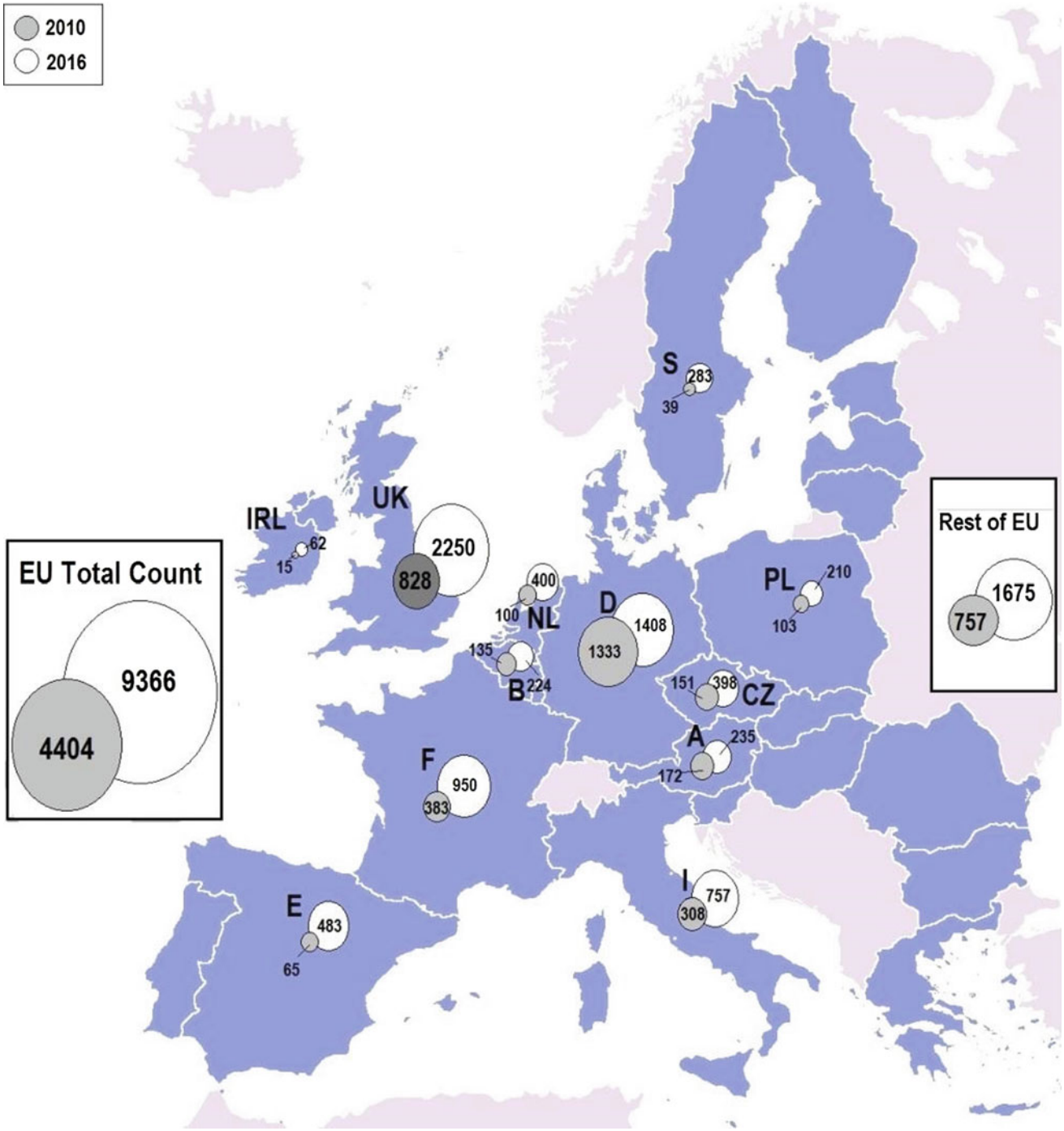

Fig. 12.1 Number of breweries in the EU 2010–2016. *Source* Brewers of Europe (2017)

2000s; these becoming 650 and 430, respectively, in 2016. Conversely, the numbers of micro- and craft brewers stabilized in Germany and Austria within the 7 years considered. Data gathered from other sources indicate significant increases of the number of micro- and craft breweries in UK and Ireland, not included in Fig. 12.1 due to differences in definition. In these two countries, figures passed from about 1,200 to more than 2,000; and from 15 to more than 60 respectively between 2010 and 2016 (Feeney 2016; SIBA 2018).

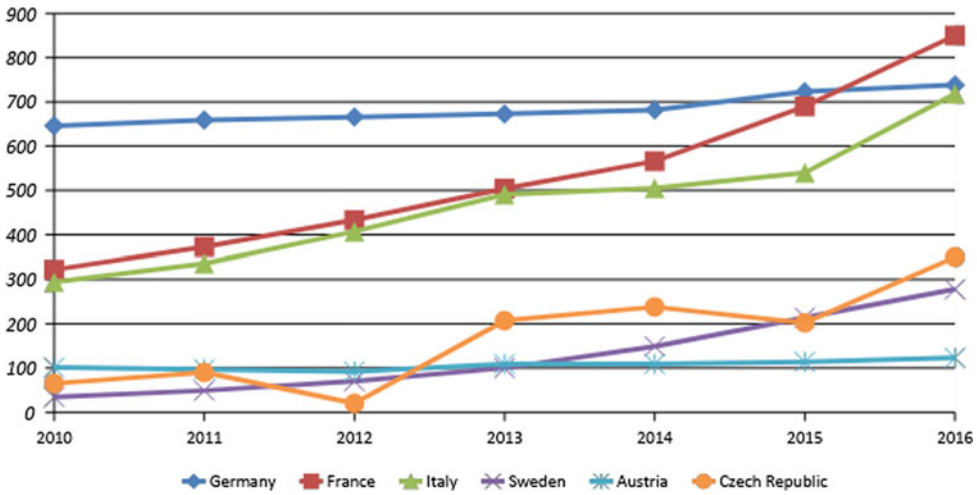

Fig. 12.2 Micro- and craft breweries in the EU 2010–2016. *Source* Brewers of Europe (2017)

Taxation and Incentives Across the EU

An important aspect to consider with regard to the development of micro- and craft breweries in Europe is the level of taxation and support granted to these businesses. Taxation represents a major driving force in new product development within the brewing industry (Poelmans and Swinnen 2011; Stack 2016). Technically, a basic distinction about taxation on beer is whether the imposed excise is *ad valorem* or *specific*. The EU defines the minimum excise for beer at EUR 0.748 per hectolitre/degree Plato calculated on the finished beer product.[4] The minimum tax is defined with respect to the strength of beer, and the EU encourages beer excises which are progressive according to this parameter (Loretz and Obenhofer 2016).

An increase in taxation occurred in the majority of EU member states from early 2000s until 2015 (Loretz and Oberhofer 2016), although the divergence in the tax levied on alcoholic beverages is extremely marked as shown in Table 12.1. Focusing on beer, excise duties appear to be considerably high for breweries located in Finland (over 72%), UK (about 53%), and Ireland (nearly 51%). Conversely, breweries located in countries such as Spain and Germany enjoy excise duties below 5%. In the UK and Ireland, for instance, the excise duty applied to wine is about four and five time higher compared to the ones applied to beer respectively, while "only" three times higher in the Netherlands. However, in France, the excise duty applied to beer is ten and five times the ones applied to wine and spirits, respectively, and countries like Italy and Germany impose excise duties for beer and spirits but not for wines.

Different levels of taxation on beer across EU member states can be explained with the lobbying operated by industries and corporations within each country, as well as with different decisions made by EU governments in the matter of alcoholic beverages. In the first case, fiscal regimes applied by individual states tend to be more favorable to wine producers where the wine-making industry holds a significant power in Parliament, as in the case of Italy and France. In the second case, decision-making processes within each EU government can be influenced by factors associated with policies targeting wellbeing (e.g., limiting alcohol consumption) or by economic aspects associated with production processes and distribution costs. A good example is provided by the different Value-Added Tax (VAT)[5] rates applied to alcoholic beverages across EU countries. These are between 24 and 25% in Scandinavian countries such as Denmark, Finland, and Sweden; however, much lower rates are applied in the UK and Germany (20% and 19% respectively). The wide spectrum of excises in the EU creates some extremes situations across member states. For instance, Finland charges 15 times the EU minimum level of excise, while beer excises in Bulgaria and Germany are barely above the minimum required by EU legislation (Loretz and Obehofer 2016). On average, a pint of beer Finland charges an excise duty of €0.70; the same pint in Germany only charges €0.05 (Loretz and Obehofer 2016).

EU member states also differ in relation to fiscal support and tax reliefs they grant to breweries. EU regulations allow each member state to apply a maximum discount of 50% off normal duty rates on production levels up to 200,000 hl per year, leaving freedom to individual members with regard to

[4]Directive 92/83/EEC—harmonised structures of excise duties on alcohol and alcoholic drinks. Available at: https://eur-lex.europa.eu/legal-content/EN/LSU/?uri=CELEX:31992L0083.

[5]VAT, also known as Goods and Services Tax (GST), is a type of incremental tax based on the increase in value of a product or service at each stage of production or distribution. In the EU, the VAT is usually a flat tax collected by the end retailer on behalf of central governments.

Table 12.1 Rates of excise duty and value-added tax in the EU

Country	Beer (cents per pint at 5% ABV)	Wine (cents per 75 cl bottle at 12% ABV)	Spirits (cents per 70 cl bottle at 40% ABV)	VAT %
Austria	13.6	0	2.8	20.0
Belgium	12.6	42.8	5.9	21.0
Denmark	21.3	111.0	5.6	25.0
Finland	91.3	254.8	12.8	24.0
France	20.8	2.8	4.8	20.0
Germany	5.4	0	3.7	19.0
Greece	17.8	0	12.0	23.0
Ireland	64.1	319.3	11.9	23.0
Italy	18.4	0	2.6	22.0
Netherlands	21.6	66.4	4.7	21.0
Portugal	10.7	0	3.5	23.0
Spain	5.7	0	2.6	21.0
Sweden	54.4	186.5	15.3	25.0
UK	67.2	258.8	10.0	20.0

Source Statistical Handbook, British Beer and Pub Association, London 2014. Data re-elaborated in Euro (from Pound Sterling) with exchange rates as at July 2014

choosing percentage and level of production. These instruments are crucial particularly for small and relatively young breweries, as the tax savings obtained by brewers are usually reinvested in their business. However, not all member states apply the same system or even implement the idea, with the result of generating different impacts on breweries located in different countries. The majority of member states, such as Germany and Slovakia, apply the full 200,000 hl threshold for breweries in order for these to receive discounts on normal duty relief (Brewers of Europe 2017). In the UK, the introduction of the Progressive Beer Duty (PBD) in 2002 brought and still brings huge benefits to micro- and craft breweries, as this tax relief enables them to afford employing more people and investing in equipment. Prior to it, all breweries paid a flat rate of excise duty per hl of beer produced according to its alcoholic strength (Wyld et al. 2010). With the PBD, brewers started benefiting from a 50% reduction in duty on the first 5000 hl of annual production, and a progressive tax remission system up to an output level of 30,000 hl (raised to 60,000 hl in 2004), after which the full duty is paid. At average beer strength of 4.2%, the main rate of beer duty would imply a cost of about £76/hl (€84.6/hl) of beer produced. For instance, a brewery remaining within the threshold of 5000 hl would receive about £38/hl (€41.8/hl) in terms of rate relief.

Different taxation regimes and levels of support create a range of situations which force European breweries to adapt and compromise. In the UK, as the PBD threshold increases, the corresponding relief for breweries diminishes in a progressive manner. For this reason, the bulk of British micro- and craft breweries tend to remain small in order to benefit from such duty relief, undermining growth, and expansion for many businesses operating in the sector. In Italy, where beer is taxed significantly more compared to wine and spirits, until 2018 the levy was applied directly on the quantity of beer produced and not sold. As a result, brewers needed to be extremely efficient in their brewing activities, as their *cotte* (brews) were taxed regardless of whether they will actually be able to place the final product on the market. In such context, brewers were frequently forced to increase sale prices above the market, in order to take into account failures of the risk of making them *ex-ante*. Recent changes in regulations introduced in July 2018 moved taxation from final product to beer sales: Italian brewers welcomed the change, although the increase of bureaucracy and red-tape associated with new rules still pose a threat to their capacity to invest into innovation, marketing and exporting.

Where governments apply high levels of taxation on alcoholic beverages as a deterrent to alcohol abuse, as in the case of Sweden, the efficacy of these measures with regard to reducing excessive consumption of alcohol among consumers is still to be proved (Bamforth and Cabras 2016). Nevertheless, while lower levels of taxation are frequently associated with more opportunities for investments and growth, empirical evidence provided by Loretz and Oberhofer (2016) suggests that, in the case of EU's beer excise regulations, the combination between a minimum amount of beer excises and reduced rates for small breweries has a direct impact for the market structure in the brewing industry. As a result, a few large multinational brewing companies co-exist with a large number of very small breweries, while "medium-sized beer producers tend to be

forced out of the market by this regulation or choose to adjust their production level to a smaller amount (…) medium-scale beer producers have also been targets of M&As, which further fosters an increase in market concentration among the global players in beer producing" (p. 136).

Drivers of Beer Consumption in Europe

The rise of micro- and craft and breweries across the EU expanded the variety of beer styles available for customers. However, as stated by Bamforth and Cabras (2016), it also generated the belief among consumers and drinkers that beer produced by smaller artisanal companies within spatial proximity was associated with beers higher standards of quality and taste. One of the reasons could be the tendency shown by these businesses to build their success onto a renewed appreciation for local produce, a sort of "neolocalism" used to create a sense of place (Flacks 1997). In addition, as micro- and craft brewers tend to appeal to a younger generation of consumers by promoting a rejection of industrially produced beers in favor of something more local, the reality may be very different, with "many craft brewers still having much to learn from the larger breweries with regard to process control and quality delivery" (Bamforth and Cabras 2016, p. 17).

Irrespective of the scale on which and where beer is brewed, and of brewers' experience and skilfulness, many factors and drivers can influence beer consumers. According to Wright et al. (2008), customers are influenced first and foremost by the taste of the product, with consumers' segments/backgrounds and the provenience of the beer (e.g., whether the brewery is within spatial proximity) respectively in second and third place with regard to purchasing likelihood. Although price and alcohol content are not considered as important by Wright et al. (2008) in determining consumers' beer choice, other research conducted predominantly in the U.S., indicates price as a crucial aspect, aside availability, change of taste, peer influence and attachment to a local place (Steven et al. 2003; Tremblay and Tremblay 2005). Much of these findings apply when configuring craft beer consumers and trends across the EU. Particularly for "local" beers, and partially in relation to patterns of behaviors proper of wine-consuming markets, seeking products with strong local connections is likely to increase in the continent.

Recently, the interest in beer as part of a dining experience has been growing in the EU, with probably now more food-beer pairing opportunities than exist for food and wine (Oliver 2005). For example, the wide range and variety of cheeses and of beers in many EU countries increase chances for food pairings, even larger than those allowed by wine (Fletcher 2013). The burgeoning number of breweries in many countries means that there is an ever-increasing selection of purchasing opportunities for consumers in terms of brewing company and beer range (Cabras 2018). Beer consumers in the EU are becoming increasingly knowledgeable about beers, also helped by an increasing level of information available online, for instance, beer-rating websites such as www.ratebeer.com and www.beeradvocate.com (Garavaglia and Swinnen 2018). While there will naturally be biases and prejudices when it comes to judging beer (e.g., the inherent suspicion of beers "mass-produced" by the major global players), there is a growing tendency of customers to compare and contrast brews, and those products perceived to fall short of preconceived ideas will not likely survive (Bamforth and Cabras 2016).

Currently in the EU is a seemingly unceasing search for new tastes and beer varieties with flavors and ingredients hitherto unexplored (Garavaglia and Swinnen 2018). These include developments out of long-standing themes—perhaps "hybrids" in respect of marrying characteristics from different beer types, the launch of new flavors previously unknown at least to local customs, or the resurgence of traditional and historic brews. For instance, UK brewers are very active with regard to developing new beers by introducing new ingredients or by bringing old recipes back from the past back into life. Cabras (2018) mentions the case of Brasscastle Brewery in Malton (North Yorkshire) launching beers such as *Wallop*, rested in aged bourbon or whisky casks, or *Bad Kitty*, a flourished vanilla porter, both made by using old British recipes. In Italy, Garavaglia (2018) reports the case of Italian Grape Ale (IGA) as a new trend which is attracting more and more consumers. Fruit beers, traditionally from the Flemish regions, are now quickly expanding across other EU beer markets (Garavaglia and Swinnen 2018).

All of these products may derive from "an urge of brewers to establish a point of difference from the perceived main stream, to go beyond norms, almost to offer shock value" (Bamforth and Cabras 2016, p. 20). This should be contrasted with historic driving forces for the development of beer styles, which was more on a basis of what materials were available and how these materials could be processed in order to produce a palatable beverage (Bamforth and Cabras 2016). Belgium, for instance, rose as a "craft beer nation" thanks to the effort of Belgian large and small brewers in promoting traditional beers such as trappist and lambic beers. In years, Belgian brewers promoted each other's argument of the specialty of "Belgian beer", attracting the attention of writers and experts worldwide who regularly visit and revisit the Belgian beer scene in their beer reviews (Poelmans and Swinnen 2018). As a result, a distinguished perception of branding associated with Belgian

beers now prevails among consumers worldwide, thus helping Belgian beers and beer culture to be formally recognized as an Intangible Cultural Heritage of Humanity by UNESCO in 2016.

Conclusions

The significant growth of micro- and craft breweries in almost all EU member states has widened the widened the EU beer market. However, differences among EU countries with regard to beer duties and forms of taxation, with breweries facing multiple challenges and—most of the time—operating in extremely diverse contexts across the continent. The variation of fiscal regimes and duties applied to alcoholic beverages and differences in tax and relief systems affecting breweries located in different member states are likely to have an impact on beer production and consumption. Nevertheless, the rise of micro- and craft breweries has expanded EU consumers' choices with regard to different types of beers, enlarging the potential commercial opportunities associated with craft beers within the food and drink sector. This has contributed to diversify production, increasing the level of sophistication and originality expressed by European breweries in their creations.

After almost two decades of steady growth, the EU craft beer market is starting to show signs of stabilization. In the UK, the high level of fragmentation in the market, operational costs rising faster than sales, and the likely reduction of fiscal support available for small breweries may trigger mergers and buyouts (SIBA 2019). This statement seems to be supported by the recent operations involving Lyon (Australian/New Zealand) purchasing Fourpure; and Heineken (Dutch), acquiring a minority stake of Beavertown in London (SIBA 2019). Larger breweries have also started to add craft-style beers to their ranges, targeting craft beer consumers and related demand. Recent examples are Moretti (owned by Heineken) launching its portfolio of "regional" beers in Italy, or Guinness (controlled by Diageo) launching Hop House 13, a lager-style beer in Ireland.

These developments bring uncertainty and increase risks for the future of EU micro- and craft brewers, but the beer scene in the European continent is continuing to evolve. In late 2018, representatives of national brewing associations from France, Italy, Denmark, Ireland, Sweden, the United Kingdom, Spain, the Netherlands, and the Czech Republic joined forces and formed the Independent Brewers of Europe (IBE). Representing more than 2,000 EU breweries, IBE aims to promote and advance the mutual interests of their members. Being the first pan-European brewery association, IBE could effectively facilitate discussions and exchanges between EU institutions, national governments and industry organizations in view of better supporting EU micro- and craft breweries in the Union. Combined and more strategic and efforts made by relevant stakeholders from these three fronts could help sustain growth for EU micro- and craft breweries and, equally, create new economic opportunities in the EU beer market.

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13 Brewpubs and Microbreweries: A Midwestern Geography of Local Craft Beer Markets by Firm Type

Charles Yeager and Jay D. Gatrell

Abstract

Microbreweries and brewpubs are distinct components of a growing craft beer industry that includes four broad segments: brewpubs, microbreweries, regional brewers, and large producers which often have a partial ownership connection to macro-brewers, such as Heineken, Pabst, or AB InBev. This research aims to identify the factors that influence the locations of smaller production sites, specifically microbreweries and brewpubs, in a seven-state region—the American Midwest (Illinois, Indiana, Iowa, Michigan, Missouri, Ohio, and Wisconsin). Using map analysis and statistical analysis, this research differentiates between microbreweries and brewpubs to understand the specific nature of the target markets for each type of business. This research demonstrates that the sociodemographic characteristics at the county scale vary between firm types and that location co-varies with diversity, workforce participation rates, wealth, and urbanization. Additionally, the research underscores the importance of the Millennial cohort and the proportion of residents employed in advanced professions. The data also indicate that the markets for brewpubs versus microbreweries are unique insofar as higher proportions of brewpubs, particularly firms with three or more locations in the study area, tend to be located in less urban areas including suburbs and college towns. In contrast, microbreweries are located in larger urban centers, tend to be single locations, and are more localized compared to brewpubs.

Introduction

America's "craft beer revolution" has been signposted as a dramatic increase in microbreweries and brewpubs across the country. And this significant expansion has been well-documented relative to both production and consumption insofar as the beer is "crafted" by local, independent breweries and has transformed the sector, as well as emerged as a major competitor in the market place relative to beer "produced" by multinational beer conglomerates (Eddings 2017; Reid and Gatrell 2015, 2017; Gatrell et al. 2017; Hoalst-Pullen and Patterson 2017). The total number of U.S. breweries jumped nearly 80% between 2013 and 2016, with the number of microbreweries and brewpubs increasing 46% and 112%, respectively (Brewer's Association 2017a). The remarkable growth in the craft beer industry has even prompted some to predict that a crisis may be forthcoming, as increasing competition between a skyrocketing number of brewers creates an environment where too many firms are vying for too little market share (Bryson 2016). Even so, the number of closures of both microbreweries and brewpubs has remained consistent in recent years, even as the number of openings has increased (Brewer's Association 2017a). Even so, as we will explore in this article, within the larger craft brewing industry microbreweries and brewpubs have developed as unique firm types, with distinct markets and locational factors. In the craft brewing industry, being a visible, passionate part of the local community is often a key factor in firm longevity (Bryson 2016), and when it comes to brewpubs and microbreweries, geography and place matter (Fig. 13.1).

Brewing and Craft Beer in the Midwest

The Midwest states can be considered beer's culture hearth and the region is synonymous with the America's mass marketed staple, the American lager. Indeed, the geography

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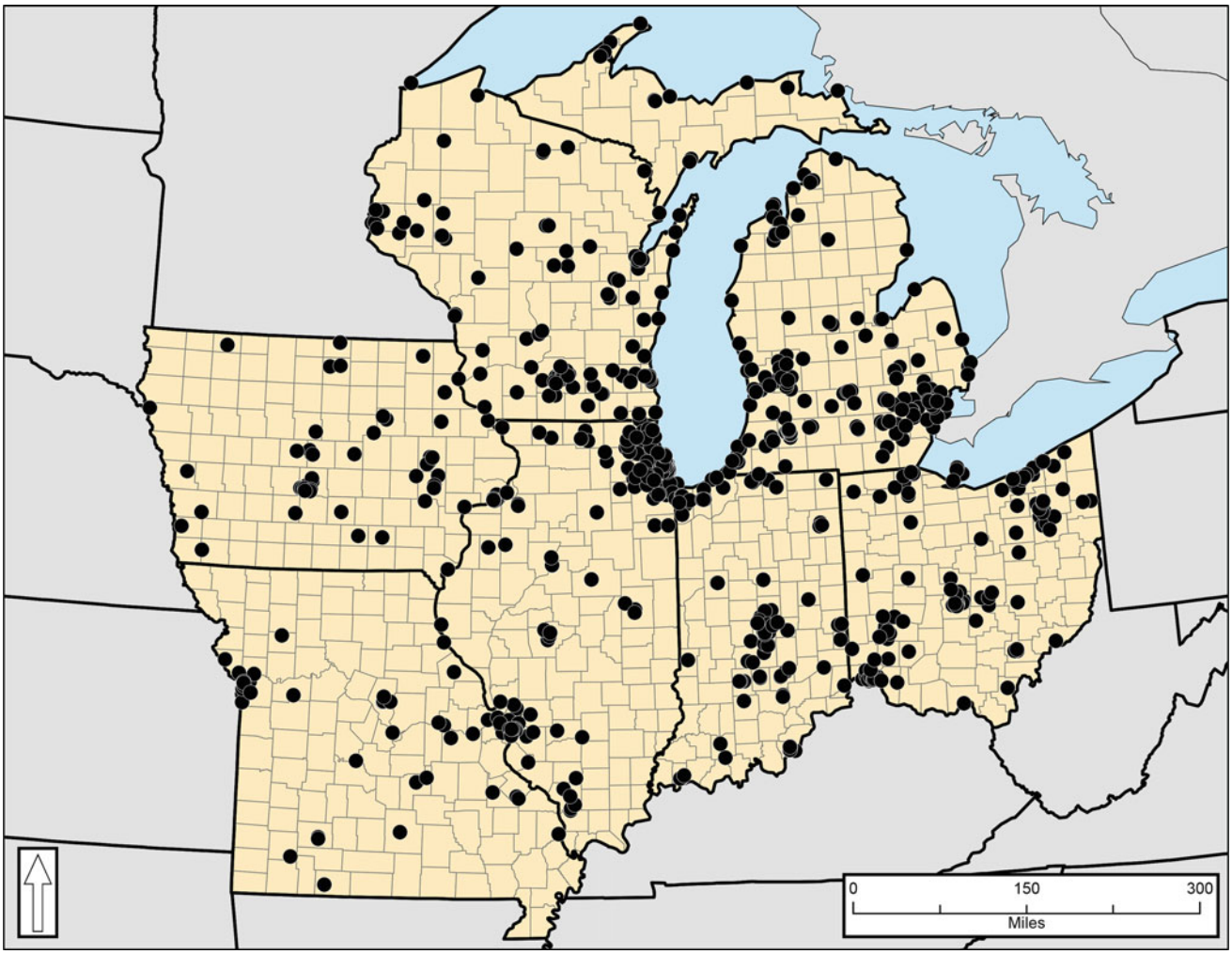

Fig. 13.1 Brewpub and Microbrewery locations in the Midwestern states

of American beer corresponds with the westward expansion of industry following the Civil War and was heavily influenced by immigration from northern European countries, most notably Germany and Czechoslovakia. The result was a concentration of immigrant-owned breweries in large Midwestern cities such as Chicago, Cincinnati, Milwaukee, St. Louis, and Detroit (Stack 2003). The geography of Midwest beer production was also influenced by the physical landscape. For example, the physical geography of the Mississippi and Ohio River Valleys, as it turns out, was well suited for the production of adjunct lagers. A plentiful supply of freshwater sources, regionally grown grains, and eager consumers (i.e., large immigrant populations) made lager beers such as Budweiser, Miller, Pabst, Stroh's, Falstaff, and Hamm's local favorites, and in the future some of these firms would emerge as global powerhouses (Gatrell et al. 2014). At the peak of the industry during the late 1800s and early 1900s, the Midwest was home to literally hundreds of breweries in large cities and small burgs. However, many smaller firms did not survive the Prohibition Era, and the number of American breweries in 1934 (756), already less than half of what it was in 1910, continued to fall precipitously until the 1970s, when the number reached an anemic low of 89 in 1978 (Brewer's Association 2017a).

Prior to the craft beer movement, Midwestern beer culture was anchored by large brewers such as Anheuser-Busch, Miller, and Pabst, all Midwestern firms, and a few regional beers such as Stroh's, Sterling, Olympia, and others. However, the regional brewers began to disappear in the late 1980s through the 1990s as the larger brewers began to undertake large-scale industry consolidation by purchasing regional firms. By the early 2000s, the American beer industry came to be dominated by three major families of U. S. brands—Anheuser-Busch (AB), MillerCoors (MC), and Pabst—with AB and MC emerging as the dominant firms. InBev acquired AB in 2008 to become the largest brewing

company, commanding the largest global portfolio of beers from its headquarters in Belgium. Likewise, MillerCoors, now part of the complex known as MolsonCoors, is brewing and/or distributing global brands such as Grolsch, Peroni, and Milwaukee's Best.

During the same period of consolidation though, the industry was changing at the margins, and the change was an extension of home-brewing movement that was legalized in late 1970s. Indeed, homebrew experimentation, the groundbreaking efforts of Jim Koch's Boston Beer Company, and to a lesser extent the entrance of import beers to the American market, signaled a change in the American palate and movement away from the classic American lager toward new diverse styles. And these changes were taking root across the Midwest—the very region that gave rise to the macro-brewed homogenous American Lager (Blessing 2014, Agnew 2014). Today, the Midwest is the scene of a thriving beer culture and home to a large number of brewpubs and microbreweries. In 2016, the Midwestern states produced 4,187,080 barrels of craft beer, or beer that is brewed at relatively small scales by independent brewers, and each of the seven states included in this research was in the upper half of states for economic impact (Brewer's Association 2017b). The Midwest was represented by ten of the "The 50 Best Craft Breweries in America" by TheDailyMeal.com in their 2017 rankings, including two of the top three entries, Bell's Brewery of Kalamazoo, Michigan and Founder's Brewery of Grand Rapids, Michigan, which were ranked at #3 and #1, respectively (Darnall 2017).

Microbreweries and Brewpubs

According the Brewer's Association (2017c), there are four segments of the craft beer industry: microbreweries, brewpubs, contract brewing companies, and regional craft breweries. As the two smaller segments of the industry in terms of beer production, brewpubs, and microbreweries are indeed similar in some respects, as both firm types allow brewers to reach consumers in the local craft beer market at a relatively small scale, at least initially. The primary distinction between a brewpub and a microbrewery lies in the amount of beer that is sold at the location that where the beer is produced: a microbrewery sells at least 75% of the beer it produces off-site, whereas a brewpub sells at least 25% on-site through the operation of a restaurant. (Brewer's Association 2017c). Another important difference between the two is in product distribution. Since a brewpub, by definition, generally sells a greater percentage of beer on site, the process of distributing beer is necessarily less complex than it is for the microbrewery, allowing brewpubs to control beer quality from the tank to the tap to the tongue, as opposed to relinquishing control of the product to a beer distributor, and then to a bar or restaurant (Hieronymus 1999). As one might expect, microbreweries that put great effort into creating high-quality brews would be reasonable to fret at the thought of kegs of their product being handled or served at the wrong CO_2 pressure, temperature, through dirty lines, or in less-than-clean glasses.

Legal differences from state to state also affect the ways that microbreweries and brewpubs can produce and sell their products (Gohmann 2016; Tamayo 2009). Certain states, such as Georgia, Mississippi, and Utah, are known for their complex and often confusing sets of laws determining what, where, and how much a brewer may produce, whereas other states, notably Oregon, Washington, and Vermont have established brewer-friendly regulatory environments that encourage brewers to thrive. Depending on location and state law, brewers may be limited in the amount of alcohol (by volume) that their beer may contain, where their beer may be sold, when their beer may be sold, and how much, if any, of a discount may be offered to consumers who purchase the beer (Berning and McCullough 2017; Sauer 2017). Brewpubs and microbreweries are often treated as completely different firm types even in the same place, with different regulations affecting microbreweries one way and brewpubs another (Nurin 2017). Not surprisingly, states where the legal environment has become less burdensome on both brewpubs and microbreweries in recent years, particularly the Midwest, have seen much of the growth across the industry (St. John 2017).

Finally, it is also worth noting that the qualitative aspects of brewpubs and microbreweries vary. That is, food programs are often an integral component of many brewpubs, particularly chain firms such as Granite, Rock Bottom, Gordon Biersch, and Ram. These brewpubs are often located in suburban strip malls and power retail center complexes across the region. In contrast, microbreweries tend to focus on tap room concepts with limited food and/or a reliance on guest vendors and transient food trucks. While the sociodemographic characteristics of urban versus suburban communities vary (i.e., the "urban hipster" subculture versus family centered suburban experience),[1] the geography of food programs may also be impacted by the legal environment as the local alcohol laws may require food service.

[1]It is worth noting that the notion of "urban hipster" culture represents an echo of earlier era, specifically the late-1980s and early-1990s. Indeed, the notion of DINKs (dual income no kids) was used by social scientists and geographers to explain the emergence of urban entertainment districts, gentrified neighborhoods, and more recently even brew pubs (see Badcock 1995; Matthew and Picton 2014).

The Craft Beer Scene as Midwestern Culture

Craft beers, by their very nature, can be considered local products, at least when viewed in the context of the "global" brewers that dominate advertising and grocery store shelf space around the world. In the Midwest, brewing and drinking beer has been part of the culture for well over a century, as discussed previously, and America's craft beer revolution has triggered a revitalization of the culture, where the agricultural production of hops is increasing, the number of brewers is growing yearly, and the definition of "Midwestern Beer" is evolving (Farrington 2017). Indeed, when pressed to define what exactly makes a beer "Midwestern", Collin Castore, one of the owners of Seventh Son Brewing based in Columbus, Ohio, replied that "In a very Midwestern fashion, the beer always comes from a friendly place without pretense. We take the beer seriously, but not necessarily ourselves. Our beers are reflections of our people." (Farrington 2017). This friendliness, well established as a cultural attribute of the Midwest, extends beyond everyday Midwesterners and into the ranks of brewers, whose differentiated product lines and appreciation of the local beer community are often displayed through cooperation and camaraderie, as opposed to cutthroat competition in the brewing districts that have developed in Chicago and Minneapolis (Nilsson et al. 2017).

Midwestern craft brews, often created using local ingredients and marketed with local imagery, history, and folklore, are cultural representations of Midwestern places and people—expressions of the "neolocal" Midwest (Flack 1997; Schnell and Reese 2014). "Neolocalism" is the process of appealing to, or even creating, the feeling of community among a group of people that is specifically attached to place or places, and craft brewers have been active in harnessing neolocalism for purposes of branding, marketing, and establishing customer loyalty through community involvement (Holtkamp et al. 2016), and craft brewers who are willing to instill an element of "the local" into their product from development to production to marketing are likely to be successful (Wesson and Nieva de Figueiredo 2001). However, appealing to neolocal Midwestern culture through marketing alone or through more superficial means, such as using place names, could fail to adequately embed a local firm into the community; a more holistic place-based product identity strategy involves the creation of a "spatial brand", where brewers, such as Great Lakes Brewing Company (Cleveland, Ohio) use elements of place, local practices, and regional history and identity to create a greater level of authenticity in their beer's connection to the local environment and people (Gatrell et al. 2017).

What do the locations of microbreweries and brewpubs tell us about the beer landscape of the American Midwest? If connection to place is strong among these types of firms, we would expect this association to be evident from sociodemographic variables such as age, ethnicity, and income. This research is the focus of this chapter. To further develop our understanding of the factors that influence locational characteristics of microbreweries and brewpubs, an analysis of Midwestern brewery and sociodemographic data was completed. This process will be described in the next section.

Data and Methods

To understand the locational differences between microbreweries (MB) and brewpubs (BP), addresses of firms were gathered from 2017 Brewer's Association member database. A subset of the national database was created based on the Midwestern states of Illinois, Indiana, Iowa, Michigan, Missouri, Ohio, and Wisconsin, and a summary count of the number of brewpubs and microbreweries was created at the county level for these states. Each firm's address was geocoded based on street address and ZIP code, and separate shapefiles were created for microbrewery and brewpub locations, and maps were made for analysis.

Additionally, to determine the sociodemographic and economic characteristics of the places where these firms were located, data were accessed and downloaded from the American Fact Finder. To determine the factors that influence location for specific firm type, the data were analyzed using Spearman's Rho test for Correlation. The Spearman's Rho test for Correlation is a method for determining the relationships between variables that are not continuous (interval or ordinal) and nonparametric, resulting in a correlation coefficient between −1 and 1, where values close to 1 show strong positive correlation and values close to −1 show strong negative correlation.

Results

The results show that brewpubs and microbreweries are not evenly distributed across the Midwestern states, as they tend to cluster in and near the population centers of the region (Fig. 13.2). Between the Midwestern states, Michigan is home to more brewpubs and microbreweries, both in total and per capita (Table 13.1). Michigan also has the highest number of BP, both in total and per capita, and the highest total number of MB, whereas Iowa has the highest number of MB per capita. It is worth noting that Iowa has, by far, the

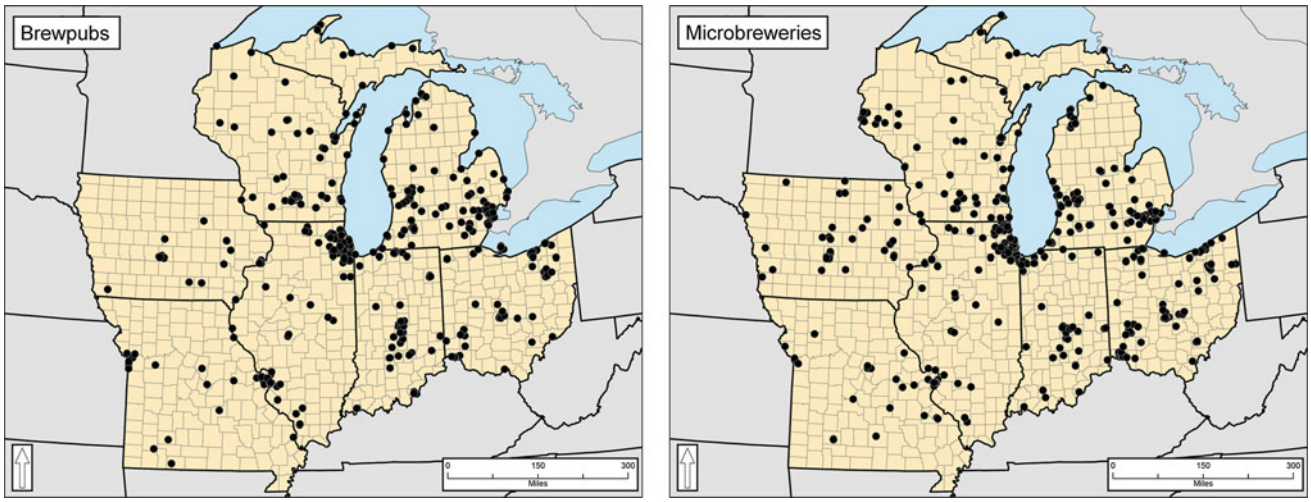

Fig. 13.2 Brewpubs and Microbrewery locations

Table 13.1 Per capita firms by state

					Per capita		
State	Total	BP	MB	Population	Total	BP	MB
Michigan	192	105	87	9,962,311	0.00001939	0.00001061	0.00000879
Wisconsin	107	51	56	5,795,483	0.00001863	0.00000888	0.00000975
Iowa	55	18	37	3,145,711	0.00001778	0.00000582	0.00001196
Indiana	104	58	46	6,666,818	0.00001583	0.00000883	0.00000700
Illinois	147	70	77	12,802,023	0.00001142	0.00000544	0.00000598
Ohio	131	56	75	11,658,609	0.00001132	0.00000484	0.00000648
Missouri	59	30	29	6,113,532	0.00000976	0.00000496	0.00000480
Sum	795	388	407	56,144,487			

smallest population of the Midwestern states, so the high per capita value is more a reflection of low population than of a dearth of microbreweries in the state.

Additionally, it was relatively common to find brewpubs with multiple locations, whereas microbreweries were predominantly single-site operations (Table 13.2). In fact, of the 337 brewpub firms in the Midwest, 17 firms had more than 1 location (5.044%), as opposed to only 5 (1.243%) of the 402 microbrewery firms had more than one location. Further, 8 of the 17 brewpub firms with more than 1 location had at least 3e locations, with 2 firms (CraftWorks Brewery and Restaurant Group and Granite City Food and Brewery) operating at least 13 locations. Of the 5 microbreweries identified in the regional database with more than 1 location, no firm operated more than 2 locations.

Population is an important factor in where businesses tend to be located, and brewpubs and microbreweries are no exception across the Midwest (Table 13.3). The per capita value of total establishments varied widely across the region at the county level, as did the per capita value of brewpubs and microbreweries (Fig. 13.3). Across the 651 counties in the region, the mean population was 85,714, of which 132 had populations above 85,000 and 519 had populations below 85,000. The vast majority of firms (76.729%) were found in the more populous counties. However, even though there were significantly more total establishments located in the more populous counties, there were only minor differences in the percentages of firm type based on county population. Brewpubs made up 49.5% of total establishments in more populous counties as opposed to 46.485% of total

Table 13.2 Total facilities by firm and type of firm

	Total firms	More than one location	More than two locations
BP	337	17 (5.044%)	8 (2.373%)
MB	402	5 (1.243%)	0 (0.000%)

Table 13.3 Firm type by county population

	Total counties	Total BP and MB	BP	MB
Counties with a population greater than 85,000	132	610	302	308
Counties with a population less than 85,000	519	185	86	99

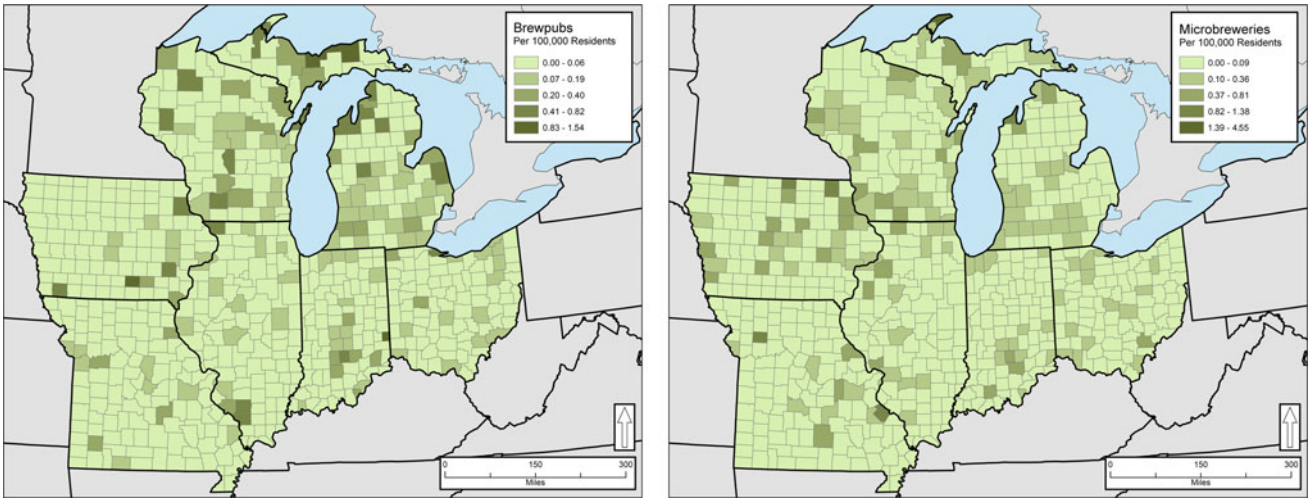

Fig. 13.3 BP and MB firms per capita 100,000 residents by County

establishments in less populous counties, whereas microbreweries made up 53.513% of total establishments in less populous counties as opposed to 50.492% of total establishments in more populous counties.

Not surprisingly, locations where brewpubs and microbreweries were found shared many demographic and socioeconomic characteristics in common. Using multiple data from the US Census Bureau's American Fact Finder, Spearman's Rho test of Correlation was conducted. Table 13.4 shows that several variables are strongly or moderately correlated, either positively or negatively, with the number of brewpubs and microbreweries across the counties of the Midwest. The Spearman's Rho correlation coefficient (r_s) can be interpreted much like the Pearson's correlation coefficient (r), where values that are close to −1 are strongly and negatively related to each other, whereas values that are close to +1 are strongly and positively related to each other. Values that are close to zero have a weak or no relationship with one another. Variables that did not display at least a moderate relationship with the number of brewpubs and microbreweries are not included in Table 13.4.

Locational characteristics such as value of owner-occupied homes, family income, gross rent, the percentage of the population reporting as Asian, and jobs in professional, science, and management were all positively related to the number of both brewpubs and microbreweries per county. Locational characteristics that were negatively related to the number of both brewpubs and microbreweries per county included the percent of the population that was White or designated as one race, the percentage of the population over the age of 65, and the jobs in agriculture, forestry, and mining jobs. These relationships paint a clear picture of the types of places that brewpubs and microbreweries tend to be located in the Midwest. These areas are places where residents are well off, and have expendable, or sizable discretionary income. They are largely urban and suburban places, where the population is diverse and well-educated. In the Midwest, these locational attributes are often found in a number of places, including college towns and revitalized (or revitalizing) urban areas.

Between brewpubs and microbreweries, however, there are notable differences among some variables that are related more to one firm type than the other, indicating that the places where one firm is most likely to be found might be the same types of places where the other firm type is most likely to be found. In particular, even though the correlation is only moderate, the locational characteristics that vary between firm types are important in defining the places firms tend to set up shop. For example, residents in counties with microbreweries were more likely to use public transportation for their commute than residents of counties with brewpubs. Counties with microbreweries were more likely to have a larger percent of older buildings (built prior to 1939), whereas counties with brewpubs are more likely to have higher percentages of buildings built in every decade since 1960. Even though the percentage of the population over the

Table 13.4 Spearman's Rho correlation for selected sociodemographic variables

	Brewpubs	Microbreweries
Value of owner-occupied homes	0.6684	0.6557
Income and Benefits (2015)	0.6579	0.6540
Percent Asian	0.5911	0.6022
Median rent	0.5755	0.5817
Percent in professional, scientific, management, administrative, and waste management services	0.5527	0.5645
Percent using public transportation for commute	0.4114	0.4617
Percent 65 years and older	−0.4181	−0.5120
Percent of homes built pre-1939	−0.3490	−0.2003
Percent one race	−0.4592	−0.3775
Percent white	−0.5342	−0.4749
Percent in agriculture, forestry, fishing and hunting, and mining	−0.6128	−0.5493

age of 65 is negatively related to counties with both brewpubs and microbreweries, indicating a large population of Millennials in both locations, the variable is more negatively related to counties with microbreweries than to those with brewpubs.

These differences in relationships among common locational variables between counties where brewpubs and microbreweries are located tell an important story about the places these firms can be found. In particular, microbreweries are more often located in densely populated urban areas, in places where a diverse, young, and well-educated population with expendable income make for a ready-made target market for craft beer brewers. Additionally, these urban centers may have a more plentiful supply of industrially zoned spaces, which would be a requirement for beer production at a scale larger than that of the home brewer, although many cities are moving toward requiring specific zoning for microbreweries (Barajas, Boeing, and Wartell 2017) or designating specific areas as "brewery districts" (Nilsson et al. 2017). These results confirm the idea of the up-and-coming, hip, historic, urban area as the common site for microbreweries, in the Midwest as well as the rest of the country (Zuk 2015; Horne 2013) (Fig. 13.4).

In contrast, brewpubs in the Midwest are often found in areas that are more suburban. Like microbreweries, they tend to be located in areas with a diverse population that is well-educated and fairly well-off financially. They rely on a young population, although the suburban populations are older than the cities. From a locational perspective, brewpubs have more flexibility that that of their microbrewing counterparts. Brewpubs, although certainly more focused on beer production than most in the restaurant industry, fit better in the retail setting where restaurants are often found in suburban environments (Fig. 13.5). In addition to

Fig. 13.4 The Argus Brewing Company in the Pullman neighborhood of Chicago, IL. *Source* Brewery (2015) www.argusbrewery.com

Fig. 13.5 The Hairless Hare Brewery, is located in a suburban strip mall near Dayton, OH. *Source* Babbit (2016) www.drinkupcolumbus.com

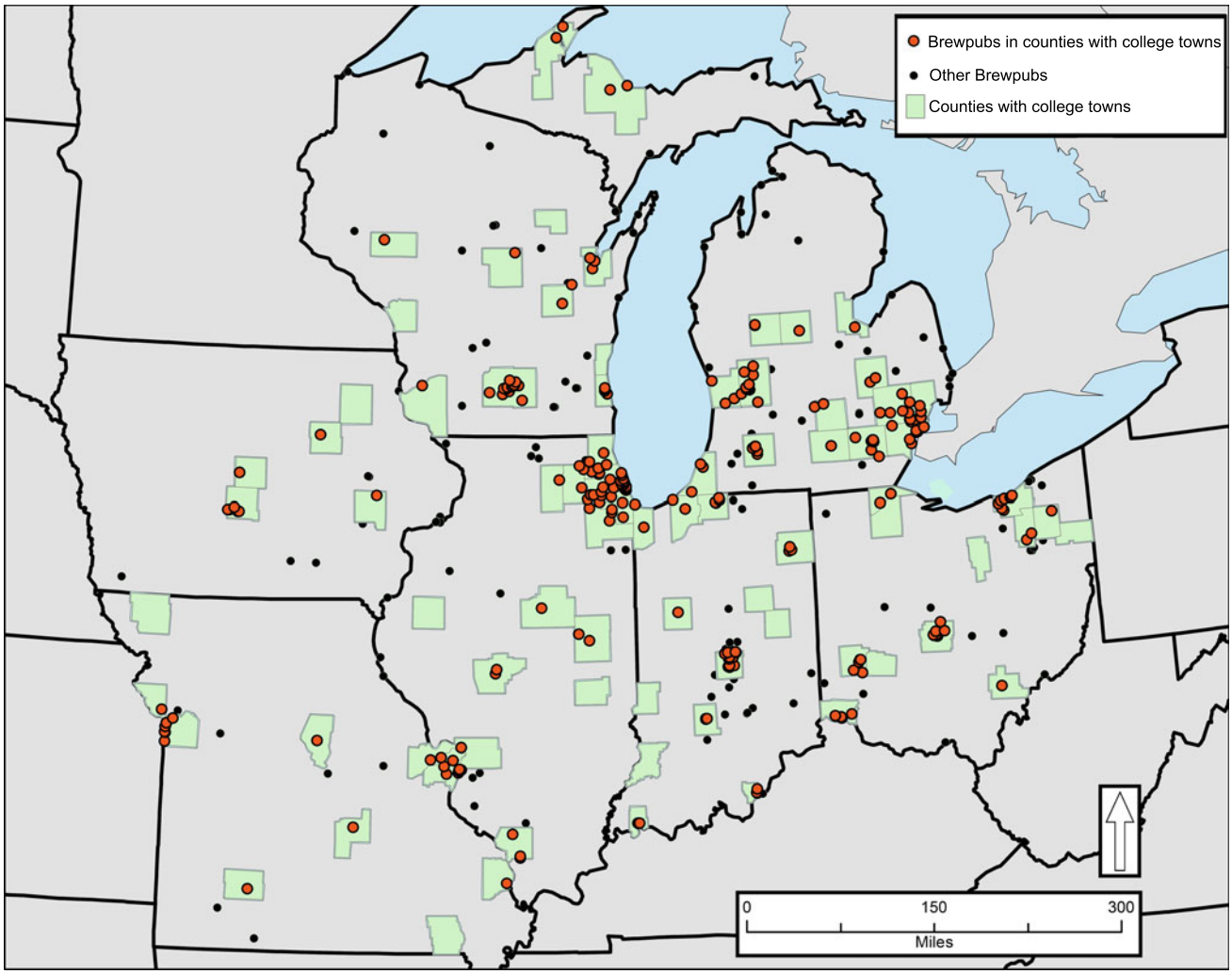

Fig. 13.6 The geography of midwest college towns and brew pubs

focusing on unique brews that are uniquely local, brewpubs often serve a creative and locally inspired menu, and are often located in college towns, which in the Midwest, are many times medium-sized population centers with a decidedly less urban aesthetic than the places where microbreweries are more often found.

Brewpubs are more commonly found in counties with "college towns" than microbreweries (Fig. 13.6). Of the 388

brewpubs located in the Midwestern states, 71.39% of those establishments can be found in or within two miles from counties that are also home to a large college or university.[2] On the other hand, only 62.12% of microbreweries are found in or within two miles of those same counties that are home to "college towns". While college towns in the Midwest are often located in counties with sizable urban populations themselves (Saint Louis University, University of Illinois—Chicago, University of Wisconsin—Milwaukee, Ohio State University, University of Cincinnati, etc.), many are located in smaller counties with medium-sized urban areas which, even though they are located away from the large urban centers of the region, take on many of the same urban characteristics of suburban counties on the edges of large cities. These counties, which are home to more "traditional" college towns and schools such as Eastern Illinois University, Saginaw Valley State University, Notre Dame, and Ohio University, are different than those where the large regional population centers are found. The ability to parse out counties with large cities in addition to large colleges and universities, which sociodemographically tend to make a better home for microbreweries, from counties that are more suburban and are home to more "traditional" college towns, could possibly see a clearer geographic split in the locational differences between microbreweries and brewpubs.

Conclusion

The results demonstrate that the factors that influence the locations of craft beer firm types co-vary based on age, wealth, diversity, and "urban" geography. In broad strokes, both microbreweries and brewpubs tend to be located in more diverse urbanized regions with well-educated and populations with expendable income. Yet, the geography of firm type suggests that microbreweries are distinct from brewpubs. Specifically, the Millennial cohort, diversity indicators, and wealth are more strongly associated with counties with microbreweries than brewpubs. Conversely, brewpubs tend to be located in areas that tend to be less diverse in the Midwestern states, such as college towns and suburban communities on the urban fringe. Indeed, the observed proportion of sales from food and associated permitting rules tend to favor suburban locations for brewpubs, as the business model, menu, and customer base is similar to many other restaurants that are increasingly common across the American suburban landscape (Relph 2015). Similarly, the demographics of suburban areas facilitate a multigenerational customer base and appeals to families. Further, the legal environments of states also influence the market characteristics of firm type locations. Further research could focus on the extent to which legal environments in different places serve to nurture or hinder the development of strong, local beer cultures, and on innovation among firms in places with less-than-friendly beer regulations. Future research might also involve interviewing brewers to gain their insight on sociodemographic variables like the ones analyzed in this research, and how those factors influence the decisions they make regarding locations of facilities. It would also be worthwhile to conduct similar research in a different region, such as the West Coast or East Coast, to compare the spatial characteristics of microbreweries and brewpubs.

[2]"College Towns" were identified based on the presence of a public land-grant or regional comprehensive University. "College Towns" with private institutions enrolling more than 7,500 students were also included.

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Economic Impact of Craft Beer Festivals

14

Jeff Dense

Abstract

The economic impact of craft beer festivals is not well understood. While the craft beer industry generated an estimated $76.2 billion to the U.S. economy in 2017, this robust figure excludes an assessment of the role craft beer festivals play within state and local economies. Locales hosting these community events may enjoy significant impacts on a wide range of tourism related industries, including lodging, food and drink, and retail. The economic impact of craft beer festivals is inextricably linked to geographic considerations, as the ability to attract out-of-town visitors is the primary driver of the overall impact of these community events. Furthermore, craft beer festivals provide a vehicle for neolocalism-related initiatives such as community branding, further growth opportunities for local craft breweries and associated (beer tourism) activities. Craft beer festivals also have significant political implications as these community events generate sizeable tax revenue for state and local governments. The chapter utilizes a case study of the 2017 Oregon Brewers Festival to highlight the prospects and challenges in utilizing economic impact analysis to buttress tourism, economic development, and government relations efforts. Potential benefits of economic impact studies of craft beer festivals to state and local craft beer industry leaders, event organizers, tourism officials, and government partners are highlighted. Methodological and analytical lessons and their application to a wide range of craft beer events are explored.

The 30th edition of the Oregon Brewers Festival (OBF) was held July 26–30, 2017 at Tom McCall Waterfront Park in Portland, Oregon. The Oregon Brewers Festival is one of America's largest and longest running craft beer festivals, rivaled only by the Great American Beer Festival in Denver, Colorado. Given the number of beer enthusiasts who may travel lengthy distances at considerable expense to attend events such as the Oregon Brewers Festival, it can be argued that craft beer festivals have a significant fiscal effect on the local economy. Craft beer festivals may have weighty economic consequences on tourism related industries, the "bottom line" of festival organizers, and state and local government coffers. A focus on the Oregon Brewers Festival is warranted due to its unique situation. This chapter utilizes a case study of the 2017 Oregon Brewers Festival to highlight the economic impact of craft beer festivals.

Craft beer tourism is a significant, yet often overlooked, component of the overall economic vitality of the craft beer industry. Small and independent craft brewers contributed $76.2 billion to the United States economy in 2017 (Brewers Association 2018). However, this robust figure excludes a consideration of the contribution of festivals and events to the craft beer industry's economic vigor. A narrow focus on production and sales provides an incomplete picture of the impact of the craft beer industry's effect on local economies. Economic activity will be created wherever beer is consumed (Europe Economics 2016). Given the potential fiscal implications of craft beer tourism, an evaluation of the economic impact of craft beer festivals is called for.

The economics of the craft beer industry have been the target of considerable focus. Research generated by non-profit trade organizations (Brewers Association 2018; Europe Economics 2016), along with reports commissioned by industry stakeholder groups such as the Beer Institute and National Beer Wholesalers Association (Dunham Associates 2017) assert a weighty economic contribution for the craft beer industry in the United States and beyond. However, these commissioned research efforts fail to examine the economic impact of craft beer festivals on the financial vitality of the industry (Dense 2013). Conversely, craft beer tourism has been the subject of several focused research

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efforts by academics. General overviews of the topic have been the subject of academic attention and provide a foundation for further microlevel analysis (Budjoso and Szucs 2012; Dunn and Wickham 2016; Lyons and Sharples 2008). A bevy of case studies of beer tourism in geographic-specific areas have been generated (Cook 2018; Eades et al. 2017; Francioni and Byrd 2016; Kraftchick et al. 2014; Plummer et al. 2005; Rogerson and Collins 2015). However, these research efforts have generally focused on patron demographics and visitor motivations without a commensurate attempt to evaluate craft beer tourism's economic impact.

An assessment of previous craft beer tourism research efforts highlights the difficulty of generalizing findings from one geographic locale to another. *Neolocalism*, a conscious effort by businesses to foster a sense of place based on attributes of their community, is an intrinsic quality of the craft beer industry which must be acknowledged if we are to understand the political and economic implications of craft beer tourism (Flack 2009; Holtkamp et al. 2016). While an evaluation of the economic impact of craft beer festivals is an essential element to understanding the dynamic nature of tourism on the industry, an appreciation of the primary geographic factors impinging on the success of these community-based events may spur future research efforts.

Methods

A team of students under the supervision of the primary researcher conducted in-person interviews of Oregon Brewers Festival patrons July 26–29, 2017. In-person surveys may not be as accurate as mail or online surveys administered after the conclusion of the event. However, this data collection technique resulted in a higher response rate, allowing for randomization and stratification of the survey sample. In addition to being surveyed about demographic information such as gender and age, Oregon Brewers Festival attendees were queried to provide expenditure data for several key tourism-related industry sectors: (1) Accommodations, (2) Meals, Food and Drink, (3) Transportation, which includes rental cars, taxicabs, ridesharing services and mass transit, (4) Gasoline, which includes gasoline purchased to travel to the Oregon Brewers Festival in private automobiles and for rental cars, (5) Festival glasses, tokens, merchandise, and food purchased at the Oregon Brewers Festival, (6) Non-beer-related amusement and recreation, (7) Beer purchased at retail locations to take home, and (8) Retail purchases. These categories have been utilized by prior peer-reviewed studies to estimate the economic impact of tourism on local economies (Stynes 1999; Tyrell and Johnston 2006; Warnick et al. 2016). These expenditure categories correlate with industry sectors in the IMPLAN (IMpact Analysis for PLANning) statistical software package utilized to estimate the economic impact of the 2017 Oregon Brewers Festival on Multnomah County.

IMPLAN uses county-level data to estimate input–output models for regions down to a county level. IMPLAN generates a complete set of economic accounts within up to 528 sectors for the region, including multipliers that were utilized to estimate direct, indirect, and induced economic impacts attributable to Oregon Brewers Festival patron expenditures. Multipliers measure total changes in output, income, employment, or value added. Multipliers estimate three components of total change within the local area: (1) *Direct effects* represent the initial change in the industry in question. For tourism, this involves the impacts on the tourism industries (businesses selling directly to tourists) themselves; (2) *Indirect effects* are changes in interindustry transactions as supplying industries respond to increased demands from the directly affected industries. For example, the increased sales in linen supply firms resulting from more hotel spending is an indirect effect of visitor spending; and (3) *Induced effects* reflect changes in local spending that result from income changes in the directly and indirectly affected industry sectors (Mulkey and Hodges 2012). The inclusion of direct, indirect, and induced effects into economic impact analysis of craft beer festivals provides a comprehensive overview of the fiscal effects these community events have in the locales in which they are held.

Two of the key inputs utilized to estimate the impact of the 2017 Oregon Brewers Festival center on ascertaining the number of out-of-town visitors to the event, along with the development of a per visitor expenditure profile. These two variables provide the basis for an informed estimate of the economic impact of the 2017 Oregon Brewers Festival. The study utilized a formula and series of structural equations to estimate the number of "unique" visitors to the Oregon Brewers Festival. 70,140 bracelets were distributed to 2017 OBF attendees. However, this figure fails to account for patrons who attend multiple days of the Oregon Brewers Festival. Utilizing this data in tandem with patron survey response patterns indicating the number of days of festival attendance, the study estimated the number of unique visitors to the 2017 Oregon Brewers Festival at 48,198. Given the number ($N = 908$) of patrons sampled, the study's economic impact estimates are within a statistical margin of error of $\pm 3.25\%$ at the 95% confidence level, well within the generally accepted parameters of social science research.

While the potential benefits of economic impact analysis of craft beer festivals are widespread, it is essential to recognize several of the shortcomings incumbent within the survey methodology (Crompton and McKay 1994; Jeong

et al. 2016). A self-selection bias may exist within the survey sample, as 2017 Oregon Brewers Festival patrons who completed the study were provided a beer token with a retail value of $1 for their time and effort. A plethora of craft beer events was concurrently held in the Portland area during the Oregon Brewers Festival. Visitor spending at these "satellite" events is difficult to isolate. Conversely, the utilization of a succinct one-page survey instrument resulted in a response rate of 98%. This response rate would have been adversely affected by a lengthier instrument which may (or may not) have produced additional empirical insights, including satellite events. Nevertheless, the methodology underlying the economic impact analysis of the 2017 Oregon Brewers Festival resulted in robust, and defensible, results.

Results

An analysis of the results of the economic impact study of the Oregon Brewers Festival illustrates the centrality of geographic factors toward the fiscal vitality of craft beer tourism and, moreover, the craft beer industry as a whole. The 2017 Oregon Brewers Festival patron survey reveals the accommodation sector (hotel, motel, and vacation rental lodging) accounted for the largest share of attendee expenditures after meals and drinks. This is the first time since inception of the study in 2011 that lodging expenditures have been outpaced by attendee spending on meals and drinks. Lodging is considered a *basic industry* by IMPLAN, as this sector provides services to nonlocal clients and new dollars are attracted to the area as a result of their activities. These new dollars are the primary determinant of the economic impact of community events like the OBF (Mulkey and Hodges 2012). Patrons spent $5.89 million to obtain lodging while attending the 2017 Oregon Brewers Festival, a precipitous 38% decrease from 2016. Given the primacy of lodging expenditures to the economic impact of craft beer festivals, an evaluation of a series of factors contributing to this significant decline is warranted.

Analysis of 2017 Oregon Brewers Festival patron per capita accommodation expenditures by residence reveals a spending pattern present in several industry sectors incorporated into the study. Day visitor spending is quite different from that of overnight visitors (Stynes 2000). Hence, it is reasonable to expect local attendees will spend considerably less than their out-of-town counterparts while attending craft beer festivals. City of Portland ($2.15) and Portland area residents ($22.01) attending the 2017 OBF spent a minimal amount on accommodations than their out-of-town counterparts. These locally derived expenditures are not considered part of the economic impact of the Oregon Brewers Festival, as they are considered redirected, not new money, in the local economy. While Southwest Washington residents ($65.76) and Oregon residents from beyond the Portland area ($38.54) spent more on lodging expenditures than local residents, patrons from states other than Oregon ($202.64) and international visitors ($264.20) incurred sizeable lodging expenses while attending the 2017 Oregon Brewers Festival. Lodging expenditures, along with meal and drink purchases were the primary contributors to an average total expenditure by out-of-state ($666) and international visitors ($804) to the 2017 Oregon Brewers Festival. While there is not a direct correlation between craft beer festival expenditures and economic impact of the events due to inclusion of margin categories (beer to take home, gasoline, retail expenditures) and multiplier effects on numerous industry sectors, all things being equal, higher per capita expenditures by attendees from beyond the local area bode well for the economic impact of craft beer festivals. Hence, joint marketing efforts between craft beer festival organizers, tourism stakeholders, and local government officials aimed at maximizing the economic impact of these community events by attracting out-of-town visitors is called for.

Oregon Brewers Festival attendees had access to a wide range of lodging accommodations. Marriott-affiliated properties (4.6% of total attendees) were the primary beneficiary of hotel-staying OBF attendees (Dense 2017). A number of survey respondents remarked on the high costs of acquiring lodging (particularly in the immediate area of the festival), and this pricing strategy drove a number of attendees to seek more affordable lodging arrangements. Room rates within walking distance of the Oregon Brewers Festival have been priced at over $300 per night in recent years, causing out-of-town patrons to seek alternative lodging arrangements while attending the event. Given the primacy of the lodging industry sector as the historic primary driver of the direct economic impact of the OBF, the significant percentage (15%) of out-of-state festival patrons obtaining vacation rental lodging (e.g., Airbnb, VRBO) while attending the Oregon Brewers Festival should be cause for concern for Portland commercial lodging operators. Moreover, the increase (30.3%, a 10.5% increase from 2016) in out-of-state OBF patrons deciding to stay with friends and family while attending the event does not bode well for the vitality of spending in the accommodation industry sector and, hence, the overall economic impact of the Oregon Brewers Festival.

Craft beer event operators and their community partners should contemplate the implications of these lodging expenditure patterns on the overall economic impact of craft

Table 14.1 Direct economic impact by sector

Industry description	Direct impact
Food services and drinking places	$5,423,615
Hotels and motels, including casino motels	$5,209,936
Other amusement and recreation industries	$2,677,823
Transit and ground passenger transportation	$1,392,365
Retail Stores—general merchandise	$459,281
Retail Stores—food and drink	$90,007
Retail Stores—gasoline stations	$73,659
Total direct economic impact	$15,326,684

Source Dense, 2017

beer festivals. Clearly, there has been a swell of patron pushback on lodging prices during the Oregon Brewers Festival. It can be argued OBF attendees from beyond the Portland region, and beer festival patrons in general, have become more cost-sensitive, especially to lodging costs. Short-term residential rentals provide Oregon Brewers Festival visitors a cost-effective alternative to hotel lodging. The vacation rental lodging category can be reasonably expected to expand in the future for cost-conscious attendees of craft beer festivals. Tourism officials and hospitality sector leadership should ponder the potential impact of these changes in Oregon Brewers Festival lodging patterns, especially maturity of the vacation rental market as an alternative to high priced hotel rates. It will be important to ascertain whether a "bounce back" occurs in the average lodging expenditure metric in subsequent years. In order to understand the economic impact of craft beer festivals, it is essential to evaluate the lodging patterns and costs incurred by event attendees from beyond the local area.

The Oregon Brewers Festival serves as a springboard for attendees to explore Portland's renowned food culture. Portland is widely considered one of the best restaurant cities in the United States, home to several of the country's most respected restaurants (Le Pigeon, Beast), beer-friendly farm-to-table dining (Higgins), a prolific food cart scene (Nong's Kho Man Gai, Kim Jong Grillin') along with a number of brewpubs and gastropubs offering quality culinary fare. Meals, food and drink purchased by Oregon Brewers Festival patrons had a significant economic impact on the local economy. Oregon Brewers Festival patrons spent an estimated $6.9 million on meals, food and drink in 2017.

Besides the sizeable direct impact on the local economy, food and drink expenditures generate sizeable indirect and induced impacts. Oregon Brewers Festival patron purchases in local restaurants and other food- and drink-related establishments, in turn, prompts local restaurant owners to purchase more products from local businesses and hire more workers (Miller 2007). Tips gleaned by wait staff during OBF are often spent within the local economy on nights out after the event. City of Portland ($31.71), Portland area ($35.29), Southwest Washington residents ($56.92), and Oregon attendees from beyond the Portland area ($52.73) spent significantly less on food and drink than other residential categories. Conversely, 2017 Oregon Brewers Festival patrons from states other than Oregon ($218.68) and international visitors ($223.86) spend significantly more on meals and drinks than locally based attendees, providing a sizeable impact on the local economy. Given these geographically based expenditure patterns, IMPLAN-based analysis revealed the Oregon Brewers Festival had an estimated direct economic impact of $15.3 million dollars. The food and drink industry sector ($5.4 million), along with the hotel and motel industry ($5.2 million) were the primary drivers of the direct economic impact of the 2017 Oregon Brewers Festival on the local economy (Table 14.1).

Furthermore, analysis of the estimated indirect economic impact generated by the 2017 OBF highlights the scope and depth of craft beer festivals' contribution to the local economy. The 2017 Oregon Brewers Festival generated an estimated $4.4 million in indirect economic impact. Twelve industry sectors benefitted from indirect economic benefits in excess of $100,000. The real estate industry sector ($.49 million) was the primary industry sector benefiting from the indirect economic impact of the 2017 Oregon Brewers Festival. In tandem with induced ($4.1 million) impacts, the 2017 Oregon Brewers Festival generated an estimated economic impact of $23.9 million. While this equated to an 18% decrease from 2016, there are a multiplicity of factors including unseasonably hot weather, spiraling commercial lodging costs and "festival fatigue" (there is at least one, and often more, craft beer festival and event in the months preceding the Oregon Brewers Festival) that should give pause

Table 14.2 Indirect economic impact by sector, $100,000+

Industry description	Indirect impact
Real estate establishments	$488,420
Management of companies and enterprises	$303,150
Advertising and related services	$280,490
Food services and drinking places	$192,092
Insurance carriers	$163,233
Monetary authorities and deposit credit intermediation activities	$162,920
Federal electric utilities	$142,578
Maintenance and repair construction of nonresidential structures	$136,263
Wholesale trade businesses	$127,500
Accounting, tax preparation, bookkeeping, and payroll	$108,714
Legal services	$105,796
Services to buildings and dwellings	$103,415

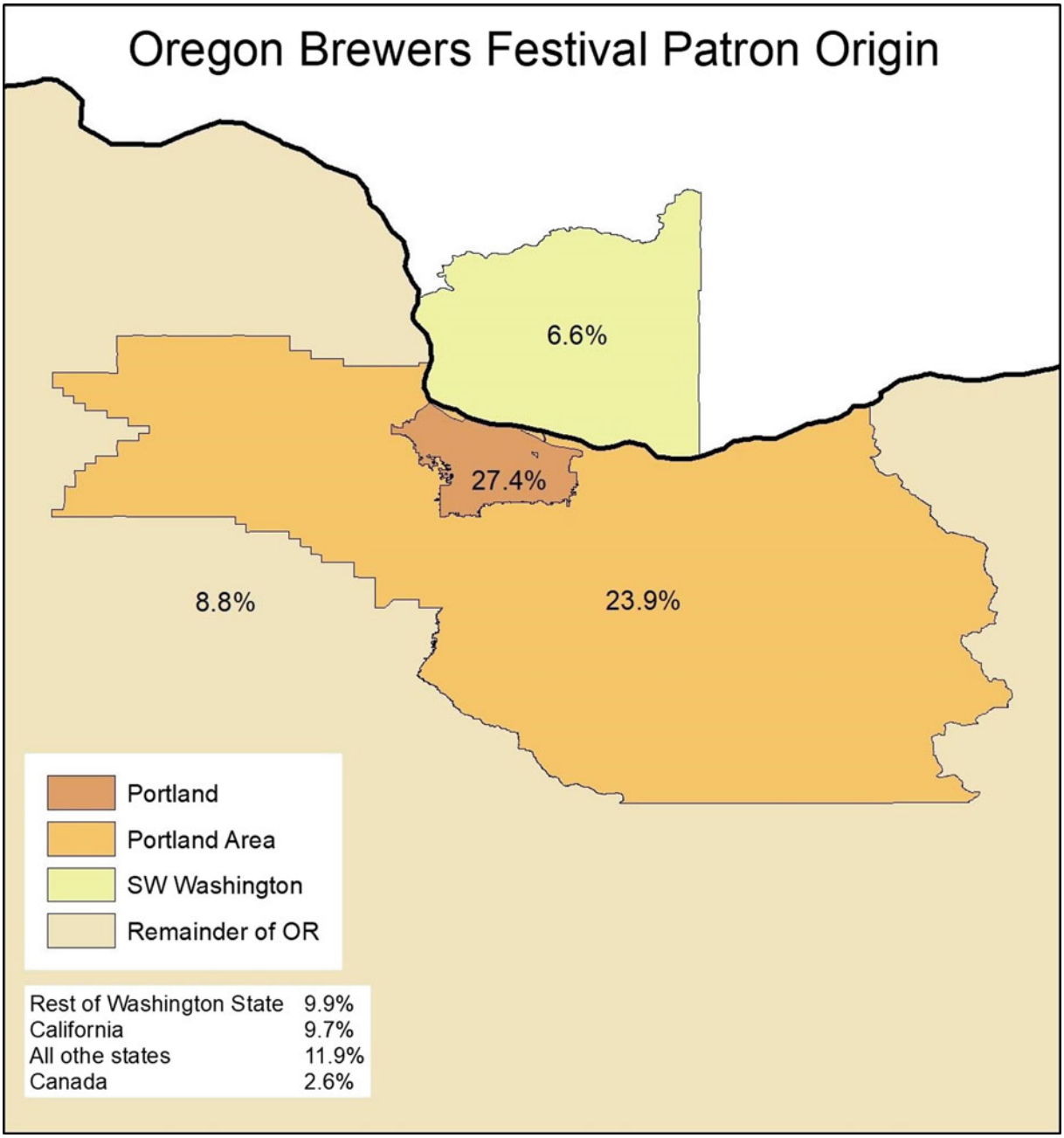
Source Dense, 2017

to interested stakeholders. Clearly, community-based events such as craft beer festivals play an important role in the economic vitality of the locales in which they are held (Table 14.2).

Craft Beer Festivals: Geographic Considerations

There are a range of geographic variables which must be acknowledged as part of a holistic analysis of the economic impact of craft beer festivals. Foremost of these factors is a determination of what constitutes a "local" attendee of the event. This is not a trivial consideration. The economic impact of the 2017 Oregon Brewers Festival is driven in large part by the ability to attract attendees from outside the local Portland tri-county area comprised of Multnomah, Washington, and Clackamas counties. These out-of-area visitors bring "new" money into the local economy, while Portland-based residents are redirecting existing expenditures within the local market (i.e., go to OBF instead of a movie). Moreover, craft beer festival attendees whom reside outside the state where the event is located (Clark County in Washington which is adjacent to Portland) are by their very nature a "visitor" and must be accounted for (Dense and Barrow 2003). The economic impact of the 2017 Oregon Brewers Festival is further compounded by the number of patrons from outside the Portland area incurring additional expenditures related to festival attendance, such as lodging, food and drink, rental cars, retail purchases, and non-beer-related recreation. The ability to attract a significant number of out-of-town visitors is the key geographic-related variable for craft beer festivals to generate a sizeable economic impact.

Survey results indicated nearly half (48.8%) of 2017 Oregon Brewers Festival patrons were residents from beyond the Portland area. Of particular interest to tourism industry stakeholders, festival organizers and government officials is the number of patrons who travel from other states and countries to attend the Oregon Brewers Festival. More than a quarter (28.3%) of 2017 Oregon Brewers Festival patrons were from states other than Oregon. Visitors from Washington (9.9%) and California (9.7%) constituted nearly a fifth of all OBF attendees, with Oregon visitors from outside the Portland region (8.8%), and international visitors (5.0%) resulting in a significant number (23,988 unique visitors) of out-of-town patrons attending the 2017 Oregon Brewers Festival. The expenditures visiting patrons incur while attending the event is the primary contributor to the economic impact of the 2017 Oregon Brewers Festival. In order to maximize the fiscal benefits of craft beer festivals, event organizers in partnership with tourism officials should focus marketing efforts on attracting the maximum number of out-of-town visitors. A clear working definition of what constitutes a "local" patron underlies the validity and reliability of economic impact analysis and highlights the inherent geographic considerations underlying economic impact analysis of craft beer festivals.



A related geographic issue linked to an estimate of expenditures by out-of-town patrons of craft beer festivals is "leakage" of spending by event attendees outside the area under study. It can be assumed not all out-of-town visitors may be spending the entirety of reported expenditures within the Multnomah County study area. The 2017 Oregon Brewers Festival economic impact study utilized a 95% Local Purchase Percentage (LPP) for all of the expenditure categories to account for "leakage" outside the local economy. Local Purchase Percentage describes the amount of the direct effect of the event and is applied before Indirect or Induced purchases are calculated (IMPLAN Group 2017). This LPP is based on an assessment of survey responses indicating where OBF attendees had obtained lodging. However, without in-depth data as to spending patterns by Oregon Brewers Festival patrons by locale, necessitating a far lengthier survey instrument (which would invariably adversely affect response rates) this percentage appears to be a reasonable estimate to account expenditure "leakage". Given the geographic location, including proximity to tourist attractions surrounding the study area, the Local Purchase Percentage for economic impact analysis of other craft beer

Table 14.3 Beer tourism by location

	Visitors
Deschutes Portland Public House	67
Rogue Pearl Public House/Eastside Pub	38
McMenamin's Pubs and Breweries	37
Breakside brewing	34
Cascade Barrel House/Raccoon Lodge	26
10 Barrel Brewing Portland	26
Hopworks Urban Brewery	20

Source Dense, 2017

festivals and events may need to be adjusted depending on locale, lodging availability and other factors.

Given the beer-centric nature of the Oregon Brewers Festival, it is reasonable to expect a number of OBF patrons will partake in Portland's prolific craft beer culture. There are more than 50 breweries in Portland, more than any other city in the world (Oregon Brewers Guild 2013). Moreover, a number of local beer-related establishments have developed worldwide reputations, and are on the"bucket list" for traveling beer aficionados when they come to "Beervana". These visits to local craft beer-related businesses provide a significant positive impact on the local economy via purchases of food, drink and beer. Nearly a third (29.3%) of 2017 Oregon Brewers Festival patrons indicated they had engaged in beer tourism, with the majority of these respondents indicating they visited multiple establishments during their visit. A significant percentage of survey respondents ($N = 67$, 7.4% of total attendees) indicated they visited Deschutes Portland Public House while attending the 2017 Oregon Brewers Festival (Table 14.3).

Geographic proximity to craft beer festivals and events has a significant "trickle down" effect of local breweries and beer-related establishments. The findings of this study provide an opportunity to reflect on the groundbreaking research of Flack (1997) regarding the connection between neolocalism and craft beer. Craft beer festivals such as the Oregon Brewers Festival can be leveraged to portray a market and sense of place which ultimately benefits the local microbrewery culture. An examination of the connection between neolocalism and craft beer has been the recent subject of recent attention by researchers (Nevert and LaPointe 2017). The evidence unearthed by this economic impact analysis of the 2017 Oregon Brewers Festival provides empirical evidence highlighting the connection between the geographic concept of neolocalism and craft beer.

In order to address this neolocalism issue, a survey question was formulated to determine whether attending the Oregon Brewers Festival was the primary reason for visiting Portland. This query was aimed at isolating the impact of time-switchers (nonlocal visitors who were planning to come to the area but switched the time of their visit to coincide with the festival) and casuals (visitors who were already in the area, attracted by other features, and who elected to attend the festival instead of doing something else) who attended the Oregon Brewers Festival. Survey results revealed 95% of nonlocal attendees indicated OBF was the primary reason for their visit.

Despite this evidence, it is difficult to accurately evaluate the *causal* connection between attendance at craft beer festivals and beer tourist activity at local area breweries. Whether it is the "chicken or the egg," re festival attendance or microbreweries driving neolocalism of craft beer (Dunn and Warnick 2016; Holtkamp et al. 2016), the related issue of *coopetition* between craft beer festivals and local microbreweries is in need of further exploration. The collective competition and cooperation between small brewers in Portland is rooted in the community branding (Beervana) undergirding coopetition (Mathias et al. 2017) and should be an essential focus of future event tourism research (Getz and Page 2016) and a geographically focused craft beer research agenda (Withers 2017). Clearly, geographic considerations (Patterson and Hoalst-Pullen 2014) such as neolocalism have a profound impact on the success, or lack thereof, of craft beer festivals, beer tourism, and the craft beer industry. Proximity to a number of world-class breweries in "Beervana" appears to be an underlying factor in the decision for patrons to visit Portland, attend the Oregon Brewers Festival and a concurrent foray in beer tourism.

The future growth of the craft beer industry is linked to a learned appreciation of geographic factors. Developing an understanding between product, place, and identity will provide communities with unique opportunities to attract out-of-town visitors who seek to have an "authentic" local experience via craft beer tourism (Gattrell et al. 2017). While beer trails and other geographically focused marketing strategies have the potential to attract out-of-town visitors to microbreweries, craft beer festivals provide ready access to a number of microbreweries products in one central location. Moreover, traditional marketing efforts may need to be revisited, as millennials have become reliant on word-of-mouth "advertising" by friends and family. The

decision to consume a certain beer and, moreover, attend a certain craft beer festival and event is often influenced by peers (McCluskey and Shreay 2011). While over 98% of 2017 Oregon Brewers Festival indicated they would return to the event in the future, attracting "new" patrons to craft beer festivals and events play an important role in the growth of the craft beer industry. The Oregon Brewers Festival predates the vast majority of microbreweries in the Portland, Oregon region and has contributed to the economic vitality of the neolocalistic craft beer culture in "Beervana". Future research examining the relationship between neolocalism and craft beer needs to explicitly recognize the important role craft beer festivals play in developing the sense of place often underlying the decision to locate a microbrewery in a specific locale.

Government as Beneficiary

The positive economic impact of craft beer festivals is shared by a number of businesses throughout the community. Twelve industry sectors generated an indirect economic impact of more than $100,000 as a result of the 2017 Oregon Brewers Festival. An additional 53 industry sectors including telecommunications, waste management, and automotive repair generated indirect economic impacts >$10,000 (Dense 2017). In light of the significant and far-reaching economic benefits accruing to local area businesses, a consideration of the economic impact of these community events necessitates an evaluation of the role government plays in hosting and benefitting from craft beer festivals.

In order to understand the connection between neolocalism and the craft beer industry, it is important to recognize the operational responsibilities and positive fiscal effects accruing to state and local government from hosting these community events. The pursuit of the various licenses and permits to operate the Oregon Brewers Festival requires interfacing with 18 different City of Portland offices (A. Larrance, personal communication, July 28, 2017). The lack of "one-stop shopping" may hinder future potential events from getting off the ground, and may impede neolocalism-related community branding efforts. In addition to required licenses and permits, festival operator Art Larrance incurred several up-front costs paid to the City of Portland, including $45,000 to rent Tom McCall Waterfront Park, along with a $8,000 "reseeding fee" to plant new grass after the event (Alworth 2017). Moreover, a sizeable amount was paid to the Portland Police Bureau for uniformed officers to provide security during the event. In order to fully understand the economic implications of these community events, it is important to recognize the up-front costs linked to government licensure and approval of craft beer festivals.

One of the primary benefits accruing to state and local government as a result of the 2017 Oregon Brewers Festival is the generation of Indirect Business Taxes (IBT). This fiscal measure consists of tax and nontax liabilities that are chargeable to business expenses when calculating profit-type incomes and certain other business liabilities to government agencies that are treated like taxes. IBT includes taxes on sales, property, and production, but excludes employer contributions for social insurance and taxes on income. In more general terms, Indirect Business Taxes can be considered the combination of excise, sales and property taxes, as well as, fees, fines, licenses, and permit revenue collected by state and local government (Mulkey and Hodges 2012).

The tourism industry sectors examined as part of the economic impact analysis generated an estimated $1.74 million in indirect business taxes as a result of the overall economic impact of the 2017 Oregon Brewers Festival. Indirect Business Taxes of $1.29, $.18 and $.23 million were generated as a result of the direct, indirect, and induced economic impacts of the 2017 Oregon Brewers Festival. The hotel and motel industry generated $.57 million in indirect business taxes, primarily attributable to transient room taxes. The scope and breadth of the economic impact of the 2017 Oregon Brewers Festival on state and local government is demonstrated by the fact 97 IMPLAN industry sectors produced a minimum of $100 in indirect business taxes. Hotel and motel lodging purchased by 2017 Oregon Brewers Festival patrons serves as the nexus for direct and indirect impacts on a number of other industry sectors such as real estate. Moreover, transient room taxes (6% City of Portland, 5.5% Multnomah County) along with the Portland Tourism Improvement District Fee (2%) collected as part of these accommodation expenditures underscores the positive fiscal impact on government attributable to the 2017 Oregon Brewers Festival. Future research should focus on the role of state and local government in promoting, or impeding, neolocalism-based community branding efforts linked to craft beer festivals.

Conclusion

The preceding analysis highlights the economic impact of the 2017 Oregon Brewers Festival. The 18% decrease in the estimated overall economic impact of the Oregon Brewers Festival from 2016 to 2017 can be attributed to a decrease (15%) in the number of patrons attending the event, along with a sizable decline (38%) of the economic impact attributable to expenditures in the accommodation industry sector. Comparison of past iterations of the Oregon Brewers Festival economic impact study with 2017 results provide several significant insights that should be pondered by the

craft beer industry and tourism officials whom should realize collaboration is the key to the Oregon Brewers Festival continuing to provide a significant economic boost to the local geographic region in the future.

Economic impact analysis of the Oregon Brewers Festival demonstrates several relationships between key variables which highlight the dynamic nature of tourism-related expenditures, and hence, overall economic impact of community festivals and events. Two key factors have emerged as the primary drivers of the Oregon Brewers Festival overall economic impact, out-of-town visitor spending and the percentage of out-of-town visitors. The average out-of-town visitor to the 2017 Oregon Brewers Festival spent $532, equating to 5.2% lower total than any previous iteration of the study. This decline can be directly attributable to attendees' accommodation related expenditures which suffered a 38% decrease from 2016. This key finding contrasts with an *increase* (9.4%) in the percentage of total attendees from beyond the Portland area attending the 2017 Oregon Brewers Festival. It can be argued OBF attendees from beyond the Portland region have become more cost-sensitive, especially to lodging costs. Stakeholders should contemplate the implications of these lodging expenditure patterns on the overall economic impact of Portland area tourism.

The centrality of the Oregon Brewers Festival to Portland area tourism and the event's contribution to the future of craft beer culture is highlighted by demographic results unearthed as part of this economic impact study. In particular, the impact of females on the craft beer industry, evidenced by the number of women in attendance (44.2%) and the high percentage (36.4%) of females in the 21–29-year-old age bracket, highlights the important educational role the Oregon Brewers Festival plays in integrating females, many of whom are attending their first craft beer industry event, into the craft beer "scene". Women are the key to the future of the craft beer industry (Dense 2013). Craft beer festivals should make a concerted effort to maximize the number of females attending these community events.

The purpose of economic impact analysis is to measure the broader economic benefits that accrue to a community. From the perspective of a political scientist, economic impact studies have a legitimate role to play in informing elected officials and taxpayers of the economic contributions of tourism to community residents' prosperity. Conservative estimates of economic impact of community events, undergirded by explicit methodological assumptions and subsequent objective presentation of facts, have the ability to objectively inform public policy. However, the potential for nefarious studies, often based on questionable assumptions and perverse methodology, casts a continual specter over well-meaning attempts to isolate the economic impact of community events such as craft beer festivals (Crompton 2006). Some assumptions inevitably will not materialize and unanticipated events and circumstances may occur. Actual results achieved during craft beer festivals and events may vary from those described in economic impact analysis reports, and the variations maybe material. However, sound methodology, impartial analysis, and a recognition of the shortcomings of studies of the economic impact of craft beer festivals have the potential to highlight the profound fiscal impact of these community events. A range of factors, including concurrent events, unseasonable weather, product maturity, and community event fatigue may present a volatile landscape on which craft beer events must compete.

There are several potential benefits to economic impact analysis of craft beer festivals. Event organizers and tourism industry stakeholders will be able to better market their product as a result of the demographic and expenditure patterns unearthed by surveys of festival attendees, along with fine-tuning future festival planning to attract the maximum number of out-of-town visitors. Government officials can be sensitized to the significant impact of these community events, and provide a seamless permitting and licensing process in exchange for the sizeable tax revenue generated by the event. In the end, City of Portland officials, and government stakeholders whose communities host craft beer festivals, should take heed to the study, which demonstrates an immutable fact: Irrespective of the difficulty of maintaining continual growth in community-based events, the Oregon Brewers Festival and craft beer festivals and events, in general, are significant contributors to the economic vitality of their communities.

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On the Existence of Belgian Craft Breweries: Explorative Research at the Microlevel

15

Eline Poelmans and Thomas P. G. Ostyn

Belgium is to beer what France is to wine or the Scottish Highlands to whisky. It is the mother ship of craft brewing.
(Webb and Beaumont 2012, p. 52)

Abstract

Regardless of lacking a craft brewery organization, historical beer country Belgium has a reasonably strong, very vivid and growing craft brewery movement. This paper assesses the Belgian craft brewery "movement" from a bottom-up perspective. More specifically, through interviews, it tries to create an understanding of the Belgian microbreweries. We compare our findings against the framework by Kleban and Nickerson (J Int Acad Case Stud 18(3):59–81, 2012) who analyzed the craft brewery movement in the US. The comparison focuses on business strategies, branding, (social media) marketing, and CSR. Our results differ substantially from those by Kleban and Nickerson. Furthermore, we investigated whether geography played a role in the interviewed breweries day-to-day activities and whether this did or did not lead to different results. Although the interviewed Belgian microbreweries behaved more or less alike, no matter where they were located in Belgium, geography—in the sense of location of establishment or historical and folkloristic events linked to that location—seem to have played a role in the microbreweries' branding practices.

Introduction

In the recent 100 years, a general trend of consolidation could be observed in the beer industry, interrupted by the two world wars. Over time, breweries merged, were acquired, went bankrupt or stopped producing. At the same time, there was a significant decrease in the beer types produced. This decrease in beer types was in several countries also aided by the temperance movements of the first quarter of the twentieth century. This trend of consolidation was only halted in the 1980s with the emergence of new, small breweries, each producing a limited amount of beers of various styles (Poelmans and Swinnen 2011a). These newfound small-scale breweries were originally denominated as "craft breweries" or "microbreweries". Broadly stated a craft brewery is considered "small", "independent" and "traditional" (Poelmans and Swinnen 2018). However, the definitions of the scale of a "craft" brewery are related to the size of the country (beer market) in which they work. Also the terms "independent" and "traditional" are open to discussion and their meanings are dissimilar in different countries.

There is a fair amount of literature on the craft brewery movement. Although the phenomenon has proved to be global, craft-beer literature is most at hand in Anglo-Saxon countries, mainly in the US (e.g.: Flack 1997; Swaminathan 1998; Carroll and Swaminathan 2000; Stack 2000; Tremblay and Tremblay 2011; Kleban and Nickerson 2012; McLaughlin et al. 2014; Schnell and Reese 2003, 2014; Moore et al. 2016) and the UK (e.g.: Mason and McNally 1997; Swann 2010; Danson et al. 2015; Cabras and Bamforth 2016).

More recently the topic also gained attention in other countries such as Italy (e.g., Bonfanti et al. 2009), Poland (e.g., Boratyńska 2007), Mexico (e.g., Gómez-Corona et al. 2016),

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Australia (e.g., Watne and Hakala 2013) and Sweden (e.g. Cavalli-Björkman and Lundblad 2012). The book by Garavaglia and Swinnen (2018) described the craft beer movement in 16 different countries. They state there is not a definition for the term "craft brewery" or "craft beer" that is generally accepted by all countries, given the diversities among the countries and their different historical beer brewing traditions. However, they try to formulate some broad definitions. They make a division between "real" craft, which is the combination of independent ownership (i.e., not owned by another large macro-brewery), being small, and using a traditional or innovative recipe, and "ex craft", which is used for beers that may have started out as craft, but became so popular that they have grown in size—i.e., became too large to be considered small—and that several of them have even been taken over by larger brewers.

Also Belgium, that despite its relatively small size, has historically been considered to have the most diverse array of beer varieties in the world (Poelmans and Taylor 2019), has seen the arrival of new, small entrants (and exits), since the 1980s and especially since the year 2000. While Belgium counted 143 breweries in 1980 and 113 in 2000 (a historical low), 304 breweries are counted as of 2018 (Poelmans and Swinnen 2018; Belgian Brewers 2018). While the emergence of craft breweries was considered a real movement in many countries (Garavaglia and Swinnen 2018), Belgium has to some extent always been a "craft beer nation" (Swinnen and Briski 2017), and thus, the emergence was much less clear. Moreover, the term "craft brewery" is far from established in Belgium. From the scarce statistical information that is available on Belgian craft beers, the division between real craft and ex-craft is not possible to make. Poelmans and Swinnen (2018) define Belgian craft beer as the combination of "Trappist beers", "Abbey beers", "Gueuze beers" and "Specialty beers". Moreover, Belgium does not have a craft beer or a craft brewery dedicated organization either.

In the Belgian market, beer is sold through a wide variety of outlets. In 2018, 42% of all beer consumption was on premise ("on-trade" sales, in restaurants, pubs, hotels, breweries, etc.) and 58% was consumed at home ("off trade sales", in grocery shops, supermarkets, specialized beer shops, over the Internet, etc.). However, exports seem to be important in Belgium as well: in 2018, only 30% of the total Belgian beer production was consumed within Belgium, with the vast majority (70%) exported (Belgian Brewers 2018).

Apart from the article by Poelmans and Swinnen (2018), other academic literature about Belgian craft breweries is nonexistent. In this paper, we investigate the main characteristics of some of these Belgian craft breweries and try to compare these results with the results of the United States' craft brewery movement found in Kleban and Nickerson (2012).

Research Methodology

From the many papers that have been written explaining the craft brewery movement and its characteristics in different countries, we have chosen for this research the framework by Kleban and Nickerson (2012), who analyzed American craft breweries. In general, craft breweries produce what Kleban and Nickerson (2011, p. 33) call "*a wide variety of full-bodied European-style beer such as India pale ales (IPAs), stouts, and pilsners, utilize high quality inputs (e.g., malts and whole cone hops), a slow brewing process, and ferment in small batches*". They used the 2012 definition of the American Brewers Association and stated that American craft breweries can produce a minimum of 30 barrels of beer per year (3,520 L of beer) and a maximum of 6 million barrels of beer per year (704,086,591 L of beer).[1] They further divided the American craft breweries into six different categories according to production output in barrels of beer per year, going from "nanobreweries" (the smallest ones), to "microbreweries", "brewpubs", "contract brewing companies", "regional craft breweries" and finally "large breweries". Apart from the production output, these categories were also distinguished on the base of other characteristics, such as the amount of beer that was sold off-site versus the amount sold on the premises (i.e., in the own brewery/pub/restaurant), etc.[2] Other countries have other subdivisions or only make the difference between craft brewers and large-scale brewers.

For countries with a small beer market, such as Belgium, the American categories could not be used. According to the Belgian Brewers today (2019), only six breweries produce more than 200,000 hL a year (namely, ABInBev, Alken-Maes, Duvel Moortgat, Palm, Haacht and Martens). All the other breweries produced less and would be considered small under the American definition. Most of them would belong to the categories of nanobrewers and microbrewers (Belgian Brewers 2019).

Belgium's land area is around 30,000 km^2 (or 12,000 square miles), which is just smaller than the state of Maryland in the United States (Poelmans and Taylor 2019). The country can be divided into three regions, namely, Flanders in the north, which speaks Dutch; Wallonia, in the south, which speaks French and German; and the Brussels Capital Region, which is officially bilingual (Dutch and French)—and into ten provinces. A calculation of the shares of all

[1] 1 beer barrel = 117.35 L or 1.1735 hL of beer.

[2] The American Brewers Association has in the meantime slightly changed their size-wise division into different craft brewery categories. They now consider an American craft brewery to be a "small" (still producing 6 million barrels of beer or less a year) and "independent" brewer. See: https://www.brewersassociation.org/statistics-and-data/craft-beer-industry-market-segments/.

Fig. 1 Belgium. *Note* Flanders = West-Flanders, East-Flanders, Antwerp, Flemish Brabant, and Limbourg. Wallonia = Hainaut, Walloon Brabant, Namur, Liège, and Luxembourg. Brussels = Brussels Capital Region

Belgian breweries by region at the moment of our interviews showed that 59.7% of the Belgian breweries were located in Flanders, 37.5% in Wallonia and only 2.8% in the Brussels Capital Region (Fig. 1).

When analyzing the Belgian craft beer movement, we captured the movement from its foundations up, from a ground-level perspective, instead of a top-down approach. We performed exploratory research based on in-depth semi-structured interviews with ten Belgian craft breweries. When selecting the breweries, we aimed at interviewing similar breweries and wanted to avoid to interview a few breweries out of each of the six categories, described by Kleban and Nickerson (2012) as this would make comparisons difficult. However, selecting the breweries was not that easy as in Belgium, there are no official definitions of subgroups within the craft brewery movement. There is also no federal or regional legislation for breweries. What is known is that a commercial brewer has to pay excise duties on the quantities of beer produced when entering the Belgian market (Belgian Brewers 2019).

The European Council Directive 92/83/EEC of 19 October 1992 on the harmonization of the structures of excise duties on alcohol and alcoholic beverages stated in article 4.1. that "*Member States may apply reduced rates of duty, which may be differentiated in accordance with the annual production of the breweries concerned, to beer brewed by independent small breweries within the following limits: (a) the reduced rates shall not be applied to undertakings producing more than 200,000* hL *of beer per year and (b) the reduced rates, which may fall below the minimum rate, shall not be set more than 50% below the standard national rate of excise duty*."[3]

Later that year, a Belgian Royal Decree on beer and fiscal regulation (namely, on the excise duties) followed—amended several times afterwards and put into law in 1998—stating that small(er) breweries with an annual production of less than 200,000 hL could benefit from a reduced excise

[3]Council of the European Union (1992).

duty rate. The smallest breweries could even benefit from extra reductions. In this respect, five categories of small breweries were considered.[4] At the moment of our research and according to the Belgium duty office and Belgian law the Belgian breweries that brewed no more than 12,500 hL on a yearly basis could be defined as "small-scale brewery" or "micro"-brewery. Of all breweries, these breweries got the most beneficial excise duty rates.[5] This was the case, irrespective of the location of the breweries: there was no distinction for Flemish or Walloon breweries or breweries in the Brussels Capital Region Most of the Belgian craft breweries belonged to this category at the moment of our research. Hence, we selected ten "microbreweries"—i.e., the small craft breweries producing less than 12,500 hL—in order to be able to compare similar business units (Table 1). Of course, future research into several of the larger Belgian craft breweries is needed to check whether our results hold for all Belgian craft breweries. Our interviews held a single craft brewery point of view with the intention of afterward generalizing recurring phenomena among these small-scale microbrewers.

In order to further select the microbreweries to interview, we first conducted research into the different characteristics of all the existing Belgian microbreweries. We wanted to make sure we interviewed the different types of microbreweries that could be found in Belgium. In this respect, we made an overview of all the different characteristics we found and based on this we made a framework in which we divided all the microbreweries according to ten characteristics (ten "axes") and we selected our breweries in order to cover all of the axes involved (Table 1). This axis-based approach and the decision on which axes to use as well as the selection of the breweries was based on a conversation with Erik Verdonck, a freelance author, who owns and maintains www.beertourism.com, is specialized in food and beer and is known for his extensive beer research.[6] Furthermore, information we got from Wouter Vermeersch from Brewery Eutropius,[7] as well as what we were able to find on the Internet was used to make our selection. Helpful websites during our initial selection phase were Ratebeer.com, Zythos.be,[8] the breweries' websites and other articles and information. Each interview[9] was a personal, semi-structured interview with the head of the brewery (in most cases the brewer), consisting of 50 questions and lasting approximately 2 h.

All of the interviewed microbreweries formed unique cases and held a certain position on the following ten characteristics (Table 1; Fig. 2): "Flemish" versus "Walloon"; "city" versus "village"; "local oriented" versus "internationally oriented"; "young" versus "old"; "small" versus "big"; "professional" versus "hobbyist"; with or without a "marketing plan"; "one beer" versus "multiple beers"; "beer" centered versus "brewery" centered and finally "classical (traditional)" versus "experimental (adventurous)".

Some of these axes are rather straightforward, others need some extra explanation. The first and second axes reveal the location within Belgium: the province of establishment in the Flemish or Walloon part of the country[10] and whether the brewery was located in a village or a city. The third axis we took into account when selecting our cases was the ratio of local opposed to international sales. A brewery might sell its volumes in the direct vicinity, i.e., the local community, or have a bigger national market combined with none to some international sales. The other extreme case would be any to almost no local/national sales, while the vast majority of the volumes are sold internationally. The fourth axis (date of foundation) is rather self-evident; it gives information on the age of the brewery. In this respect, the interviews were with early entrants as well as recently founded members to be able to compare their perspectives and practices. The fifth axis (production volume) provides the difference between small and larger craft breweries (although our research was aimed at "microbreweries", some of the interviewees would outgrow the "micro" brewery aspect in the near future). The sixth axis (professional versus hobbyist) comprises the

[4]See: the Law of 7 January 1998 on the structure and the excise duty rates on alcohol and alcoholic beverages (Wet 7 januari 1998 betreffende de structuur en de accijnstarieven op alcohol en alcoholhoudende dranken).

[5]Breweries brewing more than 12,500 hL, but less than 200,000 hL also had more beneficial excise duties compared to the larger units, but less beneficial ones than those given to the smallest ones. The new regulations of 2018 no longer state different beneficial excise duties for different subgroups of small breweries, apart from some for breweries producing less than 200,000 hL a year. These breweries are called "small independent breweries". Federale Overheidsdienst Financiën - Douane en Accijnzen (2018).

[6]For his most recent book (2013), entitled '*Bij de brouwer*' freely translated as '*At the brewer*', Verdonck traveled all over the country for two years to visit 150 Belgian breweries. As Belgium officially counted 123 breweries in 2010, 150 in 2012 and 160 in 2013, this means he visited nearly all of them. The book tells the story of all those breweries (Verdonck 2013).

[7]Mr. Vermeersch, at the time a hobby brewer and full time sales representative for a brewery raw material wholesaler seemed to know the craft brewery segment very well. In the process of conducting this research, Mr. Vermeersch started his own craft brewery.

[8]Zythos is the confederation of Belgian objective beer tasters: an umbrella organization, which confederates regional and local beer organizations in the northern Flemish region.

[9]A list of the interviewed persons and a link to the website of their respective breweries can be found in the reference list.

[10]Unfortunately, we did not find an equal amount of breweries on both sides of the language border that were willing to give us an interview. Moreover, none of the few microbreweries in the Brussels Capital Region was willing to participate.

Table 1 List of interviewed microbreweries

	1		2	3	4	5	6	7	8	9	10
Brewery name	Region (Flanders or Wallonia)	Province	Location (city versus village)	National (local) versus international	Founded	Prod. volume (in hL.)	Professional or hobbyist	Marketing plan	No. of beers	Brewery type	Beer styles and method of production
Alvinne	F	East-Flanders	Moen (V)	Int.	2004	1,200	Hobbyist	No	>30	Brewery centered	Experimental
Danny	F	East-Flanders	Erpe-Mere (V)	Nat.	2008	120	Hobbyist	No	3	Brewery centered	Classical
De Dolle Brouwers	F	West-Flanders	Essen (V)	Int.	1982	1,000	Professional	No	5	Brewery centered	Experimental
De Marsinne	W	Namur	Couthuin (V)	Nat. + Int.	2011	1,500	Professional	Yes	1	Beer centered	Classical
Dilewyns	F	East-Flanders	Dendermonde (C)	Nat. + Int.	2010	3,300	Professional	Yes	5	Brewery centered	Classical
Gentse Stadsbrouwerij Gruut	F	East-Flanders	Gent (C)	Nat. + Int.	2009	2,000	Professional	Yes	5	Brewery centered	Classical
‘t Gaverhopke	F	West-Flanders	Harelbeke (C)	Nat. + Int.	2007	750	Professional	No	10	Brewery centered	Class + Exp.
‘t Kroontje	F	East-Flanders	Denderbelle (V)	Nat. + Int.	2011	50	Hobbyist	No	5	Brewery centered	Classical
Toye	F	West-Flanders	Marke (V)	Nat. + Int.	2011	500	Professional	No	1	Beer centered	Classical
Val Dieu	W	Liège	Aubel (V)	Nat. + Int.	1997	8,900	Professional	Originally no/recently yes	5	Brewery centered	Classical

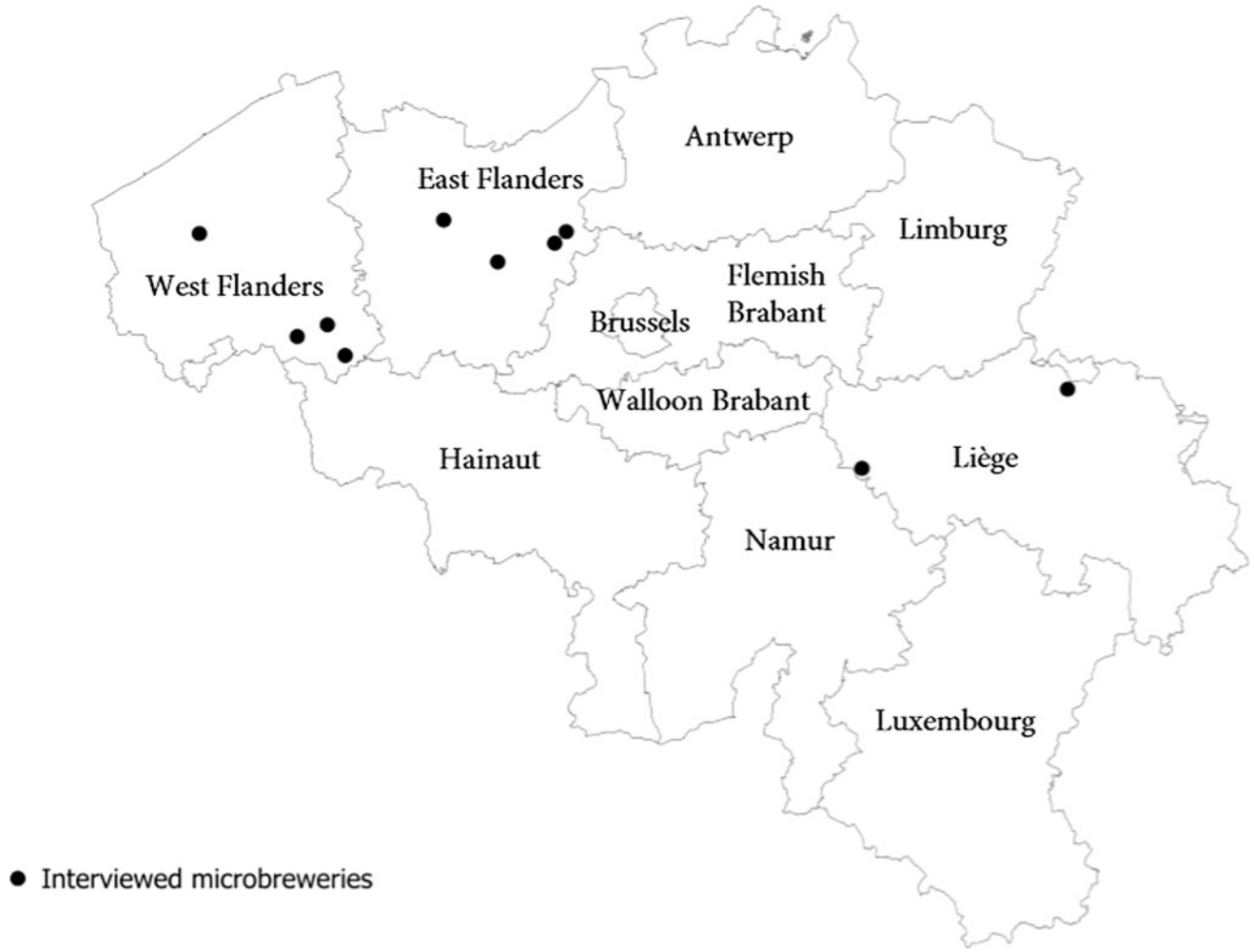

Fig. 2 The interviewed Belgian microbreweries

diversity along the level of professionalism. Is the brewer a hobby brewer (i.e., an individual who produces beer for its own use, for family members and guests, not for sale) who has another occupation or is it a real brewer, who runs it like a company with a well-developed business plan? The seventh axis entails whether the brewery has a marketing plan or not.

Axes eight, nine and ten are linked to each other and need some extra explanation. With regard to the number of beers produced (ax 8), there are two possible business plans for which a small-scale brewery can opt. This decision is decisive for all further practices as it influences production schedules, branding, marketing and sales. At one point in time, often in the startup phase of the brewery, a brewery has to choose between what we like to call either a "*beer-centered*" business plan or a "*brewery-centered*" business plan (ax 9). The former is a brewery that produces a very limited variety of beers, normally one, and consequently puts all its effort in this beer. The latter is a brewery that produces between two and unlimited amounts of beer. This implies that the latter brewery has a number of beers, which are presented as "one of the beers of brewery x". The tenth axis (classical versus experimental) is linked to both the beer styles as well as the production method. In this case, we assume that producing beer such as brown, blond and tripel are classic styles for Belgian breweries. Experimental beers would fall under "untraditional" beer styles such as porter, as well as beers that don't really belong to a certain style or have special ingredients or production techniques (leading to "classical" versus "experimental" beers) (Table 2).

Table 2 Beer-centered versus brewery-centered breweries

Beer-centered	Brewery-centered	
	Classical breweries	Experimental (adventurous) breweries
1 beer	2 to 6–8 beers	8 to unlimited amount
Non typical name with strong brand potential	Typical naming, brewery name + blond, brown, tripel, wheat, etc.	Funny or situational names
Little to no experimenting	Little to no experimenting	Continuously experimenting
Tasteful and relatively distinctive, without being too extreme	Tasteful and more distinctive, various brews for various preferences	Very tasteful and very distinctive, not brewed after preferences
Brewery de Marsinne Brewery Toye	Brewery Danny, Brewery Dilewyns, Brewery Gruut, Brewery 't Kroontje Brewery Val Dieu	Brewery Alvinne
	Brewery De Dolle Brouwers, Brewery 't Gaverhopke	

Comparison of Our Interviewed Breweries with the 2012 Framework of Kleban and Nickerson

Kleban and Nickerson state that craft breweries have to be able to fight off the competition of their peers. Breweries do so by following certain business strategies. Moreover, they consider the building of a successful beer brand as is a step-by-step process, for which a brewer has to follow certain rules with regard to branding ("pull"), marketing ("push") and—preferably—also corporate social responsibility: "*This step-by-step process takes into consideration various factors such as quality of beers, availability in the marketplace, competitive pricing, marketing and promotions, etc.*" (Kleban and Nickerson 2012, p. 71). Pull strategies create a liking for the brands in the minds of consumers, push strategies try to get the product sold to the consumer.

In the next paragraphs, we will compare and discuss the findings from our interviews with the Belgian microbreweries with the findings of Kleban and Nickerson for the American craft brewery market, which can be found in Tables 3, 4, 5 and 6. We will focus on "business strategies", "branding", "(social media) marketing" and "Corporate Social Responsibility (CSR) ". In this respect, we compare the interviewed craft breweries collectively with the aforementioned framework. Moreover, we directly compare the various subtopics step by step to create a better understanding of how the US-based results compare to our findings (Tables 3, 4, 5 and 6).

Business Strategies

Superior Quality of Beers

The interviewed craft breweries differed from the result from Kleban and Nickerson (2012) with regard to the brewing equipment. Only one brewery bought what Kleban and Nickerson called new "state-of-the-art" beer production equipment. The other breweries bought some parts new, while others were recycled, bought second, third, and even

Table 3 Business Strategies employed by Craft Breweries according to Kleban and Nickerson (2012)

Strategy	Main characteristics
"*Superior quality of beers*"	State of the art beer production equipment, brewing with only ingredients of the highest quality. Producing their beers in a sustainably way, while helping the reduction of the carbon emissions through superior brewing technology
"*Diversified product lines*"	In order to get and keep loyal customers craft breweries produce a variety of brews (e.g., seasonal, festive brews, etc.) under a flagship brand, as brand loyalty is at times difficult to attain
"*Control of production*"	This allows the craft breweries to maintain an efficient production process, which in return gives the brewery the opportunity to fully focus on consistent product quality and taste. At the same time, it helps optimize employee productivity
"*Strategic partnerships with distributors*"	Craft brewers tend to be location-based and only supply a specific region. Due to lack of resources and capabilities to distribute their products themselves, strategic relationships need to be made with successful local distributors
"*Targeted sales*"	Craft breweries try to get their beers into local establishments (bars, restaurants, …) and create various "product families" under the same brand. To boost sales advertising is used. Craft breweries train retailers and wholesalers about the brand(s) in order to secure loyalty and because they are the brand's promoters. Also other promotional methods are used, such as events, festivals, and sponsorships

fourth hand, typically from other breweries or dairy farms and/or (partially) built self. Lager tanks were the only equipment that was often bought new. Consequently, production facilities were often "patchworks". Having/being a handyman was often a necessity as rather old equipment breaks down regularly.

Notwithstanding the fact that the equipment was not new material, the breweries' production processes strongly focused on quality and efficiency, as high quality beer was generally defined by all interviewees as beer brewed with the use of high quality ingredients. All brewery partners had specific assignments and responsibilities. Whether the brewery was a professional or a hobbyist brewery, efficiency was a necessity. Time was limited, as brewing requires lots of preparation and lots of cleaning afterward. In the case of the professional breweries, this shortage of time was due to a strong focus on sales and growth. In the case of the hobbyist breweries sparse time, outside the main occupation, had to be used. For them brewing was therefore an evening or weekend activity. This efficiency focus was also caused by the regulatory framework in Belgium, which obliges breweries to deliver a brewing inquiry to the government excise agency a couple of days in advance of actual beer production. Consequently, to free up lager tanks, interviewees also had a designated weekly bottling day. When asked about the important topics to take into account when decisions had to be made none of the interviewees mentioned anything related to sustainability. Hence, in contrast to Kleban and Nickerson's (2012) framework, whether or not these high quality beers were brewed in a sustainable, carbon footprint reducing environment did not seem to be of significant importance.

Diversified Product Lines

Eight of the interviewed breweries offered multiple beers, so they could reach various types of beer drinkers. The classical brewery-centered breweries, acted mostly in accordance with the findings by Kleban and Nickerson (2012) by producing a variety of beers under the same "flagship brand" to retain a group of loyal customers. Some of these flagship brands had a geographical link with the brewery, others did not. The experimental brewery-centered breweries—which were more aimed at international sales—did not entirely act in accordance with the framework as they brewed plural flagship-like beers, without having a "dominant brew or brand". The two beer-centered business plan breweries—producing only one beer with a taste pallet that was meant to be generally appealing to a broad scope of beer drinkers—gave their single brew a historical name, with a geographical or historical link to the location of the brewery (cf. infra, under 4. Does geography count?). However, if these two breweries would consider brewing a second beer, they reckoned the beer would be called distinctly different from the original beer. The flagship brand clearly does not apply to them.

Control of Production

Operational efficiency is a necessity both due to the limited amount of available time as well as the regulatory framework, in which most breweries had dedicated "brew days". As was the case in the research of Kleban and Nickerson (2012), high product quality and consistency was something all breweries pursued; however, this could mean various things. "High quality beer" was generally defined as beer brewed with the use of high quality ingredients. However, if "consistent high product quality" means a consistent taste of every single batch, most breweries claimed that this taste consistency was not possible to achieve; brews would vary between batches. None of the interviewed breweries produced lager beers.

Most interviewees actually considered variations in taste as a proof of being a real craft brewery. They considered homogenized taste as a sign of high volume industrially brewed beer. This conviction was definitely a fact for the hobbyist breweries. Among the professional breweries, we noticed that the brewers with a brewing background did not tend to share this belief. These brewers tried to neutralize the taste differences between batches as much as possible. Whether a brewery had a beer-centered of brewery-centered business plan did not seem to influence this vision.

Strategic Partnerships with Distributors

With regard to the distribution aspect, Belgium is known for its "tied houses" system, where many of the "on-trade" sales locations (pubs, etc.) are owned by or "tied" to certain breweries. A tied house can be seen as an exclusivity contract for the distribution of drinks between pubs on the one hand and breweries or drink distributors on the other hand. The pub building is often property of the brewery or is rented by the brewery from a third party on behalf of the publican. The publican is only allowed to sell the beers from that brewery (Deconinck and Swinnen 2016). In a 2009 survey on a representative sample of 250 pubs over two-thirds of these pubs were found to be involved in some kind of a tied houses contract (Van Passel and Wauters 2009).

Hence, since a large part of the distribution is controlled by major Belgian breweries, it is very difficult for new, small breweries to get access to these outlets. Moreover, our interviewees followed the unwritten law of never going behind distributors' backs. Distributors' customers, bars and other establishments, were not to be poached, ever. All interviewees agreed that this would at best create some short turn revenue, in the long run this was not a smart practice. Rather, they had to find independent pubs, or sell their beers

to Belgian beverage distributors or specialized retailers. Moreover, as the interviewed craft breweries did not have the capabilities and resources to distribute their beers themselves, all interviewees highlighted the importance of strategic partnerships.

Hence, with regard to national points of sales and in accordance with the framework, most breweries consciously decided—apart from selling their products in their own brewery—not to do the beer distribution themselves (only the smallest craft brewery—brewery Danny—and the biggest craft brewery—brewery Val Dieu—distributed a reasonable amount of their volumes themselves). Most sales focused on local establishments (the actual brewery, specialty pubs, supermarkets, etc.), as brand awareness in the immediate vicinity is the easiest to achieve. In this respect, some supermarkets in Belgium even have "dedicated shelf space" for craft beers: they acknowledge that the craft brewers are more than happy to have an outlet and that Belgian consumers like the availability of many specialty beers. So it is a win-win. The recognition of the brand was gradually extended until it met its "organic limits". Several interviewees called this "the oil spill principle", or as one interviewee stated: "*sometimes you are contacted when they* [bars and wholesalers] *have heard about your story and start supporting you because they empathize with you. … They developed a feeling of kinship, either for the brewery owner or for the values the brewery represented. … Once the ball starts rolling and others* [bars or wholesalers] *see that the beer is successful they contact you and so it spreads*" (Toye 2014).

The difficulty in accessing the on-trade sales locations can also partly explain why 70% of all beer produced in Belgium was exported in 2018. Hence, in contrast to Kleban and Nickerson (2012), the partnerships with distributors were not limited to "local" distributors alone. Many of the interviewees consciously combined this with international sales as they also had partnerships with distributors on a global level and some had even been contacted by foreign importers. Consequently, although the interviewed craft breweries seemed to be very location-based, they did not necessarily serve a limited area. The large majority of the interviewed breweries (nine out of ten) exported at least part of their beers, often to the US. Whether or not this is due to "the Belgian factor"[11] we cannot say.

Although based on our findings we believe most of the breweries sold the majority of their volumes locally, as this seemed easiest, this was however not a general rule. It seemed to depend on the difficulties mentioned above as well as on the beer type produced, which in return can be linked to the business model the brewery had consciously or unconsciously chosen. Internationally oriented "extreme" styles appealed more easily to the international beer consumer. Hence, the experimental/adventurous breweries exported the biggest volume shares. Brewery Alvinne, the only purely "experimental" brewery exported 70–80% of its volume. Exports went to different destination countries in the past, such as Canada, Australia, Norway, Japan, Brazil, and the US. Not necessarily big quantities, but some occasional volumes. The remaining 20–30% was sold in Belgium through 25–30 beverage wholesalers (Castelein and Spiesens 2014). At Brewery De Dolle Brouwers—which can be considered both "classical" and 'experimental—20% of the volume was sold or picked up at the premises, 50% was exported (half of these exports went to the US, followed by Italy, Spain, Denmark and Sweden) and the remaining 30% went to Belgian beverage wholesalers (Herteleer 2014). Brewery 'T Gaverhopke—the second brewery that could be labeled both "classical" and "experimental"—sold 30% within the Belgian market (mainly in its own bar or through supermarkets) and exported 70% (about 70% of this export went to the US, most of the remaining 30% to Taiwan). In the past, the brewery had exported small amounts to Austria, the UK, and Italy as well (Delrue 2014).

Targeted Sales

With regard to what Kleban and Nickerson (2012) called the "creation of different families of products",[12] most of the interviewed breweries, including the brewery-centered business plan breweries, did not brew enough different beer types to be able to create such families of products. In this respect, only one of the interviewed breweries followed Kleban and Nickerson's research findings and had various product families: brewery Alvinne had no real brand, but various product lines (sour, aged on barrel, etc.).

In accordance with Stack (2003), who stated that microbreweries attempt to compete on the basis of inherent product characteristics, rather than on the basis of advertising or price, none of the interviewed breweries used advertising and their beers were priced less competitive (i.e., at a higher price) than lagers. They were however rather intense users of promotional events (cf. infra). At the same time, the general focus was on the high quality of their beers, either by creating a professionally looking brand that represented this quality image, but as much by just lacking a professionally

[11] Although most small craft brewers are too small to launch international marketing campaigns, many of them seem to have benefitted from the increased export orientation and strategies of the larger Belgian brewers. While being competitors on the Belgian domestic beer market, internationally they have reinforced each other's exports (Poelmans and Swinnen 2018; Swinnen and Briski 2017).

[12] Kleban and Nickerson did not clearly explain what they meant with this. However, from the context we assume they meant different products of the same type; for instance different stouts, different IPA's, etc.

developed brand based on the conviction that "*high quality beer does not need strong branding*" (cf. infra).

Although the interviewed breweries appeared to be competitors with branding—they needed to be sure the consumers recognized their product and were able to differentiate it from that of their competitors—this was less the case with sales. Organic growth was always preferred, pushing sales was uncommon. Most of the interviewed breweries did not strive to get shelf space, as on-trade was the most important sales channel. Moreover, all craft breweries considered the relationship with wholesalers/distributors of paramount importance. They always respected the agreements between bars and their distributor.

As the breweries either supplied very local markets or local markets combined with international sales, in practice, there was very little competition. However, all of the interviewees were aware of the risk of growth in volume and number, with some predicting a significant decrease in the number of craft breweries with market saturation. They realized this might become a real threat in the future, as few of the interviewed craft breweries had a strong brand (yet).

The Branding of a Craft Beer

A fundamental part of understanding how small-scale breweries operate is to find out how they exactly distinguish themselves and how they would like to be perceived by consumers as well as their markets. This leads us to the breweries' branding practices. The goal of branding is to create a unique, recognizable brand, which ties consumers to the product of a company. The interviewed breweries showcased various branding practices in order to make their product appealing to the national and international beer consumers (Table 6). In the following paragraphs we investigate whether the Belgian microbreweries followed the aforementioned framework; of which an overview can be found in Table 4. In general, we believe the Belgian microbreweries did use much less branding than their American counterparts as described by Kleban and Nickerson (2012).

Identifying Customers

In general, we believe that the interviewed craft breweries did not know their market and consumers well. The hobbyist breweries initially sold to family, friends, and acquaintances. While these breweries outgrew this customer group, the market knowledge changed alongside this process. The professional breweries seemed to know the demographics better, but even in their case, their market and demographic knowledge seemed more a posteriori and relatively vague.

In general, the breweries seemed to know most of the customers that bought their products at their sales' points, such as for instance at the actual brewery. However, these beers were not only bought by end consumers but also often by wholesalers, who sold the beer to other unknown end consumers afterward. Or as Mr. Delrue from brewery 'T Gaverhopke stated: "*We mostly sell* via *beverage wholesalers and of course we don't know who they sell our products to … We tried to keep track of that in the beginning and we wanted to put the various sales points on our website, but we gave up quite fast as it took just so much time to keep track of all of that. For example our beer is sold by 'Districo', which has 85 beverage wholesalers. We deliver to them, but what happens afterwards with the beer we don't know, our product gets distributed all around Belgium, I guess*" (Delrue 2014). Actually, the interviewed breweries considered the customers who bought their products in the actual brewery to be their customers—even if it were wholesalers—rather than the end consumer of their beers as they often did not know who would buy their beers from the wholesalers. Based on the information of their sales at the premises they could form a rough estimation of who they thought bought their products. This very limited consumer knowledge was not only due to the fact that most of the volumes were sold via distributors, but also partially because little time was available for "post-sales" and marketing. The craft breweries that had their own bar knew some of their end customers better, specifically those that consumed on site.

Nevertheless, as the Kleban and Nickerson (2012) framework suggested, all the interviewed breweries seemed to focus on a dedicated niche (a variety of specialty beers, some with special or exotic ingredients, others with a stronger alcohol content, etc.) and priced their products accordingly (they asked a more premium price compared to that of mass-produced industrial lager). However, in the majority of the cases, the selected niche was not very unique and overlapped significantly to almost entirely with the other interviewed breweries. Very often, this niche focus and price strategy appeared to be a logical consequence of being a craft brewery rather than a conscious strategic decision. Nonetheless a loyal customer base was developed, and this was rarely succeeded by marketing campaigns, as these did not seem to be a part of the standard toolbox of the interviewed craft breweries. The loyalty of the customers of the craft brewers was in almost all cases achieved through a feeling of kinship, either for the brewery owner or for the values the brewery represented. Customers were essentially identifying themselves with the brewery (cf. infra).

Providing Consistent Quality

High quality was always the focus—all interviewees held pride in their high quality beer—but consistent taste was more difficult to attain by the craft breweries: the various batches could vary in taste. Due to the fact that the ingredients used varied in taste (as often small amounts were bought and the different packages of purchased ingredients

Table 4 The branding of a Craft Beer Brand according to Kleban and Nickerson (2012)

Strategy	Main characteristics of this strategy
"*Identifying customers*"	It is important to identify a target market. A craft brewer ought to know and understand the markets demographics and needs to comprehend the key attributes of its consumers, such as age groups and income levels. One should know why a certain group buys its products and whom its loyal customers are. A craft brewer must try to find a dedicated niche market, which is based on the quality and the pricing of the product. When a reasonable amount of loyal consumers are found, a craft brewer can continue its expansion by using targeted marketing campaigns
"*Providing consistent quality*"	For a craft brewer quality means delivering consistent product quality. Every batch should have the same freshness and crispness. At the same time, every bottle should have the same logo, have the same packaging and communicate the same brand message. This means that every brewery ought to have some sort of quality control, regardless of the size of the brewery. Every brewery should have a standardized way of measuring the quality of the beer before it leaves the production facility. Additionally, the brews need a clearly defined and calculated shelf life as well as a way to find out their age at the store (a "best before" stamp on the packaging). Finally, there should be a consistent way to sample the brews to guarantee product consistency over time as well as budget put aside to remove expired brews from the retailer stores
"*Consumer Ownership*"	Brand and/or brewery attachment is very important. A brand gets chosen or is preferred because people feel some sort of attachment to it. Brands attempt to create an image and impression around them in order to attract consumers to their brand. This can be done by having a distinctive taste so consumers immediately tie the taste to the brewery. A brewery visit that went really good can also help tie consumers to a brand. A craft brewery ought to be very aware of giving the necessary attention to interested consumers as they spread the word and talk about their experience and can easily become brand ambassadors. Craft breweries need to have a customer centric approach, this ought to be a priority
"*Brand message, image, and recognition*"	"*Create a distinctive brand message*": A craft brewer has to clearly communicate with the customer. The craft brewery has to bring an appealing, concise, and clear message. This message should be repeated over and over again. For instance, a slogan that is used on each product's label. Eventually, it should become known and recognized in the entire value chain, from the brewery to the consumers, including the distributors and retailers. The brands packaging and supporting accessories should reflect and represent this message, which in turn is aligned with the breweries vision and mission
	"*Creating image of the brand*": By designing unique visual impressions, e.g., logos and images, the brewery needs to create an image and a reputation. This is essential as it allows the brand to stand out from the rest. This image and reputation need to be true and aligned throughout the entire brewery and its products. Off course the reputation of a brewery will also depend on both the beer quality and the customer service that is provided
	"*Brand recognition*": Having a brand which is recognizable is very important. When customers are confronted with a brand and start to remember it, there is a bigger change they will buy it and create demand for the product. This can be done by trying to get more shelf space in order to get more brand recognition. Giveaways and accessories such as pens, t-shirts, sweaters, and sunglasses are also excellent ways to get the brand to be known and recognized
"*Packaging*"	The way a brand is perceived is strongly influenced by the packaging. When a customer buys a craft brew and pays a special price for this, the packaging should reflect the customer's perception of the brand. Packaging should make a brand stand out, however, packaging needs to make the brand fit in as well. Good packaging should create interest, curiousness and needs to be compelling and comfortable. Generally, craft breweries update their packaging systematically. This allows the packaging to grow and develop together with the brand
"*Contingency Planning*"	Contingency planning is an essential building block if one wants to have a successful craft beer portfolio. Craft breweries need to carefully watch and track the records of the various brands and products and if necessary adapt accordingly. Which product sold very good (or not at all) and why? This helps the craft brewery to be prepared to sudden demand drops and risks downstream or upstream, such as shortages of raw materials. Hence, the craft brewery can prepare itself for rapid scenario changes in a specific market segment as it allows a craft brewery to refocus its energy and sales on the most successful products in case of changes in the market or in certain segments. Moreover, it helps the brewery to fight competition from new small entrants and from large-scale producers that also want a piece of the pie and try to gain market access as well

could vary in taste), batches could vary in taste. However, the limited technical and economic capabilities to deliver standardized brews were compensated by "craftsmanship". The interviewed brewers believed that the original customer base tended not be bothered much about minor taste differences. Interestingly, the largest brewery we interviewed (Brewery Val Dieu, with a yearly production of 8,900 hL) believed that as the brewery grows and the linkages between the craft brewer, the craft beer, and the craft consumers dwindle, customers tend to become less "forgiving".

However, apart from regular tastings and strict production rules with regard to safety and hygiene, there were no real applied methods to guarantee consistent quality, as most considered quality control programs too expensive. The regulatory maximum shelf life was put on the beer label in accordance with the national regulations. All of the craft brewers believed, however, that their brews would last a lot longer if stored in the right conditions. Having a "budget buffer" for the removal of expired products was not a common practice for the interviewed microbreweries, as sales via retail stores were only limited.

Consumer Ownership

All the interviewed craft breweries acted as described in the framework: they had a very strong customer centric approach creating a strong consumer ownership. They all seemed to be successful in creating an attachment to the brewery, often based on the people behind the brewery or on the values the brewery stood for. In this respect, the craft breweries initially tried to develop a loyal customer base in the relative vicinity of the brewery's neighborhood, via families and friends.

Guided tours during brewery visits were a second well-used method to create attachment to their products via the "oil spill principle": During the brewery visit the story of the brewery was told. At the same time, the guide (often one of the founding members) was very approachable and showed that the brewery was run by normal people with a strong passion for beer and a dream of running their own commercial brewery. People seemed to like personal and unique experiences like these. After these visits, the brewery often got calls from people that attended the brewery visit or from their friends with questions about where the beer was for sale, if they could visit the brewery themselves, etc. Or as Anne-Cathérine Dilewyns of Brewery Dilewyns stated. "... *People also buy some beer here after the guided tours, which of course creates revenue. However, these people are actually our ambassadors. They pass the story on to others. And the people that hear our story from someone who visited the brewery, they pay a visit themselves. ... At one point, the story starts telling itself and like an oil spill it spreads and spreads*" (Dilewyns 2014). Word-of-mouth gradually developed the brand awareness and eventually customer ownership as this consumer centric approach created "a feeling of kinship and identification" with the craft brewer. Hence, for our interviewees, this recognition was most often not created by social media or branding, but mainly by the personal and unique experience. As said, brewery visits seemed to be ideal to initiate this attachment process. This is in accordance with Swaminathan (1998) who found that regular access to the "elite networks" of customers becomes a key success factor for a craft brewery: appealing not to the general public, but to the very few and carefully selected.

Brand Message, Image, and Recognition

We believe all interviewed microbreweries used some method(s) to develop some sort of brand and image for their brewery and beer(s), however, less streamlined than in Kleban and Nickerson's findings. The common branding message, which was often unconscious, was often limited to something like: the desire to be seen as "an honest brewer" brewing an "authentic Belgian, tasty specialty beer of high quality which was made on a small-scale". However, since all interviewed brewers used a similar description it was not always clear how one craft brewery was different from another.

As all the interviewed breweries had a name, a logo, a website, and their own personalized glass, it was apparent that branding techniques were being used. However, we had the impression that some of the interviewees considered the branding practices to be more a necessary obligation than an intentional method to help sales: their brand concepts were often rather weakly exploited, as though having a "strong brand" was something they did not bother about. In this respect, some of the breweries had not considered their mission or vision, other breweries' mission and/or vision were still "under development". Nonetheless, some breweries had a stronger and more thought-out brand image than others, with a big potential. For instance, Annick De Splenter of brewery Gruut, who had obtained a marketing degree before she started brewing, did recognize the value of a strong brand. Consequently, the brewery had a very strong brand considering its size. The use of a mirror anamorphosis[13] in her beer coasters while the base of the beer glass had to be used as "a key" to reveal the hidden image, is a perfect expression of De Splenter's branding (and marketing) skills. Other brewers chose geographical or historical names for their beers (as beer brand) or brewery (in their brewery logo) (cf. infra).

The reasons for this apparent inattention for the importance of branding by some of the breweries seemed diverse, and include a lack of branding-related knowledge, a lack of time and money and a shared opinion that branding was "not

[13]A mirror anamorphosis is a sort of distorted image that can only be understood/seen with the use of cylindrical mirror. The mirror un-distorts the figure and gives free a "hidden" object.

that important (yet)", and that "delivering a high quality product would be enough". Another factor was the fact that some of the breweries appeared not to have extensively researched who their consumer base was or what they wanted, apart from "good tasting specialty beer". The breweries aimed for a specialty beer that the consumer would like, by the use of an atypical/untraditional/original brand, often conceptually cheeky and opposing big brewery branding standards. In this respect, most of the interviewees had developed a passion for brewing and had systematically developed from "home/kitchen breweries" to registered breweries. We believe the brands of the interviewed breweries already gradually developed over time and will continue to do so when the Belgian craft beer market further develops.

Nonetheless, we got the impression that the craft breweries had relatively strong reputations, mainly created by word-of-mouth and tied less to the brand and more to the people behind the brand, i.e., the owners of the brewery. Even though this "personal branding" had a very engaging effect, one had to be immersed into it by a brewery visit, a conversation with the owner, etc. Moreover, we consider this personal branding to have its geographical and scalable limits. When the volumes and the customer base become too big, in number and/or too geographical spread, the direct linkage between the beer/the brewery and the people running the brewery disappears. At the same time, the feeling of kinship dissolves as the brewery develops and grows. Alain Pinckaers of Brewery Val Dieu, the biggest brewery we interviewed, explained it as follows. "*We* [Brewery Val Dieu] *have developed a number of beers that we want to sell to the market while continuing our growth year after year and at the same time guaranteeing our consistent high product quality. When you are still a small microbrewery*,[14] *small differences in taste between brews are not a real problem and the breweries' urge to grow is lower, as there is still a hobby and fun factor involved in that phase. We still enjoy our work of course; things are just more serious now. For instance, when one of our casks has more or less foam than normal this is a problem. When this happened before (back then when we were smaller), the bar owner called me and I personally went there to change the cask myself. People considered this to be a nice gesture, because 'the owner came himself to correct this mistake/problem'. Now, first of all, I don't have time for this anymore and secondly, when this happens in the US or some other country we export to, even if I had the time, I wouldn't be able to. So, once you get bigger the goodwill and perception changes. The microbreweries get more empathy/congeniality and people are more understanding. They* [the microbreweries] *are allowed to experiment and make 'mistakes'. We cannot do that anymore. As we are getting bigger, people are less forgiving. When I am walking in the streets and I am on the phone and I didn't notice somebody and didn't greet him or her, people say 'Alain is not friendly anymore' while before it was 'he probably didn't see me, he is just such a busy man' … At the moment our brewery has the problem that it is considered as a big brewery, or at least perceived as being a lot bigger than it actually is. Recently we met with all other breweries in the region and I noticed that everybody thinks that our brewery is very big and that I run a very lucrative business. In a way that says something about the image and the brand, but perception and reality are quite different*." (Pinckaers 2014). Branding and size causes expectations, we noticed that these two go hand in hand. To be more precise, having a branding strategy implies a desire to have a significant volume growth, which means often disappearance of any previously created personal branding.

Packaging

In general, packaging tended to be consistent for each interviewed brewery: the packaging was not changed every 5 min. However, the packaging often did not communicate clearly what the craft brewery, the brewery owner(s) and its beer were all about, which again shows the lack of branding. Moreover, since in Belgium most craft beers are consumed at the premises—in the actual microbrewery after a brewery tour, or bought in a pub or shop linked to the brewer—in many cases the packaging was not that important. As newly founded microbreweries sold a product tied to a person or a location with a story, the packaging did not seem to be a dominant factor in the decision to buy a certain beer. While the packaging tended to stand out rather than fit in, it often aimed to be different and a bit peculiar to grab the attention. For instance one of the gift boxes on sale at the Gentse Stadsbrouwerij includes the five different beers, a glass and the coaster with the mirror anamorphosis (cf. supra). In line with the framework, the packaging seemed to evolve gradually as the brewery grew and the brand matured.

Contingency Planning

Kleban and Nickerson (2012) used the term "Contingency planning" as an essential building block to have a successful craft beer portfolio and as a means to be prepared for a sudden drop in demand, and for shortages in raw materials, etc. A craft brewery must track the sales of their various brands and products: what gets sold and what does not? If some brands or products are not appealing to the consumers, it is maybe better to stop producing them and to refocus on other brands or products or to better sell the brand or product by changing the name, the look, the packaging, etc.

[14]According to Mr. Pinckaers there are '*microbreweries, artisanal breweries and middle-sized to big breweries*'. He considered his brewery to be an 'artisanal brewery'.

Contingency planning can also be useful to fight competition from new small entrants and from large-scale producers that also want a piece of the pie by trying to gain market access.

Although the breweries did track the sales volumes of the various products they brewed, contingency planning did not seem to be a common practice. Lack of time was given as the main reason for a lack of contingency planning, combined with being small, with combining local and international sales and with a lack of knowledge on who the end consumers were.

However, some breweries—namely, those with the largest financial liabilities—had clear strategies on how to be prepared for changing markets and economic cycles. As such, when liabilities grew bigger, the breweries seemed to have more defined business plans. Also the craft breweries that depended heavily on international sales seemed to be more up to date about the trends in the market, they seemed more agile.

(Social Media) Marketing and CSR

With regard to the marketing efforts of the craft breweries and their vision on corporate social responsibility—and as was the case with the branding practices—we believed our findings based on the interviews with the Belgian microbreweries did not coincide with the findings of Kleban and Nickerson (2012), cf. Tables 5 and 6.

(Social Media) Marketing

According to Kleban and Nickerson (2012) Internet and social networks provide microbreweries that do not have big budgets for advertising or marketing or both with competitive tools to connect with their consumers, promote themselves, and gather market data and feedback. Marketing campaigns did not seem to be very important for most of the interviewed craft breweries. Nonetheless, social media—namely, Facebook—was used by most of them. It was mainly used as a news sharing platform rather than a real marketing platform as the extensive marketing tools built into Facebook were not used. The level of intensity with regard to posting, sharing, and liking differed. Other social media—such as Twitter and Youtube—were not exploited. Besides social media, Wikipedia was used as a rather indirect marketing tool, as it can help a brewery to tell its story in a more neutral and "encyclopedic" way. Surprisingly, almost all the breweries had a Wikipedia page. Even more surprisingly, almost none of the breweries had made it themselves. We had the impression that the breweries that used social media and other Internet related channels strategically definitely had an advantage, their brand awareness seemed bigger and stronger.

All the interviewed microbreweries focused heavily on "*word-of-mouth marketing*" as their most important tool to connect with their customers (cf. supra). Brewery 't Gaverhopke was the only interviewed brewery that stated to send out "*newsletters*". Another often heard promoting method are "*events*". All interviewed breweries had some sort of yearly event to celebrate the birthday or existence of the brewery. On these occasions, the brewery opens its doors and invites friends, acquaintances, important customers, and people in the immediate neighborhood or inhabitants of the town. Besides this annual celebration, events can also be used to promote the brewery. A brewery can sponsor events, either by giving away a certain volume of beer (e.g., Brewery Val Dieu did, it became too well known and had to start limiting the free

Table 5 (Social Media) Marketing and Corporate Social Responsibility (CSR) according to Kleban and Nickerson (2012)

Strategy	Main characteristics of this strategy
"*Social Media Marketing for Craft Breweries*"	Craft breweries use the new marketing platforms to their advantage. Social media is used to share information and receive feedback instantaneously. The brewery that is most successful in using these platforms strategically will win. Facebook, Twitter, and YouTube are the largest platforms. Craft breweries have some common strategies with regard to these platforms. Most of the craft breweries have their own Facebook page for fans to like, an official twitter account, and/or combined with a YouTube channel. Thanks to these social media platforms the craft breweries that do not have enough resources to pay for costly marketing campaigns and practices can reach out to their customers and their customers can reach out to them
"*Corporate Social Responsibility*"	Craft breweries can be considered revolutionaries. They are described as being "more local", having a "green focus" and typically having business models that are "socially responsible" and that focus on quality and diversity instead of mass-production. They understand their customers: they understand that by using fresh local ingredients for their brews they support the local communities. At the same time, they are able to meet the local market's needs. Craft breweries build loyal customers and get brand ambassadors. Moreover, they give back to the community by promoting various types of events, something the beer giants have not done so far. However, running and maintaining a state of the art brewery is about more than just buying local and following a protocol. Eco-friendly brewers have to think of the type of power they use for their facility, where their raw materials come from, the equipment to build the facility, the product the packaging is made of and how it is distributed and what is done with the waste products

kettles) or by serving beer at an event (e.g., Brewery 't Gaverhopke at the night opening of a clothing shop). Breweries also organized a certain type of event other than an establishment celebration (e.g., Brewery Alvinne organized an international craft brewery festival). However "*giveaways*" and "*accessories*" on a larger scale were not often used, as this was considered too expensive. Brewery De Dolle Brouwers and Brewery Toye both had brewery "*cycling jerseys*". The brewers of both breweries were into cycling. Since many amateur cyclist groups tended to end up at a bar after or during their usual Sunday morning cycling trip where they drink some sort of (high) alcoholic beer, having cycling jerseys seemed funny and suitable (Herteleer 2014; Toye 2014). Brewery Danny had "*stickers*" with funny quotes on. In line with their beer brand "kwibus",[15] the brewery printed stickers with the logo and ambiguous, slightly provoking but funny sentences on. The stickers seemed to be a success because the first ordered volume was exhausted quite fast.

We wondered why the interviewed microbreweries did not apply marketing to its full potential (by having either a limited usage or by a limited implementation). Some reasons for this were given by the brewers during the interviews, such as lack of time, money, and knowledge. Moreover, we think that the fact that marketing is not really a large part of the curriculum in the brewery schools in Belgium can be an extra reason. These factors, however, can still not explain why the very accessible and user-friendly social media platforms are not used more often. That is why we believe there might actually be an extra influencing factor. The fact that small-scale breweries are somewhat a counter reaction against industrial style beers and breweries that use marketing and advertising a lot gives them a rather negative attitude toward marketing and definitely advertising. We got the impression that our interviewees considered using marketing the same as "cheating" the customers. The breweries were not against marketing, but they were at least marketing averse, the idea that "a good beer sells itself" was generally prevalent, which is exactly what is claimed by the microbrewery literature: microbreweries compete on the basis of inherent product characteristics (Stack 2003). Tremblay and Tremblay (2009, 2011) claim that consumers of craft beer tend to avoid advertised products and may believe that a true microbrewery offers a handcrafted product of higher quality. Therefore, they state that many of these breweries restrain from advertising.

Corporate Social Responsibility

With regard to corporate social responsibility (CSR), the last topic of the Kleban and Nickerson (2012) framework, the interviewed craft breweries indeed gave back to the local community. The breweries tended to be engaged in their local community and invited this community every year to celebrate its founding. Some even went one step further. For instance, Brewery Val Dieu also sold beer to fraternities and student organizations in the University of Louvain-La-Neuve. For many years now, the student organizations are able to buy the beer at a very nice price. By applying this practice, the brewery hopes to add these students to its customer base in the future. "*At the moment we don't really know if they—once they join this age group—become customers of our product. If not, it has at least created brand awareness amongst the next generation consumers*" (Pinckaers 2014).

However, giving away free beer as such or generous sponsorships of any kind were very uncommon and considered cost-prohibitive. Moreover, the interviewed craft breweries did not have CSR policies: they did not (yet) have any special eco-friendly or sustainability-oriented policies.

Does Geography Count?

In this paragraph, we investigate whether we found large differences with regard to the "microbreweries" business strategies, branding, (social media) marketing and Corporate Social Responsibility (CSR) along the different characteristics against which we had selected our microbreweries (i.e., along the different axes) (Fig. 1). Moreover, we investigate whether geography played a role in the day-to-day functioning of the Belgian microbreweries.

Most of our findings did not vary with the axes 1, 2, 4, 5, 6, and 7. The geographical location of the brewery (in the Flemish or Walloon part of the country—ax 1—and in a village versus a city—ax 2) had no influence on our findings. Also the age (ax 4) and size (ax 5) of the brewery) as well as whether the brewer was a hobby brewer or a professional brewer (ax 6) did not seem to influence our findings much, apart from logical developments, such as the fact that things became more serious when brewers grew and/or matured over time. Also both the brewers with and without a real marketing plan (ax 7) showed to have at least some marketing activities.

However, our results seemed to be influenced by the axes numbers 3, 8, 9, and 10. Brewers that were focused on the local market had different priorities than brewers that also exported (at least part of) their production (ax 3). Also the breweries producing more than one beer (axes 8 and 9) and the more experimental breweries) (ax 10) responded differently. In this respect, it was the brewery centered, experimental breweries that completely focused on exports. They had to be able to compete on the world market. They took this into account and seemed to realize much better than

[15]Kwibus, a Flemish dialect word for being weird/odd/funny/foolish, close to brat or rascal.

some of the other interviewed breweries that they had to earn their place among their international competitors.

The fact that geography (in the sense of "location" of the brewery—axes 1 and 2) does not seem to play a role is not that surprising in beer country Belgium. As stated before Belgium has always been a craft beer nation. The number of craft breweries increased sharply the last decades, as was the case in other countries. However, in Belgium there has never been a lack of good non-lager type beers. In this respect, the Belgian beer scene was historically completely different than that of the US. While the temperance movement in the US erased the variety of beer types available in the country, the Belgian temperance movement (the Vandervelde law of 1918) was aimed at spirits, not beer, and influenced the development of new high-alcohol volume varieties of beer (Poelmans and Taylor 2019). The craft brewery movement in the US can be considered not only as the reflection of a change in taste, but also as some form of "neolocalism", i.e., the reestablishment of connections with local communities, settings, and economies (Flack 1997; McLaughlin et al. 2014; Schnell and Reese 2003, 2014). New breweries popped up like daisies in the last decade, in a country that was dominated by a few large brewers. Belgium on the contrary has always had a fair amount of breweries per capita. Belgium has also always had very local beer types, largely caused by historical events (such as the beer taxes that had been manifold in the past centuries, that varied from city to city and that had kept the variety of brews alive). American craft breweries seem to be found more in boom towns and areas of growing diversity and recent arrivals (Schnell and Reese 2014). Moreover, while older US craft breweries of the 1980s and 1990s were primarily located in or near major urban centers, McLaughlin et al. predicted in 2014 that the future craft breweries in the US would emerge more in exurban and rural areas. Belgian craft breweries on the contrary emerged and keep on emerging all over the territory and both in cities and on the countryside. Another large difference between both countries can be found in the fact that in the US alcohol control is left up to the states and there are many state-to-state differences in the law. This is not the case in Belgium for the different regions.

However, although the actual location of the interviewed breweries did not seem to play a role in how their day-to-day business worked—as can be seen in their similar responses to the Kleban and Nickerson framework—geography did play a role in the branding of several of the craft beers. Although some of the respondents just produced a high quality beer, without a real link to any location, other respondents definitely used the geographical location of their brewery in their branding and emphasized this local identity (Table 6).

The classical brewery-centered breweries, that produced multiple beers, both for the national and international market, used geography in the naming of their beer brand. Sometimes the name referred to the location of the brewery, sometimes to a historical event or custom that had taken place in that location in the past. For instance, brewery 't Kroontje chose for the name "Rebelle" for its beers, named after the location of the brewery "Denderbelle" (in short "Belle") and the fact that for the first time since 1937 a new beer was brewed, hence the name Rebelle ("Renewed" Belle) (Verbraekel 2014). Brewery Val Dieu brewed multiple beers under the flagship brand "Val Dieu", named after the abbey the brewery is tied to and located in (Pinckaers 2014). The Gentse Stadbrouwerij Gruut chose the name "Gruut" for its beers, which is the same name as the medieval herb-based beer that was brewed with "Gruut" ("Gruit"), a mixture of herbs and spices, traditionally employed to flavor and preserve beer against spoilage (De Splenter 2014). This mixture was different and specific to every region—making it possible for the local rulers to use it as a tax as no brewer could brew without having bought the local Gruit—leading to very distinctive, local beers (Poelmans and Swinnen 2011b). Gruut was used all over the territory of current-day Belgium before the introduction of hops, which seemed to be a superior preservative to gruit. The western part of Belgium, left of the Scheldt river—in which the city Ghent is located—that had been part of "France" for a very long time used Gruut much longer than the part on the other side of the river. Hops were forbidden as they threatened the revenue from the Gruit-taxes. The territory east of the Scheldt river (around three-quarters of present-day Belgium), however, belonged then to the Holy Roman Empire. Thanks to a 1364 decree of the emperor Charles IV local rulers were permitted to tax hops rather than relying only on the sale of gruit for revenues. Hence, the brewers in "his" region were allowed to use hops much earlier for the preservation of their beers than was the case in the "French" territory (Fig. 1). Today many Gruit-beers are produced west of the Scheldt River in homage to the recipes of the past (e.g., the Gruut beers from the Gentse Stadsbrouwerij Gruut, as well as those from the breweries Gageleer from Wommelgem and De Gouden Boom from Bruges) (Poelmans and Taylor 2019). Brewery Dilewyns did not use geography for the name of its beer, which is "Vicaris", derived from the name of the founder "Vincent" and the word "decay caries" as he was a dentist before he started brewing. However, the brewery used in its logo—which was also used on each beer label—a historical folkloristic event that took place in the city "Dendermonde" that the brewery was located in. The logo was a horse with four girls, symbolic for the founder's four daughters and related to the folkloristic tradition of Dendermonde's "Ros Beiaard", a historical ten yearly procession with a large horse with four young brothers on, carried by the people of the town of Dendermonde. This folkloristic event is on UNESCO's list of Masterpieces of the Oral and Intangible Heritage of Humanity (Dilewyns 2014).

Table 6 Branding and marketing of the interviewed breweries

Brewery	Story	Brewery name	Beer brand	Beer brand origin	Brewery logo	Marketing plan
Alvinne	Two brothers in law (a theoretical chemist and a practical production engineer) started brewing beer in a small shed. They commercialized their beer via a firm and eventually started their own brewery. They never go for mainstream and love experimenting. They give advice and expertise to others. The brewery has a people management focus, everything is personal. A third partner (a dairy industrial engineer) was added. He has developed his own unique yeast and knows everything about cleaning and disinfecting	Derived from the "water elves". Similar to the gnomes of Achouffe and the "erthels" of Urthel	No real brand, various product lines (sour, aged on barrel, etc.)	Coincidental, often based on befriended people's names	An A with an elves-looking font	NO
Danny	Independent "window cleaner Danny" and vintager and sommelier started the brewery as a winter activity when it was too cold to clean windows. Together with his wife he runs the brewery, built by himself and located in his garage. He brews "kwibus beer"	The name of the founder "Danny"	Kwibus, a Flemish dialect word for being weird/odd/funny/foolish	It sounded suitable for a beer name	A playful-looking cartoon holding a beer	NO
De Dolle Brouwers	Architect and hobby painter Kris Herteleer and his brother are both cycling enthusiasts. They started brewing beer in a shed in the back yard. They experiment and create complex recipes. A third cycling friend joined them. Against everybody's advise they bought an old brewery. Very soon Kris Herteleer was the only owner, he never upgraded the capacity, nor the old 1950's build cupper facility. He stays the	Derived from the name of a cycling enthusiast group	Various brands, often based on word jokes or twists	Sprung of the creativity and artistic mind of the owner	Some sort of childish cartoon doll, which holds a beer in one hand and a dasher in the other	NO

(continued)

Table 6 (continued)

Brewery	Story	Brewery name	Beer brand	Beer brand origin	Brewery logo	Marketing plan
	free spirit and rebellion and says no to growth and big export deals					
De Marsinne	An offspring of a colonial brewing-tied family with international industrial brewing background and a grandson of a locally important brewer and farmer which is now a farming consultant, started their own small-scale brewery in the historical farming castle. They focused on one beer, a spicy and citrus tasting easy to drink brew and saw things big. Shortly after the startup a "branch" was started in Cape Town, SA. By food pairing their beer, and rather coincidental, their beer was sold on the business flights of Brussels Airlines	The name of the village where the brewery is located	Leopold7 (one beer)	One of the founders grandfather's name + the 7 ingredients, 3 hops, 3 grains and the "Leopold touch"[2]	Modern professional and artisanal looking with a focus on being Belgian	YES
Dilewyns	Vincent Dilewyns run a dental lab; his grandparents had a brewery until WWII. He started of as a beer firm that sold Vicaris beer (VIncent CARIeS). In 2008 he decided to quit his dental lab and to start Brewery Dilewyns. A production site was bought in an industrial zone and two daughters joined the brewery. The family brewery heavily invested in higher capacity and expanded rapidly with a strong local focus. Everybody in the family helps out	The Surname of the founder	Vicaris (plural beers)	Derived from the name of the founder "Vincent" and "dental decay (caries)"	A horse with 4 girls (symbolic for the founder's 4 daughters), related to the folkloristic tradition of Dendermonde's "Ros Beiaard"[1]	YES
Gentse Stadsbrouwerij Gruut	Annick Desplenter, offspring of family Desplenter with four generations of brewing tradition restarted the brewing tradition after the bankruptcy of her	The name of the historical beer type and the city where the brewery is located	Gruut (plural beers)	Same name as the Medieval type of herb-based beer that is brewed	A medieval coin	YES

(continued)

Table 6 (continued)

Brewery	Story	Brewery name	Beer brand	Beer brand origin	Brewery logo	Marketing plan
	family's brewery. She did two years of research to put together a long lost recipe of "medieval" "Gruut" or herbs-based beer and started a brew pub/brewery in Ghent, that she is allowed to call "City brewery of Ghent"					
't Gaverhopke	A married couple, an IT-technician and a nurse, with three daughters took over a brewery/brew pub without any brewing skills or knowledge. The wife learned how to brew and became one of the few female brewing masters. The couple now supports their family and lives from the brewery/brew pub	Just copied from the previous owner	Various, often related to the type of beer	No real coherent system	A brewing kettle with a hops branch and a barley twig with the brewery name	NO
't Kroontje	Two teachers, a Dutch, history, and geography teacher and a gym and biology teacher, found out that they both were beer fanatics and eventually started a brewery together besides their teaching jobs	Historical and geographic name	Rebelle (plural beers)	Named after the former brewery Belle (until 1937)—hence "Rebelle"	A fox that shows his muscles and has "foxy" glimpse	NO
Toye	A brewery industrial engineer, designed and built his own brewery from scratch	The Surname of the founder	Goedendag[3]	After the Medieval weapon used in the Franco-Flemish war	Golden spurs in between two Goedendag-weapon sticks as well as "Goedendag" in a Medieval looking font	NO
Val Dieu	No story really told by the interviewee, although some ties with the Abbey brewery were highlighted	The name of the abbey the brewery is tied to and located in	Val Dieu (plural beers)	Named after the Abbey the brewery is tied to and located in	Logo of the Val Dieu Abbey	Originally NO, recently YES

Notes

[1]Dendermonde's "Ros Beiaard" is a procession with a large folkloristic horse with four young brothers on, carried by people of the town of Dendermonde. This procession is held once every 10 years

[2]The "Leopold touch" is an additional touch to the 6 basic ingredients of the Leopold 7 beer. The exact meaning stayed vague, but clearly intended to create some mysticism to strengthen the Leopold brand

[3]A "Goedendag" was a Mediaeval weapon—a combination of a club with a spear—that was originally used to great effect at the "Battle of the Golden Spurs" by the guildsmen of Flanders during the war against the French knights, near Courtrai on July 11, 1302. The Goedendag symbolizes the Flemish pride, victory, and identity and is strongly related to Flemish sovereignty over the French forces

The two beer-centered business plan breweries gave their single brew a historical name, with a geographical or historical link to the location of the brewery. The beer from brewery De Marsinne was named "Leopold 7". This had nothing to do with King Leopold (the name of the first, second, and fourth king of Belgium), but was derived from the name of the grandfather of one of the two owners of the brewery (Leopold). The brewery is located in the historically important farm-castle of Marsinne, which was originally owned by this grandfather. It was the biggest farm in the region and started brewing beer in 1866 for its employees. The 7 stands for the seven ingredients: 3 hops, 3 grains and the "Leopold"–touch, an additional touch to the 6 basic ingredients. The exact meaning stayed vague, but was clearly intended to create some mysticism to strengthen the Leopold brand (Declercq 2014). The beer from brewery Toye was named "Goedendag", after a Medieval weapon—a combination of a club with a spear—that was originally used at the "Battle of the Golden Spurs" by the guildsmen of Flanders during the war against the French knights, near Courtrai on July 11, 1302. The Goedendag symbolizes the Flemish pride, victory, and identity and is strongly related to Flemish sovereignty over the French forces. Marke, the village brewery Toye is located in is part of the city Courtrai (Kortrijk) that was the battlefield of this famous "Batlle of the Golden Spurs" (Toye 2014).

The experimental brewery-centered breweries tended to brew beers that were not really of any specific type or style. The taste pallets of the brews could be considered rather extreme and tended to be more appreciated by the advanced beer drinker. These breweries did not use geographical names, but often went for funny and/or situational names. For instance, brewery Alvinne had no real brand, and used various lines of products (sour, aged, on barrel, etc.). The beer brand origin was coincidental and based on befriended people's names. To give an example, one of the brewers at Brewery Alvinne had a good friend from years back, the vice president of Zythos (the overarching beer consumer organization in Flanders), called "David". At the same time, his brother in law and fellow brewer at Alvinne was called "Davy". He often switched names and called them by the wrong name. He got so frustrated about that and at one point he started calling "David" "Freddy" or "Fred". At one point they were joking about the fact that he would like to have a beer named after him and that he eventually would like to start brewing his own beers. As a joke they wrote "Cuvée Freddy" on one of their finished brews and shared a picture with him. Even more coincidental, at that time they had Americans visiting the brewery and they took a picture of the "Cuvée Freddy" beer. Shortly after their American importer wanted to import the beer. A new beer was born. Now, after so many years, the beer still sells very well in the US. Shortly after David or "Freddy" started a relationship with a female beer connoisseur. So, they called another brew after his new girlfriend "Sofie" and "Cuvée Sofie" was born. The story is not finished yet. These two "Cuvée"-beers were aged in wooden barrels. They thought maybe they should commercialize the nonaged brews of these beers as well. Hence, they made a beer called "Phi" [derived from "Sofie", pronounced as "sowphi"], which was the same beer but not aged on barrel. Based on that idea they made a trilogy of sour non-wooden aged beers and now they have Omega, Sigma, and Phi. All of this, because one American visitor took a picture of "Cuvee Freddy" written on a barrel (Castelein and Spiesens 2014).

Conclusion

Ten Belgian "microbreweries"—each producing less than 12,500 hL per year—were compared against the framework by Kleban and Nickerson (2012) who analyzed the craft brewery movement in the US. The comparison focused on business strategies, branding, (social media) marketing and CSR. Our results differed substantially from those by Kleban and Nickerson. However, we believe the majority of these divergences are the result of discrepancies between the American and Belgian beer markets rather than the lower professionalism among Belgian craft breweries.

All in all, the interviewed Belgian craft breweries seemed to be both less competitive and less mature than the ones described by Kleban and Nickerson (2012). One of the main reasons for this perceived immaturity could be that we investigated only one specific segment of the Belgian craft breweries, namely, the "microbreweries producing less than 12,500 hL annually". Moreover, although the breweries focused on the same customer segment, they did not appear to be real competitors due to their focus on hyperlocal and export markets. As a consequence of small competition, there wasn't a need for a rock solid business strategy or a well thought-out branding and marketing plan.

In this respect, the business strategies used did not vary significantly among the interviewed breweries. We recognized distinct business concepts ("beer centered", "classical brewery centered" and "experimental brewery centered" breweries), which originated from the decision on how many and what kind of beers to produce. However, most of the interviewed breweries went for a classical brewery-centered concept, with rather traditional specialty beer styles. With regard to branding, the interviewed breweries focused on being different and depended heavily on word-of-mouth and

distributers and consumers behaving as ambassadors. With regard to marketing the breweries did not vary a lot from each other, marketing was not a primary concern and activity. One of the explanations for this small amount of branding and marketing could be found in the Belgian "tied houses" system that made it very difficult for the craft brewers to get access to national "on-trade" outlets, such as pubs. As a result, our interviewed breweries opted mainly for two types of outlets: direct consumption in the brewery and in pubs, and/or distribution through distributors (such as supermarkets) and exports. The latter outlet made it very difficult to gather feedback on what the end consumer liked and what branding and marketing would be used best. Their dislike of advertising and marketing can also partly be explained by their dislike for the big brewers. They wanted to be considered very different from these large-scale brewers.

Although breweries were interviewed in both Flanders and Wallonia, and both in cities and villages, the results of our analysis did not differ according to these divisions. In this respect, the geography (in the sense of the "location of establishment" within Belgium) had no influence on the microbreweries' day-to-day activities.

However, geography was used to a large extent in the branding activities of six of the interviewed breweries. In this respect, a link to the village or city, or to historical events or folkloristic myths were used to increase the attractiveness of the beers produced.

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Leaders and Laggards in U.S. Brewing: Political Trajectories and Brewery Density

16

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Abstract

Viewed at a national level, patterns of brewery density in the United States (U.S.) appear to simply mirror population density. However, when we begin comparing States, we find great divergence in the concentration of breweries, exceeding that of even more diverse economic and demographic regions like Europe. Digging deeper, a further puzzle emerges: these differences have largely persisted over time, starting during the emergence of small brewers, even as the rules and regulations concerning brewing have largely converged. This chapter explains this puzzle through a political lens, explaining how the interplay of economic interests, political coalitions, and regulatory conditions buttressed and enhanced first mover advantages. These political forces created a longer term trajectory wherein small brewers in leading states were able to preserve, and in many cases widen their advantages relative to other states.

Variations in Brewery Density

The explosion in breweries across the United States (U.S.) is arguably one of the largest transformations of an American manufacturing industry in recent decades. From a highly consolidated industry with fewer than 50 firms in the late 1970s, the industry has seen exponential growth in the number of firms, with more than 7,500 operating in 2019, and surpassing 10,000 active licenses, suggesting a great deal of future growth (Brewers Association; Tax and Trade Bureau). Although the American craft beer revolution has often been treated as a national phenomenon, as with many industries in a country as large and diverse as the United States, there still exist wide variations in the number and production size of breweries by geography.

As small breweries—using the Brewers Association definition of breweries that hold less than 3% of the U.S. beer market—have entered the mainstream beer market, and more than 80% of 21+ adults now live within 10 miles of a brewery (Brewers Association analysis), analysts often assume that breweries are distributed fairly evenly across the country in line with population density (Fig. 16.1).

Although that statement is broadly true, looking more closely at brewery location, a puzzle emerges: the gains from brewery growth have not been shared equally. Although population density patterns can broadly predict the location of breweries nationally, population density has very little to do with brewery density across states. For example, as of mid-2017 Vermont had more Federal Brewers Permits than Mississippi and Alabama combined, despite a population less than one-twelfth that of those two states. The country with the most breweries per capita is currently Switzerland (9.0 per 100,000 population; Brewers of Europe). Vermont has nearly 50% more brewery licenses per capita than that rate (13.3 per 100,000 population). In contrast, Mississippi now has 16 licenses, a ratio of 0.5 per 100,000 population. That's roughly the same rate as Hungary (Tax and Trade Bureau; Brewers of Europe). The U.S. average is currently 3.1 licenses per 100,000 population, whereas the standard deviation is 2.6. That's a greater standard deviation looking at per capita licenses in American states than seen across the 31 countries listed in the Brewers of Europe 2016 report (standard deviation = 1.8). The leading state, Vermont, is nearly four standard deviations above the national average in Brewers Notices per capita (Sources: Tax and Trade Bureau, U.S. Census Bureau).[1]

[1]Brewers Notices, issued by the Tax and Trade Bureau, are the primary Federal Permit required when starting and operating a brewery. Because state permits vary in their requirements, they are a better comparative indicator across American geography for analyzing state patterns.

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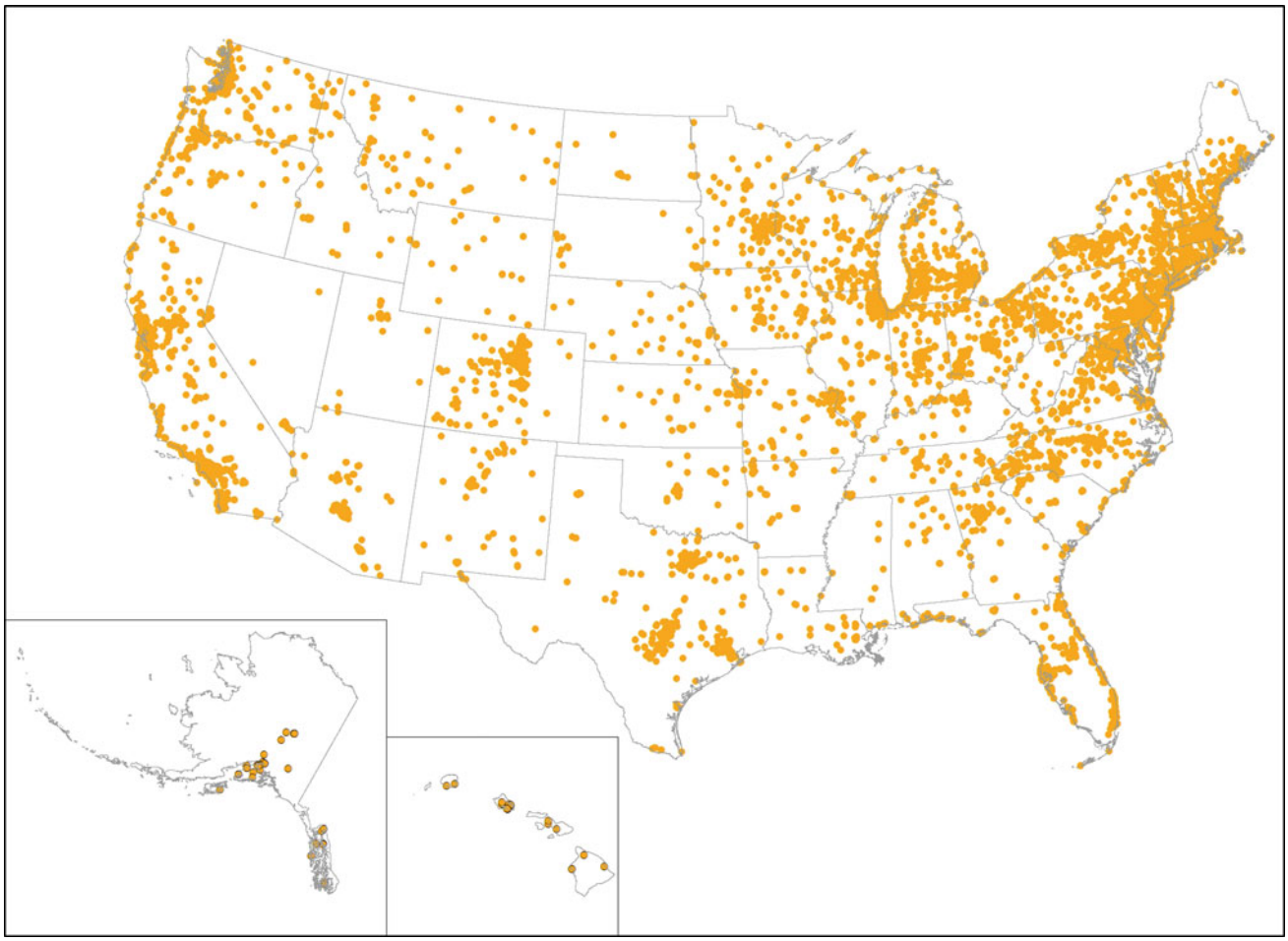

Fig. 16.1 Map of Active U.S. Brewery Locations, as of 6.30.19 (*Source* Brewers Association Brewery Database)

So what explains this tremendous variation, exceeding that of Europe, with its much greater cultural and economic differences? To deepen the puzzle, the differences in producer location have largely persisted over time, despite a national consumer market that shows many signs of common development, converging regulation, and similar consumer preferences. Looking back nearly two decades, from 2000 to 2017, the number of brewery licenses grew 4.4 times from 1,964 to 8,657 (Tax and Trade Bureau). However, the relationship between licenses per capita in 2000 and 2017 is nearly perfectly linear (r-squared $= 0.923$). So in an era where a minimum of 6,693 firms made location decisions, why did they locate in largely the same patterns as the first 2,000?

While consumer preferences and culture certainly play some role (see Barjas et al. 2017), this chapter explores the role that politics have played in shaping producer geography, through the nexus of first mover advantages and through their ability to influence the regulation of a state's brewing market. It argues that the intersection of interest groups, political rules, and regulatory factors created a strong path dependence mechanism wherein early brewery location led to a more conducive regulatory and thus market environment for breweries in those states, which has preserved, or even widened, geographic variation across American states over time. States that took an early lead in the number of small breweries have seen a self-perpetuating cycle of politics and economics that have helped preserve that lead. Small brewer entrants became political actors to defend their interests and expand their economic possibilities. In doing so, they created market opportunities for further entrants, which in turn increased the economic and political power of the brewing sector, continuing this cycle over time.

The goal of this chapter is not to statistically test the effect of particular rules such as self-distribution on state markets. Previous scholarship has already covered this ground to a great extent (see for instance Elzinga et al. 2015; McCullough et al. 2017; Burgdorf 2016). These types of analyses are useful in highlighting the levers that drive brewery location. However, they do less to highlight the underlying

causes of political variation and the conditions under which rules evolve. Consequently, this chapter seeks to describe why, even as these rules have moved in a generally more favorable direction for small beer producers across all geographies, the differences in firm (i.e., brewery) locations across geographies have not only persisted, but by many measures widened.

Explanations for Brewery Location

Arguments about how institutions and actors shape outcomes have a long tradition in the social sciences. Known as path dependence (David 1985; Pierson 2004) or historically rooted trajectories (Zysman 1994), these frameworks focus on contrasting moments of radical change—or critical junctions—and longer periods of either stable, predictable, or incremental evolution, similar to punctuated equilibrium theories in evolutionary biology (Gould and Eldredge 1977). For each, understanding the context within which actors, institutions, or processes change is the key.

In the case of breweries, the primary context is a fundamental tension between market freedoms and a control logic wherein beverage alcohol must be controlled through a variety of regulatory mechanisms. All states in the U.S. fall somewhere along this spectrum at various points in time. In addition to directly shaping the form of the beverage alcohol system at its actors, these rules have various secondary effects, such as limiting or encouraging entrants and their business models.

What we see in the case of the brewing industry is that a state's location on this continuum cannot be viewed independent of its industry structure. Rather, in the same manner in which regulatory structures influence brewery rate and form, brewery rate and form in turn push back on industry structure. More importantly for this chapter, we can see the basic workings of this intertwined mechanism early in the history of small brewing.

As small brewers emerged in the late 1970s and early 1980s, each state's political process and institutions were already being shaped by the structure of the brewing industry and its strength. In turn, the politics therefore continued along paths that were influenced by these early political deals. States with frameworks that tilted toward market freedom saw the emergence of brewers who could in turn advocate for additional flexibility. States with strong control logics did not develop much in the way of local industries, and in turn those states' politics continued to be dominated by forces that had created and supported those control logics in the first place, particularly beer wholesalers seeking to keep strong separations between production and retailing activities.

This is not just about brewers, but about a more complex set of interactions of consumers, industry participants (including producers, distributors, and retailers), and political actors. The power dynamics of each group in a state mattered and continue to matter, though in predictable ways rooted in their historical dynamics.

Although the central focus is on the stickiness of state trajectories, in closing, the chapter explores the durability of first mover advantages created by political coalitions and regulatory structure. Is there an end to path dependence in an era of omnipresent local production? In addition, states are conscious actors in this process, and many have actively sought to improve their regulatory environment in the hope of creating more vibrant brewing sectors, even in the face of concerted opposition from forces that promote a control logic. Can conscious state regulatory action overcome longer historical trajectories and improve a state's position in the larger national brewing market?

Policy Laboratories and the Small Brewing Revolution

In many ways, the brewing industry is a perfect sector to test how America's policy laboratories affect an industry. The primary reason is that nearly all beverage alcohol regulation is state-based. Because the 21st Amendment ending Prohibition left the vast majority of regulatory power at the state-level, brewing, along with other beverage alcohol, has been shaped by state policy environments more directly than most manufacturing sectors.

Secondly, in the late 1970s, most states had roughly the same number of small breweries; that is to say, none. In 1978, there were only 89 breweries in the country, representing fewer than 50 brewing companies (Brewers Association). In 1984, only 17 states had at least a single brewing license and 62% of the breweries shown in Tax and Trade Bureau (T.T.B.) data were in only 5 states (California, Pennsylvania, Texas, Washington, and Wisconsin). There were variations in the geography of the large breweries,

those owned by Anheuser-Busch, Miller Brewing Company, or the Coors Brewing Company.[2] In general, those variations were explained by state population, as brewing companies sought to co-locate production in relation to consumption. So, for example, Anheusuer Busch has breweries in California, New York, Texas, Florida, Ohio, Georgia, New Jersey, Virginia, New Hampshire, and Missouri. The current MillerCoors network looks broadly similar, with breweries in 6 of the same 10 states (California, Texas, Florida, Ohio, Georgia, and Virginia).[3] Although those states do show some signs of an improved regulatory environment for small brewers (for instance on average lower excise taxes on production) and might provide additional human capital resources for small brewers, over time there is in fact a weak inverse statistical relationship between the presence of a large brewing facility in a state and the number of small breweries per capita in that state. Because large brewers largely located facilities around maximum distribution efficiency relative to population rather than regulatory factors, the presence or lack thereof of a large brewery in a state does not appear to have strong implications one way or the other for small brewer location decisions.

Finally, although there is not a single time period or event that reversed a century of consolidation, we can delimit the beginning of our period of inquiry based on two Federal regulatory changes. The first occurred in 1976 when lobbying by the Brewers Association of America helped passed H.R. 3605, which achieved a reduction in excise taxes for small brewers, lowering the Federal excise tax rate on the first 60,000 barrels of production for brewers producing less than 2 million barrels (1 barrel = 31gallons). This initial cut was $2 a barrel (small brewers paid $7 a barrel, as opposed the rate of $9 a barrel paid by large brewers; that $2 is equivalent to between $8–9 today), offsetting some of the enormous cost advantages possessed by large-scale beer manufacturers.

The second change occurred in 1978 when President Jimmy Carter signed H.R. 1337 (containing an amendment by Senator Alan Cranston of California), legalizing home brewing at a Federal level in the U.S. H.R. 1337 went into effect on February 1, 1979. Unlike home winemaking, the 21st Amendment to the U.S. Constitution (which repealed Prohibition) did not legalize home brewing. Consequently, home brewing culture in the United States was severely stunted in the post-World War II period through the 1970s. Nevertheless, pockets of home brewing existed across the United States, flying under the regulatory radar. As McCullough et al. (2017) document, 13 states had legalized homebrewing prior to its 1978 Federal legalization, with another 9 legalizing homebrewing at Federal legalization. The work of McCullough et al. (2017) outlines the important role that homebrewing rules played in creating the market for small producers, both through human capital development as well as by building a bigger enthusiast base for consumer demand.

Although these three factors (state-based regulation, similar starting distribution, and set of Federal shocks to re-start growth) make brewing a strong candidate to study state regulation, it is in no way a natural experiment. For one, although many regulatory structures were constant across states, the three-tier system governing beverage alcohol did already exhibit many variations across states. Rules regarding distribution of beverage alcohol were already markedly different in the late 1970s. The separation of tiers (producer, distributor, retailer) has never been standardized, and in many states a true "three-tier" system has never existed.

Marc Sorini (2016), a prominent beverage alcohol attorney, notes that "contrary to popular myth, the 21st Amendment does not require any particular regulatory framework (control v. open, three-tier, etc.)." Included below are examples of states without a strict three-tier framework immediately on Prohibition (table adapted from Sorini 2016).

In addition, the state government itself has played a very different role across the United States. To this day, several states remain "control states" wherein the state itself plays some role in the beverage alcohol system (primarily as a distributor or retailer, and not always in the same products) (Table. 16.1).

Finally, there have always existed softer cultural variations across the states in their propensity to drink beverage alcohol, drink beer (versus wine/spirits), support local producers, or in general to support artisanal products. To further complicate matters, these cultural variables also interact with regulatory factors. A good example is homebrewing, where a culture may exist even in the face of unclear or state illegality, but legal status certainly informs and supports a broader culture. This is particularly true as the regulatory regime becomes more flexible. An example would be whether homebrew can be transported outside of the home for competitions.

If we need evidence that the law does not fully define culture, we can look at Vermont, where a vibrant homebrewing culture existed prior to Federal legalization and

[2]Miller, previously owned by SAB Miller, and Coors, a part of Molson Coors, created a joint merged venture in the United States in 2008 called MillerCoors. It was owned 58% by SABMiller and 42% by Molson Coors. As part of the acquisition of SABMiller by Anhseur-Busch Inbev (ABI) in 2016, ABI sold SABMiller's stake in MillerCoors to Molson Coors.

[3]MillerCoors also has a brewery in Wisconsin. These states represent the large production facilities of these networks only and do not include their small brewery acquisitions. In addition, MillerCoors had a brewery in North Carolina for many years. It closed in 2016.

Table 16.1 Post-Prohibition Three-Tier Exceptions. Adapted from Sorini 2016

State	Market freedoms across tiers
California	Brewers could sell directly to retailers or own a wholesaler, but held no retail privileges
Florida	Brewers could sell directly to retailers or own a wholesaler, but no retail privileges
Illinois	Brewers could sell directly to retailers or own a wholesaler (unless the wholesaler owned a retailer), and had retail privileges
New York	Brewers could sell directly to retailers or own a wholesaler, and had retail privileges
Texas	3.2 alcohol by weight (A.B.W.) brewers could sell directly to retailers, own a wholesaler and had retail privileges, while stronger beer brewers only could sell to retailers and own a wholesaler (if residency requirements were met)

continued even though Vermont did not formally legalize the practice until 1998 (one of the latest states; Mississippi and Alabama were the final two states to legalize homebrewing, both in 2013; Source: American Homebrewers Association). In fact, the first post-prohibition book on homebrewing—*Mountain Brew: A High-Spirited Guide to Country-Style Beer Making* (Matson and Dorr 1975), was written in Vermont two years prior to Federal legalization.

Even with this barrage of caveats about state-based variations, there is strong evidence that the pre-existing cultural and regulatory structure were less important for both brewery decisions on where to locate and market outcomes than rules about how brewers could access the market, particularly those that relate to direct-to-consumer sale. Those laws were largely homogenous across states prior to the emergence of small brewers; no states allowed direct-to-consumer sales by brewers.

None of this should be seen as an argument that laws are the only thing that mattered in shaping beer markets. Cultural preferences, such as the propensity to buy local or artisanal products, certainly mattered, but are difficult to analyze. Broad cultural preferences are challenging to operationalize as variables and this challenge only increases when we look to apply culture variables to a specific market (in this case the market for fuller-flavored beers from small brewers). One option would be to use import sales as a proxy for latent demand for fuller-flavored beers, as some imported beers filled a similar demand niche in the market. However, in 1981 imports made up less than 3% of the U.S. beer market by volume, and many of those imports were adjunct lagers that competed more directly with the large U.S. beer companies.

One other option in estimating future demand for small brewers could be to look at beer drinking in general, either measured by per capita consumption or by looking at the percentage of the overall market that beer holds within beverage alcohol. On that latter measure, there is indeed great variation across states, ranging from ~70% share of the beverage alcohol market in West Virginia to ~30% in the District of Columbia. That said, neither measure shows any strong relationship with small brewer variables, including the rate of brewery formation or small brewer market share or production levels.

Localized Firm Decisions

One other argument about brewery location dynamics that must be acknowledged is that local municipal factors also drive location decisions. Recent research on urban geography and brewery locations has found strong evidence that breweries cluster (see Nilsson et al. 2017; see Porter 1998 for broader context on economic clusters). Similarly, looking at brewery location by census tract, Barajas et al. (2017) write: "the strongest predictor of whether a craft brewery opened in 2013 or later in a neighborhood was the presence of a prior brewery."

Although clustering research does suggest that within states breweries are more likely to co-locate, the vast majority of the laws that allow breweries to pursue a hyper-local, primarily direct-to-consumer business model remain state-based. And so while these types of papers are valuable in understanding intra-urban geography, they have little explanatory power as to why brewer entrepreneurs chose those particular urban geographies in the first place.

Again, none of these caveats should be taken to mean that local conditions, be they demographic, political, or cultural, were uniform or unimportant. However, these factors seem far less important to the overall variation in brewery density by state compared to regulatory structure, and as we will see, much of the variation in state-based regulation that was critical to the emergence and expansion of small brewers occurred after 1980.

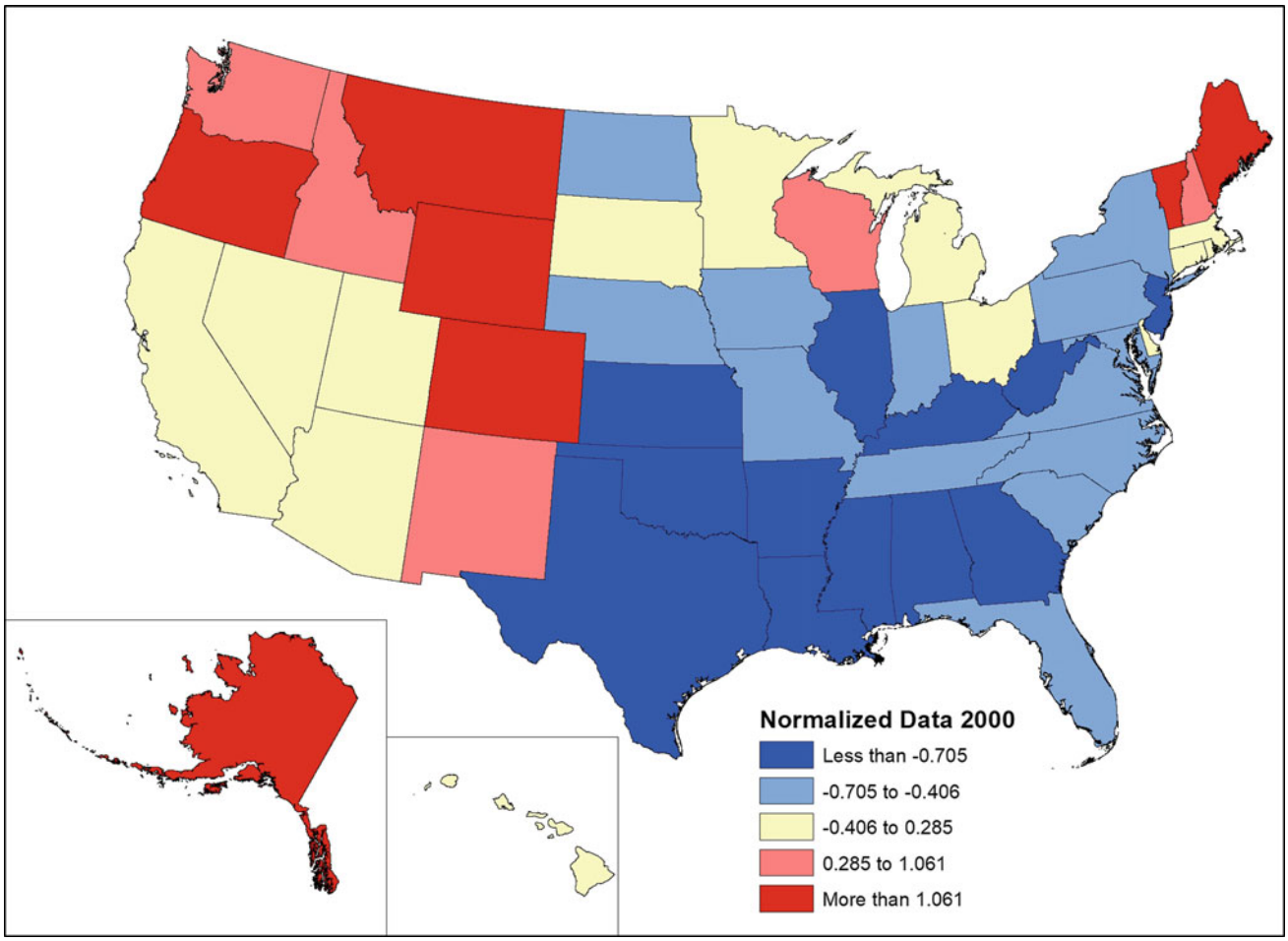

Fig. 16.2 Brewery Licenses per Capita by U.S. State, 2000 (Normalized). *Source* T.T.B. and U.S. Census Bureau

Coalitional Channels in the Brewing Sector

To sum, the previous section, the federal changes that catalyzed the small brewing revolution occurred in an environment that looked broadly similar in market terms for small brewers. Pre-existing variation was present at the state-level in regulatory structure, large brewer power, and consumer preferences, as well as at the local level in those dimensions plus additional attributes like zoning. While these are certainly partial independent variables as to the initial location of small brewers, they appear insufficient to explain the longer term trajectories across states.

Consider the situation in 2000.[4] The map below shows the number of T.T.B. Brewers Notices per capita by state, measured as a deviation from the national average. Vermont is the leading state, followed by Maine and the Mountain West, and generally, the states across the Southeast are the laggards (Fig. 16.2).

This next map shows the same measure, but for 2017 (as of 9.30.2017). Although the maps are not the same, they are highly interchangeable in their general patterns. The correlation between the measure at the two time points is $r = 0.92$. Of course, some of this is due to the time series—some % of the brewers in 2000 continue to operate in 2017. However, these brewers represent a small % of the 2017 number. Not only is the 2000 license number only 22.7% of the 2017 number, we can safely assume that a fairly high percentage of the breweries operating in 2000 has since closed. With a long term historical closing rate of ~50%, the % that the 2000 licensees presented can be assumed in the 10–15% range. And, if we subtract 50% of the 2000 licenses from the 2017 number, the correlation remains essentially unchanged ($r = 0.90$) (Fig. 16.3).

[4]An earlier time point than 2000 would be preferable for this analysis, but there are limitations in the data in earlier years. Because the T.T.B. takes great pain to avoid identifying any individuals in their aggregated data (since they consider brewery filings individual tax returns), they only identify the number of permits in a state when it reaches three permits. Consequently, any years prior to 1999 contain numbers values that could be either 1 or 2, making it difficult to compare state permits precisely.

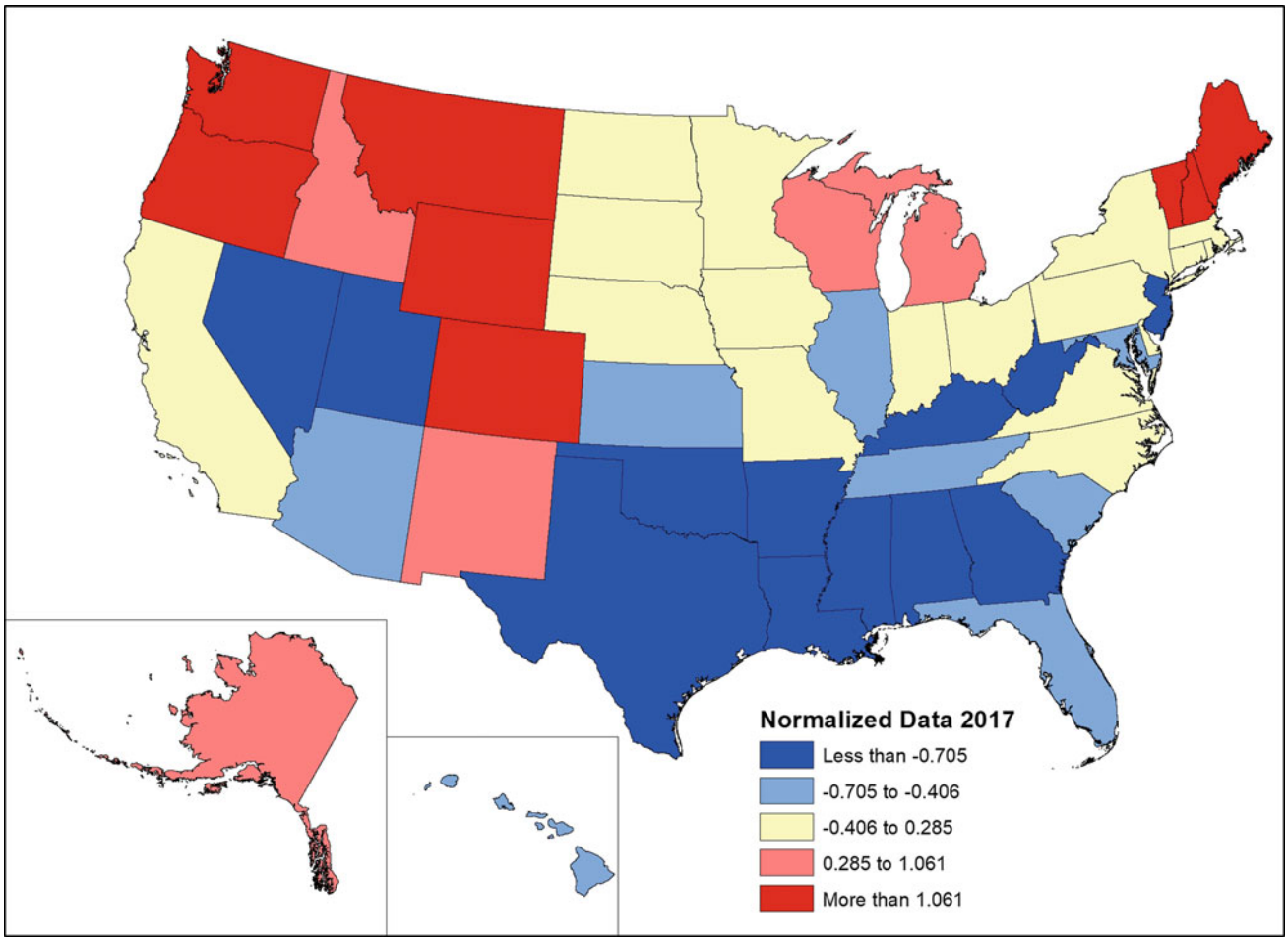

Fig. 16.3 Brewery Licenses per Capita by U.S. State, 9.30.2017 (Normalized). *Source* T.T.B. and U.S. Census Bureau

The basic argument this chapter outlines for this continuity is that small brewers enter as economic actors, then rapidly become political actors seeking to defend their interests and expand their economic opportunities. In doing so, they create a virtuous cycle in terms of opportunities for future brewers. By expanding their own economic opportunities, they create additional opportunities for future entrants. New entrants and the growing economic power of incumbent brewers in turn buttresses the political power of the brewing sector, which perpetuates this cycle.

Similar to Joseph Palamountain's (1955) work on the economic and political structures of American distribution in the 1930s stressed that although economic groups enter the political arena in order to defend their interests, by entering politics, their strengths and positions are changed by the structure of politics (see also Watson 2011 for an updated description of this process).

The analytic approach used to build such an argument draws from the historical institutionalist perspective (Hall and Taylor 1996) on political economy, where national structure conditions firm actions, but firms also shape that structure through deliberate political action.[5]

There are two primary reasons why politics and coalitions are so important in describing the expansion of breweries. The first is that brewers are among the most connected actors in the economy, interacting with a variety of economic, political, and social groups. They connect with consumers, distributors, suppliers, and other manufacturing firms. Politically, they must manage relationships ranging from

[5]Historical institutionalist scholars look at how formal political institutions structure solutions by distributing power (Moe 2005; Knight 1992), by structuring the way actors view the economy (Dobbin 1994; Fourcade 2009), by shaping responses to economic and technological transformations (Piore and Sabel 1984; Noble 1984), and by creating longer trajectories for initial choices (Zysman 1994). Critical political variables include veto points (Immergut 1992), the power resources of labor (Esping-Andersen and Korpi 1984), structure and interplay of parties and interest aggregation (Wilensky 2002), national size (Katzenstein 1985), and the skill structure of labor (Iversen and Soskice 2001).

industry trade organizations and regulators from the National level down to municipal governments. Within the economy, they connect with consumers, distributors, suppliers, and other manufacturing firms. In addition, more so than in many industries, the rules and practices of beverage alcohol reflect their role as both economic agents and social actors with the potential for negative externalities, forcing brewers to contend with the potential for social consequences in their economic and political actions. Simultaneously balancing such a diverse network of potential allies and adversaries poses challenges while providing opportunities for coalition building.

Coalitions are critical for small brewers because they are new economic agents. Brewery entrants, like any new economic group, tend to provoke social and political responses. Unlike many industries, however, essentially every brewery in the United States is a recent entrant, with roughly 98% of active firms having been founding since 1980. Predictably, as the increasing numbers of small brewers disputed past social and economic arrangements, political opposition has formed from other economic groups—namely, distributors and retailers—who often perceive themselves as losers in these transformations as brewers gain rights previously held exclusively by distributors or retailers. In turn, brewers were forced to form coalitions to solve social and political coordination challenges.

Although pains can be made to separate the effect of coalitions on firm strategies and political processes, these twin variables are inherently linked. Whether the interaction between these political processes and the positions of economic actors is conceptualized as learning (Heclo 1974; Rose 1990), increasing returns (David 1985) coordination (Pierson 2000), or positive feedback (Huber and Stephens 2001) the constant is the coalitional channels that pushed both economic actors and political processes down nationally specific pathways.

Each national political formation can be linked to firm strategies and broader economic outcomes. Conceptually, the link between coalitions and retail firm strategy may perhaps be seen best through Oliver Williamson's (1983) "markets and hierarchies" dilemma (i.e., make, buy, or partner?). However, even a cursory review the complex interplay between politics and firm strategies in brewing clearly highlights that firm decisions go beyond simple transaction costs analysis.

Consider for example the relationship between brewers and distributors. The "make-buy" decision of a brewer in relation to distribution is structured by a combination of economics, the political rules of the game, the strength of both groups within a particular geographic region, as well as a longer term relationship that can be conceptualized as an iterated game. Brewers must make decisions knowing that those decisions may enable or limit future distribution decisions. Brewers may or may not have the right to self-distribute their own beers. If they do, they have a simple "make-buy" decision. If not, they can seek to change the law to allow self-distribution. But, in doing so, they may limit their ability to later "buy" through angering the incumbent beer distributors.

Consequently, rather than looking at brewer strategies as reflecting society-specific solutions to problems of economic coordination, the emphasis shifts to spotlight how firms solve economic problems jointly with political coordination problems such as the threat of further regulation or economic partner pushback. Conceptualizing this process in terms of political coalitions provides a compelling mechanism not only the formation of firm interests, but also firm decisions about how to organize economy activity.

The form and function of each coalition creates wider economic and political ripples. First, the coalitions condition subsequent state-specific patterns of business strategy by altering the way brewers operated within their unique regulatory environment, and by their relationship to economic partners, pushing the balance of firm decisions in favor of cooperation or competition. In addition, building and maintaining successful coalitions not only forged economic partnerships, it also shaped ongoing regulatory strategies for state brewing sectors, based on how economic gains were distributed, and in turn, how those resources and market successes allowed further regulatory evolution.

This last point is key to the causal mechanism, since the interaction of business success from entrants becomes a self-fulfilling cycle when interacted with ongoing political action. States where breweries were successful saw them gain resources to further improve their regulatory standing, whereas states where brewers faced an uphill battle as entrants continued to see the balance of power tilt in favor of existing actors, namely, distributors and retailers. Although retailer power varied wildly by state, as regulatory factors are heavily influential toward the shape of beverage alcohol retail, we can conceptualize distributor power as roughly similar across states. All states had a distributor tier, and one that carried the vast majority of beer volume. Although using an independent distributor was not universally mandated, prior to the emergence of small brewers, 90% + of all beer

volumes flowed through independent distributors.[6] Consequently, distributor economic power was more or less evenly distributed across states, and while political power is not synonymous with economic power, they are highly related.[7]

Regulatory Trajectories of Small Brewing

If we re-wind to 1980 (or for that matter to the immediate post-Prohibition era), there existed variations in the rules surrounding the production, distribution and retailing of beer. These broadly can be placed in a variety of buckets, including excise taxes, limits, or controls on the ABV of beer, franchise laws, self-distribution laws, tied house laws, rules on slotting fees and "things of value", and retailing laws, concerning days, hours, and the structure of retailers themselves (license limits, either for individual retailers, or the state as a whole). In addition, the state itself played a role as a distributor or retailer of beverage alcohol in some states.

What is not included above are two categories of rules that are essential to the small brewer story. The first is direct sale laws. These fall broadly under tied house laws, and often represent exemptions to those statutes. Tied house rules, those governing the relationship between producers and retailers, stem back to the post-prohibition era, when ending the "tied house" system of producer ownership of retailing was a key goal. One of the abuses cited in the run-up to Prohibition was the "pushing" of alcohol by large out-of-state producers into small retailers that they controlled, either through direct ownership or other means, such as "things of value" (for example, buying the draught system in return for an exclusive contract).

Returning to the 1980s, across the country, the direct sale of beer at the place of production was illegal. That eliminated not only the popular tasting room model many production breweries utilize today, but also brewpubs. The first brewpub since Prohibition, Yakima Brewing and Malting, actually opened prior to the legalization of brewpubs, and operated by flying under the regulatory radar.[8]

The second is more general small brewer specific rules, including excise tax reductions, carve outs, exemptions, or specific license classes. Today, these rules are essential for many small brewers, as they offer license privileges unavailable to large brewery producers. In an era without small brewers, these did not exist, because there was no reason for them to. All producers looked the same; they were large, manufacturing facilities. If we look across the 50 states today, this broad category covers nearly every type of rule mentioned above, with a few exceptions (for example, rules governing retail competition typically apply to all brewers, regardless of size).

It is through these two sets of rules that we can see the mechanism of small brewer coalitional channels in action. In states where small brewers emerged, due to greater regulatory opportunity, variations in consumer demand, and sheer force of entrepreneurial will, these two sets of rules quickly offered an opportunity for brewers to turn into political actors and create new economic opportunities to sustain their businesses.

They also have longer turn implications. Consider brewpub laws. Today, brewpubs represent approximately one-third of all the breweries in the country, a ratio that has been declining steadily as the popularity of the small, microbrewery model increases in popularity.[9] Without historical context, one might be tempted to believe that brewpub laws are not a critical factor in brewery density, other than that they tend to overlap with an overall market access friendly environment. When looking at the longer trajectory, however, they provide a perfect example to illustrate this chapter's argument.

The first 10 states to legalize brewpubs today have an average of 5.7 brewing licenses per 100,000 21+ adults versus 2.8 in the 41 states (and D.C.) which followed (all 50 states now allow brewpubs, with Mississippi being the final state to allow them in 1999).[10] In addition, we can see the self-perpetuating logic in play in how those ten states moved to the front of the regulatory timeline. The map below shows brewpub legalization dates by state (Fig. 16.4).

The majority of these reforms were lobbied for not by potential new brewpub entrants, but by existing breweries looking to expand their business options. In Oregon, the push was led by two small production breweries: Widmer Brewing Co. and Bridgeport Brewing Co.[11] Similarly, in California, Assembly Bill 3610, which legalized brewpubs, was similarly lobbied for by Anchor Brewing Co. and New Albion Brewing Co, two existing production breweries.

[6]The remaining 10% would be volume that was directly owned by large brewers. These distributors, known as "branches" currently represent slightly less than 10% of the Anheuser-Busch volume, and far less of the Miller-Coors network. Miller historically had no branches, whereas Coors has long had a single branch in Colorado.

[7]Variations in political power would be caused by a variety of factors, including political structure, consolidation in the distribution market, state limits on campaign contributions, and the overlap of distributor territories and political districts.

[8]See All About Beer (2015).

[9]Microbreweries are defined as small production breweries, often with some percentage of direct-to-consumer at the brewery sales. See Watson (2014) for more on this shift.

[10]This is an average of the state averages rather than weighted by population. This measure was chosen so that States like California do not pull the average heavily. Given that the unit of the analysis is the state, this also makes sense analytically. Weight by population the 10 states continue to have more brewery licenses, though the gap is smaller.

[11]See PDX Monthly (2015).

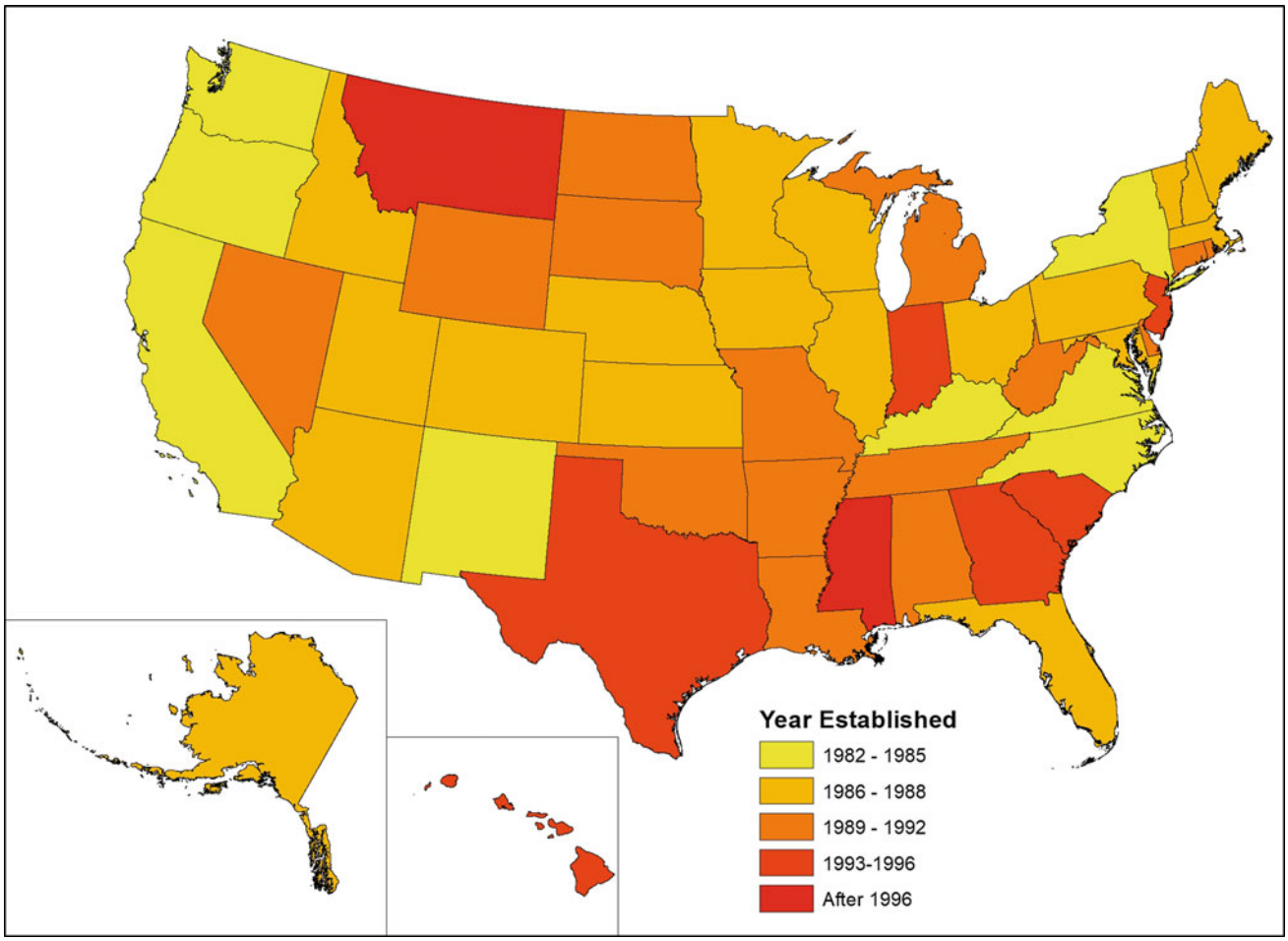

Fig. 16.4 Brewpub Legalization by State. *Source data* Elzinga et al. (2015)

Looking in the opposite direction, Mississippi, the last state to legalize brewpubs, had no breweries until 1999, when Coast Brewing opened.[12] Although Mississippi certainly exhibits nearly every potential independent variable pushing against brewery growth (and for years had a strict alcohol by volume [A.B.V.] cap on what strength beers were legal to produce), the lack of brewers meant no one to lobby for changes to these rules, as we saw in other states.

Similarly, small brewer license types and additional privileges or carve outs for small brewers often evolved only after these brewers existed, not before. It is worth noting that many of the changes benefiting small brewers have occurred as re-interpreted regulation rather than formal legal changes. Many of the laws written to cover beverage alcohol were written in a very different economic era, before the existence of small producers, and so state alcohol regulators often have great leeway to make significant reforms without going through formal legal processes. These changes have benefited brewers as much as formal changes, and often provide an easier path to reform given the high number of veto points in most American states.

California is the clear example of how having existing small brewers can provide advantages for future growth. Anchor Brewing Co., arguably the first of the new crop of small American breweries due to their decision to reformulate to all-malt brewing in the 1970s, already had carved out a special license in the State for producers under 60,000 barrels. As other small brewers emerged, this "Steam" beer license was easily expanded to other small manufacturing producers (see Alcoholic Beverage Consulting Service).

Future Junctures

Although this chapter has focused heavily on how political coalitions and power relations in brewing create state trajectories that have proved remarkably durable over time, in closing, it is worth asking whether these historical

[12]See American Craft Beer (2016). Coast Brewing was located in Biloxi at the Beau Rivage Casino Resort. It closed after being severely damaged by Hurricane Katrina in 2005.

geographic patterns may unravel going forward. There are three primary reasons that this may be a possibility: convergence and change in consumer preferences across locations, concerted state action, and pushback by other political and economic interests.

Let us begin with the former: consumer preferences. One reason that particular states have leapt forward in their density of brewing firms is first mover advantages. Because the United States experienced a dramatic shift in consumer preferences toward variety and fuller-flavor in the beer market, states with more breweries were well-positioned to expand their market places as consumers in less brewery-dense market environments had demands that exceeded local supply capabilities. In addition, early movers often created more competitive local market environments, raising the quality of their offerings and in doing so increasing their export advantages. Early movers also received smaller market benefits, such as an increased likelihood of becoming a tourist destination.

However, these conditions may be receding, for several reasons. The first is consumer demand driven: a growing preference for local as a demand element of beer producers. Recent research by Nielsen (2019) suggested that over 2/3 of craft purchasers consider local to be an important part of their purchase decision. That ratio rises even higher (to 71%) among 21–34-year-old consumers, a key demographic both in the overall beer market and within craft. This demand for local has a strong effect on competition in local markets. Local demand counterbalances the advantages of first movers outside specific geographic areas, since they are (generally) unable to offer products that tap into this desire for local. In addition, it may temper the quality advantages of producers in more competitive market, since some consumers may value local more highly than quality in their utility functions.

The second reason is that as market growth slows and brewery growth continues across all geographies—albeit at varying rates—laggard states may begin seeing their production capacity catch up with consumer demand, thus reducing the export opportunities for leading states. Taken together, these two factors mean that what was once an advantage—the ability to ship products to underserved markets—becomes a potential liability for producers in leading states. Suddenly they face an uphill battle to export, and in doing so may become less efficient producers if they are unable to use the capacity that was built with exports in mind. It would be particularly interesting to study the geographic nature of this catch up. Do laggard states that are in closer geographic proximity to leaders see different trajectories than laggards clustered with other laggards?

Beyond changing consumer preferences, there is another actor who could play a role in shaping future firm decisions about whether to enter the market and if so, where to locate: the state itself. Although this chapter has largely treated states as passive actors to be lobbied to by market actors and consumers, states are also active players in the political process, with politicians and regulatory officials making their own decisions about how to act, independent of interest groups. Although brewing has largely been too small a sector to garner heavy state interest, increasingly there are signs that political actors in many states that have fallen behind the curve may make concerted efforts to catch up. Although there is no reason to expect any advantages of economic backwardness (Gerschenkron 1962), these concerted state actions may reduce the disadvantages of being behind the curve. The clearest example of what these actions may look like come from two states: Virginia and North Carolina.

In both states, conscious regulatory reform has been combined with state industrial policy in the form of promotion and direct subsidies for breweries looking to build second facilities. North Carolina started its changes in 2005 with legislation that raised the allowable ABV in malt beverages from six percent to fifteen percent.[13] Additional legalization allowing malt beverage special event and tasting permits, direct onsite sales for producers over 25,000 barrels, and the ability to repurchase distribution rights followed in 2009, 2011, and 2012, respectively. Similarly, Virginia gave production breweries direct sale rights in 2012, created a new license type and opportunities for farm breweries in 2014.[14]

In many ways, these states follow the logic seen across the country. As small brewers emerged, they lobbied state governments and won additional market freedoms. What differentiates both is how active the state has been as a player. Virginia has played an active role in wooing West Coast breweries looking for second locations, including providing development subsidies and tax breaks.[15] North Carolina has made similar moves, and the 2011 changes were broadly seen as a move courting Stone Brewing Co. They are not alone—a bill to allow production breweries to sell pints in South Carolina become colloquially known as the "Stone Bill".[16] These types of concerted state actions go beyond the logic outlined throughout this chapter, and if states continue to actively use industrial policy tools to develop their brewing sectors, it could certainly upset longer term trajectories. Why those states in particular have chosen to be particularly aggressive in reform is an area that may be fruitful to study, and may have geographic dimensions as well as political.

[13]See CED (2012) and Williams (2017).
[14]See Northern Virginia Mag (2014).
[15]See U.S. News (2014).
[16]See Beers of SC (2014).

Finally, this entire chapter has focused on the ability of small brewers to defend their interests and expand their economic opportunities through political action. As they expand those opportunities, they may begin to infringe on the economic interests of other groups, who also have political power. Distributors as a force for a control logic have been previously discussed. Less time has been spent on retailers. As brewers gain retailer privileges, there is an increasing possibility that retailers will push back on activities they see as infringing on their own economic opportunities. There are clear signs of this occurring in a variety of locations.[17] Most importantly for this piece, political pushback is most likely to occur precisely where brewery density is the highest. This has the possibility to create a political logic that runs counter to the path-dependent logic described in this chapter. At this time, there is little to no evidence that retailer pushback has curtailed brewery growth in leading markets, but it is a topic that is worth noting for future turns of the regulatory cycle.[18]

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[17] See Press Herald (2016) and Herald Tribune (2013).

[18] Over the longer run, the logic of market freedom and control will be governed by a variety of factors. One in particular is the percentage of Americans who are 21+, and the percentage of children. It is not coincidental that the turn toward additional market freedoms for beverage alcohol producers has occurred in an era when the median age has steadily risen along with the percentage of the population who is 21+. As the millennials begin having children and the percentage declines, there is the distinct possibility that State regulators will respond to increased consumer demand for greater control over beverage alcohol.

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