Population Research and Policy Review (2020) 39:465–491
https://doi.org/10.1007/s11113-019-09540-3

ORIGINAL RESEARCH

The Spatial Integration of Immigrants in Europe: A Cross-National Study

Daniel T. Lichter[1] · **Domenico Parisi**[2] · **Shrinidhi Ambinakudige**[3]

Received: 17 December 2018 / Accepted: 27 July 2019 / Published online: 6 August 2019

Abstract

Throughout much of Europe, new waves of immigration have raised concerns about cultural fragmentation and disunity, interethnic conflict, and growing antipathy toward immigrants. Our goal is to provide evidence of uneven patterns of immigrant population distribution and residential integration, both within and between countries of the European Union. Our analyses focus on the spatial concentration of the foreign-born population in 27 countries and 1396 sub-regional areal units (called NUTS3), which in turn are nested within larger economic and cultural regions (i.e., NUTS2). Estimates of new forms of multiscale segregation (i.e., using the index of dissimilarity) are calculated from data drawn from Eurostat and a variety of other sources. Descriptive multivariate models of population concentration or macro-segregation center on key economic (i.e., GDP per capita), social (i.e., education), and ecological (i.e., urbanization) predictors of segregation within and between European countries. New forms of spatial segregation are expressed demographically in substantial regional heterogeneity among immigrants throughout Europe. Multivariate analyses indicate that immigrant-native patterns of population concentration and distribution vary widely between and within European countries with very different economies, demographic conditions, and histories of immigration. In almost all European countries, immigrants from outside of Europe are less spatially integrated with the native population than are immigrants from other countries within Europe. Differences in immigrant-native spatial integration are clearly reflected in the large numbers of immigrant regional "hot spots," which are driven by public policy and idiosyncratic political considerations at the national and regional levels. Our comparative approach provides an overview of country-to-country differences in European immigrant settlement patterns and multiscale patterns of integration and segregation.

Keywords Immigration · Integration · Europe · Segregation · Population Redistribution

✉ Daniel T. Lichter
dtl28@cornell.edu

Extended author information available on the last page of the article

Introduction

The uneven spatial distribution of immigrant and minority populations provides a useful summary indicator of social and economic integration and inclusion in modern societies (Alba and Foner 2015; Musterd 2005; Phillips 2013). Throughout much of Europe, new waves of immigration have raised concerns about cultural fragmentation and disunity, interethnic conflict, and growing antipathy toward immigrants (Goldstein and Kluge 2016; Koopmans 2013; McAreavey 2017). Coleman (2006) even refers to the growth of ethnic minorities as evidence of a Third Demographic Transition, where rapid immigration has occurred in tandem with below-replacement fertility among native-born populations. Now is an especially propitious time to re-evaluate recent patterns of population redistribution and concentration among immigrant populations and the prospect for spatial and social integration. Whether new ethnic minority populations are now integrating into the social and economic fabric of European society is far from clear (Cassiers and Kesteloot 2012; Malmberg et al. 2013; Semyonov and Glikman 2008).

In this paper, our singular goal is to provide up-to-date comparative evidence of uneven patterns of population distribution—at multiple levels of geography—among immigrants and natives within and between European countries. Previous studies have typically focused narrowly on micro- or neighborhood residential integration within specific metropolitan areas or big cities in a single country or small number of countries, even as new research suggests the emergence of new kinds of multiscale segregation between regions, states, counties, cities, and even rural communities (Costa and de Valk 2018; Kwon and Kposowa 2017; Lichter et al. 2015; Winders 2014). Previous studies usually focus on neighborhood residential segregation, but minority population redistribution and spatial concentration (e.g., in the form of ethnic enclaves or new immigrant destinations) also suggest physical and social separation from the mainstream majority or native-born population. Spatial integration at multiple levels of geography reflects and reinforces social, cultural, and economic integration and incorporation (Alba and Foner 2015; Andersson et al. 2018a; Lichter 2013). It is a key to better understanding integration more generally.

This paper focuses needed attention on arguably the most important axis of minority spatial differentiation in Europe: Nativity status. The Population Division of the United Nations documented the arrival between 2010 and 2015 of 4.1 million new immigrants into Europe, offsetting emigration from Southern Europe (United Nations 2016; see Bijak et al. 2013). The number of foreign-born residents has swelled, even in parts of Eastern Europe, as a result of political unrest, sectarian violence, and civil war in Syria, Eritrea, Iraq, and Afghanistan, among other developing countries. Europe's refugee and immigrant populations face geographical and cultural isolation from the native-born population. This raises new questions about societal cohesion or fragmentation, especially with the ascendency of nativism and anti-immigrant sentiment throughout much of Europe (Semyonov et al. 2006). European immigrants are increasingly heterogeneous on

a number of salient dimensions: Socioeconomic status (i.e., income, education, and occupational skills), religion (e.g., Muslim or Christian), race and ethnicity (i.e., the racialization of immigrant minorities), and national origin (e.g., non-Western populations originating from Asia, Africa, or other parts of the so-called Global South with colonial histories). Current and past immigration and growing cultural and ethnic diversity are highly interrelated (Sáenz et al. 2015). Placing the spotlight on Europe's foreign-born population serves to identify (in a uniform way) the so-called "other," while uncovering emerging patterns of integration or spatial separation from native-born populations.

Our goal is to document immigrant-native differences in European population concentration and spatial segregation at several levels of geography. Our analyses focus on the changing spatial distribution of the foreign-born population in 27 European countries (mostly from the European Union) and 1396 sub-regional or county units (called NUTS3), which in turn are nested within larger economic and cultural regions (i.e., NUTS2).[1] Specially, we first provide up-to-date comparative estimates of population concentration in Europe during the current period of growing ethnic diversity. Our estimates of new forms of *macro-segregation* (i.e., based on immigrant and native settlement patterns between regional or sub-regional units) are calculated from data drawn mostly from Eurostat. Second, we provide evidence of substantial heterogeneity in the spatial distribution of immigrants throughout Europe, which is driven, at least in part, by the uneven spatial distribution of different national origin groups. Patterns of immigrant-native population redistribution at the macro-scale level are now being transformed in unpredictable ways by new immigration from around the world. Third, we fit several descriptive multivariate models of population concentration or segregation that include key economic (i.e., GDP per capita), social (i.e., education), and ecological (i.e., urbanization) predictors of segregation within and between European countries. We also consider key indicators of the policy context of spatial integration (based on the *Migrant Integration Policy Index* (MIPEX)). Our fundamental goal is to provide, subject to data availability, an up-to-date and comprehensive comparative demographic portrait of recent immigrant settlement patterns in Europe.

Background

European Immigrant Settlement Patterns

Beginning with the Schengen Agreement in 1985, the free movement of Europeans throughout much of the continent has been made easier by eliminating or easing border checks and visa requirements while still imposing controls on movement into and out of much of Europe itself (i.e., the Schengen Area). Incipient native depopulation and natural decrease, in turn, have created labor shortages and new demands

[1] In 2018, there are 28 EU member states, which now includes the Republic of Cyprus, the mainly Greek Cypriot part of the island of Cyprus.

for immigrant workers (e.g., the Poles in Northern Ireland or Moroccans in the Netherlands). Transnational migration has accelerated globally. The European Union has been reshaped by the unprecedented South-to-North and East-to-West movement of workers benefiting from guest worker programs (e.g., the Turks in Germany) and the rapid growth of new immigrant groups from former European colonies. For example, France (especially in the Paris region) is now home to large immigrant populations from outside of Europe, often from ex-colonies in Northern Africa, West Africa, and Indochina. Since the late 1990s, net immigration in England also has spiked upward, with large influxes of low-skill workers from Eastern Europe (e.g., Poland, Bulgaria, and Romania) and other non-citizens originating from outside of Europe. Europe has been on the frontline of new growth from refugee and displaced populations outside of Europe. Some estimates indicate that Germany, for example, accepted more than 1 million new Syrian refugees in 2015 alone.

Recent immigration debates have been roiled by Brexit, the rightward shift in politics, and the rise of nativism across the European continent. A recently released report by Eurostat indicates that 3.8 million people immigrated to one of the EU member states during 2014 (Eurostat 2018a). Of these, 1.6 million were citizens of non-member countries, and another 1.3 million were citizens from a different EU member state. Nearly 1 million immigrants returned to a country in which they were citizens (Eurostat 2018a). Only about 12,000 were so-called stateless people, presumably asylum seekers or refugees. Among new immigrants moving from non-member states, most originated from outside of Europe rather than from non-member states within Europe. Germany received the largest number of new immigrants (885,000), followed by the United Kingdom (632,000), and France (340,000). Only slightly more than one-half of the member states (i.e., 15 of the 28 EU countries) experienced more immigration than emigration. Emigration was highest in Spain (400,000), but this number was offset by substantial new population immigration (306,000).[2] Bulgaria, Ireland, Greece, Croatia, Cyprus, Poland, Portugal, Romania, Slovenia, and the three Baltic member states also had more emigrants in 2014 than immigrants. Many high-immigration countries—such as Germany or France—also had large numbers of outmigration (reflecting circular and onward migration) but at levels insufficient to make them a net exporter of population. These figures also clearly highlight population shifts away from Southern and Eastern Europe to the more economically prosperous European countries in the North and West (Eurostat 2018a).

Of course, highly aggregated statistics often mask other more-nuanced evidence of the changing settlement patterns of foreign-born populations across the European continent. At the beginning of 2015, 34.3 million immigrants were born outside of EU's member state countries, of which the majority—18.5 million persons or 54 percent—were born in a different member state (Eurostat 2018b). They represent

[2] For Spain, newly released but unpublished data for 2017 indicate that a resurgence of new immigration (532,000) has now offset high levels of emigration (369,000). Although less dramatic, Greece similarly shifted from a net exporter to a net importer of population, largely due to a substantial surge of new immigration between 2014 and 2017 (305,000 to 532,000).

transnational migrants within the European Union. The majority of the foreign-born population arrived from outside EU member states in only five countries (Hungary, Ireland, Luxembourg, Slovakia, and Cyprus). The immigrant population of countries that are not members of the EU28 (Iceland, Lichtenstein, Norway, and Switzerland) also mostly drew its foreign-born populations from EU28 countries.[3] The foreign-born population of Switzerland, for example, represented 27.4 percent of its overall population (among the highest such proportions in Europe), and most of this foreign-born population (16.6 percent overall) came from EU28 countries (Eurostat 2018a). Switzerland, of course, is an unusual case. It is not an EU member but high levels of immigration from other European countries suggest a high level of economic integration with the EU. In the case of the small country of Lichtenstein, the immigrant population is now the majority (i.e., 63 percent), mostly originating from outside of Europe. Immigration from around the world is the lifeblood of Lichtenstein's economy.

Multiscale Population Distribution of Immigrants

The growing diversity of immigration across Europe is clearly reflected in country-to-country differences in the absolute and relative sizes of immigrant populations, the national origin of immigrants from the European Union or other European countries, the uneven regional distribution of immigrants across Europe (i.e., North/West vs. South/East), and, lastly, the motivations of different immigrant populations (i.e., refugees or asylum seekers vs. economic migrants seeking a better life). Such diversity is also expressed differently *within* countries, in the uneven spatial distribution of immigrants across cities and the countryside, between economic core and periphery regions, and between established immigrant gateways and new or emerging immigrant destinations. Narrowly framed conceptualizations and analyses of immigrant-native residential segregation within European cities or metropolitan regions arguably hide newly emerging patterns of macro-segregation at other spatial scales. This is a clear lesson from recent research on residential segregation in the United States (Fowler et al. 2016; Lee et al. 2008; Lichter et al. 2012).

Unfortunately, country-to-country differences in data collection and measurement (including alternative definitions of ethnic and national identification), different indicators of immigrant status (e.g., first- and second-generation status or citizenship), and widely divergent geographic scales of analyses make straightforward comparisons of immigrant spatial integration difficult (Iceland 2014; Lichter et al. 2016). Previous studies have for the most part centered on neighborhood-to-neighborhood differences in immigrant residence patterns within a single city (Bråmå 2008; Fahey and Fanning 2010; Maloutas 2007). Other studies compare

[3] The "immigrant population" is defined differently across populations, sometimes restricted to the first generation and other times not (i.e., including the children of the foreign-born). In some cases, the immigrant population, regardless of generation, are never provided a legal avenue to citizenship and remain part of the official immigrant population. The immigrant population clearly is a social construction, which we cannot address fully in this paper using official counts from Eurostat based on reports of member EU nations.

neighborhood segregation between several cities within a single country (Marcinczak et al. 2012; Sager 2012; Pan Ké Shon and Verdugo 2015), or focus on a small number of cities in countries in close proximity to each other or that share common cultural or economic characteristics (Arbaci 2007; Skifter Andersen et al. 2016). Still others have provided general descriptive summaries of international city-specific studies of the uneven spatial distribution of minorities across neighborhoods (Iceland 2014; Massey 2016; Musterd 2005). The settlement of immigrants in new rural destinations or small towns, at least until recently (Fonseca 2008; McAreavey and Argent 2018), was typically ignored altogether. Under the circumstances, it is not surprising that the current literature is often inchoate and difficult to neatly summarize in light of the current widespread upheaval in the spatial distribution of different population groups, disparate contexts of immigrant reception, and varying immigrant integration policies (e.g., acquisition of citizenship or receptivity to asylum seekers) across the continent.

Residential integration and its opposing spatial counterpart—segregation—arguably exist along a spatial continuum that reflects population processes that are expressed unevenly from the micro- to macro-scale level. Macro-segregation is defined at higher scales of geography (i.e., between regions, cities, suburbs, and rural communities) and reflects on-going political and economic processes. Indeed, the "political economy of place" is represented in local politics and political decision-making, including local funding of schools (and other local or regional priorities, including roads and public services), zoning ordinances, and receptivity to immigrant populations and ethnic groups. The geographic scale of macro-segregation can also be measured by outwardly radiating distances from ego-hoods (e.g., Andersson et al. 2018a; Lee et al. 2008, Östh et al. 2015) or, more recently, by administrative or legal units (e.g., municipalities) that can impose restrictions on immigrant in-migration or on factors, such as income or housing (e.g., the availability of affordable or social housing), which are overrepresented among immigrant populations (Lichter et al. 2015). Such exclusionary policies seemingly are most likely to target non-European immigrants and refugee populations.

In summarizing global patterns of segregation, Massey (2016) has argued that recent residential segregation levels have converged between the United States and Europe—decreasing in the United States and increasing throughout much of Europe. But blanket generalizations of current patterns require a cautious reading of the empirical evidence, especially if the uneven distribution of immigrant minorities is expressed differently at multiple spatial scales (e.g., macro- rather than micro-segregation). In the United States, for example, a recent study by Parisi et al. (2011) showed that nearly one-half of all black-white segregation nationally was located in differences *between* higher-level spatial units (i.e., regions, counties, and places) rather than *within* conventional spatial units (e.g., neighborhood differences within places). Moreover, white–non-white macro-segregation has seemingly increased over the past two decades as a percentage of all metropolitan segregation, at least as measured using conventional methods of decomposition based on the Theil index (Lichter et al. 2015; Parisi et al. 2015). Macro-segregation is a dimension of multiscale segregation that requires additional attention in light of new immigration patterns across Europe.

In Europe, macro-segregation is revealed, first and foremost, in large observed country-to-country differences in new influxes of immigrant populations, which presumably reflects differences in receptivity to immigration.[4] Among Nordic countries, for example, Denmark has highly restrictive immigration policies, expressing growing antipathy toward immigrants, especially refugees seeking asylum. This contrasts with Sweden, or even Norway, where the shares of immigrants—including immigrants from the Middle East—have ticked upward over the past decade or so.

The demographic, economic, and cultural impacts of uneven settlement patterns from country-to-country in Europe also are exacerbated by the uneven distribution of immigrants *within* countries—across regions and sub-regions (e.g., metropolitan regions or other periphery or outlying rural areas). Immigrants and different nationality groups are distributed unevenly across municipalities with industrial and employment bases that demand different mixes of high- and low-skilled labor. In France, the Muslim population is distributed unevenly over different metropolitan regions, with comparatively high percentages of Muslims (mostly but not exclusively foreign-born) in Paris and Marseille (Hackett 2016). Indeed, Paris has the largest Muslim population in Europe, but Muslims are not evenly distributed among the various suburban municipalities that make up the broader Paris metropolitan region (e.g., Seine-Saint-Denis). In Sweden, Malmo is recognized as a new immigrant destination of Muslims but also of immigrants from southern Europe and Sub-Saharan Africa (e.g., Somalis).

Uneven immigrant settlement patterns also are evident across rural periphery regions. In Italy, for example, immigrants work in large numbers in the hospitality industry in the Lake Como region while immigrants from economically depressed areas of Eastern Europe and North Africa tend to the Barolo and Nebbiolo grapes in the Piedmont region outside of Turin and Alba. Inter-regional immigrant population concentration and segregation is seemingly commonplace throughout both urban and rural regions of Europe but rarely studied or measured in a geographically inclusive or comprehensive way. This argues for a broader geographic perspective of residential segregation, one that acknowledges the uneven distribution of immigrant population at different spatial scales and seeks to better understand the etiology of new regional or sub-regional immigrant destinations (i.e., immigrant "hotspots").

The Policy Context of Immigrant Reception in Europe

This paper starts with a simple working assumption: Minority population concentration in the form of immigrant segregation is a singular indicator of immigrant integration.[5] We provide baseline estimates of multiscale segregation and integration

[4] In the United States, there have been recent efforts to calculate measures of the uneven distribution of racial or immigrant segregation across states, recognizing that different state policy and economic climates provide different contexts of reception for marginalized populations (Condon et al. 2016; Huo et al. 2018).

[5] Immigrant integration can be based on many other kinds of social, cultural, and economic indicators, such as language, educational attainment, and earnings. For our purposes, spatial integration is viewed as the end-product of growing economic and political integration, which is taken here to mean that immigrant and natives are becoming more alike on conventional indicators of socioeconomic status. This in turn provides a new freedom of residential mobility from segregated ethnic communities and enclaves (Waters et al. 2015).

across 27 European countries, focusing in particular on macro-segregation. But another important goal is to identify key demographic and public policy indicators that may account for spatial disparities in immigrant integration at a time of massive new immigration in Europe. The context of reception shapes integration, as measured by uneven spatial integration or segregation at various spatial scales. This point is stated plainly but eloquently by Bolt et al. (2010): "The integration pathway not only depends on the characteristics of migrants themselves, but also on the reactions of the institutions and the population of the receiving society."

To be sure, no short introduction to an empirical research article can do full justice to the historical social and political complexities across countries which have contributed to uneven immigrant settlement patterns across Europe (Koopmans 2013). At a minimum, understanding the uneven spatial distribution of immigrants across regions and sub-regions—both from Europe and outside of Europe—requires explanations that acknowledge the role of country-specific public policies, uneven levels of regional economic development (i.e., at the NUTS2 level), and widely disparate demographic conditions, as well as other regional and county economic and demographic conditions that make specific areas of immigration more or less attractive as destinations in each country.

For example, the integration of immigrants, as measured by residential segregation, may be influenced by the eligibility and generosity of the welfare state system, by housing market regulations and social housing that either segregates or disperses immigrant ethnic populations, by the receptivity and treatment of undocumented workers or refugee populations. The colonial histories of some countries (e.g., British, Dutch, and French) also have implications for the receptivity of different national origin groups, especially those who originated outside of Europe (e.g., Asian Indians or Bangladeshis in Great Britain, or the Turks in Germany). For our purposes, such policies are measured, albeit crudely, using the *Migrant Integration Policy Index* (Niessen et al. 2007; MIPEX 2017). As we describe in the next section, MIPEX measures 167 specific policies aimed at integrating immigrants in 38 specific high-income countries, including all EU Member States, as well as Norway, Switzerland, and Turkey. These measures serve a useful analytical purpose, which is to better understand the policy context of immigrant reception and segregation, both within and between European countries.

Methods

Data and Spatial Units

Our analyses are primarily based on Eurostat 2011 census data (Eurostat 2018a), which provides information on to the stock of immigrants and natives and their geographic dispersion both between and within European countries.[6] Our analysis of

[6] We recognize that the 2011 Census data have been supplanted by new Census data for some EU countries. Unfortunately, it is not currently possible to harmonize these new data because of boundary changes in the spatial units that define our regional and sub-regional units (see our discussion of NUTS units). For additional background information, see https://ec.europa.eu/eurostat/web/nuts/history.

multiscale segregation is based on three different scales of geography. First, we use 27 European countries to examine the spatial distribution of immigrant populations (originated both from within and outside of Europe) and the extent which to they are spatially concentrated or segregated residentially.

Second, we examine specific regions within countries to account for intra-country variation in the uneven spatial distribution of natives from immigrants. Regions are defined using Nomenclature of Territorial Units for Statistics (NUTS), which, according to Johnson et al. (2015, p. 655), take into account "existing geographic and political divisions in each European country to produce standard spatial units that permit cross-national comparisons." For example, in Italy, NUTS2 perfectly delineates 21 regions. Each region has its own political and economic environment that can favor the integration or isolation of immigrants. As such, NUTS2 units are useful for examining regional variation in the spatial integration of immigrant populations.

Third, and finally, we use sub-regional areal (or "county") units as the accounting units for the concentration or dispersal of immigrants and the computation of segregation of natives from immigrants. According the Eurostat guidelines (Eurostat 2018b), these sub-regional units are delineated by NUTS3 and range in size from 150,000 to 800,000 in population. In Italy, for example, NUTS3 typically delineate specific provinces or small metropolitan areas. These are the smallest geographic units available for comparative spatial analyses of the kind reported in this paper. Importantly, NUTS3 are perfectly nested within NUTS2, which, in turn, are perfectly nested within-country boundaries. NUTS do not represent geopolitical units, but instead represent demographic containers that are designed for conducting comparative analysis across European countries.[7]

Measuring Multiscale Segregation

For our purposes, segregation levels are measured using the index of dissimilarity (D), which is the workhorse of segregation analyses in the United States and Europe. The index of dissimilarity, D_t, is defined as

$$D_t = {}^1\!/_2 \sum_{i=1}^{k} |n_{it} - m_{it}|,$$

where n_{it} and m_{it} are the respective percentages of the native and minority populations residing in sub-regional areal units (NUTS3) i at time t. This index is based on pairwise comparisons and varies from 0 (no segregation) to 100 (complete segregation). D indicates the percentage of natives or foreign-born who would have to move to other sub-regional areal units (NUTS3) to achieve parity between natives

[7] The NUTS3 regions are simply statistical geographies, aggregations of smaller units, by Eurostat in association with National Statistical Office to create a hierarchy of regions across European countries that can be compared. The methods used are not always transparent and critics sometimes worry that boundaries are subject to political manipulation in order to qualify for funding under EU's regional programs.

and minorities in their percentage distributions across all sub-regional areal units (NUTS3) within a given country or region within a country. For the purpose of this study, we used NUTS3 or counties as the accounting unit to compute two indices, one for each country as a whole and one for each region (NUTS2) within each country.[8]

Country and Regional Predictors

Country-specific data and regional indicators for our multivariate analyses of immigrant population concentration come from several different secondary sources. For example, country-level estimates of the foreign-born population are reported by the World Bank, based on 2012 estimates provided by the United Nations Population Division (World Bank 2018). These estimates, typically based on national censuses, refer to the stock of international immigrants, i.e., the number of people (including refugees) born in another country.[9] These baseline estimates are supplemented with data from Eurostat, which provides detailed regional and sub-regional information on the size and national origin of the foreign-born (immigrant) population. We expect that larger immigrant populations will provide a base for attracting additional immigrants through the usual processes of cumulative causation (Engbersen et al. 2016; Massey 1988; Palmer and Pytlikova 2015).

As a baseline, the World Bank National Accounting Data (2016) provide information on various country-level social and economic indicators. These indicators include Gross Domestic Product (GDP), which gages the size of a country's economy, which is expected to be positively associated with immigration. We expect this to be reflected in contemporary population flows from poor countries in the Global South to rich countries in the Global North. GDP is measured in U.S. dollars and is converted from domestic currencies using single-year official exchange rates.

We also hypothesize that country integration policies will shape the settlement patterns of different immigrant populations. As a baseline for future research, we consider county-specific policies included in the *Migrant Integration Policy Index* (Niessen et al. 2007; MIPEX 2017). Specifically, we used eight sub-scores on a scale of 0 to 100, where the higher the score, the higher the level of integration. One indicator, labeled *labor market mobility,* was used to measure workers' rights and opportunities for legal migrants. *Family reunion* for foreign citizens identified policies that provide rights to migrants to reunite with their families. *Education* was used to examine the policies that encourage children of immigrants to achieve and develop in school like the children of citizens. *Political participation* was used to examine the policies that determine the opportunities for legal-resident foreign

[8] The size of the spatial accounting unit is inversely associated with the size of D. The populations of larger spatial units are, by definition, more heterogeneous than smaller units, such as blocks or neighborhoods. This empirical regularity has been documented in the United States in a multiscale segregation study by (Massey et al. 2009).

[9] If information on the foreign-born population is unavailable, the United Nation's estimates the foreign-born population based on the size of the citizen population.

citizens to participate in the country's political process. *Permanent residence* examined the extent to which legal residents have facilitated access to a long-term residence permit. *Access to naturalization* was used to examine the extent to which legal immigrants are encouraged to naturalize, and whether their children were entitled to full citizenship. The *antidiscrimination* score gaged the effectiveness of legal protection from racial, ethnic, religious, and nationality discrimination in all areas of life. Finally, the *health* score was used to determine whether the health system is responsive to immigrant needs.

Following convention, our analysis also included several regional indicators (at the NUTS2 level). Population size is measured as the natural log of the population of a place (to account for skew in the size distribution of places). The percentage of the population aged 65 and older provides an indirect indicator of population vitality; chronic outmigration of young adults is linked to population aging and economic decline (Johnson and Lichter 2019). Economic conditions are measured using the regional unemployment rate and GDP-per-capita purchasing power (standardized in Euros). Education is measured as the percentage of people with less than a high school degree (reference category), a high school education, some college education, or a college degree or more. Industrial structure is measured as the percentage employed in each of the following sectors: Agriculture, manufacturing, construction, service, and government. We also include a measure of diversity using the three group entropy index: (1) native, (2) non-European immigrants, and (3) European immigrants. The index varies from 0 (least diverse) to 100 (most diverse). We expect that population diversity at the regional level is likely to attract new immigrants.

Results

Spatial Distribution of Immigrants across Europe

We start by highlighting the changing spatial distribution of the foreign-born population across the European continent over the 1960–2015 period. Specifically, the country maps in Fig. 1 show the changing numbers of the foreign-born populations in Europe. The uneven distribution of the immigrant population is illustrated here by shifts in the color of the maps—from light gray (low immigration) to dark gray (high immigration). More importantly, the numerical growth of foreign-born populations undoubtedly masks the on-going ethnic and cultural transformation of Europe during the recent period of below-replacement fertility of native-born populations and the changing national origin of new immigrant groups throughout Europe (Coleman 2006).

This substantive point is illustrated with the sub-regional areal unit (NUTS3 level) maps of the European and non-European immigrant populations in Europe. Figure 2 distinguishes these areal units by whether the percentage of immigrants is less than the overall European average of 9.88 percent, more than 9.88 but less than two times the European average (9.88–19.66%), and more than two times the

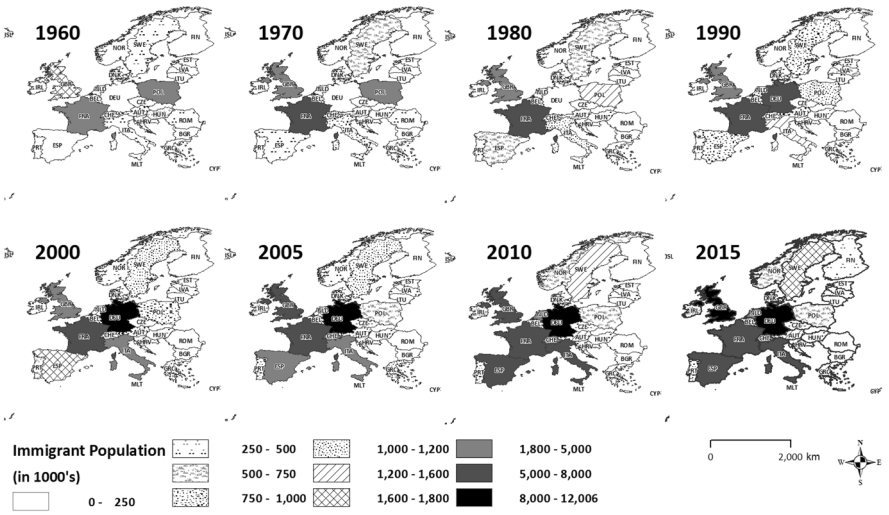

Fig. 1 Trends in migration flow in Europe 1960 – 2015. Source The World Bank

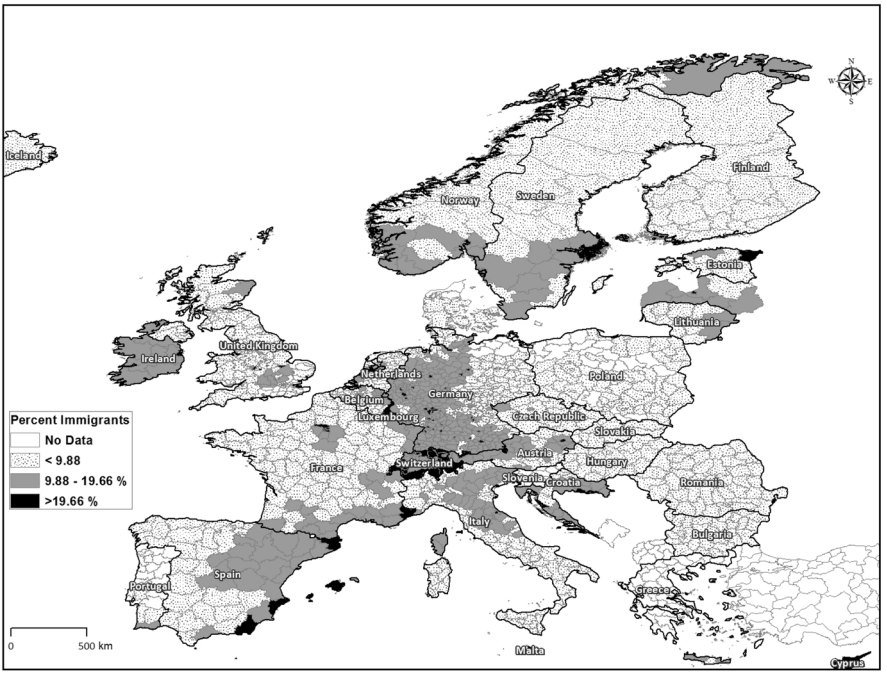

Fig. 2 Total Immigrants in Europe at Sub-regional (NUTS3) Level. Source Eurostat- Eurostat 2011

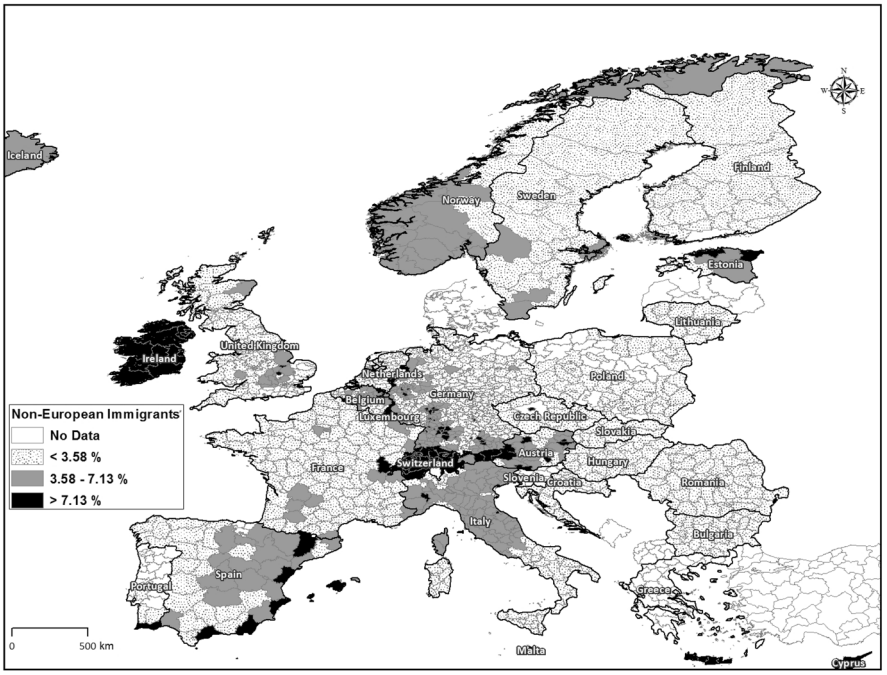

Fig. 3 Non-European Immigrants in Europe at Sub-regional (NUTS3) Level. Source Eurostat 2011

average (19.66% or more). These estimates of the size of the immigrant population are based on available Eurostat data and allow us to visually identify areas of relatively low and high immigrant concentration, both within and between countries in Europe.

At a minimum, these data reveal widespread variation in the geographic distribution of immigrants. The data in Fig. 2 show that large parts of Eastern Europe (Poland, Slovakia, Hungary, and Romania) are overwhelmingly native-born, as is the case in much of Finland and outlying rural areas in Sweden, Norway, and France. But even in low-immigration countries, there are clear regional "hotspots" of immigrant population concentration. In Finland, immigrants are concentrated in the southern (e.g., in the Helsinki metro area) and western coastlines (near Vaasa) and in the Budapest region in Hungary (data not shown) but at levels below the overall European average. Although Italy, France, and the United Kingdom have experienced substantial recent immigration, the spatial distribution of immigrants is much more highly concentrated (e.g., in the London area in the U.K., Northern Italy, and Paris, Lyon, and Marseille in France). Immigrants are distributed in high percentages across much of the western part of Germany, with immigrant "hotspots" similarly distributed broadly across this region of the country. The former East Germany, on the other hand, is mostly comprised of native-born German populations and has experienced substantial net outmigration to Berlin and regions in former West Germany, where economic opportunities and job growth are greater and where

native populations are much less virulently anti-immigrant in sentiment (Davidov and Semyonov 2017).

As shown in Fig. 3, spatial differences in immigrant population concentration are much more dramatic when we consider regional "hotspots" comprised of non-European immigrants. Despite the nationalistic fervor across parts of the EU, immigrants originating from outside of Europe average only 3.58 percent across sub-regions. Figure 3 reveals the uneven spatial distribution of non-European immigrants at levels below, above, and well above this figure. Non-European immigrants (from Asia and parts of Africa, especially Nigeria) are concentrated in parts of Northern Ireland and Switzerland (and surrounding areas in Germany, France, and Austria). Comparatively large shares of non-European immigrants (most often originating from the former Soviet Union) are also present in Estonia and in other densely populated parts of Europe (e.g., Brussels in Belgium, Barcelona, and Madrid in Spain). In Germany, immigrant populations from Turkey, Greece, and Russia and other groups (Asians) are located in above-average percentages in North Rhine-Westphalia (e.g., Cologne), Baden-Württemberg, and Bavaria (e.g., Munich).

Macro-Segregation of Immigrants from Natives

The country-specific data in Table 1 summarize highly uneven spatial patterns of immigrant settlement across each European country. We characterize such differences in terms of spatial segregation at the macro level (or macro-segregation). These data raise questions about how to best summarize immigrant-native settlement patterns—both between and within countries—and how to both identify and account for differences in the putative sources (e.g., public policy, economic context, or demographics) of European spatial segregation and integration.

As an empirical baseline, the data in Table 1 provide the immigrant-native segregation indices (*D*s) that summarize the uneven within-country spatial distribution of immigrants across European countries. Here, segregation is defined by the uneven distribution of immigrants and natives across NUTS3 units (i.e., sub-regions or counties). The overall mean *D* is 19.7 for all 27 European sub-regional areal units. Put concretely, this means that, on average, nearly one-in-five immigrants (or natives) would have to move to another sub-regional areal unit (another NUT3 unit) within their own country to achieve residential parity with the native-born population.

These estimates of immigrant-native macro-segregation vary substantially across European countries. At the low end, *D*s in Malta (3.2), Slovakia (8.2) and Ireland (8.2) suggest that natives and immigrants are spatially integrated at the macro scale. High levels of county-to-county segregation (i.e., macro-segregation) are plainly evident in Poland (34.3), Belgium (28.6), Estonia (28.6), and Lithuania (28.0). These figures also imply that these countries are home to clearly identifiable regional immigrant "hotspots."

Much of the new immigration in Europe involves the movement of Europeans who share common economic or cultural advantages (e.g., high education) that make

Table 1 Segregation between natives and immigrants across sub-regional units (NUTS3), by Country

Country	All Countries	Non-European Countries	European but Non-EU Countries	EU Countries
Austria	25.5	34.9	29.1	20.4
Belgium	28.6	33.2	27.0	29.7
Bulgaria	20.4	27.2	17.6	24.1
Croatia	15.3	31.1	16.9	11.0
Czech Republic	18.9	32.5	33.2	13.2
Denmark	17.0	21.0	11.9	14.8
Estonia	28.6	29.5	29.6	13.9
Finland	25.0	29.2	16.9	23.6
France	27.7	31.7	39.4	23.0
Germany	18.0	24.9	21.3	14.7
Greece	12.9	27.2	11.9	16.7
Hungary	19.9	45.3	25.6	19.3
Ireland	8.2	19.6	17.8	5.7
Italy	18.3	23.8	25.5	17.4
Latvia	16.3	23.7	17.3	12.2
Lithuania	28.0	21.8	30.9	11.3
Malta	3.2	7.6	4.0	0.4
Netherlands	21.9	25.6	15.3	19.3
Norway	17.3	21.5	17.1	14.4
Poland	34.3	32.4	42.4	26.3
Romania	24.2	48.6	34.6	18.4
Slovakia	8.2	14.1	25.7	10.5
Slovenia	13.9	20.4	15.2	15.9
Spain	21.6	23.5	21.8	25.4
Sweden	15.2	17.0	14.9	17.0
Switzerland	18.1	23.9	12.3	19.5
United Kingdom	25.4	31.6	22.7	19.9
Total Average	19.7	26.8	22.1	17.0

segregation less pronounced from the native-born population. Indeed, a large but minority share of the 38.7 million foreign-born in the EU28 or one of the 4 European Free Trade Association (EFTA) countries (i.e., Iceland, Liechtenstein, Norway, and Switzerland) originated from another EU/EFTA country (16.9 million) (European Union 2018).[10] The clear implication is that immigrants from another European country are much more likely than non-European immigrants to avoid racialization (e.g., Icelanders in the UK), which can be a serious barrier to integration for

[10] In 2017, about 35% of the EU-28/EFTA foreign-born population were born in an EU28/EFTA country. The rest were born outside of the EU28/EFTA.

immigrants from Africa, the Middle East, or Asia. These data also suggest that simple summary estimates of overall immigrant-native segregation may hide substantial variation in segregation among non-Western immigrants across Europe.

This fact is revealed in columns 2–4 in Table 1, which provides immigrant-native segregation scores for immigrants from non-European countries, from European countries, and from member states of the European Union. In every country, except Spain and Sweden, segregation rates from natives are higher among immigrants from non-European countries than among immigrants from member countries of the European Union.[11] The overall *D* for non-European immigrants was 26.8, or nearly 60 percent higher than the overall *D* observed for immigrants from EU countries (17.0). Segregation from natives occupies an intermediate position among all immigrants of European origin but from non-EU countries. For immigrants who originated from outside of Europe, *D*s ranged from a low of 7.6 in Malta to highs of 48.6 in Romania and 45.3 in Hungary, largely reflecting the concentration of immigrants in (a few) large cities.

Correlates of European Macro-Segregation

As an initial statistical benchmark, we identify key correlates of variation in *D*s across the 27 European countries considered here. Specifically, segregation is measured in each country by the distribution of natives and immigrants between subregions or counties (i.e., NUTS3 units) within regions (i.e., NUTS2 units), i.e., *D*s can be interpreted as within-region native–immigrant residential segregation. In this case, *D* indicates the share of immigrants that would be required to move to another NUTS3 county-level unit within the NUTS2 unit in which it is embedded.[12] Here, we shift the focus from variation between and within countries to spatial variation *within* NUTS2 regions in each country.

Table 2 provides basic descriptive information on key indicators at different scales: namely, the national and regional (NUTS2) levels. Conceptually, we view macro-segregation (between-NUTS3 segregation within NUTS2 regions) as a function of favorable or unfavorable regional and national conditions. For example, macro-segregation, as we have measured it here, is expected to be highest in regions with large percentages of immigrants (i.e., which would be indicative of ethnic enclaves that are spatially isolated from natives). At the national level, within-region segregation is also affected by the national context of reception, including immigration laws that welcome immigrants or not.

Table 3 provides Spearman's rank-order correlation coefficients between *D* and several country-specific indicators thought to be associated with immigrant

[11] In the case of Spain, this may reflect self-segregation of elderly European retirees who are living permanently or part-time in resort or tourist areas along the Mediterranean seaboard.

[12] In some cases, the NUTS2 unit only comprises one NUTS3 unit (e.g., Madrid, Asturias, Cantabria, Navarra, Murcia in Spain). For our purposes, we filtered the data to include the rows with D values > 0 and Percent Foreign-born in a NUTS2 >2 and Number of NUTS3 in a NUTS2 >3. This served the purpose of excluding these cases from the regression analysis.

Table 2 Descriptive statistics

	Mean	SD
Sub-regional (NUTS2) characteristics		
Total population	1,892,246	1,608,753
D index:natives and immigrants	10.2	6.6
D index: natives and immigrants from outside Europe	27.4	16.9
D index: natives and immigrants from outside the EU but within Europe	12.8	8.2
D index: natives and EU members	20.2	12.3
Entropy index	30.2	16.1
GDP Per capita PPS (000s)	26.5	10.5
% Over 65 Years	18.4	2.9
% High school education	33.3	8.8
% Some college education	2.1	2.1
% College or higher education	18.2	5.0
% Unemployment rate	8.0	4.6
% In agriculture & fisheries	1.8	1.5
% In manufacturing	8.2	3.8
% In construction	3.6	0.9
% In government	12.4	2.6
% In services	9.8	3.0
country characteristics		
GDP (billion $)	1880	1299
% Foreign born	11.6	3.8
Migration integration policy index	57.8	7.6
Labor market mobility	66.9	16.1
Family union	57.1	15.0
Education	45.7	13.2
Political participation	53.2	15.0
Permanent residency	60.7	10.5
Path to citizenship	57.7	13.0
Antidiscrimination policy	67.6	13.6
Access to health care	53.4	10.4

concentration and segregation vis-à-vis spatial integration. Perhaps surprisingly, these data reveal no statistically significant associations between the country-wide indicators presented here and *D*, neither between all immigrants and natives nor between all non-European immigrants and natives. These baseline country-level correlations seemingly suggest a singular conclusion: Country-to-country variation in segregation is highly idiosyncratic and difficult to explain with the country-level variables considered here. This conclusion applies to segregation patterns among both European and non-European immigrants.

Table 3 Rank-order correlations (Spearman's Rho) between Country indicators and Country native—immigrant segregation (*D*)

		GDP	Migration integration policy index	Labor market mobility	Family union	Education	Political participation	Permanent residency	Path to citizenship	Antidiscrimination policy	Access to health care	% Foreign born
All Countries	Correlation coefficient	0.261	0.115	0.166	−0.328	0.189	−0.19	0.211	0.089	0.039	0.002	−0.135
	Sig. (2-tailed)	0.189	0.575	0.418	0.109	0.356	0.354	0.301	0.665	0.85	0.993	0.502
	N	27	26	26	25	26	26	26	26	26	26	27
Non-European Countries	Correlation coefficient	0.175	0.026	0.033	−0.336	−0.026	−0.342	0.039	−0.045	0.218	−0.067	−0.131
	Sig. (2-tailed)	0.382	0.898	0.874	0.1	0.9	0.088	0.851	0.825	0.284	0.744	0.516
	N	27	26	26	25	26	26	26	26	26	26	27
European Countries but non-EU members	Correlation coefficient	0.086	−0.227	−0.268	−0.185	−0.162	−.446*	−0.095	−0.107	0.018	−0.227	−0.243
	Sig. (2-tailed)	0.669	0.265	0.186	0.375	0.429	0.022	0.645	0.603	0.93	0.265	0.222
	N	27	26	26	25	26	26	26	26	26	26	27
EU Countries	Correlation coefficient	.556**	.390*	0.253	0.006	0.234	0.097	0.362	0.258	0.377	0.266	−0.139
	Sig. (2-tailed)	0.003	0.049	0.212	0.977	0.25	0.639	0.069	0.203	0.058	0.19	0.491
	N	27	26	26	25	26	26	26	26	26	26	27

*$p < .05$, **$p < .01$, ***$p < .001$

Although few of the country-level coefficients are statistically significant, the direction and size of the coefficients are potentially meaningful. Issues of sampling variance for statistical inference arguably are less problematic here than if we had drawn a small probability sample of countries. From this perspective, many of the Rho's in Table 3 are of sufficient size substantively to merit some brief discussion. For example, sub-regional segregation (across NUTS3 units) is associated positively with national GDP (Rho = .261). This means that immigrants in countries with large economies (and greater spatial differentiation on many economic dimensions) are spread more unevenly over geographical space. In practice, this would ordinarily be reflected in the concentration of immigrants in urban employment centers. Immigrant segregation from natives also decreases from country-to-country as the percentage of immigrants in the country increases (Rho = − .135), suggesting that immigrant groups become more widely dispersed as they grow in population size (which is product of the size and duration of settlement streams into the country).

Interesting enough, the overall migration integration policy index is positively rather than negatively associated with immigrant-native segregation (Rho = .115). Of course, these cross-sectional analyses are unable to identify causal effects or even determine the causal order of variables, which may be problematic in this case. It is entirely plausible, for example, that higher scores on the migration integration policy index reflect a policy *response* to existing low levels of immigrant integration in general and to high rates of spatial segregation in particular. The issue awaits additional study, i.e., when longitudinal panel data become available to estimate the effects of specific policy interventions or laws on segregation.

Multivariate Analyses of Multiscale Segregation

Although national characteristics, including public policy differences, have small but seemingly heterogeneous effects across countries, it may be the case that country-level traits are nevertheless observed across regions (NUTS2) or sub-regional or county areal units (NUTS3) where immigrants actually live. In other words, immigrant-native segregation may be expressed at a finer spatial scale *within* each country and influenced by national immigration policies that operate differentially across regions. To address this empirical question, we have recomputed estimates of *D within* specific regions (NUTS2) in each European country. Sub-regional or county units (i.e., NUTS3 units) can be nested perfectly within the surrounding regional territory. This allows us to fit multivariate models of sub-regional segregation within regional units (NUTS2). Here, we conceptualize segregation to be a function of both regional conditions (measured at the NUTS2 level) and economic and policy characteristics of the country itself.

The results of this descriptive modeling exercise are shown in Table 4. These data show that heavily populated regions are more likely to experience high levels

Table 4 Ordinary Least Square Regression of Local Diversity (D) between Natives and immigrants from countries

	All countries		Non-European countries		European but Non-EU countries		EU countries	
	b	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*
Intercept	8.45	19.40	− 58.27	50.18	− 24.30	26.35	− 7.17	38.07
Regional (or NUTS2) Characteristics								
Ln Population	2.09**	0.89	6.99**	2.31	4.14***	1.21	3.94*	1.75
Entropy Index	− 0.06	0.06	-0.30*	0.15	− 0.07	0.08	0.07	0.12
GDP PPS (1000 s Euro)	− 0.13	0.14	0.00	0.36	− 0.11	0.19	− 0.32	0.27
% Over 65 Years	− 0.66**	0.26	- 0.86	0.66	0.02	0.35	− 0.52	0.50
% High School Education	− 0.15	0.11	0.27	0.29	− 0.02	0.15	− 0.47*	0.22
% Some College Education	− 0.86	0.60	− 2.33	1.55	− 2.07*	0.81	0.32	1.18
% College or Higher Education	0.18	0.23	0.17	0.58	0.22	0.31	0.62	0.44
% Unemployment Rate	−0.07	0.21	0.01	0.53	− 0.35	0.28	0.36	0.40
% in Agriculture & Fisheries	0.40	0.64	−0.44	1.65	0.45	0.86	2.48*	1.25
% in Manufacturing	− 0.08	0.25	− 0.77	0.64	− 0.27	0.34	0.10	0.48
% in Construction	− 1.83*	0.93	− 1.78	2.40	− 2.39!	1.26	− 1.81	1.82
% in Government	− 1.15***	0.43	− 2.73*	1.10	− 1.28*	0.58	− 1.91*	0.84
% in Services	− 0.06	0.39	0.21	1.00	− 0.44	0.52	− 1.01	0.76
Country Characteristics								
GDP (100 s billion $)	0.27!	0.155	0.50*	0.19	0.29	0.21	− 0.36	0.30
% Immigrants	0.44	0.28	0.69	0.72	0.79*	0.38	1.45**	0.55
Migration integration policy index								
Labor Market Mobility	0.29*	0.13	0.89**	0.33	0.54**	0.17	0.34	0.25
Family Union	− 0.18*	0.09	− 0.64**	0.23	0.04	0.12	− 0.38*	0.17
Education	0.30!	0.16	0.54	0.41	0.28	0.21	− 0.09	0.31
Political Participation	− 0.23!	0.13	−0.56!	0.33	− 0.28!	0.17	− 0.14	0.25
Permanent Residency	0.20*	0.10	1.09***	0.26	0.10	0.14	0.07	0.20
Path to Citizenship	− 0.33*	0.16	− 1.20**	0.41	− 0.65**	0.22	0.21	0.31
Antidiscrimination Policy	0.07	0.08	0.48*	0.20	0.24*	0.10	0.08	0.15
Access to Health Care	− 0.08	0.17	− 0.46	0.43	− 0.35	0.23	0.07	0.33
Adjusted R^2	27.5		25.4		12.2		18.1	

!$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$ (two-tailed test)

of immigrant-native residential segregation within regions and that this pattern occurs regardless of whether immigrants originate from Europe or outside of Europe. The segregation of immigrants across sub-regional or county units within the various regions of the country is also associated with educational levels of the overall population of the region (NUTS2), but only among immigrants from

EU countries. Regions with more high school graduates are less likely to have high levels of immigrant-native segregation. The low educational levels of both natives and immigrants would likely translate into more immigrant-native similarity in socioeconomic status (e.g., income) and ultimately in less segregated residence patterns between them. For immigrants from non-EU European countries, the association between immigrant and native segregation is lowest in countries with some post-secondary education. This finding is seemingly consistent with the higher levels of education observed among immigrants from within than from outside of Europe.[13]

Finally, these data indicate that immigrant-native segregation is lowest in regions that are more dependent on employment in construction (which may serve as a proxy for economic and population growth) and government. The latter finding is consistent with most U.S. neighborhood segregation studies, which typically show that cities with large shares of the population working in government tend to have lower residential segregation (Lee et al. 2008; Lichter et al. 2015). The implication is that government jobs have the effect of reducing economic disparities among workers, which is revealed in more spatial integration in residence patterns.[14]

Unlike the bivariate analyses reported in Table 3, the multivariate analysis in Table 4 reveals several statistically significant negative associations between the integration policy variables and immigrant–native segregation. Specifically, among the 32 regression coefficients presented in Table 4 (i.e., eight indicators for each of the four immigrant national origin groups), seven were statistically significant and negatively signed, as expected. For example, countries with immigrant policies that encouraged family reunification, provided a legal pathway to citizenship, or promoted political participation were less likely to be highly segregated by nativity. Conversely, six regression coefficients were unexpectedly positive in sign, which suggests that some immigrant policies may have been introduced in response to the lack of integration among immigrants. The most consistent finding in this regard was the statistically significant positive *b*s for policies that promote workers' rights and greater employment opportunities among legal immigrants. In this case, such policies may, on the one hand, provide new avenues for labor mobility into areas with disproportionately native-born populations but, on the other hand, contribute to more segregation if immigrants are channeled into or attracted to geographically isolated immigrant enclaves.

[13] Information on education of the foreign-born (15–64 years) population for the EU in 2017 states that 28.9% of the working aging population has a tertiary education (levels 5–8). Of course, differences in education reflect differences in the native–foreign mix and age differences. In 2017, 40.6% of the native-born population aged 30–34 in the EU-28 in 2017 had a tertiary level of education, roughly the same (40.0%) as those born in another EU Member State. For migrants born outside the EU, the percentage was 34.5% (Eurostat 2018c).

[14] Government jobs often go only to citizens or to EU nationals, but there nevertheless may be larger economic and social spillovers from government growth that benefit other immigrants who originate from outside the EU. In the United States, this is frequently the case in municipalities that serveas state capitals or where universities are located.

Finally, the bivariate correlations reported in Table 3 showed that GDP, measured at the country level, was positively associated with the segregation of immigrants across sub-regional or county areal units. But this relationship does not hold for immigrant-native segregation at the regional level. Indeed, any effects of national GDP appear to operate indirectly through economic development indicators at the regional level (where the regional GDP was statistically significant and positively associated with non-European immigrant-native segregation). Uneven economic development predictably sorts immigrants across geographic space—into new immigrant destinations that have presumably benefited from economic and job growth.

Discussion and Conclusion

The massive new immigration of ethnic and immigrant minorities in Europe has raised important questions about their social, economic, and cultural incorporation into mainstream society. This topic is especially important at a time of below-replacement fertility and increasing depopulation among native-born populations throughout many parts of Europe (Johnson et al. 2015). Our paper presented evidence of spatial integration, measured here with the segregation index, which can be interpreted as an indirect indicator of incorporation on a broader set of salient indicators that sort people unevenly into different countries, regions, and communities (e.g., education, language, and citizenship status). Our empirical goal was to provide, for the first time, cross-country multiscale indicators of integration or segregation that answer the question of whether immigrant minority populations share the same social and geographic space as the native-born or majority populations in Europe.

Our results suggest at least two general conclusions. First, immigrant-native segregation patterns vary widely *between* and *within* European countries with very different economies, demographic conditions, and histories of immigration. But, as we showed here, it is difficult to fully explain or account for current cross-sectional patterns of national and regional segregation among immigrants due to the small number of national and regional characteristics presented in this paper. To adequately address this task requires, at a minimum, longitudinal data that link changes in immigration (volume and characteristics) and immigration integration policies to changes in assimilation in general and spatial assimilation in particular. In future studies of this genre, it will be important to link upward social mobility among different immigrant populations to patterns of residential segregation from the native-born population and to consider the income or class segregation of various immigrant populations.

Second, in almost all European countries, immigrants from outside of Europe or the EU were more segregated from natives than were immigrants from other countries in Europe. At the scale of geography examined here (NUTS3), differences in sub-regional immigrant-native segregation were clearly evident but also often small or modest in immigrant "hot spots." Of course, segregation may be larger at more granular spatial scales, such as neighborhoods or blocks (Reardon et al. 2008). Our findings suggest the need in future studies to account for differences in

the socioeconomic status and job skills of immigrants and different national origin groups. Comparatively high rates of multiscale segregation among non-Europeans also argue for additional analyses of immigrants from Africa, the Middle East, and Asia, as well as the Americas. These new immigrant and refugee populations for non-Western societies may exhibit their own unique patterns of spatial concentration and segregation.

This study comes with some important caveats. Our cross-sectional descriptive approach was primarily designed to provide an empirical baseline for future analyses of the extent and etiology of multiscale residential integration across Europe. We recognize that segregation indices are affected by the choice of the unit of measurement and by variation in the geographic scale and population size of these accounting units (e.g., the various NUTS units) from country-to-country (for discussion, see Johnson et al. 2015). Indeed, comparative research on the residential segregation in the EU would benefit from continuing efforts to harmonize the spatial scales for aggregating populations. By necessity, we have emphasized macro-segregation, that is, the within-country regional and sub-regional segregation of immigrant groups. Limitations in the Eurostat database prevent us from evaluating comparative native–immigrant segregation within sub-regional or county units across EU countries. Our approach is nevertheless instructive because immigrant integration (including segregation) is arguably influenced by regional labor market conditions, including employment growth and unemployment, as well as by the provision of social services which are often administered at the municipal or regional level (e.g., school districts or regional service providers) rather than at the neighborhood level.

Our empirical approach also suggests a cautious approach to judging the effectiveness of governmental policies that may promote immigrant integration in general and spatial integration of new immigrant groups in particular. Our regression analyses, based on cross-sectional data, cannot fully assess the causal impact of integration policies on the foreign-born population in the EU countries considered here. With the completion of next update of Eurostat data, however, it may be possible to evaluate changes in public policy and shifts in regional and sub-regional segregation.[15] Our empirical approach nevertheless provides a strong basis for on-going efforts to build a new "political demography" of immigration (Teitelbaum 2015), where immigrant flows and their distribution reflects spatial and temporal variation in politics and public policy (including inclusion immigration policies).

Indeed, in the case of transnational migration in Europe, it is clear that flows of migrants within and between countries will be driven—perhaps increasingly so—by politics and political considerations at the national and regional or sub-regional levels. The massive entry of Syrian refugees into Germany is a case in point. But there are many other European examples where new immigrant or refugee populations are

[15] This nevertheless is a challenging research endeavor because the boundaries of NUTS2 and NUTS3 units will undoubtedly change over time, making it difficult to track population changes for the same spatial units. This is a problem that has plagued studies that monitor neighborhood change, a problem that is addressed by harmonizing boundaries by re-aggregating units that split into two units or by mathematically adjusting boundaries for over-time consistency.

required by law to settle, at least initially, in rural or other depopulating or economically stagnating areas (Bock et al. 2016; Collantes et al. 2014; Stenbacka 2013). This once again highlights the need to broaden the conceptual and empirical lenses in studies of the residential distribution and segregation of immigrants.

Finally, we have focused primarily on the uneven spatial distribution of immigrant populations, which we have defined here at the national, regional, and sub-regional levels. Our analyses reinforce recent calls to consider residential integration at alternative levels of geography—from the micro to macro scale (Andersen et al. 2018; Fowler et al. 2016). Our results speak directly to the growing body of research on the emergence and geographic spread of new immigrant destinations or gateways. Immigrants from around the world are dispersing across Europe, but they also are concentrating unevenly at national, regional, and sub-regional levels. Going forward will require additional analyses at even finer spatial scales—at the individual, district, municipal, or neighborhood levels. Indeed, Billari (2015) calls for new demographic research that better integrates the micro with the macro, i.e., how individual decision-making—both of immigrants and natives—culminates in the uneven distribution of immigrants across geographical space. As we have argued here, alternative immigrant destinations place clear constraints on residential integration and, presumably, on social inclusion more generally. Integration of all kinds occurs "in place." And it is often at a smaller scale of geography where immigrants come into daily contact (or not) with natives and where positive social integration can surmount the usual economic and cultural barriers to integration.

Acknowledgements The authors acknowledge the helpful comments on this project from Helga DeValk, Rafael Costa, Bart Sleutjes, David Brown, and Neil Agent, as well as the reviewers of PRPR.

References

Alba, R., & Foner, N. (2015). *Strangers no more: Immigration and the challenges of integration in North America and Western Europe*. New Jersey: Princeton University Press.

Andersson, E. K., Lyngstad, T. H., & Sleutjes, B. (2018a). Comparing patterns of segregation in North-Western Europe: A multiscalar approach. *European Journal of Population, 34*(2), 151–168.

Andersson, E. K., Malmberg, B., Costa, R., Sleutjes, B., Stonawski, M. J., & de Valk, H. A. (2018b). A comparative study of segregation patterns in Belgium, Denmark, the Netherlands and Sweden: Neighbourhood concentration and representation of non-European migrants. *European Journal of Population, 34*(2), 251–275.

Arbaci, S. (2007). Ethnic segregation, housing systems and welfare regimes in Europe. *European Journal of Housing Policy, 7*(4), 401–433.

Bijak, J., Kicinger, A., & Kupiszewski, M. (2013). International migration scenarios for 27 European countries, 2002–2052. In *International migration and the future of populations and labour in Europe* (pp. 75–92). Dordrecht: Springer.

Billari, F. C. (2015). Integrating macro-and micro-level approaches in the explanation of population change. *Population Studies, 69*(sup1), S11–S20.

Bock, B., Osti, G., & Ventura, F. (2016). Rural migration and new patterns of exclusion and integration in Europe In *International handbook of rural studies* (pp. 101–114). Abingdom: Routledge.

Bolt, G., Özüekren, A. S., & Phillips, D. (2010). Linking integration and residential segregation. *Journal of Ethnic and Migration studies, 36*(2), 169–186.

Bråmå, Å. (2008). Dynamics of ethnic residential segregation in Göteborg, Sweden, 1995–2000. *Population, Space and Place, 14*(2), 101–117.

Cassiers, T., & Kesteloot, C. (2012). Socio-spatial inequalities and social cohesion in European cities. *Urban Studies, 49*(9), 1909–1924.
Coleman, D. (2006). Immigration and ethnic change in low-fertility countries: A third demographic transition. *Population and Development Review, 32*(3), 401–446.
Collantes, F., Pinilla, V., Sáez, L. A., & Silvestre, J. (2014). Reducing depopulation in rural Spain: The impact of immigration. *Population, Space and Place, 20*(7), 606–621.
Condon, M., Filindra, A., & Wichowsky, A. (2016). Immigrant inclusion in the safety net: A framework for analysis and effects on educational attainment. *Policy Studies Journal, 44*(4), 424–448.
Costa, R., & de Valk, H. A. (2018). Ethnic and socioeconomic segregation in Belgium: A multiscalar approach using individualised neighbourhoods. *European Journal of Population, 34*(2), 225–250.
Davidov, E., & Semyonov, M. (2017). Attitudes toward immigrants in European societies. *International Journal of Comparative Sociology, 58*(5), 359–366.
Engbersen, G., Snel, E., & Esteves, A. (2016). *Migration mechanisms of the middle range: On the concept of reverse cumulative causation* (pp. 205–230). London: Beyond Networks. Palgrave Macmillan.
European Union. (2018). Key Figure on Europe: Statistics Illustrated. 2018 Edition. Luxembourg. Accessed on April 8, 2019 at
Eurostat. (2011). https://ec.europa.eu/CensusHub2/query.do?step=selectHyperCube&qhc=false. Accessed on April 25, 2019.
Eurostat. (2018a). http://ec.europa.eu/eurostat/data/database. Accessed on April 5, 2019.
Eurostat. (2018b). *Regions in the European Union: Nomenclature of territorial units for statistics—NUTS 2016/EU-28. 2018 Edition.* Luxembourg: Publications Office of the European Union
Eurostat. (2018c). Migrant integration statistics—education. https://ec.europa.eu/eurostat/statistics-explained/index.php/Migrant_integration_statistics_-_education#Share_of_30-34_year-olds_with_a_tertiary_level_of_educational_attainment. Accessed on April 16, 2019.
Fahey, T., & Fanning, B. (2010). Immigration and socio-spatial segregation in Dublin, 1996-2006. *Urban Studies, 47*(8), 1625–1642.
Fonseca, M. L. (2008). New waves of immigration to small towns and rural areas in Portugal. *Population, Space and Place, 14*(6), 525–535.
Fowler, C. S., Lee, B. A., & Matthews, S. A. (2016). The contributions of places to metropolitan ethnoracial diversity and segregation: Decomposing change across space and time. *Demography, 53*(6), 1955–1977.
Goldstein, J. R., & Kluge, F. (2016). Demographic pressures on european unity. *Population and Development Review, 42*(2), 299–304.
Hackett, Conrad. 2016. *5 facts about the Muslim population in Europe*. Pew Research Center. http://www.pewresearch.org/fact-tank/2016/07/19/5-facts-about-the-muslim-population-in-europe/Accessed on August 22, 2016.
Huo, Y. J., Dovidio, J. F., Jiménez, T. R., & Schildkraut, D. J. (2018). Not just a national issue: Effect of state-level reception of immigrants and population changes on intergroup attitudes of Whites, Latinos, and Asians in the United States. *Journal of Social Issues, 74*(4), 716–736.
Iceland, John. 2014. *Residential segregation: A Trans-Atlantic analysis*. Migration Policy Institute.
Johnson, K. M., Field, L. M., & Poston, D. L., Jr. (2015). More deaths than births: Subnational natural decrease in Europe and the United States. *Population and Development Review, 41*(4), 651–680.
Johnson, K. M., & Lichter, D. T. (2019). Rural depopulation: Growth and decline processes over the past century. *Rural Sociology, 84*(1), 3–27.
Koopmans, R. (2013). Multiculturalism and immigration: A contested field in cross-national comparison. *Annual Review of Sociology, 39,* 147–169.
Kwon, R., & Kposowa, A. (2017). Shifting racial hierarchies: An analysis of residential segregation among multi-racial and mono-racial groups in the United States. *Population Studies, 71*(1), 83–99.
Lee, B. A., Reardon, S. F., Firebaugh, G., Farrell, C. R., Matthews, S. A., & O'Sullivan, D. (2008). Beyond the census tract: Patterns and determinants of racial segregation at multiple geographic scales. *American Sociological Review, 73*(5), 766–791.
Lichter, D. T. (2013). Integration or fragmentation? Racial diversity and the American future. *Demography, 50*(2), 359–391.
Lichter D. T., Parisi D., & De Valk H. (2016). Residential segregation. *Pathways*, 65–74.
Lichter, D. T., Parisi, D., & Taquino, M. C. (2012). The geography of exclusion: Race, segregation, and concentrated poverty. *Social Problems, 59*(3), 364–388.

Lichter, D. T., Parisi, D., & Taquino, M. C. (2015). Toward a new macro-segregation? Decomposing segregation within and between metropolitan cities and suburbs. *American Sociological Review, 80*(4), 843–873.

Malmberg, B., Andersson, E., & Östh, J. (2013). Segregation and urban unrest in Sweden. *Urban Geography, 34*(7), 1031–1046.

Maloutas, T. (2007). Segregation, social polarization and immigration in Athens during the 1990s: theoretical expectations and contextual difference. *International Journal of Urban and Regional Research, 31*(4), 733–758.

Marcińczak, S., Musterd, S., & Stępniak, M. (2012). Where the grass is greener: social segregation in three major Polish cities at the beginning of the 21st century. *European Urban and Regional Studies, 19*(4), 383–403.

Massey, D. S. (1988). Economic development and international migration in comparative perspective. *Population and Development Review, 14,* 383-413.

Massey, D. S. (2016). Segregation and the perpetuation of disadvantage. *The Oxford Handbook of the Social Science of Poverty, 16,* 369–405.

Massey, D. S., Rothwell, J., & Domina, T. (2009). The changing bases of segregation in the United States. *The Annals of the American Academy of Political and Social Science, 626*(1), 74–90.

McAreavey, R. (2017). *New immigration destinations: Migrating to rural and peripheral areas*. Abingdom: Routledge.

McAreavey, R., & Argent, N. (2018). Migrant integration in rural New Immigration Destinations: An institutional and triangular perspective. *Journal of Rural Studies, 64,* 267–275.

MIPEX 15. (2017). Retrieved from http://mipex.eu/on October 5, 2017.

Musterd, S. (2005). Social and ethnic segregation in Europe: Levels, causes, and effects. *Journal of urban affairs, 27*(3), 331–348.

Niessen, J., Huddleston, T., Citron, L., Geddes, A., & Jacobs, D. (2007). *Migrant integration policy index*. British Council and Migration Policy Group.

Östh, J., Clark, W. A., & Malmberg, B. (2015). Measuring the scale of segregation using k-nearest neighbor aggregates. *Geographical Analysis, 47*(1), 34–49.

Palmer, J. R., & Pytlikova, M. (2015). Labor market laws and intra-European migration: The role of the state in shaping destination choices. *European Journal of Population, 31*(2), 127–153.

Pan Ké Shon, J. L., & Verdugo, G. (2015). Forty years of immigrant segregation in France, 1968–2007. How different is the new immigration? *Urban Studies, 52*(5), 823–840.

Parisi, D., Lichter, D. T., & Taquino, M. C. (2011). Multi-scale residential segregation: Black exceptionalism and America's changing color line. *Social Forces, 89*(3), 829–852.

Parisi, D., Lichter, D. T., & Taquino, M. C. (2015). The buffering hypothesis: Growing diversity and declining black-white segregation in America's cities, suburbs, and small towns? *Sociological Science, 2,* 1–25.

Phillips, D. (2013). Minority ethnic segregation, integration and citizenship: A European perspective. In *Linking integration and residential segregation* (pp. 49–66). Routledge.

Reardon, S. F., Matthews, S. A., O'Sullivan, D., Lee, B. A., Firebaugh, G., & Farrell, C. R. (2008). The geographic scale of metropolitan racial segregation. *Demography, 45*(3), 489–514.

Sáenz, R., & Manges, D. K. (2015). A call for the racialization of immigration studies: On the transition of ethnic immigrants to racialized immigrants. *Sociology of Race and Ethnicity, 1*(1), 166–180.

Sager, L. (2012). Residential segregation and socioeconomic neighbourhood sorting: Evidence at the micro-neighbourhood level for migrant groups in Germany. *Urban Studies, 49*(12), 2617–2632.

Semyonov, M., & Glikman, A. (2008). Ethnic residential segregation, social contacts, and anti-minority attitudes in European societies. *European Sociological Review, 25*(6), 693–708.

Semyonov, M., Raijman, R., & Gorodzeisky, A. (2006). The rise of anti-foreigner sentiment in European societies, 1988-2000. *American Sociological Review, 71*(3), 426–449.

Skifter Andersen, H., Andersson, R., Wessel, T., & Vilkama, K. (2016). The impact of housing policies and housing markets on ethnic spatial segregation: comparing the capital cities of four Nordic welfare states. *International Journal of Housing Policy, 16*(1), 1–30.

Stenbacka, S. (2013). International migration and resilience: Rural introductory spaces and refugee immigration as a resource. In *Regional resilience, economy and society: Globalising rural places* (pp. 75–94). Ashgate.

Teitelbaum, M. S. (2015). Political demography: Powerful trends under-attended by demographic science. *Population Studies, 69*(sup1), S87–S95.

United Nations. (2016). https://esa.un.org/unpd/wpp/Publications/Files/WPP2015_Volume-II-Demographic-Profiles.pdf. Accessed on August 21, 2016.
Waters, M. C., & Pineau, M. G. (2015). *The integration of immigrants into American society*. The National Academies Press.
Winders, J. (2014). New immigrant destinations in global context. *International Migration Review, 48,* S149–S179.
World Bank. (2018). http://wdi.worldbank.org/table/6.13# Downloaded table refers data source as: *United Nations Population Division, Trends in Total Migrant Stock: 2012 Revision.*

Affiliations

Daniel T. Lichter[1] · Domenico Parisi[2] · Shrinidhi Ambinakudige[3]

Domenico Parisi
mimmo.parisi@nsparc.msstate.edu

[1] Department of Policy Analysis and Management, Cornell University, Ithaca, NY 14853, USA

[2] National Strategic Planning & Analysis Research Center (NSPARC), Mississippi State University, Starkville, MS 39759, USA

[3] Department of Geosciences, Mississippi State University, Starkville, MS 39762, USA