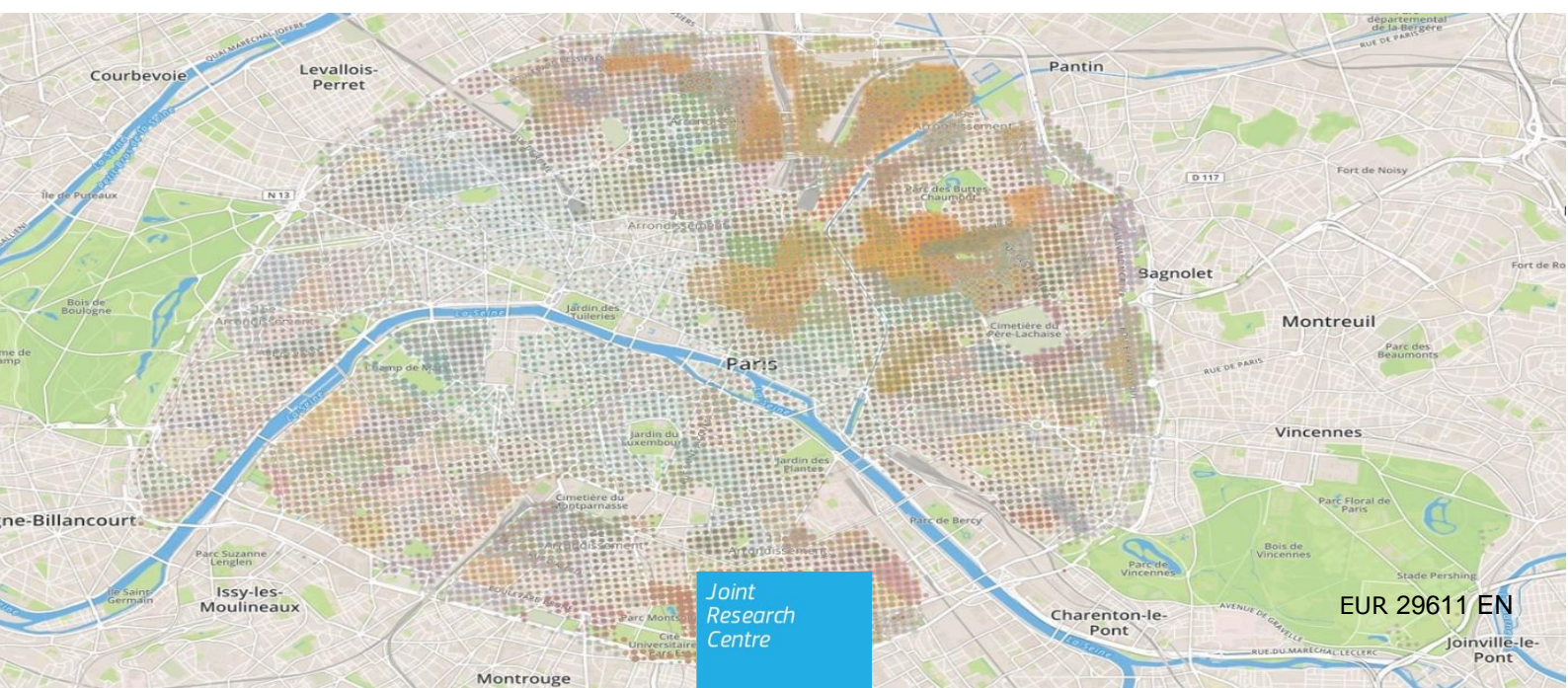# JRC TECHNICAL REPORTS

Diversity, residential segregation, concentration of migrants: a comparison across EU cities

Findings from the Data Challenge on Integration of Migrants in Cities (D4I)

Tintori, Guido
Alessandrini, Alfredo
Natale, Fabrizio

2018

This publication is a Technical report by the Joint Research Centre (JRC), the European Commission's science and knowledge service. It aims to provide evidence-based scientific support to the European policymaking process. The scientific output expressed does not imply a policy position of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use that might be made of this publication.

Contact information
Name: Guido Tintori
Email: guido.tintori@ec.europa.eu

How to cite this report: Tintori, G., Alessandrini, A., Natale, F., *Diversity, residential segregation, concentration of migrants: a comparison across EU cities. Findings from the Data Challenge on Integration of Migrants in Cities (D4I)*, EUR 29611 EN, Publications Office of the European Union, Luxembourg, 2018, ISBN 978-92-79-98732-8, doi:10.2760/823648, JRC115159.

Contents

Acknowledgements

Authors

Tintori G., Alessandrini A., Natale F.

European Commission, Joint Research Centre

Abstract

The report outlines the results of the Data Challenge on Integration of Migrants in Cities (D4I). D4I is an initiative launched at the end of 2017 by JRC to disseminate to external researchers a data set showing the concentration of migrants in EU cities at high spatial resolution. This data set was produced on the basis of *ad hoc* extractions of the 2011 Census data provided by the National Statistical Institutes of 8 EU Member States.

The high resolution and large coverage of the data allows for the first time to calculate and compare indicators of concentration, spatial residential segregation and ethnic diversity across a large number of EU cities of all sizes and different degrees of urbanisation.

Knowing where migrants reside constitutes an essential layer of information to examine issues of integration of migrants at local level and understanding the factors which may shape attitudes towards migration in the receiving society.

Among the 24 research projects which took part in the data challenge, 10 have been selected on the basis of their scientific value and policy relevance. The main findings from these research projects have been presented to policy makers in a dedicated workshop held in Brussels on 27 November 2018 and are summarised in this report.

The 10 studies use different methodological approaches borrowed from geographical, sociological and economic disciplines and cover different sets of countries and cities. They exemplify the potential and importance of analysing different aspects of ethnic diversity and residential segregation in EU cities. They provide new insights on the following themes:

- the effect of using different geographical scales and units of analysis when measuring segregation (Chapter 2.1 and 2.6);

- the need to consider ethnic segregation also a feature of small cities (Chapter 2.2);

- the heterogeneity in the patterns of distribution of migrants groups across different EU cities (Chapter 2.3 and 2.5);

- a new theoretical definitions of migration-related diversity based on the empirical relations between segregation and diversity (Chapter 2.4);

- the possibility to identify host spots with particularly high level of concentration of migrants (Chapter 2.7);

- the effects of high levels of concentration of migrants and asylum seekers on the housing market (Chapter 2.8 and 2.9);

- the accessibility of migrants to local transport systems (Chapter 2.10).

With the expansion of international migration, EU cities are characterised by increased (ethnic) diversity. High shares of migrants from certain origins may result in residential segregation in specific areas of the city. Although diversity and residential segregation do not necessarily entail a lack of socio-economic integration, they nonetheless represent measureable dynamics useful to understand how migrants interact with the receiving society (and vice versa).

The results of the D4I workshop indicate that, whenever data is available at high level of spatial detail, the calculation of residential segregation and diversity is a mature field of research which can provide concrete policy support for local administrations to design evidence-based and targeted integration measures.

From a research perspective, the most advanced methodological developments lie in the definition of the best geographical scale for the calculation of indicators and in the analysis of the temporal dynamics of segregation. The combination between residential data with other micro-data and indicators on income, education, accessibility to housing and other public services will allow to obtain ground-breaking insight on the observed patterns of spatial residential segregation and their effects on socio-economic integration processes.

From a policy perspective, the feedback provided by the participants to the D4I final workshop have indicated the need to distinguish carefully residential segregation from other forms of socio-economic integration of migrants, even discursively; to contextualise the findings from a purely quantitative approach with qualitative and on-the-ground research; to engage local authorities in the use of data and indicators, which are starting to be generated for the first time at a geographical scale of neighbourhoods, thus allowing for cross-countries and cross-cities comparisons.

1 From the harmonisation of the census data to the launch of the data challenge

1.1 Background: the harmonisation of the census data

The Knowledge Centre on Migration and Demography (KCMD) dedicates one of its research lines to the local aspects of migration, focusing in particular on issues of migrant concentration, diversity, spatial segregation and how these intersect with the integration processes in several domains, such as labour market, education, housing market, public perceptions and electoral outcomes.

In this context, the KCMD has been piloting the use of grid-based information from *ad hoc* queries of census data. Censuses contain a wealth of relevant information that can be used to map the population's residential patterns and measure its degree of diversity. However, censuses are structured and processed in different ways in different countries.

After asking National Statistical Institutes (NSI) to perform *ad hoc* extractions, KCMD researchers processed population data from the most recent census (2011) to produce detailed maps of the population in France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain and the UK. The data set generated from this harmonization and spatial processing is unique for its high level of spatial resolution (cells of 100 by 100 m) and the extensive geographical coverage. In fact, it shows the concentration of migrants by citizenship and/or country of birth throughout all territories of the mentioned eight EU Member States, covering almost 45,000 local administrative units.

Data processing was obtained by means of a well-established method used to disaggregate spatial data and produce high-resolution gridded population maps: dasymetric mapping. Figure 1 exemplifies the process of harmonisation of the census data from different geometries into a uniform grid at EU level. The JRC Technical Report *High resolution map of migrants in the EU* (Alessandrini et al. 2017) details the methods applied for the processing of the original census data, as well as the final characteristics and variables included in the data set.

Census tract: ES, IT, IE, UK, FR, PT   Grid 100x100 m: DE   Postal codes: NL
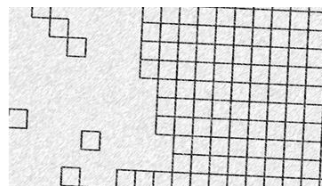
Figure 1. Harmonisation of census data by KCMD

1.2 The D4I data set: relevance for the policy domain

Migration features prominently in current political and public debate worldwide. While the diverse stakeholders partaking in the discussions on migration diverge on a number of issues on the basis of competing interests, there is substantial agreement on the need to collect and rely on accurate data to identify policy needs and inspire more informed solutions. Case in point, the recently signed *Global Compact for Safe, Orderly and Regular Migration* lists as its first objective to "Collect and utilize accurate and disaggregated data as a basis for evidence-based policies" [1] and mentions in several places the need to implement migration policies at local level.

In Europe in particular, the so-called migration crisis accelerated the on-going process[2] of improving the migration-related data landscape, a step considered essential to support policy-makers during all phases of the policy cycle and assist the multi-level governance of migration. As a contribution to this process, the KCMD-JRC issued a Science for Policy Report (Santamaria and Vespe 2018), which assesses the status of the available data sources, highlighting their main developments, gaps and challenges. The report suggests also possible ways forward. One of the main conclusions of the report is that, even though the data situation has benefitted from the coordinated efforts in the European Statistical Systems, geographically detailed data on migration is not always easily accessible, consistently collected and comparable across EU. These limitations significantly hamper the possibilities to produce actionable knowledge through data analysis.

In this respect, the data set developed by the KCMD provides an example of how scientists can contribute to address some of these limitations (harmonization, comparability, scale of the unit of analysis) by making a better use of existing data. The principal asset of the data set lies in the fact that it harmonises statistics on migration stocks at local level, mostly as a pre-requisite to facilitate subsequent analyses on the impact of migrant concentration and diversity on a range of local issues. From this data set, it is in fact possible to produce valuable insights into the composition of cities, analyse the concentration of migrants by single nationality, and calculate indicators of diversity and spatial residential segregation. This exercise supports comparative research on the local dimension of the integration of migrants in the EU with a view to promote knowledge transfer among cities and evidence-based integration policy-making. The data set offers access to more detailed, disaggregated data in a manner that is comparable across the EU and allows for a series of combinations with a variety of surveys, administrative, operational and geospatial data.

1.3 The D4I data set: why the local level

Increase in both intra-EU mobility and inflows of immigrants from third-countries to Europe has prompted great interest about the presence of migrants in European local societies. Integration policies are discussed and framed at the national level – with significant interactions with EU key actors, yet it is at the local level that they are operatively implemented and adapted to match the actual needs. In OECD countries, sub-national governments are responsible for most of public expenditure devoted to measures that are key to promote inclusiveness (OECD 2018a, 2016). In addition, it is at the local level that the increase in diversity is concretely experienced in terms both of challenges and opportunities.

The EU has been consistently cognizant of the fundamental role of the local and regional governance of integration policies (CSES 2013). Especially in the context of the EU

---

[1] https://www.iom.int/global-compact-migration
[2] COM(2018) 307 final, Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EC) No 862/2007 of the European Parliament and of the Council on Community statistics on migration and international protection.

Integration Action Plan of Third-Country Nationals adopted in June 2016[3], it has strengthened its support to local authorities through a range of programmes and instruments, aimed at facilitating networking among cities, mutual learning and joint development in the integration field – e.g. European Integration Network, European Migration Forum, Asylum Migration and Integration Fund[4], Employment and Social Innovation programme[5], Right Equality and Citizenship[6], URBACT[7], Urban Innovative Action[8].

Parts and parcel of these EU coordinated efforts, the 2018 Urban Agenda Partnership on Inclusion of Migrant and Refugees[9] identified the local dimension as the area in which major data gaps concerning contextual information on immigrant populations, including socio-demographic characteristics, are decisively affecting the enhancement of integration indicators. To this end several DGs (REGIO, HOME, and Eurostat) and OECD worked together towards closing this gap. For example, Eurostat has been testing on fully exploiting EU Labour Force Survey (LFS) data to process integration indicators at NUTS 2 level and by degree of urbanisation[10]. By the same token, the OECD and the EU (OECD 2018b, 2018c) published studies on the regional dimension of migration, also mostly based on the EU LFS, that offer international comparison of the integration outcomes for immigrants and their children.

However, while these initiatives contribute crucially to improve the data landscape on migrant integration, they are still subject to issues of reliability thresholds for sample-based statistics, in particular in countries with small overall populations and/or low shares of immigrant population groups. In addition, and more importantly, LFS data does not allow to zoom in the level of analysis below the regional level while local administrations face needs in the integration field that are specific to the territorial context. Thus, socio-spatial monitoring on even smaller territorial scales is critical to tailor actions to the specific local situations. As pointed out by the final recommendations of the 2018 Urban Agenda Partnership on Inclusion of Migrant and Refugees, in order to enable direct cross-country comparison and benchmarking among cities, it is paramount to rely on evidence produced from datasets that are both more granular and representative. The D4I data set allows for monitoring of migration and integration developments at neighbourhood level. It increases the capacity to identify cities of similar size, with similar migrant populations, it provides cities with a more comprehensive understanding of migration-related changes and integration processes. Hence it substantially helps to carry out international comparison and to inform policy-making with highly detailed evidence.

1.4 The D4I data set: relevance for research

The spatial patterns of immigrant presence in urban places and how they intertwine with processes of socioeconomic integration has been the focus of systematic research since the pioneering work of the social scientists of the School of Chicago in the first half of the 20th century. The studies of Park et al. (1925), Zorbaugh (1929), Whyte (1943), Warner and Srole (1945), Gordon (1964) used metropolitan areas as vantage points to examine the relationships between spatial segregation, often at the neighbourhood scale, and paths towards what they defined *assimilation*.

---

[3] COM(2016) 377 final https://ec.europa.eu/home-affairs/sites/homeaffairs/files/what-we-do/policies/european-agenda-migration/proposal-implementation-package/docs/20160607/communication_action_plan_integration_third-country_nationals_en.pdf
[4] https://ec.europa.eu/home-affairs/financing/fundings/migration-asylum-borders/asylum-migration-integration-fund_en
[5] https://ec.europa.eu/social/main.jsp?catId=1081
[6] http://ec.europa.eu/justice/grants1/programmes-2014-2020/rec/index_en.htm
[7] http://urbact.eu/
[8] https://www.uia-initiative.eu/en
[9] https://ec.europa.eu/futurium/en/inclusion-of-migrants-and-refugees
[10] https://ec.europa.eu/eurostat/web/migrant-integration/data/database and
http://ec.europa.eu/eurostat/web/degree-of-urbanisation/background

In Europe too, looking at the spatial patterns and social processes of immigrants in cities has since become one of the defining features of migration scholarship across disciplines, using a variety of approaches, methodologies and data sources. Evidence-based knowledge has proved how economic and social inequality has a spatial footprint in cities and neighbourhoods, where socioeconomic walls isolate segments of the population, often with ethnic minority background, from mainstream society and social networks. Residential location influences migrant integration, their outcomes in education, employment and income and affects their chances of upward mobility. In parallel, theoretical, semantic and conceptual discussions of terms such as *assimilation, integration, segregation* and *mainstream* have exponentially refined their analytical power in the study of the dynamics between immigrant groups and native populations (see e.g. Alba and Nee 2003; FitzGerald 2015; Hardwick 2015: Oberti and Préteceille 2016).

Two relatively recent trends in migration research are of particular relevance for the D4I initiative. One is the so-called 'local turn' in the study of immigrant integration policy. This has been prompted, on the one side, by the considerations on the increasingly central role played by local authorities in the multilevel governance of migrant integration policies (see e.g. Borkert and Caponio 2010; Zincone and Ponzo 2013; Filomeno 2016; Zapata-Barrero et al. 2017); on the other, by the rich field of studies on the so-called global cities, a concept made popular by Saskia Sassen's seminal work, as key places where the social, economic, political and cultural polarisation triggered by contemporary globalization are most observable and often reflected in spatial segregation of immigrant populations (Sassen 1991, Samers 2002). The second trend revolves around the description of several metropolitan areas as increasingly diverse, including in terms of national and ethnic backgrounds. This development has been theoretically fixed with the notion of super-diversity (Vertovec 2007, Crul et al. 2013), to underline how the relative high degree of diversity in some cities is so significant and complex to represent a specific challenge for integration policymaking.

Along all these lines, the D4I data set provides a new tool to measuring the configuration of cities and rural areas alike. The data set offers new opportunities to test theories empirically and contributes to expand comparative analysis at unprecedented scale. Furthermore, the data set decisively addresses the statistical bias known as the *modifiable areal unit problem*. The Modifiable aerial unit problem or even more precisely the *uncertain geographic context problem* stems from the fact that administrative units and boundaries are arbitrarily designed, therefore hard-to-compare across countries. When it comes to research on the relationship between the spatial patterns of immigrants and the various processes that shape these patterns is crucial to understand the appropriate scale, that is the true causally relevant geographic unit at which to analyse the contextual influences.

Finally, in addition to fill an empirical deficit, the D4I data set also encourages to study the spatial patterns of immigrants as part of a larger context. To fully capitalize on its potential, the dataset was made available to research groups external to the JRC of all disciplines through a data challenge that saw 24 international projects participating[11]. The results of the data challenge were presented on 27 November 2018 to policy makers and a wide range of interested stakeholders at a workshop in Brussels[12]. For the workshop, attended by a balanced mix between researchers from different disciplines, representatives from policy DGs, international organisations and research institutions, networks of cities, local administrators and migrant organisations, 10 papers were chosen from all the proposals participating in the data challenge. The studies were selected equally considering their scientific value and their policy relevance for local integration. All papers illustrated the potential of urban, small-scale research to gain new insights on how city-internal dynamics crucially impact on the integration of migrants. The participants made clear in what ways the D4I dataset represents a point of reference for more research in the coming years. The next section of the report illustrates the main findings presented at the workshop.

---

[11] https://bluehub.jrc.ec.europa.eu/datachallenge/
[12] https://ec.europa.eu/jrc/en/news/data-challenge-provides-insights-migration-and-local-integration

2 The D4I data challenge: Overview of main findings

2.1 Segregation, focal distances and neighbourhood scales for EU and non-EU migrants in European cities

M. Olteanu, J. Randon-Furling (Université Paris 1 Panthéon Sorbonne), W. A.V. Clark (University of California, Los Angeles)

This project worked towards the development of a new method, called trajectory convergence analysis.

The study developed a new mapping of segregation that described the extent to which the population in some specific small area and the continuous sequence of bespoke neighbourhoods around it are similar to, or different from, the citywide average. The trajectory represents the changing composition of the population that one meets when moving from the most local scale to the full city scale. It mimics, in a mathematically way, what an individual would perceive when moving across the city from a given starting point. The set of trajectories thus obtained is a *fingerprint* of the city for the variable under consideration. This fingerprint encodes perceptions of multi-scalar integration and segregation phenomena. A key indicator of integration/segregation perception for people living at a given point in the city lies in the way the corresponding trajectory converges to the city's average. If this convergence happens *quickly*, i.e. for small aggregates, then people living in the starting cell will have a feeling of integration in the city, in the sense that their neighbourhood resembles the city on a short scale. On the contrary, if the convergence is *slow*, i.e. it happens only for large aggregates around the starting cell, then people living in this cell will have a feeling of strong segregation: they need to go a long way from their home to experience the city as it actually is.
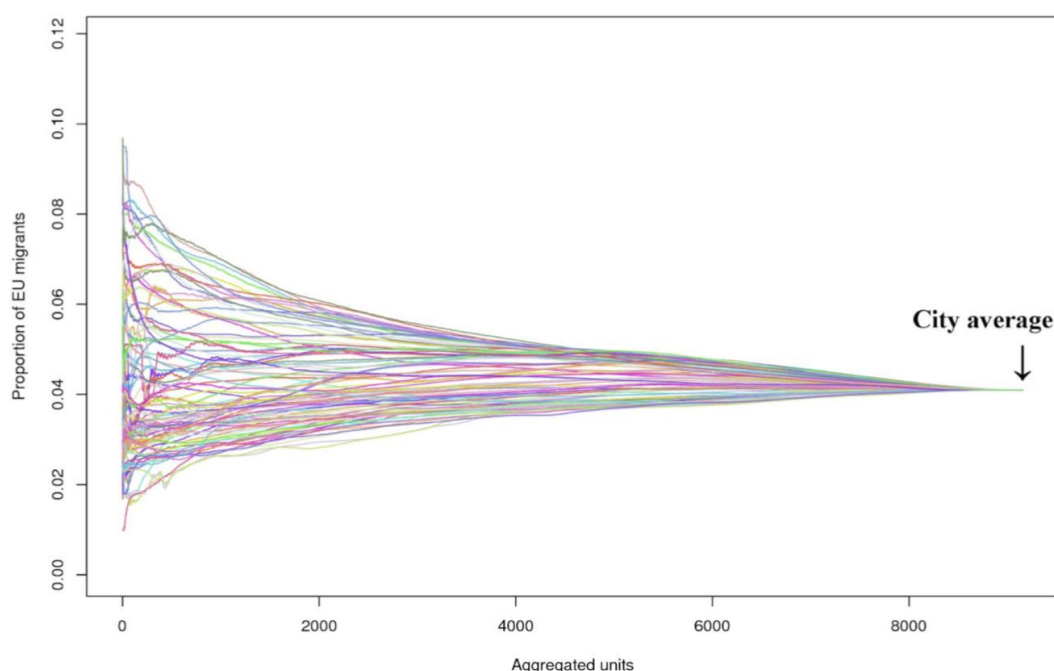
Figure 2 Trajectories for the proportion of EU migrants, starting from some (10%) of the 9156 D4i grid cells in Paris. They represent how one's perception of the population composition evolves when moving from the most local scale to the full city or metropolis. Therefore, all trajectories converge to the city's average (4,09%) – but not in the same manner, nor at the same "speed".

This methodology aims to provide both an indicator of how much a given area converges to the average and a visual portrayal of the levels of segregation/integration. For each trajectory, the distance to the first bespoke neighbourhood that resembles the whole city is defined its *radius of convergence*. This radius works as a focal distance, in that it is the distance one has to cover to get an accurate picture of the city. The longer the focal distance, the stronger the perception of residential segregation.

Trajectory convergence analysis, combined with fine-grained D4I data, could provide detailed visual representations of the patterns of residential (non-)integration of migrants, and thus indicate the different areas and the different scales at which policy measures might be needed to tackle the existence of segregation hotspots. The importance of the D4I data set for the project was indicated in its level of granular detail and its closeness to real life experience.

2.2 Home is where the ethnic community is? Explaining ethnic segregation in small and large German cities

S. Dochow (University of Bamberg)

The project looked at the uneven distribution between Germans and non-EU27 nationals in German municipalities   to appreciate whether there are differences in the scale of ethnic segregation between   micro- and macro-environments. The novel aspect of the analysis, made possible by the use of the D4I data, lied in its focus on the geographical scale of segregation and its inclusion of small cities (20,000 to   100,000 inhabitants) and not only large cities. The migrant population in Germany is widely dispersed and a high share lives in rural areas and smaller cities. Little is known about whether the settlement patterns of immigrants in these areas resemble that of larger cities, for example in terms of the evenness of the distribution over the region of interest.

The research used the D4I fine-grained grids as an approximation of a smooth population density surface and thus to overcome the modifiable area unit problem. Conceiving single aggregate units like municipalities as one population density surface allows to vary the size of the regional context that matters for segregation. For example, it could be that some municipalities are segregated within neighbourhoods (that is, on a small scale) whereas other municipalities are segregated across neighbourhoods (on a larger scale). The project therefore relied on the spatial dissimilarity index as a measure of ethnic segregation to calculate segregation at incremental scales of 300 m, 900 m and 1,500 m.
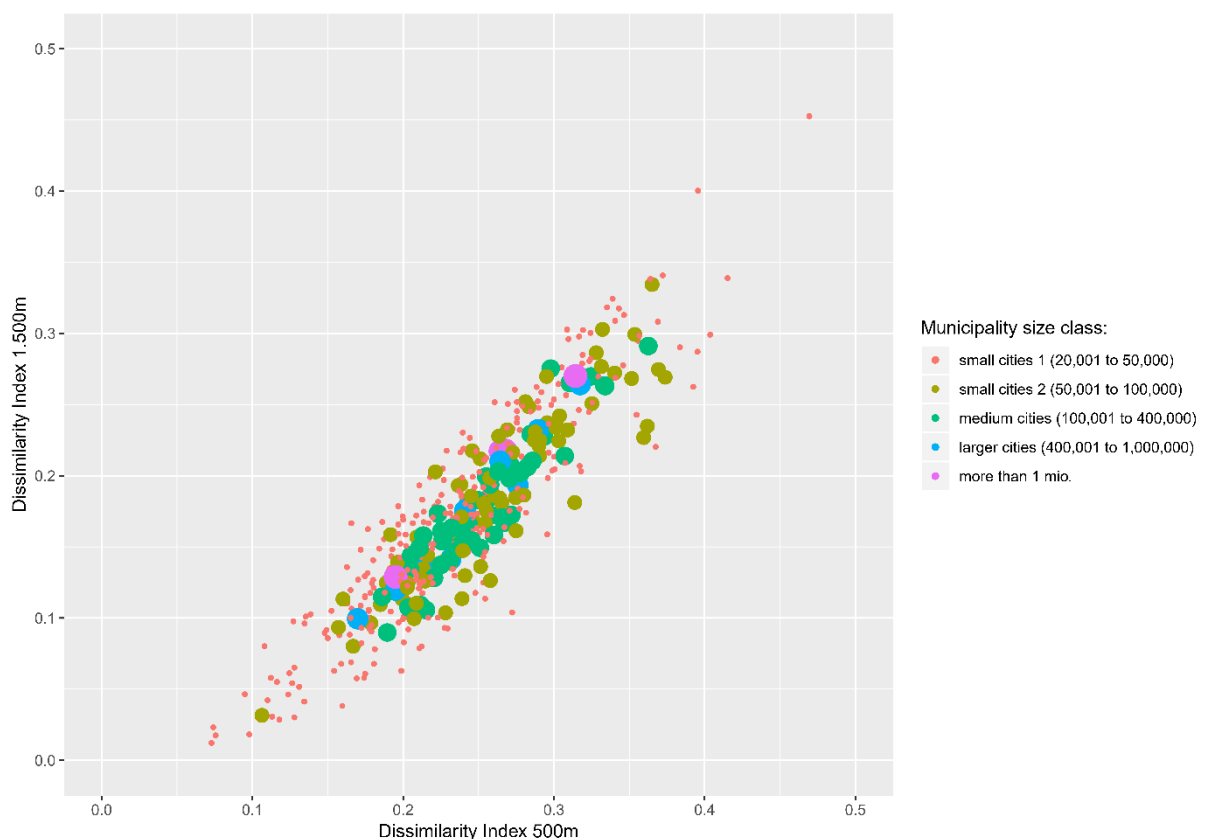

Figure 3 Association between the spatial dissimilarity index for local environments of 300 m and the spatial dissimilarity index for local environments of 1,500 m.

The two indices are highly correlated, that is, municipalities that are segregated choosing a 300 m radius are also very likely to be segregated when choosing a 1,500 m radius of the local context. This is not surprising as micro segregation is partly composed of macro segregation. However, some municipalities deviate from the large bulk in the middle by displaying larger values of segregation on the small scale for given values of segregation at the 1,500m scale than most of the other municipalities. This is an interesting finding which indicates that it is worthwhile to measure small scale segregation to gain new insights, particularly in smaller cities. Figure 3 also indicates that small German municipalities differ widely in their ethnic segregation. Even though the larger cities are on average more segregated, a number of small cities also reach high levels of ethnic segregation. This is important insight for policy makers, because small-scale ethnic segregation might be a consequence of decisions by single landlords, whereas segregation on higher scales might be due to more structural characteristics on higher levels.

The project was also constructive in discussing how to improve the fine-grained information in the D4I data set, in that it critically discussed employed estimation technique (dasymetric mapping).

2.3 The geographies of diversity and segregation by country of birth

C. D. Lloyd, G. Catney (Queen's University Belfast)

The key focus of the project was to use an array of indices that measure residential segregation (how far do members of one group live apart from members of other groups?) and diversity (how many different population groups are represented in neighbourhoods?) to assess between-group inequalities. In particular, the paper built a full set of segregation and diversity measures for all grid cells within all of the EU member states included in the D4I dataset to explore how far segregation (and diversity) is associated with deprivation, access to resources (for example, in employment, housing or education), or social outcomes (such as poor health). More in-depth analysis was carried out on a series of local segregation measures, computed for grid cells in London and Paris.

Overall, the study found that uneven geographies of immigrant groups – between groups and between places - at the very local level were more complex than expected. More specifically in the case of the two capital cities, the levels and spatial extent of highly diverse areas were found to be considerably greater in London than in Paris.
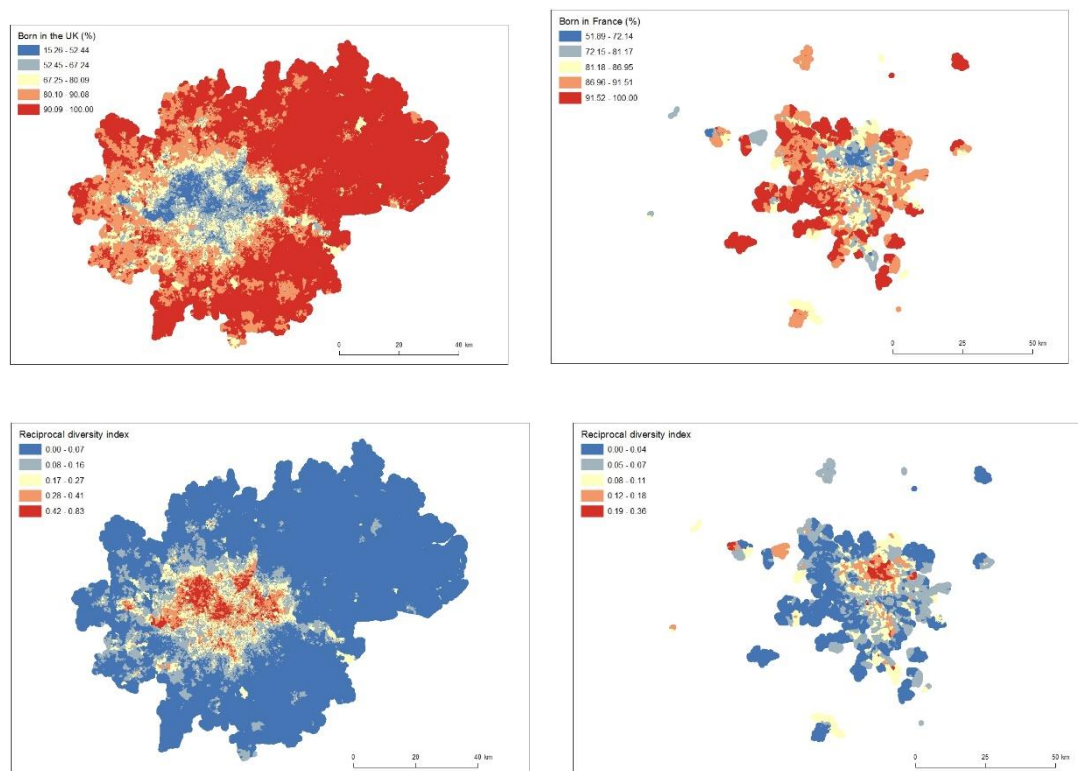
Figure 4 shows (clockwise) the percentage of people in London born in the UK for 100m grid cells, the equivalent map for those born in France residing in Paris, the RDI values for Paris and London (note that the category thresholds vary for each map). The analysis made use of the index of Dissimilarity and the reciprocal diversity index (RDI) computed for each grid cell.

The project explained the ways in which these descriptive measures and outputs, computed over different neighbourhood scales and linked to other variables, have multiple potential uses, including planning for adequate housing and schools provision. The authors underlined that the drivers of these distributions can be positive (networks, opportunities), and/or negative (inequalities, discrimination). While these represent challenges for policy makers, helping to better understand the spatial scale of migrant geographies could

provide the basis for policies which are tailor-made for individual countries, or indeed areas within countries.

Since the applications of measures of segregation and diversity are a function of the size and shape of the spatial units used in the analysis, the opportunity to work with consistent scale of analysis across several European countries, parse through individual countries of birth (rather than coarse categorisations), implement multi-country analysis of multi-scale segregation that does not focus solely on urban areas revealed of great value.

2.4. The diversity of urban diversities. A systematic mapping and theorisation of migration-related diversity in European cities

Z. Kasli, A. Pisarevskaya, P. Scholten (Erasmus University Rotterdam)

The project aimed to map and theorize variation between cities to develop a better empirical and theoretical understanding of different types of migration-related diversity in cities. The study moved from the consideration that existing research on super-diversity has been mostly ethnographic and focused on the micro-level in specific localities with no clear prescription for how to operationalize and study diversity empirically. A second element considered by the authors was that, since diversity involves some extent of segregation, the relation between migration and segregation lacks proper measures and more quantitative analysis.

The flexibility of the D4I data set was instrumental to allow an upscaling of the unit of analysis. In fact, the original data set was aggregated at Local Administrative Unit (LAU), where the confidentiality threshold did not impact as significantly as in the detailed grids-based data. Similarly, in the analysis, cities were defined as Functional Urban Area (FUA), an OECD definition of metropolitan areas, to make the entities comparable across countries.
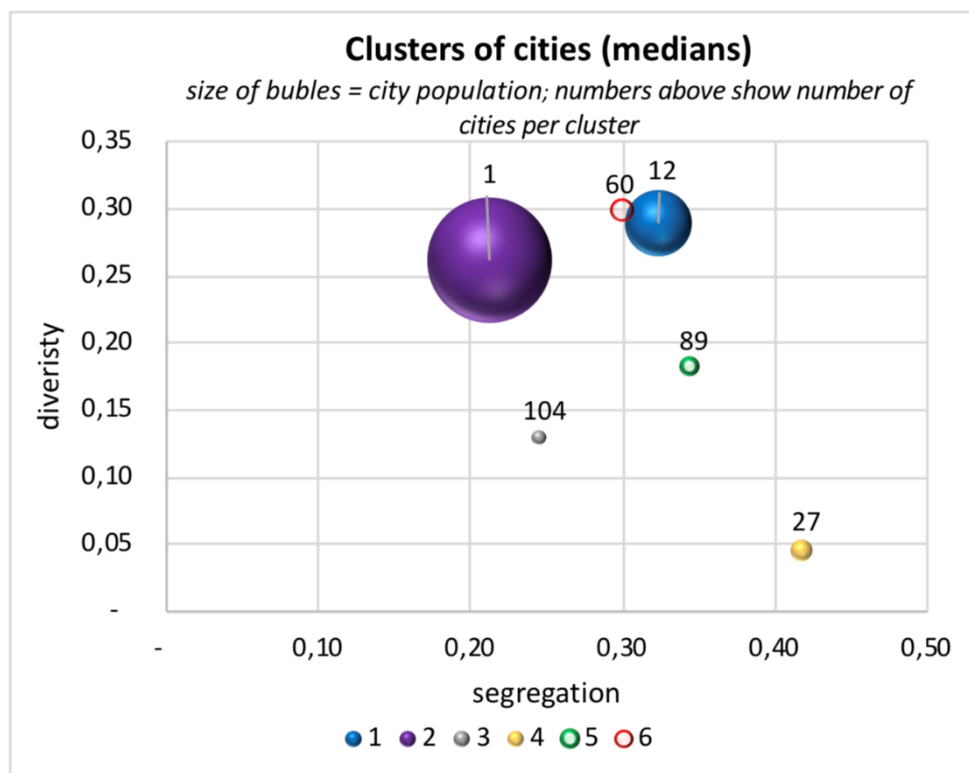
Figure 5 City clusters by three dimensions (diversity, segregation, size), based on data on France, Germany, Italy and the Netherlands, simplified.

The project followed a three-step approach. First, it made an inductive empirical mapping of clusters of cities that share similar configurations of migration-related diversity, based on the D4I data sets for France, the Netherlands, Italy and Germany, which led to profile 293 cities grouped into 6 clusters. For each city different parameters were calculated: absolute numbers and share of migrant and local origins, number of origins, total

population size, diversity and segregation indexes. The analysis revealed significant variation in terms of migration-related diversity. The internal complexity of diversity differed broadly as well. Subsequently, the authors implemented a cluster analysis of all 293 municipalities based on three variables: diversity index, segregation index and size. A correlation analysis of the variables was made to determine the optimal number of clusters. The clusters partition captured the nuances of data, while keeping the number of groups manageable. Second, following the identification of 6 empirical clusters of types of urban diversities, the project conducted a more in depth analysis of a sample of cities per cluster. This involved a closer examination of factors that may be associated with diversity. Third the first two steps were brought together in an effort to identify distinct types of urban (migration-related) diversities in urban context.

The study refuted the idea that there would be one 'model' of migration-related diversity, mapping diversity on the three core dimensions identified in the literature (diversity, segregation and city size. It theorizes the configurations of diversity towards an exhaustive typology of urban diversities. The typology aims to contribute to a better grasp of, rather than reduction of, the complexity of migration-related diversity in cities.

2.5 Comparing residential segregation: selected origins in selected EU metropolitan areas

S. Strozza (University of Naples), F. Benassi, F. Lipizzi (Italian National Institute of Statistics), C. Bonifazi, F. Heins (Institute of Research on Population and Social Policies CNR)

The project analysed segregation indices for EU and non-EU citizens and for selected countries of origin at the level of the Functional Urban Areas (FUA). It adopted different approaches. It compared segregation indices according to selected countries of origin to identify convergences throughout different countries and urban settings based on the population size of the area considered. In addition, the analysis discerned territorial specificities of the single immigrant communities and the single FUA. It then investigated possible socio-demographic and socio-economic factors that influence the level of segregation in the FUA. The additional socio-demographic and socio-economic information was also drawn from the 2011 population census. It included demographic structure (gender, age, citizenship), level of education, as well as information regarding economic activity and labour markets.

The study provided an overview of the levels, the territorial patterns and determinants of residential segregation in the urban areas of Europe, while assessing the importance of national peculiarities, like specific policies regarding integration or public housing, compared to local factors. Overall, residential segregation has a clear country specific component.
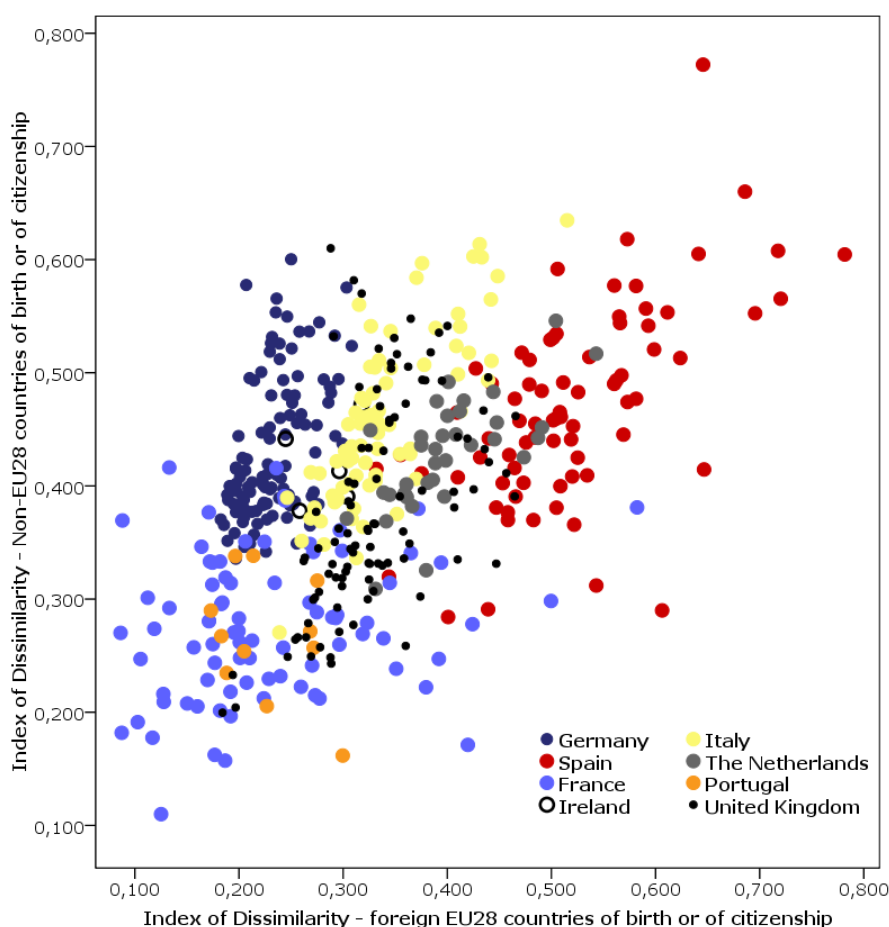

Figure 6 Residential segregation of the foreign EU28 and Non-EU28 populations – FUAs by countries compared

The empirical analysis involved 493 FUA and it revealed a great heterogeneity together with some clear signs of regularity. One of the main finding was that the level of segregation, measured through the index of dissimilarity, recorded in the large metropolitan areas is lower than the level of segregation recorded in the total urban areas in general. This pattern was confirmed when observing the sub-groups of migrants, EU and non-EU citizens. Even if the large metropolitan areas seem to be poles of attraction for migrants, the highest levels of residential segregation are recorded in the smaller urban areas. In addition, the residential segregation of migrants does vary widely when observed for specific countries of origin in selected FUA.

A preliminary analysis of possible correlations between segregation and sociodemographic factors in some metropolitan areas and large metropolitan areas (N=81) showed that, in general, population density, population growth and unemployment have an impact on residential segregation. The GDP, where significant, showed to play a role as a deterrent to high levels of residential segregation favouring residential integration.

2.6 Multiscale and multidimensional segregation of non-Western. migrants in seven European capitals

A. Petrović, M. van Ham, H. Janssen (Delft University of Technology), D. Manley (University of Bristol), T. Tammaru (University of Tartu)

The project investigated ethnic segregation in seven European capitals, namely Amsterdam, Berlin, Lisbon, London, Madrid, Paris, and Rome. These cities present a mix of immigration and welfare contexts in Europe. The study looked at the levels of ethnic segregation in each city and how these levels vary between them, how segregation manifests itself at different geographical scales and how it varies between the cities, and whether segregation varies between metropolitan cores and hinterlands.

The project examined three dimensions of segregation - centralisation, evenness and exposure – in the entire urban regions of the seven capitals, coinciding with their Functional Urban Areas. Centralisation measures the relative concentration of two groups in the urban core. Evenness captures the distribution of the population across the urban space. Exposure complements the second measure, in that registers the possibility of interaction between two groups in residential spaces at various spatial scales Together, these dimensions make it possible to compare different aspects of segregation across all the cities. To investigate the effects of scale, the research adopted the methodology of increasingly large bespoke areas, that is considering multiple spatial scales, delineated by drawing circles of various radii around each person's home.
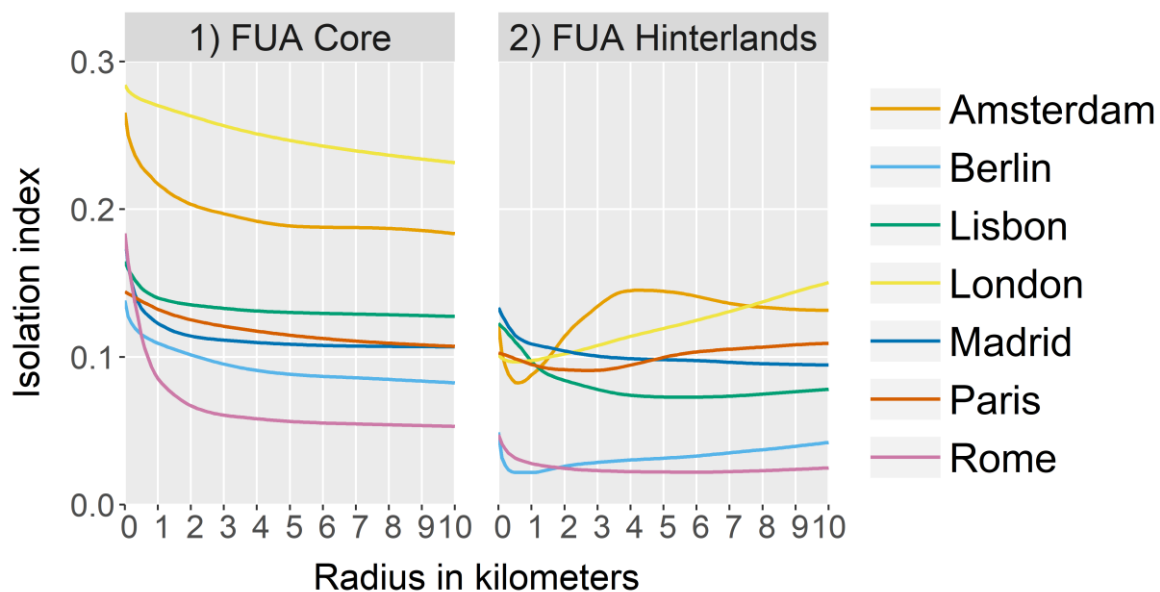

Figure 7 Exposure as a dimension of segregation

Overall, the findings gave insight into segregation at a range of spatial scales. The project identified differencing levels of segregation and potential exposure, and that neighbourhood size and local context in terms of the share of non-Western migrants mattered in how ethnic groups potentially experience segregation. Non-Western migrants concentrate in urban cores in most of the cities, even though in the South European capitals, non-Western migrants are more equally scattered in the core and hinterlands. In most of the cities, non-Western migrants are more unevenly distributed in the hinterlands than in the urban core. Hinterlands generally have less non-Western people than the urban cores, but these people locate in specific parts of the hinterlands, most likely in places

where they can access and afford housing or settle close to family. This occurs at different spatial scales in different cities.

The results for the range of scales suggest that measuring evenness at single administrative scales may obscure smaller-scale neighbourhood level ethnic compositions. Non-Western population is less likely to be exposed to other ethnic groups in their neighbourhood of residence. The meeting potential between Western and non-Western people in the same neighbourhood is conditional of the overall size of the group in the given city. Persistent segregation at multiple spatial scales is a common phenomenon on Europe but, at the same time, spatial patterning of segregation is very different and thus needs to be measured both along multiple scales and multiple dimensions.

2.7 Immigrant urban hot-spots in Europe: identification, mapping, comparison and visualization

F. Celata, M. Rossi, C. Y. Hendrickson (University of Rome La Sapienza), F. Martellozzo (University of Florence), L. Simeone (Aalborg University Copenhagen), F. Ricatti, R. Wilson (Monash University)

The aim of the research was to identify and qualify immigrant hot-spots in European cities, defined as those neighbourhoods with the highest concentration of foreigners. The analysis covered seven countries - France, Germany, Great Britain, Ireland, Italy, Netherlands, Spain – and was primarily focused on the methodological issue of the modifiable area unit problem.

The project considered immigrant urban "hot-spots" as crucial viewpoints to observe the patterns of integration or non-integration of foreigners and to understand how place, culture and social capital influence social behaviour. The authors tested extensively the possibilities open by the D4I data set to overcome the lack of accurate and detailed information about the spatial distribution of foreigners at the geographical scale that is most useful to identify the specific local areas where immigrants concentrate. To this end, the original 100x100 meters grid was aggregated into square kilometres, by appraising any potential alternative aggregation of 100x100 cells that, in any local area, show the highest concentration of foreigners. Additionally, the study converted the grid data into a geo-dataset and ran a focal statistical analysis to attribute to any 100x100 meters cell the sum of the foreign population in the surrounding 100 cells. It then produced a base map using satellite imagery provided by Esri and Open Street Map geo-data and calculated a Shannon index of diversity to measure the degree of ethnic heterogeneity of each zone.

The D4I dataset proved to be easy to combine with additional datasets. In this way, it was possible to integrate the findings and provide additional evidence with a degree of spatial resolution that was coherent with the scale at which the analysis had identified immigrant hot-spots. Geo-data permitted to calculate several indicators, such as the distance of the identified zones from the city centre, the nearest major railway station or the nearest urban green area. Land use and environmental data permitted to provide a characterization of the zones in terms of typologies of the settlements, built-up coverage and density, urban quality.

The project illustrated also possible applications of the D4I data set to target the general public, including non-specialists, through infographics, interactive maps, hypertext contents and data visualization techniques.
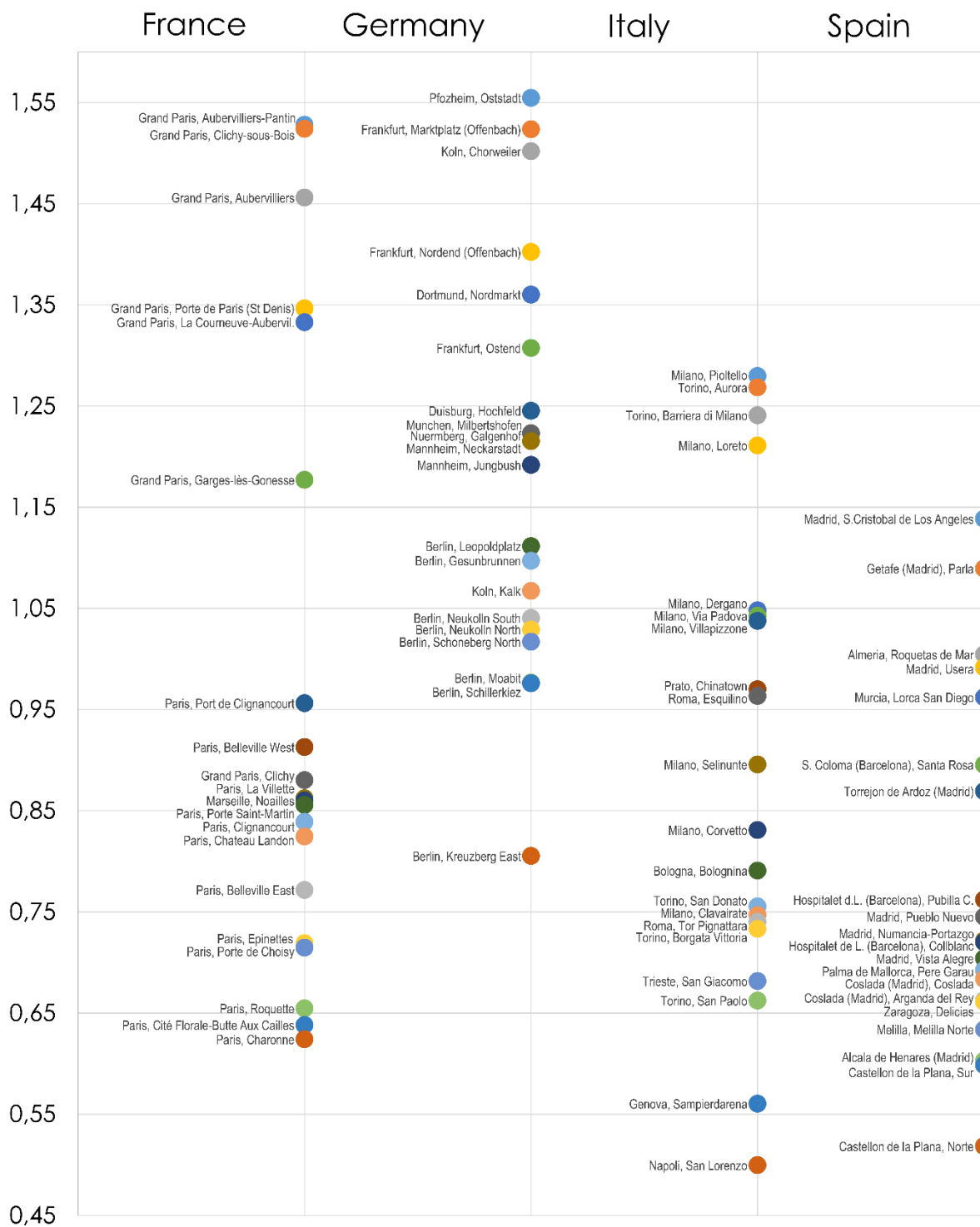
Figure 8 Comparison between countries: Ethnic diversity in cities' neighbourhoods

2.8 Residential settlement of migrants and housing values: Zooming into neighbourhoods of Italian provincial capitals

S. Kalantaryan, A. Alessandrini (KCMD-JRC)

It is widely considered that migration can have an impact on housing markets in cities. On the one hand, the inflow of migrants increases the demand for residential units in cities, raising the average house prices. On the other, the impact at neighbourhood level might not follow the general trend and lead to relative devaluation.

The initial findings from D4I unpack this complex relationship between migration and housing markets at neighbourhood level. KCMD research analysed housing market data of Italian regional and provincial capitals at neighbourhood level in combination with D4I census data at similar scale. The analysis shows that the relationship between the presence of people with migrant background and housing costs in certain urban areas is not linear. Migrant presence is associated with high prices only up to a certain degree of concentration. In neighbourhoods where more than half of the population is of migrant background, housing values become relatively lower. This might be due also to the flee of some national residents, in reaction to the presence of migrants in the neighbourhood.

The map below shows average housing prices and residential patterns of people of migrant background in Turin in 2011. The map reveals that migrants are concentrated (red spots) in neighbourhoods with relatively cheap housing prices. However, the analysis suggested that more diverse neighbourhoods are associated with relatively lower house prices and that housing costs may vary according to the country of origin of the migrant population.
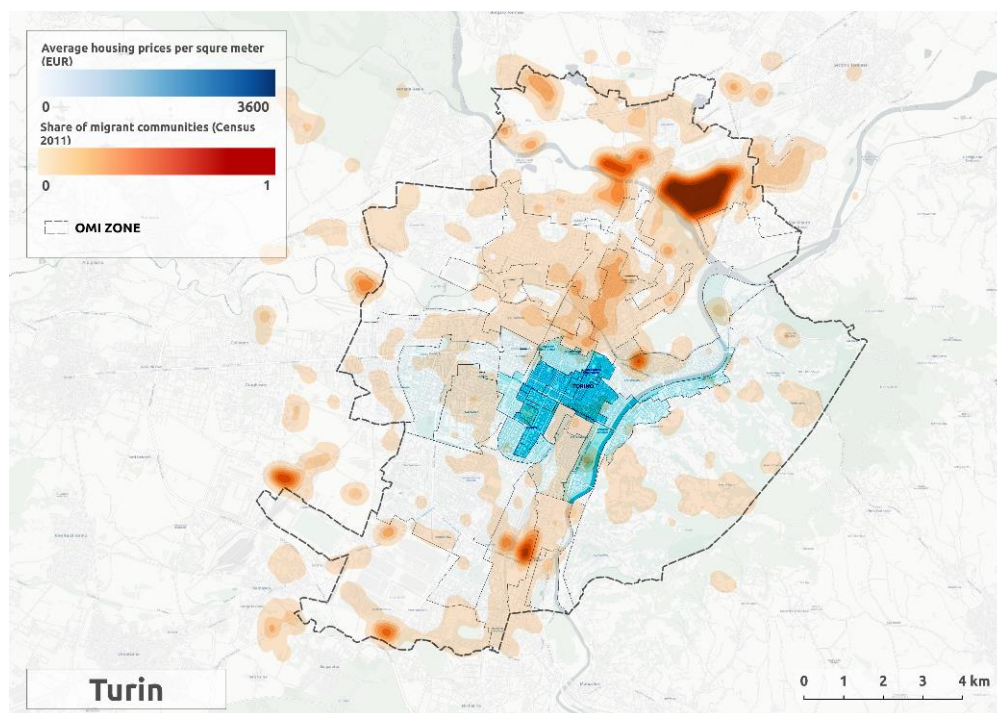

Figure 9 Average housing prices vs. share of migrants in Turin, 2011

High spatial resolution data such as the D4I dataset provides the opportunity to obtain in-depth granular knowledge on housing market dynamics. In particular, further research is needed on how changes over time concerning the patterns of migrant mobility into, within and out of neighbourhoods influence house prices.

2.9 The effect of asylum seekers' reception centres on house prices: Evidence from the Netherlands

P. Proietti (GSSI School for Advanced Studies, L'Aquila), M. N. Daams (University of Groningen), P. Veneri (OECD and GSSI School for Advanced Studies, L'Aquila)

The project examined the effect of the opening of asylum seekers reception centres (ASRCs) on the local housing market in the Netherlands. The D4I data set was combined with data regarding ASRCs opened in the Netherlands since 2009, including their address and year of opening, and data regarding property observations from the Dutch Association of Real Estate Agents (NVM). The dataset covers house sales throughout the Netherlands from January 2009 to December 2017. Data includes information regarding transaction price and date, the address, parcel size, number of rooms, period of construction, type of heating, type of structure and the presence of insulation materials. The study divides migrants into two groups, EU versus third country nationals and looked at the effect of ASRCs opening on the prices of nearby houses, in terms of ASRCs being perceived as (dis)amenities in local communities.

The analysis was carried out using hedonic regression in a difference-in-difference framework. As the empirical analysis distilled relevant local changes in house prices over time, it adopted two distance thresholds: 1) houses within 750 m from the nearest ASRC were assigned to the so-called target group, i.e. within which prices are potentially influenced by ASRCs opening; 2) houses outside but nearby the target area, located between 750 and 1,500 m from ASRCs, were assigned to the control group. This method allows to calculate the effect of ASRCs on house prices as the difference between the prices in the target and control areas after ASRCs opening minus the price-difference between these same areas in the pre-opening period. It also allows to observe whether the effect of ASRCs on house prices, if any, varies with the diversity of local population. Furthermore, since the Netherlands have a decentralised system of reception, the research considered whether the impact of ASRCs is different for houses in cities and in less densely populated areas.
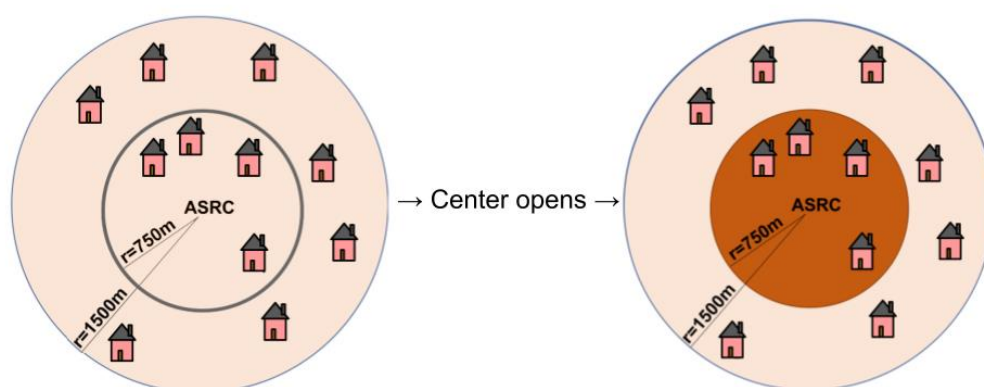

Figure 10 Average price impact of 120 centres

The findings showed that opening ASRCs negatively affects the selling prices of houses located nearby and suggested that ASRCs are perceived as (net) disamenities by potential house buyers. The project examined how this effect changes according with the degree of urbanization and found that ASRCs have a negative and significant impact on house prices in all types of settlements, although the effect is stronger outside densely populated areas. When considering the concentration of population of foreign origin, there was evidence of a steeper decrease in prices of houses located in places with a higher than average

percentage of foreigners. The result remained similar even when EU27 and non-EU migrants are considered separately.

2.10 Transport and migration "Big Data" - A GIS-based approach for measuring migrants access to public transport in European cities

Y. N. Photis, A. Bartzokas-Tsiompras (National Technical University of Athens)

The project created comparable indicators regarding migrants' access to public transport in 56 (26 larger and 32 medium-sized) European cities from 6 of the EU member states covered by the D4I data set. The research examined differences in access to public transport between native-born and foreign-born populations and produced a first assessment of how cities rank in providing public transport services. By providing a better understanding of access to public transport across European cities, the study wishes to support authorities at various level, from EU and member states to local, to allocate funds and resources more effectively.

The D4I data set was combined with other three geospatial datasets: the Urban Center Boundary – UCB for comparable city boundaries, the OpenStreetMap.org (OSM) for street network data and the General Transit Feed Specification (G.T.F.S) for public transport. In each UCB and for each stop/station, the authors calculated for each station two types of buffer zones and the average number of departures per hour on a regular weekday. The results were merged with the D4I data set and analysed statistically for each migrant group and each accessibility category. The study distinguished between two different groups of cities. First, 26 larger cities, where UCB's population is more than 500,000 inhabitants and 32 Medium-sized cities. The purpose of each test was to compare if the difference in each accessibility level between the native-born population and the different migrants' origins was statistically significant.

Figure 10 Population (%) access to public transport in selected European cities

Findings provide evidence that regardless of the city size, the foreign-born populations, by and large across Europe, experience better access to public transport than the native-born. This was explained also by assuming that migrants' travel behaviour is generally more dependent on public transit and tend to be residentially more concentrated around public transport hubs. In order to offer policymakers valuable insight, the project argued, additional research is needed at the local scale, in particular for cities that have been identified as problematic in the report.

3 Conclusion

The D4I initiative provided many stimulating inputs to steer future research towards real political priorities. The mixing of multiple perspectives proved instrumental in discussing new approaches to policy making with those most directly involved in the issue (government administrations, practitioners, civil society activists).

The initiative contributed to communicate innovative approaches to statistical data at local level. It offered the opportunity to promote a structured research-policy dialogue working towards the desired outcomes of mutual policy learning, knowledge transfers and exchange. At the same time, the data challenge format stimulated the creation of multi-level partnerships among all committed actors.

The JRC is ideally positioned for such type of initiatives especially when they relate to data set with a cross-country coverage. Catalysing research around the data offers a strategic role to the JRC at the interface between research and policy. This role entails high recognition and a multiplier effect in respect to the research capacity internal only to the JRC. Opening its research infrastructure to external scientific use helps the JRC to fulfil its knowledge management function, foster its scientific excellence and adopt multidisciplinary approaches.

Lastly, the feedback received by many participants suggested that the JRC should launch a new data challenge in 2019 to disseminate new data collected from the 2001 Census or more recent administrative data. The participants pointed to the crucial importance to exploit the benefits of longitudinal analyses.

Our next objective is to explore the ways in which the D4I data set could be used to assess policy needs and outcomes at the local level across the EU. The ultimate goal is to make sure that statistical data are feeding into decision-making effectively, in line with the actual interests, specific challenges and needs of the local and regional governments in the integration field.

Both the data challenge and the multi-stakeholder workshop confirmed the importance to have a more strategic approach to JRC's partnerships with external organisations.

References

Alba, R. and Nee, V. (2003). *Remaking the American mainstream. Assimilation and contemporary immigration*. Cambridge, MA: Harvard University Press.

Alessandrini, A., Natale, F., Sermi, F., and Vespe, M. (2017). High resolution map of migrants in the EU *JRC Technical Reports EUR 28770 EN, doi: 10.2760/0199*

Borkert M. and T. Caponio (eds.) (2010) *The local dimension of migration policymaking*, Amsterdam: Amsterdam University Press.

Center for Strategy and Evaluation Services (2013), "Study on practices of integration of third-country nationals at local and regional level in the European Union", European Union, Brussels.

Crul, M., Schneider J. and F. Lelie (2013) *Super-diversity A new perspective on integration*, Amsterdam: VU University Press

Filomeno, F. A. (ed.) (2017). *Theories of Local Immigration Policy*, Cham: Palgrave Macmillan.

FitzGerald, D. S. (2015) The sociology of international migration in *Migration theory: talking across disciplines* ed. by C. B. Brettell and J. F. Hollifield, New York: Routledge, 115-147.

Gordon, M. (1964) *Assimilation in American life*, New York: Oxford University Press.

Hardwick, S. W. (2015), Coming of age. Migration theory in geography, in *Migration theory: talking across disciplines* ed. by C. B. Brettell and J. F. Hollifield, New York: Routledge, 198-226.

Oberti, M and Préteceille E. (2016), *La ségrégation urbaine*, Paris: La Découverte.

OECD (2018a), *OECD Regions and Cities at a Glance 2018*, OECD Publishing, Paris, https://doi.org/10.1787/reg_cit_glance-2018-en.

OECD (2018b), Working Together for Local Integration of Migrants and Refugees, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264085350-en"

OECD/EU (2018c), *Settling In 2018: Indicators of Immigrant Integration*, OECD Publishing, Paris/European Union, Brussels. *https://doi.org/10.1787/9789264307216-en*

OECD (2016), *Making Cities Work for All: Data and Actions for Inclusive Growth*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264263260-en

Park, E. P., Burgess, E. W. and R. D. McKenzie, (1925). The city. Suggestions for investigation of human behavior in the urban environment, Chicago, University of Chicago Press.

Samers, M. (2002) Immigration and the global city hypothesis: towards an alternative research agenda. *International Journal of Urban and Regional Research* 26.2, 389– 402.

Santamaria, C. and Vespe, M. (2018) Towards an EU Policy on Migration Data. Improvements to the EU migration data landscape, Publications Office of the European Union, Luxembourg. ISBN 978-92-79-93668-5, doi:10.2760/645367, JRC112864

Sassen, S. (1991). *Global city,* Princeton: Princeton University Press.

Vertovec, S. (2007). Super-diversity and its implications. *Ethnic and racial studies, 30*(6), 1024-1054.

Warner, W. L. and L. Srole (1945), *The social systems of American ethnic groups*. New haven: Yale University Press.

Whyte, W. F. [1943] Street corner society. The social structure of an Italian slum, Chicago, Ill., The University of Chicago Press.

Zapata-Barrero, R., Caponio, T., & Scholten, P. (2017). Theorizing the 'local turn' in a multi-level governance framework of analysis: A case study in immigrant policies. *International Review of Administrative Sciences, 83*(2), 241-246.

Zincone G. and I. Ponzo (eds) 2013 . *How European Cities Craft Immigrant Integration. Something to Learn*. Rome: Foundation for European Progressive Studies/Italianieruopei;

Zorbaugh, H. W. (1929), The gold coast and the slum. A sociological study of Chicago's near north side, Chicago, University of Chicago.

The European Commission's science and knowledge service

Joint Research Centre

JRC Mission

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent evidence throughout the whole policy cycle.

EU Science Hub
ec.europa.eu/jrc

@EU_ScienceHub

EU Science Hub – Joint Research Centre

Joint Research Centre

EU Science Hub

Publications Office