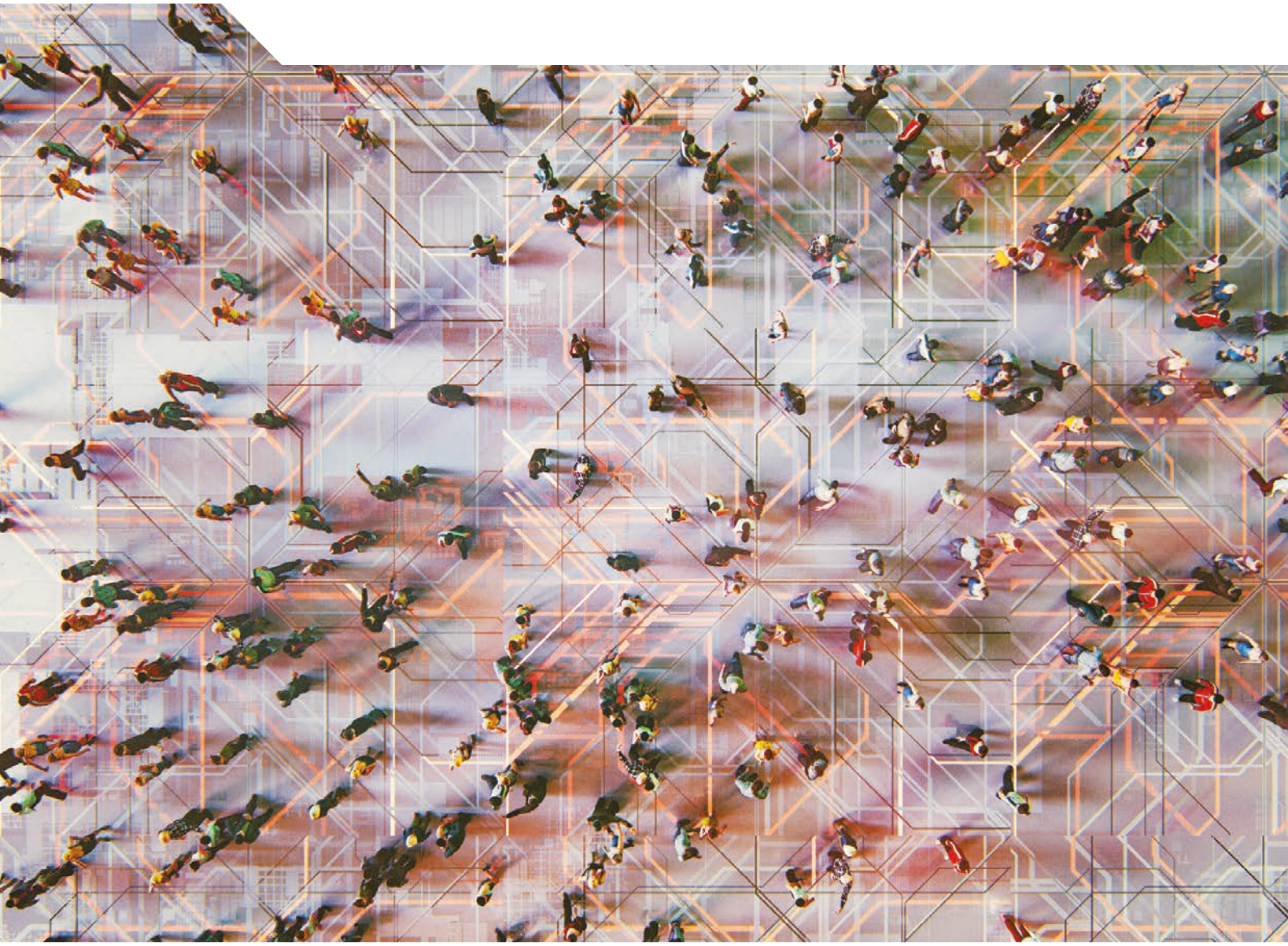
OECD Regional Development Studies

The Contribution of Migration to Regional Development



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Foreword

With many regions in OECD countries facing declining working age populations, the geographical dimension of migration has become crucial for regional development. Where migrants settle within countries and how much they contribute to their local economies are important questions for policy makers.

Fully addressing these questions requires geographically granular data on the presence of migrants and their performance in local labour markets. In addition, a detailed analysis of the factors driving the capacity of local economies to successfully integrate migrants is necessary to ensure that the full potential of migration can be realised. This report aims to address both needs through two novel datasets.

The first updates and extends the existing OECD Regional Database on migration and migrant integration with an increased number of indicators as well as an increased geographical scope and time coverage. The resulting dataset, which includes more than 120 indicators, covering 36 countries over two decades, provides a comprehensive picture of the education and labour market outcomes of migrants across OECD regions. The second offers unprecedentedly granular information on the geography of migration, providing a means to measure, and consistently compare, changes in migration settlement patterns across municipalities of 22 OECD countries.

Furthermore, the report provides new insights on the role of migration on regional development, highlighting opportunities and challenges for integrating migrants successfully in regional economies. Overall, whilst for some workers and places there may be short-term transition impacts, the findings show that migration can generate valuable benefits for regional economic development, especially over the longer term. Through the variety of evidence provided, this report supports policies designed to enhance the potential benefits of migration in all regions.

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The analysis and preparation of the report were managed and co-ordinated by Lukas Kleine-Rueschkamp with the guidance of Paolo Veneri, Head of the Statistics and Territorial Analysis Unit, under the supervision of Rüdiger Ahrend, Head of the Economic Analysis, Data and Statistics Division, OECD. The report was drafted by Lukas Kleine-Rueschkamp (OECD) and Cem Özgüzel (OECD). Nadim Ahmad and Andrew Paterson (OECD) and provided valuable comments. Mael Astruc—Le Souder, Eric Gonnard, Jasper Hesse, Claire Hoffmann and Chloé Mas (all OECD) provided statistical support. Furthermore, the report benefitted from analytical inputs by Anthony Edo (CEPII), Ismael Gálvez-Iniesta (University of the Balearic Islands), Lucas Guichard (LISER), Evgenii Monastryenko (University of Luxembourg) and Gianluca Orefice (University of Dauphine). Data on interregional trade flows were provided by Giovanni Madras (European Commission's Joint Research Centre). The report benefited from valuable reviews and comments by Alan Manning (London School of Economics), Jan Stuhler (Universidad Carlos III de Madrid), and Madeleine Sumption (Migration Observatory, University of Oxford). Pilar Philip and François Iglesias (both OECD) prepared the report for publication.

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Executive summary

In 2019, 5.3 million new permanent migrants settled in OECD countries, an increase of around a quarter since 2010. Migration is highly concentrated geographically, with more than half of the foreign-born population (53%) living in large metropolitan regions, compared to only 40% of natives. Migration has also increased faster in specific OECD regions such as capitals or regions with more dynamic labour markets. Yet, despite the scale of migration, the localised impacts, and the high political attention around the issue, there remains a lack of detailed analysis of the local challenges and opportunities associated with migration. This report presents novel, highly granular data and analysis on migration in regions and cities and sheds new light on the role of migration in regional development.

To fully capitalise on the potential of migrants' skills and talent, regions need to successfully integrate them into their labour markets. Over the past 5 years, most regions have made significant progress on this front: the employment rate of migrants increased by 4.3 percentage points in the OECD, faster than for the native-born population. Yet migrants' employment rates still fall below that of natives, especially in European regions. On average, migrants are around 4 percentage points less likely to be in employment than their native peers, although in capital regions and regions with a relatively larger service economy, these gaps tend to be smaller.

The paper highlights in particular three key areas where actions could be taken to improve migrants' integration in regional labour markets. First, European regions face difficulties in supporting non-EU migrants into employment. Compared to migrants from EU countries, migrants from a non-EU country have a 10 percentage points lower employment rate, with the largest differences in high-income regions in Northern Europe. Second, gender gaps are particularly striking for migrants. While foreign- and native-born have similar employment rates among males, the gap between female foreign- and native-born remains significant in the majority of OECD regions, on average around 7 percentage points. Gaps are particularly large outside of capitals and metropolitan regions, driven by a relatively low labour force participation of female migrants. Third, even though migrants can provide valuable skills to regional economies, their skills are often not fully used. In fact, more migrants have completed tertiary education (40%) than their native-born counterparts (35%), but highly qualified migrants often work in jobs that do not match their qualifications.

Many migrants have played a critical role in countries' responses to the pandemic as key workers in essential sectors, such as food processing, delivery, transportation, and haulier services or health care, that were vital for the continuity of economic activity. On average, migrants accounted for 14 percent of key workers across European regions and for around 20 percent in capital regions. Migrants were particularly important for supporting local health care systems, especially in cities, accounting for 23 percent of medical doctors and 14 percent of nurses in European regions. While the pandemic highlighted the important role of migrants as key workers across regions and cities, it also revealed their heightened vulnerability. Worse socio-economic conditions in terms of housing, lower possibilities to work remotely, and lower employment security put migrants at greater health and economic risks.

Regions can benefit from migration not only as a vital source of labour, especially in key sectors with significant shortages, but also in several other dimensions of economic development. This report shows

that migration is an important mechanism to boost regional GDP per capita, especially in lower-income regions, thus contributing to within-country economic convergence. On average, a 10 percent increase in the migrant share is associated with 0.15 percent higher regional GDP per capita. Overall, for the 25 percent of poorest regions in a country, the positive effect of migration on per capita incomes is more than twice as high (0.36 percent).

Migrants can also contribute to regions' internationalisation and innovation. By bringing new ideas to their host regions, migrants help foster local innovation. This effect is particularly strong in the most innovative municipalities, where a 10 percent increase in the share of migrants is linked to a 1 percent rise in the number of patents per capita. Furthermore, migrants help their host regions establish new trade networks and thus boost regions' internationalisation via exports and imports. On average, a 10 percent increase in the number of migrants equates to a 1.2 percent increase in a region's exports and a 2.5 percent increase in imports. For trade with places outside the European Union, including emerging markets, the positive impact of migration is even larger.

While migration can generate valuable benefits for regional economic development, those benefits are not necessarily shared equally across space and different types of workers. Regions with more highly educated migrants record larger increases in international trade compared to those with migrants with lower levels of education. Similarly, the contribution of migrants to patenting activities appears to be higher in more developed regions. In the labour market, an increase in the labour supply due to migration can affect natives' employment in the short term. Between 2010 and 2019, growth in natives' employment rates slowed down in European regions following increases in the labour force due to migration, especially for low-educated workers in lower-income regions. However, this effect disappears over time, as regional labour markets adjust. Regions with higher levels of GDP per capita are faster to absorb new workers, resulting in little or no effect on the native workforce, especially those with higher education, even in the short term.

Targeted policies could help to fully capitalise on the potential of migration. To ensure that all regions and groups profit from migration, policies should aim to mitigate any short-term adverse labour market effects on, in particular, non-university educated workers and economically lagging regions. Furthermore, strengthened support for female migrants and faster recognition of foreign qualifications could alleviate labour shortages regions face and at the same time foster migrants' economic integration in their host region. Policies that ensure fair pay and decent working conditions can enable regions to attract migrants, which is particularly relevant for shrinking regions and essential services. Such policies would also improve migrant integration in labour markets while offering them better protection from economic and health crises.

1 The geography of migration across OECD regions and cities

This chapter analyses the scale and distribution of migration across regions and cities in OECD countries. First, it provides an overview of the geography of migrant populations across large regions. Second, it assesses how the share of migrants has evolved in recent years and examines what type of regions have attracted further migration. Finally, using novel data, the chapter examines migration granularly, eliciting patterns and trends of migration in small regions and different types of areas within OECD countries.

In Brief

Migration has increased across the OECD in recent years, with the presence of migrants varying significantly across regions and cities within OECD countries

- The population share of foreign-born individuals has been slowly increasing in OECD countries, reaching 12% in 2019. However, the extent of migration has a strong geographic nature, with the share of migrants varying widely across regions in the same country.
- Migrants are significantly more concentrated in specific types of regions than the native-born population. More than half of the foreign-born population (53%) lives in large metropolitan regions, compared to only 40% of the native-born population.
- Between 2015 and 2019, migration has increased faster in specific OECD regions. Capital regions keep attracting a significant number of migrants and have recorded a larger increase in the population share of migrants than their respective rest of the country. Migration also increased faster in regions with dynamic labour markets characterised by recent declines in unemployment or rises in employment rates.
- While migration in recent years appears to be more dispersed throughout OECD countries' territories than in earlier periods, cities remain a major destination for migrants. In most OECD countries with available data, the share of migrants is not only larger in cities than towns and suburbs or rural areas but has also increased the most in cities over the past five years.

Introduction

The integration of migrants remains one of the most relevant and pressing policy challenges in many OECD countries. While migration and the size of migrant communities differ across countries, regional differences within countries also tend to be significant. Therefore, designing effective migrant integration policies requires precise and adequate subnational data. Subnational data on migrants' presence and their labour outcomes do not only offer insights on geographic differences but also enable an empirical assessment of existing challenges. Finally, subnational data on migrants can help evaluate policies and the impact of changes in integration measures.

This chapter builds on and extends recent OECD efforts to analyse the subnational geography of migration in OECD countries (Diaz Ramirez et al., 2018[1]). It significantly expands the empirical scope of regional data for TL2 OECD regions on migrants' presence and their demographic background (for a definition of TL2 regions, see Box 1.1). While previous efforts were restricted to one (2015) or two (2005, 2015) points in time for the presence of migrants, this chapter is based on new comprehensive data collection efforts. Drawing on various labour force surveys as well as other sources, most derived indicators cover annual regional observations for the period of 2010-19, reaching back as far as 2000 for data on the presence of migrants (Box 1.2).

Box 1.1. What are "TL2 regions" and "TL3 regions"?

Regions within the 38 OECD countries are classified on two territorial levels reflecting the administrative organisation of countries. The 433 OECD "Territorial Level 2" (TL2) regions are those at the highest subnational administrative level, for example the federal states in Germany. The 2296 OECD "Territorial Level 3" (TL3) regions correspond to administrative regions, with the exception of Australia, Canada and the United States

Source: OECD (2021[2]), *OECD Territorial Grids*, http://stats.oecd.org/wbos/fileview2.aspx?IDFile=cebce94d-9474-4ffc-b72a-d731fbdb75b9.

Box 1.2. Data: Definition and sources

Data sources

This chapter uses various labour force surveys to assess the geographic distribution, educational attainment and the labour market integration of migrants across regions in OECD countries. The main data sources are the European Community Labour Force Survey (EU-LFS) for the European OECD countries, the American Community Survey for the United States (US), the Canadian Labour Force Survey for Canada, the National Survey of Occupation and Labour for Mexico, the Survey of Education and Work (SEW) for Australia, the Israel Monthly Labour Force Survey for Israel, the Encuesta Nacional de Empleo (ENE) for Chile, the Gran Encuesta Integrada de Hogares (GEIH) for Colombia and the Resident Registered Population Status Census, the Immigrant Status and Employment Survey as well as the Survey of the Economically Active Population for Korea, which all contain information on the country of birth or nationality of the local resident population. To ensure comparability, only countries with more recent data than from 2015 are included in the analysis in this chapter.

Sample

The sample of all analyses in this chapter is restricted to residents in the 15 to 64 age group. The analysis uses the common approach of defining migrants as those individuals born in a foreign country, regardless of those individuals' arrival date to their host country. For European countries, migrants are further split into two groups based on their country of birth: those born in another European Union (EU) member country than the one where they currently work and reside (i.e. EU migrants) and those born in a country outside of the EU (i.e. non-EU migrants). Finally, anyone who was born in their country of residence is considered native-born.

Overall, the remainder of the chapter presents new evidence on three dimensions related to regional migration. First, it examines the geographic variation and concentration of the foreign-born population across OECD regions. Second, it examines how the population share of migrants has evolved over recent years and which type of regions recorded the largest increases. Finally, the chapter uses novel, geographically granular data to provide a more nuanced picture of spatial differences in migration in OECD countries.

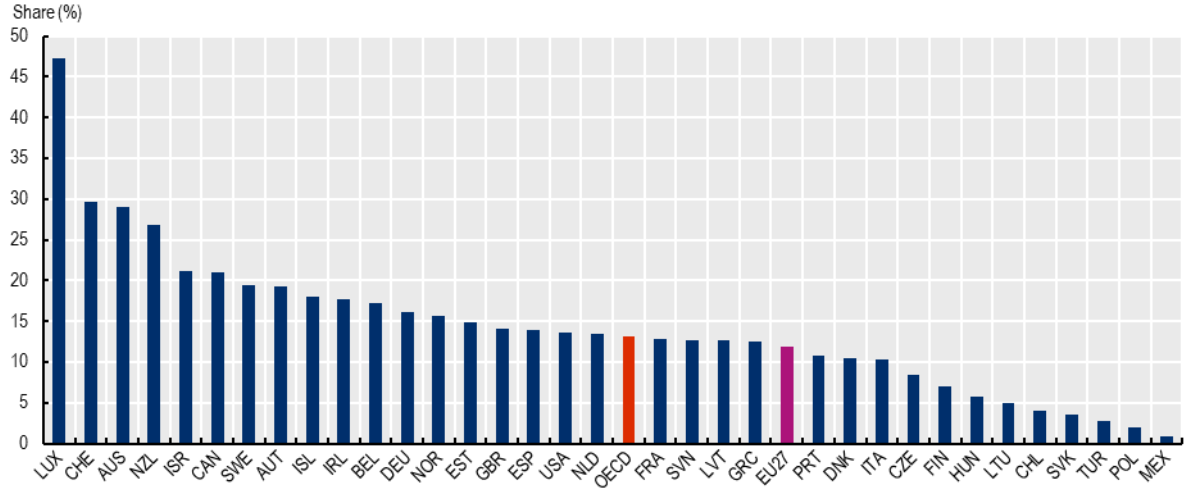
Where do migrants live? The geographic distribution of migrants across the OECD

To support effective migration policy design, policy makers need to understand the different types of challenges and difficulties migrants face. Foremost, this requires comprehensive and detailed data on migrants, in particular their geographic distribution across different regions and cities within OECD countries. As documented by previous research, the foreign-born population differs from the native-born population in terms of where they choose to live. Overall, migrants tend to be more geographically concentrated in specific regions. This chapter sheds light on the regional distribution of migrants in 30 OECD countries using new data and time-series information, complemented by novel data at a very granular geographic level (municipalities, districts and small OECD regions) that offers an even more nuanced perspective on where migrants live.

The size of migrant communities differs greatly across OECD countries. On average, migrants make up 13% of the population in OECD countries and around 12% in EU27 countries (Figure 1.1). Luxembourg, where almost half of the population are migrants (47%), records the highest share of migrants among OECD countries, followed by Switzerland (30%), Australia (29%) and New Zealand (27%). At the other end of the scale, the population share of migrants is less than 1% in Mexico and around 2% in Poland. In a third of countries with available data (13 out of 36), the share of foreign-born exceeds 15% of the total population.

Figure 1.1. Migrant population across OECD countries, 2019

Share of foreign-born population by country



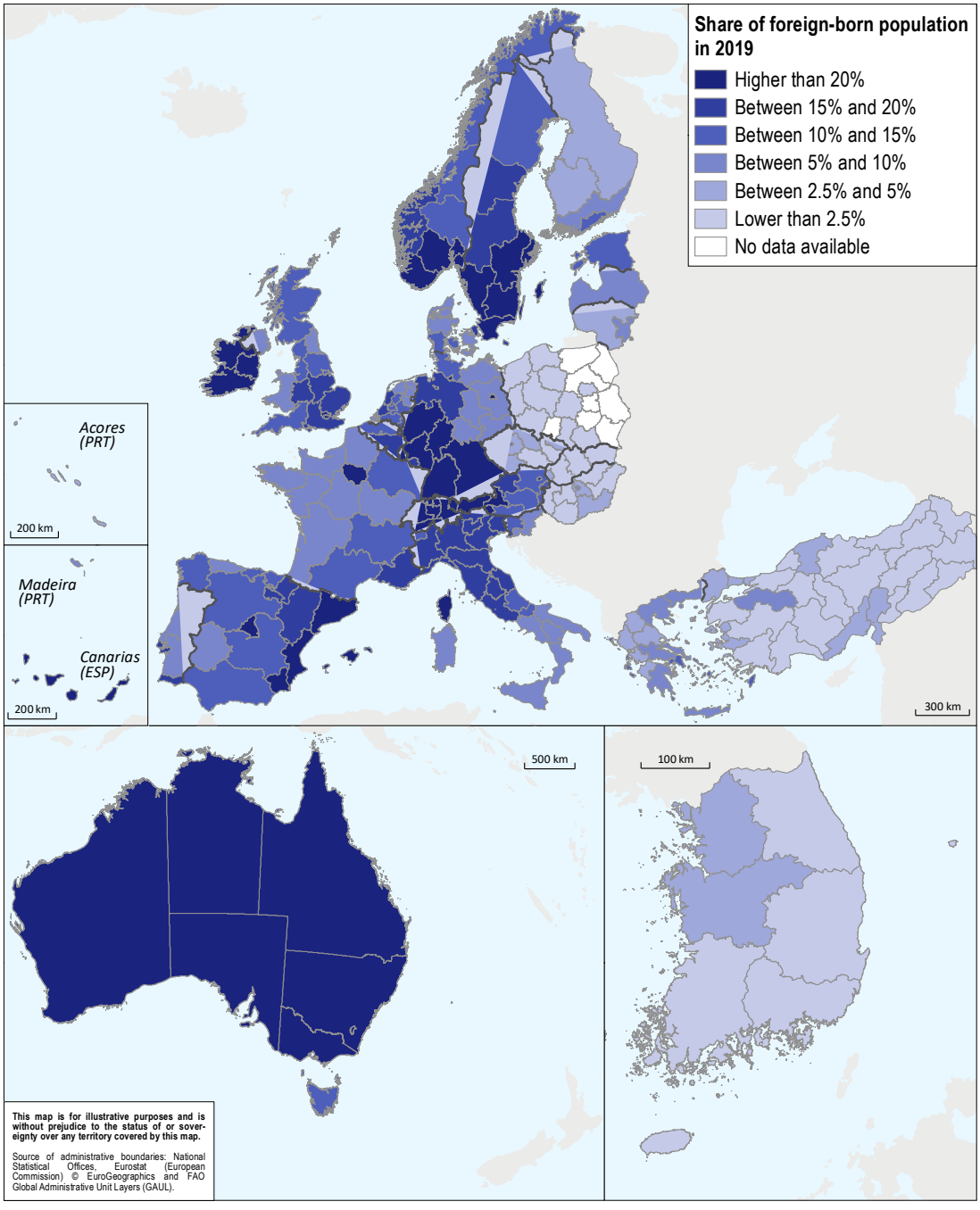
Note: The figure presents the share of the foreign-born among the total population. Data are for 2019 with the exception of Mexico, New Zealand, Turkey (all 2018), Canada and Chile (2017).
Source: OECD (2020[3]), *International Migration Outlook 2020*, https://dx.doi.org/10.1787/ec98f531-en; Eurostat (2020[4]), *Migration and Population Statistics*, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Migration_and_migrant_population_statistics.

The population share of migrants does not only differ across countries but also varies across regions within OECD countries. Across the OECD, the average national difference in the migrant population share between the regions with the highest and those with the lowest share of migrants is around 15 percentage points. Belgium and the United Kingdom (UK) record the largest regional differences among OECD countries, with the population shares of migrants in Brussels and Greater London, their respective regions

with the largest foreign-born communities, exceeding those of Flanders and North East England (UK) by 40 and 37 percentage points respectively (Figures 1.2 and 1.3). In Australia, Austria, Canada, France, Germany, Spain and the US, regional differences in the size of migrant populations are also significant, ranging from 20 to 30 percentage points. Given the size of their migrant communities, the Nordic countries Denmark, Norway and Sweden, as well as Switzerland, display relatively small regional variation.

Figure 1.2. Migrant population across OECD regions, 2019

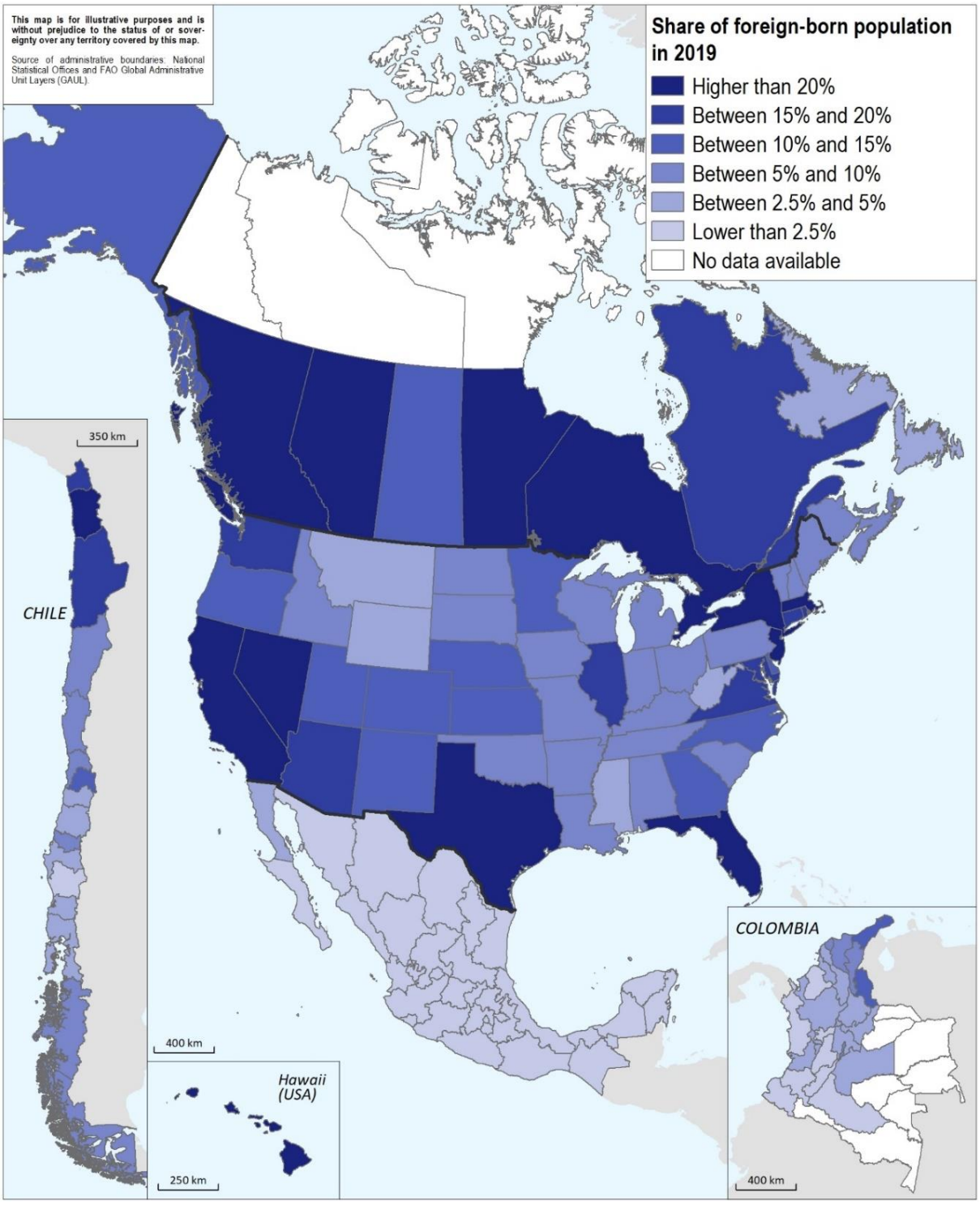
Share of foreign-born population in TL2 regions



Note: The figure presents the share of foreign-born among 15-64 year-olds.
Source: OECD calculations based on labour force surveys. See Box 1.2 for detailed information on sources.

Figure 1.3. Migrant population across OECD regions, 2019

Share of foreign-born population in TL2 regions



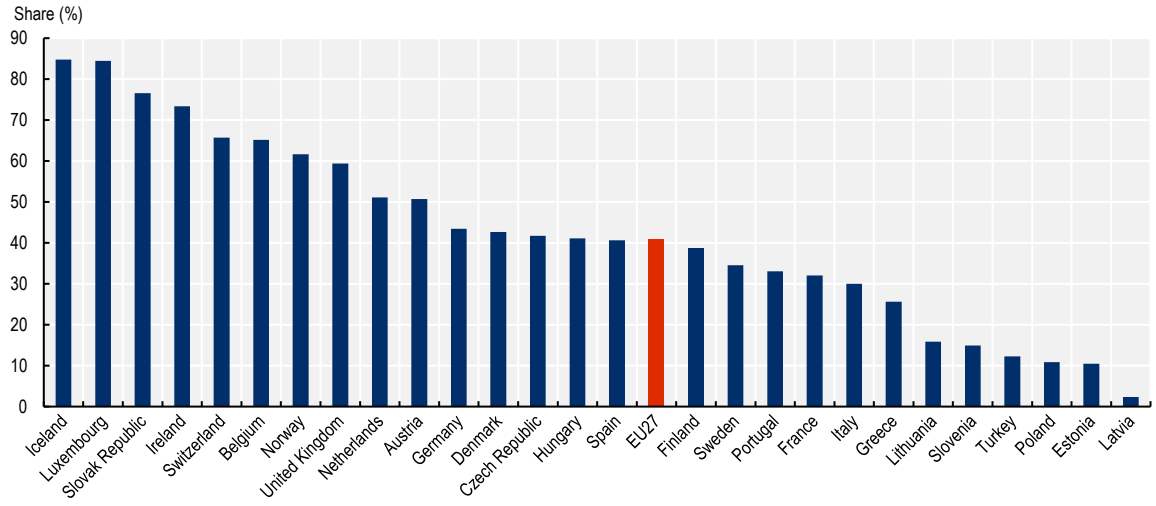
Note: The figure presents the share of foreign-born among 15-64 year-olds.
Source: OECD calculations based on labour force surveys. See Box 1.2 for detailed information on sources.

As previously documented for data from 2015, the concentration of migrants remains especially strong in capital city regions (Diaz Ramirez et al., 2018[1]). Overall, the share of migrants in capital regions exceeds 15.8%.[1] In around two-thirds of countries with available data for multiple regions, the capital city region has the largest share of foreign-born population.[2] In fact, the Belgian and UK capitals, Brussels and London, are the two regions with the highest population share of migrants in the OECD with 54% and 44% respectively. Additionally, Vienna, the Austrian capital, records the fourth-largest population share of foreign-born among all OECD regions. On average, migrants account for 5.3 percentage points more of the population in capital regions than in their respective countries. Additionally, migrants are also heavily concentrated in regions that concentrate a lot of economic activity within their country or contain the economic capitals of their respective country.

In 2019, around 30 million people living in EU27/European Free Trade Association (EFTA)/UK countries were born outside the EU27, EFTA or UK, representing 9.7% of all inhabitants. Additionally, 16 million people born in EU27/EFTA/UK countries resided in one of those countries, other than their place of birth, accounting for 4.9% of the population (Eurostat, 2021[5]). The distinction between EU foreign-born and non-EU foreign-born reveals noticeable differences in the respective geographic distribution of migrants. In the EU27, 40% of all foreign-born individuals come from EU countries. In Norway, Switzerland, the UK (all non-EU countries), the proportion of migrants born in the EU even ranges from 60-66%. In Luxembourg and Switzerland, the two countries with the biggest proportion of EU-born among migrants, four out of five migrants come from other EU countries (Figure 1.4). Poland as well as the Baltic countries of Estonia and Latvia have the lowest share of EU individuals among the foreign-born population, with around 10% or less of migrants born in another EU country.

Figure 1.4. Share of EU migrants among the foreign-born population, 2019

Share of EU migrants among the total migrant population by European OECD country



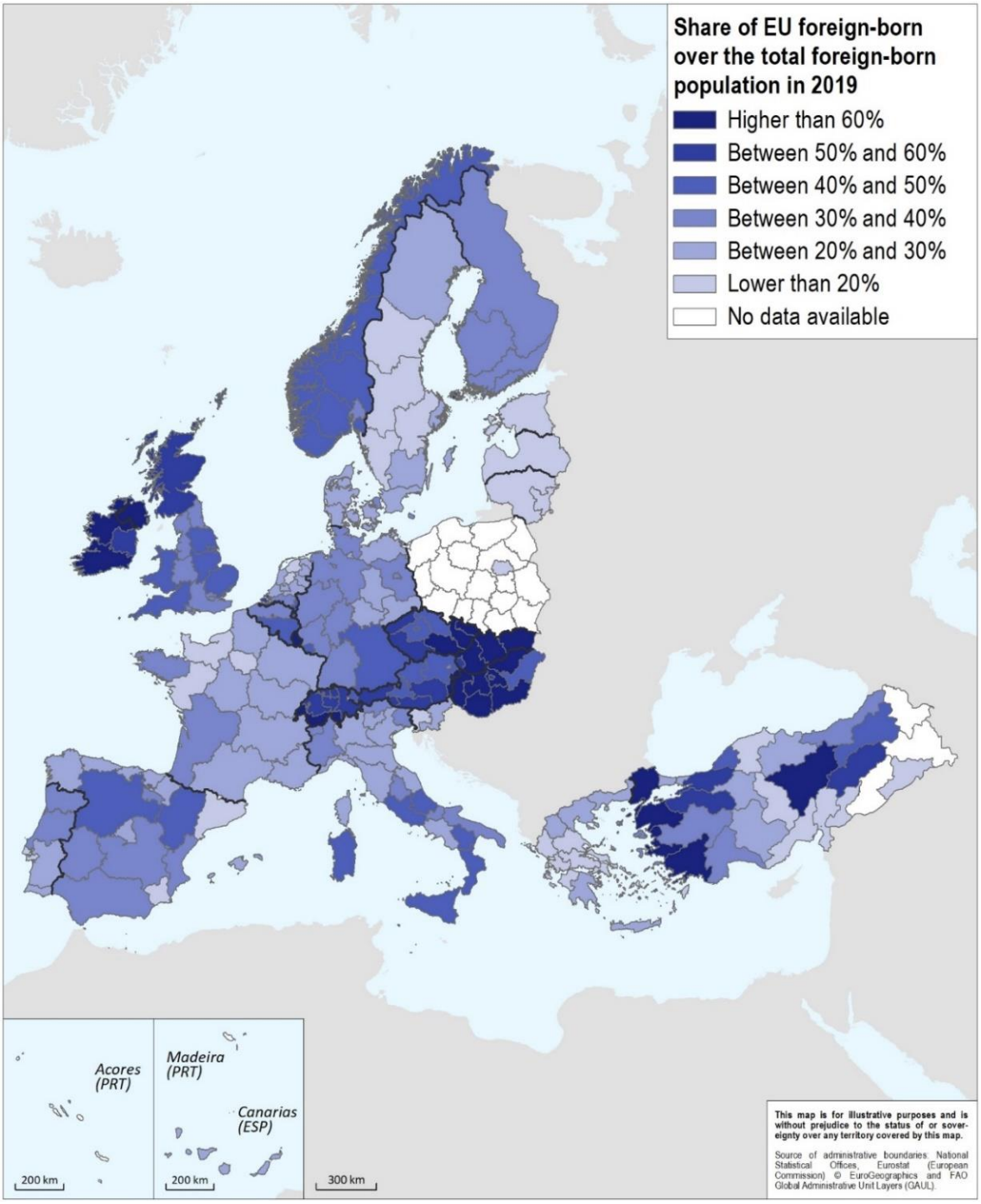
Source: Eurostat (2020[4]), *Migration and Population Statistics*, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Migration_and_migrant_population_statistics.

Compared to non-EU migrants, foreign-born from EU countries are more dispersed geographically within European countries. The share of EU migrants among the overall population tends to be more similar across regions within a given country than is the case for non-EU migrants. However, countries and regions still differ widely in terms of the composition of their foreign-born population divided into EU and non-EU migrants (Figure 1.5) While in Scandinavia as well as Belgium or Poland, most regions have a comparable proportion of EU migrants as a percentage of the entire migrant population, regional differences in the

relative importance of EU migrants are considerable in other European countries. The relative share of EU migrants among all migrants differs more than 30 percentage points across regions in the Czech Republic, Finland, Hungary, the Netherland and the UK.

Figure 1.5. EU migrants in European OECD regions, 2019

Share of EU foreign-born among the total foreign-born population



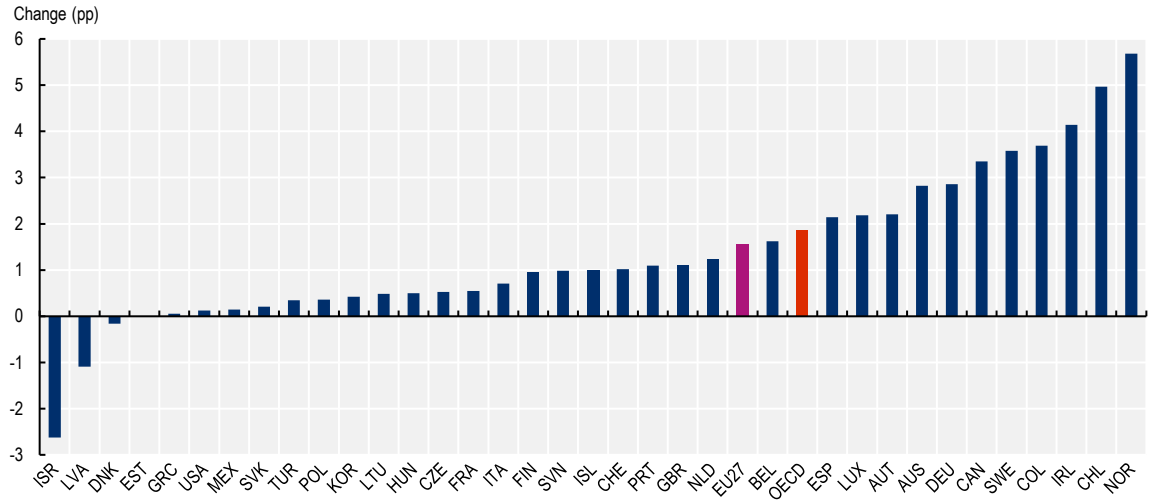
Source: OECD calculations based on labour force surveys. See Box 1.2 for detailed information on sources.

How has the population share of migrants in OECD regions evolved over time?

Over the past few years, the population share of migrants has increased in most OECD countries. Between 2015 and 2019, the share of the foreign-born population rose by 1.9 percentage points in the OECD overall and by around 1.6 percentage across the EU27 countries (Figure 1.6). While Denmark, Israel or Latvia recorded a small decrease in their migrant population shares, other countries such as Chile, Ireland, Norway or Sweden experienced a rise of the share of migrants among the total population of 3.5 percentage points or more in the period 2015-19.

Figure 1.6. National population share of foreign-born, 2015-19

Percentage point (pp) change in the national foreign-born population share by country



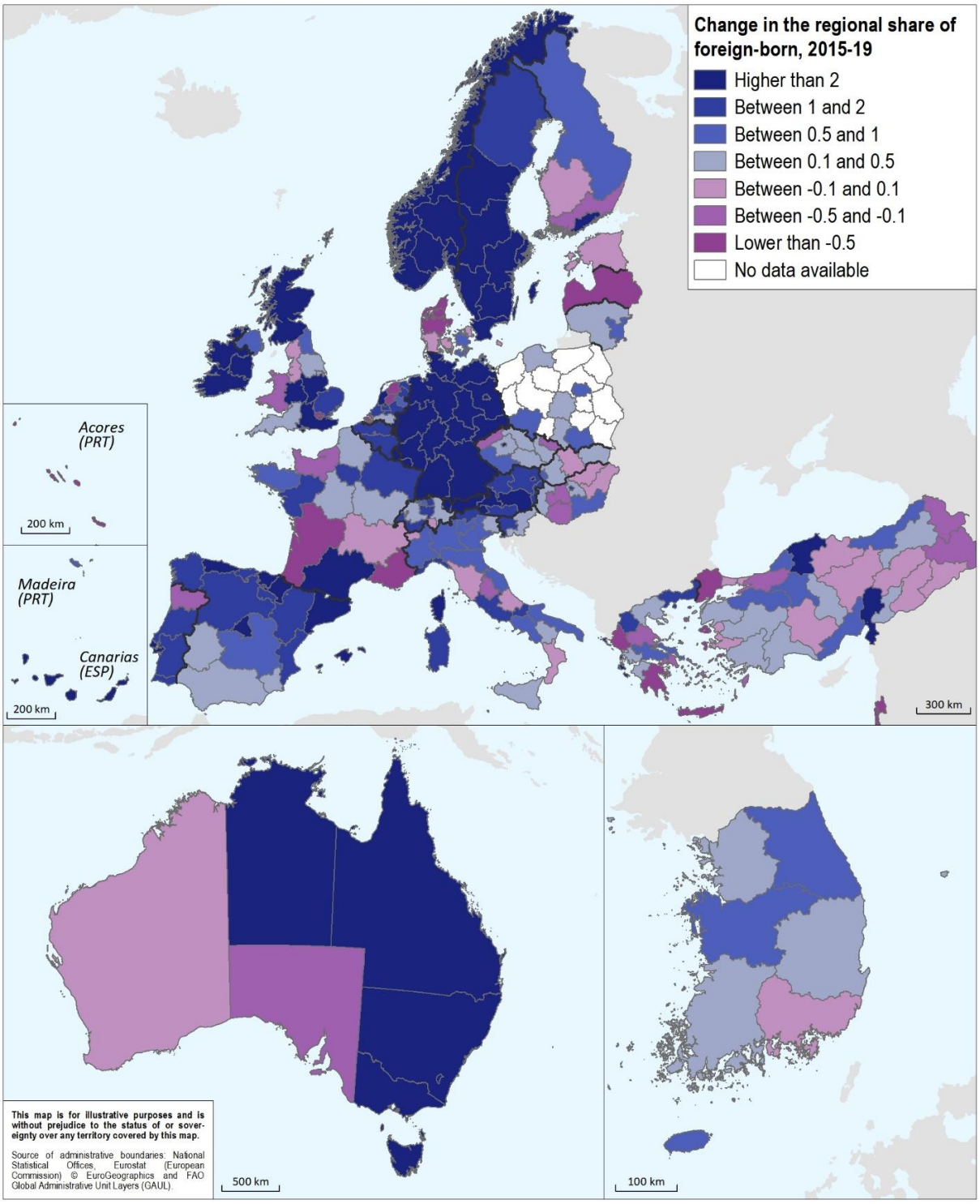
Source: OECD calculations based on labour force surveys. See Box 1.2 for detailed information on sources.

In line with the national picture, most OECD regions experienced an increase in their respective foreign-born population in recent years. Only 19% out of all regions with available data, recorded a fall in the population share of migrants between 2015 and 2019. Around 42% of regions experienced an increase of more than 1 percentage point. These trends are significantly more pronounced over a longer period. Throughout the past decade, the population share of migrants increased in the vast majority of regions. Between 2010 and 2019, 61% of OECD regions saw their foreign-born population increase by at least 1 percentage point, with 14% of regions recording an increase of 5 percentage points or more.

Notwithstanding the general pattern, a closer look at regional data reveals considerable regional differences in various OECD countries. For example, French regions differed widely in the extent to which their foreign-born population share changed in 2015-19 (Figures 1.7 and 1.8). While the regional population share of foreign-born individuals fell by more than 1 percentage point in Nouvelle-Aquitaine and Provence-Alpes-Côte d'Azur, Corsica saw a rapid increase of around 12 percentage points, reaching around 26% in 2019, on par with the capital region Ile-de-France. In Germany, the share of migrants rose by around 2 to 2.5 percentage points in most regions, whereas Berlin and Baden-Württemberg attracted significantly more migrants, with the share of foreign-born rising by 4.1 and 3.5 percentage points respectively. In the US, the situation has not changed dramatically over the period 2015-19. The vast majority of US regions recorded either marginal increases or marginal decreases in the population share of migrants.

Figure 1.7. Change in the share of foreign-born population across OECD regions, 2015-19

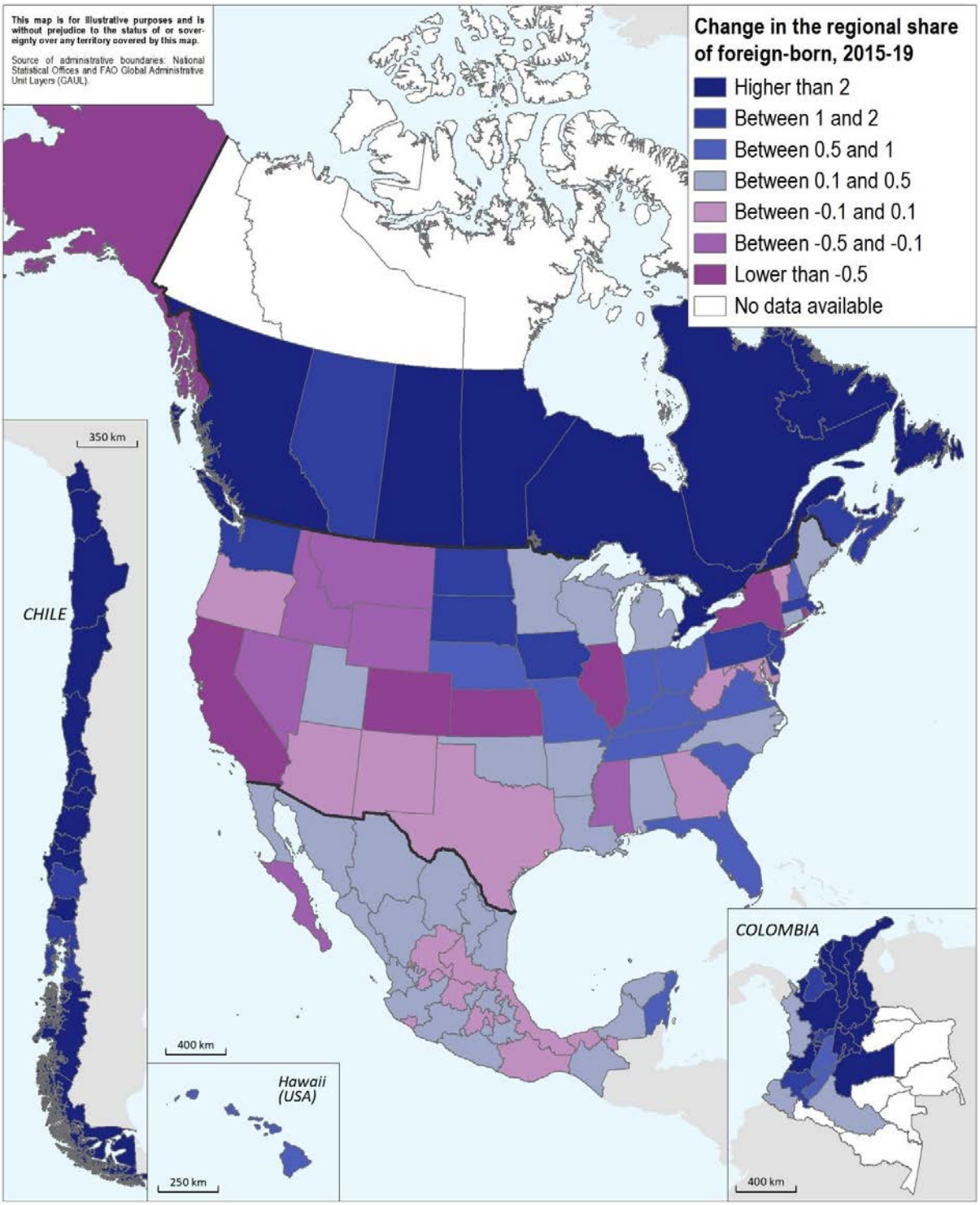
Percentage point share in the regional foreign-born population



Source: OECD calculations based on labour force surveys. See Box 1.2 for detailed information on sources.

Figure 1.8. Change in the share of foreign-born population across OECD regions, 2015-19

Percentage point share in the regional foreign-born population



Source: OECD calculations based on labour force surveys. See Box 1.2 for detailed information on sources.

Which regional factors have attracted migrants?

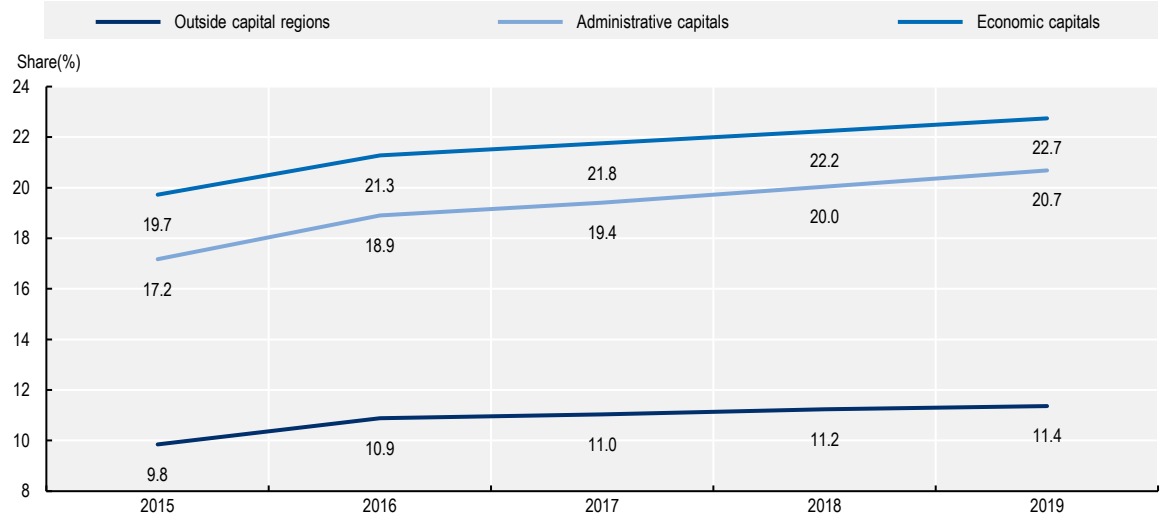
Historically, migration across the OECD has often concentrated on specific areas within countries. Various push factors motivate people to leave their countries and a range of pull factors help explain where they migrate to. Among such pull factors, both regions' demographic and economic characteristics have played an important role in attracting migration.

The presence of established migrant networks has historically been an important pull factor for migrant flows, as pre-existing migrant communities can provide support networks for new arrivals (Simpson, 2017[6]). In OECD countries, the presence of migrants from specific nationalities or countries of origin, appear to explain more than 70% of the variation in migrant flows (Beine, Docquier and Özden, 2011[7]). Regional economic conditions are another important pull factor that helps to explain migration flows. More specifically, higher wages and better income opportunities are key determinants of where migrants move (Bansak, Simpson and Zavodny, 2020[8]). Furthermore, migrants often move to regions with relatively strong labour markets, i.e. low unemployment, while economic recessions appear to deter migration (Hunt, 2006[9]).

Across OECD countries, capital city regions and those regions home to the countries' largest city or centres of economic activity offer a high attraction to migrants. The foreign-born population share in OECD countries' capitals is not only almost twice as high as in the rest of the country but has also grown faster over recent years (Figure 1.9). Between 2015 and 2019, it rose by 3.5 percentage points reaching 20.7%, equivalent to an increase of 21%. In contrast, the share of the foreign-born population only increased by around 16% outside of capital cities. Regions that contain their country's largest city and most important economic centre have an even higher share of migrants than capitals, amounting to around 22.7% in 2019. In these regions, the migrant population grew by 15% between 2015 and 2019, a slower rate than in capital regions but comparable to that of the respective rest of the country.

Figure 1.9. Share of the foreign-born population in OECD capitals and the rest of the country, 2015-19

Weighted average of the foreign-born population in administrative and economic capitals

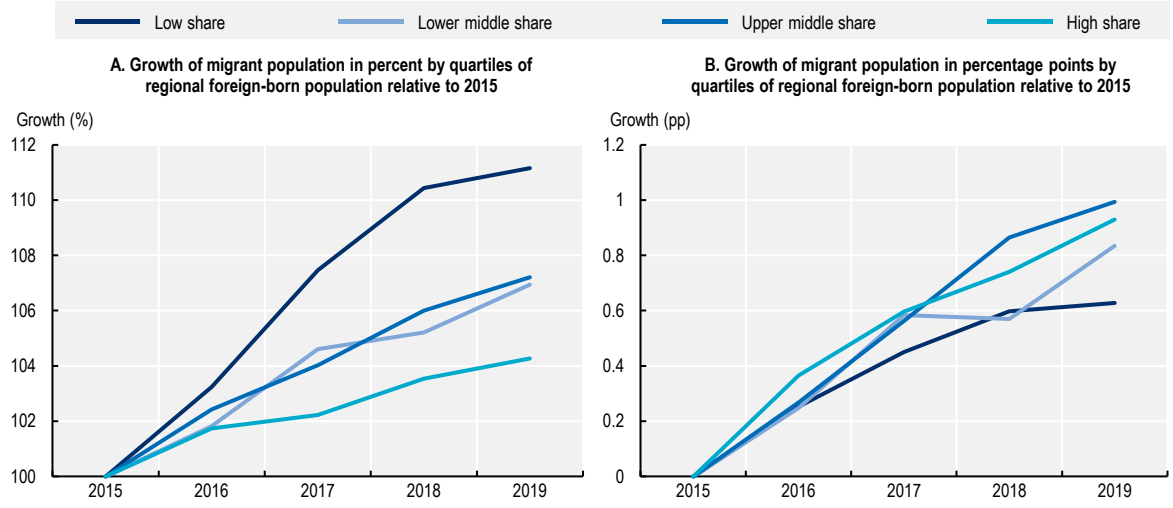


Note: Population-weighted OECD averages of the population share of foreign-born from 2015 to 2019. Data cover 27 OECD countries with available information. Countries without regional breakdown are excluded. Economic capitals are defined as the regions containing the largest city of their country. Economic capitals differ from administrative capitals in the following countries: Australia (New South Wales), Israel (Tel Aviv District), Italy (Lombardy), the Netherlands (North Holland), Switzerland (Zurich), Turkey (Istanbul) and the US (New York).
Source: OECD calculations based on labour force surveys. See Box 1.2 for detailed information on sources.

In line with previous migration cycles (Simpson, 2017[6]), the population of foreign-born has grown the fastest in those OECD regions with relatively larger pre-existing migrant communities. Those regions with larger migration populations also experienced a larger percentage point increase in the share of migrants between 2015 and 2019. However, the relative increase of migration to OECD regions has been faster in places with smaller migrant communities (Figure 1.10, Panel A). Between 2015 and 2019, the 25% of regions with the lowest share of foreign-born population in 2015 recorded a growth of 11% of their migrant population with most of the growth occurring in 2015-17. Overall, the evolution of the foreign-born population share follows a clear gradient across the distribution of regions (divided into quartiles) based on their respective migrant population shares in 2015. While regions with smaller migrant communities saw their migrant populations growing fastest, those regions that had the highest foreign-born population shares in 2015, exceeding 18.5%, recorded only an increase of 4% in the population share of migrants. When examining the absolute change (percentage point increase) in the population share of migrants, the pattern is different (Figure 1.10, Panel B). In fact, those regions in the second-highest quartile in terms of their pre-existing migrant communities recorded the largest increase. Based on a smaller share of migrants in 2015, the regions with the fewest migrants recorded a smaller absolute increase in their migrant populations (in percentage points) compared to other regions.

Three factors could explain the observed dispersion of migration across OECD regions. First, regions with a lower share of migrants can achieve a faster relative increase more easily for statistical reasons due to a lower starting base. Second, countries with only a recent history of immigration, and therefore regions with small migrant communities, appear to have recorded relatively large migration flows since 2013. However, the patterns hold even when countries or regions with small migrant populations are excluded. Third, evidence from the literature suggests that migrant networks have the largest effects when migrant stocks are small and dampen with increasingly large migrant populations (Clark, Hatton and Williamson, 2007[10]).

Figure 1.10. Increase in the foreign-born population in 2015-19 and the size of migrant communities



Note: The figure displays the growth in the population share of migrants between 2015 and 2019 based on the quartiles of regions according to their respective population share of foreign-born in 2015. Regions with small migrant populations (less than 3% in 2015) are excluded. In the bottom quartile, the foreign-born population ranges from 3% to 7.9%. In the second quartile, it ranges from 7.9% to 12.1%. In the third quartile, the share of migrants falls between 12.2% and 18.4%. In the top quartile, migrants account for between 18.5% to 53.4% of the regional population. Panel A displays the growth in percentage relative to the starting point in 2015. The panel displays the absolute growth in percentage points compared to the starting point in 2015.
Source: OECD calculations based on labour force surveys. See Box 1.2 for detailed information on sources.

Employment opportunities are an important driver of migration, with those OECD regions with more dynamic labour markets being key destinations for foreign-born individuals. Overall, the foreign-born population rose faster in regions with more favourable labour market conditions. Between 2013 and 2019, regions with relatively lower unemployment rates in the preceding year recorded significantly higher increases in the share of the foreign-born population (see Annex Table 1.A.1). Similarly, regions with more job opportunities, as measured by higher overall employment rates in the preceding year, experienced statistically significantly faster growth of their foreign-born population. In contrast, previous faster economic growth in terms of regional gross domestic product (GDP) per capita and GDP was not linked to increases in the migrant population, suggesting the relatively greater relevance of economic opportunities as a key factor in attracting migrants.

The COVID-19 pandemic will at least have led to a temporary reduction of migration to OECD regions and cities. It has led to a significant fall in international migration to OECD countries in 2020. Based on initial estimates, the number of new residence permits granted to migrants during the first half of 2020 was 46% below the number observed in 2019 (OECD, 2020[3]). With the pandemic continuing and many member countries facing a second or third wave, international travel remains highly restricted, which curtails international migration. As a consequence, the documented rise in the number of foreign-born across OECD regions over the past decade is likely to stagnate or even decrease slightly in 2020 and 2021.

Going granular: In which type of areas do migrants live?

While data for large regions (i.e. TL2) offer a broad and effective picture of how migrants are distributed within OECD countries, it can in some cases only provide relatively coarse spatial information. For example, some TL2 regions in populous OECD countries such as Germany or the US have a population of 10 million inhabitants or more and extend for tens of thousands square kilometre. As a result, data for such large territories and populations cannot reveal potentially interesting and meaningful intraregional discrepancies and also inhibit cross-country analysis of trends by regional typologies based on commonalities of OECD regions.

To fill this void of granular subnational migration data, the OECD has engaged in an extensive data collection effort. The resulting novel dataset offers unprecedentedly detailed information on the subnational geography of migration in OECD countries. It consists of granular subnational data on the presence of migrants in 20 OECD countries, primarily at the level of municipalities with a few exceptions such as Germany (districts, *Kreise*) and the USA and Canada (census tracts/census subdivisions) (see Box 1.3 for more detail).

Box 1.3. Municipal/census tract dataset on migration

The dataset contains information on migrants and their population share in municipalities (or census tracts) in 22 OECD countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the UK, USA).

For most countries, the data coverage starts in 2010 and ends in 2019. The main characteristics available at the municipal level include country of origin, age and gender. The statistics on foreign-born are based on the resident population. The main data sources are countries' population surveys, complemented by census data in countries without continuous population surveys.

Contrary to the data for large (TL2) regions, the indicators for more granular levels of geography cover the entire resident population. Thus, they are not limited to the working-age population but offer insights into the local share of migrants for all age groups.

Source: Astruc-Le Souder et al. (forthcoming[11]), "Going granular - A new database on migration in municipalities across the OECD", OECD Publishing, Paris.

Based on data from continuous population registers as well as censuses, the new dataset offers an unprecedentedly granular perspective on the geography of migration within OECD countries. While the level of granularity depends on the number of municipalities or census tracts in each country, the new dataset provides additional insightful spatial information as it can be aggregated to larger geographic levels, thus enabling a consistent international comparison of migration trends across small regions (i.e. TL3) or metropolitan areas. Furthermore, the data allow for an analysis of changes in migration by different types of regions based on the OECD regional typologies, which classify regions according to their access to a metropolitan area (see Box 1.4 for a detailed explanation) or distinguishes between predominantly rural or urban regions.

Box 1.4. Classification of small regions by access to metropolitan areas

The OECD metropolitan/non-metropolitan typology for small regions (TL3) helps to assess differences in socio-economic trends in regions – both within and across countries – by controlling for the presence/absence of metropolitan areas and the extent to which the latter is accessible by the population living in each region. The method relies on publicly available grid-level population data and localised information on driving conditions. According to such typology, TL3 regions are classified as metropolitan if more than half of their population lives in a functional urban area (FUA) of at least 250 000 inhabitants and classified as non-metropolitan otherwise. A metropolitan region becomes a large metropolitan region if the FUA accounting for more than half of the regional population has over 1.5 million inhabitants.

Table 1.1. Overview: Regional classification and access to FUAs

Acronym	Grouping	Macro grouping	Access to FUAs
MR-L	Large metropolitan region	Metro region	50% of population in FUA above 1.5 million inhabitants
MR-M	Metropolitan region	Metro region	50% of population in FUA above 250 000
NM-M	Region near a metropolitan area	Non-metro region	50% of population can reach FUA above 250 000 within an hour
NM-S	Region with/near a small-medium city	Non-metro region	50% of population can reach FUA of 50 000-250 000 within an hour
NM-R	Remote region	Non-metro region	No FUA within an hour for half of the population

Source: OECD (2020[12]), *OECD Regions and Cities at a Glance 2020*, https://doi.org/10.1787/959d5ba0-en; method based on Fadic, M. et al. (2019[13]), "Classifying small (TL3) regions based on metropolitan population, low density and remoteness", https://doi.org/10.1787/b902cc00-en.

In turn, the typology further classifies non-metropolitan regions based on the size of the FUA that is most accessible to the regional population. More specifically, non-metropolitan TL3 regions are sub-classified into three possible types:

1. With access to a metropolitan area, if at least half of the regional population can reach an FUA of at least 250 000 inhabitants within a 60-minute car ride.

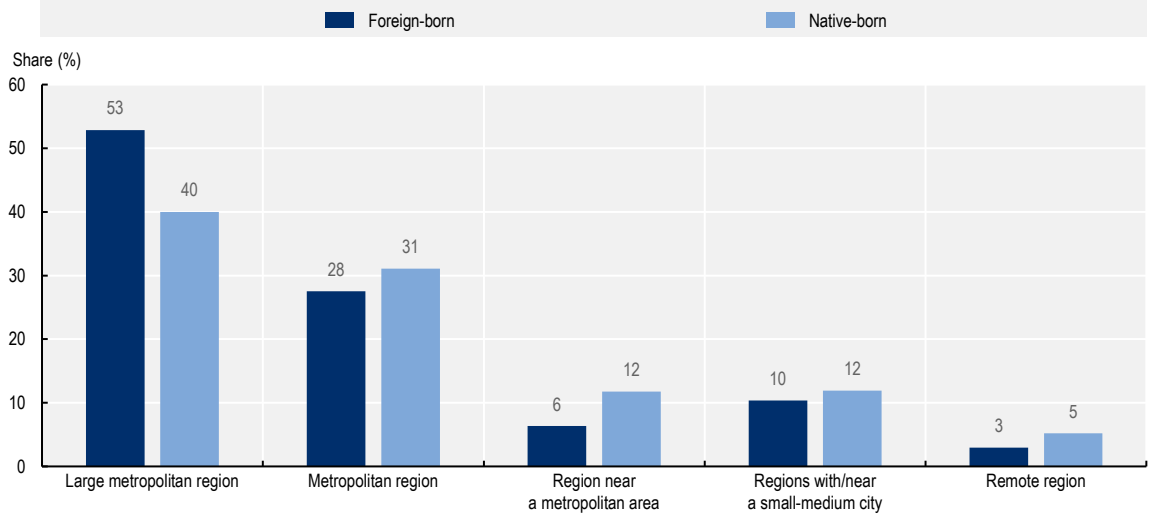
2. With access to a small/medium city, if at least half of the regional population can reach an FUA between 50 000 and 250 000 inhabitants within a 60-minute car ride.
3. Remote, if reaching the closest FUA by car takes more than 60 minutes for more than half of the regional population.

Within OECD countries, significant spatial differences in migration exist. Figures 1.12 and 1.13 display the share of migrants among the local population across OECD countries with granular population data on foreign-born individuals. Especially in countries with a detailed geographic breakdown (i.e. information on small administrative units), such as France, Italy or Spain, the new dataset reveals clear geographic differences. In France, migrants are particularly concentrated in and around large cities. In Spain, the data show the large concentration in municipalities that surround the major cities such as Barcelona, Madrid or Valencia as well as in the communities along the Mediterranean coast.

Aggregating the municipal/census data demonstrates that migrants are significantly more concentrated in specific types of regions than the native-born population is. More than half of the foreign-born population (53%) in the 22 OECD countries with available data live in large metropolitan regions, i.e. regions that contain a metropolitan area of more than 1.5 million inhabitants, which is home to at least 50% of the regional population (see Box 1.4 for the definition of the classification of TL3 regions) (Figure 1.11). In comparison, only 40% of native-born individuals live in large metropolitan regions. In contrast, migrants appear to be less likely than the native-born population to settle outside of metropolitan regions. Less than a fifth of migrants (19%) reside in non-metropolitan regions, compared to almost 30% of the native-born population. The difference in the location of migrants and native-born residents is particularly striking in regions near a metropolitan area and remote regions, where only 6% and 3% of migrants live respectively. Among the native-born, those regions account instead for 12% (regions near a metropolitan area) and 5% (remote regions) of the entire population.

Figure 1.11. Distribution of the foreign- and native-born population by type of TL3 region, 2019

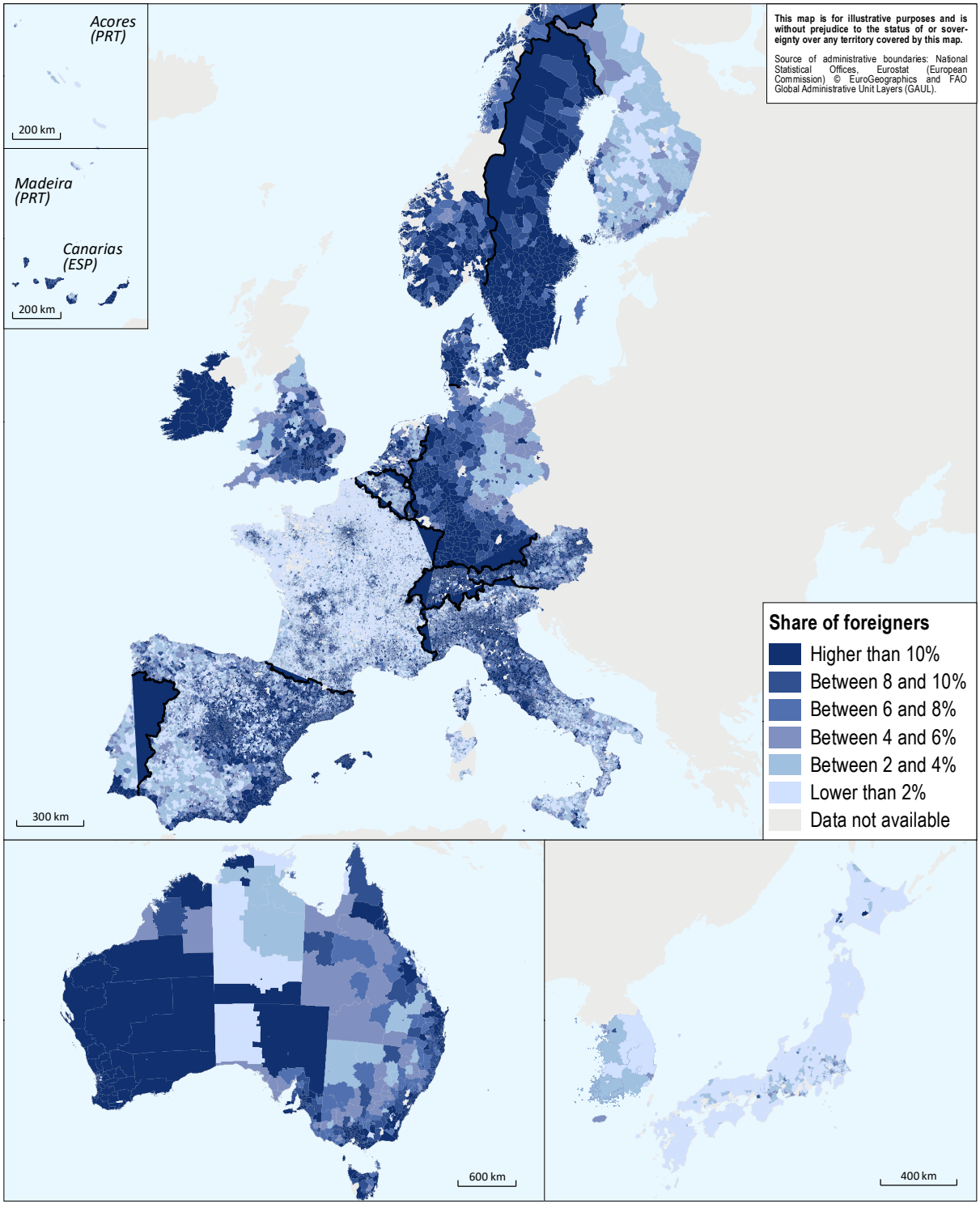
Distribution of foreign- and native-born population by type of OECD (TL3) region, based on latest available year



Note: Box 1.4 describes and explains the classification of small (TL3) regions by their access to metropolitan areas. The underlying sample covers the entire local resident population.
Source: Author's elaboration based on data described in Box 1.3.

Figure 1.12. Share of foreign-born population in municipalities and census tracts in OECD countries, 2019

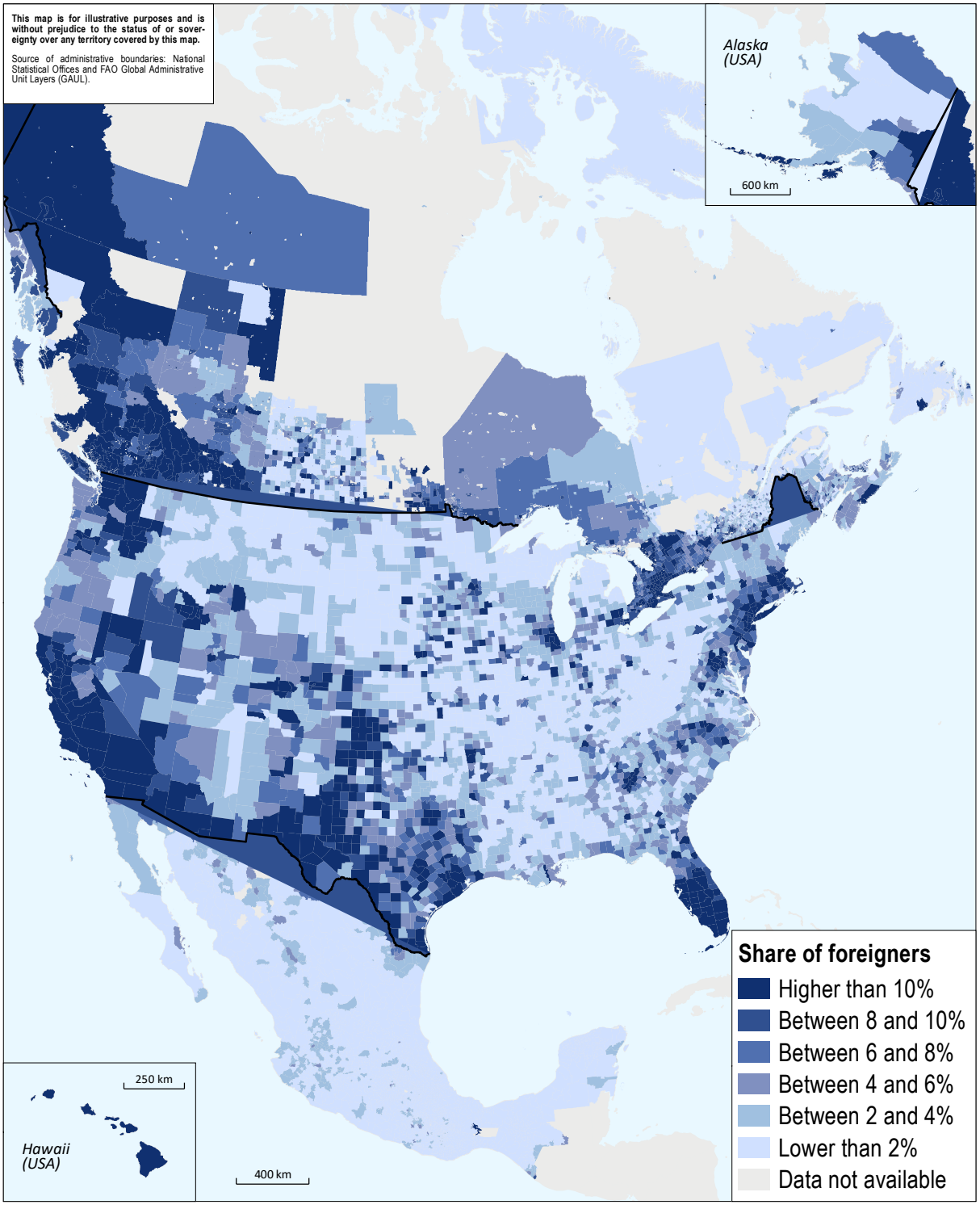
Population share of foreign-born across municipalities and census tracts, 2019 or latest available year



Note: The maps show the population share of foreign-born individuals across municipalities or other granular administrative units in OECD countries. Data are for 2019 or the latest available year. The underlying sample covers the entire local resident population.
Source: OECD based on national continuous population registers and censuses, described in Box 1.3.

Figure 1.13. Share of foreign-born population in municipalities and census tracts in OECD countries, 2019

Population share of foreign-born across municipalities and census tracts, 2019 or latest available year

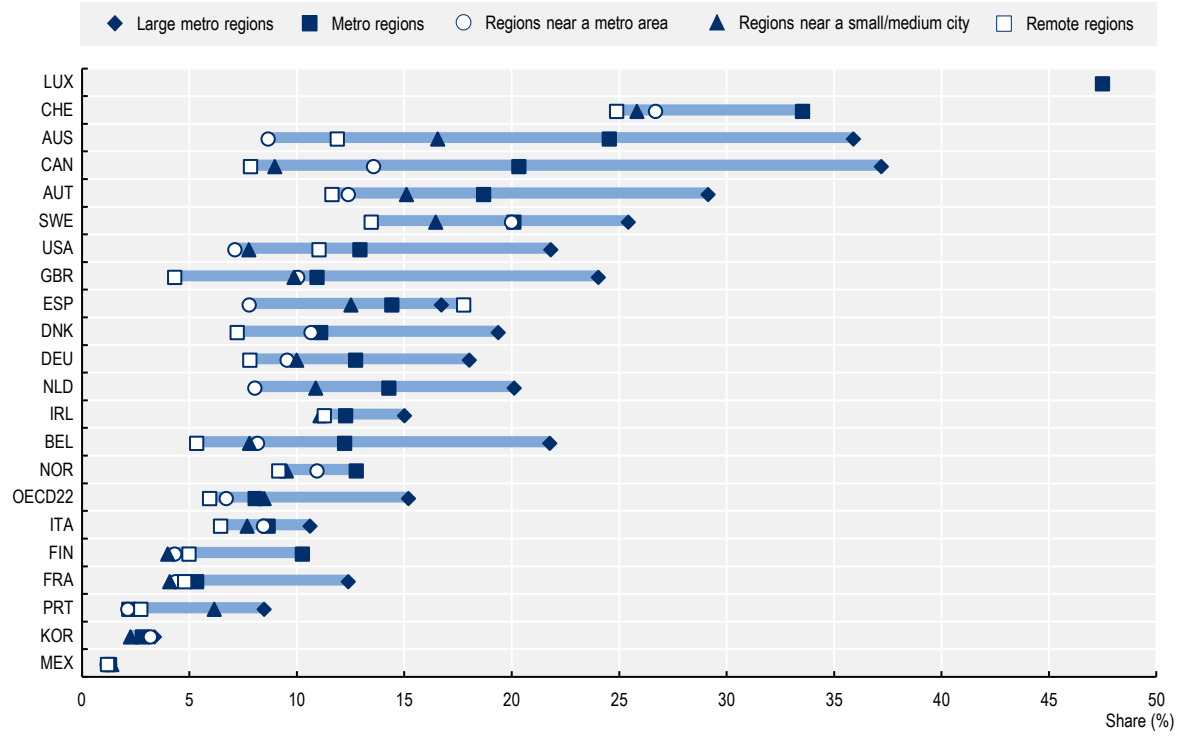


Note: The maps show the population share of foreign-born individuals across municipalities or other granular administrative units in OECD countries. Data are for 2019 or the latest available year. The underlying sample covers the entire local resident population.
Source: OECD based on national continuous population registers and censuses, described in Box 1.3.

In terms of the overall regional population share, migrants make up more than 23% of inhabitants in metropolitan regions and around 21% of inhabitants in non-metropolitan regions across 22 OECD countries (Figure 1.14). However, looking at the full spectrum of regions by their access to metropolitan areas reveals further significant geographic differences within OECD countries. For instance, in Australia and Canada, more than 35% of people living in large metropolitan regions were born abroad, compared to around 10% in remote regions. In the UK, migrants make up almost a quarter of inhabitants in large metropolitan regions, whereas their share only ranges from 4% (remote regions) to 11% (metropolitan regions) in other parts of the country. Overall, the migrant population follows a clear spatial gradient in most countries. It tends to be highest by a significant margin in large metropolitan regions or metropolitan regions in countries without a large metropolitan area. Additionally, the regional population share of migrants is lowest in almost all OECD countries in either remote regions or regions near a small- or medium-sized city.

Figure 1.14. Migrant population share by type of region and country

Share of the foreign-born population by type of region and OECD country, 2019 or latest available year



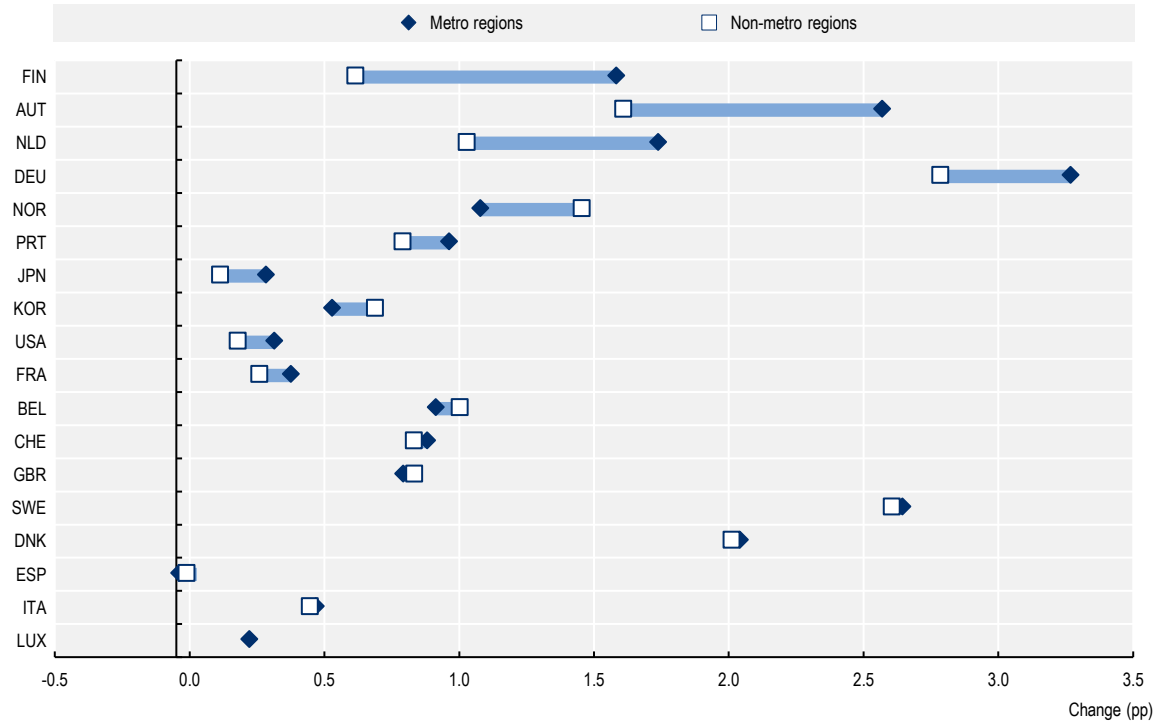
Note: Box 1.4 describes and explains the classification of small (TL3) regions by their access to metropolitan areas. 2019 or latest available year. Data for the UK are limited to England and Wales. The underlying sample covers the entire local resident population.
Source: Author's elaboration based on data described in Box 1.3.

Metropolitan regions not only have, on average, larger smaller migrant communities than non-metropolitan regions, they have also recorded faster growth of their foreign-born population. Between 2015 and 2019, in 12 out of 17 OECD countries with available data, metropolitan regions experienced higher growth in the population share of foreign-born than non-metropolitan regions did (Figure 1.15). While those differences were small in countries such as Denmark, Italy, Sweden or Switzerland, they were highly significant in others. In Germany for example, the share of the foreign-born population rose by almost 1.6 percentage points in metropolitan regions from 2015 to 2019 compared to around 0.6 percentage points in non-metropolitan regions. Similarly, the percentage points increase in the migrant population was also much

higher in metropolitan regions than in non-metropolitan regions in Austria, Germany and the Netherlands. However, in a number of OECD countries including Belgium, Korea and Norway, migrant communities grew the most in non-metropolitan regions. These results, while for a subset of OECD countries, seem to confirm the earlier documented finding for larger (TL2) OECD regions (see Figure 1.10) that, in various OECD countries, migrant communities and thus migration appear to become more geographically dispersed.

Figure 1.15. Change of foreign-born population in metropolitan and non-metropolitan regions, 2015-19

Percentage point (pp) change in the foreign-born population by metropolitan region and country between 2015-19 or latest available year



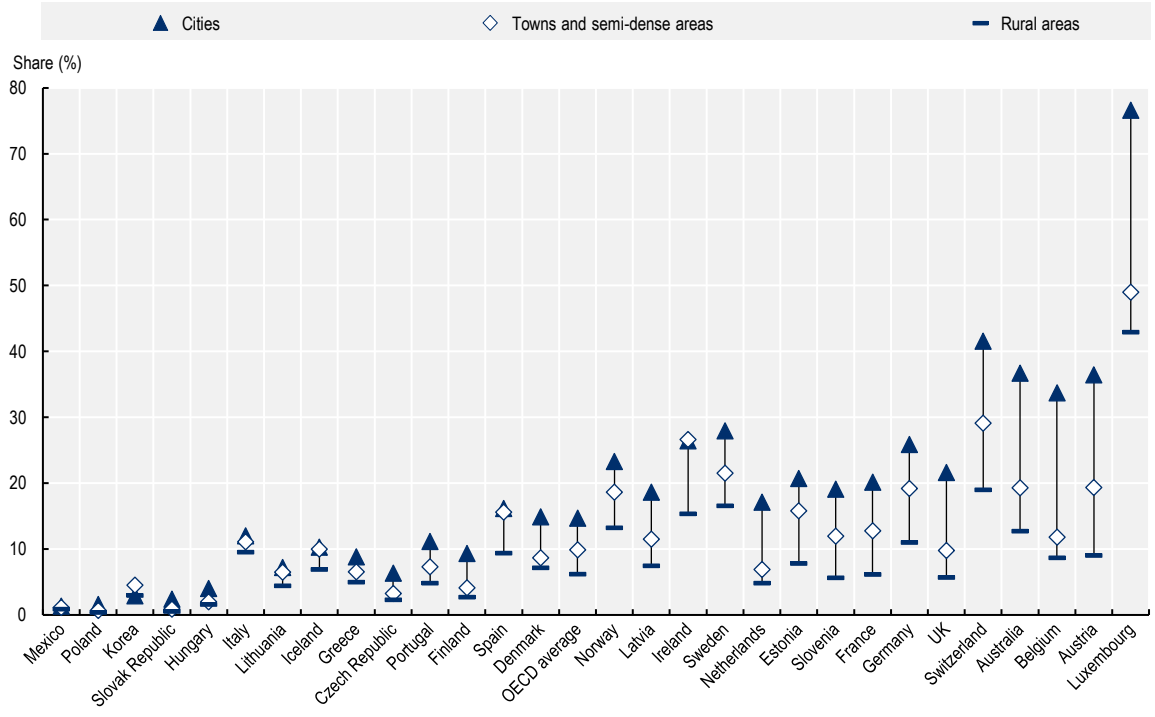
Note: The default time period of the analysis is 2015-19. Based on data availability, the time period differs in some countries: 2015-18 (Korea, Switzerland, the UK and the US), 2015-17 (France, Japan) and 2017-19 (Luxembourg). Data for the UK are limited to England and Wales. The underlying sample covers the entire local resident population.
Source: Author's elaboration based on data described in Box 1.3.

The degree or urbanisation offers another insightful perspective on the geography of the presence of migrants and their change over time (see Box 1.5 for a description). Using the "degree of urbanisation" to distinguish different types of settlement for European countries, cities – defined as local units above 50 000 inhabitants with a population density of over 1 500 inhabitants per square kilometre – have significantly higher migrant population shares than other areas in almost all OECD countries with available data.[3] For example, in Australia, Austria, Belgium or France, migrants made up at least twice as much of the population in cities than in towns and suburbs or rural areas in 2019. The spatial differences are particularly striking in Belgium and the Netherlands, where migrants account for 33% (Belgium) and 17% (Netherlands) of the population in cities but only 12% (Belgium) and 7% (Netherlands) in towns and suburbs with rural areas reporting even lower migrant population shares. However, the migrant community is more equally spread out across the degree of urbanisation in various other OECD countries. In Italy,

differences between cities (12%), towns and suburbs (11.1%) or rural areas (9.5%) are relatively small. Additionally, cities and towns and suburbs have relatively similar migrant population shares in both Ireland and Spain.

Figure 1.16. Share of migrants across OECD countries by degree of urbanisation, 2019

Foreign-born population share by the degree of urbanisation, 2019 or latest available year



Note: 2019 or latest available year. Data for the UK are limited to England and Wales. The underlying sample covers the entire local resident population.
Source: Author's elaboration based on data described in Box 1.3 as well as Eurostat (2020[14]), *Migration and Migrant Population Statistics*, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Migration_and_migrant_population_statistics.

Box 1.5. The degree of urbanisation

The degree of urbanisation as approved by the UN Statistical Commission includes a first classification of grid cells and subsequent classification of local spatial units. It acknowledges the urban-rural continuum and proposes three classes of settlements instead of the traditional urban vs. rural dichotomy. The three classes are: i) cities (or densely populated areas); ii) towns and suburbs (or intermediate density areas); and iii) rural areas (or thinly populated areas).

Using grid cell data on population size and density, the degree of urbanisation classifies areas as follows:

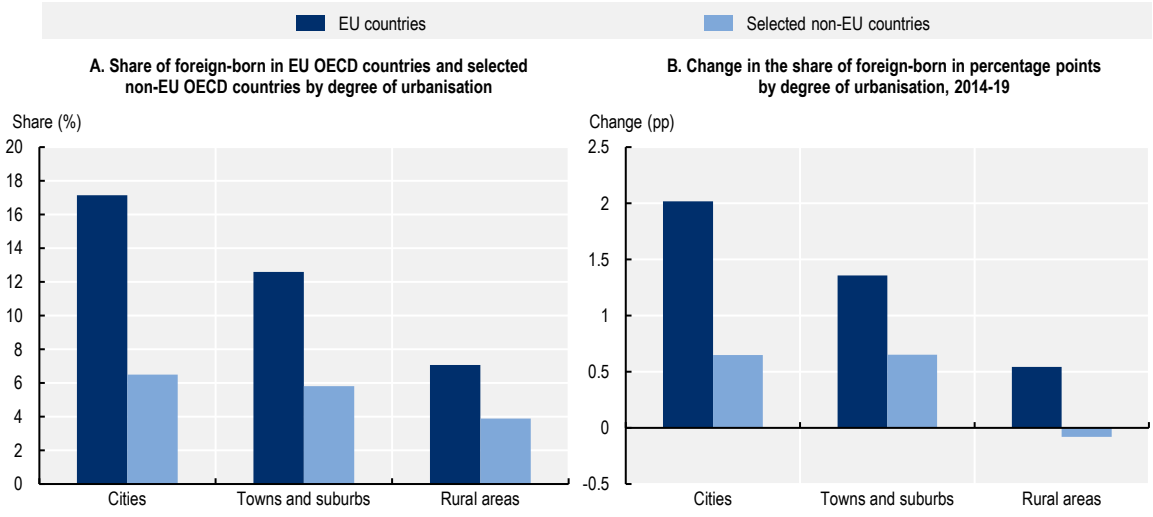
1. **Cities** consist of contiguous grid cells that have a density of at least 1 500 inhabitants per km^2 or are at least 50% built up. The cluster of contiguous cells must have a population of at least 50 000. Gaps in this cluster are filled and its edges are smoothed.

2. **Towns and semi-dense areas** consist of contiguous grid cells with a density of at least 300 inhabitants per km^2 and are at least 3% built up. This cluster of contiguous cells must have a total population of at least 5 000. Once the minimum population has been verified, city cells that are part of this cluster are removed.
3. **Rural areas** are cells that do not belong to a city or a town and semi-dense area. Most of these have a density below 300 inhabitants per km^2.

Source: OECD/EC (2020[15]), *Cities in the World: A New Perspective on Urbanisation*, https://dx.doi.org/10.1787/d0efcbda-en.

The degree of urbanisation reveals differences in the spatial patterns in the location as well as the increase of migrant communities in a comparison of EU and non-EU countries in the OECD. Among EU member states of the OECD, migrants account for a much larger share of the population in cities in 2019 (17%) than in towns and suburbs (13%) or rural areas (7%). Furthermore, the relative size of the migrant community has grown the fastest in cities in both absolute and relative terms, rising 2 percentage points or 13% between 2014 and 2019. In contrast, the foreign-born population share is more comparable across the degree of urbanisation across those OECD countries with available data that are outside the EU. Additionally, migration appears to have been occurring at a similar pace in cities, towns and suburbs in those countries, with an increase of 0.6 percentage points between 2014 and 2019. While the results for the non-EU countries cannot be generalised to all non-European OECD countries due to a lack of data for a number of countries, the results nonetheless illustrate the potential richness of information that granular data based on grid cells or small geographic units can provide to inform localised migration policies.

Figure 1.17. Share of foreign-born by the degree of urbanisation in 2019 and its change, 2014-19



Note: The figures show the population share of migrants in 2019 as well as its change across the degree of urbanisation between 2014 and 2019. The sample of non-EU OECD countries with available data includes Australia, Iceland, Korea, Norway, Switzerland and the UK. Data for the UK are limited to England and Wales. The underlying sample covers the entire local resident population.
Source: Author's elaboration based on data described in Box 1.3 as well as Eurostat (2020[14]), *Migration and Migrant Population Statistics*, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Migration_and_migrant_population_statistics.

Box 1.6. Do migrant arrivals create ghettos or new communities?

While many studies focus on migrants' impact on the native-born labour market (e.g. wages or employment), migrants can also affect native-born residential choices. In fact, a large literature focusing on the phenomenon known as "white flight" (i.e. departure of white people) indicates that the arrival of migrants leads to the departure of native-born residents in rich OECD countries leading to geographical segregation of ethnic groups (Saiz and Wachter, 2011[16]). Recently, Moraga, Ferrer-i-Carbonell and Saiz (2019[17]) have revisited the effect of migrant arrivals on the residential mobility of the native-born population at the neighbourhood level in the context of Spain, the country that experienced the largest and fastest migration shock in the OECD in the 21st century.

The authors find that most of the migrants arriving in Spain settled in the centre of metropolitan areas. In fact, the authors show that the number of migrants setting in neighbourhoods decreases gradually as the distance to the city centre increases. Moreover, the authors find that the distance to the city centre also affects whether native-born individuals decide to leave their neighbourhood. For instance, while the native-born population living in neighbourhoods located in urban centres left as a reaction to the arrival of migrants, such reactions were not observed for native-born residents living in peripheral areas. A possible explanation put forth by the authors is that strong growth in the construction activity in the peripheral areas could absorb the increase in the migrant population without causing the native-born population to leave.

Source: Moraga, J., A. Ferrer-i-Carbonell and A. Saiz (2019[17]), "Immigrant locations and native residential preferences: Emerging ghettos or new communities?", *Journal of Urban Economics*, Vol. 112, pp. 133-151; Saiz, A. and S. Wachter (2011[16]), "Immigration and the neighborhood", *American Economic Journal: Economic Policy*, Vol. 3/2, pp. 169-88.

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Saiz, A. and S. Wachter (2011), "Immigration and the neighborhood", *American Economic Journal: Economic Policy*, Vol. 3/2, pp. 169-88. [16]

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Notes

[1] The share of migrants rises to 18.6% if Seoul and Tokyo – two capitals with very large populations but small migrant communities – are excluded.

[2] In 18 out of 30 countries, the capital regions have the highest share of foreign-born population.

[3] Figure 1.16 and Figure 1.17 combine data provided by Eurostat for European countries with the new granular migration dataset (Box 1.3) for non-European countries. For the latter, local areas such as municipalities can be categorised by the degree of urbanisation using grid level information on population size and density of those areas (Eurostat/DG REGIO/JRC, 2021[19]).

Annex 1.A. Regression results: Change in regional migration

The following table displays a set of pairwise first-difference model regressions results for the change in the regional population share of migrants over 2015-19. The regressions include year fixed effects and cluster standard errors by regions.

Annex Table 1.A.1. Regional factors associated with increases in the migrant population, 2015-19

Change in the share of the foreign-born population

Variable	1	2	3	4
Employment rate in the previous year	0.0010336** (0.0003885)			
Unemployment rate in the previous year		-0.0014657*** (0.0003498)		
Log GDP in the previous year			-0.649488 (0.486534)	
Percentage of foreign-born in the previous year				-0.0030981*** (0.0007828)

Note: First difference model with year fixed effects and clustered standard errors by region. *** p<0.01, ** p<0.05, *p<0.1.
Source: Author's elaboration based on OECD (2021[18]), *Regional Statistics*, OECD, Paris.

2 The integration of migrants in regional labour markets

This chapter analyses the labour market integration of migrants across regions in OECD countries. First, it provides an overview of labour market outcomes of migrants across regions and their change over time. Second, it analyses how migrants fare in the labour market compared to the native-born population. Third, it looks at different relevant factors that play a role in explaining different labour market outcomes between native-born and migrant workers, namely the distinction between European Union (EU) and non-EU migrants as well as gender gaps. Finally, it sheds light on the skills migrants can bring to regional economies by analysing the educational attainment of migrants, comparing it between EU migrants, non-EU migrants and the native-born population.

In Brief

The labour market integration of migrants has been improving across OECD regions but significant policy challenges remain

- Labour market outcomes of migrants have improved in recent years. Since 2015, the employment rate of migrants increased by 4.3 percentage points in OECD countries, with a third of OECD regions reporting rising employment rates of migrants of more than 5 percentage points. However, the COVID-19 pandemic risks reverting such progress among migrants.
- Despite recent improvements, migrants' employment rate still falls below that of the native-born population in the labour market, especially in European regions. As of 2019, migrants remain around 4 percentage points less likely to be employed but almost 5 percentage points more likely to be unemployed than native-born individuals in OECD countries. However, in capital regions and regions with a relatively larger service economy, such differences in labour market outcomes tend to be smaller.
- Differences between non-EU and EU migrants in Europe, especially in high-income regions in Northern Europe, as well as gender gaps and educational attainment help explain worse employment outcomes of migrants across OECD regions. In most regions, male migrants and native-born individuals have similar employment rates. However, significantly lower employment of female migrants, driven by relatively low labour market participation in many regions, cause a gap between overall employment rates of migrant and native-born workers in OECD regions, in particular outside of capitals and more urban regions.
- In European OECD countries, non-EU migrants significantly lag behind EU migrants in labour market outcomes. The average employment rate of non-EU migrants is more than 10 percentage points lower than that of EU migrants, while their unemployment rate is almost 6 percentage points higher. However, the gap between EU and non-EU migrants has narrowed in almost two-thirds of regions since 2015, driven by faster employment growth among non-EU migrants.
- Migrants can contribute valuable skills to regional economies. In the OECD, the share of migrants (40%) that has completed tertiary education surpassed the share of native-born residents (35%) in 2019. However, migrants' educational attainment differs widely within OECD countries, with differences of more than 10 percentage points between regions in many OECD countries.
- Increasingly, specific regions concentrate both highly skilled native-born and migrant workers. The more educated a region's native-born population is, the more educated its migrant population tends to be, with this geographic concentration of high-skilled migrant and native-born workers having become stronger over time.

Introduction

The majority of migrants in OECD countries will likely stay in their host country in the medium run. Therefore, their integration in the labour market is of fundamental importance as it not only offers the economic means for a good quality of life but also facilitates social and cultural integration in migrants'

place of residence. However, the successful integration of migrants into labour markets remains a significant challenge with a strong geographic component.

Overall, migrants remain less likely to be employed than native-born individuals across OECD regions. At the same time, their gap relative to the native-born population in terms of labour market outcomes varies widely across regions within countries. This chapter examines the current regional labour market integration of migrants and its recent evolution. Furthermore, it offers insights into the challenges different types of migrants face. Additionally, it analyses to what extent gender gaps pose an obstacle to migrants' economic integration in OECD regions.[1] Finally, it provides new data on the educational attainment of different types of migrants, comparing it to the native-born population, which provides an overview of the skills migrants can bring to regional economies.

This chapter builds on and extends recent OECD efforts to compare labour market integration outcomes at the subnational level (Diaz Ramirez et al., 2018[1]). It significantly expands the empirical scope of regional data for TL2 OECD regions on migrants' presence and labour market outcomes (Box 1.2). While previous efforts were restricted to one point in time (2015) for migrants' labour market outcomes across regions, this chapter is based on new comprehensive data collection efforts. Drawing on various labour force surveys as well as other sources, most derived indicators cover annual regional observations for the period of 2010-19. Table 2.1 provides an overview of the time coverage of the main categories of indicators examined in this chapter.

Box 2.1. Data: Definition and sources

Data sources

This chapter uses various labour force surveys to assess the educational attainment and the labour market integration of migrants across regions in OECD countries. The main data sources are the European Community Labour Force Survey (EU-LFS) for the European OECD countries, the American Community Survey for the United States (US), the Canadian Labour Force Survey for Canada, the National Survey of Occupation and Labour for Mexico, the Survey of Education and Work (SEW) for Australia, the Israel Monthly Labour Force Survey for Israel, the Encuesta Nacional de Empleo (ENE) for Chile, the Gran Encuesta Integrada de Hogares (GEIH) for Colombia, and the Resident Registered Population Status Census, the Immigrant Status and Employment Survey as well as the Survey of the Economically Active Population for Korea.

Sample

The sample of all analyses in this chapter is restricted to residents in the 15 to 64 age group. The analysis uses the common approach of defining migrants as those individuals born in a foreign country, regardless of those individuals' arrival in their resident country. For European countries, migrants are further split into two groups based on their country of birth: those born in another European Union (EU) member country than the one where they currently work and reside (i.e. EU migrants) and those born in a country outside of the EU (i.e. non-EU migrants). Finally, anyone who was born in their country of residence is considered native-born.

Definitions

Labour market outcomes:

- Employment, unemployment, and participation rates

Educational attainment:

- Low education: International Standard Classification of Education (ISCED) 0/2.
- Medium education*:* ISCED 3/4.
- High education: ISCED 5/6.

Table 2.1. Time coverage of indicators

Availability of yearly regional data by country and group of indicators

	Educational attainment	Labour market outcomes	EU/non-EU distinction
European countries*	2004-19	1999-2019	2006-19*
Australia	2011-12	2011-20	..
Canada	2017-19	2006-20	..
Chile	2010-20	2010-20	..
Colombia	2013-20	2013-20	..
Israel	2012-19	2012-19	..
Korea	..	2012-20	..
Mexico	2005-19	2005-19	..
United States	2000-19	2000-19	..

Note: .. : not available

* European countries include all EU OECD countries plus Iceland, Norway, Switzerland, Turkey and the UK. Separate data on EU and non-EU migrants are available in Germany from 2017 onwards, from 2012 onwards in Lithuania, from 2012 onwards in Ireland and Turkey, and from 2007 onwards in Denmark.

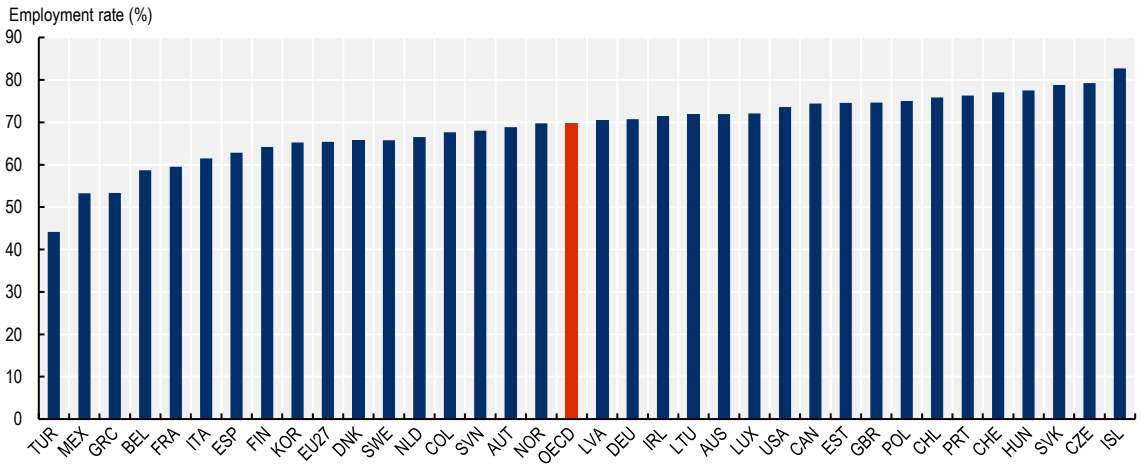
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

What are migrants' labour market outcomes in the OECD?

On average, the employment rate of migrants reached almost 70% in OECD countries in 2019. In EU27 countries, it was slightly lower, standing at 65% (Figure 2.1). However, in various OECD countries, migrants recorded significantly higher employment rates. For example, in Iceland, migrants' employment rate was almost 83% in 2019 and it surpassed 75% in Chile, the Czech Republic, Hungary, Poland, Portugal, the Slovak Republic and Switzerland,. In contrast, only 44% of migrants in Turkey were employed in 2019. Similarly, only slightly more than half of the migrant population was in active employment in Greece (53%) and Mexico (53%).

Across OECD regions, differences in labour market outcomes of migrants are striking. The employment rate of migrants ranges from 23% in Southeastern Anatolia, East in Turkey to 88% in Åland, Finland (Figures 2.3 and 2.4). In general, those OECD countries with a low national employment rate of migrants also document the largest variation in migrants' employment rate. For instance, regional differences in the share of employed migrants are between 33 to 36 percentage points in Mexico and Turkey. However, Germany and Hungary, both countries where migrants' national employment rates of 71% and 77% exceed the OECD (70%) and EU27 (65%) averages, also report regional gaps of more than 20 percentage points or more. Ireland, Korea and Switzerland are among the countries with little geographic variation in migrant employment rates, with regional differences amounting to 6-8 percentage points.

Figure 2.1. Employment rate of migrants, 2019

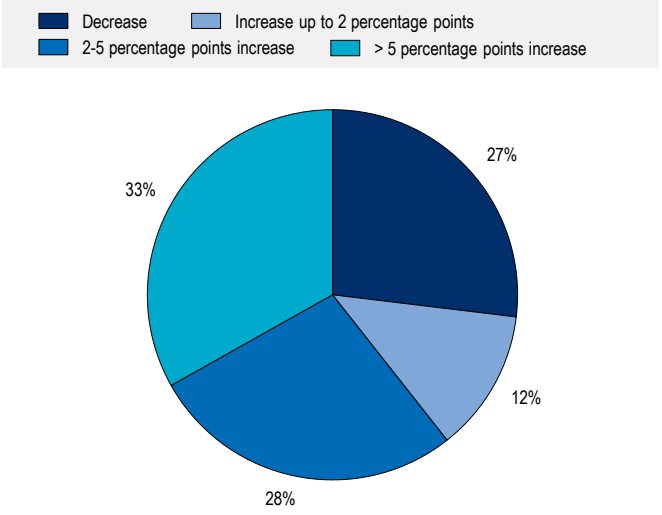


Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

In the vast majority of OECD regions, the labour market integration of migrants has made considerable progress since 2015. On average, the employment rate of migrants increased by 4.3 percentage points in OECD countries and 3.4 percentage points in EU27 countries. Among regions with available data, the employment rate among migrants has developed positively, with almost three-quarters of regions recording an increase (Figure 2.2). In around a third of regions, this increase was highly significant, exceeding 5 percentage points between 2015 and 2019. A further 28% of regions saw employment among their foreign-born population rise by between 2 and 5 percentage points. However, the positive trend in migrants' employment was not ubiquitous, as around 27% of regions actually reported a decline in the employment rate of migrants. A similar pattern holds for unemployment, which has fallen by almost 5 percentage points among migrants across the OECD.

Figure 2.2. Change in the migrant employment rate across OECD regions, 2015-19

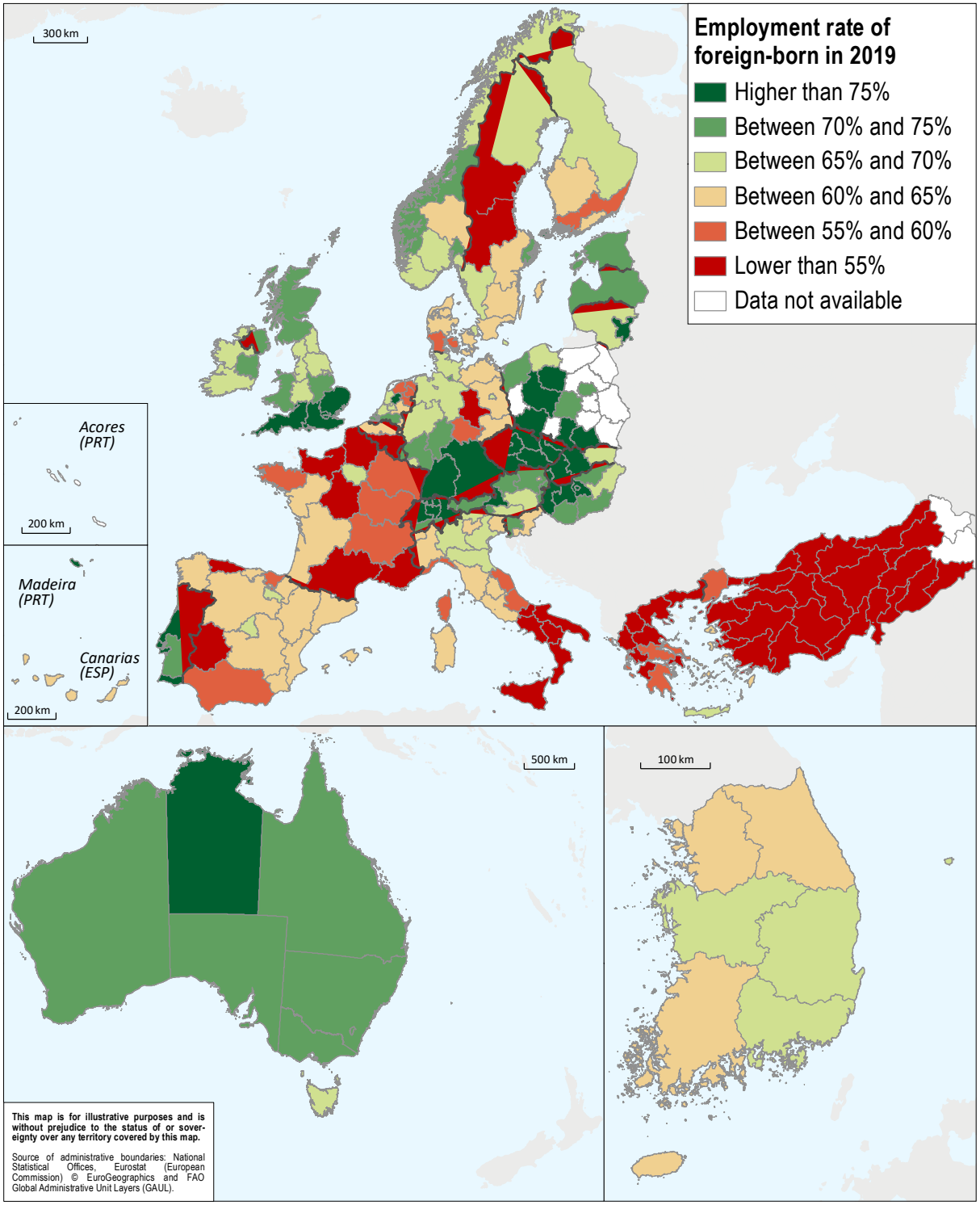
Distribution of the change in the employment rate of foreign-born across regions



Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

Figure 2.3. Employment rate of foreign-born, 2019

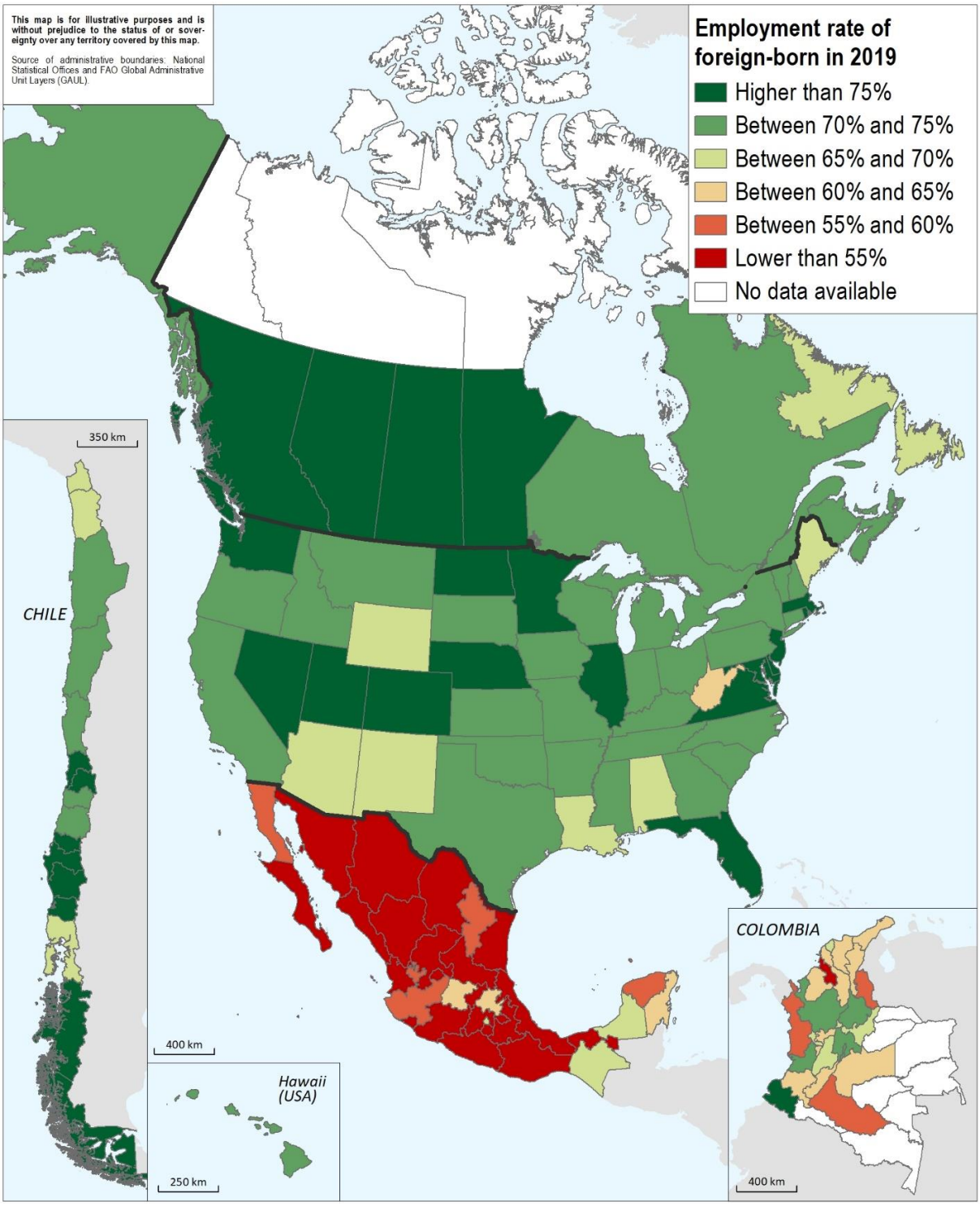
Employment rate of foreign-born across TL2 regions, 2019 or latest available year



Note: The sample consists of foreign-born individuals aged 15 to 64.
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

Figure 2.4. Employment rate of foreign-born, 2019

Employment rate of foreign-born across TL2 regions, 2019 or latest available year



Note: The sample consists of foreign-born individuals aged 15 to 64.
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

Migrants' contribution to the host region's labour market is not limited to their roles as employees. They also help foster entrepreneurship, as migrants are more likely to be self-employed or entrepreneurs (Box 2.2). Additionally, migration can help local firms mitigate pressing skills shortages (Box 2.3).

Box 2.2. Effect of migration on entrepreneurship and foreign direct investment (FDI)

Across OECD countries, migrants are more likely to be self-employed or entrepreneurs than the native-born population (Fairlie et al., 2012[2]). For instance, 25% of the new firms in the US were founded by first-generation migrants (Kerr and Kerr, 2020[3]). Firms founded by migrants are more likely to export (Wang and Liu, 2015[4]) yet are often smaller in size (Kerr and Kerr, 2020[3]). Due to the high entrepreneurial activity of migrants, some countries (e.g. Australia, the United Kingdom [UK], or the US) introduced visas for investors and entrepreneurs.

Migrants are more likely to choose self-employment compared to native-born residents for a few reasons. First, migrants have a higher willingness to take risks (Kihlstrom and Laffont, 1979[5]). Second, they may prefer self-employment due to difficulties in entering the labour market due to discrimination. Finally, migrants chose self-employment to benefit from the individual talent, motivation or co-national networks (Kerr and Mandorff, 2015[6]).

Migrants also increase FDI linkages between their host country and country of birth by reducing the transaction and information costs. In fact, migrants and refugees help establish new linkages or increase the volume of FDIs between both countries (Mayda et al., 2019[7]). Evidence from various OECD countries suggests that high-skilled or second-generation migrants play a crucial role in fostering FDI flows compared to new arrivals (Kugler and Rapoport, 2007[8]; Flisi and Murat, 2011[9]).

Source: Fairlie, R. et al. (2012[2]), "Indian entrepreneurial success in the United States, Canada, and the United Kingdom", Emerald Group Publishing Limited; Flisi, S. and M. Murat (2011[9]), "The hub continent. Immigrant networks, emigrant diasporas and FDI", *The Journal of Socio-Economics*, Vol. 40/6, pp. 796-805; Kerr, S. and W. Kerr (2020[3]), "Immigrant entrepreneurship in America: Evidence from the survey of business owners 2007 & 2012", *Research Policy*, Vol. 49/3, p. 103918; Kerr, W. and M. Mandorff (2015[6]), "Social networks, ethnicity, and entrepreneurship", No. w21597, National Bureau of Economic Research; Kihlstrom, R. and J. Laffont (1979[5]), "A general equilibrium entrepreneurial theory of firm formation based on risk aversion", *Journal of Political Economy*, Vol. 87/4, pp. 719-748; Kugler, M. and H. Rapoport (2007[8]), "International labor and capital flows: Complements or substitutes?", *Economics Letters*, Vol. 94/2, pp. 155-162; Mayda, A. et al. (2019[7]), "Refugees and foreign direct investment: Quasi-experimental evidence from U.S. resettlements"; Wang, Q. and C. Liu (2015[4]), "Transnational activities of immigrant-owned firms and their performances in the USA", *Small Business Economics*, Vol. 44/2, pp. 345-359.

Box 2.3. Looking for the "Best and Brightest": Hiring difficulties and high-skilled foreign workers

In the US, research on whether skilled migrant workers could replace native-born workers is mixed. Firms recruiting young and skilled migrant workers also recruit additional young native-born workers in all skills groups (Kerr, Kerr and Lincoln, 2015[10]). However, firms that receive additional work permits for migrant workers through the official lottery do not recruit additional domestic workers (Doran, Gelber and Isen, 2014[11]).

Raux (2021[12]) focuses on the relationship between firms' hiring difficulties and their recruitment decisions between native-born and migrant workers. Comparing recruitment decisions made by a given employer for similar positions, he finds that US employers are more likely to seek migrant workers when

finding domestic workers takes more time. In particular, employers are 28% more likely to initiate a work permit demand when the job posting duration is 40 days long. The likelihood is even higher for occupations related to engineering and computer sciences. The study shows that employers rely on skilled migrant workers to fill their vacancies when faced with labour force shortages.

Source: Doran, K., A. Gelber and A. Isen (2014[11]), "The effects of high-skilled immigration policy on firms: Evidence from visa lotteries", *NBER Working Paper*, No. 2066; Kerr, S., W. Kerr and W. Lincoln (2015[10]), "Skilled immigration and the employment structures of U.S. firms", *Journal of Labor Economics*, Vol. 33/3, pp. 147-186; Raux, M. (2021[12]), "Looking for the 'Best and Brightest': Hiring difficulties and high-skilled foreign workers".

How do migrants fare in comparison to the native-born population?

Despite increasing employment and falling unemployment, migrants still lag behind the native-born population in the labour market in most OECD countries and regions. As of 2019, migrants remain around 4 percentage points less likely to be employed but almost 5 percentage points more likely to be unemployed than native-born individuals in OECD countries. However, a closer look at OECD regions reveals a more nuanced picture (Figures 2.5 and 2.6).

Migrants' relative labour market integration differs between EU countries and non-European OECD countries. In the OECD overall, migrants have, in fact, on average higher employment rates than native-born and have narrowed the gap with the native-born population in terms of unemployment. In 2019, migrants' unemployment rate was only 1 percentage point above that of native-born workers, down from more than 2 percentage points in 2015. In Europe, migrants still lag behind the native-born population in terms of employment (66% to 69% in the EU27 in 2019) but that gap has fallen by almost 1 percentage point between 2015 and 2019.

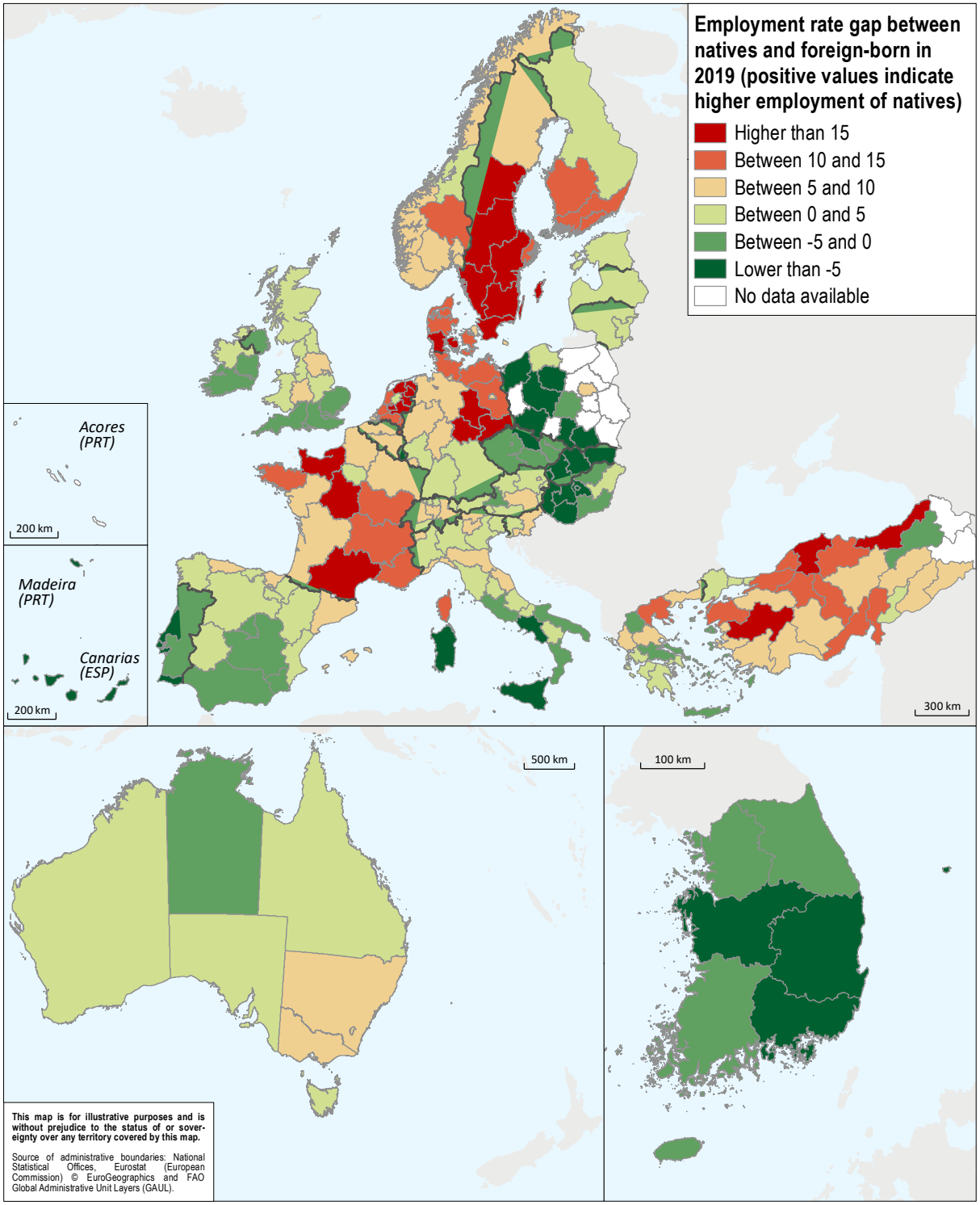
Labour market differences between native- and foreign-born not only differ between countries but also vary widely across regions within countries. For example, the native-migrant employment rate gap exceeds 15 percentage points in various regions in eastern Germany but is almost non-existent in southern Germany (Figures 2.5 and 2.6). In the UK, the gap reaches 5 to 10 percentage points in the West Midlands and Yorkshire and Humber while the south of the country reveals the opposite picture, with migrants recording higher employment rates than native-born individuals. In most southern states in the US, the employment rate of migrants surpasses that of native-born by more than 5 percentage points while it falls short of that of the native-born population in several states in the Midwest.

Educational attainment is a key determinant of workers' employability. Thus, differences in educational attainment between foreign-born and native-born could drive worse employment outcomes of migrants (see section on educational attainment and use of migrants' skills for more details). In most OECD regions, however, employment rates are significantly lower for migrants than native-born individuals across all levels of educational attainment.

Migrants are more likely to be in employment in regions with relatively tight labour markets and places with relatively larger migrant communities. Taking into account country-specific characteristics, in regions with higher employment among the native-born population, i.e. regions with a tight labour market, migrants also recorded significantly higher employment rates in 2019 (Figure 2.7, left panel). Furthermore, regional labour market outcomes of migrants also appear to be correlated with the size of the regional migrant communities. In regions with a large migrant population relative to the rest of the country, migrants fare better, i.e. have a higher employment rate (Figure 2.7, right panel), which might capture network effects that facilitate migrants' job search. However, both factors are not correlated with a narrowing of the labour market gap between native-born and migrant workers across OECD regions.

Figure 2.5. Regional employment rate gap of foreign-born, 2019

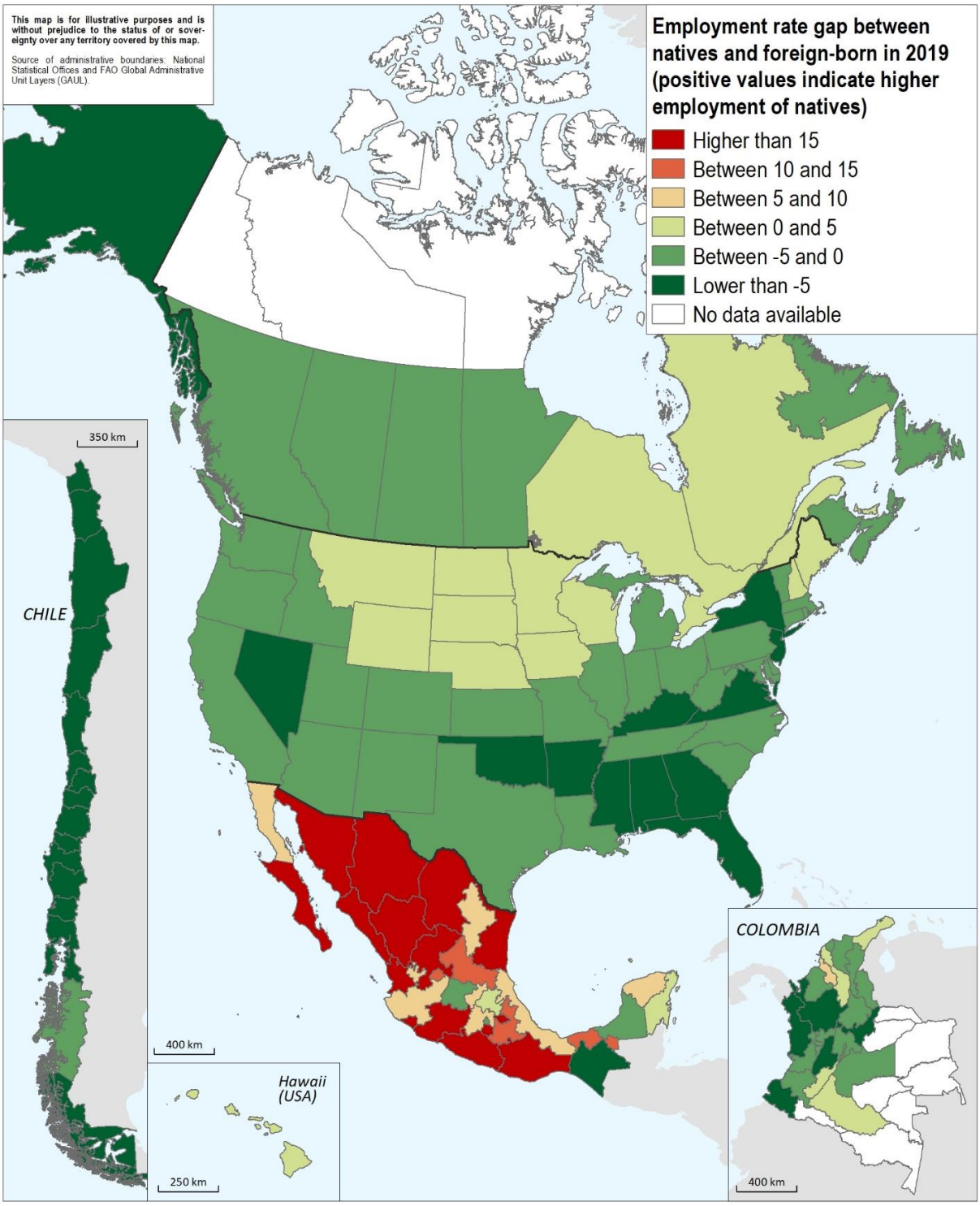
Difference in employment rate between native- and foreign-born, TL2 regions, 2019 or latest available year



Note: The maps show the difference in the employment rate between native- and foreign-born individuals in each TL2 region in 2019 or in the latest available year.
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

Figure 2.6. Regional employment rate gap of foreign-born, 2019

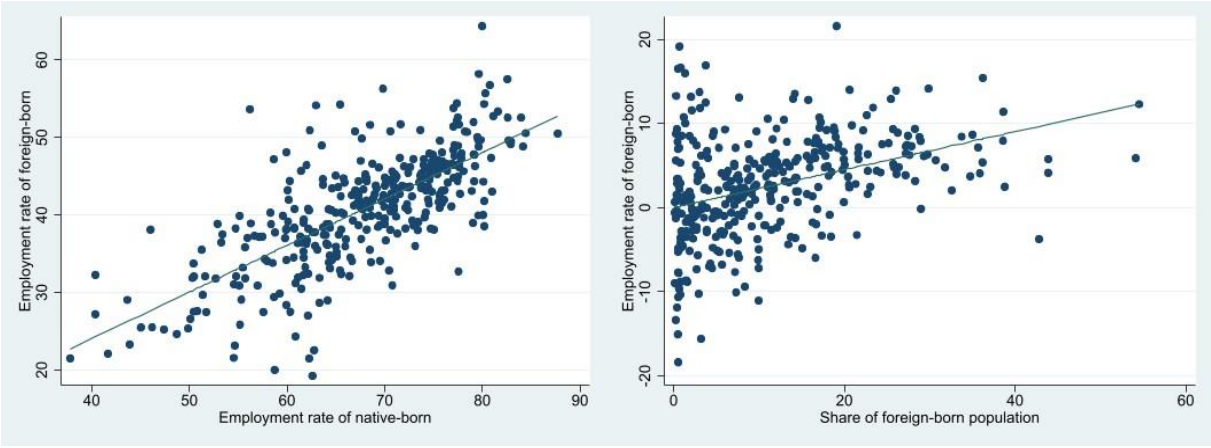
Difference in employment rate between native- and foreign-born, TL2 regions, 2019 or latest available year



Note: The maps show the difference in the employment rate between native- and foreign-born individuals in each TL2 region in 2019 or in the latest available year.
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

Figure 2.7. Employment rate of migrants: Labour market tightness and network effects, 2019

Correlation of the regional employment rate of migrants with the native-born employment rate (left) and the share of migrants (right)

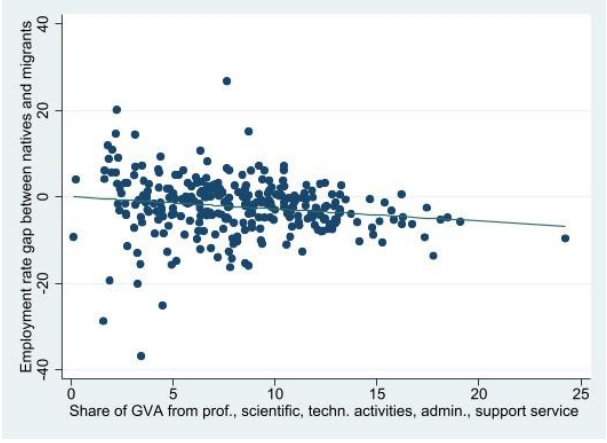


Note: Figures display residual component plots that take into account country fixed effects.
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

Across OECD member countries, the structure of the regional economy appears to matter for the gap between native-born and migrant workers in labour market outcomes. Within OECD countries, regions with a stronger focus on the service sector show, on average, significantly lower differences in the employment rate between native-born and migrants (Figure 2.8). This relationship is robust to taking into account whether a region has an overall strong labour market, i.e. high levels of employment among the native-born population. The findings might indicate that it is easier for migrants to find a job in the service economy, which includes many entry or low-paying jobs, than in other sectors of the economy. Additionally, the regional employment gap also narrowed significantly between 2010 and 2018 in regions with a greater share of gross value added (GVA) coming from services (Annex Figure 2.A.1).

Figure 2.8. Employment rate gap and professional services, 2017

Regional differences in the employment rate between the native-born population and migrants and share of regional GVA from professional services



Note: Figures display residual component plots that take into account country fixed effects.
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

Understanding the factors that inhibit migrants from fully participating economically in their host region has become even more important in the light of the COVID-19 pandemic. The economic consequences of the pandemic appear to hit migrants particularly hard (see Chapter 2) as migrants in most regions are concentrated in specific sectors of the economy, some of which such as hospitality or retail have struggled the most over the past year (OECD, 2020[13]). The rest of the chapter examines three factors that might help explain the native-migrant labour market gap across OECD regions. Specifically, it analyses the discrepancy between different types of migrants. Furthermore, it examines the role of gender differences, i.e. the difficulty of migrant women to enter or stay in the labour market. Finally, it sheds light on differences in educational attainment and skills between migrants and the native-born population.

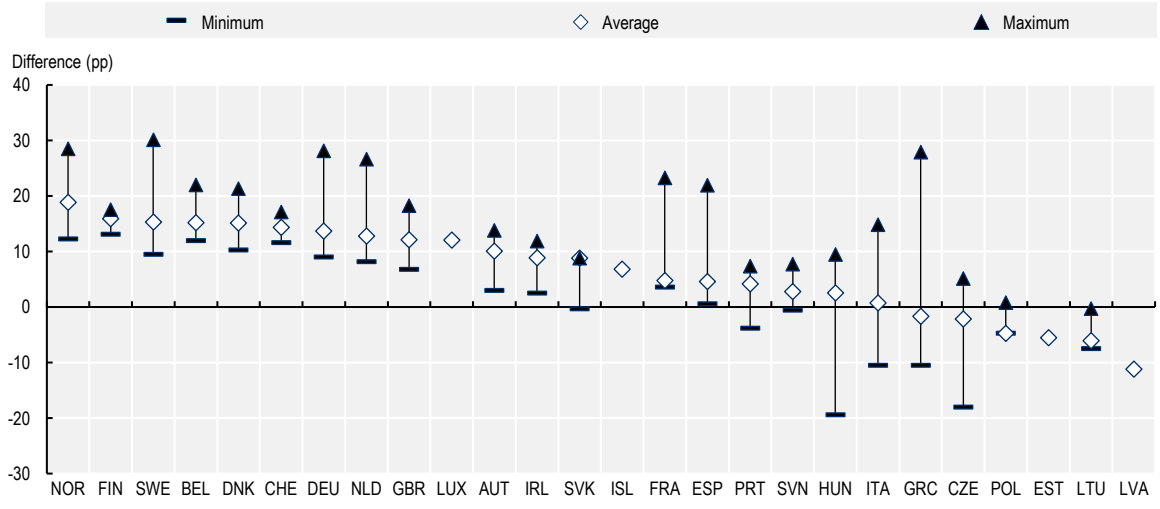
Regional labour market differences between EU and non-EU migrants

In European OECD countries, migrants' labour market outcomes follow a sharp divide between different migrant groups. While those born in another EU or European Free Trade Association (EFTA) country record high levels of employment and low levels of unemployment, in many countries and regions even outperforming the native-born population, migrants born elsewhere lag. This section examines the labour market differences between EU and non-EU migrants and analyses their geographic dimension across European regions.[2]

EU migrants tend to be significantly better integrated into their host countries' labour market than non-EU migrants. In European OECD countries, the average rate of EU migrants was 10.5 percentage points higher than that of non-EU migrants. Similarly, the unemployment rate of EU migrants was on average 5.9 percentage lower than that of non-EU migrants. These patterns are apparent in almost all countries with available data (Figure 2.9). For example, in all but six, mostly East European countries with small EU-born migrant communities, non-EU migrants recorded lower employment rates than their EU peers. Furthermore, in 15 of 26 countries, EU migrants had a higher employment rate than non-EU migrants in all of the regions of the respective country. In capital regions, the average employment gap between EU and non-EU migrants tends to be lower than in the rest of the country, averaging below 8 percentage points in 2019.

Figure 2.9. Employment rate gap between EU and non-EU migrants

Percentage point (pp) differences in employment rates between EU and non-EU migrants across European regions



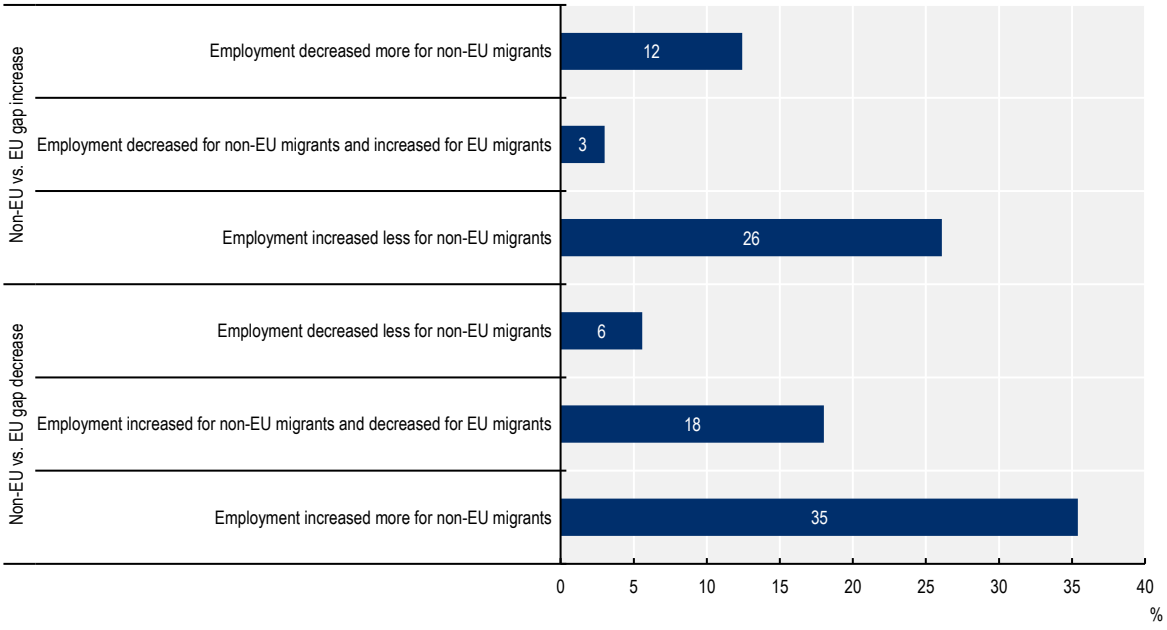
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

The labour market gap between EU and non-EU migrants appears to be narrowing, both nationally as well as regionally. Between 2015 and 2019, the difference in the employment rate of EU and non-EU migrants decreased by around 1.555 percentage points in both OECD countries with available data and the EU27 overall. Nonetheless, the gap remains large, with the employment rate of EU migrants still exceeding that of non-EU migrants by more than 10 percentage points in 2019. In countries such as Austria, the Czech Republic, France, Germany or the Baltic countries, the vast majority of regions recorded a reduction of labour market gaps, with the employment rate of non-EU migrants converging to that of EU migrants (Figure 2.11). In other countries, however, the picture has been more mixed. For example, in Spain, several southern regions including Andalusia and Murcia recorded a significant widening of the employment rate differences between EU and non-EU migrants, driven by a fall in the employment rate of those born outside the EU, while more industrial regions in the north of the country recorded a large drop in the gap.

While the overall labour market gap has narrowed between non-EU migrants and EU migrants, the picture is mixed in European regions. In a positive way, the majority of regions (59%) recorded a convergence in the labour market outcomes of EU and non-EU migrants between 2015 and 2019. This catch-up was primarily driven by faster employment growth among non-EU migrants (Figure 2.10) and to a lesser degree by regional employment growth of non-EU migrants occurring at the same time as falls in employment among EU migrants. Conversely, in most of the regions where the EU vs. non-EU gap increased in 2015-19, the employment rate of both EU and non-EU migrants increased but even faster for EU migrants.

Figure 2.10. Distribution of regions by changing employment gap between non-EU and EU migrants, 2015-19

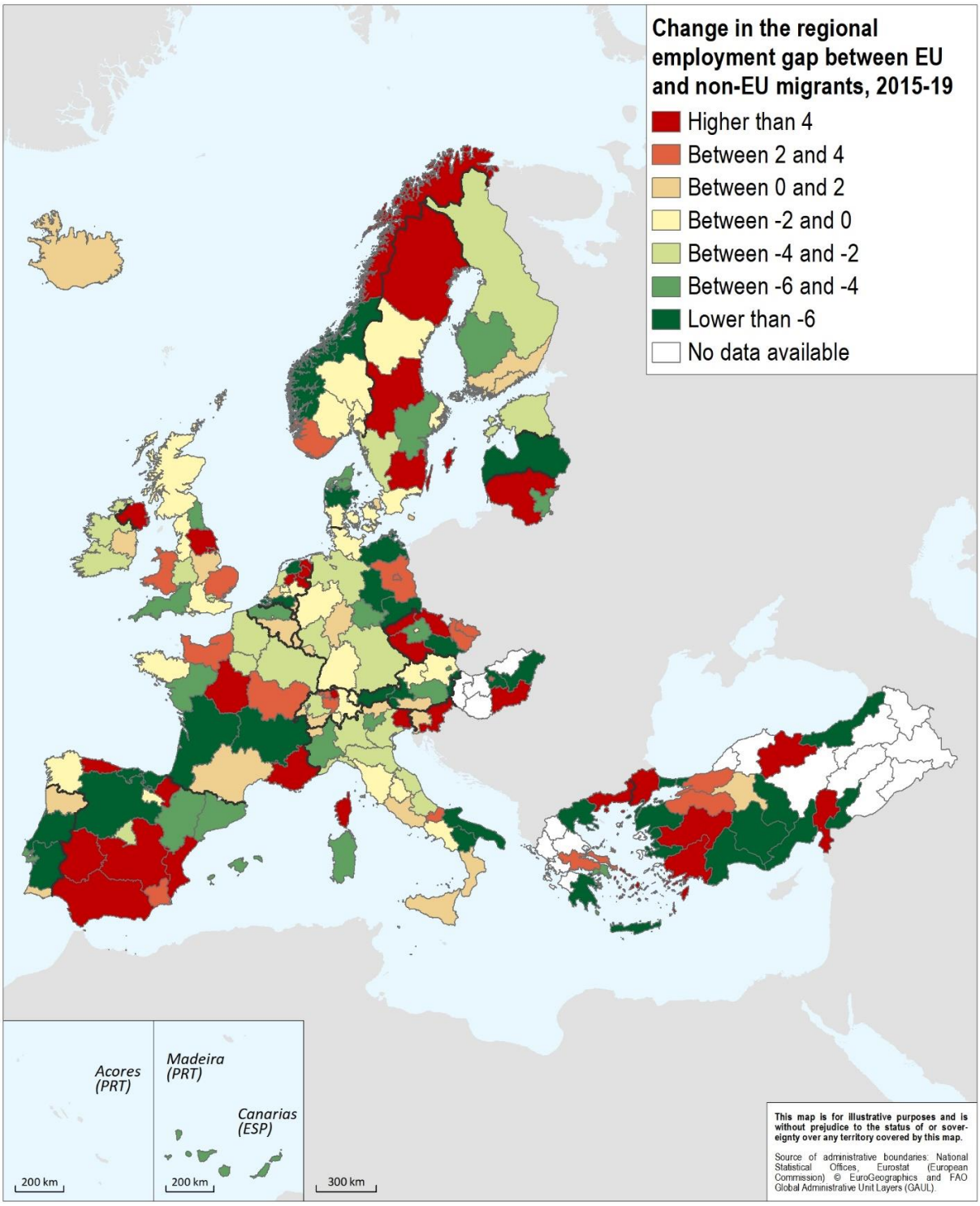
Share of regions by change in the difference in employment rates of non-EU and EU migrants



Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

Figure 2.11. Change in the regional employment gap between EU and non-EU migrants, 2015-19

Change in the difference in the employment rate between EU and non-EU migrants



Note: The map shows the change in the difference in the employment rate between EU- and non-EU migrants in each TL2 region between 2015 and 2019. For Germany, changes are for 2017-19 due to missing earlier data. Red colours mark a widening of the gap, green denotes a narrowing.

Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

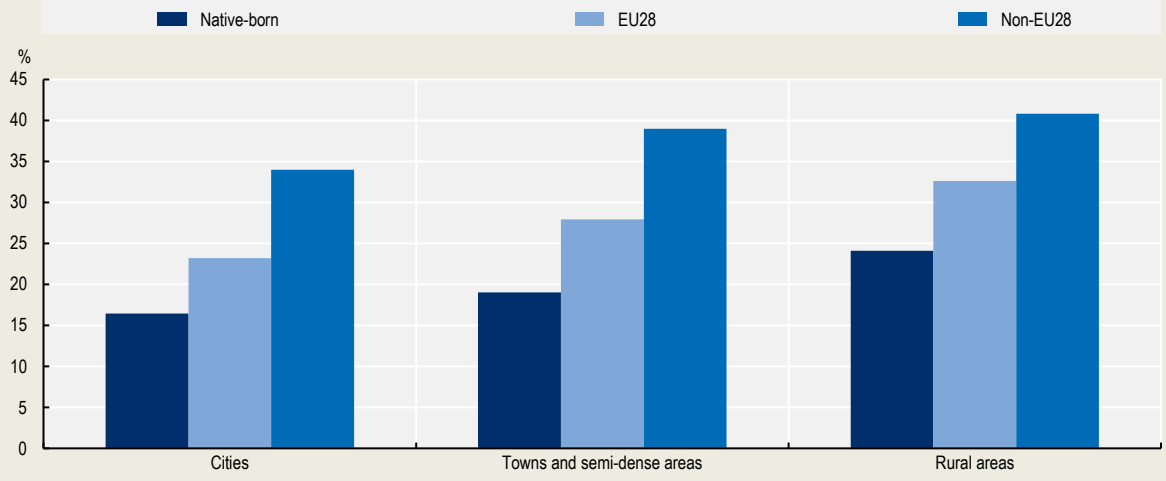
Worse labour market outcomes of non-EU migrants compared to those born in an EU country could have various reasons. Non-EU migrants appear to lag in education, meaning they have lower access to many jobs that require specific skills or qualifications (see the section below on educational attainment). Furthermore, non-EU migrants are more likely to face cultural or language barriers, which make a smooth integration into their host regions' economies more difficult. They might also encounter discrimination, an obstacle that is likely to be lower for EU migrants, especially given their higher educational attainment (OECD/EU, 2018[14]). Finally, EU migrants encounter fewer problems in terms of recognition of their foreign qualifications and education than non-EU migrants, allowing them to find employment with less difficulty (see Box 2.4). Instead, for non-EU migrants, such challenges may not only make their job search more difficult but also raises the probability of being overqualified for a job, i.e. having an education or qualification that exceeds the regular requirements of one's job (OECD, 2019[15]).

Box 2.4. Overqualification from a spatial perspective

Working in an occupation that does not match the individual qualification automatically leads to efficiency losses. Workers with educational attainment above the requirements of their occupation do not exploit their full potential. As a consequence, structural overqualification artificially restricts the economic growth potential and income and career opportunities of the workers affected by overqualification. The impact of high overqualification shares is even more severe in regions expiring skill shortages. Therefore, a regional perspective is essential to capture underlying patterns, given that economic activity and density often converge (Combes and Gobillon, 2015[16]). Moreover, the distinction between migrants and native-born residents enables a more profound analysis of underlying reasons.

Figure 2.12. Overqualification shares by the degree of urbanisation and country of origin, 2017-19

Share of high-skilled workers employed in medium- and low-skilled jobs



Note: The overqualification share is calculated as the share of tertiary-educated workers (ISCED Levels 5-8) employed in low- or medium-skilled jobs (International Standard Classification of Occupations [ISCO] Levels 4-9). The sample includes the employed working-age population (15-64 years old). Employees of the public service, international organisations and armed forces (ISCO Level 0) are excluded. This definition follows previous OECD calculations (OECD/EU, 2018[14]). The analysis builds on a pooled sample of observations of the years 2017-19.
Source: OECD calculations based on Eurostat data (accessed in October 2021).

Figure 2.12 provides evidence on overqualification rates among the native-born and migrant population across the degree of urbanisation. It documents two patterns. First, the share of overqualification increases in less dense areas. Second, migrants (especially from outside the EU28) are more likely to work in jobs not matching their real educational qualifications. The general relation between overqualification and density is potentially driven by a higher share and demand for high-skilled jobs in urban areas. Higher labour demand enables better matching as applicants do not have to settle for jobs that are not adequate to their educational level. Differences in the overqualification shares of native-born and foreigners might result from the process of recognising foreign professional qualifications, which is often time-consuming. This might also explain the difference between EU28 and non-EU28 migrants as the recognition process is potentially less complex for EU28 migrants. Additionally, discrimination in the labour market could drive migrants into low-skilled jobs, despite their qualifications.

Source: Combes, P. and L. Gobillon (2015[16]), "The empirics of agglomeration economies", in *Handbook of Regional and Urban Economics*, Elsevier; OECD/EU (2018[14]), *Settling In 2018: Indicators of Immigrant Integration*, https://doi.org/10.1787/9789264307216-en.

Gender differences

Migrant women face a double disadvantage in OECD regions. Persistent gender gaps are a key obstacle holding back migrants' labour market outcomes in OECD regions. While labour market outcomes of women tend to be below that of men, foreign-born women face a double challenge as immigrants and as women (OECD, 2020[13]). In all OECD countries, women remain less likely to be in paid work than men (OECD, 2017[17]). The development over the past few decades and in recent years give cause for optimism as gender gaps have continuously fallen (OECD, 2017[17]). However, among migrants, gender gaps in the labour market remain stubbornly high.

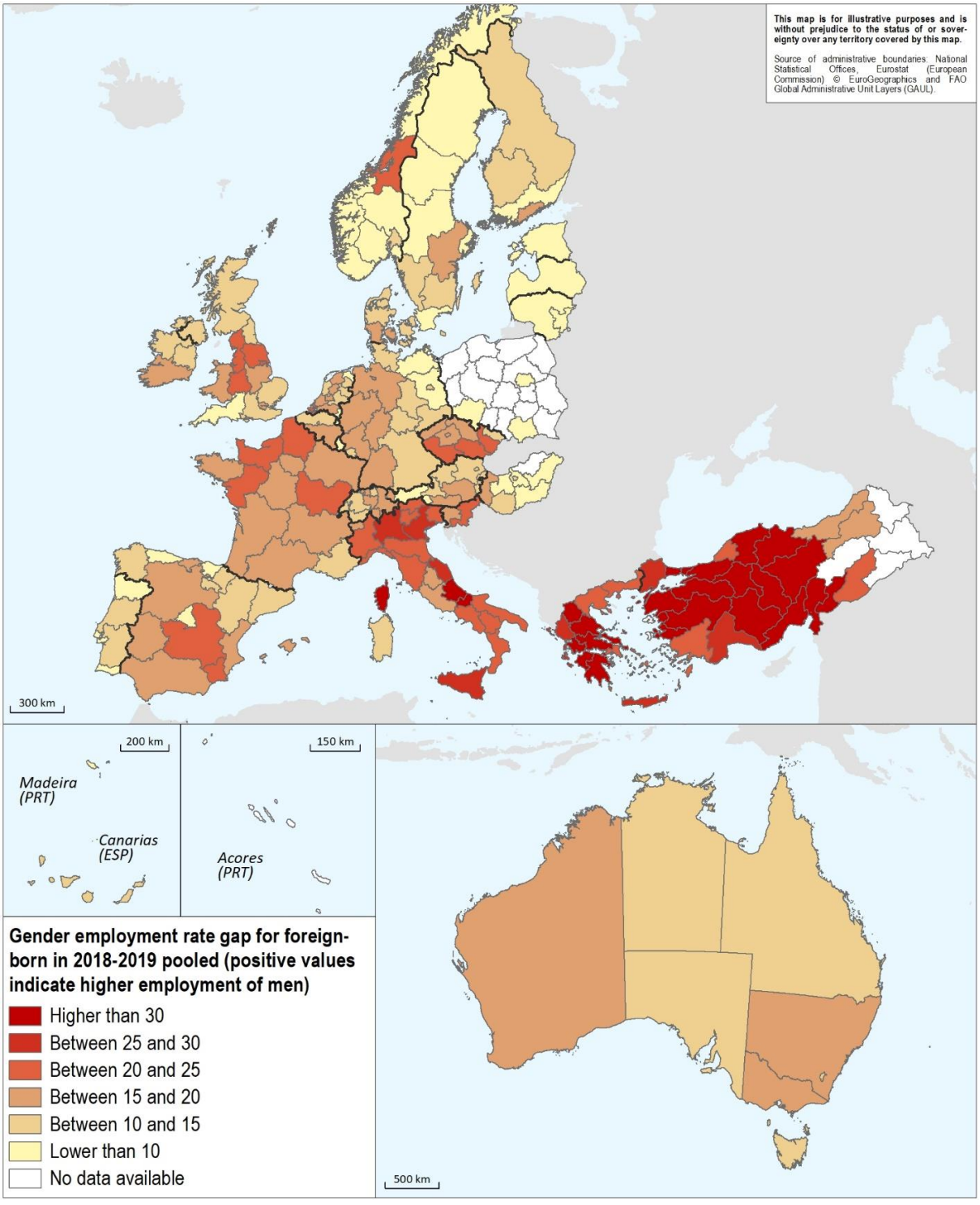
Among the foreign-born population, women have a significantly lower employment rate than men. In 2019, this gender gap amounted to 17 percentage points, with the male migrant employment rate reaching 74% while the female migrant employment rate was 57%. Even though gender gaps also exist among the native-born population, exceeding 9 percentage points in 2019, they are particularly pronounced among migrants, with the gender difference in the employment rate being 8 percentage points higher for migrants. While male migrants actually slightly exceed their native-born peers in terms of the employment rate (74.2% compared to 73.8%), female migrants lag behind female native-born individuals, which almost entirely explains the higher gender gap among migrants.

Across the OECD, the gender gap in the employment rate of migrants is not only very high but also varies widely across regions. In France, Germany and the US, the difference between the regions with the highest and lowest gender employment gap among migrants ranged from 10 percentage points (France and Germany) to 20 percentage points (US) in 2019 (Figures 2.13 and 2.14). Overall, regions in Southern Europe and Latin America encounter especially large differences between men and women in labour market outcomes. On average, regional disparities in the gender differences in employment rates are twice as large for migrants than native-born (OECD, 2018[18]).

Low female labour force participation is one of the main drivers for worse employment outcomes among female migrants across OECD regions. Even when country-specific factors such as an overall low female labour participation are taken into account, regional differences in the extent to which female migrants actively engage in the labour market helps to explain why the gender gap in employment differs widely among migrants across OECD regions. OECD analysis, as well as evidence from previous work, indicates that female participation rates are particularly low among non-EU migrants, driving the regional differences in the employment gender gap (Grubanov-Boskovic, Tintori and Biagi, 2020[19]).

Figure 2.13. Regional employment gender gap among foreign-born, 2018-19

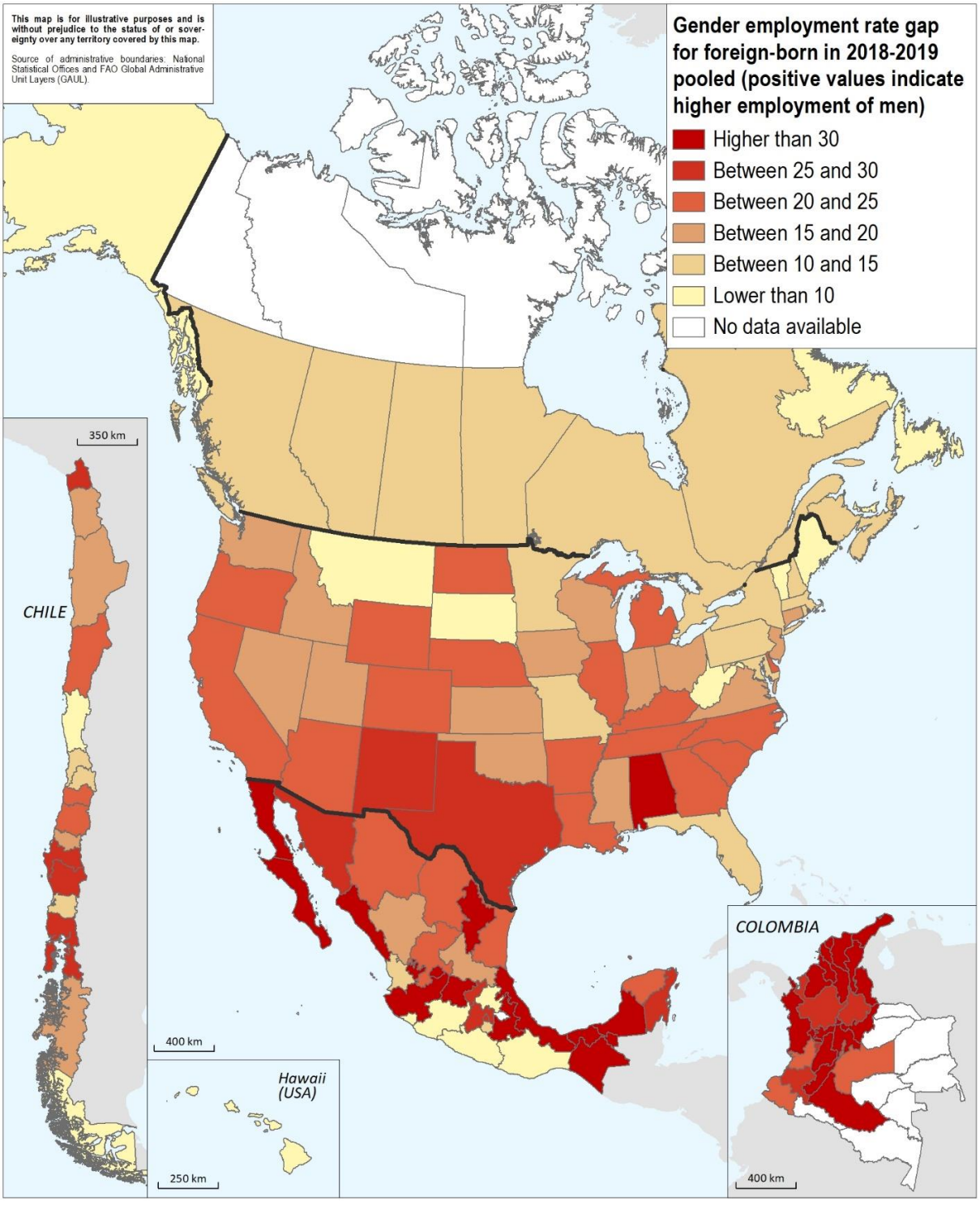
Percentage point difference in employment rate between male and female foreign-born by TL2 regions, pooled years



Note: The maps show the difference in the employment rate between male and female foreign-born individuals across TL2 regions for pooled years 2018 and 2019. Darker colours mark larger gender gaps.
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

Figure 2.14. Regional employment gender gap among foreign-born, 2018-19

Percentage point difference in employment rate between male and female foreign-born by TL2 regions, pooled years



Note: The maps show the difference in the employment rate between male and female foreign-born individuals across TL2 regions for pooled years 2018 and 2019. Darker colours mark larger gender gaps.
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

Even though female migrants are increasingly employed in OECD countries, the gender gap in labour market outcomes among migrants has not narrowed. To the opposite, driven by an even faster rise in the employment rate of male migrants, the average gender gap in the employment rate among migrants rose by 1.7 percentage points between 2015 and 2019. This stands in stark contrast to the trends for the native-born population, for whom women's increasing employment has led to a continuous fall of the gender gap in employment over the past decade.

A detailed look at OECD regions reveals that some places managed to lower labour market gender gaps among migrants while others saw a further widening. Whereas most regions in Australia and the US recorded a reduction in the difference in the employment rate of male and female migrants, most regions in other non-EU OECD countries experienced an increase in the gender gap (Figures 2.15 and 2.16). In Europe, progress in lowering migrants' gender gap has been mixed. While some regions experienced a reduction in the employment gender gap of migrants of more than 3 percentage points, other regions within the same country saw a further deterioration in male-female differences.

Box 2.5. Is immigration a viable solution against skill shortages?

Whether migration can help ease skill shortages in specific industries and bring benefits for the host countries is an essential part of the debate on migration. Evidence from the US suggests that policy changes favouring the immigration of STEM (Science, Technology, Engineering and Mathematics) workers have contributed to increasing productivity (Peri, Shih and Sparber, 2015[20]).

In Europe, Signorelli (2020[21]) looks at the French context and evaluates whether increasing migrant workers targeted to jobs suffering from skill shortages can boost firm growth. The study compares firms that operate in local employment zones more or less affected by the shortage of specifically skilled native-born labour and evaluates how their performance evolved after the French government facilitated the migration of skilled workers from outside of Europe.

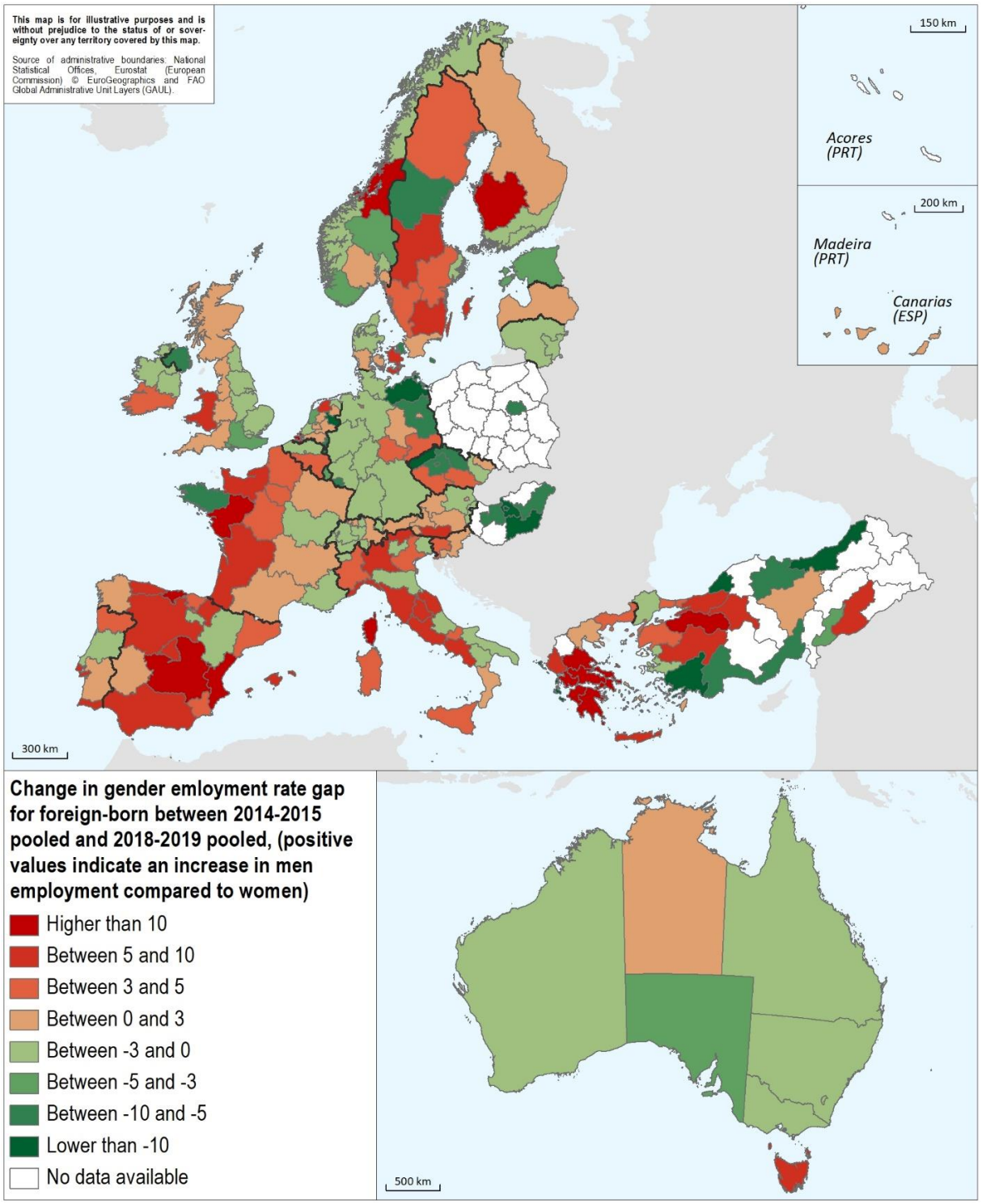
Businesses located in the employment zones that were the most constrained by the skill shortages targeted by the reform significantly benefitted from the increased access to migrant workers: they grew faster in terms of employment and revenues and increased their demand for native-born workers in managerial positions. While no effect was detected on average firm productivity, businesses located in slack labour markets experienced an increase in their productivity, sales and the number of employees.

These results suggest that the reform contributed to reducing the inequality in firms' access to skills which is an essential element in firms' performance. As such, policies encouraging high-skilled migration may be crucial to ensure firms that are located in less dynamic regions have access to skilled workers they need to remain competitive.

Source: Peri, G., K. Shih and C. Sparber (2015[20]), "STEM workers, H-1B visas, and productivity in U.S. cities", *Journal of Labor Economics*, Vol. 33/S1, pp. S225-S255; Signorelli, S. (2020[21]), "Too constrained to grow analysis of firms' response to the alleviation of skill shortages", *PSE Working Paper Series*, No. halshs-02961493.

Figure 2.15. Change in the regional gender employment gap of migrants, 2014/15-2018/19

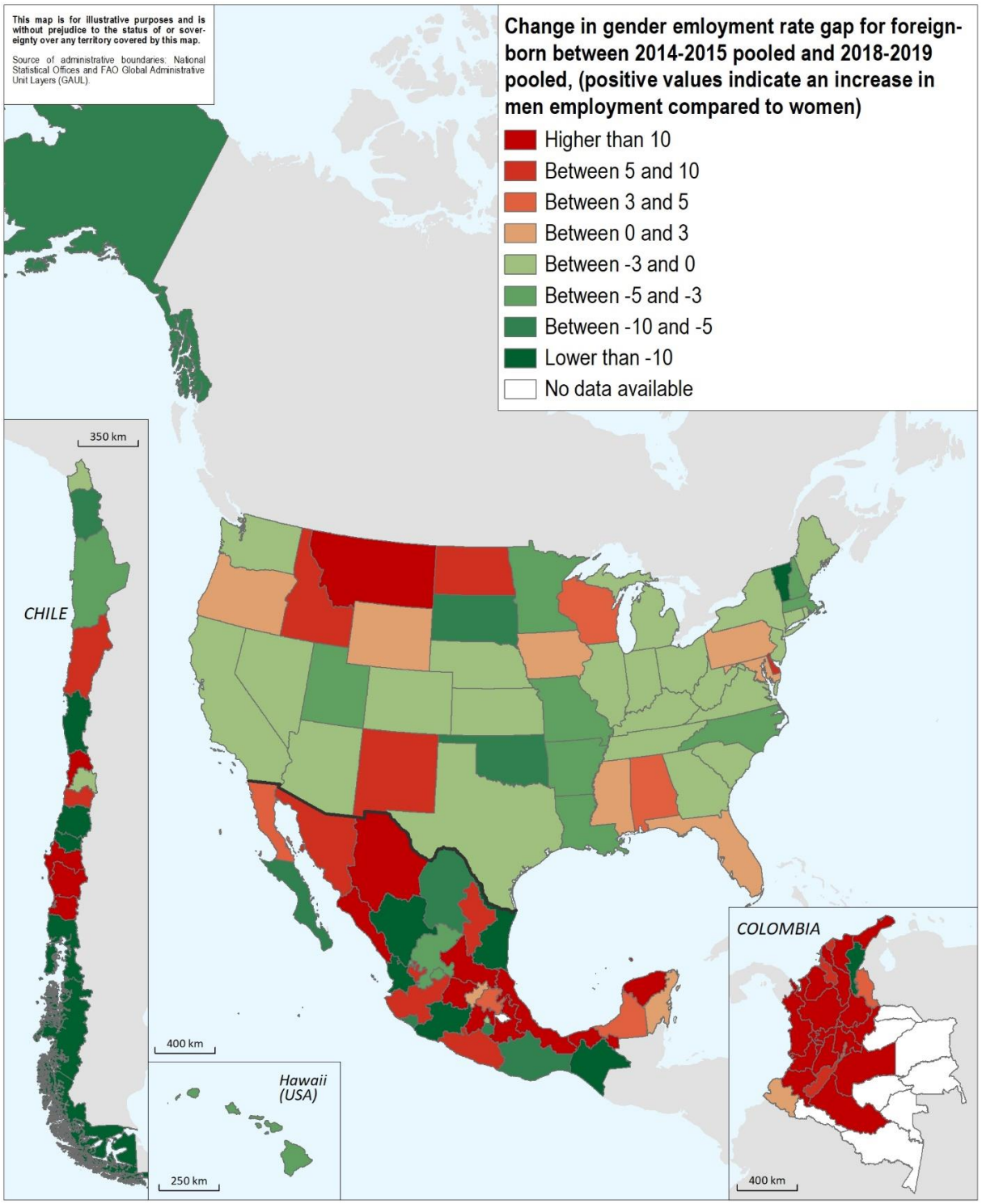
Change in the difference in employment rate between male and female foreign-born, by TL2 regions, pooled years



Note: The maps show the change in the difference in the employment rate between male and female foreign-born individuals across TL2 regions between pooled years 2014/15 and 2018/19. Red colours mark increases in the gender gaps, green denotes decreases.
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

Figure 2.16. Change in the regional gender employment gap of migrants, 2014/15-2018/19

Change in the difference in employment rate between male and female foreign-born, by TL2 regions, pooled years



Note: The maps show the change in the difference in the employment rate between male and female foreign-born individuals across TL2 regions between pooled years 2014/15 and 2018/19. Red colours mark increases in the gender gaps, green denotes decreases.
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

While various factors might inhibit migrant women's integration in regional labour markets in OECD countries, the consequences of having children appear to play a significant role. Across OECD member countries, the employment rate of migrant women who have a young child (0 to 5 years old) was 45.9% in European countries and 50.8% in the US (OECD, 2020[13]). In Europe, this compares to an employment rate of native-born women with young children of 66.6%. Childcare responsibilities affect native-born and migrant women differently. As evidence for OECD countries points out, a higher share of foreign-born women than native-born women have care responsibilities (44% to 36%), potentially partly explicable by the fact that foreign-born women have more children and are less likely to use childcare services (OECD, 2020[13]). Furthermore, childcare responsibilities have a different impact on native- and foreign-born women. While the former often take short career breaks, the latter are more likely not to enter the labour market in the first place. Consequently, policies that aim to reduce the gender gap in the labour market among migrants should facilitate access to childcare for migrant children (Liebig and Tronstad, 2018[22]). In particular, regions where female migrants face large obstacles to entering the labour market could aim to boost their employment rates by offering targeted support that makes childcare responsibilities and economic activity more compatible.

Lower education is another factor that limits female migrants' integration into regional labour markets across the OECD. On average, the educational attainment of migrants is lower among women than among men (OECD/EU, 2018[14]). Education, including linguistic, numerical and digital skills are a fundamental driver of success in the labour market. Employment gaps tend to be higher in regions where the gap in education between native-born and migrants is larger (Grubanove-Boskovic, Natale and Scipioni, 2017[23]). The following section examines the skills migrant can bring to regional labour markets by assessing their educational attainment across OECD regions.

Box 2.6. Comparison of migrants' not in education, employment or training (NEET) rates by country and degree of urbanisation

A smooth transition between school and employment for young adults is vital to ensure integration into the labour market and labour force. For youths, the pathways into employment are diverse and difficult to compare. Therefore, the NEET share for 15-24 year-olds is a valuable measurement to evaluate how easily young adults enter the labour market. Moreover, NEET data provides information on the well-being and the share of the youth population in danger of falling behind due to early-career unemployment (OECD, 2021[24]).

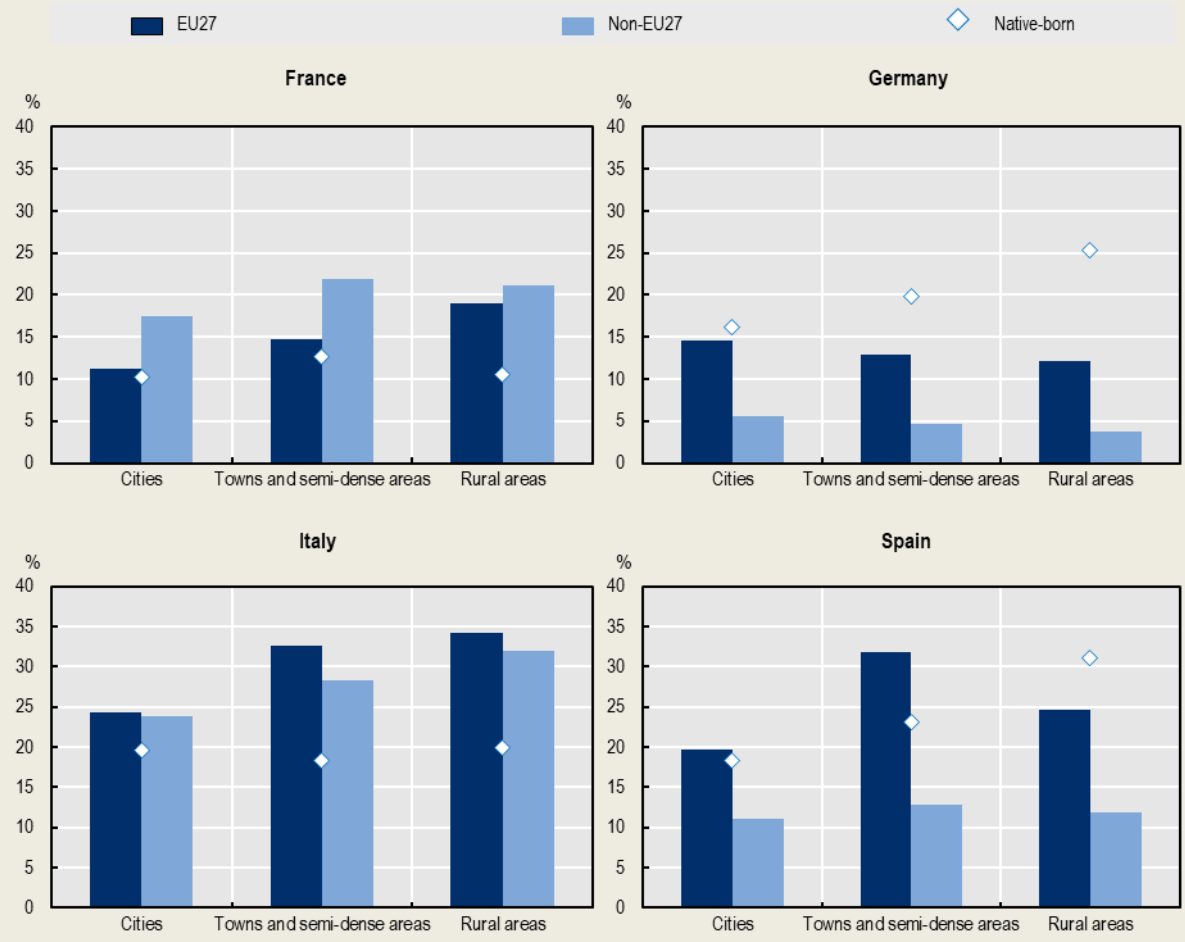
In this analysis, two more dimensions are incorporated. First, the data distinguishes the country's regions by the degree of urbanisation as national NEET shares might not detect structural differences within a country. Second, migrants from the remaining EU27 countries and from outside the EU are considered separately. A smooth transition from school to employment is essential for the personal economic situation in the long term (Oreopoulos, Von Wachter and Heisz, 2012[25]). This especially applies to migrants as they often lack social networks and face additional obstacles such as discrimination in the job search (Bertrand and Mullainathan, 2004[26]). Additionally, labour market integration significantly contributes to migrants' social integration (Fasani, Frattini and Minale, 2020[27]).

Figure 2.17 shows that while the NEET share of native-born individuals is independent of the degree of urbanisation among all countries, the NEET share of migrants is higher in less dense regions. In France and Germany, the NEET rate for EU27 migrants is consistently smaller than for non-EU27 migrants across the degrees of urbanisation. Opposed to the other countries, the NEET shares for EU27 migrants and native-born workers in Germany are slightly smaller in less dense areas than in cities. In Italy and Spain, differences between EU27 and non-EU27 migrants vanish and are not structural. However, inconsistent values for migrants in the bottom two panels might also be driven by fewer observations.

Apart from the settlement preferences of migrants, better institutional guidance for graduating migrants might drive regional differences in the NEET share.

Figure 2.17. Youth NEET by degree of urbanisation and country of birth, 2017

NEET share for the age group 15-24 in the year 2017 for selected countries



Note: Countries chosen based on data availability.
Source (figure): OECD calculations based on Eurostat NEET rate data.
Source (box): Bertrand, M. and S. Mullainathan (2004[26]), "Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination", *American Economic Review*, Vol. 94/4, pp. 991-1013; Fasani, F., T. Frattini and L. Minale (2020[27]), "Lift the ban? Initial employment restrictions and refugee labour market outcomes", *Journal of the European Economic Association*; OECD (2021[24]), *OECD Skills Outlook 2021: Learning for Life*, https://doi.org/10.1787/0ae365b4-en; Oreopoulos, P., T. Von Wachter and A. Heisz (2012[25]), "The short-and long-term career effects of graduating in a recession", *American Economic Journal: Applied Economics*, Vol. 4/1, pp. 1-29.

Educational attainment and use of migrants' skills

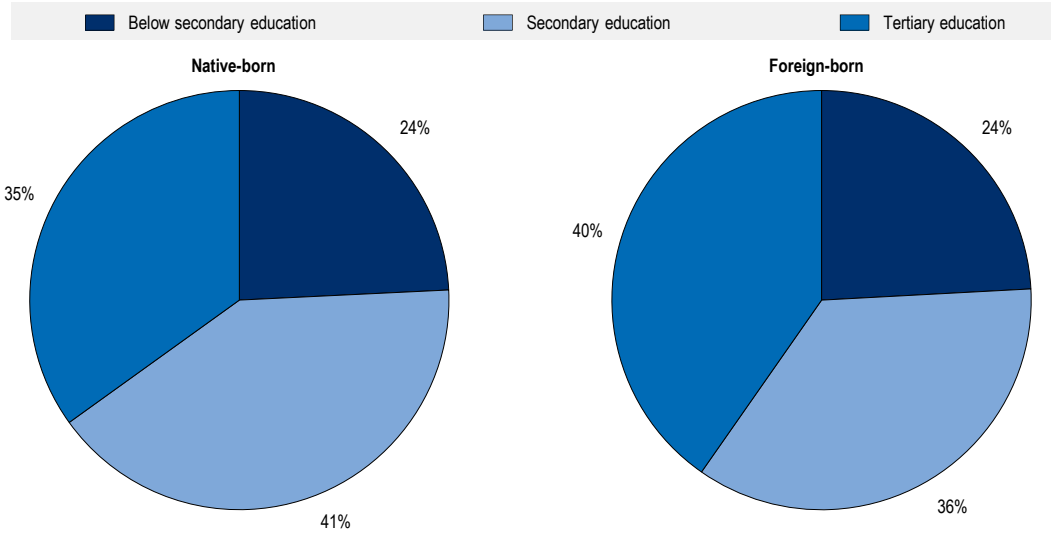
Human capital in the form of education and skills is a fundamental driver of economic development (Diebolt and Hippe, 2019[28]). Regions that are able to attract high-skilled migrants can reap benefits in terms of economic and productivity growth. More generally, educational attainment is also a key factor in facilitating

access to jobs. Therefore, regional differences in the education of migrants not only matter for regional development but also help to explain why migrants struggle more in some regions with regard to their integration in the regional labour market.

In OECD countries, foreign-born individuals are on average more educated than native-born individuals. In 2019, the share of migrants with tertiary education reached 40% compared to 35% of the native-born population (Figure 2.18). Equal shares of migrants and native-born have below secondary education (24%) but the fact that more migrants are tertiary-educated is reflected in the higher share of native-born individuals with secondary education (41% compared to 36% among migrants). While these numbers point out the skills that migrants can contribute to the economy in the OECD, the picture differs substantially in various dimensions. First, there are noticeable differences across OECD countries. Second, even within countries, migrants' educational attainment can differ widely across regions (Figures 2.19 and 2.20). Third, educational attainment varies substantially between distinct groups of migrants. Fourth, even within countries, migrants' educational attainment can differ widely across regions.

Figure 2.18. Average educational attainment of migrants and native-born workers in OECD countries, 2019

Share of native-born and foreign-born population by level of education, OECD average

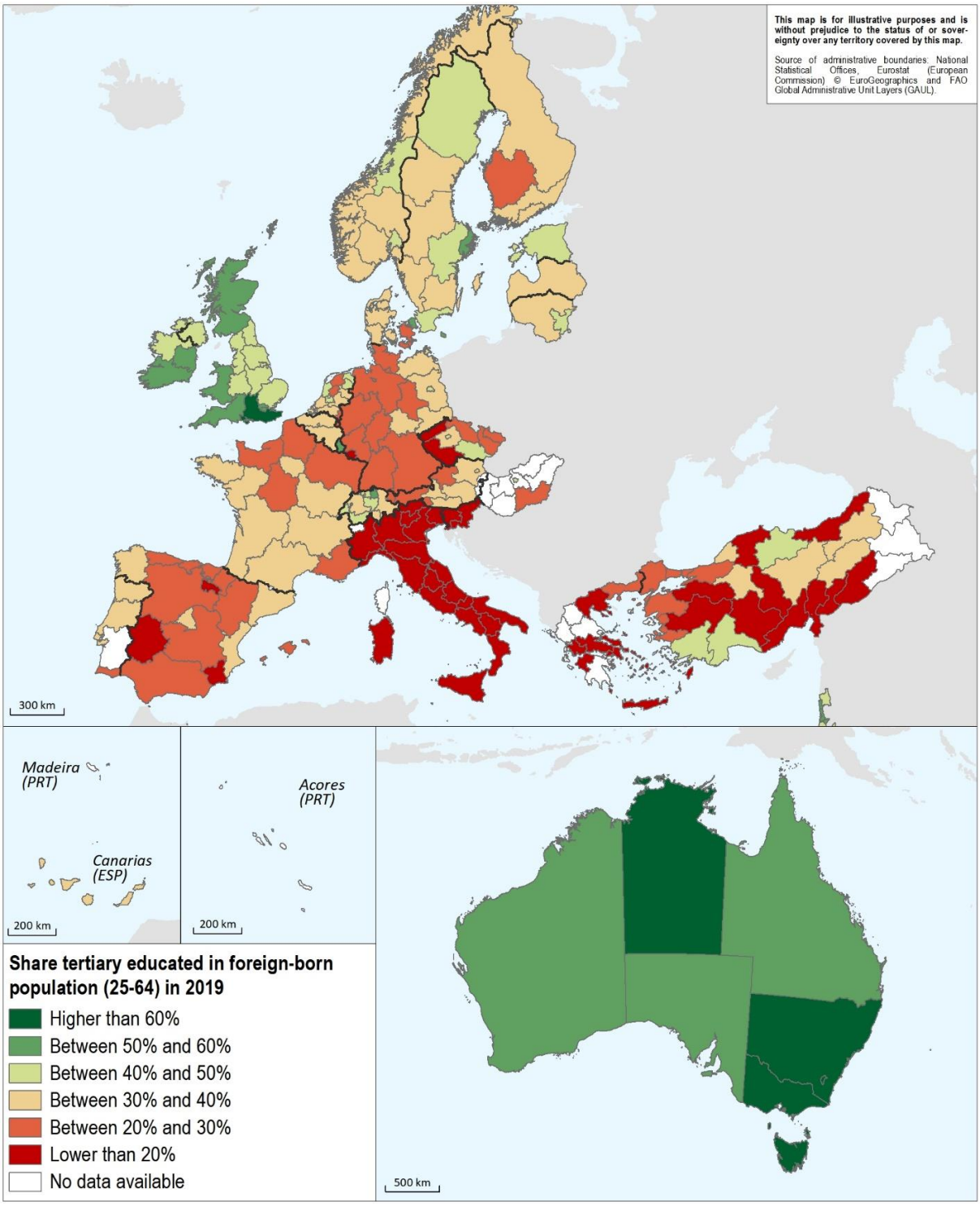


Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

Increasingly, specific regions concentrate both highly skilled native-born and migrant workers. Across OECD regions, the share of migrants with tertiary education is strongly correlated to that of the native-born population (Figure 2.21). The more educated a region's native population is, the more educated its migrant population tends to be. This geographic pattern has become clearer over time. Compared to 2010 and 2015, the concentration of highly educated migrant and native-born workers in the same regions has increased.

Figure 2.19. Educational attainment of migrants across OECD regions, 2019

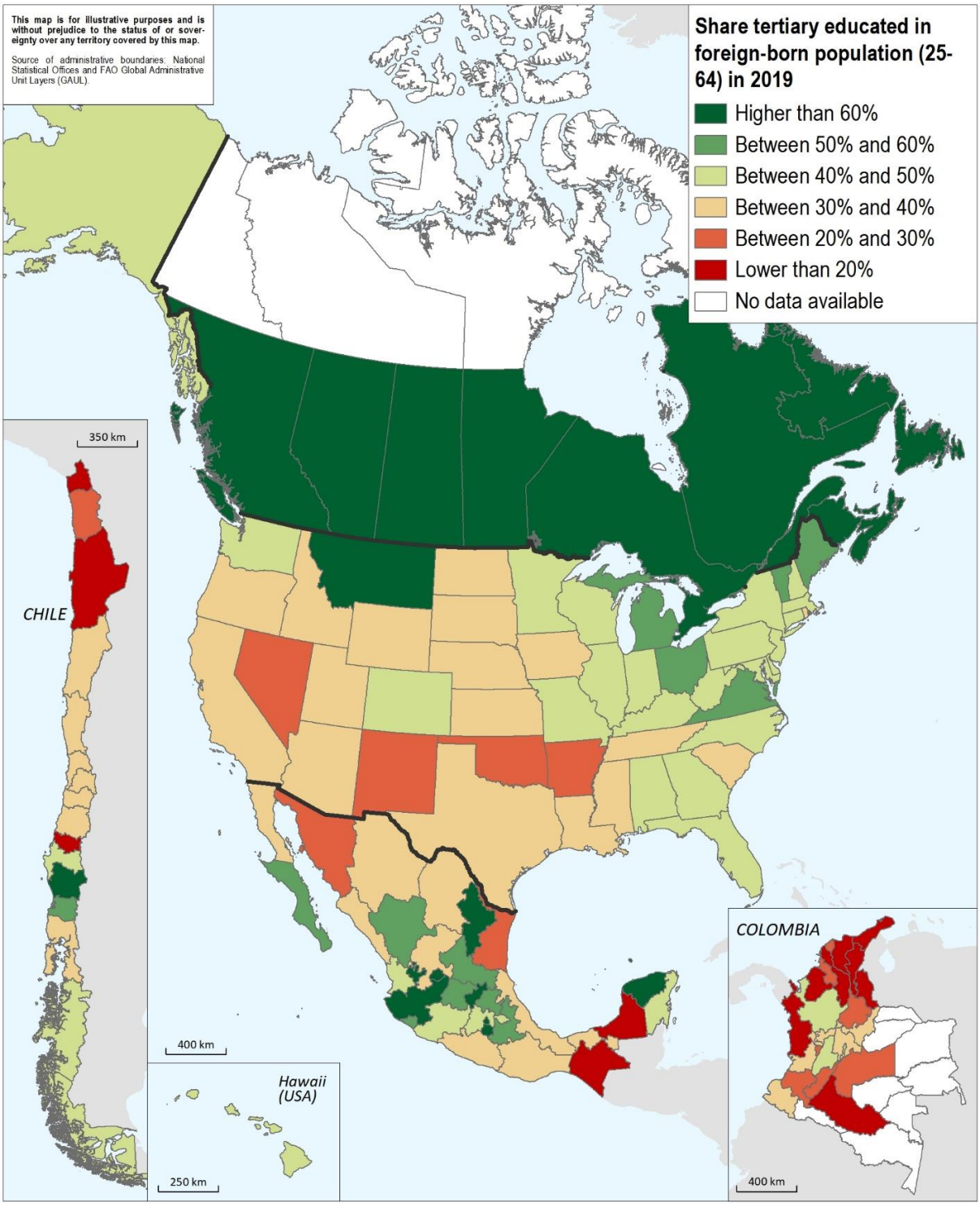
Share of tertiary-educated migrants by TL2 regions



Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

Figure 2.20. Educational attainment of migrants across OECD regions, 2019

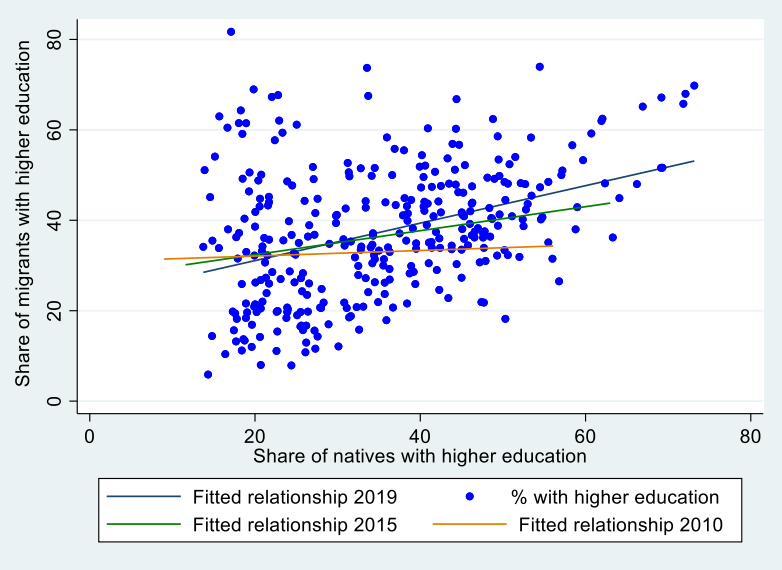
Share of tertiary-educated migrants by TL2 regions



Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

Figure 2.21. Regional patterns of tertiary education among native-born individuals and migrants

Correlations of the regional share of tertiary-educated native-born and migrant workers, 2010, 2015 and 2019

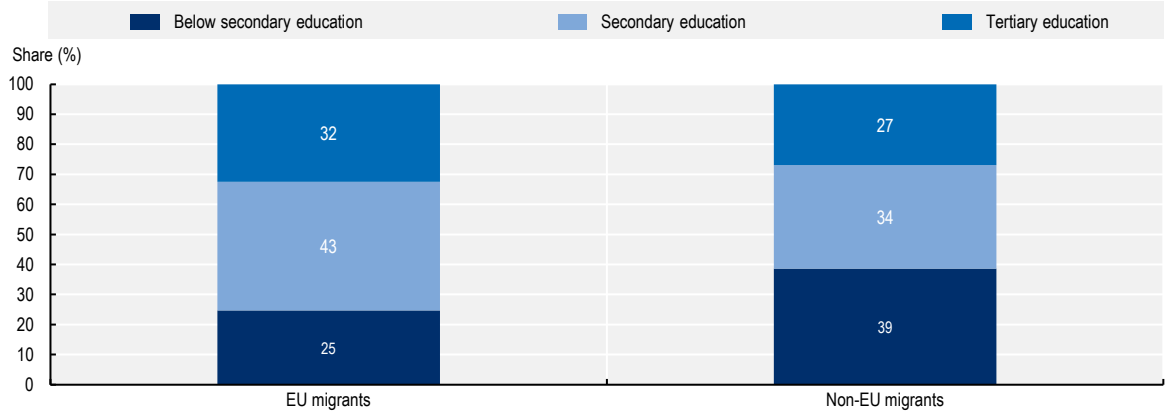


Note: The lines represent the predicted linear relationship between regions' share of tertiary education among their native- and foreign-born populations for 2010, 2015 and 2019.
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

In Europe, migrants' average educational attainment depends on their country of origin. The distinction between EU and non-EU migrants offers clear differences. In EU27 countries, EU migrants tend to have significantly higher levels of education than non-EU migrants (Figure 2.22). The share of tertiary-educated individuals was 5 percentage points higher for EU migrants in 2019. In contrast, non-EU migrants are over-represented among the low-skilled population. While only 1 in 4 EU migrants had less than secondary education, 39% of non-EU migrants did. As higher educational attainment is broadly linked to better employment outcomes, non-EU migrants face higher difficulties of integrating into the labour market in regional economies.

Figure 2.22. Educational attainment of EU and non-EU migrants, EU27 countries, 2019

Average educational attainment of EU and non-EU migrants in EU27 countries

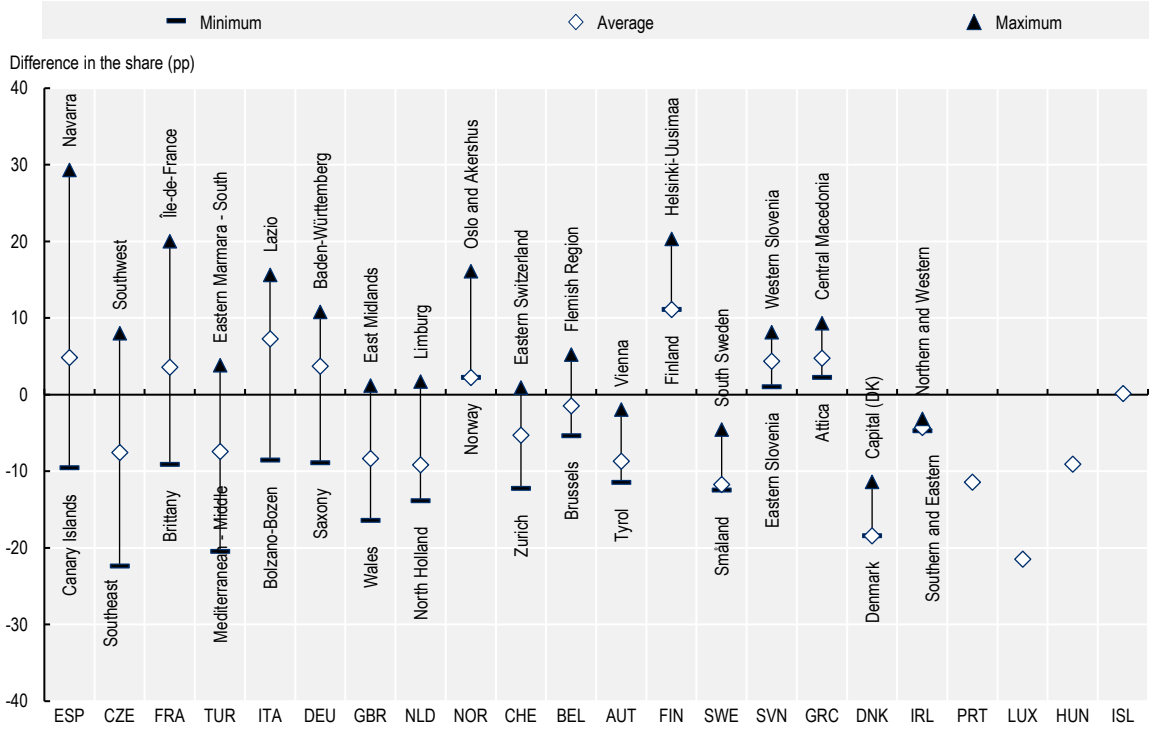


Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

Despite the overall high level of educational attainment of EU migrants, not all regions manage to attract high-skilled EU migrants. In fact, the difference in educational attainment between the native-born and EU-born migrant population is region-specific. Even in countries such as Belgium, Switzerland or the UK where EU migrants are more likely to be tertiary-educated than native-born, some regions report higher educational attainment for the native-born population (Figure 2.23). In many countries, capital regions concentrate large shares of highly skilled native-born workers. As a result, in various capital regions, including Helsinki (Finland), Ile-de-France (France), Lazio (Italy) or Oslo (Norway), native-born workers appear to have higher educational attainment than migrants.

Figure 2.23. Differences in tertiary education of native-born individuals and EU migrants across regions, 2019

Difference in the share of tertiary-educated native-born individuals and EU migrants across TL2 regions

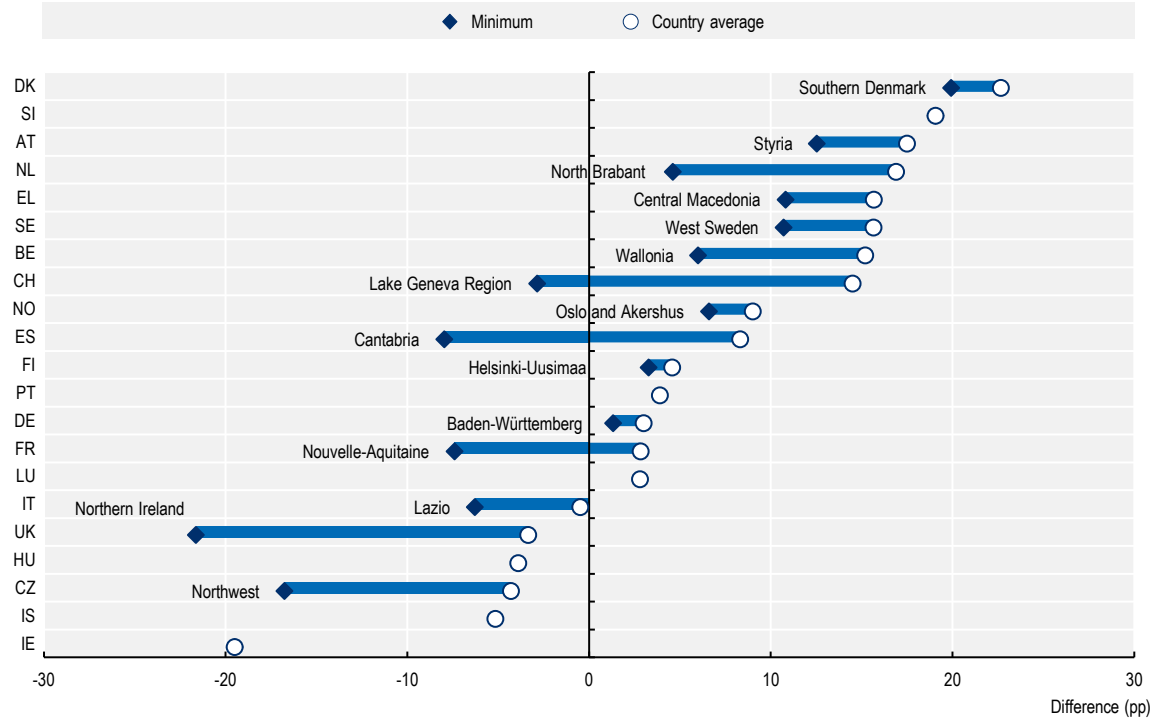


Note: Negative values indicate a higher share of tertiary-educated individuals among the EU migrant population than among the native-born population.
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

The discrepancy in education attainment between migrants from EU countries and those born elsewhere also varies widely across regions in European OECD countries. In 15 out of 21 countries with available data, EU migrants tend to have higher rates of educational attainment than their non-EU countries (Figure 2.24). However, the extent of this educational gap differs regionally within countries. In the Netherlands for example, tertiary education is 17 percentage points higher for EU migrants nationally but only 5 percentage points higher in North Brabant. In Spain, the educational attainment of non-EU migrants surpasses that of EU migrants in Cantabria, even though the population share with tertiary education is more than 8 percentage points higher among EU migrants nationally.

Figure 2.24. Differences in the share of tertiary-educated EU and non-EU migrants, 2019

Share of tertiary-educated EU migrants minus share of tertiary-educated non-EU migrants by TL2 regions



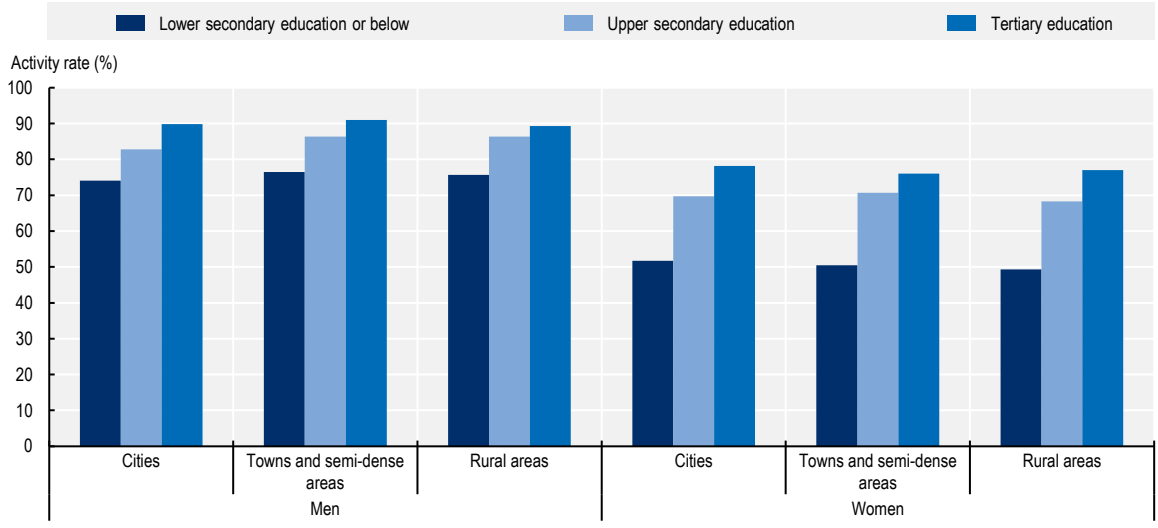
Note: Positive values indicate higher shares of tertiary education for EU migrants than non-EU migrants.
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources. .

Subnational differences in the educational attainment of migrants affect migrants' ability to find employment or integrate economically. In Europe, those differences in educational attainment between different groups of migrants are linked to discrepancies in economic activity. Among female migrants, higher educational attainment is associated with higher rates of economic activity (either being employed or unemployed, i.e. looking for a job). Additionally, female labour market activity rates differ by the degree of urbanisation. Overall, female migrants of all levels tend to be more likely to be economically active in cities than in other areas (Figure 2.25). This pattern holds for female migrants from both EU and non-EU countries. However, among non-EU migrant women, spatial differences between cities and towns and semi-dense areas are less pronounced.

Even though the educational attainment of migrants, and thus the skills they can bring to the local economy, have improved, the labour market integration of migrants still faces a number of challenges. First, a big gap remains between native-born individuals or EU migrants on the one hand and non-EU migrants in terms of educational attainment. Additionally, migrants often struggle to find jobs that match their level of qualification. Effective regional development policies need to address these challenges by both encouraging additional learning and training opportunities among non-EU migrants and ensuring a better recognition of foreign qualifications and professional skills (OECD, 2017[29]). This endeavour becomes even more pressing as migrants, and especially non-EU migrants, are more concentrated in jobs that are at high risk of automation (OECD, 2019[30]). Tailored regional policies that allow migrants to up-skill, re-train or find jobs that better correspond to their skillsets will contribute to regional development by better using the talents and skills that migrants have and by supporting their labour market integration and resilience for future economic shocks.

Figure 2.25. Activity rates of migrants by level of education and degree of urbanisation, 2019

Activity rates of female EU and non-EU migrants by level of education and degree of urbanisation



Note: Activity rate is the percentage of active persons in relation to the comparable total population. The economically active population comprises employed and unemployed persons.
Source: OECD calculations based on Eurostat (2021[31]), *Migrant Integration Statistics - Regional Labour Market Indicators*, https://ec.europa.eu/eurostat/statistics-explained/index.php/Migrant_integration_statistics_-_regional_labour_market_indicators.

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Notes

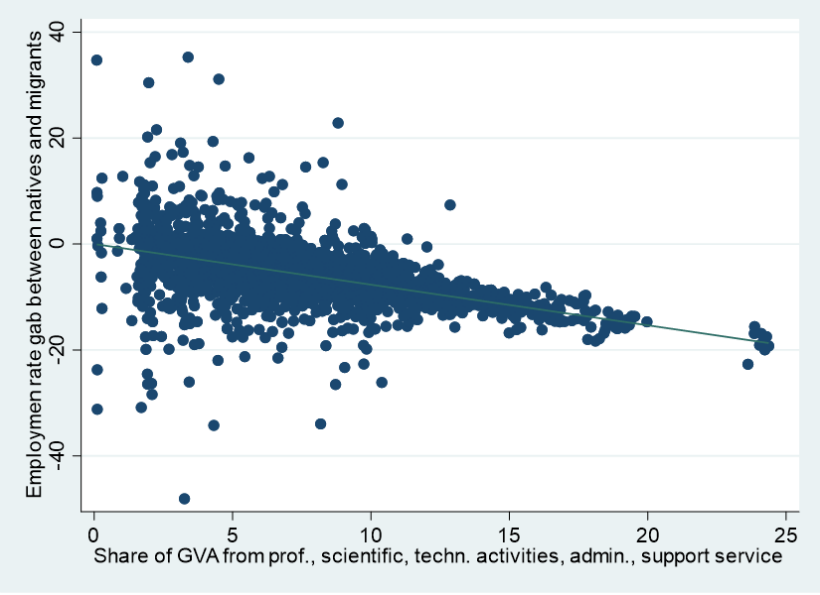
[1] The chapter focuses primarily on employment rates as well as labour force participation rates because regional unemployment statistics are not available everywhere due to sample size issues.

[2] For the purpose of this chapter, EU migrants contain those born in the UK. The most recent available data are for 2019 when the UK was still formally an EU member state, giving UK citizens the same rights as those from other EU countries.

Annex 2.A. Supporting evidence

Annex Figure 2.A.1. Change in regional employment rate gap and GVA in services, 2010-18

Change in employment rate gap (native-migrant) based on regional GVA from services by TL2 regions



Note: Figure displays residual component plots that take into account region and year fixed effects.
Source: OECD calculations based on labour force surveys. See Box 2.1 for detailed information on sources.

3 COVID-19 and migrants across cities and regions

This chapter examines the impact of COVID-19 on migrants across regions and cities, and sheds light on the contribution of migrants to ensure the continuity of essential services during the pandemic. The chapter assesses the health and employment vulnerability of migrants during the pandemic and it presents evidence on the potential capacity of migrant workers to shift to remote working amid lockdowns and social distancing measures. Finally, the chapter analyses the contribution of migrants to local economies as key workers in essential services.

In Brief

Migrants played a crucial role as key workers during the pandemic, yet were more exposed to health and employment consequences of COVID-19

- **Migrants faced a higher risk of COVID-19 compared to the native-born population**. In addition to being over-represented in dense areas which accelerated the spread of the virus, migrants also faced added exposure risk due to their socio-economic conditions, which affected their work and living conditions.
- **Migrants living in cities are more likely to experience poor housing conditions, making them more vulnerable to the crisis's health consequences**. In most European Union (EU) OECD countries, migrant households are more likely to live in overcrowded dwellings than native-born households. Moreover, overcrowded dwelling is more frequent among migrants living in cities and especially those from non-EU countries.
- **Migrants located in all areas tend to have jobs that are less amenable to remote working compared to native-born workers**. Lockdowns and social distancing measures shifted work from offices to homes. Migrant workers, however, have a lower remote working potential which exposes them to job and income losses in the short run and increased exposure to the virus. The native-migrant gap in remote working potential exists in all types of areas (e.g. cities or rural) and is roughly the same size. Across all areas, non-EU migrants have lower remote working potential compared to the native-born population and other migrants from EU countries.
- **The health crisis has triggered attention to essential services and to the people that work in them**. While large sections of the workforce had to stay home due to lockdowns, some essential functions, such as food processing, delivery or healthcare, were performed to keep citizens healthy, safe and fed during the pandemic. This has highlighted an important role of migrant workers as "key workers" in these services, especially in cities.
- **Migrants play an important role in essential services, accounting for 14% of key workers across European regions**. In most countries, capital regions have the highest share of migrant key workers, with migrants accounting for an average of 20% of all key workers in the region. However, the share of migrants among key workers and their countries of origin varies significantly across European countries, reflecting the presence of migrants in the local workforce.
- **Migrants of all education levels contribute to key worker occupations**. Migrants play an important role in occupations requiring low skills, such as domestic workers, hotel and office cleaners, but also in the healthcare system, especially in cities. Migrants make around 23% of medical doctors and 14% of nurses. While EU doctors and nurses are evenly spread across space, non-EU countries are more likely to work in cities.

The health and labour market impact of COVID-19 on migrants

The global pandemic has caused an unprecedented health emergency in OECD countries. The health impact of the crisis has been unevenly distributed across places within countries, with some regions – often with high population density – being hit particularly hard, especially during the first wave (OECD, 2020[1]).

These differences across space also reflect an unequal impact of the crisis across different groups. For instance, the type of occupations and the housing conditions expose migrants to the health effect of the pandemic more than native-born residents. This section shows that migrants are more vulnerable to the adverse health and economic effects of the COVID-19 crisis as they are more likely to live in overcrowded housing and be employed in occupations with lower remote working potential.

The health impact of COVID-19 in regions

The health impact of the COVID-19 pandemic has been uneven within countries. From February to June 2020, large regions in 30 OECD countries with available data registered on average 6% more deaths than in the same months of the previous 2 years (average of 2018-19) (OECD, 2020[1]).[1] While significant differences were observed across regions, in most cases, regions with high population density and proximity to metropolitan areas were affected more than other regions.

Several correlated and complex regional factors can drive differences in the spread of the virus and excess mortality. In regions where keeping social distance was relatively harder due to the industrial or occupational composition of the economy and to local living conditions (e.g. people living in larger households or care homes), the virus spread significantly faster (Ascani, Faggian and Montresor, 2020[2]; Fadinger and Schymik, 2020[3]). Furthermore, regional healthcare infrastructure (e.g. hospital beds, doctors, etc.) and the region's demographic structure played a vital role in regions' capacity to treat their infected population and reduce the overall health impact (Diaz Ramirez and Veneri, 2021[4]). A higher population share of the elderly or those with chronic diseases is likely to increase the vulnerability to severe virus infections, thus influencing regional resilience to the virus. The next section examines some of these factors that have contributed to the crisis's health impact by distinguishing the migrant and native-born population across regions.

Socio-economic conditions and the uneven health costs of the pandemic

Migrant communities, as well as ethnic minorities, have suffered higher health consequences compared to the rest of society. While death rates have increased for the overall population during the pandemic, the increase was more considerable for ethnic groups and migrants.[2] Other recent studies on a limited group of countries with available data confirm that ethnic groups were affected more severely by the pandemic (Perkin et al., 2020[5]; Rossen et al., 2020[6]). While higher vulnerability results from a complex set of factors, it is mainly driven by socio-economic characteristics (e.g. type of occupation, household structure, demographics) and location characteristics (e.g. urban areas) where migrants are more likely to live. Overall, ethnic minorities and migrants are more likely to live in areas with high rates of COVID-19 and thus increased vulnerability to the pandemic.

Box 3.1. Geographic areas and regional classifications

The chapter features analysis using administrative regions and the degree of urbanisation depending on data availability and the objective of the analysis.

Administrative regions

Most of the regional policy analysis uses data collected for administrative regions, that is, the regional boundaries within a country as organised by governments. Data on administrative regions have the advantage of referring to areas that are often under the responsibility of a certain subnational government. They also correspond to the geographical scale targeted by a specific policy implemented

at the national or subnational level. Regions are classified into two scales: large (Territorial Level 2, TL2) and small (Territorial Level 3, TL3), ensuring comparability across countries.

Classification of local units by degree of urbanisation

The degree of urbanisation definition acknowledges the urban-rural continuum and proposes three classes of settlements instead of the traditional urban vs. rural dichotomy. The three classes are: i) cities (or densely populated areas); ii) towns and semi-dense areas (or intermediate density areas); and iii) rural areas (or thinly populated areas).

Source: Eurostat (2013[7]), *Urban-Rural Typology*, http://ec.europa.eu/eurostat/web/rural-development/methodology; OECD (2020[1]), *OECD Regions and Cities at a Glance 2020*, https://doi.org/10.1787/959d5ba0-en.

Significant spatial differences in migrants' exposure to the virus exist even across neighbourhoods within cities. Recent evidence focusing on the prevalence of COVID-19 across neighbourhoods in New York City at the outset of the pandemic confirms this point (Borjas, 2020[8]). The study combines data on the number of tests and infections at the postal code level to examine the importance of demographic and socio-economic characteristics on the number of tests administered and the infection rates. Two important results emerge. First, individuals living in disadvantaged neighbourhoods or with a high share of ethnic minorities were less likely to get tested for the virus. Second, conditional on taking the test, individuals living in such neighbourhoods had a much higher probability of testing positive.

Housing conditions, occupations and the health crisis

Housing conditions play an important role in people's standard of living and access to good-quality housing is essential for the successful integration of migrants (OECD, 2018[9]). For instance, good housing conditions are linked to higher educational outcomes, lower risks of social exclusion and health-related issues (Salvi del Pero et al., 2016[10]). Across the OECD countries, migrants are less likely to own their homes (Gobillon and Solignac, 2019[11]) and are more likely to live in poor housing conditions than the native-born population (OECD/EU, 2018[12]). In general, housing costs correspond to a larger share of the income of migrant households, which forces them to cut back spending on other needs, including healthcare (Salvi del Pero et al., 2016[10]).

In the context of the COVID-19 pandemic, housing conditions gained further importance as they can affect the spread of the virus. According to Brandily et al. (2020[13]), French municipalities with a higher share of overcrowded housing suffered more from COVID-19, as overcrowding facilitated transmission among household members. Furthermore, in multi-generational households, living in overcrowded housing exacerbated the risk of transmission of COVID-19 to older individuals, especially if one household member worked outside of the home during the lockdown period. Overall, housing and intergenerational living account for up to 60% of the difference observed in the number of COVID-19 cases between rich and poor municipalities.

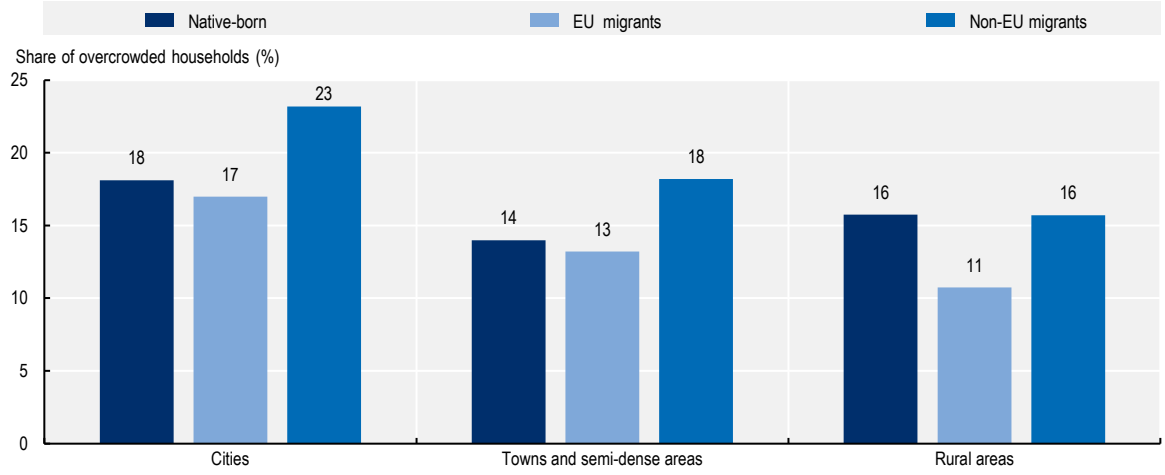
Non-EU migrants are more likely to live in overcrowded housing, especially in cities

Migrants, especially those living in cities, often live in overcrowded dwellings. As a result, compared to native-born residents, migrants are more likely to live in poor housing conditions, affecting their well-being negatively. In most European OECD countries, households including at least one migrant adult are more likely to live in overcrowded dwellings compared to households with only native-born individuals. While this difference exists in all types of areas, overcrowded households tend to be more frequent among migrants in cities than in other areas.

Across all degrees of urbanisation, overcrowded housing is particularly severe among non-EU migrants. For instance, while 17-18% of native-born and EU migrant households in cities suffer from overcrowding, the share jumps to 23% for non-EU migrants, indicating a large disparity in terms of living conditions. Similarly, the share of non-EU migrants living in overcrowded housing conditions in towns and semi-dense areas (18%) is 4-5 percentage points higher than those of the native-born population (14%) or EU migrants (13%).

Figure 3.1. Migrant households are more likely to be overcrowded, 2019

Share of households that are overcrowded in the total number of households by the degree of urbanisation in European countries



Note: Data include OECD-EU countries for which data are available. Households are considered migrant if at least one adult member is a migrant. See OECDEU (2015[14]) for a detailed definition of overcrowding.
Source: Eurostat, EU Statistics on Income and Living Conditions, 2019 (accessed in December 2020).

While risk of poverty for non-EU migrants is highest in cities, for native-born it is greatest in rural area

Prior to the pandemic, migrant households were already more vulnerable to poverty risk compared to native-born households. Households where at least one adult is a migrant face significantly higher risk compared to native-born households. Across the regions of 26 European OECD countries, 15% of native-born households face the risk of poverty, a much lower risk compared to EU and non-EU migrants, with 22% and 35% respectively.[3] Furthermore, poverty risks are higher for migrant households across all types of areas along the degree of urbanisation.

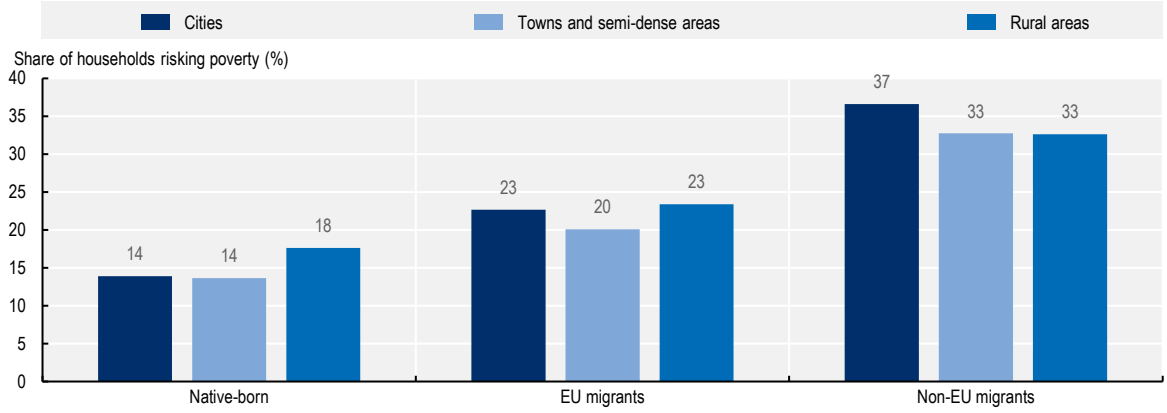
In Europe, non-EU migrants in cities face a higher risk of poverty compared to those located in other types of areas. For non-EU migrants, the share of households at risk of poverty reaches 37% in cities (settlements above 50 000 inhabitants), compared to 33% in towns and semi-dense areas and rural areas. For EU migrants, the picture is more nuanced, as the share of households at risk of poverty is practically consistent across all types of settlement (close to 23%).

While a clear understanding of these spatial differences requires further investigation, the importance of cities for migrants can partially explain the observed spatial differences in terms of poverty risk. First, cities, especially large ones or capitals, serve as entry points to countries, as newcomers and working-age migrants at earlier stages of their career are more likely to live in cities. Due to a large number of migrants living in cities, newly arrived migrants can tap into their origin country networks, which enables them to find a job more easily. Second, cities have a higher share of low-income service jobs that employ migrant

workers. On the other hand, cities in advanced economies attract native-born workers with higher education levels and ambition (Combes, Duranton and Gobillon, 2008[15]; De la Roca and Puga, 2017[16]; Özgüzel, 2020[17]). As a consequence, while the average levels of skills of native-born workers in cities tend to be higher relative to the rest of the country, such patterns are less likely to hold for migrants.

Figure 3.2. Migrants face a significantly higher risk of poverty, 2019

Number of households risking poverty as a share of all households by nationality and degree of urbanisation in European countries



Note: A household is considered risking poverty if the equivalised disposable income is below 60% of the median of equivalised disposable income. Equivalised disposable income is calculated using total disposable household income multiplied by a within-household non-response inflation factor and divided by equivalised household size.
Source: Eurostat, EU Statistics on Income and Living Conditions, 2019 (accessed in December 2020).

During the pandemic, many started working remotely. Before the COVID-19 outbreak, remote work was considered a work alternative that was used very little. Suddenly, the pandemic turned it into an urgent solution to reduce contagion risk and ensure economic continuity. While some workers maintained their jobs and income by working remotely during the pandemic, some did not have the same opportunity and thus suffered employment and income losses. The following section presents evidence on the degree to which migrants could shift to remote work amid lockdowns and social distancing measures.

Why does remote working potential matter for migrants?

Remote working is an important determinant for regions' capacity to function under lockdowns while reducing individuals' exposure to the virus. By working from home, workers can maintain their economic activity and reduce economic disruption due to lockdown measures (OECD, 2020[18]). As importantly, it allows workers to stay healthy by avoiding public spaces or commute to the office.

Not all workers have the possibility to work remotely. Remote working potential depends on the nature of the tasks carried out by workers. Workers who only need a computer and Internet connection to work (e.g. financial analysts) can easily shift work from office to home, while those who need to use heavy machines (e.g. construction) or who have occupations requiring physical presence (e.g. restaurant staff) cannot work from home. Workers' specific tasks (i.e. occupations) are more important than the specific workplace characteristics or the sector of economic activities in which a job is classified to determine the capacity to work remotely. For example, academic researchers in universities can continue working during a lockdown or under social distancing requirements, while canteen staff working in the same university cannot.

During the pandemic, workers who could work from home faced lower risks of job and income losses. Evidence from the US indicates that workers who were able to work remotely during the pandemic were affected less severely by the negative labour market effects (OECD, 2021[19]). Specifically, workers with high remote work potential were less likely to drop out of the labour force or face unemployment during the crisis than those with low remote work potential. The contrary occurred for workers whose occupation relies on physical proximity to other people. Moreover, while the demand for labour dropped dramatically across European capitals during the pandemic, the decrease was more tempered for jobs with high remote working potential (Adrjan and Kleine-Rueschkamp, 2021[20]).

Beyond the employment advantages, remote working also helped workers stay healthy (Alipour, Fadinger and Schymik, 2021[21]). Working from home enabled workers to avoid face-to-face contact in offices and public transportation, which reduced their probability of contracting the virus. Consequently, workers who could work remotely faced lower exposure and COVID-19 infection risk compared to those who could not work from home (Angelucci et al., 2020[22]).

The following section presents evidence on the degree to which migrants could shift to remote working and how it compares to native-born residents. It does so by taking a nuanced look at socio-demographic conditions along the urban-rural continuum, when relevant. It uses the most recent European Labour Force Survey (EU-LFS) wave and measures workers' remote working capacity based on their occupations, as explained in Box 3.2. Assessing the remote working potential of migrants provides insights into the socio-economic vulnerability of migrants during the COVID-19 crisis. If migrants worked in occupations less prone to remote working, they were also more vulnerable in terms of health and unemployment risks under lockdowns. Understanding the extent of such vulnerability could inform policy makers on income losses in the short term as well as other negative effects in the medium and long terms to adapt possible measures to the specificities of places and needs of people.

Box 3.2. Assessing the remote working potential of migrants

While it is possible to measure the remote working potential of workers and firms using surveys, collecting such information is costly and suffers from small sample sizes, which could raise issues regarding representativeness or flexibility in the analysis due to statistical power and make international comparisons very difficult.

An alternative method is to measure the remote working potential through workers' occupation. It classifies each occupation based on the tasks required and according to the degree to which those tasks can be performed remotely (Dingel and Neiman, 2020[23]; Saltiel, 2020[24]; Gottlieb, Grobovsek and Poschke, 2020[25]). For example, occupations requiring workers to be outdoors (e.g. food delivery person) or to use heavy equipment (e.g. a vehicle) are considered to have a low potential of remote working. In contrast, occupations requiring only a laptop and an Internet connection (e.g. an accountant, finance specialist, etc.) will have a high potential to work remotely. This method allows the use of the most recent administrative datasets that have broad coverage and allows international comparisons.

The analysis in this chapter classifies occupations based on a recent study by Dingel and Neiman (2020[23]) which is built from the O*NET surveys conducted in the US. As the occupations are classified according to the US Standard Occupational Classification system (SOC), this note uses a crosswalk to the International Standard Classification of Occupations (ISCO) to associate each occupation to a level of remote working potential in other countries (OECD, 2020[18]).

The occupation level information is then merged with labour force surveys that allow assessing the remote working potential of migrant and native-born populations overall, but also by specific socio-economic or demographic characteristics.

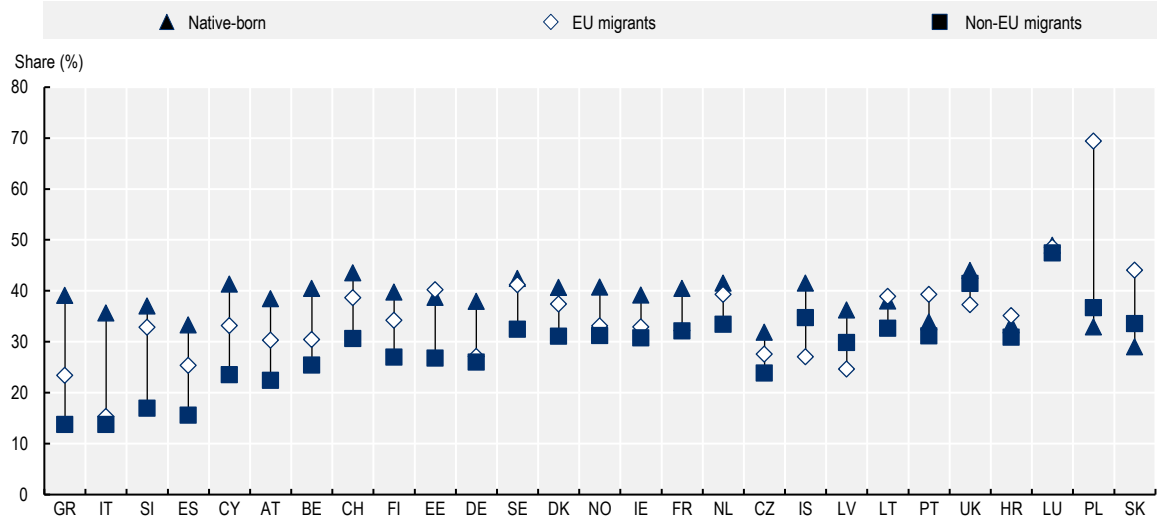
Source: Dingel, J. and B. Neiman (2020[23]), "How many jobs can be done at home?", *Journal of Public Economics*, Vol. 189, p. 104235; Gottlieb, C., J. Grobovsek and M. Poschke (2020[25]), "Working from home across countries", *Covid Economics: Vetted and Real-Time Papers*, No. 8; OECD (2020[18]), "Capacity for remote working can affect shutdowns' costs differently across places", https://www.oecd.org/coronavirus/policy-responses/capacity-for-remote-working-can-affect-lockdown-costs-differently-across-places-0e85740e/; Saltiel, F. (2020[24]), "Home working in developing countries", *Covid Economics: Vetted and Real-Time Papers*, Vol. 6.

Migrants in all areas are more likely to be employed in occupations that have lower remote working potential

Across European OECD countries, the native-born population has a higher remote working potential than migrants (OECD, 2020[26]). While the share of jobs amenable to remote working varies greatly between European countries, there is a significant gap between migrant and native-born workers in all countries with large migrant populations (Figure 3.3). Furthermore, in most countries, non-EU migrants fare worse than those originating from EU countries. Greece, Italy, Slovenia and Spain record the widest gaps between native-born residents and non-EU migrants in the share of jobs amenable to remote working, reaching differences of more than 20 percentage points.

Figure 3.3. Native-born workers have higher remote working potential than migrants, 2019

Share of jobs that can potentially be performed remotely (%) in European countries



Note: The number of jobs in each country or region that can be carried out remotely as the percentage of total jobs. Countries ranked according to decreasing difference between the remote working potential of native-born residents and non-EU migrants.
Source: OECD calculations based on European Labour Force Survey and Occupational Information Network data (accessed in February 2021).

The gap between native-born and migrant workers is wider among lower-income workers

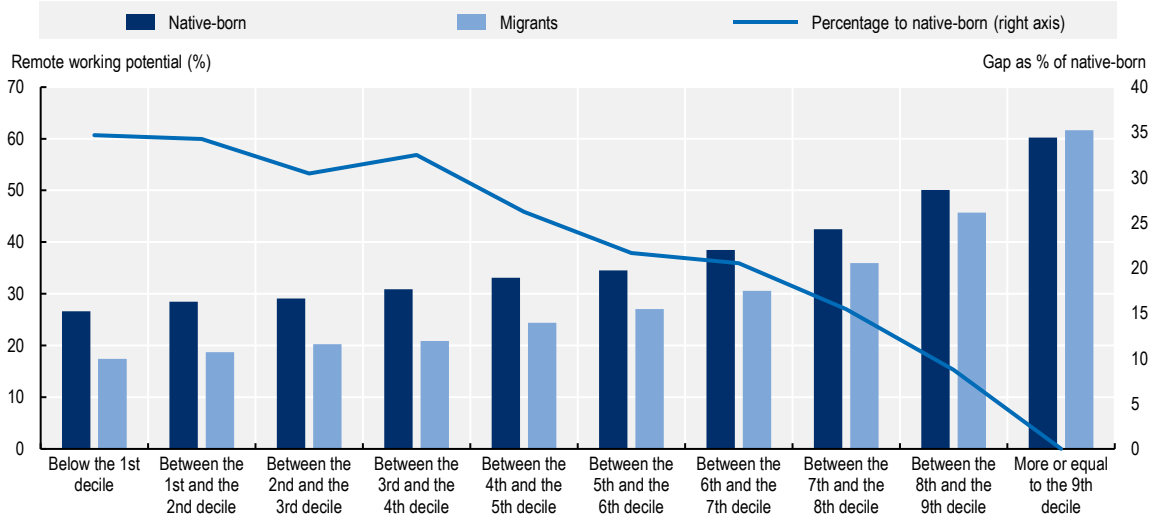
Compared to native-born, migrants have lower remote working in almost all income groups, especially in lower-income groups (Figure 3.4).[4] For example, migrant workers in the 1st income decile (i.e. among the 10% of the population with the lowest income) have 35% lower remote working potential than their native-born peers within the same income group. The relative remote working gap declines gradually as the average income increases and disappears completely among the highest decile workers.

The remote working potential is higher in cities for all workers

Cities offer a larger share of jobs amenable to remote working for both migrant and native-born workers, compared to other areas. This advantage of cities is driven by their industry structure and the presence of a larger share of the high-skilled labour force. OECD evidence (2020[18]) demonstrates that cities (settlements above 50 000 inhabitants) have a 13 percentage point higher share of jobs amenable to remote working than rural areas. While cities have the highest potential for remote working, towns and semi-dense areas seem to be somewhat closer to rural areas than cities.

Figure 3.4. The remote working potential gap is higher for lower-income groups, 2019

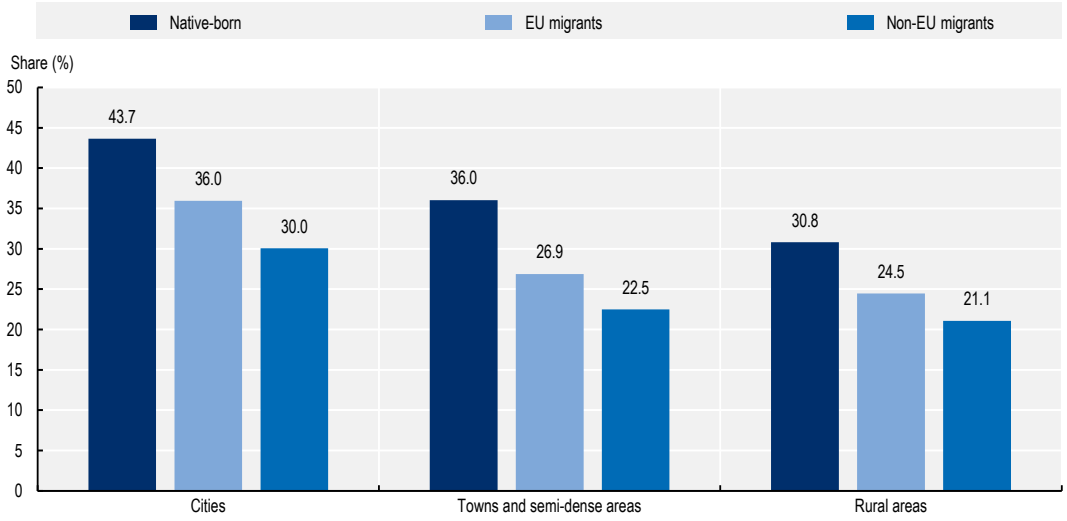
Share of jobs that can be done remotely (left axis) and the migrant-native gap (right axis) in European countries



Note: The figure plots the remote working potential for migrant and native-born workers (left axis), and the gap between two groups relative to the native-born population's remote working potential within the income group (right axis).
Source: OECD calculations based on European Labour Force Survey and Occupational Information Network data (accessed in December 2020).

Figure 3.5. The remote working potential is highest in cities for all groups, 2019

Remote working potential by the degree of urbanisation in European countries



Note: The figure plots the share of workers who can work remotely by the degree of urbanisation and origin.
Source: OECD calculations based on European Labour Force Survey and Occupational Information Network data (accessed in January 2021).

The native-migrant gap in remote working potential tends to be consistent across all types of areas. In cities and towns and semi-dense areas, the remote working gap between native-born residents and migrants is around 11 percentage points compared to around 8 percentage points in rural areas. While the gap is nominally smaller in rural areas, the gap relative to the native-born population's remote working potential remains roughly the same along the city-rural continuum. Across all areas, non-EU migrants have lower remote working potential than native-born residents and other migrants from EU countries. On average, non-EU migrants are 30% less likely to work in jobs that can be done remotely than native-born workers and 16% less likely than EU migrants.

Migrants are likely to suffer consequences of the crisis both in the short and long terms

COVID-19 could lead to deepening divides within labour markets at the national and local levels. In many countries, the low-skilled, low-wage workers, migrants and young people have been the most vulnerable to COVID-19-related job losses (OECD, 2021[19]). The initial negative impact on employment was larger for women, minorities, those with high school or less education, and the young, even after accounting for the industries and occupations they worked in (Lee, Park and Shin, 2021[27]).

Job loss during an economic crisis can have a negative long-term effect on labour market outcomes. Such effects are also known as the "scarring effect", according to which an individual who lost employment during a crisis is more likely to suffer from negative labour market experiences in the future (e.g. shorter contracts, lower hourly wages, etc.), compared to an otherwise identical individual who has stayed in employment (Davis and Von Wachter, 2011[28]).

Migrants and other vulnerable groups are exposed to higher risks of facing long-term consequences during crises. The evidence presented in this section indicates that migrants worked in occupations with lower remote working potential. As individuals with low remote working potential faced a higher risk of unemployment during the pandemic, the economic consequences of the crisis may have been more severe for migrants. Evidence from past crises indicates that workers, including migrants, who lost their jobs during this are also more likely to leave the labour market and become inactive. To minimise the risk of persistently

lower employment rates for migrants in the medium term, necessary policies must be developed with a specific aim to promote a quick return to the labour market of all affected groups, including migrants and help them find good-quality jobs.

What role do migrants play as essential (key) workers in OECD regions?

The unprecedented economic and social challenges emerging from the COVID-19 pandemic have cast a new light on those services that are at the core of functioning local economies. Sectors such as food processing, delivery or healthcare are vital for the continuity of economic activity and are often taken for granted. During the pandemic, these sectors were defined as "essential" and the people that work in them have been called "key workers". This section assesses the contribution of migrants as key workers in EU cities and regions by taking a nuanced look at differences across space. In doing so, it complements country-level analyses that describe the contribution migrants played in key sectors for regions' capacity of coping with the crisis (OECD (2020[29]) or Fasani and Mazza (2020[30])).

While forced shutdowns confined large sections of the workforce at home during the COVID-19 pandemic, some essential functions still needed to be performed to keep citizens healthy, safe and fed during the pandemic. Consequently, key workers have been at the frontline during the pandemic and local COVID-19 responses and, in many cases, helped the economy run amid far-reaching lockdown measures. Key workers cover a wide range of tasks, extending from highly skilled (e.g. doctors or medical researchers) to low-skilled (e.g. supermarket cashiers or delivery drivers) occupations. Across European countries, migrants constituted around 14% of all key workers and have contributed to the economy by sharing the responsibility and burden of delivering essential services alongside the native-born population.

The need to ensure the continuity of health services and provisions of goods amid the risk of labour shortages during the COVID-19 crisis has pushed countries to facilitate the entrance into the labour market of migrants (OECD, 2020[31]). For example, Italy granted temporary work permits to undocumented migrants employed in agriculture, fishing, care and domestic work sectors,[5] while the United Kingdom (UK) government extended the visas of healthcare and social care officials for a year free of charge (OECD, 2020[32]).

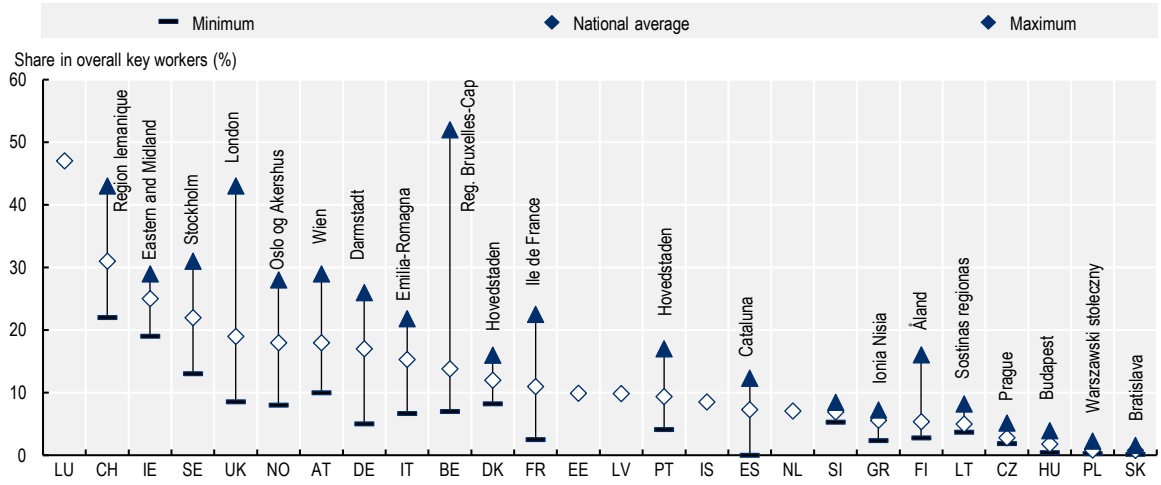
The share of migrant key workers varies significantly across and within countries

Migrants account for 14% of key workers across European OECD regions, on average.[6] Yet, both the share of migrants among key workers and their countries of origin varies significantly across European countries. For instance, migrants account for up to 47% of key workers in Luxembourg but less than 2% in Poland and the Slovak Republic (Figure 3.6). Overall, the majority of migrant key workers come from non-EU countries. Non-EU migrants make up 7.5% of key workers across regions, compared to around 5% of key workers from EU28 countries (see Annex Figure 3.A.1).[7] However, in a few countries with a relatively larger share of high-skill immigration, such as Ireland, Luxembourg or Switzerland, two-thirds of migrant key workers or more come from EU countries.

The share of migrants among the total key workers tends to reflect the presence of migrants in the local workforce. Across European regions, the share of migrants as of total key workers ranges from almost 50% in Brussels or the Lake Geneva region to 1% or less in other regions (Figure 3.6). The share of migrants among key workers is roughly proportional to their share in the regional working-age population.[8] However, some regions and countries offer exceptions to this pattern (see Annex Figure 3.A.2). In North East England (UK) or Stockholm (Sweden), for example, migrants are highly over-represented in key professions, while they are significantly underrepresented in other places such as Andalusia (Spain).[9]

Figure 3.6. The share of migrant key workers varies significantly across and within countries, 2019

The number of migrant key workers as a share of total key workers, TL2 regions



Note: The number of migrant key workers as a share of total key workers in the region. Countries appear in descending order by the share of migrant key workers in the total key workers at the national level. Regions correspond to TL2 regions depending on data availability. Occupations are classified following the key worker definition, as explained in Box 3.3. In countries and regions with a very small migrant population, the sample sizes of migrant key workers might be small and thus estimates might not be fully accurate.
Source: OECD calculations based on the European Labour Force Survey (accessed in November 2020).

The importance of migrant key workers also differs significantly within countries. On average, there is a 13-percentage point difference between the regions with the highest and lowest shares of migrant key workers (Figure 3.6). In most EU-OECD countries, capital regions have the highest share of migrant key workers. Migrants correspond to 17% of all key workers in capital regions, on average, which is roughly 5 percentage points higher than the national averages in their respective countries. Moreover, the share of migrants among key workers varies significantly between capital regions going from a very low 1.6% in Bratislava up to 48% in Brussels.

Some regions rely more on EU key workers, other on non-EU key workers. In regions like Lake Geneva, Luxembourg or Zurich, key workers from EU countries correspond to more than 28% of all key workers, while non-EU migrants only less than 13%. In contrast, non-EU migrants constitute more than 30% of key workers in London and 20% in Ile-de-France, while EU migrants accounted for 13.1% and 4.4% respectively. In Belgium and the UK, regional differences in the share of non-EU migrant key workers exceed 30 percentage points, driven by Brussels' and London's capital regions, concentrating large migrant communities and very high shares of migrant key workers.

Unsurprisingly, migrants account for a larger share of key workers in cities, which is explained by larger migrant populations in densely populated areas. The share of migrants among all key workers is 17.5% in cities, while it is 12% in towns and semi-dense areas and 7% in rural areas (Annex Figure 3.A.3).[10] These numbers broadly reflect the distribution of migrants across the degree of urbanisation, as migrants make up 18%, 13% and 7% of the workforce in cities, towns and semi-dense areas, and rural areas respectively. In all of the 26 European OECD countries, except Greece and Lithuania, migrant key workers in cities tend to constitute a more significant share of total key workers than other types of areas (Annex Figure 3.A.5).

Box 3.3. Assessing the share of key workers

This chapter uses a two-step process to assess migrants' importance as key workers in regions. First, it defines whether a worker is a key worker or not using the key profession based on the European Commission communication on guidelines concerning the exercise of the free movement of workers during COVID-19 (see Fasani and Mazza (2020[30]) for a similar approach). According to this definition, there are 45 key occupations (out of 181 occupations in total), including occupations such as personal care workers, teachers, travel attendants, medical doctors or food processing workers, among many others.

Second, the share of migrants in key professions at the regional level is measured through the most recent wave of the European Labour Force Survey (EU-LFS) and subsequently merged with the key worker definition for each occupation based on ISCO-occupations at three digits. Combining the two data sources allows assessing the number of migrants working in key professions as a share of the total key workers in regional economies.

Additionally, key workers can be further classified into three skill levels based on occupations (OECD, 2019[33]):

- *Low-skilled*: Jobs in sales and services and elementary occupations (ISCO 5 and 9).
- *Medium-skilled:* Jobs as clerks, craft workers, plant and machine operators and assemblers (ISCO 4, 7 and 8).
- *High-skilled*: Jobs in managerial, professional, technical and associated professional occupations (ISCO 1, 2 and 3).

It is important to note this definition groups workers by the skill requirement of their occupations and do not necessarily reflect the actual skill levels defined by workers' formal education. As shown in the literature, migrants often downgrade in the labour market, meaning that they work in occupations that are below their skill levels. This effect is possibly stronger for migrants arriving from non-EU countries as they face additional difficulties in degree recognition or residence permits.

Sample

The analysis uses the most recent wave of EU Labour Force Survey (EU-LFS, 2019). The sample is restricted to employed workers in the 15 to 64 age group. Migrants are defined as those individuals born in a foreign country. Migrants are further split into two groups based on their country of birth: those born in another European Union (EU) member country than the one where they currently work and reside (i.e. EU migrants) and those born in a country outside of the EU (i.e. non-EU migrants). Finally, anyone who was born in their country of residence is considered native-born.

Source: Fasani, F. and J. Mazza (2020[30]), "Immigrant key workers: Their contribution to Europe's COVID-19 response", https://www.iza.org/publications/pp/155/immigrant-key-workers-their-contribution-to-europes-covid-19-response; OECD (2019[33]), *Under Pressure: The Squeezed Middle Class*, https://ec.europa.eu/social/main.jsp?langId=en&catId=89&furtherNews=yes&newsId=9630.

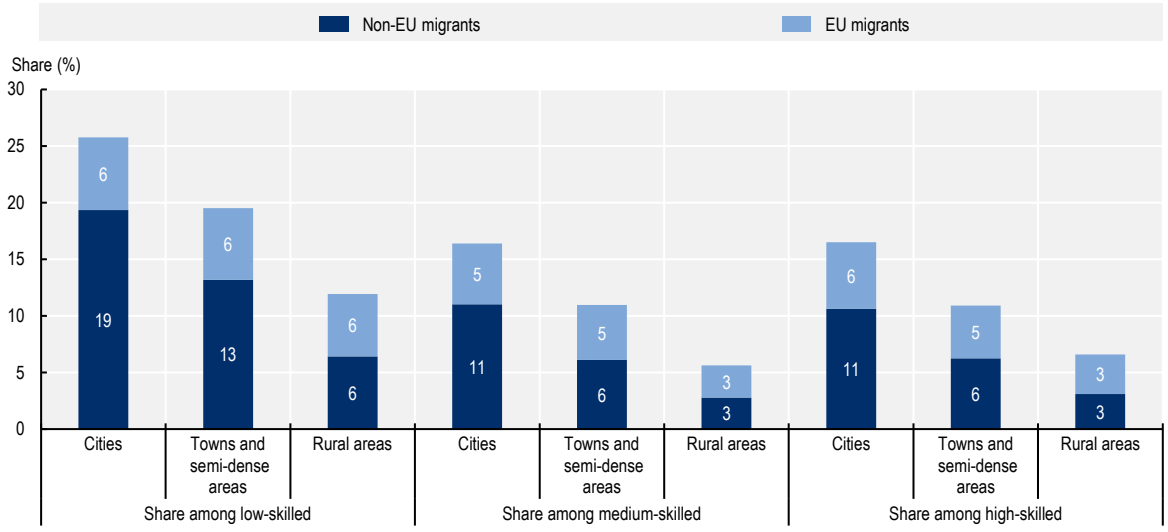
One-fourth of low-skilled workers in essential occupations are migrants in cities, twice as high as in rural areas

Migrants of all skill groups played an essential role as key workers (Figure 3.7). However, migrants take on a particularly important role in key worker occupations requiring low skills, such as domestic workers, hotel and office cleaners. For example, in 2019, migrants constituted 25% of all low-skilled workers in cities, 19% and 12% in towns and semi-dense areas and rural areas respectively. While low-skilled

migrants have a higher tendency to concentrate in cities, it is less likely to be the case for higher skill groups.

Figure 3.7. Migrants of all skill groups contribute to key occupations in all types of areas, 2019

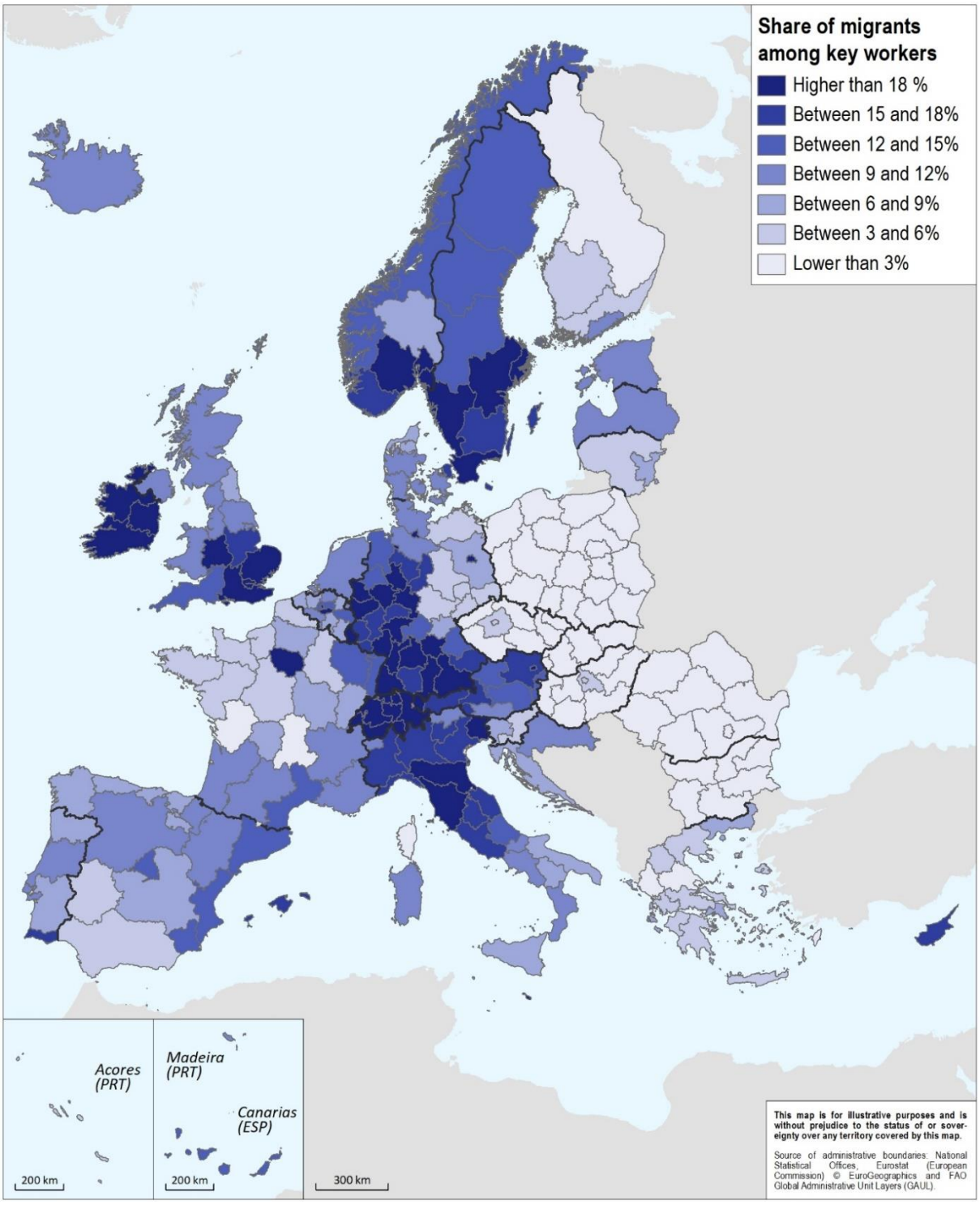
The number of migrant key workers as a share of all key workers by skill level, origin and degree of urbanisation in European countries



Note: The number of migrant key workers as a share of all key workers by skill group and by the degree of urbanisation. The residual from each bar corresponds to native-born workers. Population weighted averages of OECD26. Occupations are classified following the key worker definition, as explained in (Box 3.3).
Source: OECD calculations based on the European Labour Force Survey (accessed in November 2020).

Figure 3.8. Migrant key workers across European regions, 2019

Percentage values, TL2 regions



Note: The figure displays the share of migrants among key workers in regions. Key workers are defined as detailed in Box 3.3. In countries and regions with a very small migrant population, the sample sizes of migrant key workers might be small and thus estimates might not be fully accurate.

Source: OECD calculations based on the EU Labour Force Survey, September 2020.

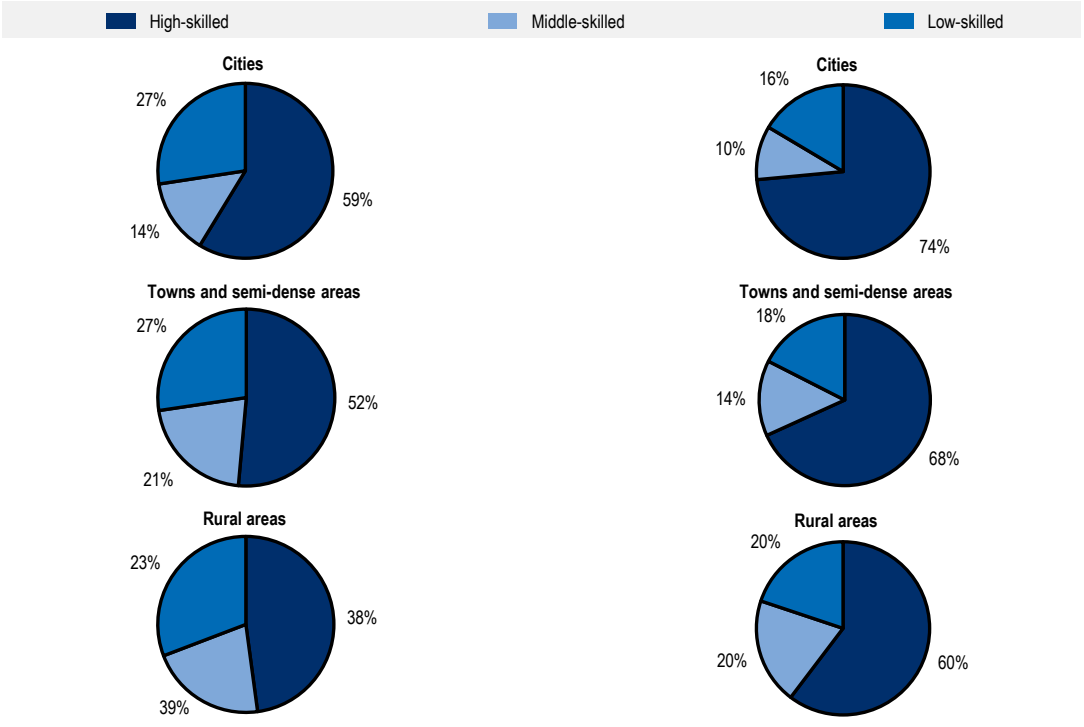
Non-EU migrant key workers are more likely to live in cities

In European countries, the place where migrant key workers settle is strongly associated with their origin (EU vs. non-EU). EU migrants of all skill groups are spread across all territories, corresponding to 3-8% of all local key workers. In contrast, non-EU migrants, especially those who are low-skilled, are concentrated in cities (Figure 3.7). For example, while non-EU migrants make up 5% of all low-skilled key workers in rural areas, their share rises to 20% in cities. Similarly, the share of non-EU migrants among medium-skilled key workers ranges from 3% in rural areas up to 15% in cities. High-skilled non-EU migrants are also more likely to be concentrated in cities than rural areas, while this is less likely to be the case for low- and medium-skilled workers. For example, while there is an 8-percentage points difference in the share of high-skilled non-EU migrants between cities and rural areas, this difference is 13 percentage points for low-skilled non-EU migrants.

Compared to their native-born peers, migrant key workers are more likely to be low-skilled (Figure 3.9), a pattern observable across all types of areas. Two facts stand out. While EU migrant key workers resemble native-born key workers in terms of their skill levels, non-EU migrants are much less likely to work in high-skilled jobs and twice as likely to work in low-skilled jobs. Part of the difference is due to the lower average formal skills of migrants compared to native-born. However, migrants often work in occupations that are below their skill levels. While there are ample reasons for working in jobs below one's qualification, migrants arriving from non-EU countries can face additional difficulties in the recognition of their foreign degrees or constraints related to their residence permits.

Figure 3.9. Migrant key workers are more likely to be low-skilled than native-born workers, 2019

Migrant key workers (left panel) and native-born key workers (right panel) by the degree of urbanisation and skill level in European countries



Note: The share of migrant (left panel) and native-born (right panel) key workers by skill group as a share of total key worker occupations by the degree of urbanisation. Population-weighted averages of 26 European OECD member countries. Occupations are classified following the key worker definition, as explained in Box 3.3.
Source: OECD calculations based on the European Labour Force Survey (accessed in November 2020).

Essential sectors under lockdown

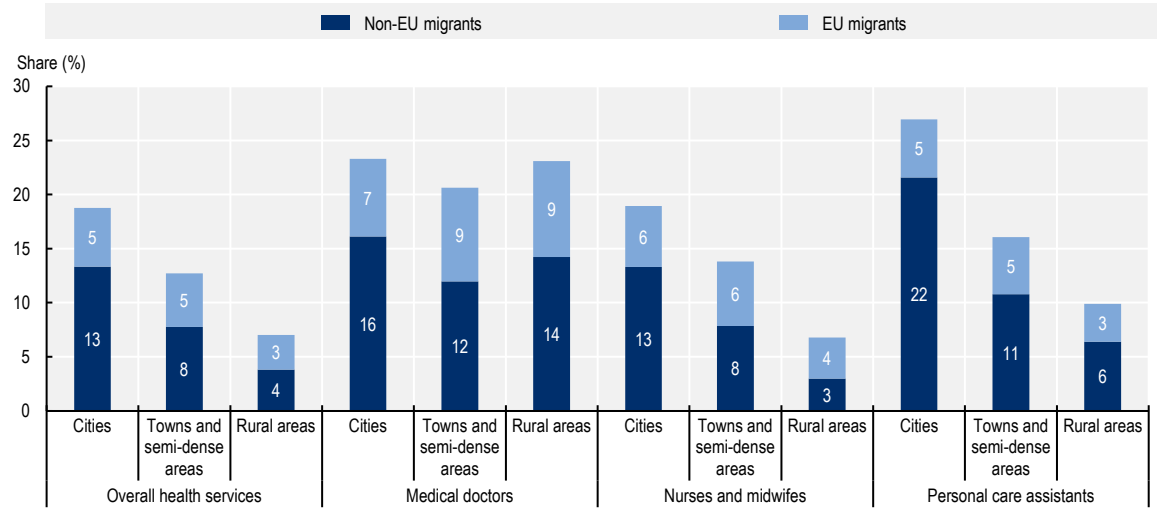
The three sectors of health services, distribution, wholesale and retail trade were crucial for the continuity of economic activity and essential services during the COVID-19 lockdowns across EU and OECD countries.[11] Migrants have contributed to each of those key sectors across cities and other areas, though to different degrees. This section focuses on the contribution of migrant workers to these three essential sectors across regions.

Health sector

Across the degrees of urbanisation, the share of migrant key workers in healthcare follows the share of migrants in the workforce.[12] For example, migrant workers constituted 19% of all employees in the health services in cities. This share was significantly lower in towns and semi-dense areas or rural areas, where they accounted for 13% and 7% of the sectorial employment respectively (Figure 3.10).

Figure 3.10. Migrants play an important role in critical parts of the health system, 2019

The share of migrants among key workers in the sectors health services in European countries



Note: The number of migrant workers as a share of total workers in health services or occupation by the degree of urbanisation and country of origin. Industries include occupations that are considered as essential as well as those that are not. The values are population-weighted averages of OECD26. Occupations are classified following the key worker definition as explained in Box 3.3.
Source: OECD calculations based on European Labour Force Survey (accessed in August 2020).

While the share of migrant key workers in healthcare follows the share of migrants in the workforce across all types of areas, migrants play a disproportionately important role in critical parts of the healthcare system. On average, around 21-23% of medical doctors are migrants in all types of areas. Whereas non-EU migrant doctors tend to concentrate more in cities (decreasing from 16% in cities to 14% in rural areas), medical doctors originating from EU countries do the opposite and locate mostly outside of cities. In most EU-OECD countries, capital regions have the highest share of migrant key workers. On average, migrants account for almost 20% of all key workers in capital regions, which is roughly 6 percentage points higher than the respective national average.

The concentration of migrant health workers in cities, especially those from non-EU countries, is even more striking for nurses and personal care assistants. For example, while 19% of nurses and 27% of personal care assistants in cities are migrants, their share drops to 7% and 9% in rural areas respectively. Moreover,

the share of non-EU migrants among nurses and personal assistants is significantly higher in cities than in rural areas.

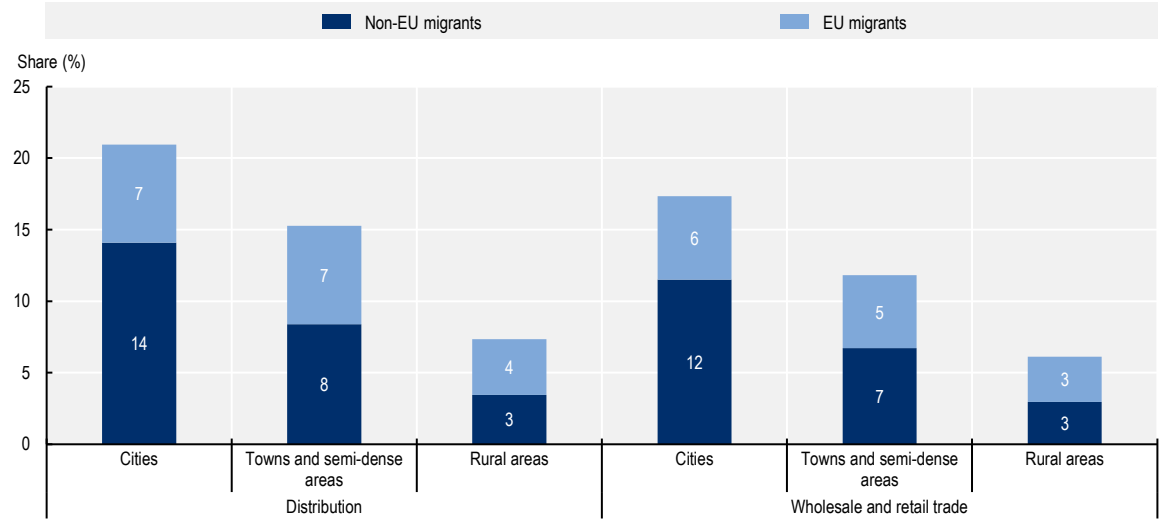
Distribution, transportation, wholesale and retail trade

The distribution of goods and transportation of people across cities, regions and countries are crucial components of the current global economy. Migrant workers play an important role in this sector,[13] covering a wide range of services related to the mobility of people, including taxis, rail or air travel, transportation of goods through freight transport, and postal services and activities related to the storage of goods. Migrants constituted 21% of all workers in this sector in cities and 15% and 7% in towns and semi-dense areas and rural areas respectively. The share of non-EU migrants is particularly high in denser areas. For example, non-EU migrants represented 14% of all workers in the sector in cities (or two-thirds of all migrant workers) and their share falls to 3% in rural areas. While EU migrant workers constitute a higher share of workers in this sector in cities, the difference is much smaller.

Wholesale and retail trade are the final steps in the distribution of goods to consumers. It corresponds to a large set of activities involving the sale or resale of goods without any transformation and involves physical effort in assembling, sorting and grading goods in large lots, breaking bulk, repacking and redistributing in smaller lots. It involves merchants, distributors, exporters, importers, sales branches or sales offices. The fact that migrants work in many low-skill occupations means that they are even more concentrated in this sector, requiring physical effort. Migrants constituted 17% of the sector in cities, 12% in towns and semi-dense areas, and 6% in rural areas. Similar to other essential services, non-EU migrants show a strong gradient for denser areas. While non-EU migrants represent 12% of all workers in this sector in cities, their share drops to 3% in rural areas. Although EU migrants constitute a larger share of the sector in cities than in rural areas, the difference remains smaller.

Figure 3.11. Migrant key workers contribute to all sector essential under lockdowns, 2019

The share of migrants among key workers in the sectors distribution, wholesale and retail trade in European countries



Note: The number of migrant workers as a share of total workers in each industry by the degree of urbanisation and country of origin. Industries include occupations that are considered as essential as well as those that are not. The values are population-weighted averages of OECD26. Occupations are classified following the key worker definition as explained in Box 3.3.
Source: OECD calculations based on European Labour Force Survey (accessed in August 2020).

While migrants of all skills contribute to the continuity of essential services, especially in cities, they remain particularly exposed to the impact of the pandemic

Migrants were affected severely by the health and economic consequences of the COVID-19 crisis. Migrants tend to concentrate in urban areas or dense regions that have experienced stronger mortality increases during the first wave. Furthermore, as migrants tend to have lower average incomes and poorer living conditions, they were even more exposed to the health and economic consequences of the crisis compared to native-born residents living in the same region. Lockdowns and social distancing measures shifted work from offices to homes. Migrant workers, however, have a lower remote working potential which exposes them to job and income losses in the short run and increased exposure to the virus. Alongside the overall effects of COVID-19, this represents a double setback that could make migrants more vulnerable to the impact of the current health and economic crisis.

The unprecedented economic and social challenges emerging from the COVID-19 pandemic have cast a new light on essential services that are at the core of functioning local economies. Sectors such as food processing, delivery or healthcare are vital for the continuity of economic activity and are often taken for granted. The role of migrants who often work in low-paid but vital occupations has been crucial in all types of areas. The importance and working conditions of key workers and the contribution of migrants to essential services are topics that will extend beyond the current crisis and have already resulted in a new discourse on policies that ensure fair pay, facilitated access to jobs and better recognition of professional qualifications in those sectors.

Around 14% of key workers in European regions are foreign-born and this share tends to be even higher in specific countries, in cities and certain sectors. Migrants assume significant parts of low-skill and low-pay jobs in sectors such as distribution or food processing. In terms of occupations, more than a third of cleaners and helpers, more than a quarter of workers in the construction sector, and one in five workers in food processing are migrants. However, migrants also contribute to the labour supply in high-skill key occupations, as shown by the fact that they account for up to 23% of medical doctors.

Amid the labour shortages faced in many key occupations ranging from agricultural workers to medical doctors, migrants provided additional labour supply and ensured the provision of essential services and goods in European regions. The fight against COVID-19 has unveiled their relevance, which is otherwise often overlooked in a migration debate predominantly focused on the importance of attracting high-skilled migrants.

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Notes

[1] Beyond the count of fatalities directly reported due to the COVID-19 infection, the increase in the number of total deaths in a region relative to previous years provides a more precise indication of the current pandemic's overall health impact. The excess mortality during the pandemic – the increase in deaths as a percentage of deaths in previous years – avoids problems of misreporting caused by low testing levels.

[2] Migrants, on average, are younger than the native-born population. This difference renders the migrant population less likely to develop serious health effects from COVID-19. In that sense, the increase in the mortality rates for migrants was slowed down by this demographic advantage. On the contrary, migrants, especially those in an irregular situation, may be less inclined to get tested or go to a hospital, which could increase their mortality rates (OECD, 2020[26]).

[3] Following the definition of Eurostat, a household is considered risking poverty if the equivalised disposable income is below 60% of the median of equivalised disposable income. Equivalised disposable income is calculated using total disposable household income multiplied by a within-household non-response inflation factor and divided by equivalised household size.

[4] Migrants are more likely to be employed in occupations with lower remote working potential. At the same time, remote working potential differs substantially across occupations. For instance, it reaches as high as 65% for managers and professionals, while it is less than 10% for elementary occupations, skilled agricultural, forestry and fishery workers, and craft and related trades workers. Migrants constitute around 10-12% of workers in occupations with high remote working potential (above 40%). In contrast, they account for around twice as many workers (16-30%) in occupations with low remote working potential (below 20%).

[5] For more information, see https://ec.europa.eu/migrant-integration/news/italian-government-adopts-targeted-regularisation-for-migrant-workers.

[6] The EU labour force survey contains information on NUTS 1 or NUT 2 regions depending on the country. These regions correspond to TL2 regions, according to the OECD Territorial Grid (http://www.oecd.org/cfe/regional-policy/territorial-grid.pdf).

[7] The analysis in this chapter relies on microdata collected prior to Brexit which groups UK nationals as part of the EU28. As such it is impossible to distinguish migrants originating from the UK from those that originate from other member countries. Due to this data limit, the analysis in this chapter also considers migrants of UK origin as part of the EU28.

[8] In roughly half of the regions in the sample (101 out of 247 TL2 regions), the share of migrants among key workers is proportional to their share in the overall regional workforce (the ratio is between 0.9 and 1.1).

[9] Migrants can be over-represented (or under-represented) in key occupations if their share in the overall workforce is very small (or large).

[10] The share of key workers among the local workforce remains roughly constant across the degree of urbanisation and corresponds to around 30% of the total workforce. The higher share of migrants among key workers in cities compared to rural areas is thus not due to higher demand of such jobs in cities, but due to larger migrant population in cities. As can be seen in Annex Figure 3.A.4, the share of migrant key workers among the total regional workforce is 5% in cities, while this share is 4% and 2% in towns and semi-dense areas and in rural areas respectively.

[11] Agriculture is another essential sector that is crucial for the survival of the society and which employ foreign-born workers. Despite the importance of this sector, it is an activity that is primarily done in rural areas, making it of little interest from the perspective of a spatial analysis as in this chapter.

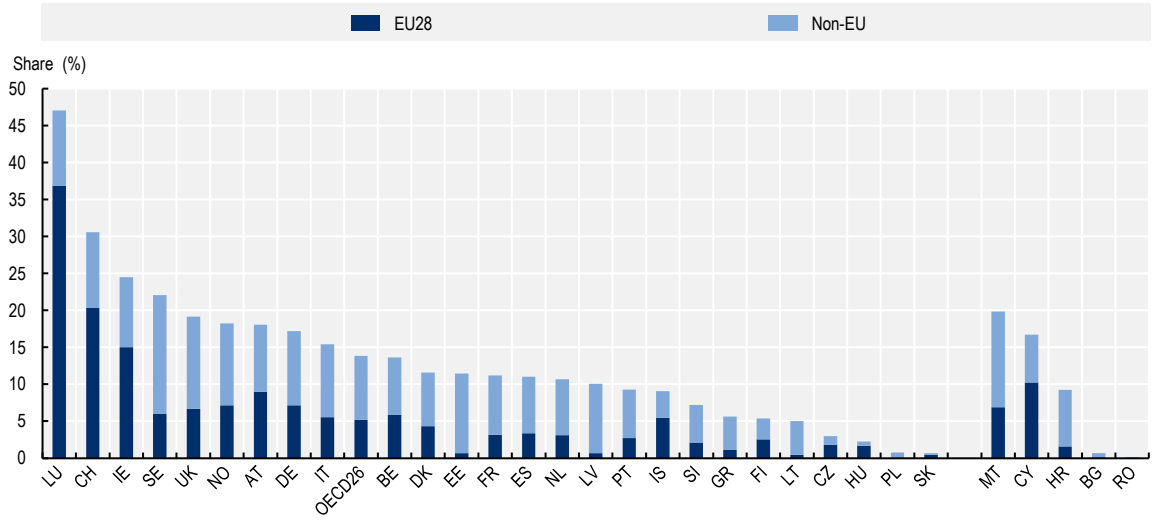
[12] The health services cover all of the activities that correspond to Statistical Classification of Economic Activities in the European Community (NACE) industry grouping Q (Nace Rev.2). The medical doctors correspond to ISCO-88 code of 221 while nurses and midwifes correspond to 222 and 322. Personal care workers in health services correspond to ISCO-88 code 532 and include healthcare assistants that work at hospital or clinics as well as private homes.

[13] The distribution sector (NACE code H) corresponds to the provision of passenger and freight transport by rail, pipeline, road, water or air, and all associated activities such as terminal and parking facilities, cargo handling, warehousing of goods, renting of transport equipment with driver or operator, as well as postal services.

Annex 3.A. Migrants across European countries

Annex Figure 3.A.1. Share of EU and non-EU migrants among all key workers, 2019

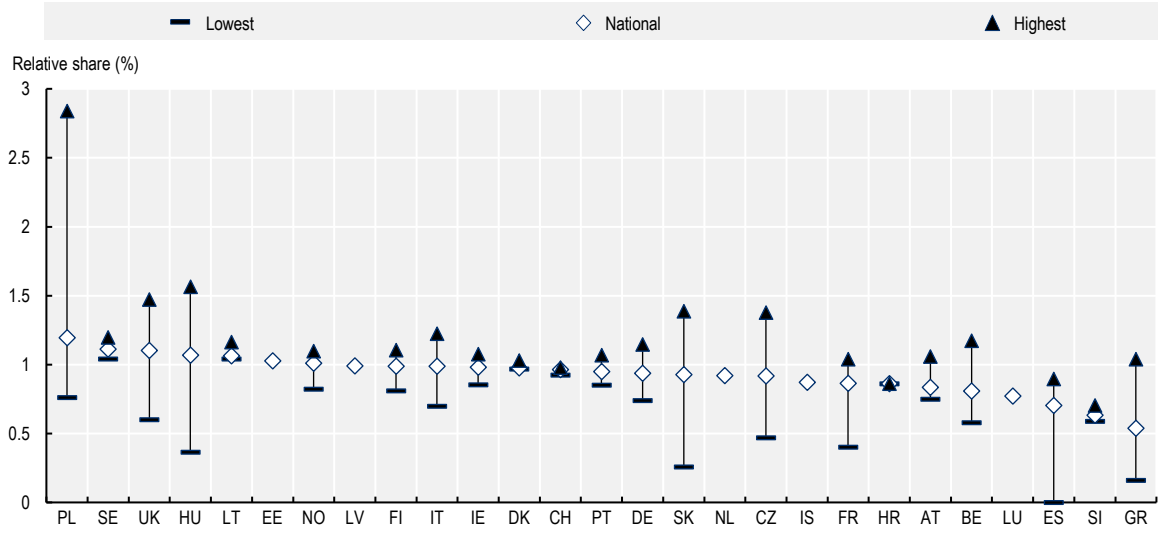
Percentage of migrant key worker in all key workers in European countries by origin



Note: The average number of migrant key workers as a share of total key worker occupations at the national level. Countries appear in descending order by the share of migrant key workers in the total key worker occupations at the national level. OECD26 corresponds to the population-weighted average of 26 European OECD member countries. Occupations are classified following the key worker definition, as explained in Box 3.3.
Source: OECD calculations based on the European Labour Force Survey (accessed in November 2020).

Annex Figure 3.A.2. Share of migrants in key occupations relative to their overall labour force presence

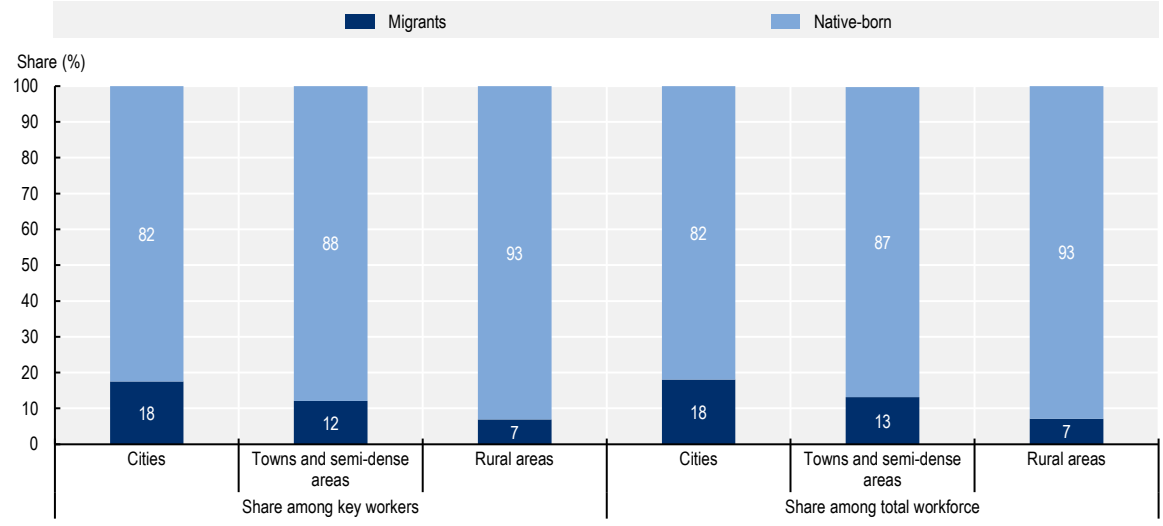
The relative share of migrant key workers relative to overall employment in 2019, TL2 regions



Note: The figure plots the share of migrant workers in key occupations relative to migrant share in overall employment in the region. Countries are ranked in descending order according to the national average. Occupations are classified following the key worker definition as explained in Box 3.3.
Source: OECD calculations based on European Labour Force Survey (accessed in November 2020).

Annex Figure 3.A.3. Workforce and key workers by the degree of urbanisation and country of birth, 2019

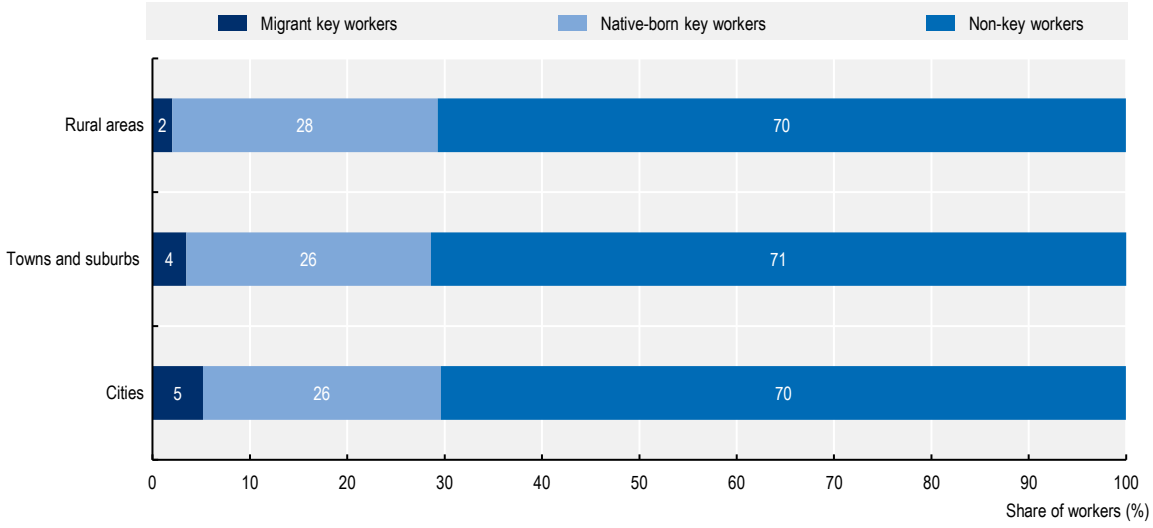
Share of native-born and migrant workers among key workers and the total workforce by the degree of urbanisation in European countries



Note: The share of native-born and migrant workers among key workers (left side) and all workforce (right side) by the degree of urbanisation. Population weighted averages of OECD26 countries. Occupations are classified following the key worker definition, as explained in Box 3.3.
Source: OECD calculations based on the European Labour Force Survey (accessed in November 2020).

Annex Figure 3.A.4. Distribution of key workers by the degree of urbanisation and nationality, 2019

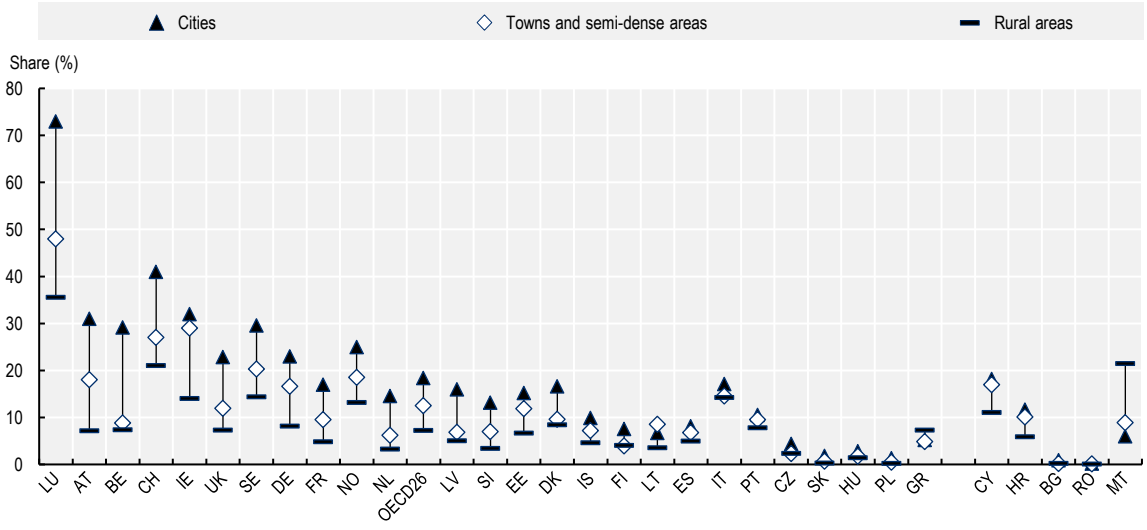
Number of workers as a share of total workers by the degree of urbanisation in European countries



Note: The number of workers as a share of total workers by type of region for native-born and migrants. Population weighted averages of OECD26 countries. Occupations are classified following the key worker definition as explained in Box 3.3.
Source: OECD calculations based on European Labour Force Survey (accessed in November 2020).

Annex Figure 3.A.5. Differences in migrant key workers across the degree of urbanisation, 2019

The number of migrant key workers as a share of total key workers in European countries



Note: The number of migrant key workers as a share of total key worker occupations by type of region. Countries appear in descending order of difference in the share of migrant key workers in total key worker occupations between cities and rural areas. OECD26 corresponds to the population-weighted average of 26 European OECD member countries. Occupations are classified following the key worker definition as explained in Box 3.3. In countries and regions with a very small migrant population, the sample sizes of migrant key workers might be small and thus estimates might not be fully accurate.
Source: OECD calculations based on the European Labour Force Survey (accessed in August 2020).

4 Regional economic development: The role of migration

Migrants contribute to many aspects of the economy of their host country. Yet, despite growing evidence at the national level, little is known of these effects at the regional scale. This chapter aims to fill this gap by providing novel empirical evidence on the contribution of migrants to regional economies across the OECD using microdata and econometric methods, focusing in particular on critical dimensions of regional development such as income, innovation, international trade and labour markets.

In Brief

Migrants contribute to the regional economy through many channels, increasing the income and well-being of the overall population

- **New analysis for OECD countries shows that migration contributes to regional economic development in various ways**. Despite extensive work on the contribution of migrants to national economies, little is known about the effects at the subnational level. As migrants settle unevenly within countries, empirical analysis at lower geographical scales is essential for assessing how local conditions shape their contribution to local economies and to inform public debate and policy design. This chapter attempts to provide such evidence.
- **Migration contributes to regional economic convergence within and across countries in Europe**. On average, a 10% increase in the migrant population share is associated with a 0.15% higher regional income per capita. However, the effects are stronger for lagging regions, especially in lower-income EU countries. Overall, for the 25% of poorest regions in a country, the positive effect of migration on per capita incomes is more than twice as high (0.36%). As a result, migration can help poorer regions catch up with the rest of the country, in turn contributing to the income convergence across Europe.
- **Migrants bring new ideas to their host regions, fostering local innovation**. Using detailed information on patents and the share of migrants in municipalities, the chapter shows that migrants appear to raise patenting activity in their local area and thus foster local innovation. However, these positive effects are limited to already innovative areas with high patenting levels, mainly located in urban areas.
- **Migration enhances trade connections of regions**. In Europe, migrants help their host regions establish new trade networks and thus boost regional exports and imports. Regions that observe a 10% increase in the number of migrants experience a 3.2% rise in imports, including intermediates used in exports, and a 1.2% rise in exports. The contribution of migration is particularly strong for trade with destinations outside the European Union (EU) and regions with highly educated migrants.
- **As new migrants enter regions' labour markets, they can affect the native-born population's employment in the short term**. In European regions, between 2010 and 2019, growth in native-born employment rates slowed down following increases in the labour force due to migration, especially for low-educated workers in lower-income regions. However, this effect disappears over time, as regional labour markets adjust. Regions with higher levels of gross domestic product (GDP) per capita are faster to absorb new workers, resulting in little or no effect on the native-born workforce, especially those with higher education. In a ten-year period, the effect of the increase in labour force due to migration disappears for less-educated native-born workers, while it turns positive for highly educated workers.
- **Targeted policies could help spread the benefits of migration for regional economies and well-being**. Investing in the upskilling of native-born workers, especially more vulnerable groups such as non-university-educated workers and economically lagging regions, can help address labour market challenges and strengthen regional development.

Introduction

Migrants play a diverse set of roles in and influence all aspects of the economy of their host community. Despite growing evidence at the national level, little is known of these effects at the regional scale. However, subnational analysis is crucial because migrants settle unevenly within countries, concentrating in certain regions and cities. Therefore, empirical analysis at the regional level is essential for assessing the true contribution of migrants to local economies and informing public debate as well as policy design.

This chapter aims to fill the gap of subnational evidence on the role of migrants in regional economies. It provides novel and robust empirical evidence for OECD regions, focusing on key dimensions of regional development such as income, innovation, international trade and labour markets. The analysis relies on microdata and uses rigorous econometric methods to provide novel and causal evidence. Furthermore, it explores whether the effects differ across regions depending on their characteristics. Thus, the chapter aims to support policy making by offering differentiated findings on the regional economic effects of migration.

Migration and regional income

Income per capita is a key determinant of well-being and a dimension of regional development that can be influenced by migration. Based on economic theory, the link between migration and regional income is ambiguous, as the channels through which migration can affect regional development levels might have positive or negative effects. On the one hand, migrants can boost regional income per capita levels because migrants are more likely to be in their working age (defined as those aged between 15 and 64). Moreover, if a larger labour force allows workers to become more specialised (Peri, 2012[1]), all workers benefit from skill complementarities or if migrants fill shortages in critical positions, per capita income can increase further.[1] Migration can contribute to income growth also through firm creation, as the evidence from this chapter shows, or help develop new products or export markets. On the other hand, income per capita can decrease, for example, if employers invest less in technologies when migration provides additional cheap labour supply, limiting productivity growth (Ortega and Peri, 2014[2]) or if the human capital of new migrants is below the average human capital of a region's labour force.

Given the ambiguity of the links between migration and regional income, this section aims to provide new regional evidence from a multi-country perspective.[2] Thus, it offers new evidence for a large set of OECD countries and contributes to the understanding of how migration affects regional income, which has so far been inhibited by the fact that existing studies use different methodologies, country samples and time frames. Finally, this section also examines how the effects of migration might vary across regions with different characteristics.

Box 4.1. Subnational analysis across the OECD: Geographic areas used in the chapter

The chapter features analysis using two geographical scales depending on data availability and the objective of the analysis.

TL2 regions

Most of the regional policy analysis uses data collected for administrative regions, that is, the regional boundaries within a country as organised by governments. Data on administrative regions has the advantage of referring to areas that are often under the responsibility of a certain subnational government. They also correspond to the geographical scale targeted by a specific policy implemented

at the national or subnational level. Regions are classified into two scales: large regions (Territorial Level 2, TL2) and small regions (Territorial Level 3, TL3), which ensure comparability across countries.

Regions within the 38 OECD countries are classified on 2 territorial levels reflecting the administrative organisation of countries. The 433 OECD large (TL2) regions represent the first administrative tier of subnational government, for example, provinces in Canada, *régions* in France or states in the United States (US). There are 2 290 OECD small (TL3) regions, with each TL3 being contained in a TL2 region (except for the US). For example, the TL2 region of Aragon in Spain encompasses three TL3 regions: Huesca, Teruel and Zaragoza. TL3 regions correspond to administrative regions, except for Australia, Canada and the US. All the regions are defined within national borders.

Local administrative units (LAUs)

The level of details, number of municipalities and access to data is very different across countries. Municipalities are often defined by the LAU codes and their number varies across countries from 99 in Denmark to 36 695 in France. For some countries, municipal level data does not exist. Therefore, we used data at a larger scale: *Kreise* in Germany, county councils in Ireland, *Fergusias* in Portugal.

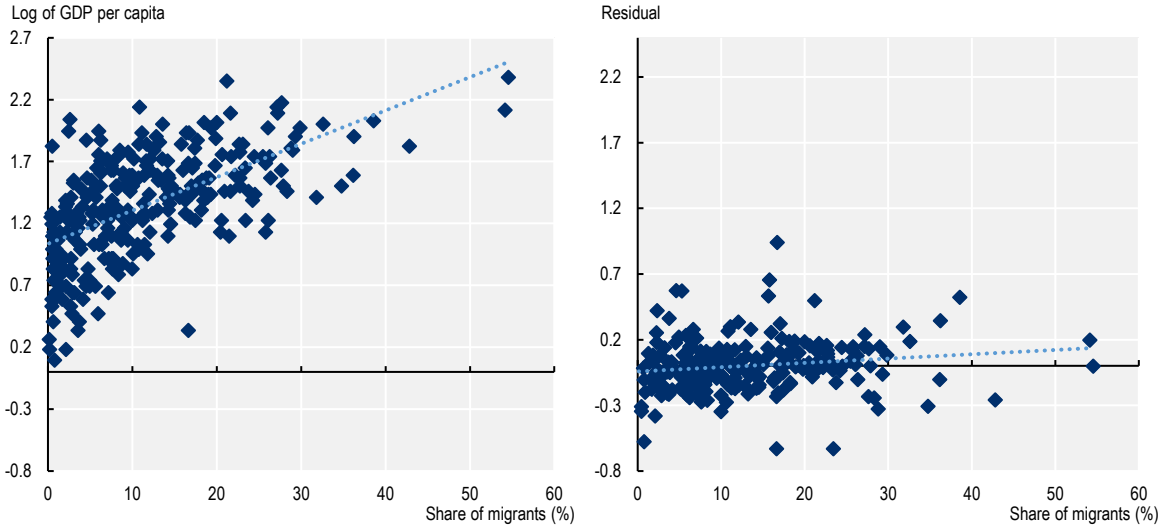
Source: OECD (2020[3]), *OECD Regions and Cities at a Glance 2020*, https://doi.org/10.1787/959d5ba0-en.

OECD regions with higher GDP per capita have larger migrant communities

In general, foreign-born individuals are more likely to be concentrated in dynamic and more prosperous regions that offer better employment opportunities. The left panel of Figure 4.1 shows that across the OECD, regions with a higher share of migrants (horizontal axis) also have a higher per capita income (vertical axis).

Figure 4.1. GDP per capita and share of migrants are correlated

Regional correlations, TL2 regions, most recent data available



Note: Figures plot the correlation between the share of migrants in the region (horizontal axis), and the logarithm of GDP per capita in the region (Panel A) and the residuals (Panel B). The residuals are obtained through a linear regression where the dependent variable is the logarithm of GDP per capita, regressed on a set of variables that account for workforce characteristics. Each marker corresponds to a TL2 region.
Source: OECD calculations based on data from OECD Regional Statistics (database) (accessed December 2020).

This positive correlation, however, can be driven by many factors. For instance, migrants are attracted to regions that offer better employment opportunities, which happen to be richer, more populous or have been experiencing stronger growth even prior to the arrival of migrants. Furthermore, migrants, especially those who are highly educated, tend to concentrate in regions where their native-born counterparts are also highly concentrated (OECD, 2020[3]). The right panel of Figure 4.1 shows the relationship between the share of migrants and income after accounting for the skill composition of native-born residents and migrants, land area and total population to account for any size/agglomeration effect. Indeed, accounting for these factors reduces the strength of the relationship (i.e. flatter trend line).

Within regions, an increase in migration is positively associated with regional income

The correlations discussed above indicate that the share of migrants is larger in more prosperous regions. However, it is unclear whether migration actually boosts regional income or simply results from other regional characteristics that could create spurious correlations or reverse causality. To account for other possible factors, more complex econometric techniques are necessary, as explained in Box 4.2. Figure 4.2 presents the estimates from a regression analysis.[3]

Box 4.2. Empirical strategy

Empirical specification

The analysis in this chapter relies on exploiting the spatial variation in the share of the migrant population relative to the total population in a region (TL2) to explain the differences in the outcome variable of interest. The analyses carried out in this chapter aim to estimate the impact of migrants on regional income, labour market effects and innovation, with the details of the empirical specification varying according to the specific outcome. The baseline approach relies on the following equation standard in the literature (Beine, Bertoli and Moraga, 2016[4]):

$$y_{rt} = \beta_0 + \beta_1 m_{rt} + \theta_r + \theta_t + \mu_{rt} \qquad \text{(Equation 1)}$$

- The dependent variable is the outcome (e.g. GDP, native-born employment or patenting) in region r at time t.
- The change in the migrant population experienced in a particular area is captured by the m_{rt} variable which is equal to the number of working-age migrants (who are likely to participate in the labour market) as a share of the total (working-age) population.[4,5]
- θ_r is a vector of regional dummies capturing any time-invariant regional characteristic.
- θ_t is a vector of time dummies capturing any idiosyncratic shock that may affect all regions at the same time.
- The error term is denoted μ_{rt}.

Threats to identification: Non-random location of migrants

An important limitation of spatial correlations is that migrants generally decide when and where to migrate so that they are unlikely to be randomly distributed across regions and countries. In other words, migrants are very likely to select their residence and move into areas with better labour market opportunities and better economic conditions. Thus, the "endogenous sorting" of migrants across regions creates a positive correlation between migration and outcome variables, thereby contaminating the "average causal" effects of migration on the local outcomes. The introduction of region fixed effects allows capturing the contribution of characteristics that do not change over time. However, fully accounting for the positive correlation between local characteristics and migrants' presence requires more elaborate empirical strategies as explained below.

Network (or past settlement) instrument, aka shift-share

A standard approach to address this endogeneity issue relies on an instrumental variable approach using the network instrument or past settlement (Jaeger, Ruist and Stuhler, 2018[5]). The instrument relies on the observation that immigrants tend to settle in regions with large migrant populations, especially those of their co-nationals. By exploiting the role of networks in attracting migrants to regions, this instrument aims to purge the estimates of the bias arising from the non-random location of migrants across regions. Most estimates presented in this chapter use this instrument and a two-stage least squares (2SLS) method to establish a causal relationship.

The instrument is constructed as follows. First, the migrant population is split into five origin groups (e.g. Western Europe, Eastern Europe, North Africa or East and South of Asia). Second, the spatial distribution for each of these groups is calculated based on their distribution in 2005, using EU Labour Force Survey (EU-LFS) data. Third, the spatial distribution of migrants from a given origin group in 2005 (i.e. the share) is used to allocate the total number of migrants from that origin group living in the country between 2010-19 (i.e. the shift) across regions. The predicted number of migrants living in a given region at a given year is obtained by summing up across countries of origin. Finally, the predicted migrant population is used to compute the predicted fraction of migrants in the region.

Validity of the instrumental variable approach

The network instrument can completely isolate the true labour market impact of immigration if economic conditions that motivated earlier migrants to settle in particular areas are uncorrelated with economic conditions in the period of analysis (Jaeger, Ruist and Stuhler, 2018[5]). A way to minimise the potential correlation between past immigration inflows and economic shocks in the period of analysis would be to use a sufficient time lag to predict the actual number of migrants (Dustmann, Fabbri and Preston, 2005[6]).[6]The analysis related to trade and productivity uses the distribution of migrants in 2004 as the reference year to build the shift-share instrument as it provides the highest country coverage.

The analysis on the labour market effects exploits census data from the Integrated Public Use Microdata Series (IPUMS) and national statistical institutes for a smaller set of 13 European countries from the year 1990, which is distant enough from the period of analysis (e.g. 2010-20) for immigrant shares not to be correlated with past demand adjustments or persistent labour market dynamics. This approach also alleviates the concerns raised by Jaeger, Ruist and Stuhler (2018[5]) by using a longer time lag. The results using the instrument based on the year 2004 for the larger sample also confirm the main findings using an instrument based on the distribution in 1990 (Edo and Özgüzel, forthcoming[7]).

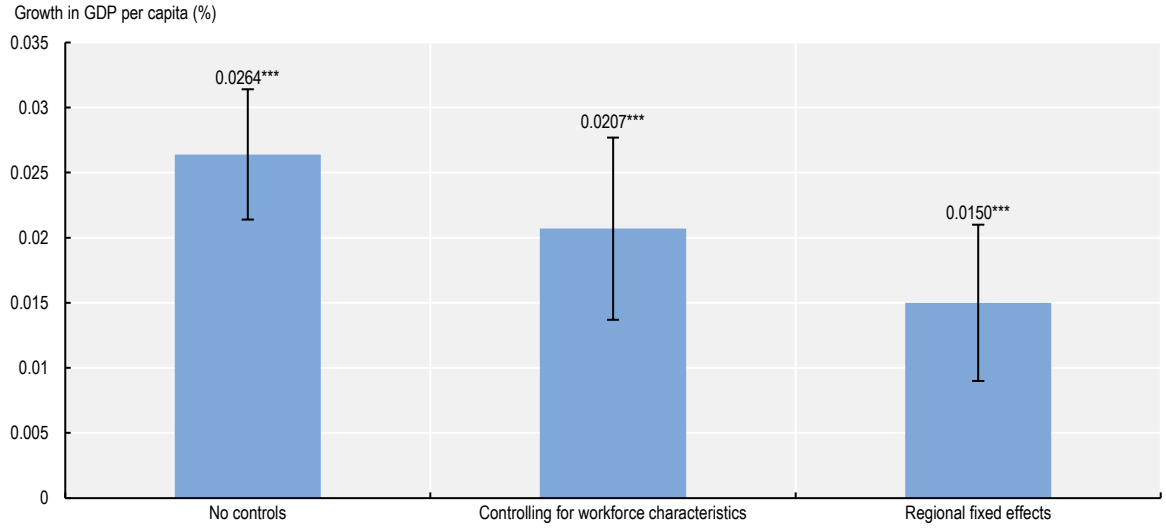
Estimated magnitudes

The analysis on income per capita, trade and labour markets rely on the network instrument, year and region fixed effects to identify the causal effects of migration, which is the state-of-the-art econometric method. Despite extensive use of the instrumental variable approach in empirical studies on migration, recent literature suggests that, in some cases, the approach may not be able to fully isolate the role of economic conditions in the host region. There is no reason to suspect that the instruments used in this study cannot completely isolate the economic conditions. Even if that were to be the case, the findings would hold and results would be qualitatively similar. More precisely, if the instruments used in this study are not able to isolate the economic conditions, this would mean that the estimated effects are slightly larger than they should be (or closer to the estimates obtained through ordinary least squares [OLS]).

Source: Beine, M., S. Bertoli and J. Moraga (2016[4]), "A practitioners' guide to gravity models of international migration", *The World Economy*, Vol. 39/4, pp. 496–512; Edo, A. and C. Özgüzel (forthcoming[7]), "The impact of immigration on employment dynamics: Evidence from Europe", *OECD Regional Development Working Papers*, OECD Publishing, Paris; Jaeger, D., J. Ruist and J. Stuhler (2018[5]), "Shift-share instruments and the impact of immigration", No. w24285, National Bureau of Economic Research; Dustmann, C., F. Fabbri and I. Preston (2005[6]), "The Impact of Immigration on the British Labour Market", *The Economic Journal*, Vol. 115/507, pp. F324-F341.

Figure 4.2. Regional per capita GDP grows with increases in the shares of migrants

Estimated effect of a 1% increase in the share of migrants, selected OECD countries, 2006-19, TL2 regions



Note: Figure columns correspond to the point estimates for the share of migrants in the overall population, obtained through 2SLS regressions. The first column ("No controls") corresponds to a regression without any control variables, while Column 2 ("Controlling for workforce characteristics") controls for the logarithm of the population size, logarithm of land area, the share of native-born workers with a university education or above, and the share of migrant workers with a university education or above. Columns 1-2 include country fixed effects and year fixed effects. The last column ("Regional fixed effects"), in addition to control variables in Column 2, also includes region fixed effects and year fixed effects. All columns use the share of migrants predicted through a shift-share as instruments. Residuals are clustered by TL2 regions, for 41 countries in the sample. See Endnote 2 for the list of countries included in the analysis. The number of observations varies depending on the model between 1 619 and 4 538.

***, **, * denote statistical significance at the 1%, 5% and 10% levels respectively.

Source: OECD calculations based on data from OECD Regional Statistics (database) and European Labour Force Survey (accessed June 2021).

On average, regions with higher migrant population shares tend to have higher GDP per capita. Following the econometric strategy detailed in Box 4.2. Figure 4.2 present the results from the instrumental variable approach, which addresses the endogeneity issue and helps to identify a causal relationship between the presence of migrants and regional income. A 10% increase in the share of migrants in a region is associated with 0.26% higher regional income per capita (i.e. GDP per capita) (Figure 4.2, Column 1).[7] To have a sense of the magnitude in percentage points, the following calculation offers an illustrative example. The Saxony region in Germany corresponds to the median in the sample in terms of the share of migrants. Saxony has a migrant share of 8% and a GDP per capita of EUR 37 988. A 10% increase in the migrant share would increase Saxony's migrant share by 0.8 percentage points to 8.8% (corresponding to an additional 32 505 migrants given its population of 4.1 million according to the EU-LFS), which would be associated with an increase of almost EUR 100 in GDP per capita (EUR 98,7).

The positive relationship between migration and regional GDP per capita holds even when taking into account local and workforce characteristics. As discussed earlier, regions with a higher share of migrants tend to be populous places, where both native-born and foreign-born workforces have on average a higher level of education. To ensure that the positive effects are not driven by a region's population size or skill composition, Column 2 in Figure 4.2 controls for the skill composition of native-born workers and migrants, land area and total population size. Furthermore, these controls also ensure that the estimate captures the effects due to an increase in the migrant population and not due to changes in the skill composition of the migrants. Accounting for such characteristics slightly reduces the magnitude of the estimated coefficients

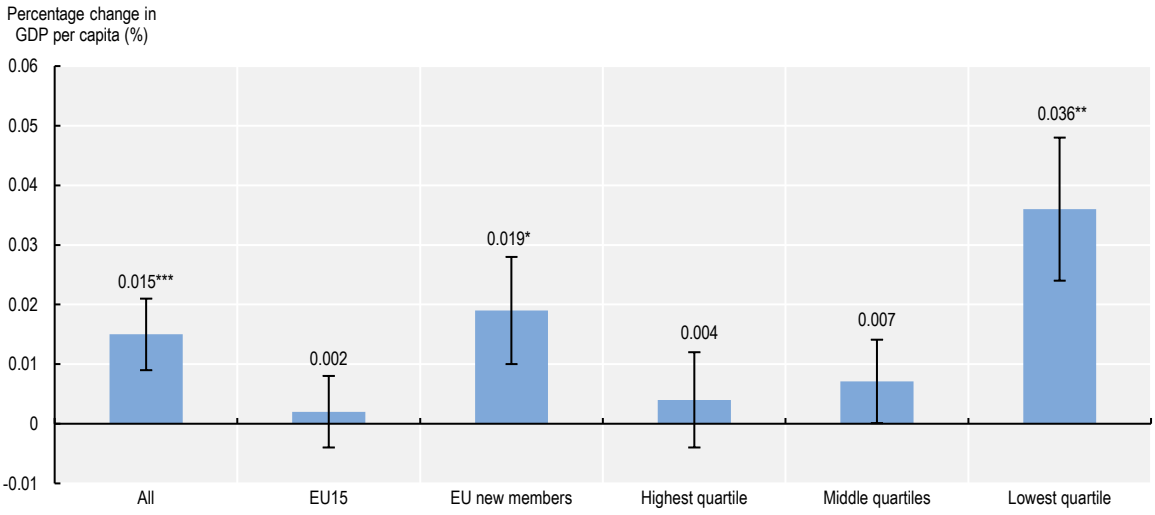
but do not significantly alter the results. One potential explanation that could contradict the findings is that specific regional factors drive both higher regional migration and higher income. To address this concern, Column 3 presents results that take into account regional characteristics that are constant over time (i.e. regional fixed effects). Even when accounting for regional fixed effects, the link between migration and regional income remains clear. A 10% increase in the share of migrants in a region indicates a 0.15% higher income per capita even after accounting for time-variant and invariant regional characteristics (Column 3).

Lagging regions benefit the most from migrants

While migration contributes to regional income in European regions, its exact effects vary across countries or regions with different characteristics. Overall, migrants seem to contribute to regional economic convergence as they benefit regions with lower income levels the most. Figure 4.3 presents regression results where the relationship between the migrant share and the regional income are estimated separately for sub-samples of regions within European countries.[8] Splitting the regions into various groups reveals that the positive effects of migration on income can vary substantially. For example, while an increase in the migrant share does not affect regional income growth in the EU15 countries (Figure 4.3, Column "EU15"), it has a positive and statistically significant effect on the EU member countries that joined after 2007 ("EU new members").[9] In fact, these countries, which have lower average income levels, drive the observed positive effects, suggesting that migration can contribute to income convergence between EU countries.[10]

Figure 4.3. Migrants help lagging regions catch up with more affluent regions

Estimated effect of a 1% increase in the share of migrants, select sample of OECD countries, 2006-19, TL2 regions



Note: Figure columns correspond to the point estimates for the share of migrants in the overall population, obtained through 2SLS regressions. The first column ("All") corresponds to the last column in Figure 4.3. "EU15" includes all EU15 countries and the United Kingdom (UK). "EU new members" include all countries that joined the EU after 2007. Regions that are in the highest income quartile relative to their countries are grouped as "Highest quartile" (25% of the regions with the highest income per capita), those in the second and third quartiles (regions between 25% and 75%) as "Middle quartiles" and those in the lowest quartile (25% of the regions with the lowest income per capita) are grouped in "Lowest quartile". All regressions control for the logarithm of the population size, logarithm of land area, the share of native-born workers with university education and above and the share of migrant workers with university education and above. All regressions use the share of migrants predicted through a shift-share as an instrument. All regressions include region fixed effects and year fixed effects. Residuals are clustered by TL2 regions, for 41 countries in the sample. See Endnote 2 for the list of countries included in the analysis. The number of observations varies depending on the model between 1 619 and 4 538.
***, **, * denote statistical significance at the 1%, 5% and 10% levels respectively.
Source: OECD calculations based on data from OECD Regional Statistics (database) and European Labour Force Survey (accessed June 2021).

Within countries, poorer regions benefit the most from migration. Splitting regions into three groups by their income levels relative to the other regions within the country helps to understand which regions benefit the most from migration. Results show that the positive effects of migration are driven by regions in the lowest income quartile within their countries (i.e. the 25% of regions with the lowest income per capita). More precisely, a 10% increase in the migrant share in these regions is associated with a 0.36% higher income. These positive effects indicate that increase in the migrant share helps lagging regions catch up with other regions in their country.

Migration promotes regional income convergence

The empirical evidence presented in this section supports the idea that migration contributes to regional economic convergence. Moreover, this finding holds even after accounting for the fact that migrants tend to settle in areas with higher income per capita (i.e. the non-random location choice of migrants). Indeed the results show that increasing the number of migrants relative to the total regional population boosts income per capita, especially in lower-income regions. As a result, these findings indicate that migrants can contribute to helping poorer regions catch up with the rest of the country and accelerate income convergence across Europe.

The positive effect of migrations on regional income documented in this section reflects the outcome of multiple vehicles that allow migrants to contribute to local economies. For example, beyond working in firms as employees or setting up firms as entrepreneurs, migrants can connect their regions to their country of origin, resulting in larger bilateral trade or fostering innovation through new ideas (Box 4.4). The following sections of this chapter shed further light on specific drivers of regional economic development and thus present evidence on various aspects of migrants' contribution to their regional economy.

Box 4.3. Birthplace diversity and long-run economic growth

The socio-economic effect of diversity associated with migration has raised interest in the academic literature due to two potential and contradictory consequences in destination countries. On the one hand, higher diversity could lead to a wider range of languages, norms and behaviours, which could have a negative economic or social effect due to a rise in communication costs and an overall reduction of social cohesion and trust (Putnam, 2007[8]). On the other hand, higher diversity can expand societies' skillset, which could lead to positive economic gains and growth. Indeed, previous studies have shown that diversity of migrants has been a boost to economic performance at different aggregation levels, including for countries (Bove and Elia, 2017[9]), regions (Trax, Brunow and Suedekum, 2015[10]), cities (Ottaviano and Peri, 2006[11]) and firms (Hjort, 2014[12]). In particular, it has been shown that diversity among migrants with a university education or above has a stronger positive economic effect due to their broader knowledge (Alesina, Harnoss and Rapoport, 2016[13]; Bahar, Rapoport and Turati, 2020[14]).

Using panel data of the 51 US states over the 1960-2010 period, Docquier et al. (2020[15]) study the skill-specific effect of diversity among migrants on states' economic growth. Diversity is computed using a birthplace diversity index, which captures the probability to draw randomly two individuals born in different countries from the reference population. The analysis relies on the sizeable and exogenous variations in size and composition of the migrant population after implementing the Immigration and Nationality Act in 1965, which surpassed the former quota system, generating an upsurge of migrants from a broader set of origins.

The paper shows that diversity among migrants with a university education or above positively affects the macroeconomic performance of US states, while diversity has almost no effect for migrants with high school or lower education.

Source: Alesina, A., J. Harnoss and H. Rapoport (2016[13]), "Birthplace diversity and economic prosperity", *Journal of Economic Growth*, Vol. 21/2, pp. 101-138; Bahar, D., H. Rapoport and R. Turati (2020[14]), "Birthplace diversity and economic complexity: Cross-country evidence", *Research Policy*, p. 103991; Bove, V. and L. Elia (2017[9]), "Migration, diversity and economic growth", *World Development*, Vol. 89, pp. 227-239; Docquier, F. et al. (2020[15]), "Birthplace diversity and economic growth: Evidence from the US states in the Post-World War II period", *Journal of Economic Geography*, Vol. 20/2, pp. 321-354; Hjort, J. (2014[12]), "Ethnic divisions and production in firms", *Quarterly Journal of Economics*, Vol. 129/4, pp. 1899-1946; Ottaviano, G. and G. Peri (2006[11]), "The economic value of cultural diversity: Evidence from US cities", *Journal of Economic Geography*, Vol. 6/1, pp. 9-44; Putnam, R. (2007[8]), "E pluribus unum: Diversity and community in the twenty-first century the 2006 Johan Skytte Prize Lecture", *Scandinavian Political Studies*, Vol. 30/2, pp. 137-174; Trax, M., S. Brunow and J. Suedekum (2015[10]), "Cultural diversity and plant-level productivity", *Regional Science and Urban Economics*, Vol. 53, pp. 85-96.

Migration and local innovation

This section examines whether migration contributes to innovation at the regional and local levels in OECD countries. Innovation is a vital driver of economic prosperity and growth. It boosts the adoption of new technologies or more efficient work practices or products, ultimately enhancing income and productivity. Like migration, innovation is a very geographically concentrated phenomenon. Within OECD countries, specific regions or cities often account for large proportions of research and development as well as the development of new products or the invention of new technologies.

Despite extensive evidence on the link between migration and innovation, subnational analysis involving multiple countries remains scant.[11] In fact, only two studies have focused on the relationship between innovation and immigration in a multi-country context. One of these studies, based on a sample of 20 European countries covering the period between 1995 and 2008, finds that a larger pool of skilled migrants is associated with a higher number of patent applications (Bosetti, Cattaneo and Verdolini, 2015[16]). The second study provides the first and the sole analysis looking at the question across regions of 12 countries in Europe but their results are inconclusive (Ozgen, Nijkamp and Poot, 2012[17]).

This section presents novel and unique evidence on the relationship between migration and patenting at an extremely granular level in a multi-country setting covering almost three decades.[12] It investigates the relationship between innovation, as captured by the number of patent applications from inventors, and the local presence of migrants.[13] To do so, it uses highly fine-grained information that includes the co-ordinates (latitude and longitude) of inventor locations as provided by de Rassenfosse, Kozak and Seliger (2019[18]) and the share of foreign-born individuals at the LAU level (municipal level hereafter). The latter data on the share of migrants originate from a novel dataset gathered by the OECD, which is presented in Chapter 1. Combining the two data sources generates a unique sample that covers 21 OECD countries, thus dealing with a diverse array of small areas over the 1990-2014 period.[14] In contrast to the analysis in the rest of the chapter, this analysis considers the total resident population rather than the working-age population.

While the analysis on the link between migrants and patenting activity benefits from the use of highly granular data, it also suffers the drawback of involving municipalities with very different characteristics and economic activity. The local factors such as industrial structure, types of occupations and population density may affect innovation activities (Carlino and Kerr, 2015[19]). Therefore, the analysis in this section splits municipalities into four groups (quartiles) based on their number of patents per capita to elicit meaningful patterns of the relationship between migration and innovation at the local level. The resulting quartiles help discern differences across more or less innovative municipalities and the extent to which migrants contribute to their respective innovation activities. For this purpose, the average patents per

capita in each municipality is calculated over the whole period of time for which the data on both patents and total population are available.[15]

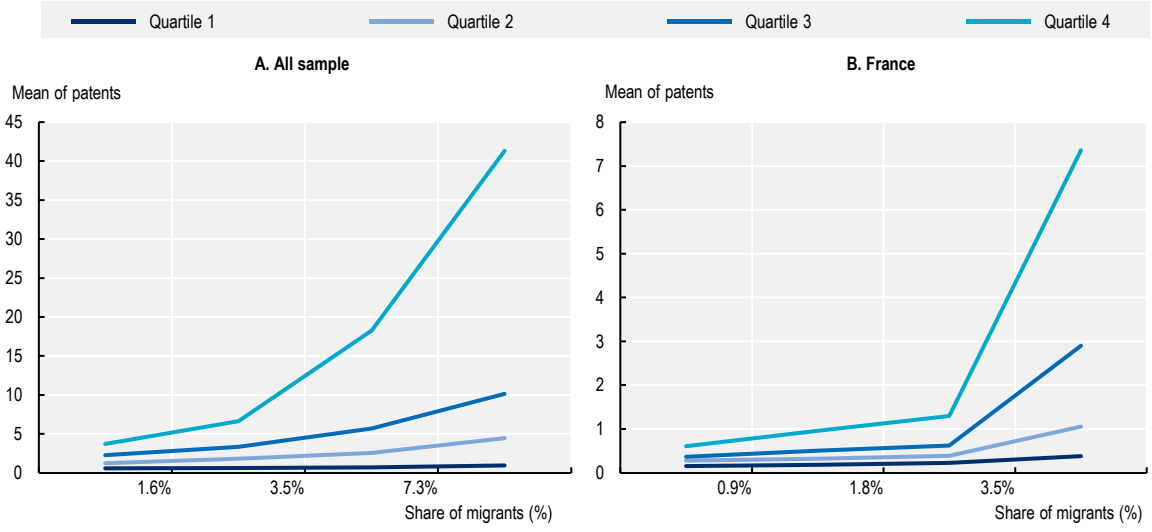
Patents and migrants are highly concentrated

Municipalities with higher shares of migrants report higher numbers of patents per capita. The left panel of Figure 4.4 visualises how the average number of patents for each group of municipalities (i.e. each line corresponds to a quartile) changes as the share of foreign-born individuals increases (horizontal axis). For low shares of migrants (2%), the number of patents tends to increase similarly across more or less innovative municipalities. However, as the share of migrants increases, the municipalities with the highest patenting activities (i.e. Quartiles 3 and 4) diverge significantly from the less innovative municipalities. In France, the divergence starts at slightly higher levels of population shares of migrants (i.e. 3%), though the general pattern still holds (right panel of Figure 4.4).

These figures using raw data reveal that the relationship between the share of migrants and patenting may vary across spatial units depending on their initial patenting activity. More precisely, it seems that the increase in the migrant share is associated with disproportional increases in patenting in specific types of patent-intensive local areas, highlighting the importance of the local ecosystem for patenting activity and the high geographical concentration of patents. The following section employs econometric tools that allow investigating this relationship in more depth.

Figure 4.4. Highly innovative localities benefit the most from an increase in the migrant share

The average number of patents per municipality group and the share of the migrant population in the total sample (Panel A) and in France (Panel B), 1990-2014



Note: Figures plot the relationship between the mean number of patents (vertical axis) and the share of the migrant population (horizontal axis) for each municipality quartiles for all samples (Panel A) and only France (Panel B). The sample includes municipalities from 21 countries and data for 1990-2014 with gaps. Quartile 1 includes 25% of municipalities with the lowest patenting activity. Quartiles 2 and 3 include the municipalities that are between 25-50% and 50-75% in terms of patenting respectively. Quartile 4 includes 25% of municipalities with the highest patenting activity.

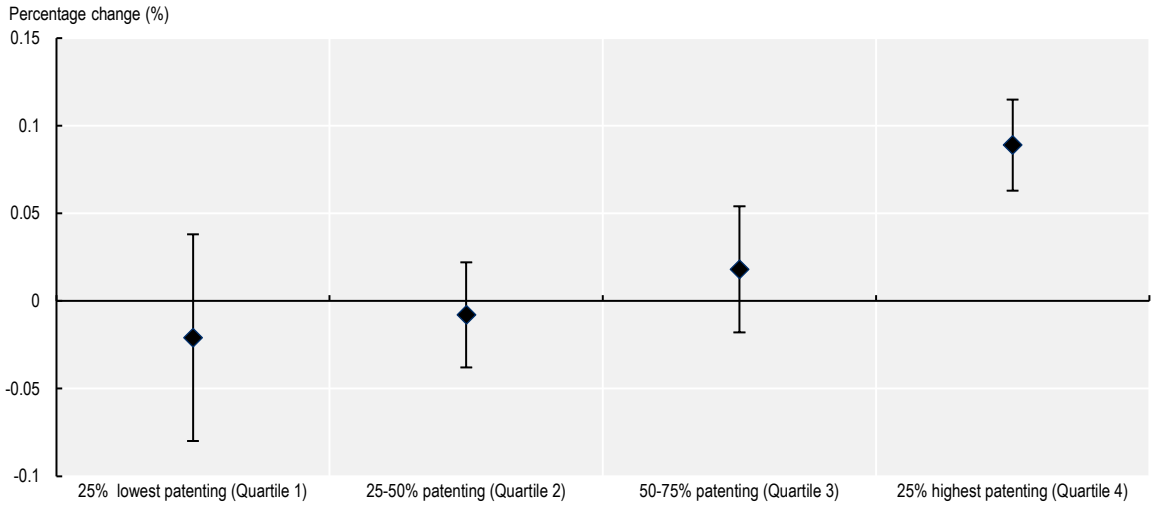
Source: OECD calculations based on data from De Rassenfosse, G., J. Kozak and F. Seliger (2019[18]), (2019), "Geocoding of worldwide patent data", http://dx.doi.org/10.1038/s41597-019-0264-6 and Astruc-Le Souder, M. et al. (forthcoming[20]), "Going granular: A municipal migration database", *OECD Regional Development Working Papers*, OECD Publishing, Paris.

Migrants contribute to patenting only in areas that are already innovative

A higher share of migrants appears to result in more patents but only in areas active in patenting.[16] A 10% increase in the share of migrants in a locality that is part of the 25% of most patent-intensive municipalities (Figure 4.5, Quartile 4), is linked with 1% more patents per capita in the same spatial unit. These results remain qualitatively similar when accounting for GDP per capita, indicating that the positive relationship does not depend solely on factors related to economic development.[17]

Figure 4.5. An increase in migrant share boosts innovation only in highly innovative areas

Estimated effect of a 1% increase in the share of migrants, select sample of OECD countries, 1990-2014, municipalities



Note: The markers correspond to the point estimates obtained from regression estimates carried out separately for each group and the vertical lines indicate the standard errors. All points refer to the group-specific coefficient associated with the share of foreign-born individuals in the total population. Quartile 1 includes 25% of municipalities with the lowest patenting activity. Quartiles 2 and 3 include the municipalities that have between 25-50% and 50-75% in terms of patenting respectively. Quartile 4 includes 25% of municipalities with the highest patenting activity. Regressions control for municipality, year and TL3-year fixed effects. The number of observations varies depending on the model between 67 470 and 68 865. Residuals are clustered by TL2 regions. See Endnote 11 for the list of countries included in the analysis.
***, **, * denote statistical significance at the 1%, 5% and 10% levels respectively.
Source: OECD calculations based on data from De Rassenfosse, G., J. Kozak and F. Seliger (2019[18]), "Geocoding of worldwide patent data", http://dx.doi.org/10.1038/s41597-019-0264-6 and Astruc-Le Souder, M. et al. (forthcoming[20]), "Going granular: A municipal migration database", *OECD Regional Development Working Papers*, OECD Publishing, Paris.

Highly urbanised areas record the strongest links between migration and patenting

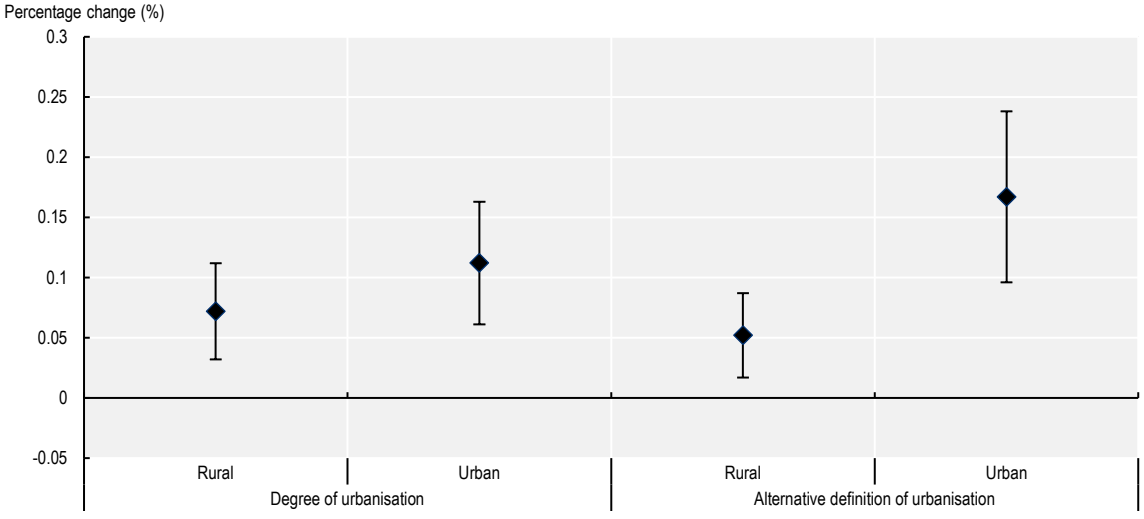
Migration appears to boost local innovation mainly in urban areas. The results presented above suggest that highly innovative municipalities are those where migration plays a role in further promoting patenting activities. Regrouping municipalities based on their degree of urbanisation[18] (Figure 4.6) shows that the positive relationship between innovation and the share of foreign-born individuals is much stronger in more urbanised areas.[19] Such a positive relationship is the consequence of several factors available in these localities. The local factors driving the observed positive effect cannot be identified in this analysis, although the literature provides important insights. For example, more urbanised areas tend to attract migrants who are relatively more educated or working in occupations that are related to scientific activities or patenting. Alternatively, a higher number of migrants in an urban area may amplify agglomeration economies, which are especially beneficial for innovative activities (Carlino and Kerr, 2015[19]). The fact that positive effects

are triggered in urban areas also suggests that local factors, such as industrial structure, types of occupations or population density, may also play an important role. While the empirical strategy (i.e. fixed effects) used in the analysis accounts for these factors partially, a complete understanding of the factors driving the established relationship requires more detailed data, which is unavailable at the moment at such a granular level.

Granular geographic information is crucial for understanding migrants' contribution to patenting activities. The evidence presented above shows that while there is practically no correlation between migrant shares and patenting in most local units, such correlation becomes strong for the group of highly urbanised areas. These findings highlight the importance of local factors such as local industrial structure, types of occupations or population density that are crucial for innovation.

Figure 4.6. Urban areas are driving the positive effect

Estimated effect of a 1% increase in the share of migrants, select sample of OECD countries, 1990-2014, municipalities by the degree of urbanisation



Note: The first two point estimates correspond to those obtained with the standard degree of urbanisation as explained in Endnote 17. For simplicity, urban refers to cities and towns and semi-dense areas. The last two represent results where municipalities with more than 25% of the population located in thinly populated areas (i.e. areas with a population density below 300 inhabitants per km^2) are assumed to be rural. All points refer to the fourth-group coefficient associated with the share of migrants in the total population. Residuals are clustered by TL2 regions. See Endnote 11 for the list of countries included in the analysis.

Source: OECD calculations based on data from De Rassenfosse, G., J. Kozak and F. Seliger (2019[18]), (2019), "Geocoding of worldwide patent data", http://dx.doi.org/10.1038/s41597-019-0264-6 and Astruc-Le Souder, M. et al. (forthcoming[20]), "Going granular: A municipal migration database", *OECD Regional Development Working Papers*, OECD Publishing, Paris.

By using granular information never used before, the analysis is able to highlight the strong local variation in the relationship between migration and innovation. Using detailed information on patents and newly collected data on the share of migrants at the municipal level, the analysis provides evidence from a multi-country setting over two decades. Consequently, the results also indicate that analyses that rely on national-level information or data for large regions risk concealing these heterogeneous effects, which can be crucial for policy makers.

Migration and regional trade

International trade is another dimension of regional development that has close links with migration. Migrants can boost trade in their host economy through various channels. Since the seminal work of Gould (1994[21]), evidence from many countries has shown that migration networks are associated with larger trade flows. A burgeoning literature investigates the channels behind the impact of migrants on trade. For example, the presence of migrants can improve trade by reducing information costs or creating additional demand for the goods produced in their countries of origin (Felbermayr and Toubal, 2012[22]). Immigration also causes an increase in the diversity of productive skills, leading to a rise in total factor productivity and thus its competitiveness in the international markets (Ortega and Peri, 2014[2]). Furthermore, migration can stimulate knowledge transfer. As migrants move across countries, they bring along productive knowledge that is an essential element in boosting the production and trade capacity of the country (Bahar and Rapoport, 2018[23]). Finally, migrants may boost the creation of low capital-intensive firms (Casabianca, Lo Turco and Maggioni, 2021[24]).

Despite extensive evidence on the contribution of migrants to higher trade flows between their countries of origin and host countries, little is known about their effects at the subnational level. Most of the evidence focuses on the contribution of migrants to national trade flows, with evidence at the subnational level remaining limited. The study by Herander and Saavedra (2005[25]) constitutes an early example of subnational evidence and investigates the impact of migrants' networks established within US states on US export volume. Similarly, focusing on the case of French provinces, Briant et al. (2014[26]) study the effect of immigration on the trade volumes in French *départements*. Their key finding is that the pro-trade effect of migrants is observed only when the migrants originate from countries with weak institutions. More recently, Parsons and Vézina (2018[27]) exploit the natural experiment of emigration from Viet Nam to the US and find that US states with larger Vietnamese diaspora trade more with Viet Nam. However, no comprehensive analysis of the subnational effects of migration on trade for multiple countries so far exists.

This section presents the first multi-country evidence on the impact of migration on trade flows at the regional level ever.[20] This unique dataset covers trade flows between 267 TL2 regions across the 21 European countries and the rest of the world in 2013. Using trade flow data between 267 TL2 regions across the 21 European countries and the rest of the world, the section first shows the contribution of migrants to import and export flows of their host region.[21] Second, it examines the role of migrants in lowering transaction channels and boosting bilateral trade between their hosting region and their country of origin. Third, it presents evidence on the knowledge transfer channel by differentiating the effects of migrants by their education levels as well as the knowledge intensity of their sector. Finally, the section searches deeper and presents evidence at the firm level using French customs data.

Migrants promote international trade of their host region

Migrants contribute to the internationalisation of their host economy by promoting trade flows of their host economy and boost total imports and exports of their host region. On average, European regions experiencing a 10% increase in the overall number of migrants see a rise of 3.4% in their imports (Column 1) and 1.5% in their exports (Column 3). As migrant communities are likely to be larger in more populous regions, part of the observed effects could be driven by the region's population size. To address this potential omission, results in Columns 2 and 4 also account for the size of the local native-born population. The inclusion of the native-born population reduces the magnitudes of the point estimates from 1.4% to 1.2% for exports and from 3.2% to 2.5% for imports. In all cases, the estimated relationship remains robust and statistically significant.

Box 4.4. Empirical strategy: Gravity equation

The analysis in this section relies on an augmented gravity-like specification. In fact, a similar estimation strategy is the default approach in the international trade literature (Chaney, 2008[28]; Mayer and Head, 2013[29]) but also in the literature exploring the effects of migration on trade.

$$\ln(\text{trade}_{ijod}) = \beta_0 + \beta_1 \ln(\text{number of migrants}_{io}) + \beta_2 \ln(\text{number of natives}_{io}) + \beta_3 X_{ij} + \theta_i + \theta_j + \mu_{ijod} \quad \text{(Equation 2)}$$

- where the subscripts i and j denote country of origin and country of destination respectively. The subscripts o and d refer to the regions in these countries.
- The dependent variable is the logarithm of regional-level trade flows.
- $number\ of\ migrants_{io}$ is the number (or total population) of migrants from a country of origin i, located in region o.
- $number\ of\ natives_{io}$ is the number (or total population) of native-born from the country of origin i, located in region o.
- X_{ij} is a vector of control variables that are standard in the gravity estimations. Among those controls, the bilateral distance is measured as the geographical distance between capitals of origin and destination, while the GDP captures the size of the country of origin and destination region. The Regional Trade Agreement, common border, common language and colonial links dummies reflect the trade-promoting factors.
- θ_i is a vector of regional dummies capturing any origin-specific characteristics that are time-invariant.
- θ_j, is a vector of time dummies capturing any destination-specific characteristics that are time-invariant.

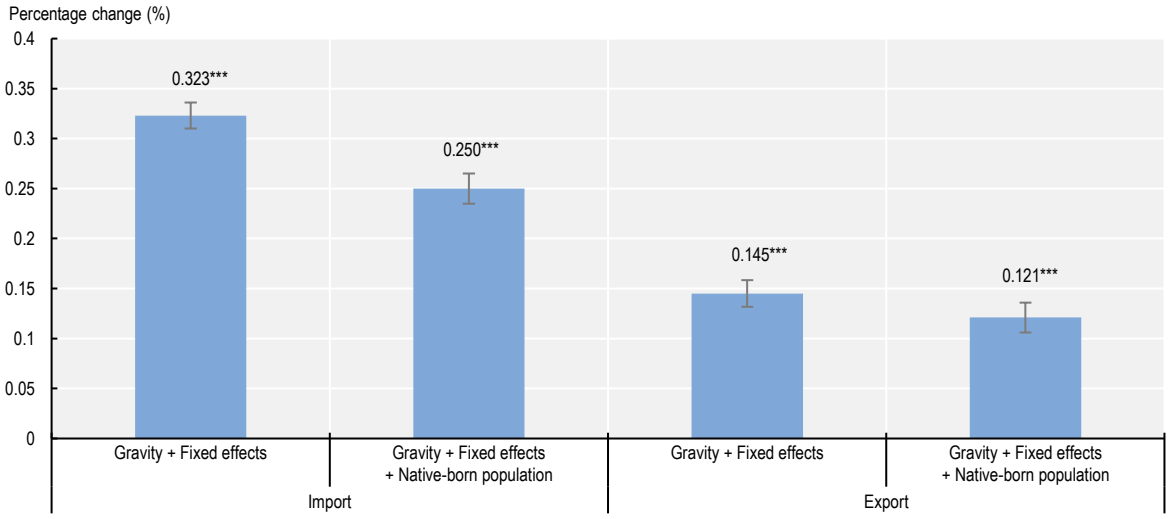
Source: Chaney, T. (2008[28]), "Distorted gravity: The intensive and extensive margins of international trade", *American Economic Review*, Vol. 98/4, pp. 1707-21; Mayer, T. and K. Head (2013[29]), *Gravity Equations: Workhorse, Toolkit and Cookbook*.

By raising regions' international trade, migration enhances regions' international competitiveness. The estimates suggest that an increase in the number of migrants in a region positively affects trade flows, particularly the imports. The impact of migrants on imports is roughly twice larger than on exports. This finding is in line with the literature, which also finds stronger effects on imports. The magnitudes estimated in the analysis are comparable to those found at the national level (Genç, 2014[30]) yet remain smaller compared to those found at the subnational level for single-country analyses (Briant, Combes and Lafourcade, 2014[26]; Parsons and Vézina, 2018[27]).

While the larger effects on imports may harm the trade balance in the short run, it can also lead to larger exports in the medium to long run. In the short run, migrants increase demand for consumer goods from their country of origin or other types of goods that are not available in their host region. While the larger set of consumption varieties increases the welfare of the population, these imports could also benefit exports in the medium to long run. For example, imports could involve cheaper intermediary products or machinery, which can improve the productivity of the industries in the host economy and translate into higher exports in the medium or long run (Bas and Strauss-Kahn, 2014[31]). Moreover, exposure to imported products can accelerate learning and innovation in local firms.

Figure 4.7. Migrants boost both imports and exports of the region where they settle

Estimated effect of a 1% increase in the number of migrants, European countries, 2013, TL2 regions



Note: Figure presents 2SLS estimates for the impact of an increase in the number of migrants (or migrant population) on regional trade flows for European countries. Gravity controls include the logarithm of the bilateral distance between region and trade partner, the logarithm of GDP in both origin and destination. All results present 2SLS results where the regional native-born and migrant population are instrumented using predicted population numbers. Fixed effects include origin and destination fixed effects. Residuals are clustered by TL2 regions. Residuals are clustered by TL2 regions. See Endnote 20 for the list of countries included in the analysis.
***, **, * denote statistical significance at the 1%, 5% and 10% levels respectively.
Source: OECD calculations based on data from European Labour Force Survey (accessed October 2020) and Thissen, M. et al. (2019[32]), "European NUTS 2 regions: Construction of interregional trade-linked supply and use tables with consistent transport flows", *JRC Working Papers on Territorial Modelling and Analysis*.

Migrants' contribution to exports is particularly important as it indicates an immediate increase in regions' production capabilities and competitiveness. Since regions can only compete in global markets once they have become productive enough, an increase in the export volumes can suggest important gains in the production capabilities of the region, which is crucial for economic development and income (Irwin and Terviö, 2002[33]). For this reason, the rest of the section focuses on regional exports.

Migrants, in particular those with a university degree, contribute to regional exports

Not only country-level characteristics but also the heterogeneity among migrants could matter for trade flows. The recent literature consistently reports larger marginal effects on trade flows for migrants with a university degree or above. For example, migrants with higher educational attainment can transfer knowledge better (Bahar and Rapoport, 2018[23]; Bahar et al., 2019[34]). Highly skilled migrants might also bring new and different skills to their host region that can complement the production, particularly in high-value, knowledge-intensive sectors, making firms more productive and competitive in trade (Nathan and Lee, 2013[35]). As with trade flows, skilled migrants can also provide domestic investors with additional information on "home" market investment opportunities (Pandya and Leblang, 2012[36]).

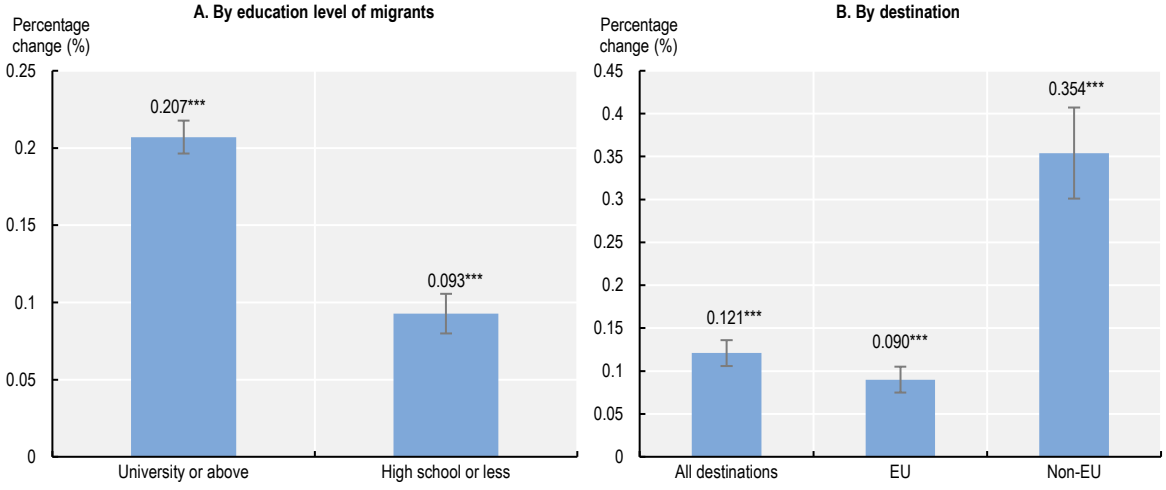
The marginal effect of migrants with a university degree or above on regional exports is twice as strong as for those who have a high school education or less. Regions that observe a 10% increase in the number of migrants with a university education or above (Figure 4.8, Panel A) experience a rise in their regional exports by 2.1%, while a similar increase in the high school or less-educated migrant population would have a more moderate effect of 0.9%.

Migration appears to boost exports in particular to non-EU destinations

Migrants appear to boost exports to all destinations but, in particular, to non-EU countries and regions. Overall, the analysis carried out in this section suggests that a 1% increase in the number of migrants is follower by an increase of 0.12% in international exports. Exports directed to regions located in other EU countries increased by 0.09%. In comparison, the effects of trade with regions outside the EU are more than three times larger (Figure 4.8, Panel B).[22] While understanding the underlying mechanisms requires further analysis, these differential effects might be driven by several factors. First, migrants might boost regional trade by increasing the probability of starting new export relationships between countries. Migrants can bring improved international market knowledge, which allows buyers and sellers in both countries to match better. Given the strong existing trade links between regions in the EU, it is natural that the marginal effects associated with an increase of migrants are stronger for trade with non-EU destinations. Second, migrant networks allow establishing trade links that overcome trade barriers, particularly for destinations with weaker institutional quality by reducing the transaction costs. Diasporic/co-ethnic networks offer an effective means of contract management and enforcement (Javorcik et al., 2011[37]). Over time, migration may also attract foreign direct investment (FDI) flows between host and home countries, translating into an increase in trade. Since barriers are lower for trade with other EU regions, exports to non-EU regions benefit disproportionately more from migration.

Figure 4.8. The marginal effects of migration on exports are stronger for regions with more university-educated migrants and to non-EU destinations

Estimated effect of a 1% increase in the number of migrants, European countries, 2013, TL2 regions



Note: Both panels present 2SLS estimates for the impact of an increase in the number of migrants (or migrant population) on regional trade flows for European countries. All regressions include gravity controls (the logarithm of the bilateral distance between region and trade partner, the logarithm of GDP in both origin and destination) and fixed effects (origin and destination). All results present 2SLS results where the regional population of migrants are instrumented using predicted population numbers. Residuals are clustered by TL2 regions. See Endnote 20 for the list of countries included in the analysis.

***, **, * denote statistical significance at the 1%, 5% and 10% levels respectively.

Source: OECD calculations based on data from European Labour Force Survey (accessed October 2020) and Thissen, M. et al. (2019[32]), "European NUTS 2 regions: Construction of interregional trade-linked supply and use tables with consistent transport flows", *JRC Working Papers on Territorial Modelling and Analysis*.

Migration supports trade diversification

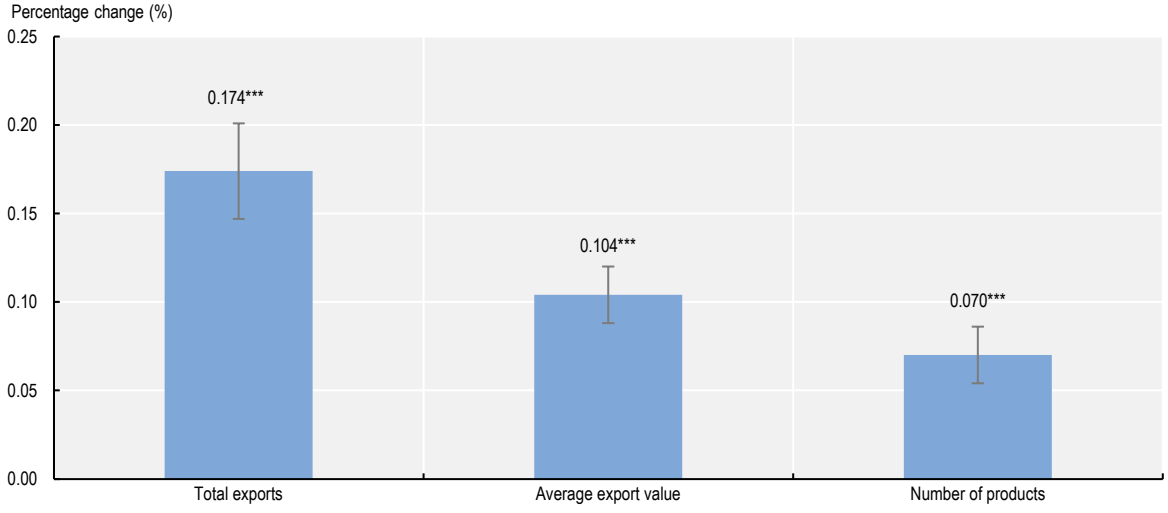
The aggregate effect of migration on trade observed at the regional level can result from a combination of three main channels. First, individual firms can directly benefit from the presence of migrant workers, who can help create new multi-border networks and business relationships (Felbermayr and Toubal, 2012[22]; Ortega and Peri, 2014[2]). Second, migrants can work as employees or start their own exporting companies to boost the region's total exports (Horwitz and Horwitz, 2016[38]). Third, they could help their firm export new products or boost product quality (Grossman and Maggi, 2000[39]).

Firm-level analysis can help identify the mechanisms through which migrants affect the trade flows. Due to confidentiality concerns, accessing firm-level microdata is often very difficult, making a multi-country analysis difficult or, in most cases, impossible. Focusing on the case of France, this chapter uses microdata covering the universe of French exporters. The analysis shows that migrants in French provinces (TL3 regions, *départements* in French) increase exports from the province to the country of origin of the migrant. More precisely, a 1% increase in the number of migrants from a given country increases the total exports from the French province to the country of origin of the migrant by 0.17% (Figure 4.9).

Migrants help firms export more types of products and products of higher quality (Peri and Requena-Silvente, 2010[40]). The presence of migrants in a French province contributes to firms' export performance by increasing the average value of the exported goods (Figure 4.9, second column). Two factors can drive the increase in the average value of exported goods. First, the quality of the exported product might be increasing, which would raise the average export value. Second, the presence of migrants also helps firms to start exporting more product varieties (Figure 4.9, third column). If these new export products have a higher value, it could also raise the average value of firms' exports.

Figure 4.9. Migrants increase export volumes, export values and the number of products in their host regions

Estimated effect of a 1% increase in the number of migrants in a province on French firms, 1995-2012, TL3 regions



Note: Figure presents the point estimates obtained through 2SLS estimation at the firm level. Each column corresponds to the impact of an increase in the number of migrants located in a French province (TL3 region) from a country of origin on exporting activity of firms located in the province towards the country of origin of the migrant. Each column corresponds to the point estimate of a different outcome variable. All results present 2SLS results where the province-level population of migrants are instrumented using predicted population numbers. Residuals are clustered by TL3 regions.

***, **, * denote statistical significance at the 1%, 5% and 10% levels respectively.

Source: OECD calculations based on data from Direction Général des Douanes et Droits Indirects and French Labour Force Survey (INSEE) (accessed November 2020).

Box 4.5. Migration as a channel for knowledge diffusion and industrial development

While most of the economic debate on immigration has focused on the effects in the host country, migrants can also affect outcomes in their country of origin. A growing literature provides evidence that migrants can be drivers of international knowledge diffusion across borders, which can be particularly important for the economic development of countries of origin (e.g. Kerr, 2008[41]; Bahar and Rapoport, 2018[23]; Miguelez and Noumedem Temgoua, 2020[42]).

In recent work, Bahar et al. (2019[34]) explore a novel angle exploring gains from migration and show how migrants, upon their return, can shape the industrial development of their home country. The study exploits a natural experiment in the early 1990s, when about 700 000 citizens of the former Yugoslavia fled to Germany to escape war where they received temporary legal status, *Duldung* (German for "toleration"), which allowed them to stay and, under some circumstances, work in Germany. By working in German industries, Yugoslavian refugees were exposed to German productive know-how. When the war ended in 1995 following the Dayton Peace Treaty, Yugoslavian refugees also started going back. By 2000, the majority of Yugoslavian refugees had been repatriated back to their home country or to other territories of dissolved Yugoslavia.

Upon their return, Yugoslavian migrants put into use their newly acquired foreign knowledge, technologies and best practices. In fact, a few years after their return, Yugoslavian exports started increasing. This increase was particularly strong for industries that received a larger number of returnees, especially those who received more than high school education or worked in occupations that involve analytical skills or managerial roles.

These results indicate that returning migrants can generate substantial industry-specific productivity increases, resulting in changes in the export composition of a country as a whole. In terms of policy implications, these results indicate that having access to labour markets could allow refugees to learn from their receiving countries and put them into use in their country of origin upon their return.

Source: Bahar, D. and H. Rapoport (2018[23]), "Migration, knowledge diffusion and the comparative advantage of nations", http://dx.doi.org/10.1111/ecoj.12450; Bahar, D., A.Hauptmann, C.Özgüzel, and H.Rapoport (2019[34]), "Migration and post-conflict reconstruction: The effect of returning refugees on export performance in the former Yugoslavia" *IZA Discussion Paper Series*; Kerr, W. (2008[41]), "Ethnic scientific communities and international technology diffusion", *The Review of Economics and Statistics*, Vol. 90/3, pp. 518-537; Miguelez, E. and C. Temgoua (2020[42]), "Inventor migration and knowledge flows: A two-way communication channel?", *Research Policy*, Vol. 49/9, p. 103914.

Migration and regional labour markets

Migration has become an increasing source of political tensions in recent years, both within and outside the EU, partly because of concerns about the potential adverse impact of migration on public finance and employment. According to a survey, 55% of the population in the EU believe that migrants are a fiscal burden and 40% express concerns about migrants taking jobs from native-born workers (EC, 2017[43]). While these are perceptions rather than facts (Edo et al., 2018[44]), economists are increasingly investigating how migration affects regional labour markets.

During the past decade, the surge in migration to Europe has triggered new attention among economists on the labour market consequences of immigration and refugee waves by revisiting prior well-known studies or implementing new ones (Edo, 2018[45]). One important question addressed by these studies is about determining the impact of an increase in the local labour supply driven by migrants on the employment of native-born living in that area. From a methodological point of view, the approach to address

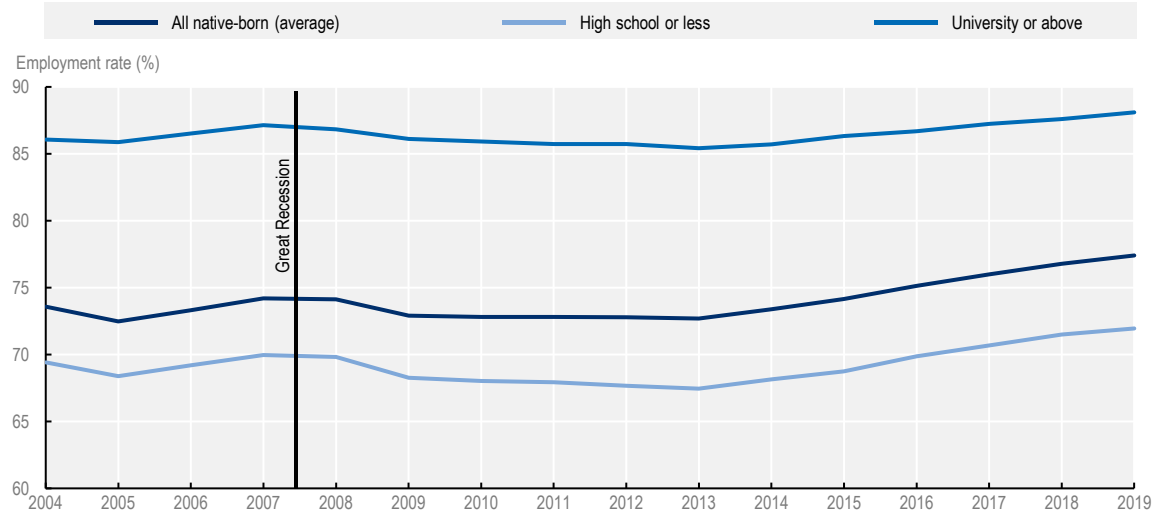
such empirical questions is to compare changes in economic outcomes of places experiencing a higher increase in the local labour supply due to migration relative to other places with smaller increases and exploit the spatial variation econometrically. The main advantage of such a strategy is that it captures all channels through which immigration can affect regional labour markets (Dustmann, Schönberg and Stuhler, 2016[46]).

Despite the strong interest in this topic, empirical evidence at the regional level remains scarce. Most studies either use regional variations within a single country or implement multi-country investigations without introducing any regional dimension (Angrist and Kugler, 2003[47]; D'Amuri and Peri, 2014[48]). The main advantage of cross-regional analyses is to offer a rich set of information to identify the labour market response to immigration. On the other hand, a multiple-country setting allows exploiting the heterogeneity of the sample (in terms of economic performance, welfare system or labour market institutions) to understand the underlying mechanisms through which labour markets can respond to immigration.

This section presents novel insights by investigating the impact of migration on the employment of the native-born population by exploiting data across 136 European TL2 regions in 13 (mainly Western) European countries between 2010 and 2019.[23] This analysis is particularly relevant for Western European countries for two reasons. First, between 2010 and 2019, the native-born employment rate[24] increased by 5.6 percentage points on average across European regions following the decline in the Great Recession (2007-09) (Figure 4.10). Second, as regional economies recovered from the crisis, labour market opportunities also increased, attracting migrants. In fact, during the same period, the share of the migrant (i.e. foreign-born) labour force increased on average by 3.4 percentage points from 12.7% in 2010 to 16.1% in 2019. Increases occurred in all countries considered except for Greece (Figure 4.11). The rise in the share of migrants in the labour force in Western Europe is twice as large as in the US, where the share increased by 1.6 percentage points between 2010 and 2019 (from 15.8 to 17.4%).

Figure 4.10. The employment rate for the native-born population was recovering from the Great Recession

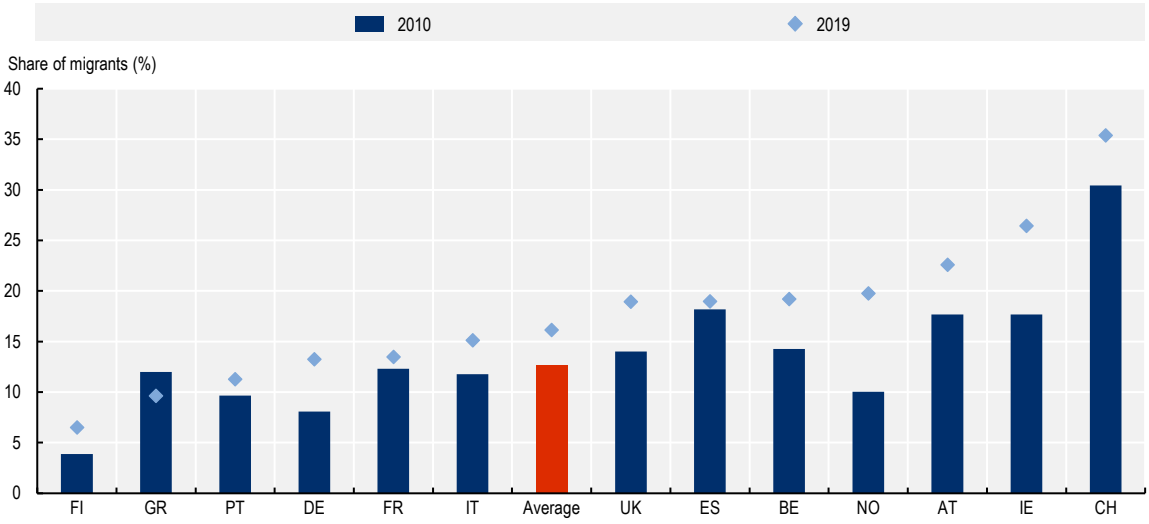
The native-born employment rate in Western European countries, 2004-19



Note: The figure plots the evolution of the employment to population rate for native-born over the 2004-19 period for the sample of 13 European countries (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Norway, Portugal, Spain, Switzerland and the UK). The university or above education group considers all native-born workers with some tertiary education or more, while the high school or less-educated group considers all native-born workers with secondary education or less.
Source: Author calculations based on EU-LFS.

Figure 4.11. The migrant share increased in all European countries except Greece

The share of migrants in the labour force of Western European countries in 2010 and 2019



Note: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Norway, Portugal, Spain, Switzerland and the UK. The average corresponds to the weighted average of the sample.
Source: OECD calculations based on data from EU-LFS.

The following analysis explores the labour market effects of an increase in the labour supply driven by migration along three dimensions.[25,26] First, it examines the dynamic response of regional native-born employment to labour supply changes over different periods. In theory, possible changes in native-born workers' employment caused by a change in the labour supply resulting from migration could differ between the short and medium to long run, as labour market adjustments are not instantaneous.[27,28]Second, migration may have uneven effects on native-born with different levels of education. Possible short-term effects in native-born workers' employment are often concentrated on low-skilled workers, while they are negligible or even positive for high-skilled, educated ones.[29] The analysis thus tests whether the increase of migrant workers (defined as those born outside of the host country) in European regions had uneven effects across workers with different levels of education over the past decade. Third, it examines how the patterns of employment changes differed by regional characteristics, as the capacity of regions to absorb new labour supply may depend on local firms` ability to adjust their capital stock and the business cycles. For example, if firms cannot adjust their capital or are unwilling (due to lack of demand during an economic downturn), an increase in the labour supply could have a stronger effect on the labour market. Building on this idea, in the final step, the analysis explores whether the short-run impact of immigration on native-born employment is weaker in fast-growing regional economies.

As labour markets adjust over time, the short-term regional impact on growth in domestic employment of an increase in labour supply due to migration disappears

The identification of the regional impact of migration on native-born employment requires accounting for the location choices of migrants. Therefore, Figure 4.12 compares the average effect of an increase in the local labour supply due to immigration on the native-born employment rate, defined as the number of employed native-born over the total native-born population. Columns 1-2 present the estimated relationship, while Columns 3-4 account for the bias in the estimation due to the non-random settlement of migrants across regions. As the effects of migration adjust over time, the short-term (one-year) and long-term (ten-year) effects are considered by separate estimates for the 2010-19 period. Given the increase in the native-born employment rate across European regions during the period (Figure 4.10), these estimates correspond to a deceleration in the growth rate in the employment rate and not a decline.

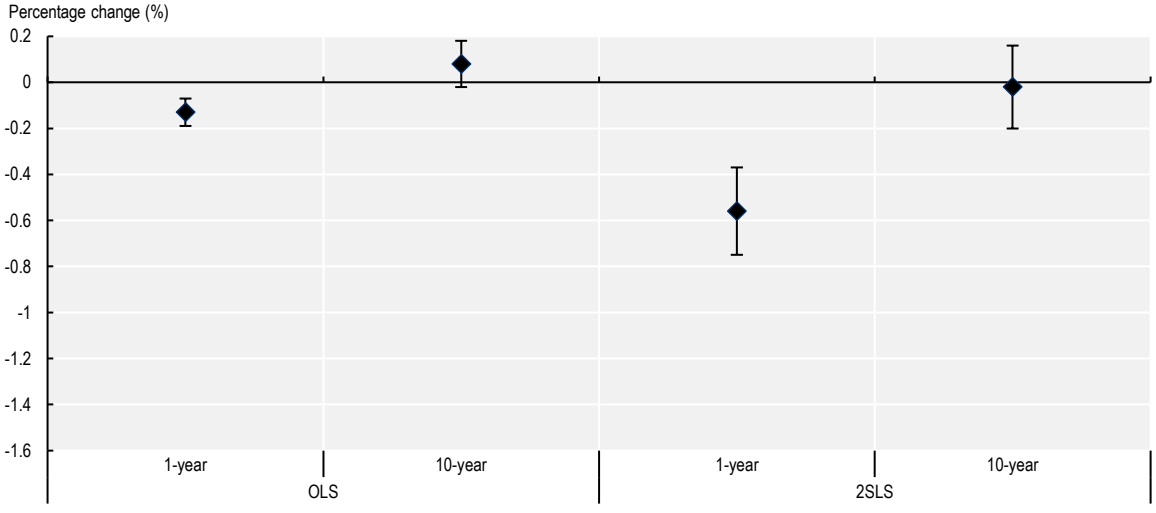
The effects of migration on native-born employment rates diminish over time. The point estimate in Column 3 (using 1-year intervals) implies that a 1% increase in the labour supply due to migration in a given region is associated with a 0.56% slower growth in the native-born employment rate in that region, while in the long term (using 10-year changes, Column 4), the effect on the native-born employment rate completely disappears.[30,3132] Expressed differently, a 1% increase in the labour force due to migration would indicate a 0.13 percentage points lower increase in the employment rate of the native-born population.[33] This result is robust to several specifications and consistent with economic theory predicting that immigration triggers various short- to medium-run adjustments within and across regions/countries that affect native-born employment. Capital accumulation and the adaptation of production techniques are two potential mechanisms explaining why the longer-run impact of immigration on employment is weaker than the short-run employment response.[34] Additionally, migration boosts regional income per capita, as shown in the first section of this chapter, which in turn can then strengthen regional labour markets and compensate for the initial labour market supply changes.

Across regions, the short-term and long-term labour market effects differ for native-born workers with tertiary education and those with lower levels of education

As documented in the preceding sections, migration boosts regional economies through more international trade, higher income and increased innovation. As a consequence, regions benefit from migration economically overall. However, some population groups in OECD regions might be more affected than others by migration, especially in the labour market, which would require targeted policies for supporting those groups.

Figure 4.12. Regional labour markets adjust over time and manage to absorb an increase in the labour force due to migration in the long run

Estimated effect of a 1% increase in the labour supply due to migration on the native-born employment rate, European countries, 2010-19, TL2 regions



Note: The figure presents OLS and 2SLS estimates for the impact of a 1% increase in the labour supply due to migration on the employment rate of the native-born population (i.e. the number of employed native-born over the native-born population), annually and 10-year changes. 2SLS estimations use the predicted increase in the labour supply due to the migration (i.e. the shift-share) as the instrument. Residuals are clustered by TL2 regions. The sample includes the following countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Norway, Portugal, Spain, Switzerland and the UK.
Source: OECD calculations based on data from EU-LFS and national censuses obtained from IPUMS. See Box 4.2 for further details.

Migration may also have uneven effects on the employment rate of the native-born population with different levels of education. While many factors can drive these differences, the effects are more substantial for

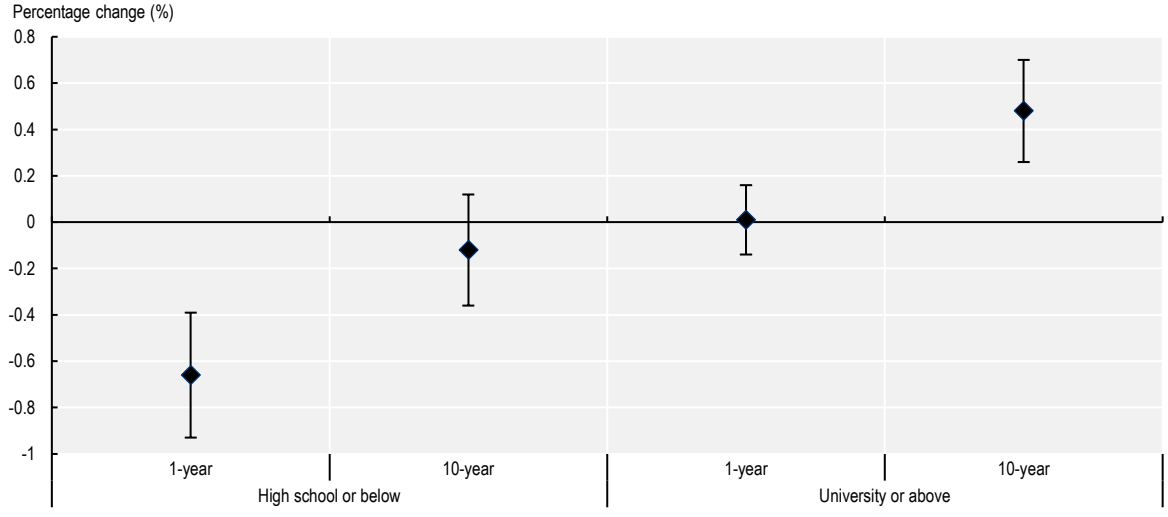
native-born workers with high school or less education because the degree of competition between native-born and migrant workers within the low-skill segment of the labour market is stronger (Orrenius and Zavodny, 2007[49]). Another reason is that the skill complementarity between migrant and native-born workers with a university education or above could benefit educated native-born without increasing the labour market competition (Peri, Shih and Sparber, 2015[50]). As discussed extensively in the literature, the labour market effects of migration are often concentrated on high school or less-educated native-born workers, while they are negligible or insignificant for university-trained (or above) ones.

The analysis carried out in this section reveals that labour market effects of migration are limited to native-born workers with a high school degree or lower education (Figure 4.13). The estimates indicate that in the short run, a 1% increase in the labour supply due to migration slows the growth in the native-born employment rate (i.e. the number of employed native-born workers over the total native-born population) with a high school degree or less by 0.66% while it has no effect on native-born workers with higher levels of education. This asymmetric impact is consistent with the existing empirical evidence that indicates that migrants compete mostly with native-born workers who do not have a university degree (Dustmann, Schönberg and Stuhler, 2017[51]).

The labour market impact of an increase in the migrant population also changes in the long run as labour markets adjust. For native-born workers with a high school degree or less, the short-run effect of an increase in the labour force resulting from migration fades away in the long run as the labour market adjusts. Native-born workers with higher levels of education even see an increase in their employment rate in the long run.[35]

Figure 4.13. The regional labour market effects of migration are uneven across workers with different levels of education

Estimated effect of a 1% increase in the labour supply due to migration on the native-born employment rate by level of education, European countries, 2010-19, TL2 regions



Note: The figure presents 2SLS estimates for the impact of a 1% increase in the labour force due to migration on the employment rate of the native-born population, annually and 10-year changes by education levels of native-born workers. 2SLS estimations use the predicted increase in the labour supply due to migration (i.e. the shift-share) as the instrument. Residuals are clustered by TL2 regions. The sample includes the following countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Norway, Portugal, Spain, Switzerland and the UK.
Source: OECD calculations based on data from EU-LFS and national censuses obtained from IPUMS. See Box 4.2 for further details.

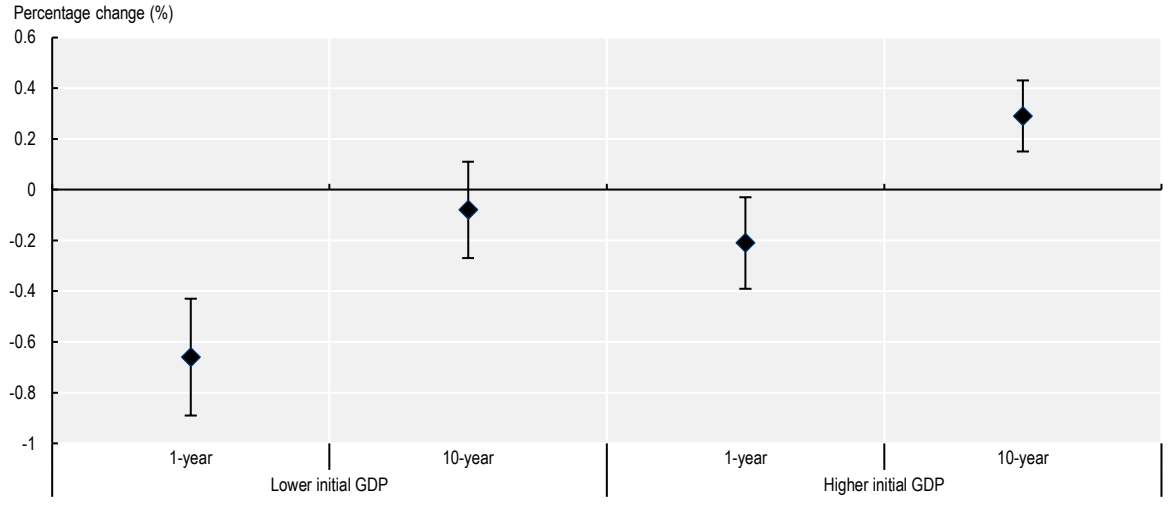
Regions with higher GDP integrate migrant workers more easily

Economically dynamic regions can better absorb an increase in the labour supply induced by migration. The standard economic models assume that the stock of capital in the economy evolves very slowly in the short run. When the capital stock is fixed, a migration-induced increase in labour supply reduces the level of physical capital per worker and negatively affects labour productivity and lowers average wages (Borjas, 2003[52]). As a result, fewer native-born workers will be willing to work and their employment level should decline. However, if capital stock adjusts to changes in the labour supply, neither wages nor employment levels fall. Thus, regions that are economically more dynamic and able to adapt their capital better should absorb the increase in the labour supply more easily, resulting in weaker adverse effects on native-born workers.

The European regions with the highest regional GDP experienced weaker employment effects in response to migration in the short run. The estimates in Figure 4.14 show that in the short run, the marginal impact of a 1% increase in the labour supply due to migration in regions with "Higher initial GDP" (i.e. 25% of regions with the highest GDP in Europe in 2010) is less than one-third the size compared to those with "Lower initial GDP" (i.e. the remaining 75% of regions). Moreover, in the long run, the growth in the native-born employment rate in regions with higher GDP is even accelerated in response to migration. The regions with lower initial GDP, on the other hand, are capable of perfectly absorbing the increase in the labour supply in the long run.[36]

Figure 4.14. More prosperous regions absorb new migrants in the labour force more easily

Estimated effect of a 1% increase in the labour supply due to migration on the native-born employment rate, European countries, 2010-19, TL2 regions



Note: Presents 2SLS estimates for the impact of a 1% increase in the labour supply due to migration on the employment rate of the native-born population (i.e. number of employed native-born over the native-born population), annually and 10-year changes. Regions are grouped according to their GDP in 2010. Twenty-five percent of the regions with the highest GDP in Europe are grouped as "Higher initial GDP" while the remaining 75% are grouped as "Lower initial GDP". Residuals are clustered by TL2 regions. 2SLS estimations use the predicted increase in the labour supply due to migration (i.e. shift-share) as the instrument. The sample includes the following countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Norway, Portugal, Spain, Switzerland and the UK.
Source: OECD calculations based on data from EU-LFS and national censuses obtained from IPUMS. See Box 4.2 for further details.

Targeted policies can help all regions and workers benefit from migration

As documented in this chapter, migration boosts economic development in OECD regions. It leads to an increase in regional income per capita, more international trade and more innovation, which results in greater well-being of the regional population. Migrants arrive in regions with economic opportunities and increase the available labour supply. However, this increase in the labour supply due to immigration can slow the pace of growth in the native-born employment rate in the short term.[37] While this effect gradually diminishes over time as the labour market adjusts, it is more pronounced for some groups (e.g. native-born workers with lower levels of education or located in regions with lower GDP or capacity to absorb migrants) who may be affected more than others. Given the relatively small displacement effects on native-born employment and positive effects on the overall economy, it is reasonable to assume that migrants expand the overall employment in their host region. Still, as the labour market consequences on native-born workers are uneven across groups, targeted policies that take into account the heterogeneous impact of migration and provide effective support for those groups that are most vulnerable in the labour market can ensure that the entire population benefits from positive economic gains associated with migration in OECD regions.

Box 4.6. Does migrant mobility protect native-born employment?

Geographical mobility of workers can reduce income, wage and unemployment differences across regional and local labour markets (Bartik, 1991[53]; Blanchard and Katz, 1992[54]). One important mechanism to consider is the role of migration to cushion the effect of negative shifts in the labour market. The asymmetry in the geographical responsiveness between native-born and migrant workers has attracted a growing interest for economists since the emergence of the last economic crisis in 2008 (Basso and Peri, 2020[55]). The main intuition is that, as migrants tend to be relatively more mobile than native-born workers, they are more likely to move in the presence of an adverse economic shock or negative cycle.

The geographic mobility of migrant workers shields the native-born population against the negative effects of economic shocks. Recent literature showed that areas affected by demand shifts experience a decrease in the total migrant population. Through various channels, the reduction of migrant workers softens the adverse effects of demand shifts on native-born employment opportunities and wages and help the local labour markets recover faster (Cadena and Kovak, 2016[56]; Monras, 2018[57]; Basso, D'Amuri and Peri, 2019[58]; Gálvez Iniesta, 2019[59]; Özgüzel, 2021[60]).

While documenting the change in the migrant population, existing studies do not provide conclusive evidence on the exact drivers of this change. In fact, the population of an area can change through inflows from or outflows to other areas, or both. Understanding how population flows react to the changes in the economic conditions matters for improving our understanding of how local labour markets adjust to demand shifts (Monras, 2018[57]) but also from a policy perspective.

OECD evidence from European regions shows that migrants reduce their inflows to TL2 regions where unemployment rates increase (Figure 4.15, left panel). An increase in the regional unemployment rate reduces the inflow rates of migrants (i.e. the darker blue dotted line). In contrast, the relationship (i.e. the lighter blue dotted line) is close to zero for native-born workers. An increase in the unemployment rate also reduces the outflow of migrants (i.e. the darker blue dotted line), although the relationship is less pronounced than the inflows (Figure 4.15, right panel). Once again, the relationship is very close to zero for the native-born population.

Figure 4.15. An increase in the unemployment rate reduces migrant inflows

Correlations between 1 percentage point (pp) change in the regional unemployment rate and in the inflow or outflow rates, 2003-17, a select sample of European countries, TL2 regions

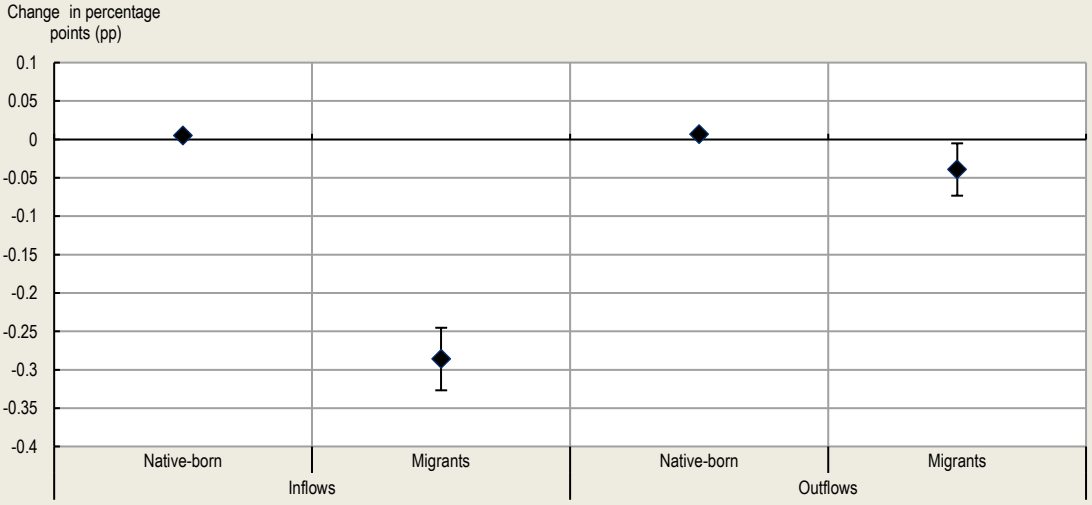


Note: The figures plot the raw correlations between two flow margins (inflow and outflow rates, separated for migrants and native-born population) and the region's unemployment rates (defined as the share of unemployed workers over the active labour force), which is a proxy for economic conditions in the region. The inflow rate to region r at time t, as the number of people that live in region r at time t and were living somewhere else at time $t-1$ (within the same country or abroad), divided by the number of people that live in the region r at time t. Similarly, the outflow rate from a region r at time t is defined as the number of people that were living in region r at time $t-1$ and were living in another region (and in the same country) at time t, divided again by the number of people that live in region r at time t. Each marker corresponds to 1 of the 76 regions in a select sample of European countries. Sample of countries: Belgium, Greece, France, Portugal, Spain and Sweden.
Source: OECD calculations based on data from EU-LFS.

Mobility rates and local economic conditions affect each other, making it difficult to establish a causal relationship. As the unemployment rate and mobility rates are likely to be jointly determined (regions with a lower unemployment rate would tend to attract more workers), the correlations suffer from endogeneity issues (or reverse causality), as discussed in the previous sections. An econometric approach relying on the instrumental variable approach (using unemployment rates predicted through a shift-share similar to Bartik (1991[53])) shows that an increase in the unemployment rate in a region reduces migrant inflows to the region, while native-born inflows are not affected. On average, a 1-percentage point increase in the regional unemployment rate reduces the inflow of migrants by 0.286 percentage points, which correspond to a decrease of 12% of the inflows (left panel, first row). The magnitude is comparable to that found by Monras (2018[57]) for metropolitan areas in the US. For native-born workers, the coefficients are always equal to zero in all sub-periods.

Figure 4.16. An increase in the unemployment rate affects migrant inflows but not outflows

Estimated effect of a 1 percentage point change in the regional unemployment rate and in the inflow or outflow rates, 2003-17, a select sample of European countries, TL2 regions



Note: The figure presents the point estimates from a 2SLS estimation where the dependent variable is the change in the group-specific inflow or outflow rates, and the independent variable is the change in the unemployment rate in the region. The independent variable is instrumented using a Bartik instrument. Residuals are clustered by TL2 regions. Analysis based on 1 091 observations. Sample of countries: Belgium, Greece, France, Portugal, Spain and Sweden.
Source: OECD calculations based on data from EU-LFS.

The results show that changes in the unemployment rate do not significantly affect the outflow of migrant or native-born workers to other regions. The unresponsiveness of outflows might be the result of several factors. First, moving away from a region is costly, especially during an economic crisis. In a context of recession, the risk of unemployment and overall uncertainty affect the decision of migrating (Czaika, 2015[61]). Second, the outflows measures used in this section can only capture the outflows directed to another region within the country (i.e. internal migration).[38]

Source: Blanchard, O. and L. Katz (1992[54]), "Regional evolutions", *Brookings Papers on Economic Activity*, No. 23(1), Economic Studies Program, The Brookings Institution; Bartik, T. (1991[53]), "Who benefits from state and local economic development policies?"; Basso, G., F. D'Amuri and G. Peri (2019[58]), "Immigrants, labor market dynamics and adjustment to shocks in the Euro Area", *IMF Economic Review*, Vol. 67/3, pp. 528-572; Basso, G. and G. Peri (2020[55]), "Internal mobility: The greater responsiveness of foreign-born to economic conditions", *Journal of Economic Perspectives*, Vol. 34/3, pp. 77-98; Cadena, B. and B. Kovak (2016[56]), "Immigrants equilibrate local labor markets: Evidence from the Great Recession", *American Economic Journal: Applied Economics*, Vol. 8/1, pp. 257-90; Czaika, M. (2015[61]), "Migration and economic prospects", *Journal of Ethnic and Migration Studies*, Vol. 41/1, pp. 58-82; Gálvez Iniesta, I. (2019[59]), *The Role of Immigration in a Deep Recession: The Case of Spain*; Prieto-Rosas, V., J. Recaño and D. Quintero-Lesmes (2018[62]), "Migration responses of immigrants in Spain during the Great Recession", *Demographic Research*, Vol. 38, pp. 1885-1932; Monras, J. (2018[57]), "Economic shocks and internal migration"; Özgüzel, C. (2021[60]), "The cushioning effect of immigrant mobility", *CESifo Working Paper Series*.

Conclusion

This chapter presented evidence on the contribution of migrants to the economic development of their host region. Using microdata and state-of-the-art econometric tools, the analysis in this chapter presented novel evidence on the contribution of migrants at the subnational level and from a multi-country perspective. As such, the chapter aims to expand and nuance the understanding of the subnational effects of migrants on regional income, innovation, trade and labour markets.

This chapter shows that migrants contribute to the regional economy in different ways and through different mechanisms that change across space and characteristics of regions as well as the level of education of the regional labour force. While most studies measure the average effect of migration in the whole national economy, the results in this chapter show the need for a more nuanced look as the effects can be highly uneven across regions. Similarly, while migration may affect the overall economy, their effects may be more concentrated on certain groups (e.g. high school or less-educated native-born workers). These findings can help design effective policies to spread the benefits of migration to all places.

While this chapter contributes to the evidence base on migration's contribution to regional development, currently limited data availability leaves scope for future research. Such work could examine how the local industrial structure affects regions' capacity to absorb new migrants and make use of their skills. Furthermore, understanding how migration affects local wages, in particular that of the native-born labour force, could complement the presented evidence on the impact of migration on regional labour markets. Detailed regional data on the sectors where new migrants work could shed further light on how migration might help alleviate labour shortages for specific occupations. Finally, future analysis could try to examine how the contribution of migration to regional development may depend on the specific country of origin or the length of stay of migrants. With greater data availability, such analysis may help to further enrich the empirical evidence on the regional economic effects of migration and, thus, support more effective policy design.

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Notes

[1] An increase in the migrant population can also lead to a culturally more diverse population, which can be positively associated with higher income (Alesina, Harnoss and Rapoport, 2016[13]).

[2] The analysis in this section uses TL2 level regional data from 41 countries for the period 2006-19. The countries include Austria, Australia, Belgium, Bulgaria, Canada, Chile, Colombia, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, Greece, Germany, Hungary, Iceland, Ireland, Israel, Italy, Korea, Lithuania, Luxembourg, Latvia, Malta, Mexico, the Netherlands, Norway, Poland, Portugal, Romania, Slovenia, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the UK and the US. The analysis using instrumental variables rely on a reduced set of countries due to data availability.

[3] Each column corresponds to the point estimate and the error bars correspond to the standard errors, which indicates that the precise magnitude can be somewhere within the range. All regressions include country fixed effects to account for any country characteristics that is time-invariant and would affect the estimated relationship. The results can also be affected by some factors that have affected all countries at the same time (e.g. a global financial crisis). Introducing year fixed effects addresses this concern and makes it possible to compare the relationship using data from many years.

[4] Using annual migration flows would be a better measure for estimating the effects of migrant inflows. However, such data do not exist at the subnational level. Consequently, the analysis in this chapter uses the standard approach in the economic literature of using annual changes in the number of migrants. In addition to data availability, using the number of migrants is more precise in terms of measurement. Furthermore, the inclusion of region fixed effects allows capturing the impact of the change in the share of migrant between two periods.

[5] In the final section of this chapter focusing on the labour market effects of migration, the specific measure used to capture the presence of migrants differs slightly. As explained in further detail in the section (or in Edo and Özgüzel (forthcoming[7])), the independent variable measures the increase in the local labour supply induced by migration.

[6] Using a base year further in the past is important for two reasons. First, it increases the likelihood that the unobserved factors that determined the location choice of migrants in the base year are less likely to be shaping the settlement patterns in the period of analysis. Second, past migrant waves could spark labour market dynamics. If the time between the base year and the period of analysis is too narrow, medium- or long-term dynamics induced by past immigration, such as capital adjustment, may affect current labour market outcomes.

[7] The analysis uses GDP per capita data (deflated in 2010 prices) collected from OECD Regional Database. Using regional deflated GDP per capita is impossible as such data are unavailable for 41 countries and 13 years (2006-2019) in the sample. However, using country or regional fixed effects should partially alleviate these concerns. For example, the use of country fixed effects ensures that the regions

located within the same country are compared in the estimation. Similarly, by using the regional fixed-effects, the estimates capture the change in the regional GDP per capita between two periods.

[8] To make estimates comparable, all regressions account for skill composition of native-born and migrant workers, total population size, calendar effects that have affected all of the regions in the sample similarly in a given year and region characteristics that are fixed over time. It is also important to note that the regional fixed effects account for all region-specific factors that are stable over time. As such, the estimated relationship indicates the change in GDP driven by an increase in the migrant share of the region net of region-specific factors.

[9] Countries that joined the EU after 2007 have low shares of immigrants, which can create imprecision in the estimated magnitude. The estimated magnitudes should be considered with caution.

[10] Migrants' contribution to local income may be larger in New Member countries than in EU15 countries for two reasons. First, it is possible that migrants are able to contribute more in regions (or countries) when the income levels are lower or the local economy is less advanced. In fact, country-level evidence shows that migrants boost income per capita and productivity in middle-income countries rather than in high-income countries (Alesina, Harnoss and Rapoport, 2016[13]; Bahar, Rapoport and Turati, 2020[14]). Second, it is also possible that the returns to an increase in the share of migrants might be decreasing. In other words, the added benefit of an increase in migrant share on local income might be larger when the migrant share is lower. As regions that have higher levels of income also have higher share of migrants, it is hard to disentangle these two factors and determine which factor is driving the differences in the estimates.

[11] Most of the literature on innovation and immigration corresponds to micro-analyses, which mostly have as focal point the US, where the positive contribution of foreign-born workers with a university education or above and foreign graduate students to patenting activities has been highlighted (Hunt and Gauthier-Loiselle, 2010[63]; Stephan and Levin, 2001[64]; Kerr, 2008[41]). Some papers use data across regions to examine the question in the context of single European countries, such as Niebuhr (2010[65]) for Germany, Bratti and Conti (2014[66]) for Italy and Nathan (2015[67]) for the UK.

[12] The findings presented in this section are based on Guichard, Özgüzel and Kleine-Rueschkamp (forthcoming[68]) who use municipality level data from 21 countries for the period 1990-2014. Countries include Australia, Austria, Belgium, Denmark, Finland, France, Germany, Italy, Ireland, Japan, Korea, Luxembourg, Mexico, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the UK and the US. Please see the paper for further technical details and more results.

[13] Innovation comes in different forms that are only imperfectly captured by patenting activity. There could be innovations in business models or use of technology which the analysis does not capture.

[14] The findings of this chapter extend the existing knowledge and understanding of the topic in three ways. First, the analysis goes beyond the available evidence with respect to both the spatial granularity and time coverage due to the use of highly detailed geographical information that allows examining whether migrants contribute to local innovation across 17 countries over 25 years. Second, the analysis exploits the richness and granularity of the data by applying an econometric framework that relies on a restrictive set of fixed effects to capture the influence exerted by potential confounding factors. Third, the analysis shows that results are heterogeneous across urbanisation levels or characteristics of the local economy, aspects that would not be captured with less granular data.

[15] Total sample of municipalities are divided into four equal groups in terms of number of observations based on the patents per capita. The first group corresponds to municipalities with and less than

0.76 patents per 10 000 inhabitants. Similarly, Group 2 includes municipalities with more than 0.76 patents per 10 000 and less than 1.69. Group 3 includes municipalities between 1.69 and 3.52 patents per 10 000 inhabitants and Group 4 includes those with more than 3.52.

[16] As migrants locate to richer areas, one might suspect the positive relationship between migrants and innovation to be driven other confounding factors. To account for any possible factors that could drive the positive correlation, it is possible to include the logarithm of GDP at the municipality level in the regressions as a control variable. The results remain virtually unchanged.

[17] While not presented, the positive relationship is remarkably stable across the different countries of the sample suggesting that the results are not driven by specific countries. Moreover, the effects hold across alternative specifications accounting for a set of fixed effects that reduces significantly potential biases due to confounding factors.

[18] The degree of urbanisation definition acknowledges the urban-rural continuum and proposes three classes of settlements instead of the traditional urban vs. rural dichotomy. The three classes are: i) cities (or densely populated areas); ii) towns and semi-dense areas (or intermediate density areas); and iii) rural areas (or thinly populated areas).

[19] Municipalities are grouped by the degree of urbanisation using two alternative definitions to ensure that the estimated effects are not driven by choice of definition. For more details on the definitions, please see Guichard, Özgüzel and Kleine-Rueschkamp (forthcoming[68])

[20] The analysis uses a novel dataset that measures trade flows for European TL2 regions prepared by Thissen et al. (2019[32]).[20] This unique dataset covers trade flows at the sectoral level between 267 TL2 regions across the 21 European countries and the rest of the world in 2013.

[21] The findings presented in this section are based on Monastryenko and Özgüzel (forthcoming[69]) who use TL2 level regional data from 21 European countries for the year 2013. Countries include Belgium, Bulgaria, Croatia, the Czech Republic, Denmark, Estonia, France, Greece, Hungary, Ireland, Lithuania, Luxembourg, Latvia, Malta, Poland, Portugal, Romania, the Slovak Republic, Slovenia, Spain and Sweden. Please see the paper for further technical details and more results.

[22] The analysis pools together migrants from all origins when calculating the regional number of migrants. It is possible that one might worry that the observed differences between EU and non-EU destinations are driven by the fact that non-EU migrants constitute a larger share of the total number of migrants and leading to larger magnitudes. To alleviate this concern, Monastryenko and Özgüzel (forthcoming[69]) also estimate these regressions splitting the number of migrants into EU and non-EU. The results remain unchanged.

[23] The findings presented in this section are based on Edo and Özgüzel (forthcoming[7]) who use TL2 level regional data from 13 Western European countries for the period 2010-19. Countries include Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Norway, Portugal, Spain, Switzerland and the UK. Please see the paper for further technical details, more results and additional robustness tests.

[24] The dependent variable is the logarithm of the employment rate to the native-born population in region r at time t (i.e. the logarithm of employed native-born over the native-born population). The use of the native-born population in the denominator ensures that native-born residents who are in the labour force (employed or unemployed) and also those in inactivity are captured.

[25] The analysis defines the change in the labour supply in a region driven by immigration by $\log(1 + \mathrm{M_{rt}}/\mathrm{N_{rt}})$, where $\mathrm{M_{rt}}$ and $\mathrm{N_{rt}}$ are the respective number of migrants and native-born residents in the labour

force in region r at time t. Also used in Bratsberg and Raaum (2012[70]) or Borjas and Edo (2021[71]), this algebraic definition is derived from simple labour demand theory (Borjas, 2003[52]), facilitates the interpretation of the estimates and avoids any undefined observations due to zeros in the data. The conclusions of this analysis are robust to using (M_{rt}/N_{rt}) as an alternative measure of sudden regional supply changes or the use of total population in the denominator $(M_{rt}/M_{rt}+N_{rt})$. For further discussion on the robustness of the results please see Edo and Özgüzel (forthcoming[7]).

[26] The analysis in this section measures the labour market effects of migrants as an average of all sectors. However, as some sectors rely more on migrant labour than others, the sector-level labour market effects may also vary.

[27] The most basic economic models assume that the stock of capital in the economy is fixed in the short run. Hence, a migration-induced increase in labour supply reduces the level of physical capital per worker and negatively affects labour productivity, lowering the wages (Borjas, 2003[52]). At this lower wage, fewer native-born workers will be willing to work and their employment level should decline.

[28] Given the lack of empirical evidence on how the labour market adjusts over time to such changes in the labour supply, this analysis aims to fill this gap by examining how employment adjusts following an increase in the migrant population in the European context.

[29] A higher reduction in the earnings of high school or less-educated native-born workers due to immigration as compared to native-born workers with university education and above is documented in many studies (Borjas, 2003[52]; Dustmann, Schönberg and Stuhler, 2017[51]). While the reasons behind these uneven effects might be complex, an important element driving the difference is that substitution is likely to be easier for high school or less-educated workers as these workers are more interchangeable and training costs are lower than for skilled workers. An additional set of studies even show that native-born workers with university education and above could gain from low- and high-skilled immigration (Peri, Shih and Sparber, 2015[50]).

[30] The estimated elasticity captures the percentage change in the employment rate due to a 1% increase in the labour supply driven by immigration. For example, labour supply in Île-de-France (containing Paris) is around 5.5 million people. If immigration increases the labour supply by 1% (i.e. corresponding to an inflow of 56 000 migrants), the native-born employment rate would decrease by 0.45% (i.e. decreasing from 81% to 80.7%).

[31] Beyond the changes in the native-born employment rate, it is possible to calculate the number of native-born residents who are affected by an increase in the migrant labour supply. The analysis in this chapter indicates a displacement rate of approximately 0.3 to 0.4. The estimate from Column 3 in Panel A of Figure 4.12 translates into a short-term displacement rate of 0.45. Annex Figure 4.A.1, which estimates the relationship directly using the native-born employment rate (and not its logarithm) as the dependent variable and the ratio of migrant to native-born workers in the labour force as an explanatory variable corresponds to a short-run displacement rate of 0.16. In real terms, these magnitudes indicate that ten additional migrants in the local labour force reduce the number of employed native-born in the local market by roughly three to four in the short run and but have no effect in the long run.

[32] These headline estimates correspond to the average effect of a 1% increase in the labour supply due to migration across regions regardless of the size of the migrant community. However, the marginal effect of a 1% increase in the labour supply may differ depending on the share of migrants in the local labour market. In fact, the impact of an increase of migration on native employment is larger in regions with a higher share of migrants.

[33] This estimate comes from a complementary estimation using a specification where both the dependent and independent variables are in levels rather than in logarithmic form. More information are provided in Annex 4.A.

[34] Another possible explanation is that native-born internal migration across regions (within countries) spread the economic impact of immigration to other local labour markets, thereby dissipating the sudden shift through national economies. To neutralise the impact of these multi-regional adjustments, it is possible to estimate the impact of immigration on the native-born employment rate at the country level (i.e. exploiting multi-country variations instead of regional variations). As shown in Edo and Özgüzel (forthcoming[7]), even at the country level, the short-run estimated effect from annual variations is half the size of the ten-year changes, which confirms that the immediate impact of migration on employment is stronger than in the longer-run.

[35] The positive effect on the employment rate of the high-skilled native-born workers suggests that migrants are complementary to native-born, especially those with higher levels of education. If migrant and native-born workers are found to be imperfect substitutes, then they would complement one another and raise average wages (Ottaviano and Peri, 2012[73]; D'Amuri and Peri, 2014[48]; Brücker et al., 2014[72]). Given that this complementarity is more likely to happen between workers with higher levels of education, it could also explain part of the effect (Dustmann, Frattini and Preston, 2013[74]).

[36] These results also hold when regions are grouped relative to their GDP growth during the period. This indicates that the regions with higher initial GDP were also those who experienced the strongest growth during the period.

[37] The analysis in this section evaluates the labour market effects of migrants on the overall economy. However, changes in the labour supply due to migration may affect sectors differently depending on the reliance of these sectors to migrant labour. For instance, migrants may play a crucial role in addressing labour shortages in certain sectors (e.g. agriculture workers or truck drivers). The lack of sufficient migrant labour in such sectors could cause disruptions to the sector which can negatively affect the overall economy (e.g. delays in the national production, supply issues for firms or higher prices for goods).

[38] A key limitation to using such microdata is that they can only capture outflows to other regions within the country. Several papers documented that an important fraction of migrant outflows during the crisis were outflows abroad (for Spain, see Özgüzel, 2021[60]; or Prieto-Rosas, Recaño and Quintero-Lesmes, 2018[62]). As such, the null effects for the outflow rate could be driven by this undercounting.

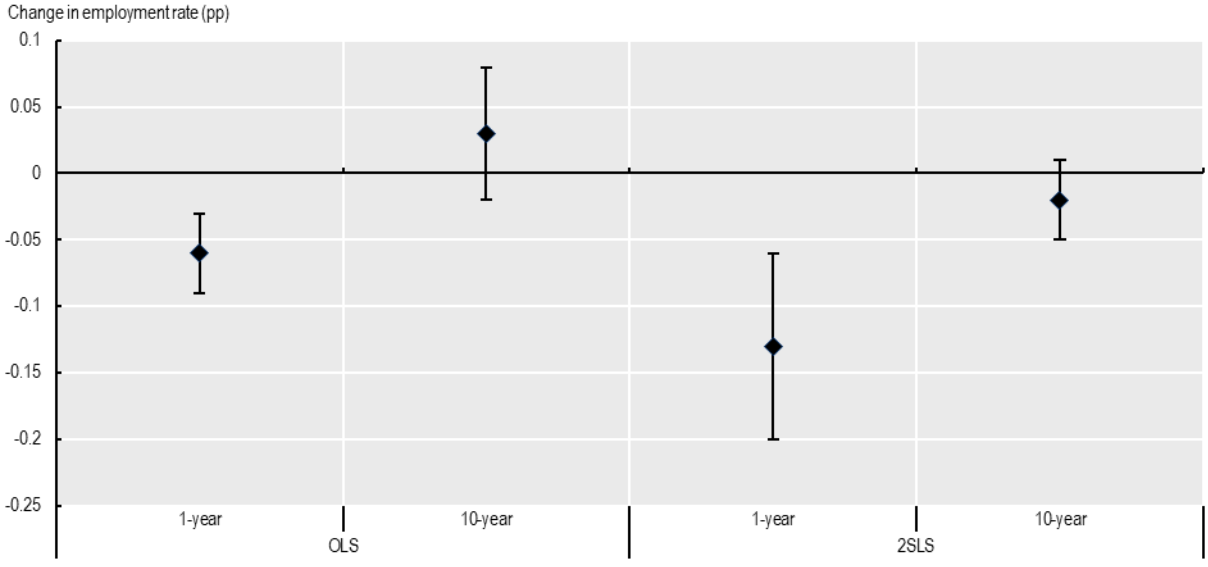
Annex 4.A. Additional results without logarithmic transformation

The benchmark specification uses the logarithm of the employment rate as the dependent variable, and $log(1 + M_{rt}/ N_{rt})$ to measure the regional migrant supply shock. Annex Figure 4.A.1 uses directly the employment rate and the ratio of migrants to natives (M_{rt}/ N_{rt}) instead of using a logarithm transformation. Therefore, it shows how the employment rate of the native-born workers in a region reacts to an increase in the ratio of migrants to native-born.

Considering the average labour market conditions in the sample for 2010. The average employment rate of native-borns throughout the sample is 72.8%, the unemployment rate 6.4%, and the inactivity rate 20.8%. The estimate of the effect of an 1 percentage point increase in the ratio of migrants to native-born on the native-born employment rate reduces the emplomeyment rate of natives by -0.13 percentage points in the short-run (Column 3). Combining the average labour market numbers and the estimate yields that the arrival of 10 migrants in the labour market reduces the number of employed native-borns in the short run by less than 2 (1.6). The displacement effect is calculated by multiplying the estimate and the ratio of the native population to the native labour force. In the long run, this effect is much more modest and insignificant (-0.02, Column 4).

This level-level specification shows that the previous conclusions are not sensitive to the log-log specification and allows to better quantify the short-run crowd out effect due to migration.

Annex Figure 4.A.1. Effect of an increase in the ratio of migrants to native-born on the native-born employment rate



Note: Presents OLS and 2SLS estimates for the impact of a 1 percentage point increase in the ratio of migrants to native-born on the employment rate of native-born workers, annually and over a 10-year period. 2SLS estimations use the predicted increase in the labour supply due to migration (i.e. shift-share) as the instrument. Residuals are clustered by TL2 regions. The sample includes the following countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Norway, Portugal, Spain, Switzerland and the UK.
Source: OECD calculations based on data from European Labour Force Survey and national censuses obtained from IPUMS (accessed December 2020). See Box 4.2 for further details.

OECD Regional Development Studies

The Contribution of Migration to Regional Development

With many regions in OECD countries facing declining working age populations, the geographical dimension of migration has become crucial for regional development. Where migrants settle within countries and how much they contribute to the local economies are important questions for policy makers. This report aims to address these questions using two novel datasets that offer internationally comparable information on migration and migrants' labour market integration across cities, towns and rural areas in OECD countries. The report also analyses different dimensions of regional development and provides new evidence on how migrants contribute to regional income, innovation, international trade and labour markets.

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