

Eurostat regional yearbook

2020 edition



**Eurostat regional
yearbook**

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Printed by Imprimerie Bietlot in Belgium

Manuscript completed in July 2020

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Luxembourg: Publications Office of the European Union, 2020

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Theme: General and regional statistics

Collection: Statistical books

Print: ISBN 978-92-76-20729-0
ISSN 1830-9674
doi:10.2785/764915
Cat. No: KS-HA-20-001-EN-C

PDF: ISBN 978-92-76-20728-3
ISSN 2363-1716
doi:10.2785/98733
Cat. No: KS-HA-20-001-EN-N

Foreword

The *Eurostat regional yearbook* provides statistics on the economy and people in the regions of the European Union (EU). National figures alone cannot reveal the full and sometimes complex picture of what is happening at a more detailed level within the EU.

The outbreak of the COVID-19 pandemic at the beginning of 2020 has changed the EU and the world profoundly and it may have lasting effects on a wide range of social, economic and environmental issues in the years to come.

These effects are not yet visible in the 2020 edition of this publication, since all statistical results refer to earlier reference years, but the pandemic has already led to an increased demand for more subnational data to support statistical analysis at regional and local level.

This year, we are pleased to present two new chapters in the publication: one on living conditions, based on data from the EU-SILC survey that can be used to analyse progress with respect to [the European Pillar of Social Rights](#); the other on the environment and natural resources, drawing on a broad range of data that can be used to assess developments in relation to [the European Green Deal](#).

We are also introducing a new product *Regions in Europe — statistics visualised*, which is a digital publication that presents a range of innovative data visualisations to help users explore key socioeconomic indicators at regional level. This publication will be released in conjunction with the [18th European week of regions and cities](#).

The *Eurostat regional yearbook* is based on the most recent data available, usually for 2018 or 2019. The analyses presented are supported by a range of maps, figures and infographics which are designed to highlight regional variations.

The publication is available online in [Statistics Explained](#) on Eurostat's website. The latest figures can be downloaded from [Eurostat's database](#), where more disaggregated (and fresher) data may be found.

I hope that you enjoy exploring the regions of the European Union!



A handwritten signature in blue ink, appearing to read 'M. Kotzeva'.

Mariana Kotzeva

Director-General, Eurostat

Abstract

Statistical information is an important tool for understanding and quantifying the impact of political decisions in a specific territory or region. The Eurostat regional yearbook 2020 provides a detailed picture relating to a broad range of statistical topics across the regions of the EU Member States, as well as the regions of the United Kingdom, the EFTA and candidate countries.

Each chapter presents statistical information in the form of maps, figures and infographics, accompanied by a descriptive analysis highlighting the main findings. Regional indicators are presented for the following 13 subjects: population, health, education, the labour market, living conditions, the economy, business, research and innovation, the digital society, tourism, transport, the environment and agriculture.

Chief editor

Mariana Kotzeva

Editors

Teodóra Brandmüller and Åsa Önnersfors
(Eurostat, Unit E.4., Regional statistics and geographical information)

Production

Informa S.à r.l. — Giovanni Albertone, Simon Allen and Andrew Redpath

Map production

Jorge Calvo, Michael Harrop, Åsa Önnersfors, Jørgen Rasmussen and Hannes Reuter
(Eurostat, Unit E.4., Regional statistics and geographical information)

Dissemination

Catherine Coyette and Annika Johansson
(Eurostat, Unit B.4., Dissemination and user support)

For more information/contact details

Eurostat
Bâtiment Joseph Bech
5, rue Alphonse Weicker
2721 Luxembourg
LUXEMBOURG
Internet: <https://ec.europa.eu/eurostat/>
E-mail: estat-user-support@ec.europa.eu

Data extraction

The data presented within this publication were extracted during March and April 2020. The manuscript was completed in July 2020.

An online data code available under each map/table/figure can be used to directly access the most recent data on Eurostat's website.

All statements on policies within this publication are given for information purposes only. They do not constitute an official policy position of the European Commission and are not legally binding. To know more about such policies, please consult the European Commission's website at: <https://ec.europa.eu>

Acknowledgements

Coordination group: Timothy Allen, Louise Corselli-Nordblad, Helene Strandell, Susanne Taillemite and Pascal Wolff (Eurostat, Unit B.4., Dissemination and user support), Teodóra Brandmüller, Åsa Önnersfors, Petronela Reinecke and Ruxandra Roman-Enescu (Eurostat, Unit E.4., Regional statistics and geographical information) and Andrew Redpath (Informa s.à r.l.)

We would like to thank all colleagues involved in the editorial work of each chapter:

- **Introduction:** Teodóra Brandmüller and Oliver Müller (Eurostat, Unit E.4., Regional statistics and geographical information)
- **Population:** Petronela Reinecke (Eurostat, Unit E.4., Regional statistics and geographical information); Silvia Andueza Robustillo, Veronica Corsini, Giampaolo Lanzieri, Monica Marcu and Gabriela Senchea Badea (Eurostat, Unit F.2., Population and migration)
- **Health:** Ilze Burkevica, Ángeles Hermosa López and Christopher Jung (Eurostat, Unit F.5., Education, health and social protection); Lucian Agafitei, Emilio di Meglio and Barbara Moench (Eurostat, Unit F.4., Income and living conditions; Quality of life)
- **Education:** Alessandro Albano, Eric Gere and Małgorzata Stadnik (Eurostat, Unit F.5., Education, health and social protection); Elodie Cayotte, Sabine Gagel and Fabienne Montaigne (Eurostat, Unit F.3., Labour market and lifelong learning)
- **Labour market:** Daniela Sciranková (Eurostat, Unit E.4., Regional statistics and geographical information); Dilyan Atanasov, Fabienne Montaigne and Hartmut Schrör (Eurostat, Unit F.3., Labour market and lifelong learning)
- **Living conditions:** Emilio di Meglio and Barbara Moench (Eurostat, Unit F.4., Income and living conditions; Quality of life)
- **Economy:** Luis Biedma, Panagiota Bisiela and Gaetana Montana (Eurostat, Unit C.2., National accounts production)
- **Business:** Tatiana Mrlianova, Claudia Pelzer, Samuli Rikama and Sarmite Visocka (Eurostat, Unit G.2., European businesses)
- **Research and innovation:** Valdas Ambraziūnas, Urška Arsenjuk and Gregor Kyi (Eurostat, Unit G.4., Innovation and digitalisation)
- **Digital society:** Michaela Grell, Bettina Obringer and Jadwiga Tudek (Eurostat, Unit G.4., Innovation and digitalisation)
- **Tourism:** Christophe Demunter, Krista Dimitrakopoulou and Renata Lewczuk (Eurostat, Unit G.2., European businesses)
- **Transport:** Evangelia Ford-Alexandraki and Emilia Iscru (Eurostat, Unit E.3., Transport)
- **Environment:** Arturo de la Fuente Nuño and Ekkehard Petri (Eurostat, Unit E.2., Environmental statistics and accounts; Sustainable development); Teodóra Brandmüller and Alessandra Palmieri (Eurostat, Unit E.4., Regional statistics and geographical information), Bavo Peeters (Directorate-General for Environment, Unit D.1., Land Use & Management), Barbara Bacigalupi (Directorate-General for Environment, Unit F.1., Sustainable Development Goals Green Finance and Economic Analysis), Arwyn Jones, Panos Panagos, Emanuele Lugato and Cristiano Ballabio (Joint Research Centre, Unit D.3., Land Resources), Alberto González Ortiz, Carsten Iversen, Artur Gsell and Eva Ivits (European Environment Agency)
- **Agriculture:** Ebba Barany, Edward Cook, Oscar Gomez Prieto, Michel Henrard, Marjo Kasanko, Jose Domingo Martinez Solano, Pol Marquer, Helena Ramos and Johan Selenius (Eurostat, Unit E.1., Agriculture and fisheries)

We are also very grateful to:

- the [Publications Office of the European Union](#), and in particular Claudia Daman and Daiva de Kort-Paplauskaitė, Unit B.2., Publications

Contents

Foreword	3
Abstract	4
Acknowledgements	5
Introduction	7
1. Population	21
2. Health	37
3. Education	51
4. Labour market	65
5. Living conditions	79
6. Economy	91
7. Business	103
8. Research and innovation	117
9. Digital society	131
10. Tourism	143
11. Transport	155
12. Environment	167
13. Agriculture	179

Introduction





[Eurostat](#), the statistical office of the [European Union \(EU\)](#), collects, compiles and publishes statistics for the [EU](#) and [euro area](#), as well as national, regional and other subnational data, primarily for the Member States of the EU, but also for the United Kingdom, [EFTA](#) and [candidate countries](#).

The *Eurostat regional yearbook* aims to provide a taste of the wide selection of European statistics that are collected for [regions and other subnational classifications](#) across a broad range of subjects.

The outbreak of the COVID-19 pandemic at the beginning of 2020 has changed Europe and the world profoundly and it may have lasting effects on a wide range of social, economic and environmental issues in the years to come. As Europe emerges from lockdown, there remain considerable socioeconomic and climatic challenges. Although the impact of the pandemic is not yet visible in the 2020 edition of the *Eurostat regional yearbook* — since all statistical results refer to earlier reference years — it has already lead to an increased demand for more subnational data to support statistical analysis at regional and local level.

European statistics

SUBNATIONAL STATISTICS

EU Member States are often compared with each other, but in reality it can be difficult to compare a small country like Malta, which had 494 000 inhabitants on 1 January 2019, or Luxembourg, which had 614 000 inhabitants, with larger Member States, such as Germany, the most populous EU Member State, where there were 83 million inhabitants. Furthermore, there are considerable differences between Member States as regards their territorial make-up: for example, Ireland, Sweden and Finland are very rural, whereas the [Benelux](#) Member States and Malta are characterised by much higher levels of urbanisation. Equally, within individual Member States there can be great diversity: for example, the densely-populated, urbanised areas of Nordrhein-Westfalen in the west of Germany may be contrasted with the sparsely-populated, largely rural areas of Mecklenburg-Vorpommern in the north-east of Germany.

Therefore, analysing data at a regional or subnational level is often more meaningful and such an analysis may also highlight disparities within countries, such as an east-west divide in Germany or a north-south divide in Italy. Furthermore, such analyses may reveal differences in patterns of economic development. For example, Germany and Poland have polycentric patterns of (economic) development with several relatively large cities spread across their territory, whereas France and

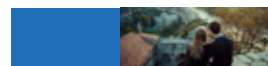
Romania are examples of a more monocentric pattern of development, with their activity more concentrated in and around their respective capitals.

Over the past few years, Eurostat has expanded the range of statistics that it provides beyond regional information to cover other territorial typologies, addressing the growing needs of policymakers within the context of cohesion and territorial developments. These changes are based on harmonising and integrating various typologies under two broad headings: those linked to regional statistics and those linked to statistics for [local administrative units \(LAU or municipalities\)](#). With this in mind, a process of legislative consolidation was accomplished by [Regulation \(EU\) 2017/2391](#) as regards the territorial typologies (Tercet). Some of the most commonly used regional typologies include [urban-rural regions](#), [metropolitan regions](#), border regions, [coastal, island and outermost regions](#) and mountain regions. Typologies based on statistics at a local level include data by [degree of urbanisation](#) or data for [cities and functional urban areas \(FUAs\)](#).

STATISTICS ON REGIONS — THE NUTS CLASSIFICATION

At the heart of regional statistics is the [NUTS](#) classification — a classification of territorial units for statistics. This regional classification for EU Member States is based on a hierarchy of regions and subdivides each Member State into regions that are classified according to three different levels, covering NUTS levels 1, 2 and 3 from larger to smaller areas. Some EU Member States have a relatively small population and may therefore not be subdivided at some (or even all) of the different levels of the NUTS classification. For example, Estonia, Cyprus, Latvia, Luxembourg and Malta are each composed of a single NUTS level 2 region according to the [2016 version of the NUTS classification](#). For non-member countries covered in this publication — candidate countries and EFTA countries — the concept of 'statistical regions' is used instead of NUTS. This applies principles analogous to those used in the establishment of the NUTS classification, but is based on gentlemen's agreements between the countries concerned and Eurostat (rather than having any legislative basis). Note that Iceland, Liechtenstein, Montenegro and North Macedonia are each composed of a single level 2 statistical region. Table 1 provides an overview of the number of NUTS and statistical regions for each of the EU Member States and non-member countries that are covered in the *Eurostat regional yearbook*.

Most of the regional statistics shown in the *Eurostat regional yearbook* are for NUTS level 2 regions. However, subject to data availability, some maps and figures are shown for either NUTS level 1 regions (more aggregated geographical information) or NUTS level 3 regions (the most detailed level of regional information). These more



detailed statistics are only available for a limited selection of indicators that include demography, economic accounts, business demography and transport statistics.

There may also be specific cases (normally related to the limits of data availability) where particular regions are presented using a different NUTS level compared with the remainder of the regions in the same map or figure; these cases are documented in footnotes and are included to improve data coverage. Where little or no regional data exist for a particular EU Member State, use has been made of national data; these exceptions are again documented in footnotes.

THE NUTS REGULATION AND CLASSIFICATION

The NUTS classification is defined in [Regulation \(EC\) No 1059/2003](#) of the European Parliament and of the Council, which has to be amended by a [European Commission](#) regulation each time the classification is updated (when a new version of the NUTS is needed). The NUTS regulation specifies that there should be a minimum period of three years stability during which time the classification should not be changed; exceptions are made for the inclusion of additional regions when the accession of a new EU Member State occurs. Since 2003, the NUTS classification has been amended several times, partly due to regular amendments, partly due to the accession of new Member States or changes to the territorial boundaries of existing Member States (for example, the inclusion of data for the French region of Mayotte).

The fourth regular amendment of the NUTS classification ([Commission Regulation \(EU\) No 2016/2066](#)) was adopted in December 2016 and applies to any data transmitted to Eurostat from 1 January 2018 onwards; it is referred to as NUTS 2016. This version of NUTS is the basis for classifying regional statistics as used in the 2020 edition of the *Eurostat regional yearbook*. It should be noted that for time series, the data presented in this publication may have been collected using a previous version of NUTS, although these statistics have been recoded to NUTS 2016. As a consequence, data are sometimes not available for a small number of regions where a simple recoding or aggregation of data from previous versions of NUTS was not possible (due to changes in boundaries).

As noted above, the NUTS classification was also amended by [Regulation \(EU\) 2017/2391](#) as regards the territorial typologies (Tercet), establishing a common statistical classification of territorial units, to enable the collection, compilation and dissemination of European statistics at different territorial levels across the EU.

Table 1: Number of NUTS 2016 regions and statistical regions by country

	NUTS level 1	NUTS level 2	NUTS level 3
EU-27	92	240	1 169
Belgium	3	11	44
Bulgaria	2	6	28
Czechia	1	8	14
Denmark	1	5	11
Germany	16	38	401
Estonia	1	1	5
Ireland	1	3	8
Greece	4	13	52
Spain	7	19	59
France	14	27	101
Croatia	1	2	21
Italy	5	21	110
Cyprus	1	1	1
Latvia	1	1	6
Lithuania	1	2	10
Luxembourg	1	1	1
Hungary	3	8	20
Malta	1	1	2
Netherlands	4	12	40
Austria	3	9	35
Poland	7	17	73
Portugal	3	7	25
Romania	4	8	42
Slovenia	1	2	12
Slovakia	1	4	8
Finland	2	5	19
Sweden	3	8	21
	Level 1	Level 2	Level 3
United Kingdom	12	41	179
Iceland	1	1	2
Liechtenstein	1	1	1
Norway	1	7	19
Switzerland	1	7	26
Montenegro	1	1	1
North Macedonia	1	1	8
Albania	1	3	12
Serbia	2	4	25
Turkey	12	26	81

Source: Eurostat

THE MAIN PRINCIPLES OF THE NUTS CLASSIFICATION

Principle 1: the NUTS regulation defines minimum and maximum population thresholds for the size of individual NUTS regions (see Table 2) to ensure a basic degree of comparability. Deviations from these thresholds are only possible when particular geographical, socioeconomic, historical, cultural or environmental circumstances exist.

Principle 2: NUTS favours administrative divisions. If available, administrative structures are used for the different NUTS levels. In those EU Member States

where there is no administrative layer corresponding to a particular level of NUTS, regions are created by aggregating smaller administrative regions.

In a similar vein to the NUTS classification, regions have also been defined and agreed with the EFTA and candidate countries on a bilateral basis; these are called statistical regions and follow exactly the same rules as the NUTS regions in the EU, although they have no legal basis. Although the United Kingdom left the EU at the start of February 2020 it continues, at the time of writing, to publish regional statistics according to the NUTS classification.

Table 2: Population size constraints for NUTS 2016 regions
(number of inhabitants)

	Minimum population	Maximum population
NUTS level 1 regions	3 000 000	7 000 000
NUTS level 2 regions	800 000	3 000 000
NUTS level 3 regions	150 000	800 000

Source: Eurostat

STATISTICS BY DEGREE OF URBANISATION

The [degree of urbanisation](#) is a classification originally introduced in 1991. Initially it distinguished between densely, intermediate and thinly populated areas, using information on numbers of inhabitants, population density and the contiguity of [local administrative units \(LAUs\)](#) or municipalities.

In 2014, a new degree of urbanisation classification was introduced. This is based on three types of area, which

are defined using a criterion of geographical contiguity based on a population grid of 1 km² in combination with a minimum population threshold (see Table 3 for a summary of the spatial concepts employed). The revised classification identifies [cities](#) (densely populated areas), [towns and suburbs](#) (intermediate density areas) and [rural areas](#) (thinly populated areas); Map 1 shows the distribution for each of these across the EU, the United Kingdom and the EFTA countries. In this edition of the *Eurostat regional yearbook*, statistics by degree of urbanisation are used in the chapters on [health](#), [living conditions](#), the [digital society](#), and [tourism](#).

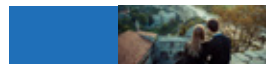
Table 3: Spatial concepts used in the degree of urbanisation

Grid cell concept	Criteria		
High density clusters (urban centres)	Population ≥ 50 000 inhabitants and contiguous grid cells of 1 km ² with ≥ 1 500 inhabitants per km ²		
Urban clusters	Population ≥ 5 000 inhabitants and contiguous grid cells of 1 km ² with ≥ 300 inhabitants per km ²		
Rural grid cells	Grid cells outside urban clusters and urban centres		

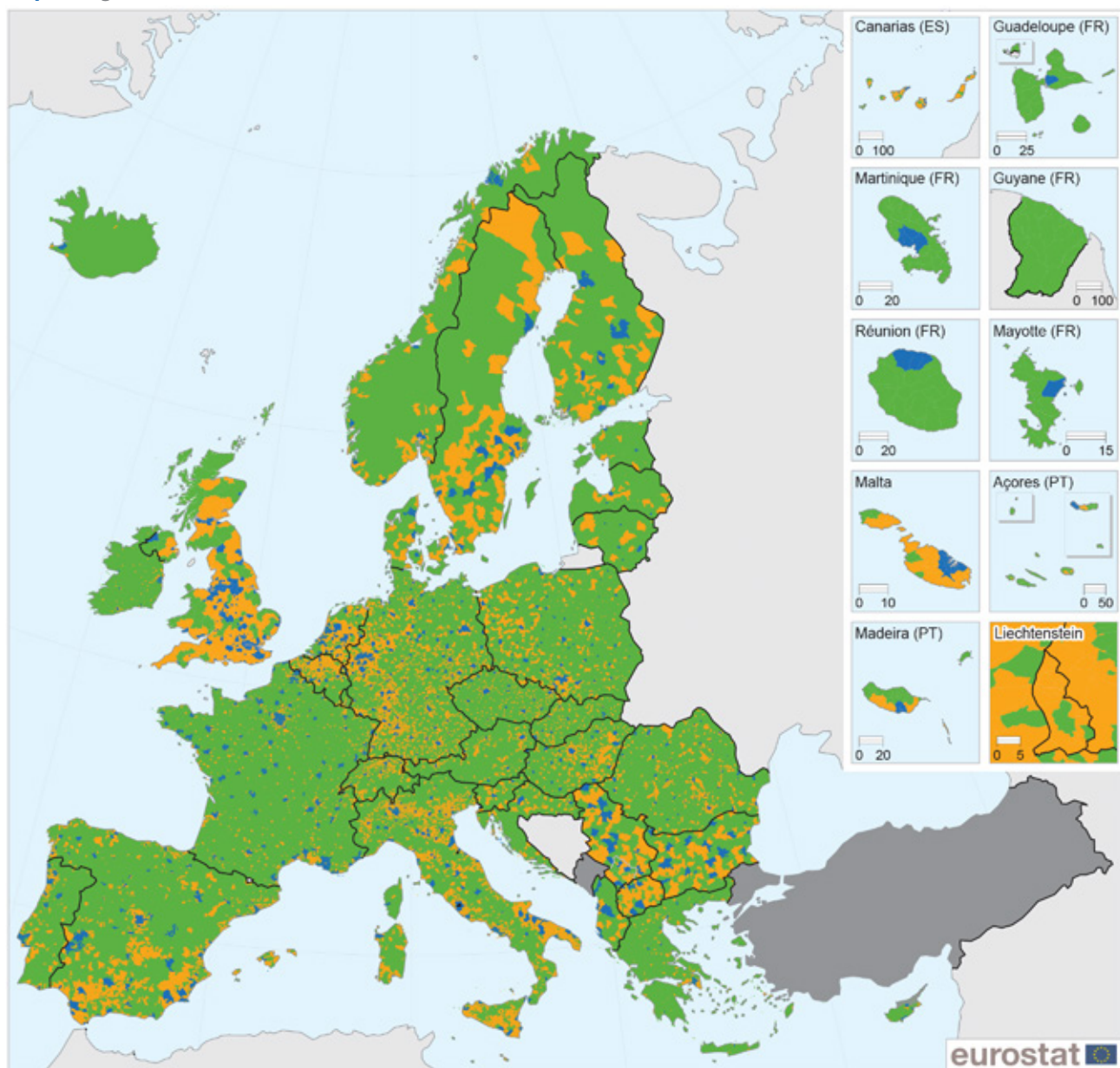
Degree of urbanisation concept	Alternative terminology	UN classification	Criteria
Cities	Densely populated areas	Large urban areas	≥ 50 % of the population lives in high-density clusters
Towns and suburbs	Intermediate urbanised areas	Small urban areas	< 50 % of the population lives in rural grid cells and < 50 % of the population lives in high-density clusters
Rural areas	Thinly populated areas	Rural areas	> 50 % of the population lives in rural grid cells

Note: the sum/average for cities may be combined with towns and suburbs and are then referred to as urban areas (in contrast to rural areas).

Source: Eurostat, the European Commission Directorate-General for Regional Policy, OECD



Map 1: Degree of urbanisation for local administrative units (LAU)



Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 04/2020

- Cities**
(Densely populated areas: at least 50 % of the population lives in urban centres)
- Towns and suburbs**
(Intermediate density areas: less than 50 % of the population lives in rural grid cells and less than 50 % of the population lives in urban centres)
- Rural areas**
(Thinly populated areas: more than 50 % of the population lives in rural grid cells)
- Data not available**

0 200 400 600 800 km

Note: based on population grid from 2011 and LAU 2018.

Source: Eurostat, JRC and the European Commission's Directorate-General for Regional and Urban Policy



The revision of the degree of urbanisation classification also provided the opportunity to streamline and harmonise a number of similar but not identical spatial concepts, for example, the use of [urban centres](#) to identify European cities with at least 50 000 inhabitants, or the aggregation of data for cities and for towns and suburbs which are covered by the common heading of [urban areas](#).

In its 51st session of March 2020 in New York, the United Nations Statistical Commission endorsed a very similar

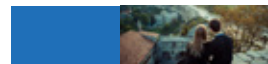
version of the degree of urbanisation for recommendation to its members. This version includes a second level of the degree of urbanisation, dividing both towns and semi-dense areas and rural areas into three additional subclasses.

As such, the United Nations version is interoperable with the EU version of the degree of urbanisation, while providing a more detailed breakdown if/when countries decide they are in a position to extend the classification to a second level (see Table 4).

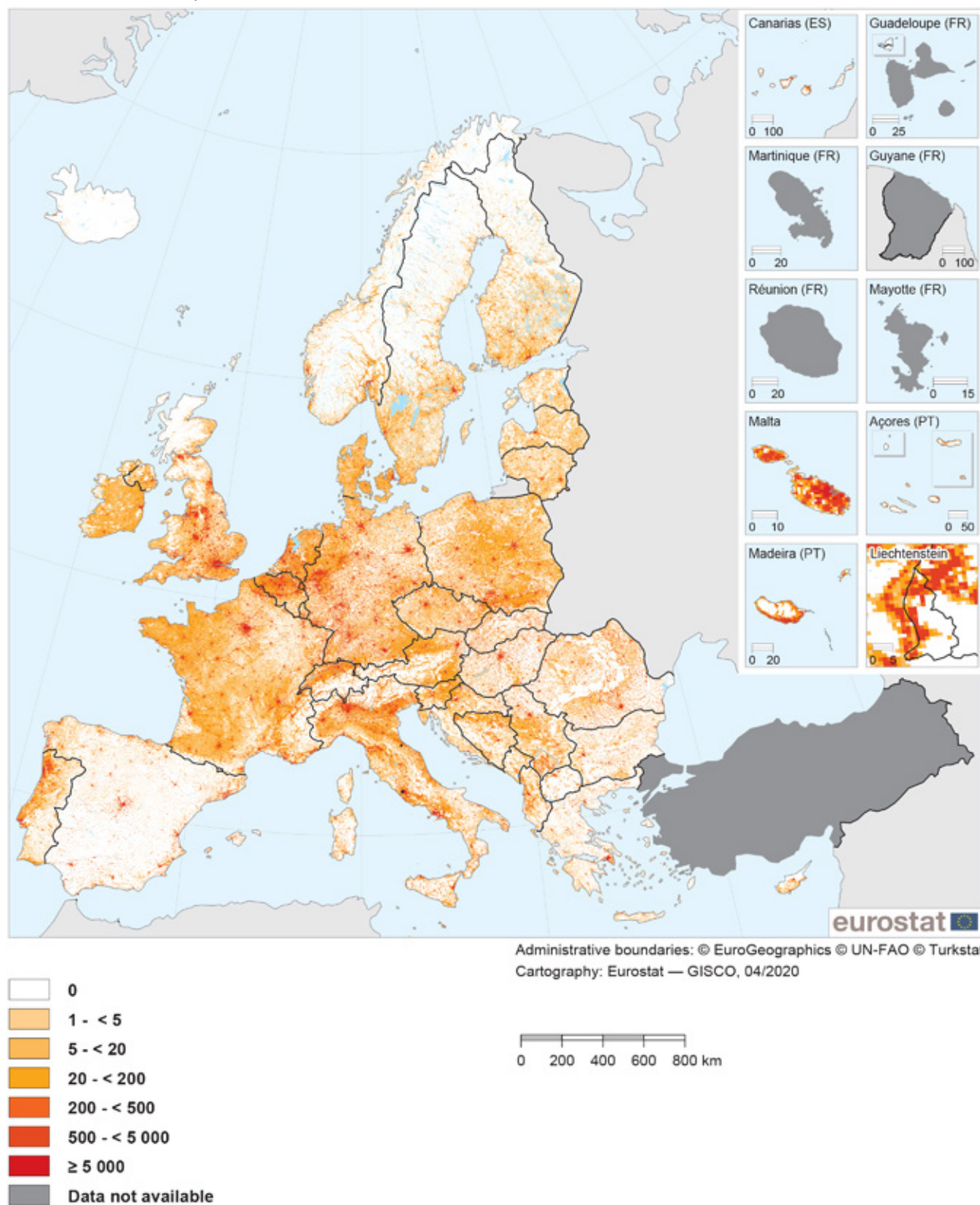
Table 4: United Nations' classification for the degree of urbanisation

Level	Local unit classification	
	Short terms	Technical terms
1	City	Densely populated area
2	City	Large settlement
1	Town & semi-dense area	Intermediate density area
2	Dense town	Dense, medium settlement
2	Semi-dense town	Semi-dense, medium settlement
2	Suburban or peri-urban area	Semi-dense area
1	Rural area	Thinly populated area
2	Village	Small settlement
2	Dispersed rural area	Low density area
2	Mostly uninhabited area	Very low density area

Source: United Nations Statistical Commission



Map 2: Population density based on the Geostat population grid, 2011
(number of inhabitants per km²)



Source: JRC, Eurostat, Geostat population grid 2011



STATISTICS ON CITIES

European cities face a variety of challenges, from poverty, crime and social exclusion, to urban sprawl, pollution and counteracting climate change. By contrast, cities also have considerable potential: for example, attracting investment, people and services, or encouraging research, creativity and innovation. Cities can therefore be seen as both the source of and solution to some of the most pressing economic, social and environmental challenges in the EU, which makes them central to the European Commission's [six key priorities for 2019-2024](#).

Cities have become more prominent in policy debates both within Europe and globally. The [Urban Agenda for the EU](#) was approved in 2016 with three pillars: better regulation, better funding, and better knowledge and data. [Cohesion policy](#) has a strong urban dimension with dedicated funding for urban development, urban innovative actions and policy exchanges between cities. The European Commission proposal for the next [multiannual financial framework for the period 2021-2027](#) (COM(2018) 321 final) has requirements for 'thematic concentration and urban earmarking'. One of five priority policy objectives is 'a Europe closer to citizens by fostering the sustainable and integrated development of urban, rural and coastal areas and local initiatives'.

In 2011 and 2012, work carried out by the European Commission's [Directorate-General for Regional and Urban Policy \(DG REGIO\)](#), Eurostat and the [OECD](#) resulted in a new harmonised definition of cities and their surrounding areas being introduced.

- A city consists of one or more LAUs where the majority of the population lives in an urban centre of at least 50 000 inhabitants.
- A greater city is an approximation of the urban centre when this stretches beyond the administrative city boundaries.
- A functional urban area consists of the city and its surrounding commuting zone.

The EU has a specific [city data collection](#) exercise undertaken by the national statistical authorities, DG REGIO and Eurostat. It provides statistics on a range of socioeconomic aspects relating to urban life in close to 800 cities that are spread across the EU; in addition, data has also been collected for cities in the United Kingdom, Norway, Switzerland and Turkey. Note there may be a considerable difference between the latest reference periods for which data are available when comparing statistics for different cities.

Eurostat's [city statistics](#) provide a wide range of information to assess the quality of urban life and living standards, supplementing regional statistics. The data collection exercise includes a wide range of variables/indicators, with statistics for: demography, housing, health, crime, the labour market, income disparities, educational qualifications, the environment, the climate, travel patterns and cultural infrastructure. Alongside this annual data collection exercise, DG REGIO requests, every three years, a perception survey concerning the quality of life in European cities. In this edition of the *Eurostat regional yearbook*, statistics on European cities are presented at the end of the chapter on [population](#).

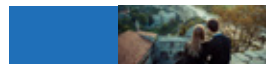


Figure 1: City and related typologies — an example for Milano



A **city** is a local administrative unit (LAU) where the majority of the population lives in an urban centre of at least 50 000 inhabitants. The city of Milano has 1 366 180 inhabitants.

A **functional urban area** consists of a city and its commuting zone. The functional urban area of Milano has 5 145 657 inhabitants.

Metropolitan regions are NUTS 3 regions or a combination of NUTS 3 regions which represent all agglomerations of at least 250 000 inhabitants. These agglomerations were identified using the functional urban area. Each agglomeration is represented by at least one NUTS 3 region. If in an adjacent NUTS 3 region more than 50 % of the population also lives within this agglomeration, it is included in the metropolitan region. The metropolitan region of Milano has 4 336 121 inhabitants.

Source: Eurostat



European policy background

European policymaking is inherently multidimensional: on the one hand, it has to encompass a broad framework providing objectives for the EU as a whole, while on the other it needs to acknowledge the often specific needs of national and subnational territories. Recent challenges such as the global financial and economic crisis, the impact of globalisation, increasing levels of income inequality, security concerns from terror attacks, or the spread of coronavirus provide just a few examples of the two-sided need to deliver both global and local solutions in a coherent manner.

One of the EU's main challenges is to ensure that policy developments are scrutinised to ensure that they take account of the considerable geographical diversity within the EU. The territorial dimension of EU policy is increasingly recognised, as growth and job creation depend on making the best use of all assets, while ensuring that common resources are used in a coordinated and sustainable way. This section provides an overview of some of the main EU policy developments that have a territorial impact.

COHESION POLICY

What is cohesion policy?

EU cohesion policy is designed to promote harmonious development within the EU by strengthening economic, social and territorial cohesion. In doing so it promotes job creation, business competitiveness, economic growth and [sustainable development](#), thereby improving the overall quality of life experienced by those living in the EU.

The bulk of cohesion policy funding is concentrated on less developed regions of the EU, with the goal of helping to reduce economic, social and territorial disparities. Cohesion policy is established on the basis of seven-year funding periods; at the time of writing one such period (2014-2020) is coming to an end. Some EUR 352 [billion](#) of cohesion policy funding was allocated during the period 2014-2020 — equivalent to almost one third of the total EU budget.

Cohesion policy is delivered through a number of specific funds: the [European regional development fund \(ERDF\)](#) and the [cohesion fund \(CF\)](#). Together with the [European social fund \(ESF\)](#), the [European agricultural fund for rural development \(EAFRD\)](#) and the [European maritime and fisheries fund \(EMFF\)](#), they make up the [European structural and investment funds \(ESIF\)](#).

The ERDF concentrates its actions on innovation and research, digital technologies, support for [small and medium-sized enterprises](#) and a low-carbon economy.

The cohesion fund supports EU Member States whose [gross national income \(GNI\)](#) per inhabitant is less than 90 % of the EU average. During the period 2014-2020, it allocated a total of EUR 63.4 billion to a range of investment projects primarily in relation to trans-European networks (TENs) and the environment. The ESF aims to improve employment and education opportunities in the EU, as well as the situation of the most vulnerable people. More than EUR 80 billion was earmarked for human capital investment across the EU Member States during the period 2014-2020.

Cohesion policy: how is the budget decided?

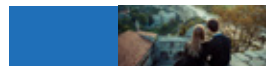
The total budget for cohesion policy and the rules associated with its allocation are jointly decided by the [Council](#) and the [European Parliament](#). The [legislative package](#) for cohesion policy for 2014-2020 was adopted on 17 December 2013. This included a [common provisions regulation \(CPR\)](#) which laid down general provisions and the simplification of European structural and investment funds. The CPR was amended in October 2015 to take account of the unique situation of Greece resulting from the global financial and economic crisis and its subsequent sovereign debt crisis.

The bulk of the budget for the EU's cohesion policy is provided to regions whose development lags behind the EU average. Indeed, more than half of the total budget for cohesion policy was given over to less developed regions that were predominantly located in the south or the east of the EU, the Baltic Member States and several outermost regions.

Cohesion policy: implementation

European structural and investment funds are attributed through a process which involves EU, national, regional and local authorities, as well as social partners and organisations from civil society. Each EU Member State produces a draft partnership agreement and draft operational programme, which provides information for their regional strategy and a list of proposals for programmes. Having negotiated the contents of these with the European Commission, national/regional managing authorities in each of the Member States then select, monitor and evaluate projects.

The rules for cohesion policy funding during the period 2014-2020 were simplified and harmonised so that the same rules are applied to all of the different funds. Procedures were adapted so they were based upon a results-orientated approach with more transparent controls, less bureaucracy, the introduction of specific preconditions before funds can be released, and the introduction of measurable targets for better accountability.



The NUTS classification — an objective basis for the allocation of cohesion policy funding

Statistics from regional accounts are used in the allocation of ESIF, with the NUTS classification providing the basis for regional boundaries and geographic eligibility.

During the period 2014-2020, eligibility for the ERDF and the ESF was calculated on the basis of regional GDP per inhabitant (in [purchasing power standards \(PPS\)](#)) averaged for the period 2007-2009. NUTS level 2 regions were ranked and split into three groups:

- less developed regions, where GDP per inhabitant was less than 75 % of the EU average;
- transition regions, where GDP per inhabitant was 75 %-90 % of the EU average; and
- more developed regions, where GDP per inhabitant was more than 90 % of the EU average.

Eligibility for the cohesion fund was initially calculated on the basis of GNI per inhabitant (in PPS) averaged over the period 2008-2010. It was subsequently revised, based on information for GNI per inhabitant averaged over the period 2012-2014. At the time of writing, the 13 Member States that joined the EU in 2004 or more recently, as well as Greece and Portugal, are all eligible for cohesion fund support.

Cohesion policy: integrated into broader policy goals

Regional policy and funding help deliver many of the EU's overall policy objectives. During the period 2014-2020, cohesion policy programming was, for the first time, embedded within overall economic policy coordination, in particular the [European semester](#). The latter provides a regular cycle of economic policy coordination designed to coordinate the individual efforts of EU Member States. These links between cohesion policy and broader economic reforms have been strengthened such that the European Commission may suspend regional funding to any Member State which does not comply with the EU's economic rules.

Cohesion policy: future plans?

At the time of writing, European institutions are in the process of discussing the delivery and implementation of cohesion policy post-2020. A range of proposals for regulations covering the period 2021-2027 are already in place and these are designed to focus resources on six principal objectives: a European green deal; an economy that works for people; a Europe fit for the digital age; promoting a European way of life; a stronger Europe in the world; and a new push for European democracy.

OTHER POLICY AREAS THAT IMPACT ON SUBNATIONAL AREAS

While the EU's regional policy can play an important role in delivering broader policy goals in a range of socioeconomic fields such as education, the labour market, energy, research and development or the

environment, other EU policy areas can, in a similar way, have an impact on regions across the EU.

Urban development policy in the EU

The various dimensions of urban life — economic, social, cultural and environmental — are closely inter-related. Successful urban developments are often based on coordinated/integrated approaches that seek to balance these dimensions through a range of policy measures such as urban renewal, increasing education opportunities, preventing crime, encouraging social inclusion or environmental protection.

During the 2014-2020 funding period, European policymakers recognised the important role that could be played by the urban dimension of regional policy, in particular measures designed to assist the fight against poverty and social exclusion. By doing so, the EU gave special emphasis to urban development, directing at least half of the resources foreseen under the ERDF to be invested in urban areas.

At the end of May 2016, a meeting of ministers responsible for urban matters was held in Amsterdam, the Netherlands. It reached an agreement on an [Urban Agenda for the EU](#), as established by the [Pact of Amsterdam](#). This agreement foresees the development of 12 priority areas for partnerships between European institutions, EU Member States, European cities and other stakeholders. The themes include: the inclusion of migrants and refugees; air quality; urban poverty; housing; the circular economy; jobs and skills in the local economy; climate adaptation; energy transition; sustainable land use; urban mobility; digital transition; public procurement.



In March 2019, the European Commission adopted an explanatory memo on [post-2020 developments in relation to the CPR, the ERDF and CF](#). The initiative is designed to strengthen integrated and participatory approaches to sustainable urban development. It aims to do so by facilitating and supporting cooperation and capacity building among urban actors, innovative actions, knowledge, policy development and communication.

Rural development policy in the EU

The EU's rural development policy is designed to help rural areas meet a wide range of economic, social and environmental challenges. The EAFRD is intended to help develop farming and rural areas by providing a competitive and innovative stimulus at the same time as seeking to protect biodiversity and the natural environment. There are six priority areas, namely, to promote: knowledge transfer and innovation in agriculture and forestry; the viability and competitiveness of all types of agriculture and support sustainable forest management; the organisation of the food production chain, animal welfare and risk management in farming; the restoration, preservation and enhancement of agricultural and forest ecosystems; the efficient use of natural resources and support the transition to a low-carbon economy; social inclusion, poverty reduction and economic development in rural areas.

For the period 2014-2020, the EAFRD was allocated EUR 99.6 billion. If national contributions are included, the funding available for this second pillar of the [common agricultural policy \(CAP\)](#) amounted to EUR 161 billion. As with other structural and investment funds, from 2014 onwards, rural development policy has been based on the development of multiannual partnership and operational programmes which are designed at a national/regional level by individual EU Member States (see above for more details).

In June 2018, the European Commission presented a set of legislative proposals for the [future of the CAP beyond 2020](#). These proposals aim to make the CAP more responsive to future challenges, such as climate change and generational renewal, while continuing

to support European farmers for a sustainable and competitive agricultural sector.

European Committee of the Regions

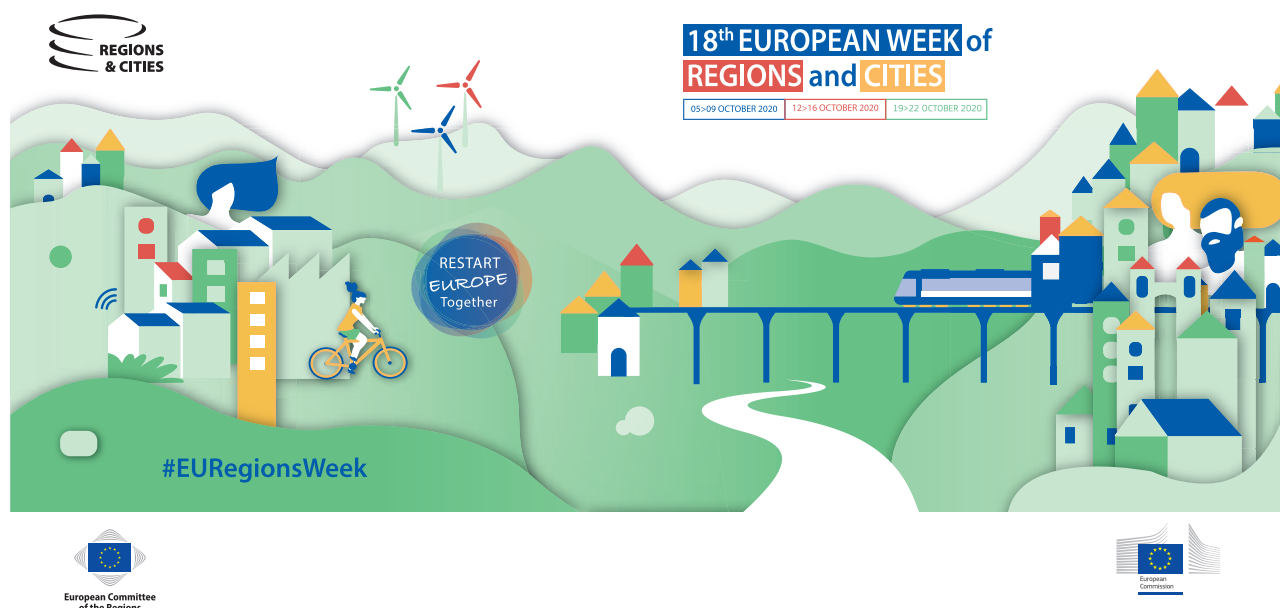
The [European Committee of the Regions \(CoR\)](#) — as the EU's assembly for regional and local representatives — provides a voice for regions and cities across the EU. It was created in 1994 and is composed of 329 members who are regional presidents, mayors or elected representatives from the 27 Member States of the EU; successive European treaties have broadened its role.

On June 26 2019, the CoR adopted a set of [proposals](#) for the next legislative mandate of the EU: strengthening the democratic foundation of the EU; improving its governance; improving the competitiveness of the EU; recalling the importance of cohesion policy as the EU's main investment and solidarity policy; calling for a long-term strategy for increased sustainability at all levels of government; developing a comprehensive EU migration policy with the same standards, driven towards integration and with clear communication of costs and benefits; putting EU values into practice in its external policies.



The [#CohesionAlliance](#) is a coalition of people who believe that the role of EU cohesion policy should be strengthened after 2020. The alliance was created through cooperation between leading European associations of cities and regions and the European Committee of the Regions.

By April 2020, more than 300 local and regional authorities, federations of local and regional authorities and civil society organisations and over 10 600 individual signatories had joined the #CohesionAlliance. The local and regional authorities and their national federations from across the EU that have officially signed up to the alliance represent around 97 % of the EU's population.



The European Week of Regions and Cities is an annual four-day event which allows regions and cities to showcase their capacity to encourage growth and job creation, implement EU cohesion policy, and provide evidence of the importance of the local and regional level for good governance. Organised by the Committee of the Regions and DG REGIO, it has become a networking platform for regional and local development, which is viewed as a key event for policy practitioners. The 18th European Week of Regions and Cities will be held in October 2020 and will concentrate on three principal themes:

- Green Europe;
- cohesion and cooperation;
- empowering citizens.

European pillar of social rights

The [European pillar of social rights](#) was jointly signed by the European Parliament, the Council and the European Commission in November 2017. It aims to take account of changing realities in the world of work, to promote the renewal of economic convergence across the EU, and to deliver new and more effective rights for citizens. The pillar is built around three main headings:

- Equal opportunities and access to the labour market — education, training and lifelong learning; gender equality; equal opportunities; active support for employment.

- Fair working conditions — secure and adaptable employment; wages; information about employment conditions and protection in case of dismissals; social dialogue and involvement of workers; work-life balance; healthy, safe and well-adapted work environment and data protection.
- Social protection and inclusion — childcare and support to children; adequate protection for workers; unemployment benefits; minimum income; old age income and pensions; healthcare; inclusion of people with disabilities; long-term care; housing and assistance for the homeless; access to essential services.

These three headings are subsequently broken down into a set of [20 key principles](#). To monitor the progress being made in strengthening the social dimension of Europe, the European Commission has established a [social scoreboard](#). The information collected is also used for economic policy coordination as part of the European semester. In her [Political guidelines for the period 2019-2024](#), the new European Commission president, Ursula von der Leyen, highlighted the need to reconcile 'the social and the market in today's modern economy' and undertook to fully implement the European pillar of social rights.

Despite the pillar of social rights not making any specific reference to regional policy, policymakers have shown a growing interest in analysing information at a more detailed, subnational level. Many of the indicators in the social scoreboard may be provided by Eurostat for a range of territorial typologies — principally, by NUTS region or by degree of urbanisation.



Sustainable development goals

Sustainable development has long been part of the political agenda within the EU. However, this subject area was given fresh impetus with the adoption of the [2030 sustainable development agenda](#) in September 2015 by the [United Nations \(UN\)](#) General Assembly. At the core of the agenda, there is a set of [17 sustainable development goals \(SDGs\)](#), which provides a global policy framework for stimulating action until the year 2030 in areas of critical importance related to people, the planet, prosperity, peace and partnership.

On 22 November 2016, the European Commission adopted the Communication, [Next steps for a sustainable European future](#) (COM(2016) 739 final). It details the significance of the SDGs, identified EU policies that contribute to the implementation of SDGs, and announced plans for regular monitoring within an EU context. The EU has made a firm commitment towards delivering on the SDGs and on the [Paris Agreement](#) on climate change. With a broad range of challenges ahead, the EU highlighted further actions required to help secure a sustainable future in a reflection paper released by the European Commission in January 2019, [Towards a sustainable Europe by 2030](#). The paper highlighted that some of the most important global challenges to be faced in the coming years include issues around social equality, solidarity and environmental protection. In her *Political guidelines for the period 2019-2024*, the European Commission president underlined this commitment noting that 'economic policy should go hand in hand with social rights, Europe's climate neutrality objective and a competitive industry'. With this in mind, she suggested there was a need to 'refocus the European semester into an instrument that integrates the United Nations' sustainable development goals'.

A short reading guide

COVERAGE

Each chapter in the *Eurostat regional yearbook* presents statistical information in the form of maps, figures and infographics, accompanied by a descriptive analysis highlighting the main findings. Regional indicators are presented for the following 13 subjects: population, health, education, the labour market, living conditions, the economy, business, research and innovation, the digital society, tourism, transport, the environment and agriculture.

The *Eurostat regional yearbook* contains regional statistics for the Member States of the EU. This is the first edition of the publication since the withdrawal of the United Kingdom from the EU. Brexit took place at the start of February 2020: however, data continue to

be shown for the United Kingdom as a non-member country, alongside information for EFTA (Iceland, Liechtenstein, Norway and Switzerland) and candidate countries (Montenegro, North Macedonia, Albania, Serbia and Turkey).

The geographical descriptions used to group EU Member States, for example, 'northern', 'eastern', 'southern' and 'western' are not intended as political categorisations. Rather, these references are made in relation to the geographical location of one or more EU Member States, as listed within the geography domain of Eurovoc, the European Commission's [multilingual thesaurus](#). The northern Member States are often distinguished between the [Baltic Member States](#) (Estonia, Latvia and Lithuania) and the [Nordic Member States](#) (Denmark, Finland and Sweden).

The designations employed and the presentation of material in maps and figures do not imply the expression of any opinion whatsoever on the part of the EU concerning the legal status of any country, territory or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

TIMELINESS

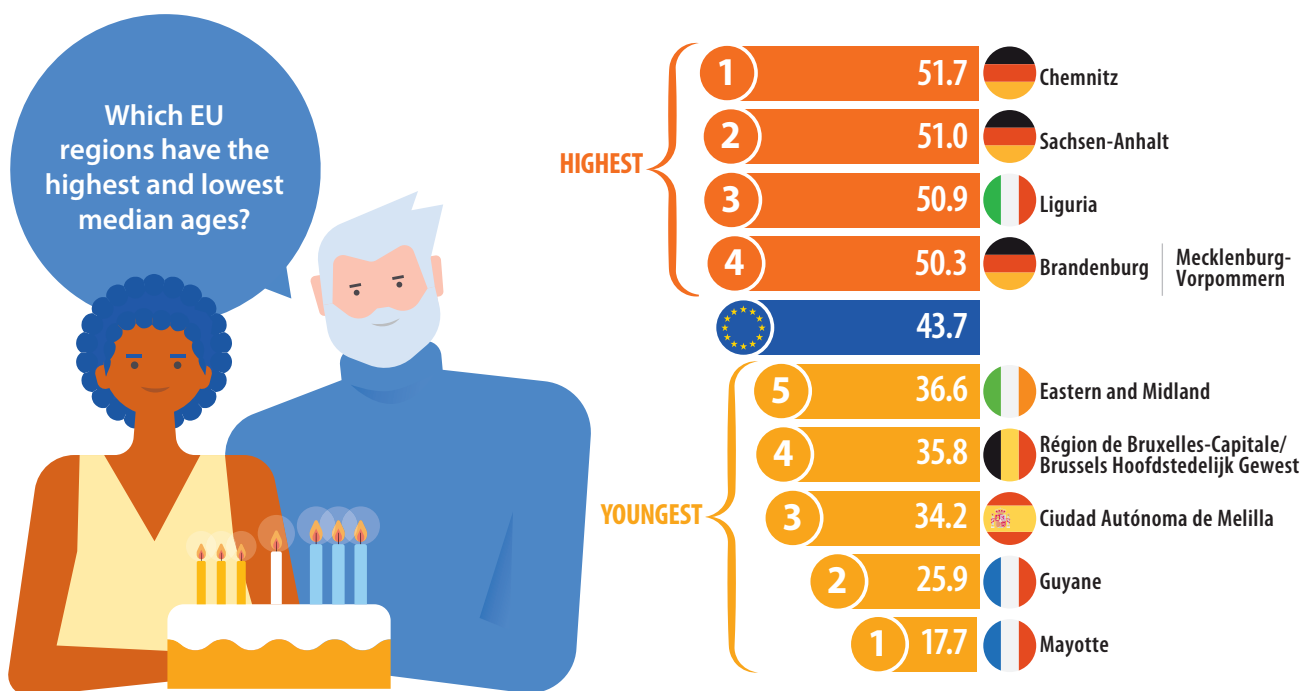
There is a wide range of surveys and data collection exercises whose data feed into the *Eurostat regional yearbook*. As a result, there may be differences concerning the latest available reference year between the chapters as each aims to show the latest information. In general, 2019 data are available for demography (as used in the chapter on population), the labour force survey (as used in the chapters on education and the labour market) and the information society survey (as used in the chapter on the digital society). Otherwise, the most common reference period is 2018, which is generally the latest year for which information is available in most of the other chapters, for example, living conditions, the economy or tourism. Note that [Eurostat's website](#) may have fresher data due to the continuous nature of data collection and processing (resulting in updates and new reference periods being added throughout the year). Online data codes below each of the maps and figures help users to locate the freshest data.

Eurostat's data are published with accompanying metadata that provide background information on each source, as well as specific information (flags) for individual data cells. The flags provide information relating to the status of the data, for example, detailing whether the data are estimated, provisional or forecasted. These flags have been converted into footnotes which appear under each of the maps and figures. Breaks in series are also indicated, as appropriate, in the footnotes provided.

1

Population





(years, 2019 data)
EU-27, Guyane and Mayotte: provisional.

There are considerable differences in regional demographic structures and developments across the [European Union \(EU\)](#), including:

- dynamic metropolises which are often characterised by relatively youthful populations, large numbers of people living alone, high costs of living and buoyant labour markets;
- towns and cities in former industrial heartlands that have been left behind economically, characterised by relatively high levels of unemployment, poverty and social exclusion;
- commuter belts/suburban areas which are often inhabited by families;
- coastal and countryside locations that may be viewed as retirement locations for relatively affluent pensioners;
- other rural and remote regions which may exhibit declining population numbers and a relatively elderly population structure, while being characterised by narrow labour market opportunities and poor access to a wide range of services.

Regional populations

On 1 January 2019 there were just under 447 million persons living in the [EU-27](#). The distribution of the EU's population between and within the individual EU Member States is far from uniform. Most people in the EU live in relatively densely-populated cities, towns and suburbs, while the vast majority of the EU's land

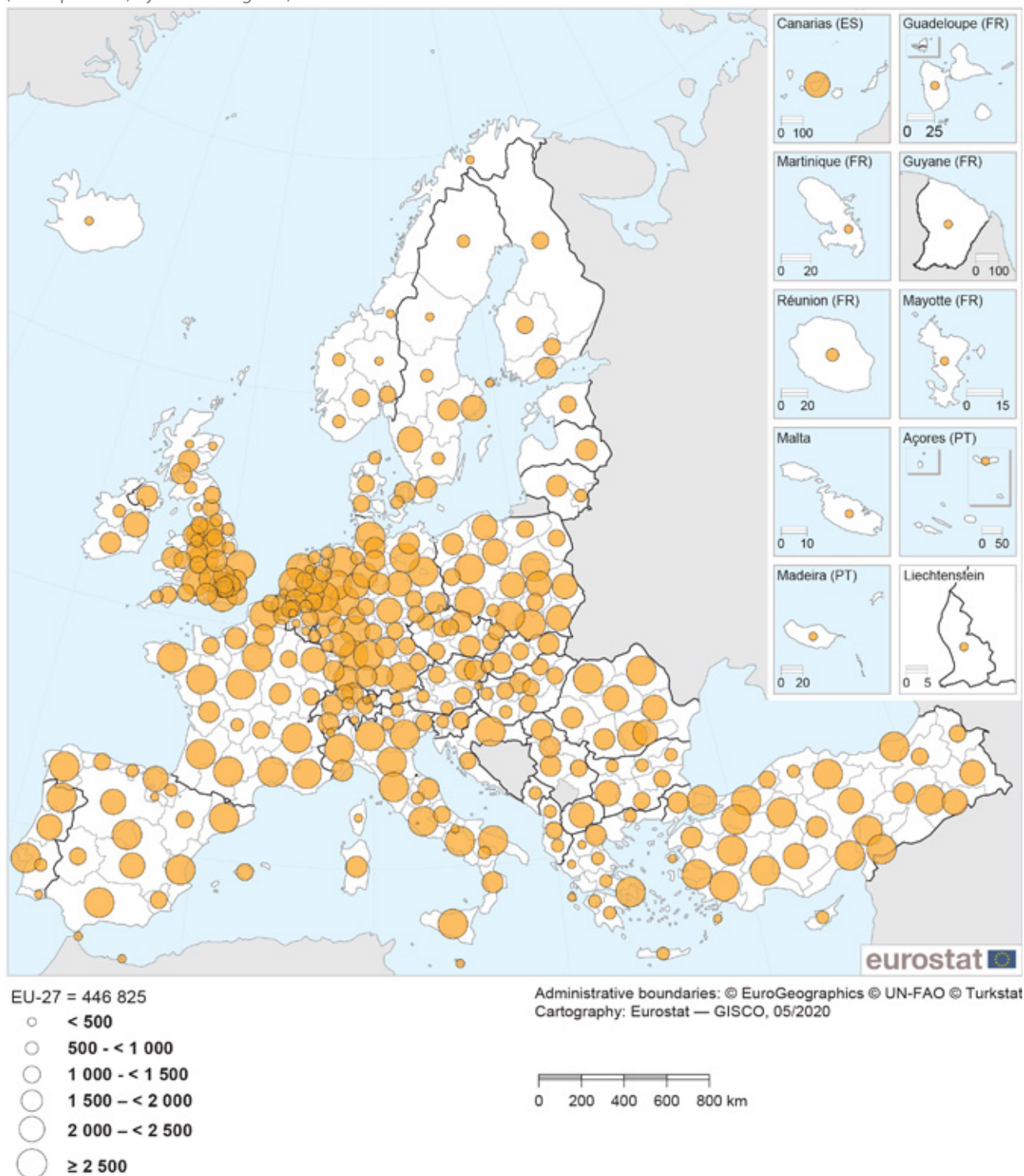
area is more sparsely-populated. There are 240 [NUTS](#) level 2 regions and 1 169 [NUTS](#) level 3 regions across the EU from which a detailed typology for analysing demographic developments can be established. Note that some of the differences covered by this article reflect the (artificial) administrative boundaries that are used to delineate each region.

As of 1 January 2019, there were 51 [NUTS](#) level 2 regions in the EU that had in excess of 2.5 million people (as shown by the largest circles in Map 1.1). This information relates to the 'usual resident population' (in other words, those people living in each region for at least the last 12 months). The list of most populous regions included the capital regions of Germany, Greece, Spain, France, Croatia, Italy, the Netherlands, Poland and Portugal. The highest population counts were recorded in the French capital region of Île-de-France (12.2 million), the northern Italian region of Lombardia (10.1 million) and the southern Spanish region of Andalucía (8.4 million).

Regions with fewer than 500 000 people as of 1 January 2019 (shown by the smallest circles in Map 1.1) were often characterised as rural, remote or peripheral regions. The least populous [NUTS](#) level 2 regions with less than 250 000 persons included the two Spanish [Ciudades Autónomas](#) de Ceuta y Melilla, the mountainous Italian region of Valle d'Aosta/Vallée d'Aoste, and four island regions — Ionia Nisia and Voreio Aigaio (both Greece), Região Autónoma dos Açores (Portugal) and Åland (Finland); the latter had the lowest population count (just under 30 000 persons).



Map 1.1: Population, 1 January 2019
(1 000 persons, by NUTS 2 regions)



Note: EU-27 and Ireland, estimates. France: provisional.

Source: Eurostat (online data codes: [demo_r_gind3](#) and [demo_gind](#))

Population density

Population density provides an average measure for the number of persons living per square kilometre (km²) of land area. Regional population density is based on the assumption of uniform density over the whole of a territory. However, most regions are characterised by a broad range of different land uses beyond residential developments (for example, agriculture, forests, factories, offices and retail space, transport infrastructure, unused and abandoned areas). Therefore, even within individual regions there can be wide-ranging differences in population density. For example, in the Belgian capital region — Arr. de Bruxelles-Capitale/Arr. van Brussel-Hoofdstad — people living in the affluent, suburban areas located to the south-east of the city centre had considerably more space, on average, than those people living in the more densely-populated neighbourhoods to the north of the city centre.

In 2018, the population density of the EU-27 was 108.8 persons per km². Quite low levels of population density across many of the EU's regions were interspersed by more densely-populated pockets of people living in regions concentrated around cities and larger towns with their suburbs. As of 1 January 2019, the 50 most populous NUTS level 3 regions accounted for 22.3 % of the EU-27's total population, whereas their combined share of the EU-27's total land area was just 5.8 %.

Space is at a premium in the French capital of Paris ...

The highest level of population density in the EU was recorded in the French capital region of Paris, where there were, on average, more than 21 000 persons per km² in 2018. As noted above, the administrative boundaries used to delineate each region can have a

considerable influence on these results. For example, the French capital region is constrained by the *périphérique* and hence its area is strictly confined to centre of Paris, in contrast to most urban regions which include both a city centre and its surrounding (less densely-populated) areas.

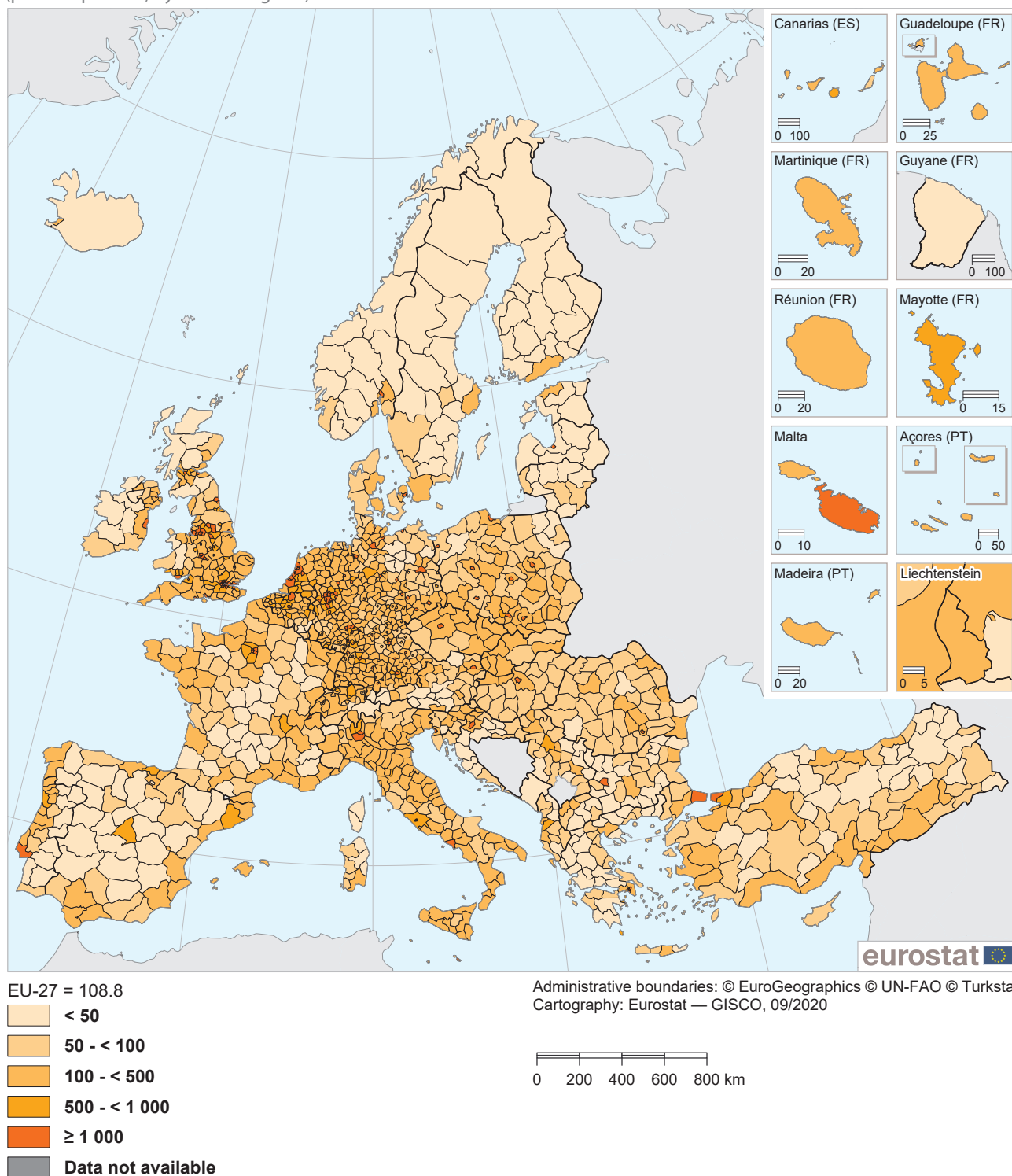
The second highest level of population density in 2018 was recorded in the Greek capital region of Kentrikos Tomeas Athinon (10 436.3 persons per km²), followed by Hauts-de-Seine, which covers some of the inner suburbs to the west of Paris (9 371.4 persons per km²). Most of the other regions with very high levels of population density were characterised as urban regions containing some of Europe's principal cities (including most of the capitals) or regions that were located adjacent to these (in other words, areas of suburban sprawl around some of Europe's main cities). By contrast, the lowest level of population density among EU capital regions was recorded in Vilniaus apskritis (Lithuania), at 85.8 persons per km², which was below the average population density for the whole of the EU-27.

... in contrast to large expanses of uninhabited areas in northern Europe

At the other end of the range there remain large expanses of Europe where relatively few people are living. Nowhere was this more apparent than in Lappi — the northernmost region of Finland — which had the lowest population density in the EU, at 1.9 persons per km² in 2018. Of the nine other regions in the EU where population density was below 10.0 persons per km², two more were located in northern Finland and they were joined by three regions from northern Sweden.



Map 1.2: Population density, 2018
(persons per km², by NUTS 3 regions)



Source: Eurostat (online data code: [demo_r_d3dens](#))



Population structure

Very old people accounted for 5.8 % of the EU-27 population

The social and economic consequences associated with population ageing are likely to have profound implications both nationally and regionally, for example, impacting the capacity of governments to raise tax revenue, provide adequate pensions and healthcare services, and generally to balance their finances. Most population projections indicate that the EU's population will continue to age as a result of persistently low fertility rates and extended longevity.

As of 1 January 2019, around one fifth (20.4 %) of the EU-27 population was aged less than 20 years, while a majority (59.4 %) of the population was of working age (defined here as people aged 20-64 years). Older people (aged 65 years or more) accounted for the remaining 20.3 % of the EU-27 population, with the share of the very old (80 years or more) standing at 5.8 %.

Figure 1.1 shows the 10 NUTS level 3 regions in the EU with the highest shares of young people aged less than 20 years in their total populations. These regions were principally located in France (two regions to the north of the capital and three régions ultrapériphériques) and Ireland; this pattern may be linked, at least in part, to

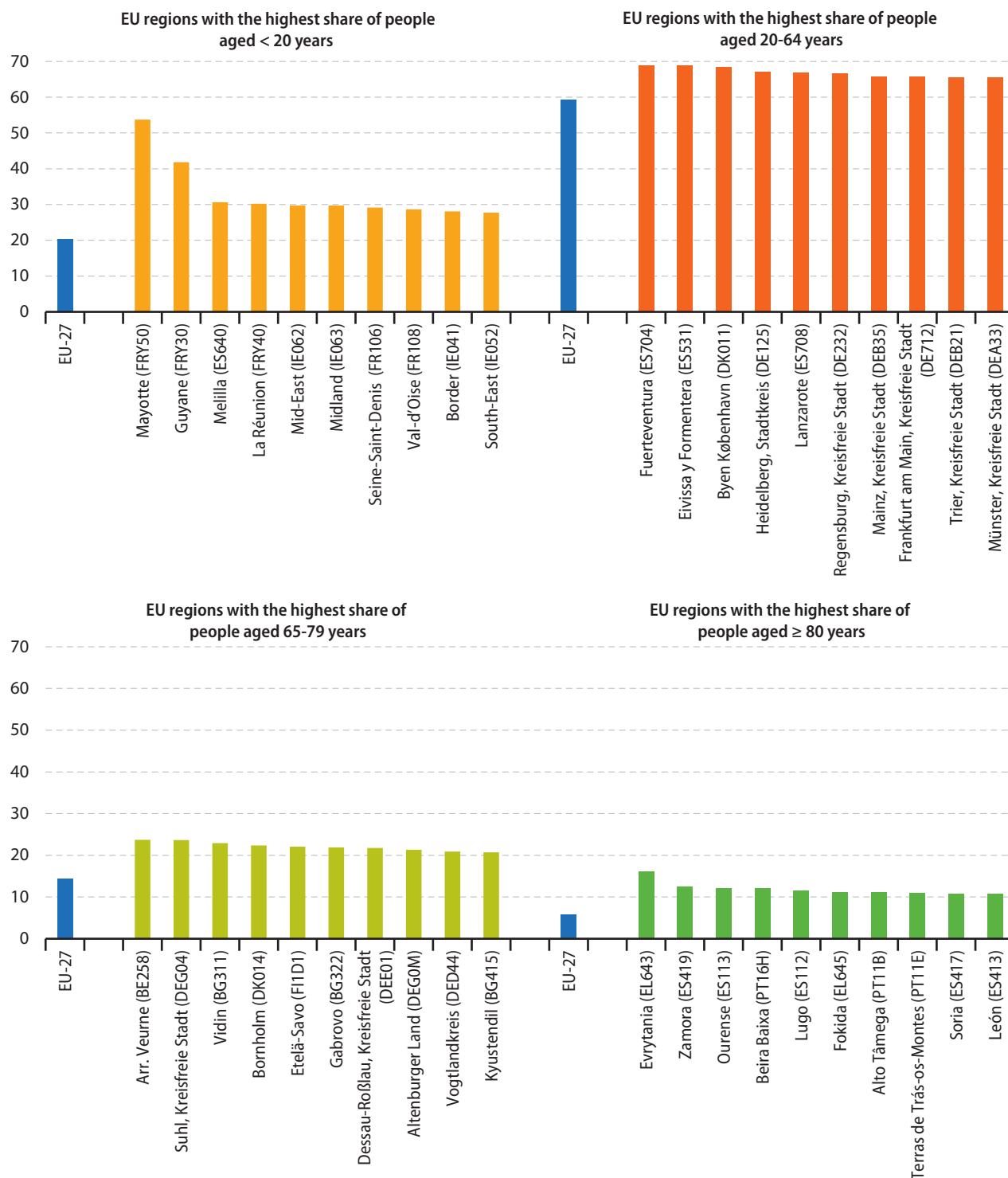
relatively high fertility rates in both of these EU Member States. On 1 January 2019, the French island region of Mayotte was the only region in the EU to report that more than half (53.8 %) of its population was aged less than 20 years.

Many rural regions in southern Europe were characterised by high shares of very old people

At the other end of the age spectrum, the regions characterised by a relatively high share of very old people (aged 80 years or more) were principally located in southern Europe (see the final part of Figure 1.1). This pattern of population ageing in rural and often remote regions is likely to have been advanced by younger people choosing to leave the region in which they grew up so they could continue their studies or look for alternative and perhaps more varied work. It was particularly apparent across sparsely-populated regions in Greece, Spain and Portugal.

On 1 January 2019, the mountainous, central Greek region of Evrytania had the highest share of very old people in the EU; people aged 80 years or more accounted for 16.1 % of population (nearly three times as high as the EU-27 average). Two regions in north-western Spain recorded the second and third highest shares of very old people — among NUTS level 3 regions — namely, Zamora (12.5 % of the total population) and Ourense (12.1 %).

Figure 1.1: Population structure by broad age group, 1 January 2019
(%, share of total population, by NUTS 3 regions)



Note: EU-27 and Ireland, estimates. France: provisional.

Source: Eurostat (online data code: [demo_r_pjangrp3](#))

The **median age** is another indicator which may be used to analyse population ageing. It gives an idea of the rapid pace at which the EU's population structure is changing. The median age of the EU-27 population was 38.4 years in 2001 (the first reference year for which information is available); over a period of 18 years, the median age increased by more than five years, to stand at 43.7 years by 2019.

Some of the highest median ages in the EU were recorded in eastern Germany ...

As noted above, the challenges posed by an ageing society may be intensified in regions from which younger (and working-age) people relocate. In 2019, 8 out of the 10 regions in the EU with the highest median ages were situated in eastern Germany, spread across the Länder of Thüringen, Sachsen-Anhalt and Brandenburg. These regions were characterised by relatively low levels of disposable income and relatively high unemployment rates (when compared with other regions in Germany). It is therefore likely that their high median ages reflect, at least to some degree, younger people having moved — for example to the larger cities of eastern Germany, other parts of Germany, or further afield (for example, into Austria) — in search of higher wages and/or greater job opportunities.

In 2019, the Greek region of Evrytania had the highest median age among NUTS level 3 regions in the EU, at 55.5

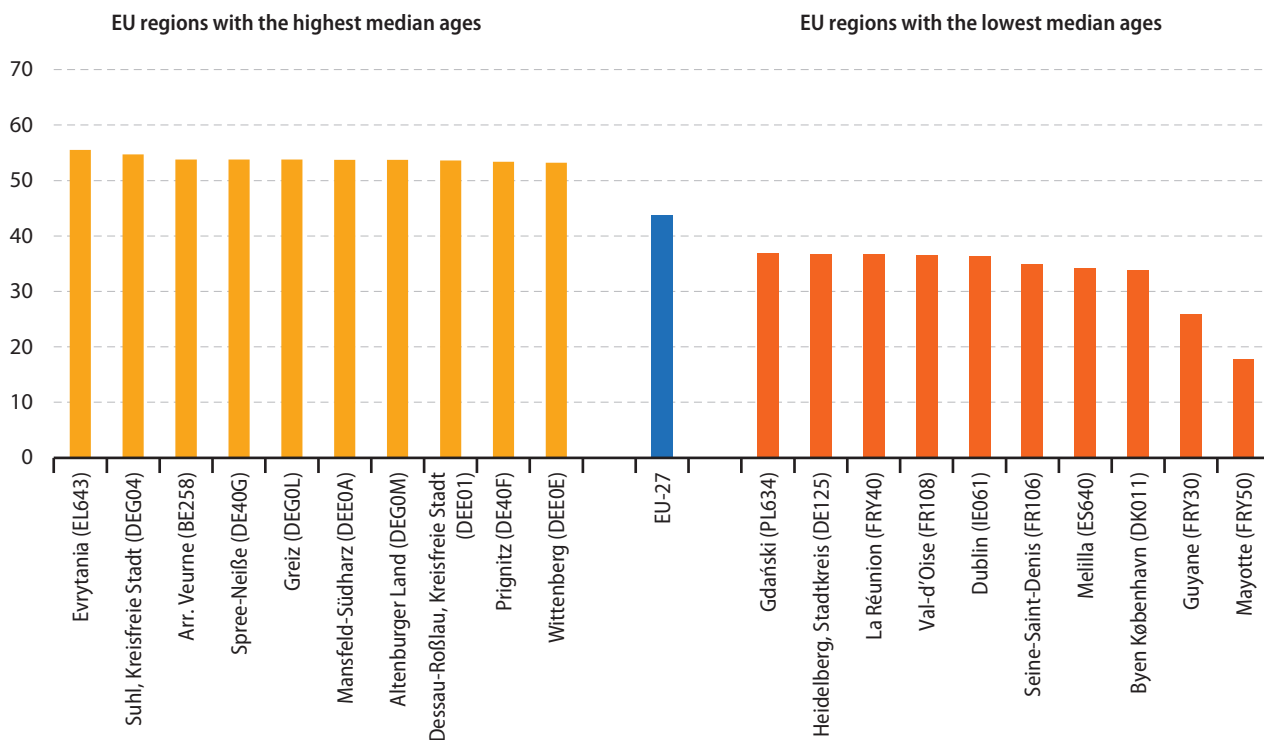
years. It was followed by Suhl, Kreisfreie Stadt in Thüringen (Germany) where the median age was 54.7 years, while there were three regions that each had a median age of 53.8 years — Arr. Veurne in north-western Belgium (near to the coast and the French border), Spree-Neiße in Brandenburg (Germany) and Greiz (also in Thüringen).

... while some of the lowest median ages were recorded in and around capital cities

Capital regions often exert a considerable pull on both international and intra-regional migrants as they usually offer a wide range of educational and employment opportunities. This can lead to population structures evolving with younger people accounting for a growing share of the total population in capital cities and their surrounding suburban areas; over time, this pattern may self-propagate, insofar as populations with younger age structures are more likely to have relatively high birth rates.

In 2019, the 10 NUTS level 3 regions in the EU with the lowest median ages included Byen København (the Danish capital region; median age of 33.8 years), Seine-Saint-Denis and Val d'Oise (both situated close to the French capital region; 34.9 years and 36.5 years) and Dublin (the Irish capital region; 36.3 years). However, the lowest median ages in the EU were recorded in two of the French régions ultrapériphériques, namely, Mayotte (17.7 years) and Guyane (25.9 years).

Figure 1.2: Median age of population, 2019
(years, by NUTS 3 regions)



Note: Ireland, estimates. EU-27 and France: provisional.

Source: Eurostat (online data codes: [demo_r_pjanind3](#) and [demo_pjanind](#))



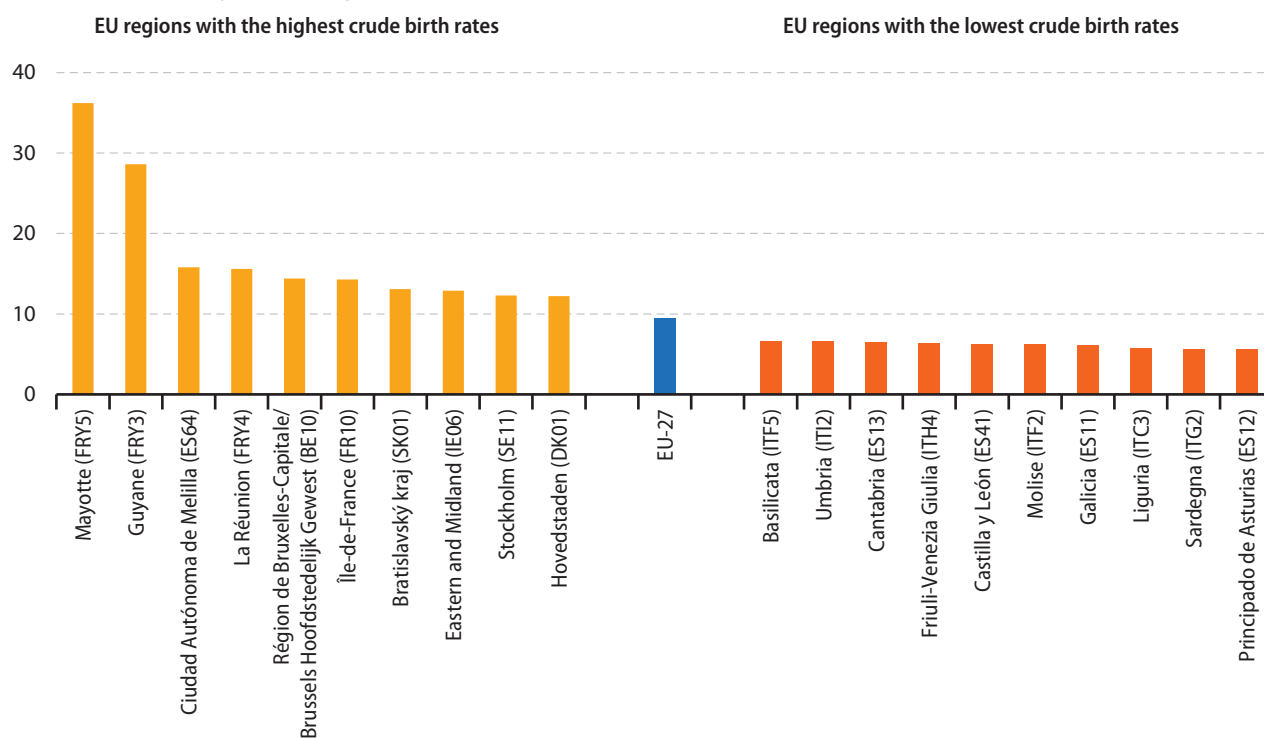
Fertility

In 2018, there were 4.25 million live **births** across the EU-27, which equated to a crude birth rate of 9.5 births per 1 000 persons. EU regions with relatively high levels of **fertility** are protected, to some degree, from the impact of population ageing. In 2018, three out of the four highest crude birth rates — among NUTS level 2 regions — were registered in the régions ultrapériphériques of France: Mayotte (36.2 births per 1 000 persons), Guyane (28.6) and La Réunion (15.6). There were also six capital regions present at the top of this ranking, with the Belgian capital of Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest recording the highest crude birth rate among these (14.4 births per 1 000 persons); the other capital regions

included those of France, Slovakia, Ireland, Sweden and Denmark (see Figure 1.3).

The lowest crude birth rates were spread across a number of Italian and Spanish regions (outside of their major conurbations). In 2018, Principado de Asturias (north-west Spain) had the lowest rate in the EU, at 5.6 births per 1 000 persons. It was joined by the two other regions that compose the north-west of Spain — Galicia and Cantabria — as well as Castilla y León. Among the Italian regions, Sardegna had the lowest crude birth rate (5.7 births per 1 000 persons in 2018). In contrast to the situation in Spain, the Italian regions with very low crude birth rates were widely dispersed across the territory, from Friuli-Venezia Giulia in the north-east down to Basilicata in the south.

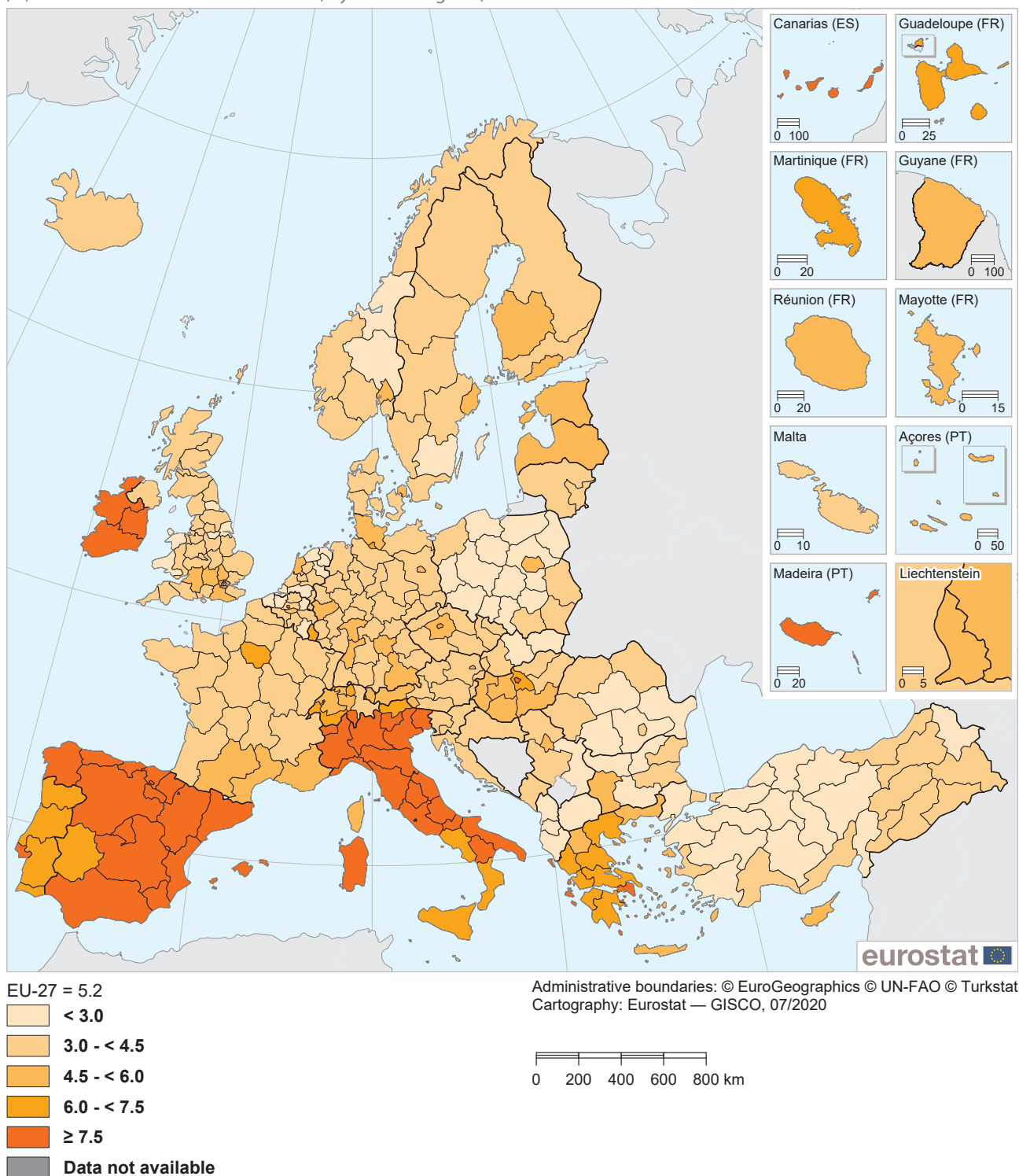
Figure 1.3: Crude birth rate, 2018
(per 1 000 persons, by NUTS 2 regions)



Note: EU-27 and Ireland, estimates. France: provisional.

Source: Eurostat (online data codes: [demo_r_gind3](#) and [demo_gind](#))

Map 1.3: Live births to mothers aged ≥ 40 years, 2018
(%, share of total number of live births, by NUTS 2 regions)



Note: EU-27, estimate.

Source: Eurostat (online data code: [demo_r_fagec](#))



In Ireland, Spain and Italy, a relatively high share of mothers gave birth age 40 years or older

In 2018, the median age of women at childbirth in the EU-27 was 30.8 years. One factor which may explain the relatively low levels of fertility in the EU is the growing proportion of women giving birth later in life. This may be linked, among others, to: higher female participation rates in further education and/or more women choosing to establish a career before starting a family; lower levels of job security (for example, in the gig economy); the increasing cost of raising children and housing; and a decline in the number of traditional family units (less people getting married and more people getting divorced).

Map 1.3 shows the proportion of live births born to mothers aged 40 years or more; in 2018, approximately 1 in 20 births across the EU-27 were to women from this age group. The regions where at least 7.5 % of all births were accounted for by women aged 40 years or more are shown by the darkest shade in the map. These were concentrated over much of Ireland, Spain and Italy, while high shares were also recorded, among others, in the capital regions of Greece, Hungary and Portugal.

In 2018, the Spanish region of Galicia had the highest proportion of live births among mothers aged 40 years or more; its share of 12.9 % was approximately 2.5 times as high as the EU-27 average (5.2 %). At the other end of the spectrum, just 2.2 % of all live births in Východné Slovensko (Slovakia) were born to mothers aged 40 years or more.

Population change

Historically, population growth in the EU has been driven largely by [natural population change](#) (the total number of births minus the total number of deaths). Following the end of the post-war baby-boom, the rate of natural population growth started to slow from the 1970s onwards. Later, successive enlargements of the EU

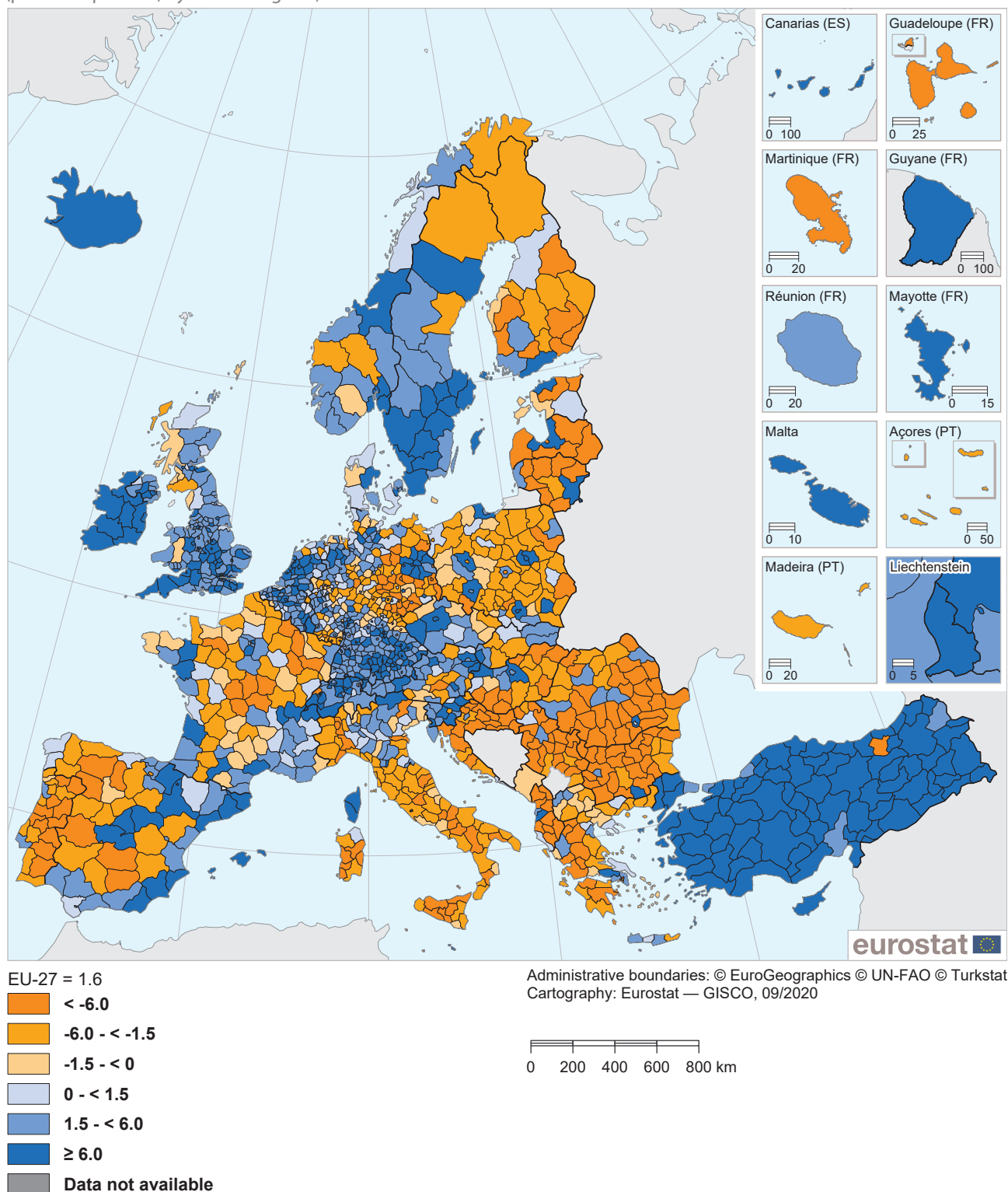
took place alongside the development of the European single market, with net [migration](#) (the difference between the number of immigrants and emigrants) gaining prominence in terms of its contribution to overall population change. Note: Eurostat produces net migration figures by taking the difference between total [population change](#) and natural population change; this concept is referred to as net migration plus (statistical) adjustment.

Map 1.4 presents the crude rate of total population change. Between 1 January 2018 and 1 January 2019, the EU-27's population rose by 726 000 persons, equivalent to a growth rate of 1.6 per 1 000 persons. The increase in EU-27 population could be wholly attributed to net migration plus adjustment (up 1.2 million persons), as the number of deaths outpaced the number of births by almost 450 000 persons.

At a regional level, changes in the total population result not just from migratory flows to and from other countries but also from flows of people within the national territory (moving from one region to another). Indeed, such intra-regional migration generally accounts for a larger share of the net change in population numbers than flows from other countries. In recent years, some of the main developments for regional demography include:

- a capital city effect — populations in and around many capital cities continue to expand exerting a 'pull effect' on both national and international migrants;
- an urban-rural split — with the majority of urban regions continuing to report population growth, while the number of people resident in many peripheral, rural and post-industrial regions was in decline;
- regional divergences within individual EU Member States — these may impact on regional competitiveness and cohesion, for example, differences between the eastern and western regions of Germany, or between the northern and southern regions of Belgium and Italy.

Map 1.4: Crude rate of total population change, 2018
(per 1 000 persons, by NUTS 3 regions)



Note: EU-27, estimate. France: provisional.

Source: Eurostat (online data codes: [demo_r_gind3](#) and [demo_gind](#))



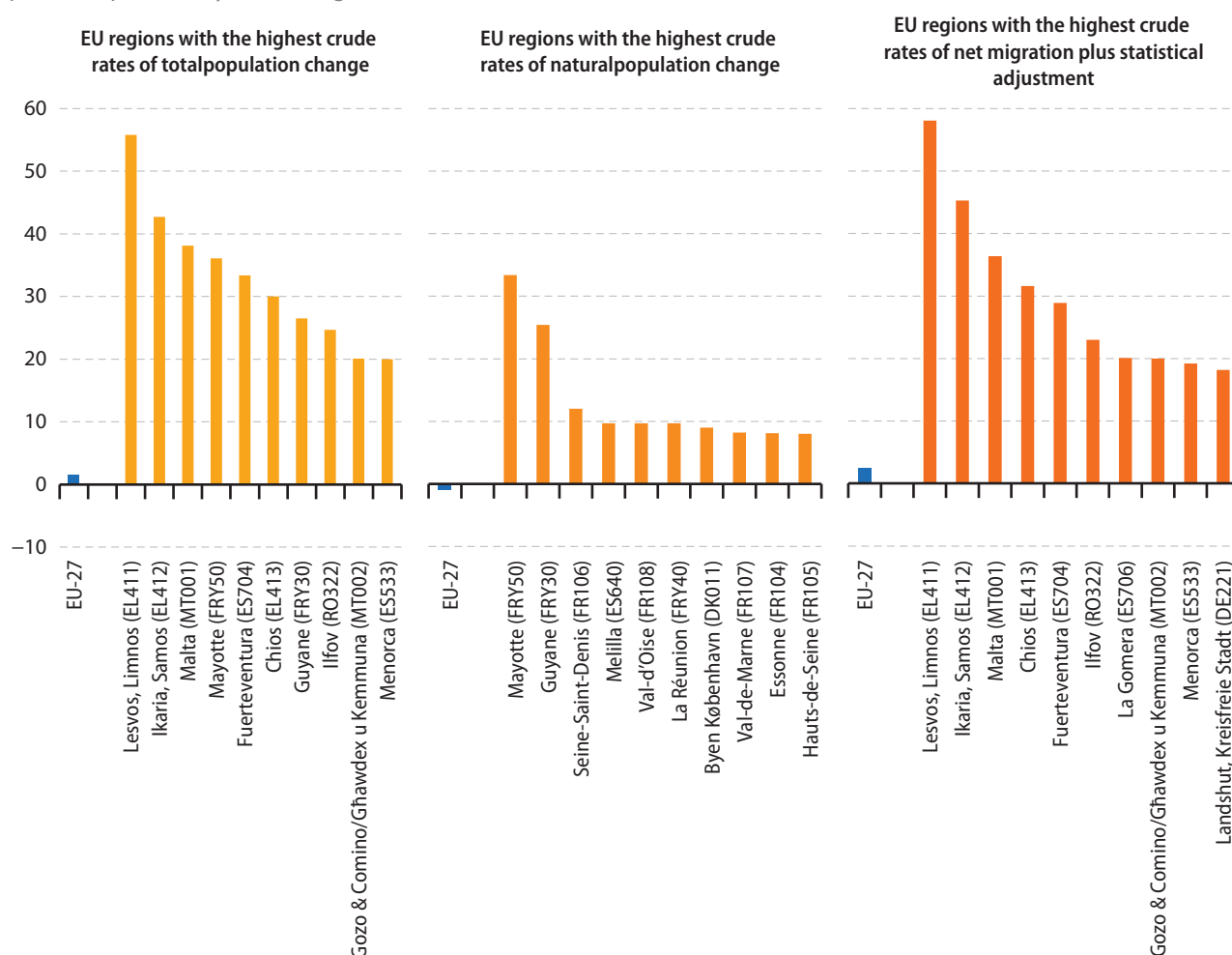
The highest rates of population change were in Greek islands impacted by the refugee crisis

During 2018, there was a relatively even split between the number of NUTS level 3 regions that reported an increase in their total population (609) and the number of regions that recorded a fall (556); there were four regions where there was no change in the level of population. The highest crude rates of total population change were recorded in the Greek island regions of Lesvos, Limnos and Ikaria, Samos (both of which are situated within close proximity of Turkey). There were a number of other island regions that featured among the EU regions with the highest rates of total population increase, including the Greek island of Chios,

Malta and its neighbouring island of Gozo, Mayotte in France, and the Spanish islands of Fuerteventura (in Canarias) and Menorca (in Illes Balears).

Figure 1.4 also decomposes the overall change in population between natural change on one hand and net migration plus adjustment on the other. Many of the regions with the highest rates of natural population change were located in France, either close to the capital region or in the régions ultrapériphériques. The regions with high rates of net migration were often found to be the same as those that featured in the list of regions with the highest overall rates of total population change, underlining the relative importance of migratory flows to population change (during periods when births and deaths were closely matched).

Figure 1.4: Crude rate of population change, 2018
(per 1 000 persons, by NUTS 3 regions)



Note: EU-27, estimates. France: provisional.

Source: Eurostat (online data codes: [demo_r_gind3](#) and [demo_gind](#))

Population developments in cities

In some parts of the EU — for example, much of Belgium, the Netherlands, western parts of Germany and northern Italy — the spatial distribution of cities follows a pattern of close proximity. By contrast, the [Nordic Member States](#), France and the interior of Spain and Portugal are characterised by a more sparse distribution of cities over a much greater area.

On average, older people tend to make up a relatively small share of people living in cities

The old-age dependency ratio — defined here as the number of older people (aged 65 years or more) compared with the number of working-age people (aged 20-64 years) — stood at 33.6 % for the EU-27 in 2018. As such, there were approximately three people of working-age for every older person in the EU. Map 1.5 shows that there were almost twice as many cities (476) that had an old-age dependency ratio that was below the EU-27 average, as there were cities with a ratio above the average (261 cities).

As noted above, capital cities, other major conurbations and their surrounding areas tend to attract relatively high numbers of young migrants. In 2018, the lowest old-age dependency ratios in the EU were recorded in Rivas-Vaciamadrid and Valdemoro (both close to Madrid, Spain) and Galway (Ireland; 2011 data). There were a number of cities in Spain, Ireland, Cyprus, the Netherlands (2016 data), Poland (2014 data) and Romania that recorded very low old-age dependency ratios — many of these cities were part of conurbations close to some of Europe's major cities. Several factors might underlie this pattern: young people may be unable to afford to buy or rent in city centres (especially in capitals) and instead live in the surrounding areas,

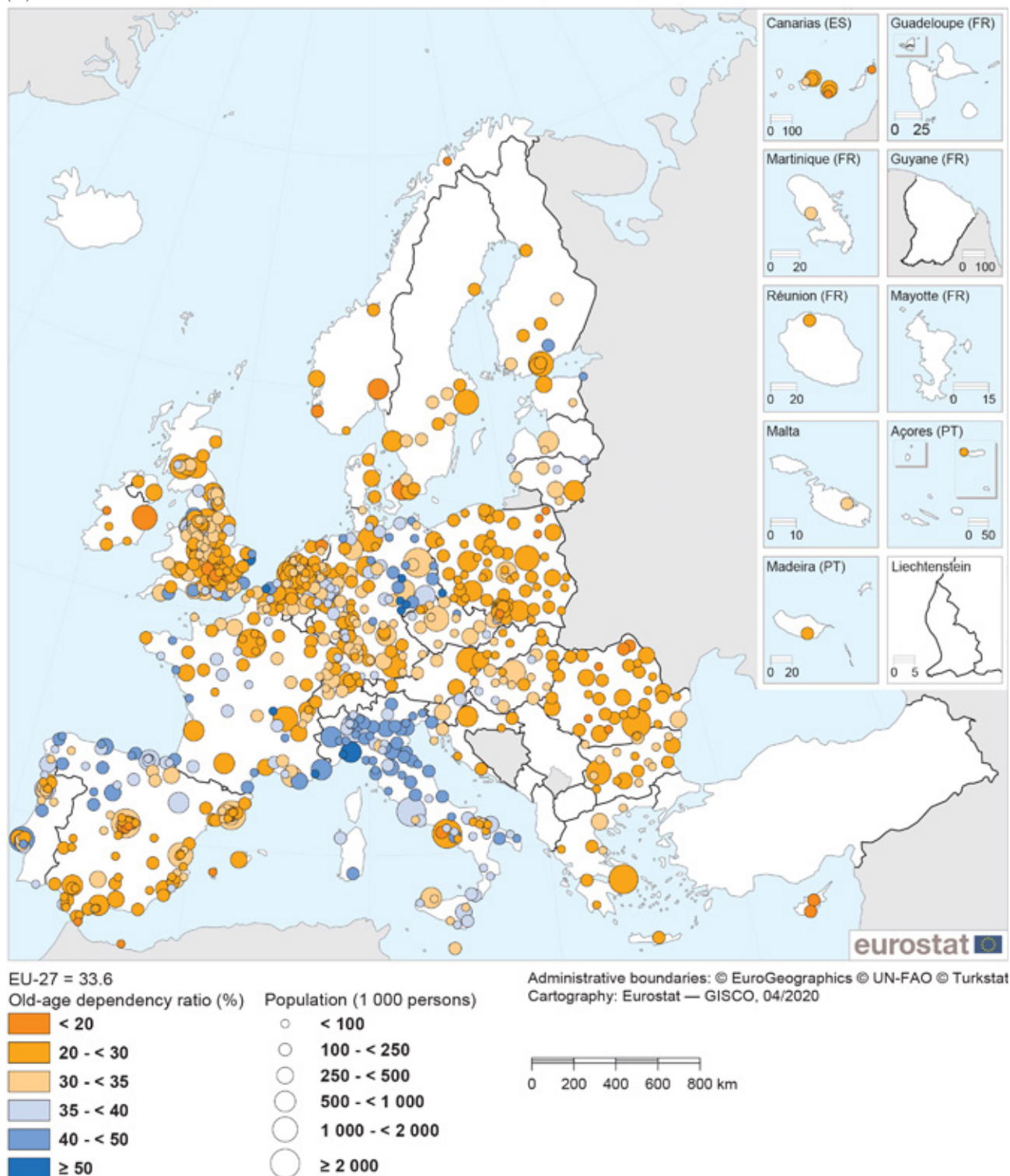
while families might move to suburban areas in order to have additional (and more affordable) living space. It is also conceivable that older people are tempted to leave large cities when they retire, in order to avoid some of the perceived disadvantages of living in big cities (congestion, crime or a higher cost of living).

Almost 13 million people were living in and around the French capital

Population numbers in (and around) most of the EU's largest cities are generally rising at a relatively rapid pace, especially for capitals. However, there are cities, such as those located in former industrial heartlands, where population numbers are in decline. Figure 1.5 presents information on the 20 largest [functional urban areas](#) in 2018; these data decompose population numbers between city centres and their surrounding commuter zones. The highest level of population was recorded in Paris (France; 12.8 million people; 2016 data), followed — at some distance — by Madrid (Spain; 6.8 million) and Berlin (Germany; 5.3 million). The largest functional urban areas that were not centred upon a capital city were Milano (Italy; 5.1 million), the German urban agglomeration of the Ruhrgebiet (which includes, among others, Bochum, Dortmund, Duisburg, Essen and Oberhausen; also 5.1 million) and Barcelona (Spain; 5.0 million).

In 2018, the commuter zones surrounding the cities of Napoli (Italy) and Bucuresti (Romania) were relatively small in size, accounting for less than 15 % of the total population in their functional urban areas. By contrast, more than half of the total population in the functional urban areas of the Ruhrgebiet (Germany), Katowice (Poland; 2014 data), Stuttgart (Germany), Frankfurt am Main (Germany), Amsterdam (the Netherlands; 2016 data) and Bruxelles/Brussel (Belgium) was accounted for by people living in the commuter zones.

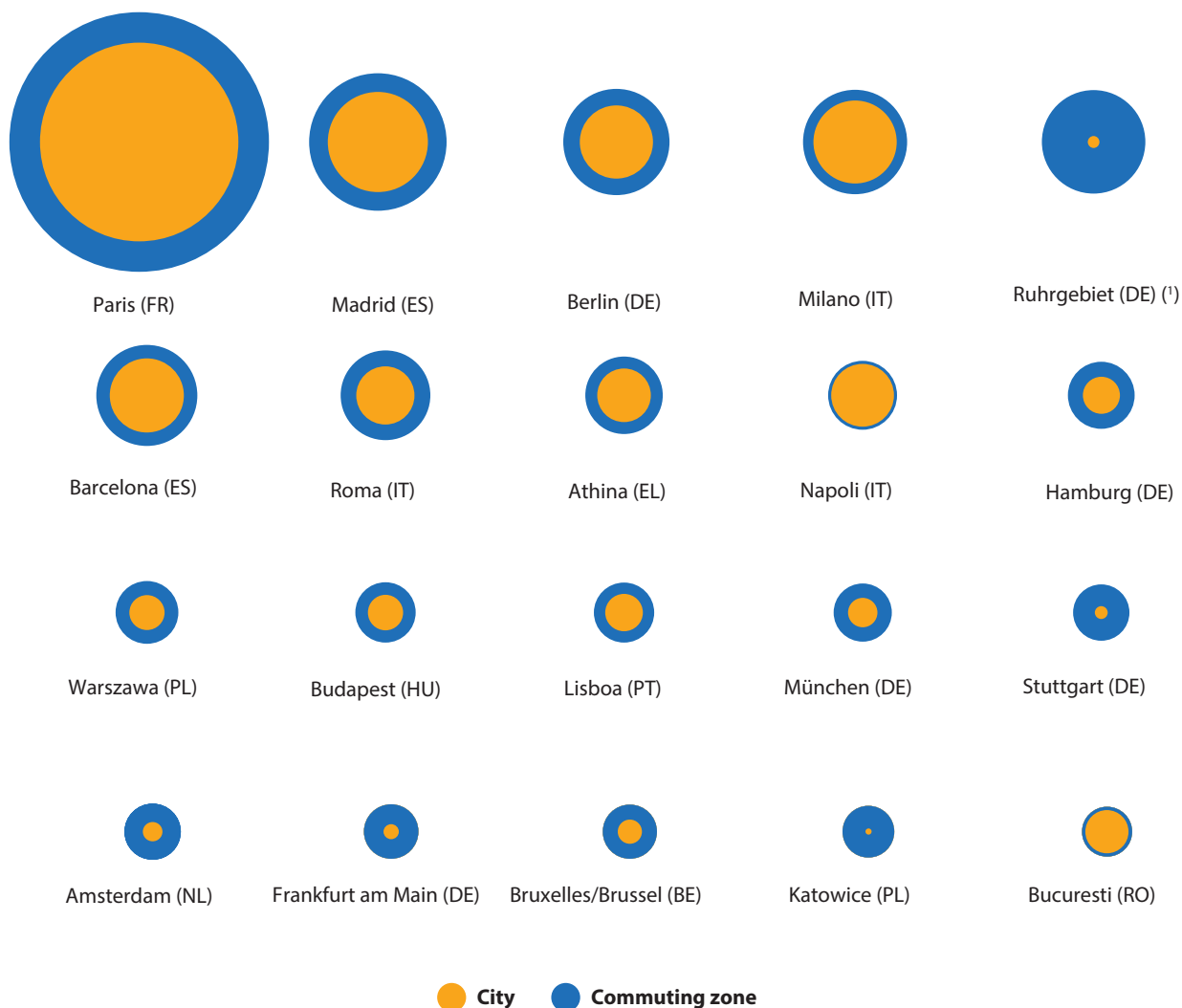
Map 1.5: Old-age dependency ratio, selected cities, 2018
(%)



Note: based on the ratio of the population aged ≥ 65 years/population aged 20-64 years, expressed in percentage terms.
EU-27: provisional. Ireland, Lithuania, Poland and Portugal: estimates. Czechia and Slovenia: 2017. France, the Netherlands and Switzerland (other than Winterthur and Biel/Bienne): 2016. Austria, Poland, Winterthur and Biel/Bienne: 2014. Denmark and Norway: 2013. Ireland, Greece, Cyprus and Luxembourg: 2011.

Source: Eurostat (online data codes: [urb_cpopstr](#), [urbcpop1](#) and [demo_pjanind](#))

Figure 1.5: The 20 largest functional urban areas of the EU, by cities and commuting zones, 2018
(million persons)



Note: Lisboa, estimates. Paris and Amsterdam: 2016. Warszawa and Katowice: 2014. Athina: 2011.

(!) The functional urban area of the Ruhrgebiet does not have an administrative centre. However, the Regionalverband Ruhr is located in Essen, data for which are shown here (under the heading for city).

Source: Eurostat (online data codes: [urb_cpop1](#) and [urb_lpop1](#))

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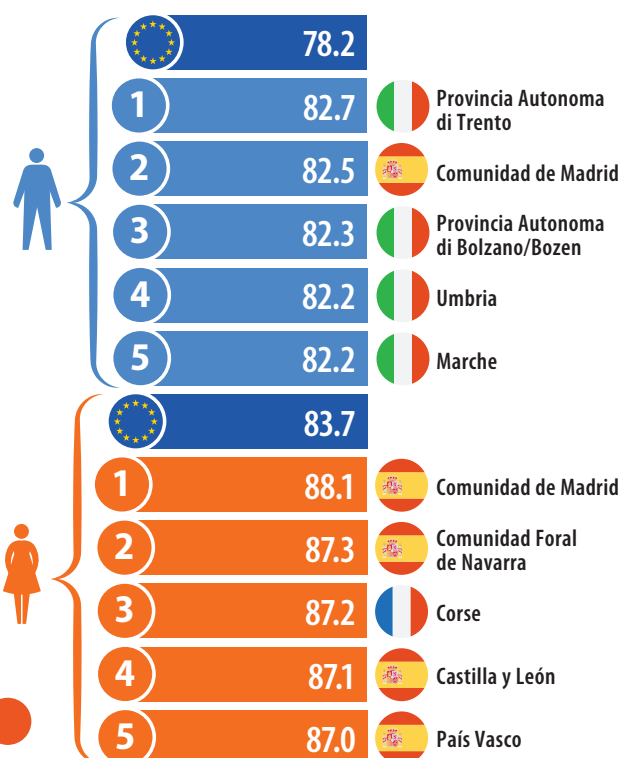
Health



Which EU regions have the highest life expectancy for men and women?



(years, 2018 data)
EU-27: estimates



The health of the [European Union \(EU\)](#) population is closely linked to that of the planet through — among other influences — the quality of the air we breathe, the water we drink and the food we eat. Health is an important priority for most Europeans, who expect to receive efficient [healthcare](#) services — for example, if contracting a disease or being involved in an accident — alongside timely and reliable public health information. If historical precedents are followed and life expectancy across the EU continues to increase, it is likely that there will be a higher level of demand for a range of healthcare services in the future, driven by an ageing population. At the same time, reductions in the number of people of working-age could lead to staff shortages in certain health-related occupations and in specific geographical regions.

Life expectancy

Life expectancy at birth is the average number of years a newborn would live if subjected throughout his/her life to current mortality conditions. During the last two centuries, life expectancy in Europe rose at a relatively consistent pace (other than in periods of war). This increased longevity can be attributed to a range of factors, including significant advances in medical treatment and care, changes in living and environmental conditions, changes in working conditions/occupations, as well as lifestyle changes.

In 2018, EU-27 life expectancy at birth was 81.0 years

Recent years have seen an end to the previously steady upward progression of life expectancy in the EU-27; there was a fall in life expectancy in 2015 and no change in 2017. More generally there are a range of potential drivers that impact on inter-regional differences in life expectancy. These may include:

- proximity to healthcare services — capital city regions tend to have a greater number and variety of healthcare facilities compared with rural regions;
- the prosperity of a region — life expectancy is generally higher in those regions characterised by a higher standard of living and lower in regions characterised by poverty and social deprivation;
- lifestyle and cultural differences — for example, the type of work that predominates in a region, the typical diet of a region, or the incidence of smoking and alcohol consumption.

In 2018, the life expectancy of a female newborn in the [EU-27](#) was 83.7 years, which was 5.5 years higher than the corresponding figure for a newborn male (78.2 years). Female life expectancy was higher than male life expectancy in every [NUTS](#) level 2 region for which data are available. Some of the largest gender gaps were recorded in the [Baltic Member States](#) and several Polish regions, while the difference in life expectancy between the sexes was much more closely matched in Dutch regions and in the French island region of Mayotte. The Lithuanian capital region had the highest gender gap for life expectancy at birth (9.9 years difference), while the lowest gap was recorded in the Dutch region of Flevoland (2.2 years).

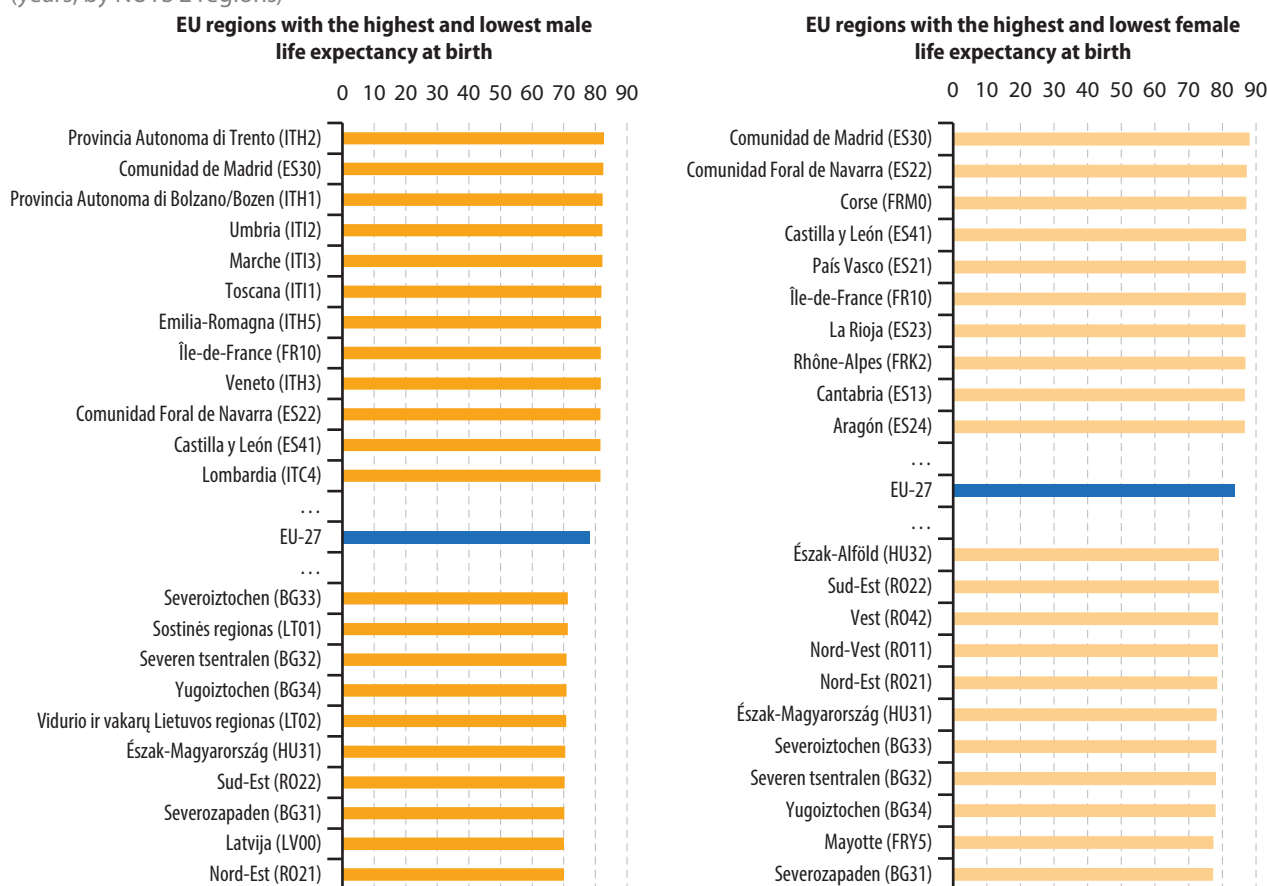


Female life expectancy peaked in several regions across Spain and France

In 2018, the 10 regions in the EU with the highest levels of female life expectancy at birth were all located in Spain or France (see Figure 2.1). The Spanish capital region had the highest female life expectancy (88.1

years), while the top 10 regions were completed by six more Spanish regions and three French regions. By contrast, some of the highest levels of male life expectancy at birth were recorded in northern and central Italy, with a peak of 82.7 years in Provincia Autonoma di Trento.

Figure 2.1: Life expectancy at birth, 2018
(years, by NUTS 2 regions)



Note: EU-27, estimates. Martinique (FRY2) and Guyane (FRY3): 2017. Guadeloupe (FRY1): 2016.

Source: Eurostat (online data codes: [demo_r_mlifexp](#) and [demo_mlexpec](#))

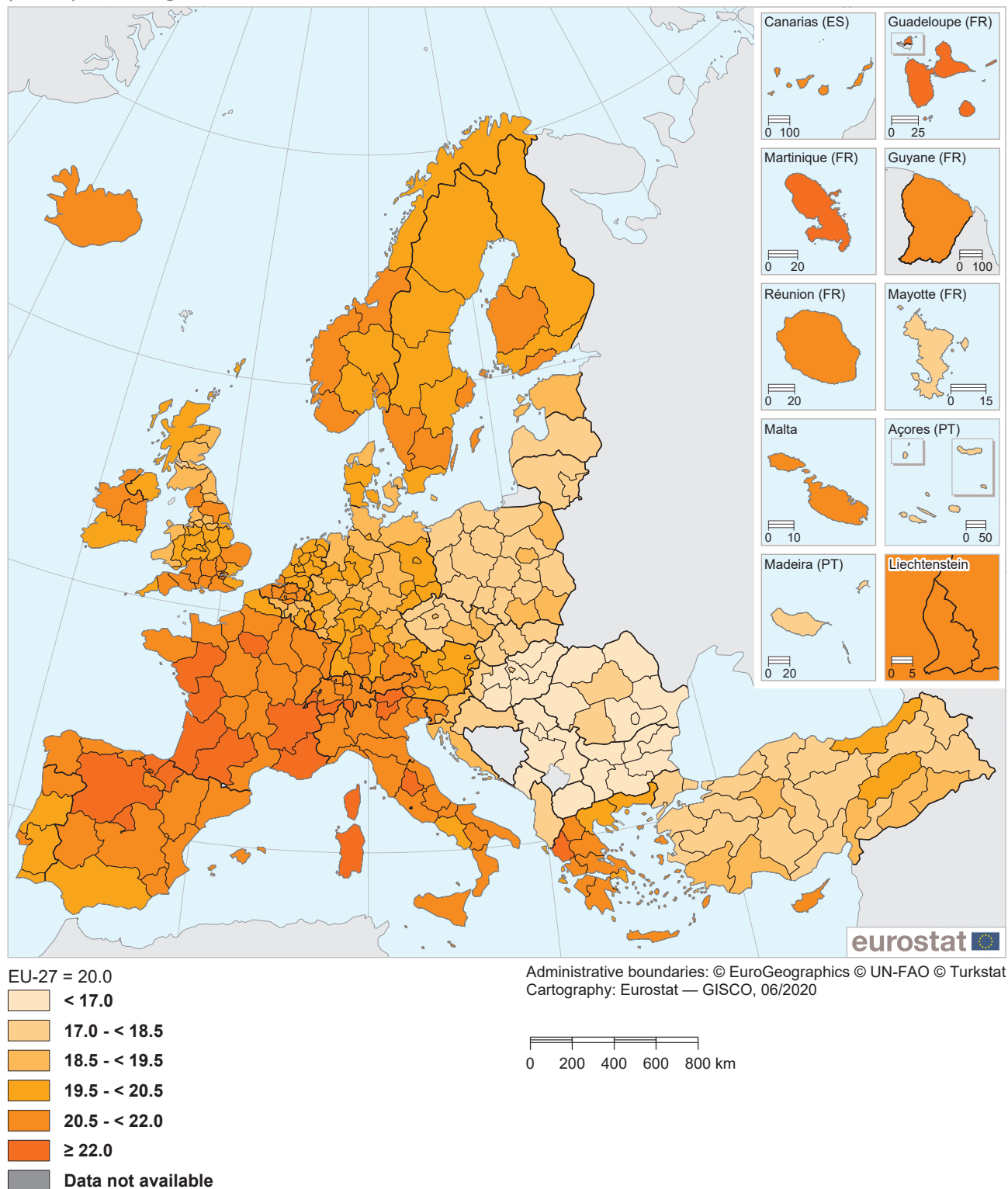
On average, a person aged 65 years living in the Comunidad de Madrid could expect to live a further 23.2 years

In 2018, the inhabitants of the EU-27 who had survived to the age of 65 could expect to live, on average, a further 20.0 years. The highest levels of life expectancy at this age were recorded in a band of regions running from northern Spain through much of western and southern France and into northern and central parts of Italy, as well as the north-western Greek region of Ipeiros. By contrast, life expectancy at 65 years was

considerably lower in the vast majority of regions in eastern and Baltic Member States (see Map 2.1).

A more detailed analysis of NUTS level 2 regions reveals that the highest levels of life expectancy at 65 years were recorded in the Spanish and French capital regions. In 2018, a person of this age living in the Comunidad de Madrid could expect to live a further 23.2 years on average, while the corresponding figure for the Île de France was a further 23.0 years. At the other end of the range, the lowest levels of life expectancy at 65 years were recorded in two Bulgarian regions — where a 65 year-old person could expect to live, on average, a further 15.7 years.

Map 2.1: Life expectancy at 65 years, 2018
(years, by NUTS 2 regions)



Note: Albania, national data. Ireland: estimates. France: provisional, except for Guadeloupe (FRY1), Martinique (FRY2) and Guyane (FRY3). Guadeloupe, Martinique, Guyane and Mardin, Batman, Şırnak, Siirt (TRC3): 2016.

Source: Eurostat (online data codes: [demo_r_mlifexp](#) and [demo_mlexpec](#))



Health status and health care

Self-perceived health refers to the population's own assessment of its health in general using a five-point scale ranging from very good to very bad. It covers the different dimensions of health, in other words, physical, social and emotional functioning and biomedical signs and symptoms.

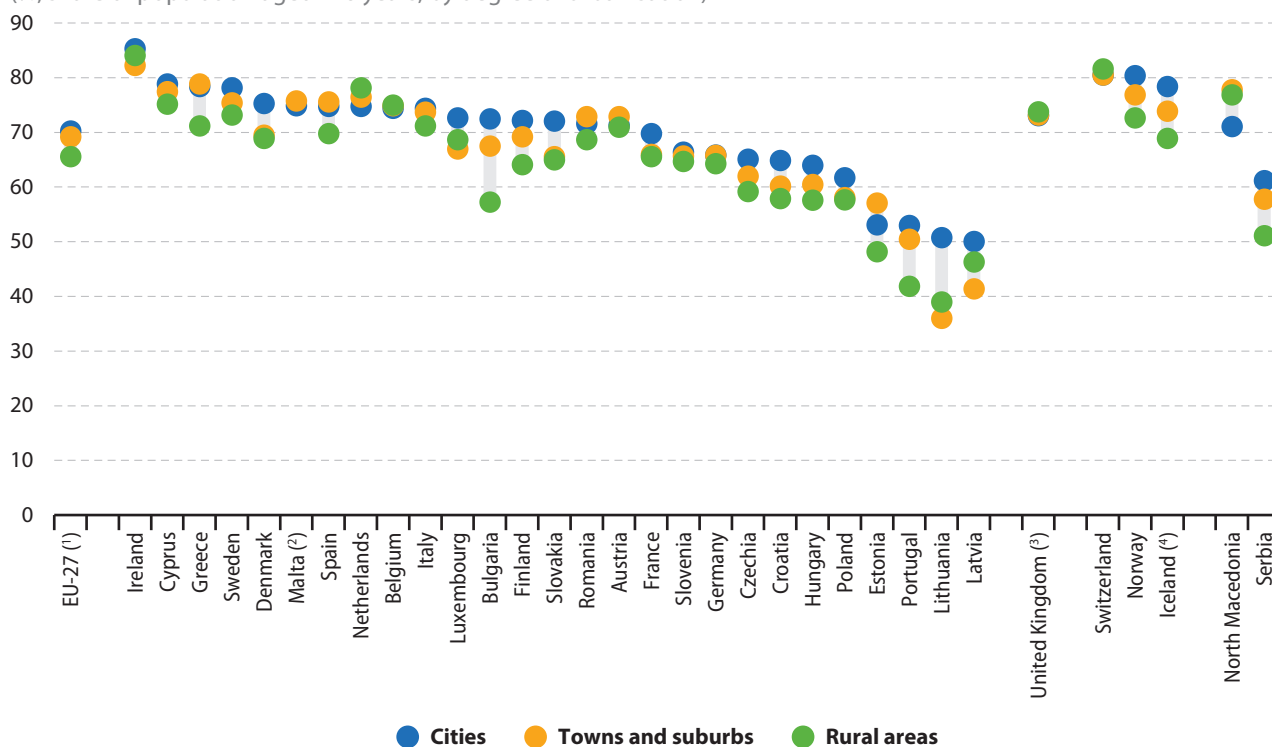
More than two thirds of all adults in the EU perceived their own health as good or very good

Some 68.6 % of the EU-27 adult population (defined here as people aged ≥ 16 years) perceived their own health as good or very good in 2018. This share was higher among adults living in cities (70.3 %) than it was for the rural population (65.6 %). Such differences by

degree of urbanisation may reflect, at least to some degree, the age structure of populations. Younger people (who tend to have better health) are more likely to be found living in urban area, whereas older people (who tend to have poorer health) are more likely to live in rural areas.

An analysis by degree of urbanisation shows that the proportion of adults perceiving their own health to be good or very good was generally highest among city-dwellers; in 2018, this situation was observed in 19 of the EU Member States. Adults living in the cities of Lithuania, Bulgaria and Slovakia were much more likely (than the total adult population) to perceive their own health as good or very good. By contrast, a higher (than average) proportion of adults living in the rural areas of the Benelux Member States perceived their own health as good or very good.

Figure 2.2: People who perceive their own health as good or very good, 2018
(%, share of population aged ≥ 16 years, by degree of urbanisation)



Note: ranked on cities.

⁽¹⁾ Estimates.

⁽²⁾ Rural areas: low reliability, not available.

⁽³⁾ Provisional.

⁽⁴⁾ 2016.

Source: Eurostat (online data code: hlth_silc_18)

1 in 50 adults living in the rural areas of the EU had an unmet need for medical examination

There are a variety of reasons why an individual may report that they have an unmet need for a medical examination. The following are of interest with regard to illustrating equity in access to health care services:

- cost, whereby medical examinations are considered too expensive;
- distance, if patients consider it too far to travel to a clinic/hospital for an examination or there are no means of transportation available;
- time, when patients are dissuaded from having a particular type of examination because of a lengthy waiting list.

In 2018, the proportion of the EU-27 adult population with unmet needs for medical examination — due to it being too expensive, too far to travel, and/or because of waiting lists — was 1.8 %. An analysis by degree of urbanisation (see Figure 2.3) reveals that this share was slightly higher in rural areas (2.0 %) than it was either in cities (1.7 %) or in towns and suburbs (1.6 %).

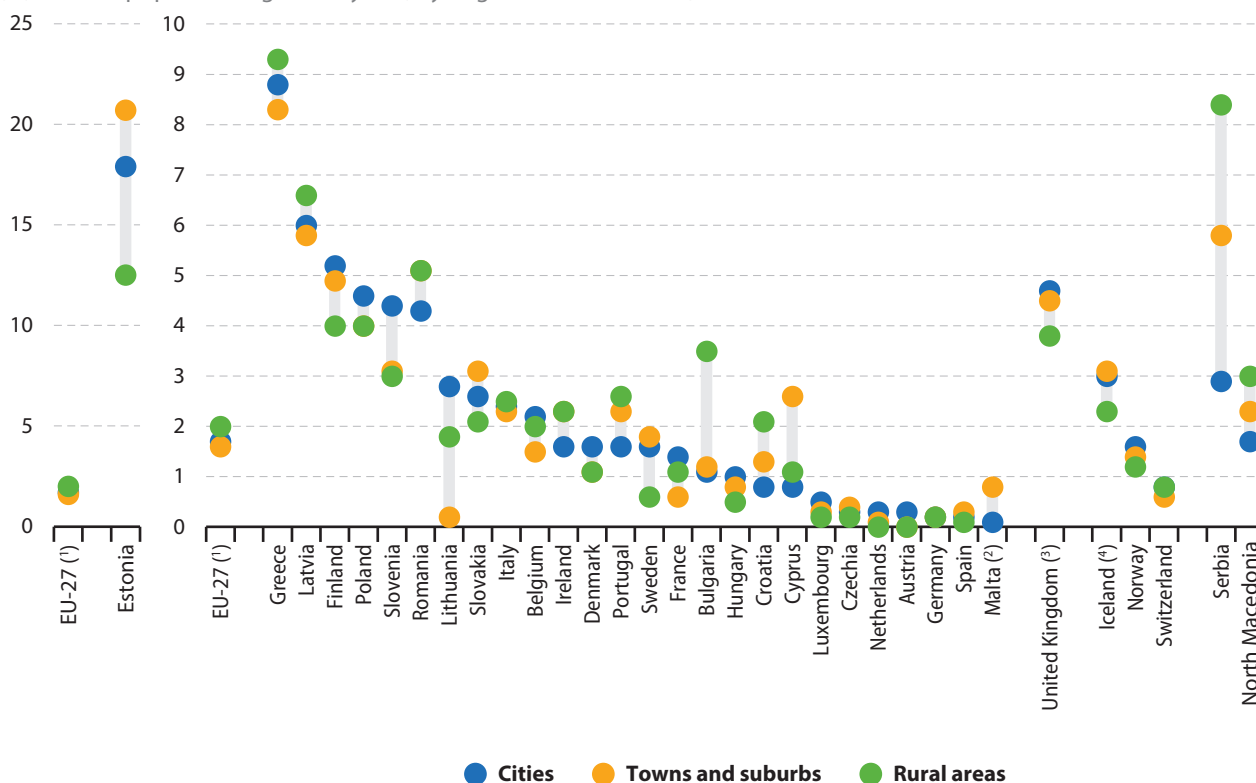
The overall proportion of the adult population with unmet needs for medical examination was 0.3 % or less in 2018 in Czechia, Luxembourg, Germany, Spain, Malta,

the Netherlands and Austria. By contrast, the share of adults with unmet needs for medical examination was higher than 5.0 % in Latvia (6.2 %) and Greece (8.8 %), with a peak of 16.4 % in Estonia. An analysis by degree of urbanisation shows that in 11 of the EU Member States the proportion of adults with unmet needs for medical examination was highest among people living in cities. In addition, there were seven Member States where the highest share was recorded among people living in towns and suburbs and six where the highest share was recorded among people living in rural areas. In Germany, Ireland and Romania the highest share was recorded for at least two different degrees of urbanisation. These differences within Member States may, at least in part, reflect the distribution of poverty and social exclusion, which tends to be relatively high in the cities of northern and western Member States and in the rural areas of southern and eastern Member States.

On average there were 266 inhabitants for every doctor in the EU-27

Physicians include general practitioners (GPs), medical and surgical specialists. They provide services to patients as consumers of healthcare, including: giving advice, conducting medical examinations and making

Figure 2.3: People with unmet needs for medical examination, 2018
(%, share of population aged ≥16 years, by degree of urbanisation)



Note: the figure has two different y-axes. Ranked on cities. Unmet needs for medical examination due to it being too expensive, too far to travel, or because of waiting lists.

(1) Estimates.

(2) Rural areas: low reliability, not available.

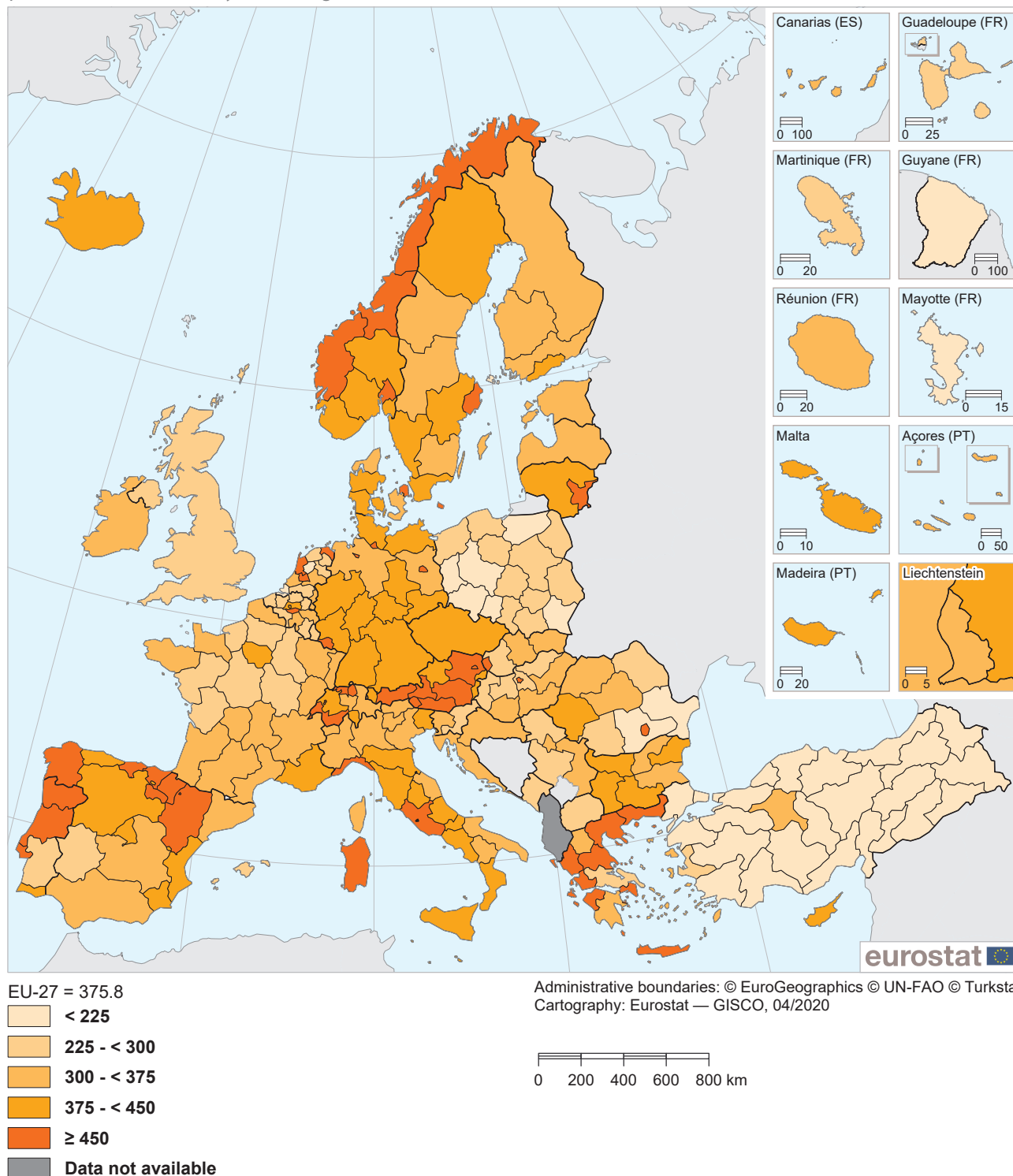
(3) Provisional.

(4) 2016.

Source: Eurostat (online data code: hlth_silc_21)



Map 2.2: Number of (practising) physicians, 2017
(per 100 000 inhabitants, by NUTS 2 regions)



Note: Slovenia, North Macedonia and Turkey, professionally active physicians. Czechia, Greece and Portugal, physicians licensed to practice. Germany and Makroregion Województwo Mazowieckie (PL9): NUTS 1 regions. Czechia, Ireland and the United Kingdom: national data. EU-27 and the United Kingdom: estimates. Denmark, Makroregion Województwo Mazowieckie (PL9) and Sweden: 2016. Finland: 2014.

Source: Eurostat (online data codes: [hlth_rs_prsrg](#) and [hlth_rs_prs1](#))

diagnoses; applying preventive medical methods; prescribing medication and treating diagnosed illnesses; giving specialised medical or surgical treatment.

In 2017, there were approximately 1.68 million medical doctors/physicians within the EU-27. This equated to an average of 376 physicians per 100 000 inhabitants or an average of 266 inhabitants for every physician. Map 2.2 shows the regional distribution of physicians, with:

- a very high number of physicians relative to the size of the population across several regions in Greece — note that Greek data refer to physicians licensed to practice, which is a broader measure than practising physicians (as reported by a majority of EU Member States);
- a very high number of physicians relative to population size in several capitals — this was particularly true for Attiki (Greece), Wien (Austria), Bratislavský kraj (Slovakia) and Área Metropolitana de Lisboa (Portugal) where there were in excess of 600 physicians per 100 000 inhabitants;
- a relatively high number of physicians relative to population size across a wide range of urban regions (as health care services — including those provided by physicians — are more likely to exist in regions that are characterised by relatively high population density).

The highest number of physicians relative to population size was recorded in the Greek capital of Attiki (792 physicians licensed to practice per 100 000 inhabitants in 2017). This peak value was more than 10 times as high as the lowest ratio (78 practising physicians per 100 000 inhabitants), as recorded in the French island region of Mayotte.

Causes of death

Statistics on causes of death are based on two pillars: medical information from [death certificates](#) which may be used as a basis for determining the cause of death and the coding of causes of death following the [International Statistical Classification of Diseases and Related Health Problems \(ICD\)](#). These data provide information about diseases (and other eventualities, such as suicide or accidents) that lead directly to death; they can be used to help plan health services. Statistics on causes of death are classified according to the [European shortlist for causes of death \(2012\)](#) which has 86 different causes.

A wide range of factors determine regional mortality patterns, for example: age structures, gender, access to healthcare services, living/working conditions and

the surrounding environment. Maps 2.3-2.5 show information for [standardised death rates](#), whereby age-specific mortality rates are adjusted to reflect the structure of a [standard population](#). This removes the influence of different age structures between regions (as elderly persons are more likely to die than younger persons, or are more likely to catch/contract a specific illness/disease) and results in a more comparable measure across space and/or over time.

In 2016, more than one quarter of all deaths in the EU-27 were attributed to cancer

There were 4.5 million deaths across the EU-27 in 2016. When expressed in relation to the total population, the EU-27's standardised death rate from all causes of death was 1 000 per 100 000 inhabitants.

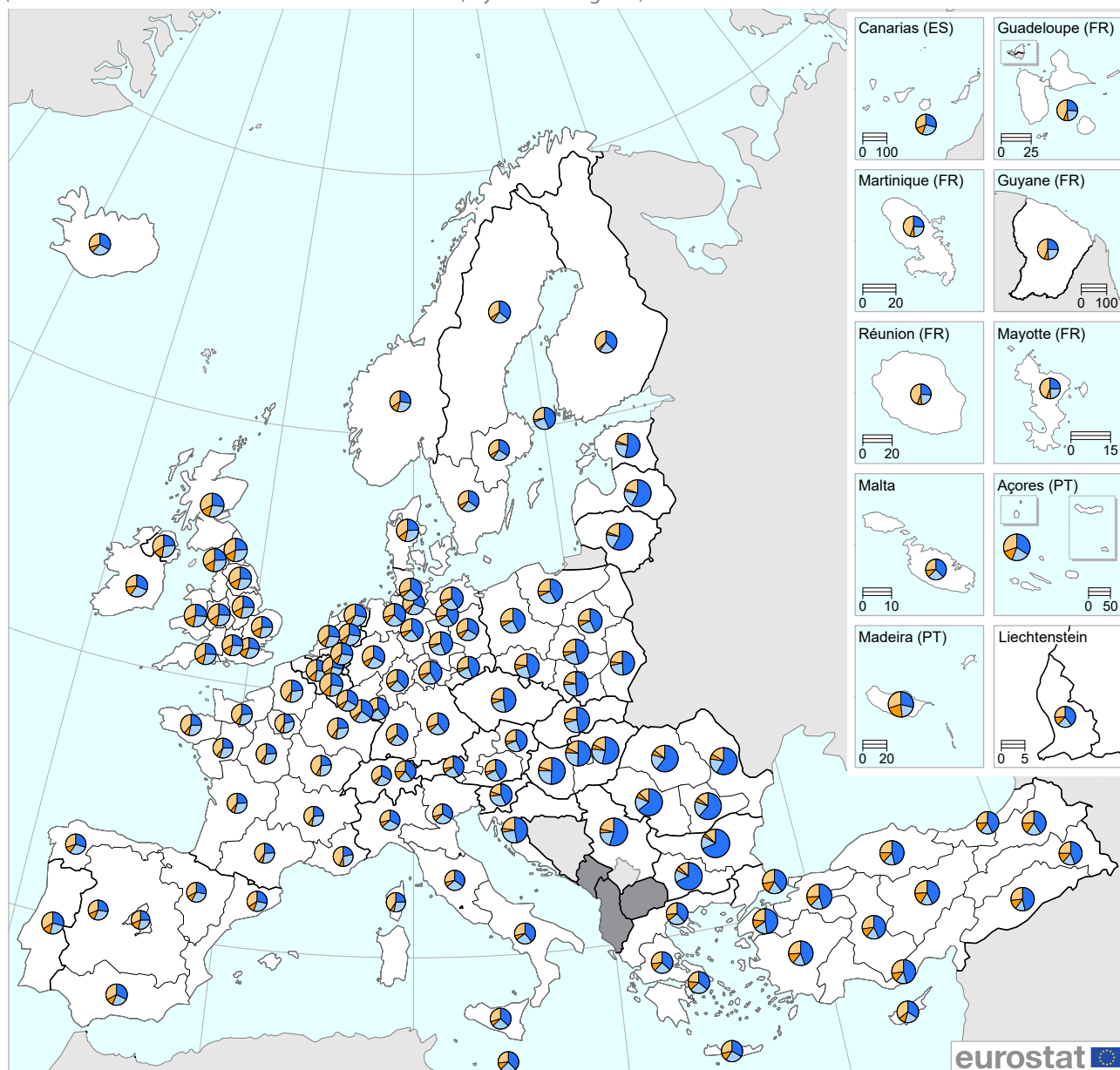
The three principal causes of death in 2016 were: diseases of the circulatory system, malignant neoplasms (hereafter referred to as cancer) and diseases of the respiratory system. Diseases of the circulatory system include ischaemic heart diseases and cerebrovascular diseases, and these accounted for more than one third (37.1 %) of all deaths in the EU-27. Cancer accounted for just over one quarter (25.7 %) of the total number of deaths; a more detailed analysis of deaths from specific cancers is provided below. The share of deaths resulting from diseases of the respiratory system was much lower, at 7.5 %, while other causes of death accounted for the remaining 29.7 %.

In 2016, more than two thirds (68.8 %) of all deaths in Severna i yugoiztochna (Bulgaria) were attributed to diseases of the circulatory system. The other NUTS level 1 regions in the EU where at least half of all deaths were due to diseases of the circulatory system were located in eastern Member States — every region of Bulgaria, Hungary and Romania — or the Baltic Member States.

There were seven NUTS level 1 regions in the EU where at least 30.0 % of all deaths were attributed to cancer in 2016. The highest share of deaths accounted for by cancer was recorded in the Italian region of Nord-Ovest (30.7 %), closely followed by Slovenia (30.6 %). Four of the five remaining regions with shares of at least 30.0 % were located in France (including the capital region of Île-de-France), while the other region was Noreste (Spain).

In 2016, the Região Autónoma da Madeira in Portugal had, by far, the highest share (21.9 %) of deaths caused by diseases of the respiratory system. The next highest share was recorded in the Spanish capital region, Comunidad De Madrid (14.3 %). Diseases of the respiratory system accounted for less than 10 % of all deaths in the vast majority of European regions.

Map 2.3: Most common causes of death, 2016
(standardised death rate and % share of all deaths, by NUTS 1 regions)



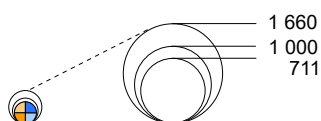
Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 06/2020

Most common cause of death
(% share of all deaths)
EU-27 = diseases of the circulatory
system (37.1 %)

Standardised death rate
(per 100 000 inhabitants)
EU-27 = 1 000

- Diseases of the circulatory system
- Cancer (malignant neoplasms)
- Diseases of the respiratory system
- Other causes of death

0 200 400 600 800 km



Note: the information shown is based on standardised death rates and relates to all deaths of residents in or outside their home country.

Source: Eurostat (online data code: hlth_cd_asdr2)

FOCUS ON DEATHS FROM CANCER

Although significant advances have been made to combat cancer, it remains a key public health concern. Approximately two fifths of the EU's population will, at some point during their lives, face cancer. Survival rates are increasing, in part due to early detection and screening programmes. The [European Commission's](#) policy guidelines for 2019-2024 foresee the development of a plan to fight cancer and support EU Member States in improving cancer control and care. Individuals may also influence their chances of avoiding cancer by regulating, among others, their exercise, diet, consumption of alcohol and smoking behaviour.

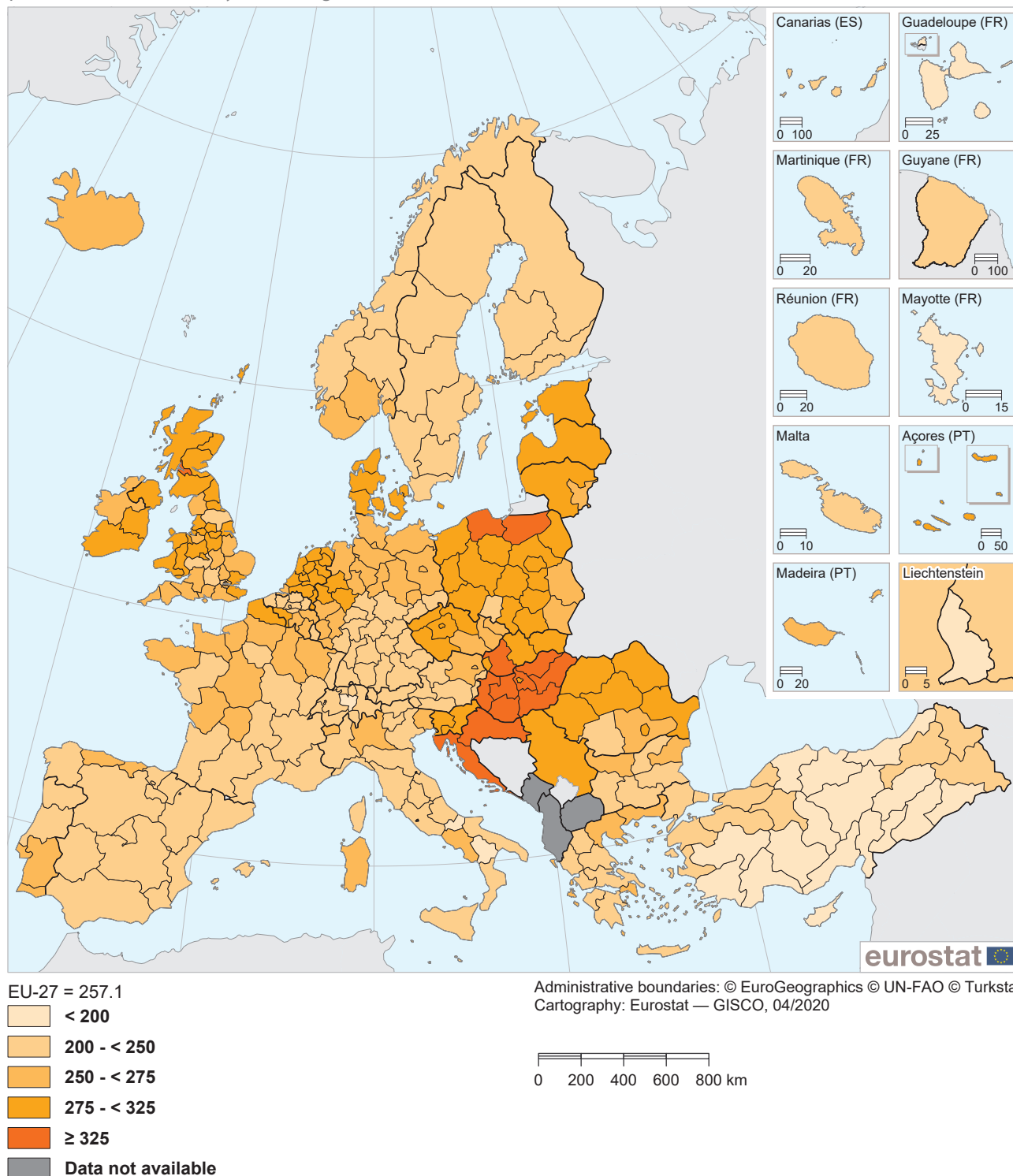
A wide range of factors determine regional mortality patterns, for example: age structures, gender, living/working conditions and the surrounding environment. Maps 2.4 and 2.5 show information for [standardised death rates](#), whereby age-specific mortality rates are adjusted to reflect the structure of a [standard population](#). This removes the influence of different age structures between regions (as elderly persons are more likely to die than younger persons, or are more likely to catch/contract a specific illness/disease) and results in a more comparable measure across space and/or over time.

In 2016, 1.2 million deaths across the EU were attributed to cancer

The EU-27 standardised death rate from cancer was 257 per 100 000 inhabitants in 2016. The highest death rates from cancer were concentrated in eastern Member States. For example, all of the NUTS level 2 regions of Croatia, Hungary and Slovenia had rates above 300 deaths per 100 000 inhabitants (see Map 2.4). This cluster of regions included Közép-Dunántúl in Hungary, which had the highest cancer death rate in the EU — 364 deaths per 100 000 inhabitants.

The lowest standardised death rates from cancer were quite widely dispersed across the EU. Aside from two of the French régions ultrapériphériques — Mayotte and Guadeloupe — people living in Cyprus had the lowest risk of dying from cancer (194 deaths per 100 000 inhabitants in 2016). Relatively low death rates — below 200 deaths per 100 000 inhabitants — were also recorded in the southern Italian regions of Basilicata and Molise.

Map 2.4: Standardised death rates from cancer, 2016
(per 100 000 inhabitants, by NUTS 2 regions)



Note: the information shown relates to all deaths of residents in or outside their home country. Serbia: national data.

Source: Eurostat (online data code: hlth_cd_asdr2)

Cancer was the principal cause of death for people aged less than 65 years

In 2016, cancer accounted for more than one third (37.2 %) of the total number of deaths in the EU-27 among people aged less than 65 years. Some 290 000 people under this age died from cancer in 2016; this was considerably higher than the 167 000 deaths attributed to diseases of the circulatory system, which was the second most common cause of death for this subpopulation. Despite cancer being the principal cause of death among people aged less than 65 years, the risk of mortality from cancer across the total population was more than three times as high, underlining that most cancer-related deaths continue to occur among the elderly.

Észak-Magyarország in Hungary had the highest death rate from cancer for people aged less than 65 years

Map 2.5 shows that the highest standardised death rates from cancer among people aged less than 65 years were typically found in eastern and Baltic Member States. In addition, there were some atypical/isolated regions with relatively high death rates — as shown by the darkest shade in the map — comprising Nord-Pas de Calais (France), Regiões autónomas dos Açores y da Madeira and Algarve (all in Portugal).

In 2016, the highest death rate from cancer among people aged less than 65 years was recorded in Észak-Magyarország, at 147 deaths per 100 000 inhabitants. Note this Hungarian region also recorded the fourth highest death rate from cancer for people of all ages (behind three other Hungarian regions). The death rate from cancer among people aged less than 65 years in Észak-Magyarország was more than three times as high as the rate recorded in Övre Norrland (Sweden):

the latter had the lowest rate in the EU, at 45 deaths per 100 000 inhabitants aged less than 65 years.

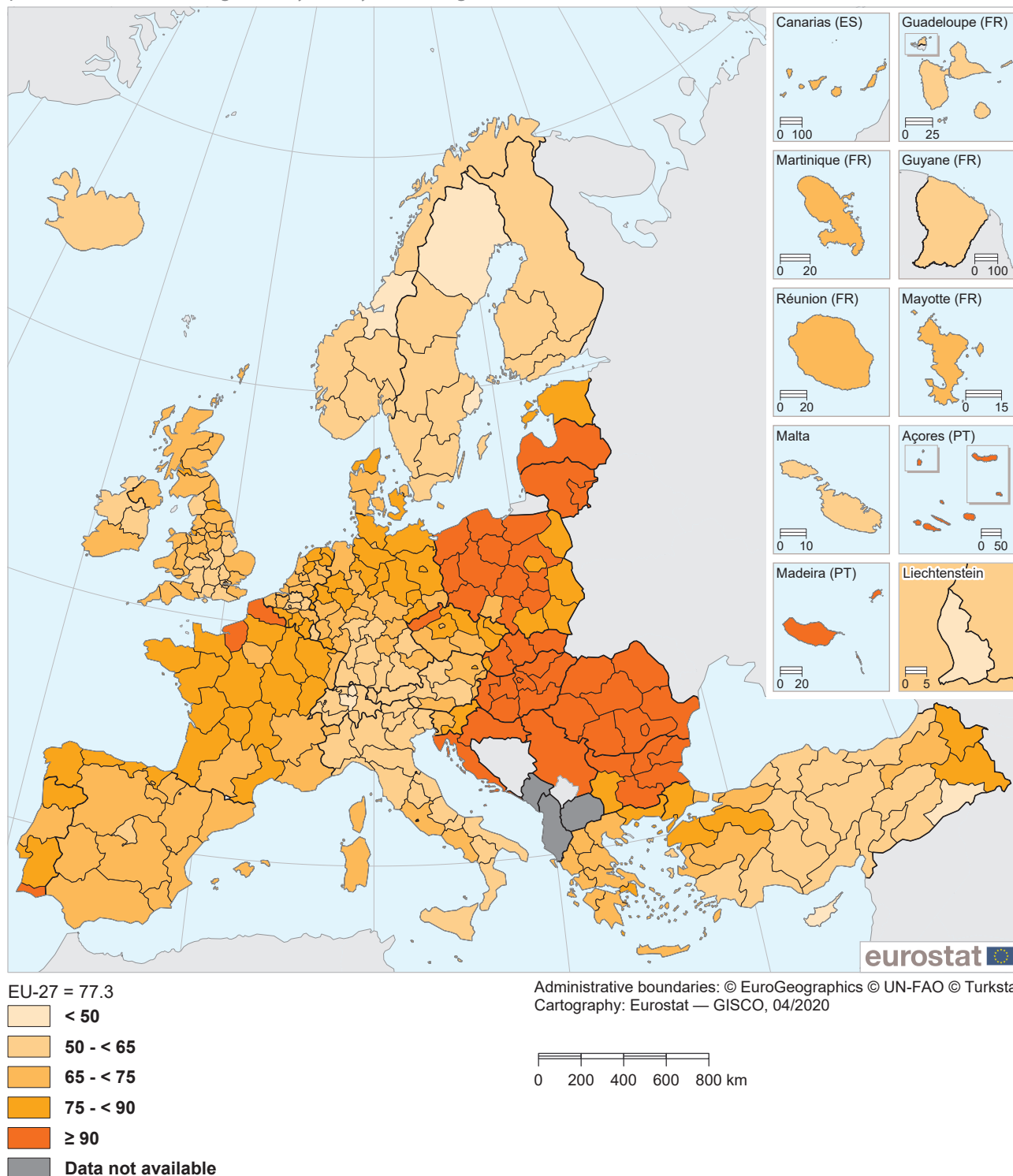
By comparing the results presented in Maps 2.4 and 2.5 it is possible to analyse where the risk of mortality from cancer was particularly high or low among people aged less than 65 years relative to the risk for people of all ages. In 2016, there were several regions in Bulgaria and Romania, where standardised death rates from cancer among people aged less than 65 years were relatively high (when compared with rates for the total population). By contrast, in several Swedish and Irish regions, death rates from cancer for people aged less than 65 years were considerably lower than those for the whole population.

Figure 2.4 confirms that the highest regional death rates from cancer were concentrated in Hungary. The capital of Budapest was the only Hungarian region that did not feature among the 10 EU regions with the highest death rates from cancer in 2016. Aside from Hungarian regions, there were several other regions in eastern Member States where death rates from cancer were at least 325 per 100 000 inhabitants (see the darkest shade in Map 2.4), including: both Croatian regions, Západoé Slovensko (in Slovakia), Warmińsko-Mazurskie and Pomorskie (both in Poland).

Just over one fifth of all cancer-related deaths in the EU-27 were attributed to lung cancer

Alongside gender specific cancers — prostate cancer for men and breast cancer which is almost exclusive to women — lung cancer and colorectal cancer are two of the leading causes of death that affect people in the EU. In 2016, the EU-27 standardised death rate from lung cancer was 53 per 100 000 inhabitants, while the rate for colorectal cancer was 31 deaths per 100 000 inhabitants.

Map 2.5: Standardised death rates from cancer among people aged < 65 years, 2016
(per 100 000 inhabitants aged < 65 years, by NUTS 2 regions)



Note: the information shown relates to all deaths of residents in or outside their home country. Serbia: national data.

Source: Eurostat (online data code: hlth_cd_asdr2)

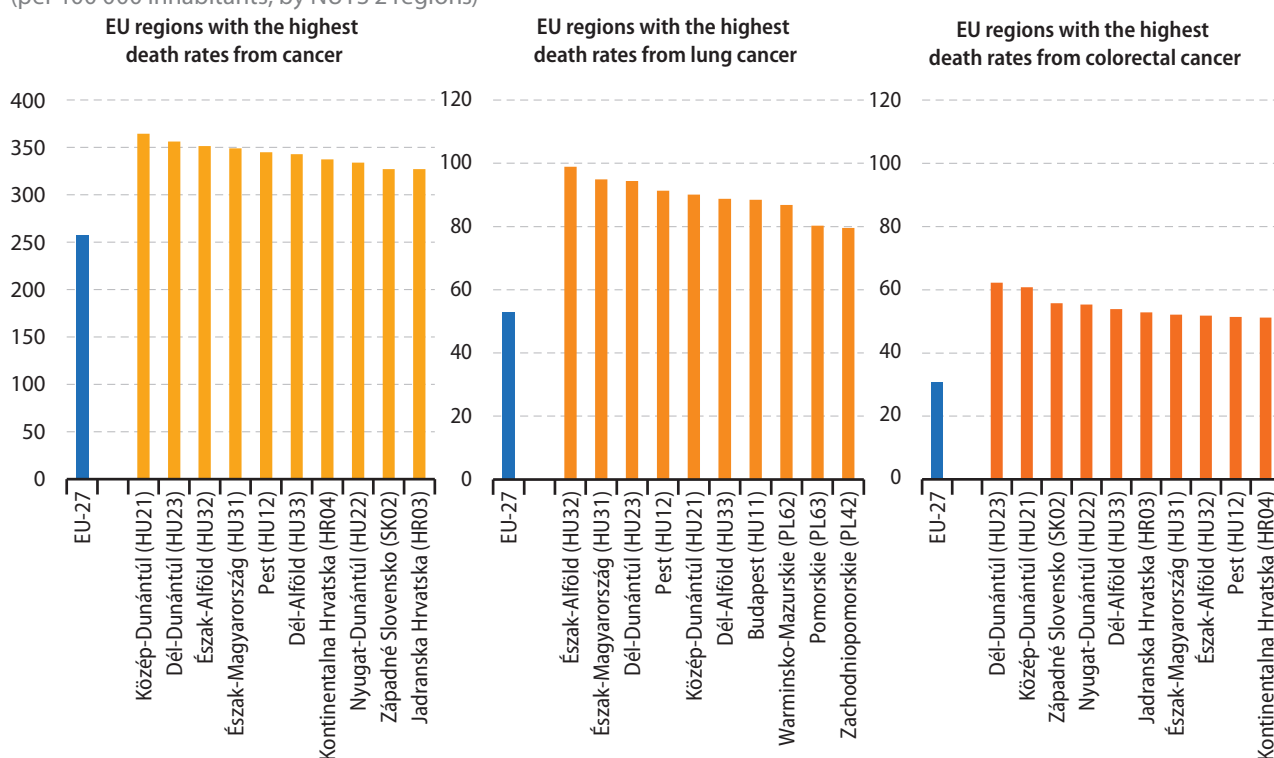
Észak-Alföld and Dél-Dunántúl in Hungary recorded the highest death rates from lung cancer and from colorectal cancer respectively

A closer analysis across NUTS level 2 regions reveals that the highest regional death rate for lung cancer was in Észak-Alföld (99 deaths per 100 000 inhabitants in 2016). It was followed by all but one of the remaining seven Hungarian regions (the exception being Nyugat-Dunántúl) where death rates from cancer were within the range of 88-95 deaths per 100 000 inhabitants (see the middle part of Figure 2.4). The three remaining EU

regions with the highest death rates from lung cancer were all situated in the northern half of Poland.

Hungarian regions also accounted for a majority of the 10 EU regions with the highest death rates for colorectal cancer (see the final part of Figure 2.4). They included Dél-Dunántúl, which had the highest regional death rate (62 deaths per 100 000 inhabitants). People living in Dél-Dunántúl were twice as likely to die from colorectal cancer as the EU-27 average. Budapest was the only Hungarian region that did not feature in the top 10. The ranking of regions with the highest death rates from colorectal cancer was completed by the two Croatian regions and a single region from Slovakia.

Figure 2.4: Standardised death rates from cancer, 2016
(per 100 000 inhabitants, by NUTS 2 regions)



Note: the information shown relates to all deaths of residents in or outside their home country. The scale used for the first figure is different to that used for the other two figures.

Source: Eurostat (online data code: hlth_cd_asdr2)

3

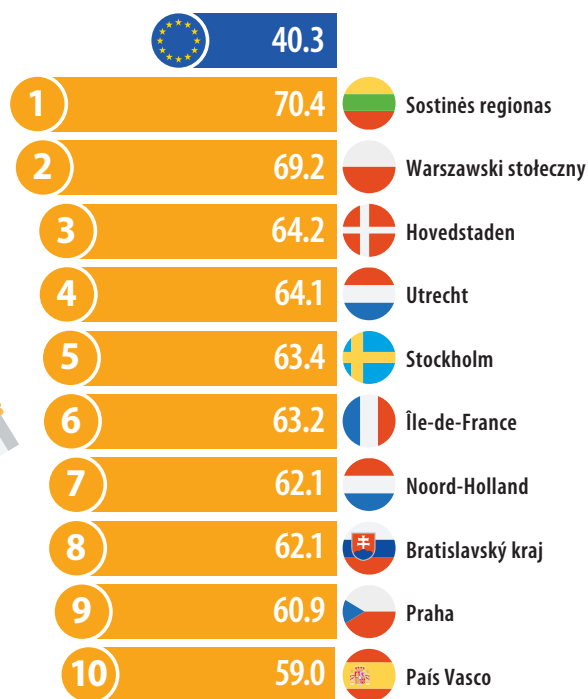
Education



Which EU regions have the highest share of people with tertiary education?



(% of people aged 30-34 years, 2019 data)



Alongside health, education is often considered as one of the most important investments a country can make in its people. Education has the potential to drive forward socioeconomic development: this is particularly the case in a globalised world, where a highly-skilled workforce is necessary to compete in terms of productivity and innovation.

Education, [vocational training](#) and [lifelong learning](#) play a vital role in the economic and social strategies of the [European Union \(EU\)](#). The strategic framework for European cooperation in education and training is called [Education and training 2020 \(ET 2020\)](#). It pursues four common objectives: make lifelong learning and mobility a reality; improve the quality and efficiency

of education and training; promote equity, social cohesion and active citizenship; enhance creativity and innovation, including entrepreneurship.

This chapter presents data following the natural progression of pupils and students through different levels of the education system (according to the [International standard classification of education \(ISCED\)](#) — see box for more details), before analysing transitions from education into the [labour market](#).

In 2018, there were almost 92 million children, pupils and students enrolled across the [EU-27](#) in all levels of education from early childhood through to doctoral studies.



International standard classification of education (ISCED)

As national education systems vary in terms of structure and curricular content, it can be difficult to make spatial or temporal comparisons when assessing their performance. In order to interpret the inputs, processes and outcomes of education systems, official statistics on education are compiled according to the international standard classification of education (ISCED). It is used to assemble a wide variety of statistics, covering topics such as enrolments and attendance, educational attainment, or human or financial investment.

ISCED is the reference classification for organising formal education programmes and related qualifications by education levels and fields into internationally agreed categories. The most recent version of the classification — [ISCED 2011](#) — was adopted by the UNESCO General Conference in November 2011 and identifies the following levels of education:

- early childhood education — ISCED level 0;
- primary education — ISCED level 1;
- lower secondary education — ISCED level 2;
- upper secondary education — ISCED level 3;
- post-secondary non-tertiary education — ISCED level 4;
- short-cycle tertiary education — ISCED level 5;
- bachelor's or equivalent level — ISCED level 6;
- master's or equivalent level — ISCED level 7;
- doctoral or equivalent level — ISCED level 8.

The term tertiary education is used to refer to higher levels of education (ISCED levels 5-8).

Early childhood education (and care)

Research has shown that early experiences of children are often critical for their long-term development. Early childhood and primary education are thought to play a key role in potentially redressing life chances through tackling inequalities and raising proficiency in basic competences. One of the first opportunities children have to develop learning, critical thinking and collaborative skills is if they attend early childhood education (ISCED level 0); this has to include an educational component, in contrast to child care that may be provided by a crèche or a child minder.

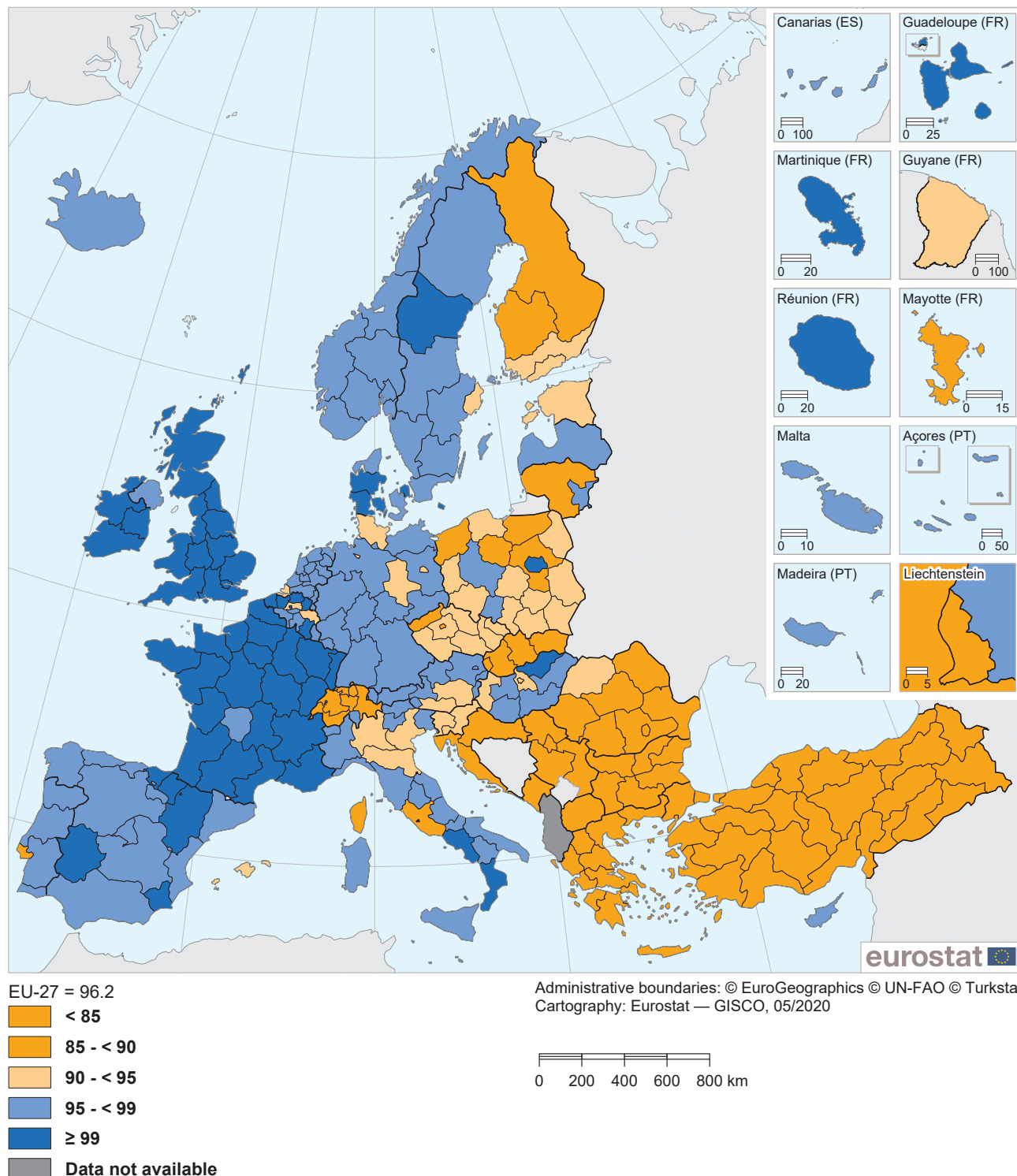
There were 34 regions across the EU where all children between the age of four and the age for starting compulsory primary education participated in early childhood education

The ET 2020 strategic framework set a headline target to have, by 2020, at least 95 % of children between the age of four and the age for starting compulsory primary education participating in early childhood education. In 2018, this share stood at 96.2 % across the EU-27 — in other words the headline target had been surpassed.

Map 3.1 shows a more detailed analysis for 218 NUTS level 2 regions. It reveals that there were 132 regions (in other words, approximately 6 out of 10) where the headline target of 95.0 % had been attained (those regions shaded in blue); note that statistics presented for Germany relate to NUTS level 1 regions. There were 34 regions — predominantly located in Belgium, Denmark, Ireland and France — where all children between the age of four and the age for starting compulsory primary education participated in early childhood education.

While EU Member States have made a number of reforms designed to increase the proportion of young children participating in early childhood education, it is unlikely (at the current rate of progress) that these will result in every region reaching the headline target by 2020. All of the regions of Bulgaria, Czechia, Greece, Croatia, Romania, Slovenia and Slovakia reported a share of children between the age of four and the age for starting compulsory primary education participating in early childhood education in 2018 below 95.0 % (shaded in yellow). The lowest participation rates — with fewer than 7 out of 10 children from this subpopulation participating in early childhood education — were recorded in Východné Slovensko (the easternmost region of Slovakia; 69.9 %) and Attiki (the capital region of Greece; 67.1 %).

Map 3.1: Participation rates in early childhood education, 2018
(%, by NUTS 2 regions)



Note: the rate shows the share of children between the age of four and the age of starting compulsory primary education that participated in early childhood education. Germany and the United Kingdom, NUTS level 1. Bourgogne (FRC1), Haute-Normandie (FRD2), Picardie (FRE2), Limousin (FRI2), Poitou-Charentes (FRI3), Corse (FRM0), Guyane (FRY3) and Mayotte (FRY5): provisional. Liechtenstein and Montenegro: 2017. Turkey: 2016.

Source: Eurostat (online data codes: [educ_uoe_enra17](#) and [educ_uoe_enra10](#))



Vocational education

Upper secondary education (ISCED level 3) typically ends when students are aged 17 or 18 years-old. These programmes are designed primarily to prepare students so that they may continue their studies at a higher level, or — as in the case of vocational education — provide them with the necessary skills and competencies that are relevant for a specific occupation or trade. Policymakers have shown interest in vocational education as it has the potential to help facilitate the transition of young people from education into the labour market and lower youth unemployment rates.

Almost half of all upper secondary students were enrolled in vocational education programmes

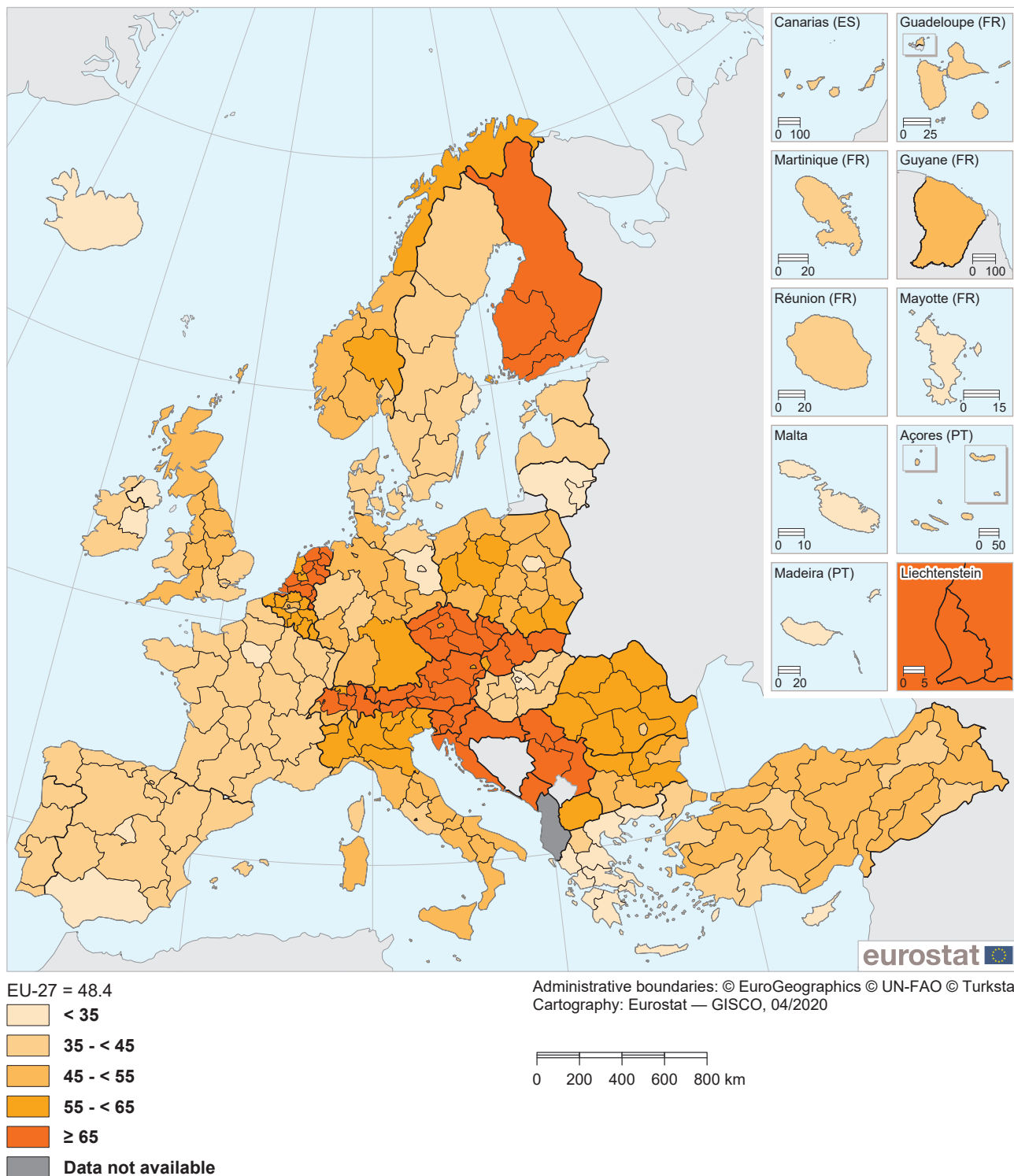
In 2018, there were 17.6 million students enrolled in the EU's upper secondary education establishments, with almost half of these (48.4 %) participating in vocational education programmes; the remaining share followed general upper secondary education programmes that were more academic in nature.

The proportion of upper secondary students enrolled in vocational programmes varied considerably across EU regions. In 2018, a peak of 76.1 % was recorded in Severozápad (Czechia). Its share was 4.6 times that of the lowest share (16.7 %) recorded in Cyprus. Some of

these differences between regions can be attributed to the availability of and perceptions concerning vocational education in each EU Member State: for example, in Czechia, Finland and Slovenia, vocational education is well developed and widely seen as an effective way of helping to facilitate an individual's transition into the labour market. By contrast, vocational education systems were less common in southern and [Baltic Member States](#), as well as in Ireland, France, Hungary and Sweden.

In 2018, there were 37 (out of 218) NUTS level 2 regions where the share of upper secondary students participating in vocational education was at least 65 %; note that statistics presented for Germany relate to NUTS level 1 regions. Both of the regions in Croatia and in Slovenia had shares that were above 65 % and this was also the case in all but one of the regions in Czechia, Austria, Slovakia and Finland. Within these four EU Member States, the only exceptions — where regional shares of upper secondary students participating in vocational education were below 65 % — were in the capital regions of Praha, Wien and Bratislavský kraj, as well as Åland (that had the smallest population among EU regions). Indeed, the proportion of upper secondary students enrolled in vocational programmes was often low in the EU's capital regions, as they recorded the lowest share in more than two thirds of the multi-regional Member States; this may be linked to the high concentration of general and academic establishments in capital regions.

Map 3.2: Students enrolled in upper secondary education that followed vocational programmes, 2018
(%, by NUTS 2 regions)



Note: Germany and the United Kingdom, NUTS level 1. Italy: definition differs. Turkey: 2016.

Source: Eurostat (online data code: educ_uoe_enrs06)



Male students were more likely (than female students) to enrol in vocational education programmes

In 2018, there were 8.5 million students enrolled in upper secondary vocational education across the EU-27, a majority of whom were male (4.9 million). The share of male students enrolled in upper secondary education that followed vocational programmes was 54.6 %, while the corresponding ratio for female students was lower at 41.8 %. As such, a greater share of female students at this level of education were following more academic studies.

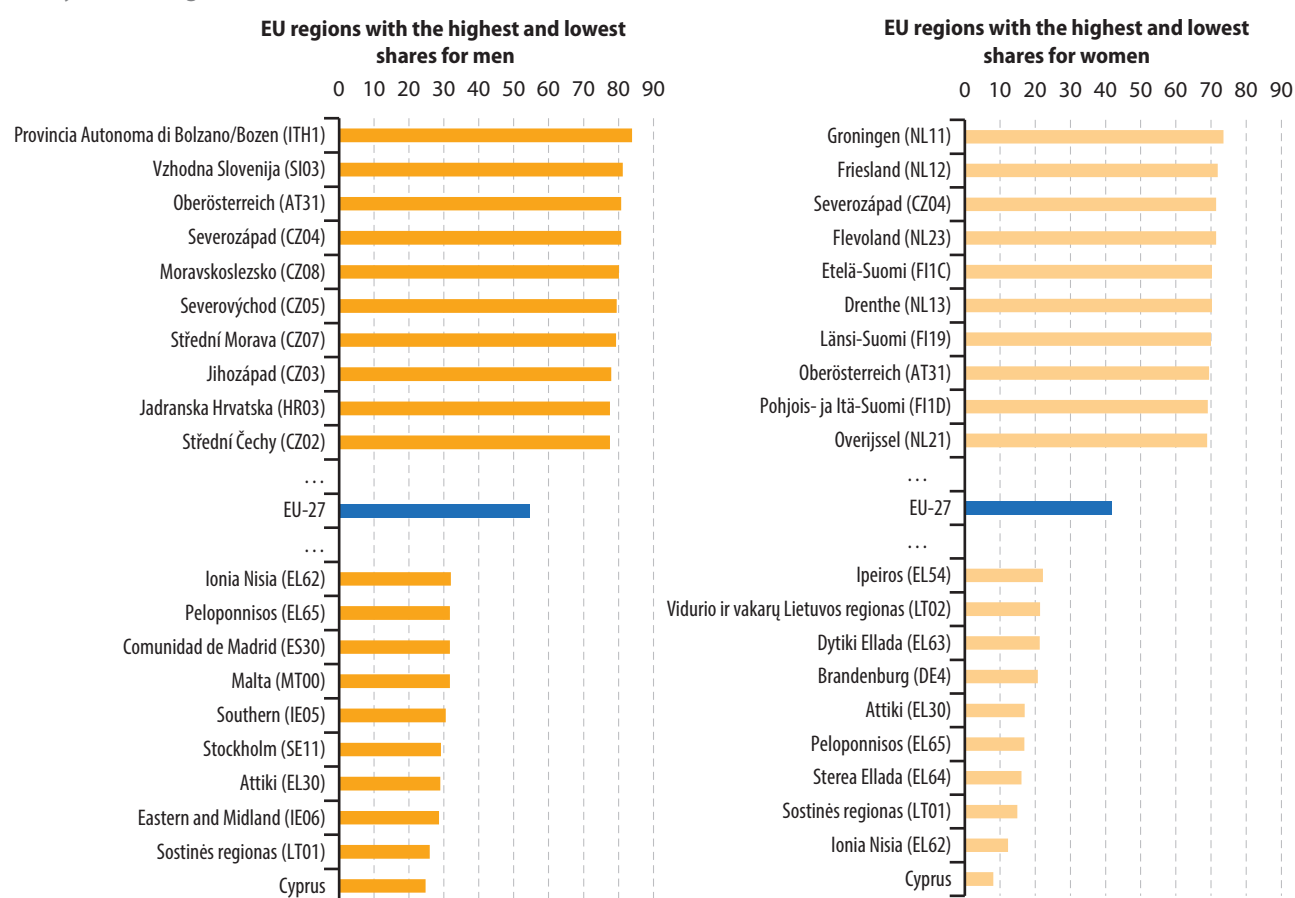
Figure 3.1 shows the regions with the highest and lowest shares of male/female students within upper secondary education that followed vocational programmes. In 2018, the highest regional share among male students was in the northern Italian region of Provincia Autonoma di Bolzano/Bozen (83.9 %); more than four out of every five male students also

followed vocational programmes in Vzhodna Slovenija (Slovenia), Oberösterreich (Austria), Severozápad and Moravskoslezsko (both Czechia).

In 2018, almost three quarters (73.5 %) of all female upper secondary students in Groningen (the Netherlands) were enrolled on vocational programmes. Three more Dutch regions — Friesland, Flevoland and Drenthe — as well as Severozápad (Czechia) and Etelä-Suomi (Finland) also reported that more than 7 out of every 10 female students in upper secondary education were following vocational programmes.

In 2018, the largest regional gender gaps were recorded in several Italian, German and Polish regions, where the proportion of male students within upper secondary education following vocational programmes was more than 20 percentage points above that for female students. By contrast, there were only eight regions where this gap was in favour of female students: all three regions of Ireland, four regions from Sweden, and Prov. Hainaut in Belgium.

Figure 3.1: Students enrolled in upper secondary education that followed vocational programmes by sex, 2018
(%, by NUTS 2 regions)



Note: Germany, NUTS level 1. Bulgaria and Italy: definition differs.

Source: Eurostat (online data code: educ_uoe_enrs06)

Educational attainment

Educational attainment can be measured by looking at the highest level of education (based on the ISCED classification) that an individual has successfully completed. A basic level of education is desirable for all, as it provides the opportunity to participate in economic and social life. That said, people with higher levels of educational attainment generally tend to have a lower likelihood of being unemployed and enjoy a wider range of job opportunities, higher levels of income and tend to be more satisfied with life.

PEOPLE WITH AT LEAST AN UPPER SECONDARY EDUCATION

In the last couple of decades, there has been a rapid expansion in the number of students participating in intermediate and higher levels of education. The share of the EU-27 working age population — defined here as those aged 25-64 years — that had attained at least an upper secondary level of education (ISCED levels 3-8) increased between 2002 and 2019 from 65.9 % to 78.4 %.

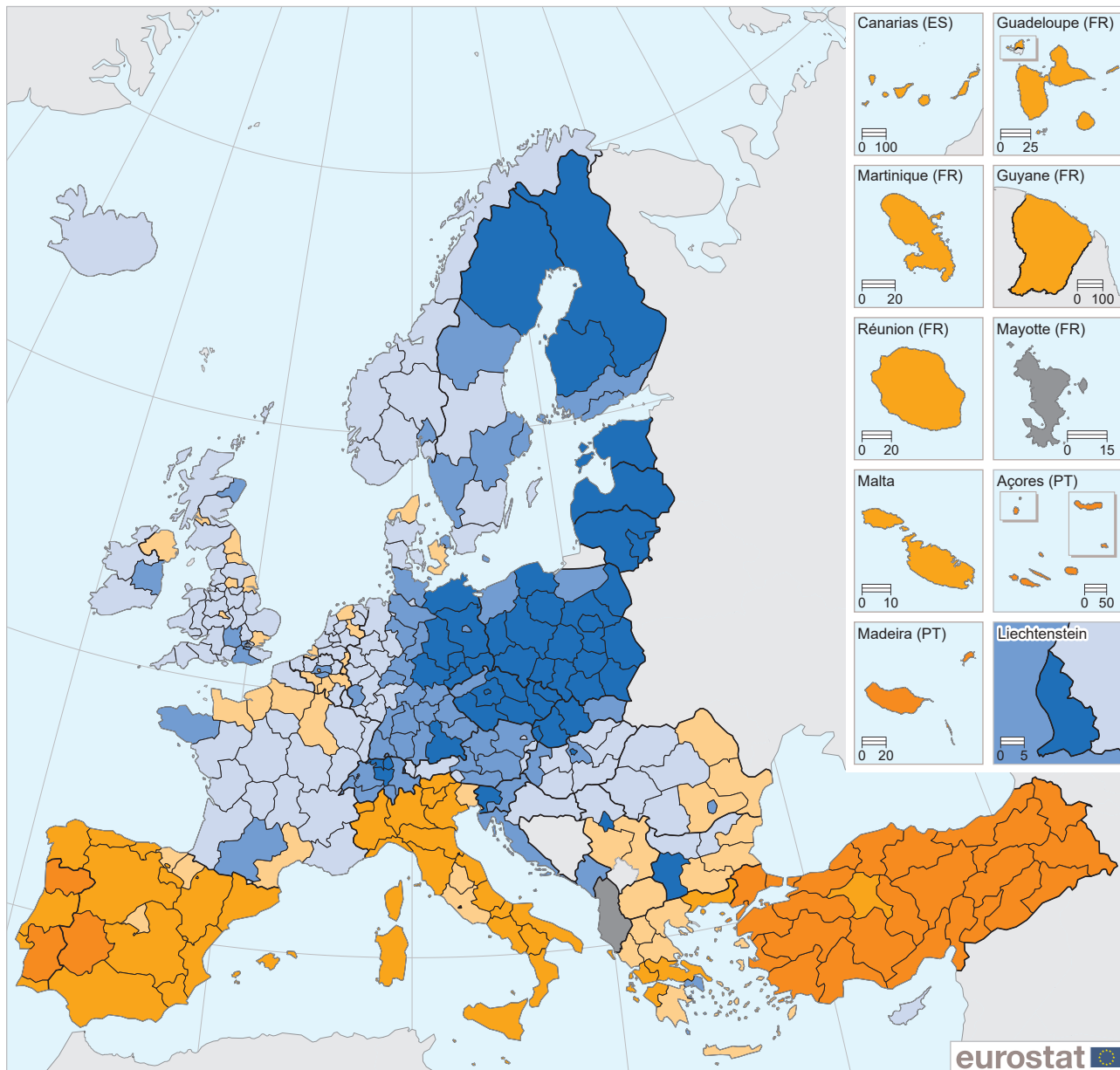
The share of the working age population with at least an intermediate level of education was almost three times as high in Praha as it was in Região Autónoma dos Açores

Map 3.3 shows that in 2019 a very high proportion of the working age population in the eastern Länder of

Germany and several eastern and Baltic Member States had attained at least an intermediate level of education. These figures reflect, at least to some degree, former Communist regimes providing universal access to education, the impact of which can still be seen today in high levels of literacy and numeracy among older generations. The highest shares were recorded in the capital regions of Czechia, Lithuania, Poland and Slovakia: Praha (97.2 %), Sostinės regionas (96.9 %), Warszawski stołeczny (96.8 %) and Bratislavský kraj (96.0 %).

By contrast, the share of the working age population that had at least an intermediate level of education was generally much lower in southern regions of the EU. This was particularly true in six NUTS level 2 regions where less than 50.0 % of the working age population had attained at least an intermediate level of education. Four of these regions — Regiões Autónomas dos Açores y da Madeira, Norte and Alentejo — were located in Portugal, while the other two — Extremadura and Ciudad Autónoma de Ceuta — were in neighbouring Spain. Note that their older generations may have grown up in quite different socioeconomic conditions to those experienced by pupils and students today. Furthermore, both of these Iberian countries experienced the relatively late democratisation of their education systems and that they experience/experienced emigration of more highly-educated individuals (to other regions or countries).

Map 3.3: People aged 25-64 years having attained at least an upper secondary level of education, 2019
(%, by NUTS 2 regions)



Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 04/2020

Note: Corse (FRM0), low reliability.

Source: Eurostat (online data code: [edat_ifse_04](#))

TERTIARY EDUCATION

Tertiary education (ISCED levels 5-8) builds on secondary education, providing learning activities at a higher level of complexity. It is offered by universities, vocational establishments, institutes of technology, as well as other institutions awarding academic degrees and/or professional certificates.

Less than half of all EU regions had reached the policy goal for tertiary educational attainment

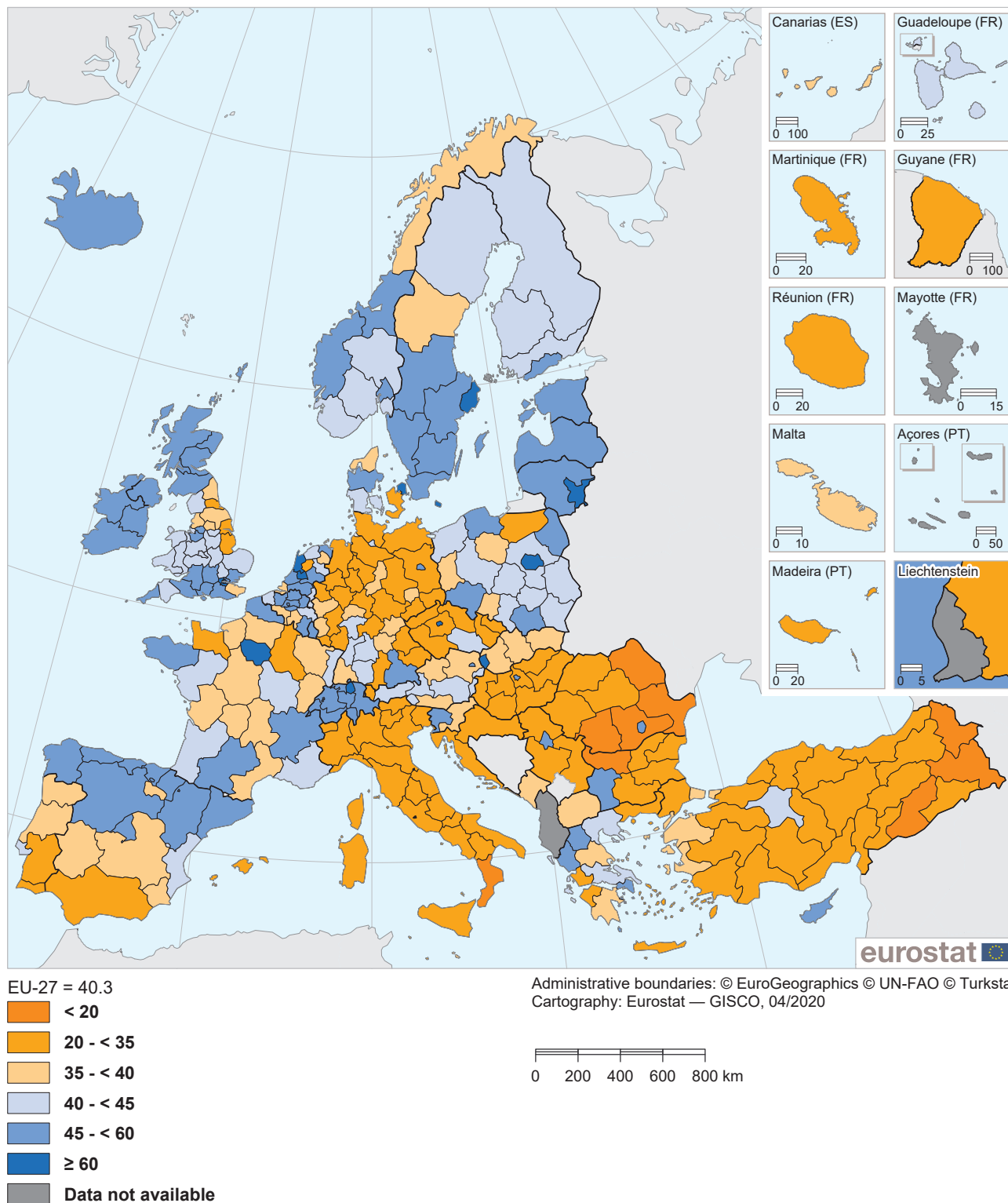
Map 3.4 provides information on the share of the population aged 30-34 years who had successfully completed a tertiary education programme. This age group has been used as it is commonplace for most students to have completed their tertiary education during their twenties (even if they followed a masters or postgraduate course). This indicator forms part of a [scoreboard](#) used to monitor the European pillar of social rights and is also an [ET 2020 benchmark indicator](#). The policy goal is to increase tertiary educational attainment across the EU to at least 40 % by 2020.

In 2019, more than two fifths (40.3 %) of the EU-27 population aged 30-34 years possessed a tertiary level of education; as such, the ET 2020 benchmark had been attained. However, a more detailed regional analysis reveals considerable territorial disparities — both within and across individual EU Member States. There were 101 NUTS level 2 regions (out of the 237 for which data are available) where at least 40.0 % of people aged 30-34 years had a tertiary level of educational

attainment in 2019; these regions are shaded blue in Map 3.4. At the top end of the distribution, there were nine regions with shares of at least 60.0 %: the capital regions of Czechia, Denmark, France, Lithuania, the Netherlands, Poland, Slovakia and Sweden; and Utrecht — a research hub, with one of the largest universities in the Netherlands. In a majority of the remaining multi-regional EU Member States, the capital region recorded the highest share of tertiary educational attainment. The only exceptions — where a non-capital region recorded the highest share — were Prov. Vlaams-Brabant (Belgium), País Vasco (Spain), Jadranska Hrvatska (Croatia), Emilia-Romagna (Italy) and Utrecht. Capital regions would appear to act as a magnet for highly-qualified people, exerting considerable ‘pull effects’ through the varied educational, employment and social/lifestyle opportunities that they offer.

By contrast, the share of people aged 30-34 years with a tertiary level of education remained below the ET 2020 benchmark of 40.0 % in more than half of the regions for which data are available in 2019; these regions are shaded in yellow. Many of these were rural or sparsely populated regions that had a relatively large agricultural sector, with a low level of supply of highly-skilled employment opportunities. It is interesting to note that in eastern Germany, Italy, Portugal and several eastern EU Member States, every region except for the capital region recorded a relatively low level of tertiary educational attainment. In many of these, the relatively low take-up of tertiary education opportunities reflects a (traditional) practice of following vocational programmes instead.

Map 3.4: Tertiary educational attainment of people aged 30-34 years, 2019
(%, by NUTS 2 regions)



Note: Ciudad Autónoma de Ceuta (ES63), Ciudad Autónoma de Melilla (ES64), Corse (FRM0), Valle d'Aosta/Vallée d'Aoste (ITC2), Highlands and Islands (UKM6) and Hedmark og Oppland (NO02), low reliability. Corse: 2017.

Source: Eurostat (online data code: [edat_lfse_12](#))

Transition from education to work

The final section of this chapter provides information on the transition of school-leavers and graduates from education to work. When students complete their studies there may be a number of barriers that restrict their progression into the labour market, for example: a lack of relevant work experience; a lack of skills; the increased pace at which technology and globalisation disrupt some industries; or an overall lack of jobs (during periods of economic shock).

EARLY LEAVERS FROM EDUCATION AND TRAINING

Education policy seeks to ensure that Europeans have the skills, knowledge and capabilities to manage and develop their careers throughout life. One particular area of policy interest is linked to reducing the proportion of [early leavers from education and training](#), in other words, the share of individuals aged 18-24 years who have at most a lower secondary level of educational attainment (ISCED levels 0-2) and who were not engaged in any further education and training (during the four weeks preceding the [EU labour force survey](#)). This indicator forms part of a scoreboard used to monitor the European pillar of social rights and is also an ET 2020 benchmark indicator; the policy goal is to reduce the proportion of early leavers in the EU to less than 10.0 % by 2020.

Most of the EU regions with low shares of early leavers from education and training were concentrated in eastern Europe

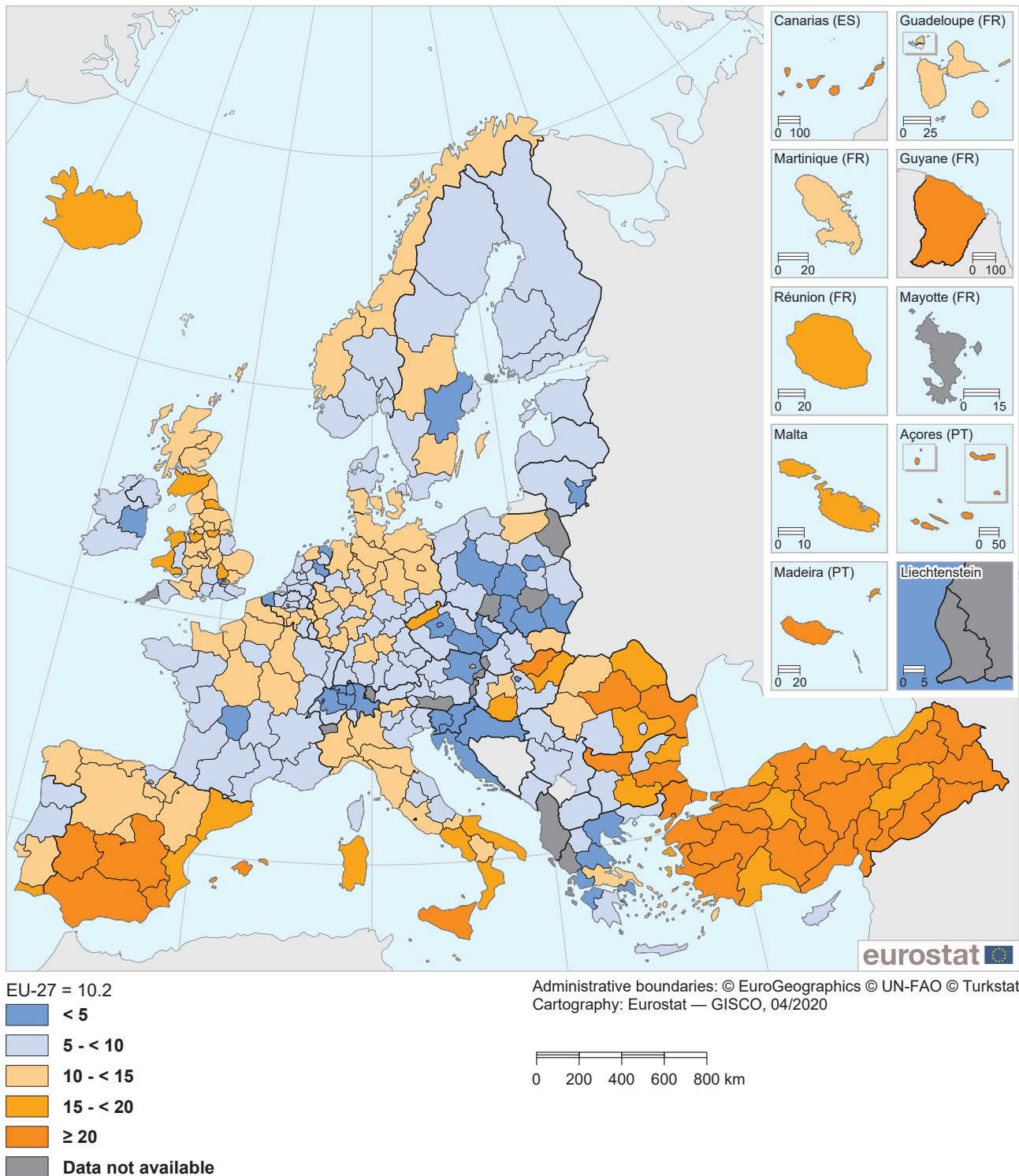
In 2019, the share of early leavers from education and training in the EU-27 stood at 10.2 %; as such, it was very close to the benchmark target for 2020. The proportion

of early leavers from education and training was already below 10.0 % in a majority — 128 out of 228 (or 56.1 %) — of NUTS level 2 regions, as denoted by the blue shaded regions in Map 3.5. Some of the lowest shares were concentrated in eastern Europe and in capital regions. The lowest regional share of early leavers from education and training (1.7 %) was recorded in the coastal/island region of Jadranska Hrvatska (Croatia). There were three other regions where no more than 1 in 50 young people were early leavers: the capital regions of Czechia and Lithuania — Praha and Sostinės regionas (both 1.9 %) — and the Greek region of Kentriki Makedonia (2.0 %).

The transition from education into work may prove particularly difficult for people with low levels of literacy and numeracy, those who leave education at an early age, and people coming from disadvantaged backgrounds. The highest regional shares of early leavers from education and training were often concentrated in island and/or peripheral regions of the EU, where it is likely that a disproportionately high share of students have to leave home if they wish to follow a particular tertiary education course or programme, leaving behind a higher concentration of early leavers. The share of early leavers from education and training was also relatively high in most of southern Europe and across most of Bulgaria and Romania. The south-eastern Bulgarian region of Yugoiztochen had the highest share of early leavers, at 27.2 % in 2019.

Although the proportion of early leavers from education and training was comparatively quite low in western EU Member States, their former industrial heartlands tended to record higher shares: for example, Prov. Liège (Belgium) or Nord-Pas de Calais (France). Among other reasons, this pattern may be a reflection of lower life chances and weak local labour markets (which may act as a push factor to drive away more talented students).

Map 3.5: Early leavers from education and training among people aged 18-24 years, 2019
(%, by NUTS 2 regions)



Note: includes data of low reliability for some regions (too many to document). Auvergne (FRK1), Sostinës regionas (LT01), Budapest (HU11), Łódzkie (PL71) and Cumbria (UKD1): 2018. Voreio Aigaio (EL41), Notio Aigaio (EL42), Peloponnisos (EL65), Limousin (FRI2), North Yorkshire (UKE2) and North Eastern Scotland (UKM5): 2017. Thessalia (EL61), Corse (FRM0), Região Autónoma da Madeira (PT30), Hedmark og Oppland (NO02) and Trøndelag (NO06): 2016. Dytiki Makedonia (EL53) and Highlands and Islands (UKM6): 2015.

Source: Eurostat (online data code: [edat_ifse_16](#))

EMPLOYMENT RATES FOR YOUNG GRADUATES

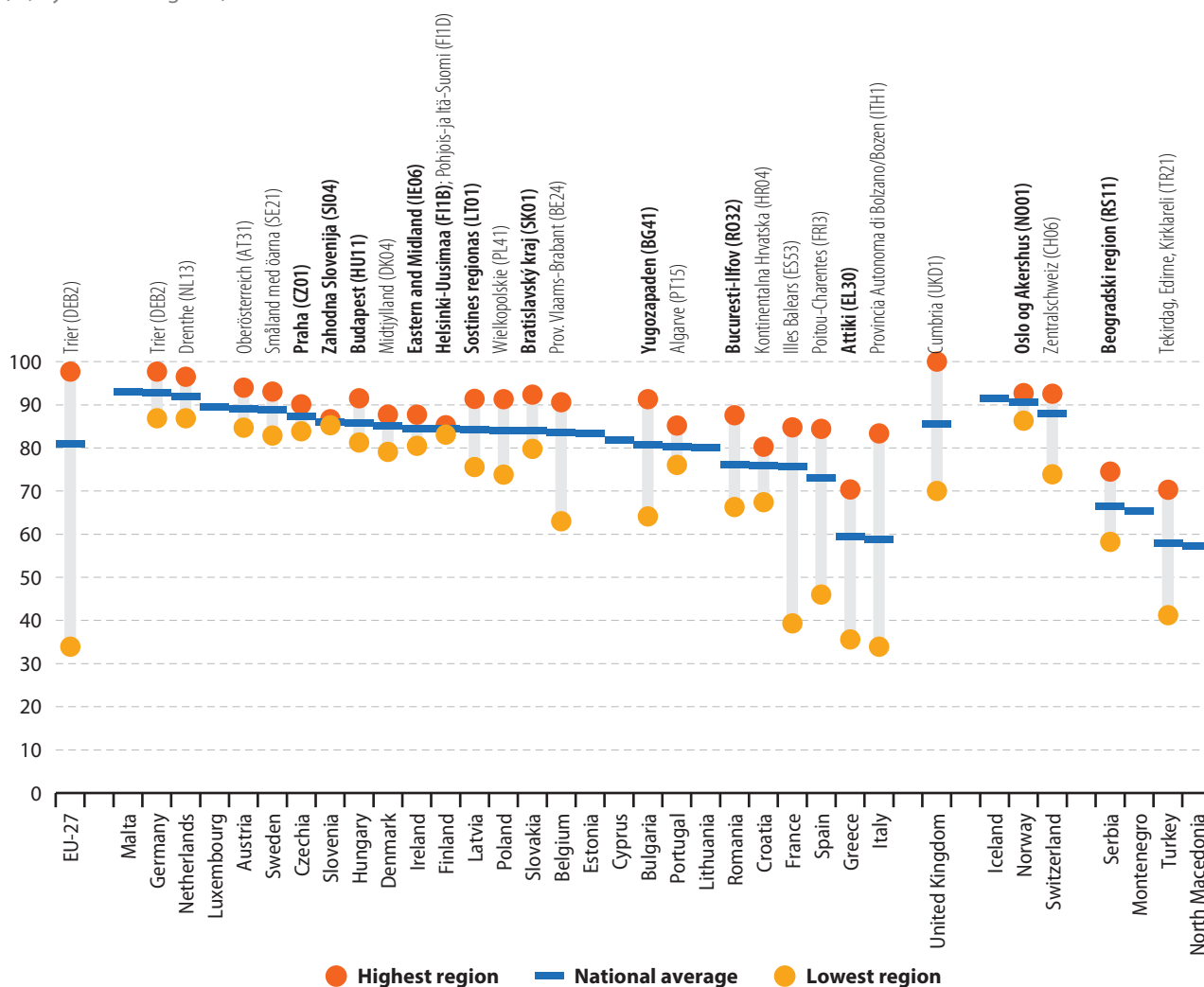
ET 2020 includes a policy goal whereby EU Member States should aim to ensure that their **employment rates** for recent young graduates (aged 20-34 years) reach at least 82.0 % by 2020. This indicator provides information on the transition from education to work among people who have recently graduated from either upper secondary or tertiary levels of education (within the last one to three years).

From a relative low of 74.3 % — recorded in the aftermath of the global financial and economic crisis — the EU-27's employment rate for recent young graduates registered five consecutive annual increases during the period 2014-2018. In 2019, the rate was unchanged at 80.9 %; as such, it remained 1.1 percentage points below the ET 2020 benchmark target. Figure 3.2 shows the distribution of employment rates for recent young graduates: note that EU Member States

that had relatively low national rates tended to record much greater regional variations. The employment rate for recent young graduates was at least 82.0 % in 128 out of 225 NUTS level 2 regions for which data are available (primarily for 2019). The ET 2020 benchmark was reached (or surpassed) in every single region of Czechia, Germany, Estonia, Latvia, Malta, the Netherlands, Austria, Slovenia, Finland and Sweden. The highest employment rate for recent young graduates was recorded in the German region of Trier (97.7 % in 2019). There were seven other regions where the rate was at least 95.0 %: four of these were in Germany (all located in Bayern) and three were from the Netherlands.

At the other end of the range, the employment rate for recent young graduates was less than 50.0 % in 2019 in the southern and island regions of Italy (except for Abruzzo), as well as in four Greek regions, the French régions ultrapériphériques (no data available for Mayotte; 2018 data for Martinique), and the Spanish region of Extremadura.

Figure 3.2: Employment rate of recent graduates aged 20-34 years, 2019
(%, by NUTS 2 regions)



Note: the indicator shows the share of people who had left education and training 1-3 years earlier that are in employment. It is calculated for people with at least an upper secondary level of educational attainment. Ranked on national average. Includes data of low reliability for some regions (too many to document). Ionia Nisia (EL62), Lorraine (FRF3), Martinique (FRY2) and Lincolnshire (UKF3): 2018. Basse-Normandie (FRD1): 2017. Cornwall and Isles of Scilly (UKK3): 2015. Regions listed above the figure are those with the highest ratio. Capital regions are indicated by a bold typeface.

Source: Eurostat (online data code: [edat_lfse_33](#))

4

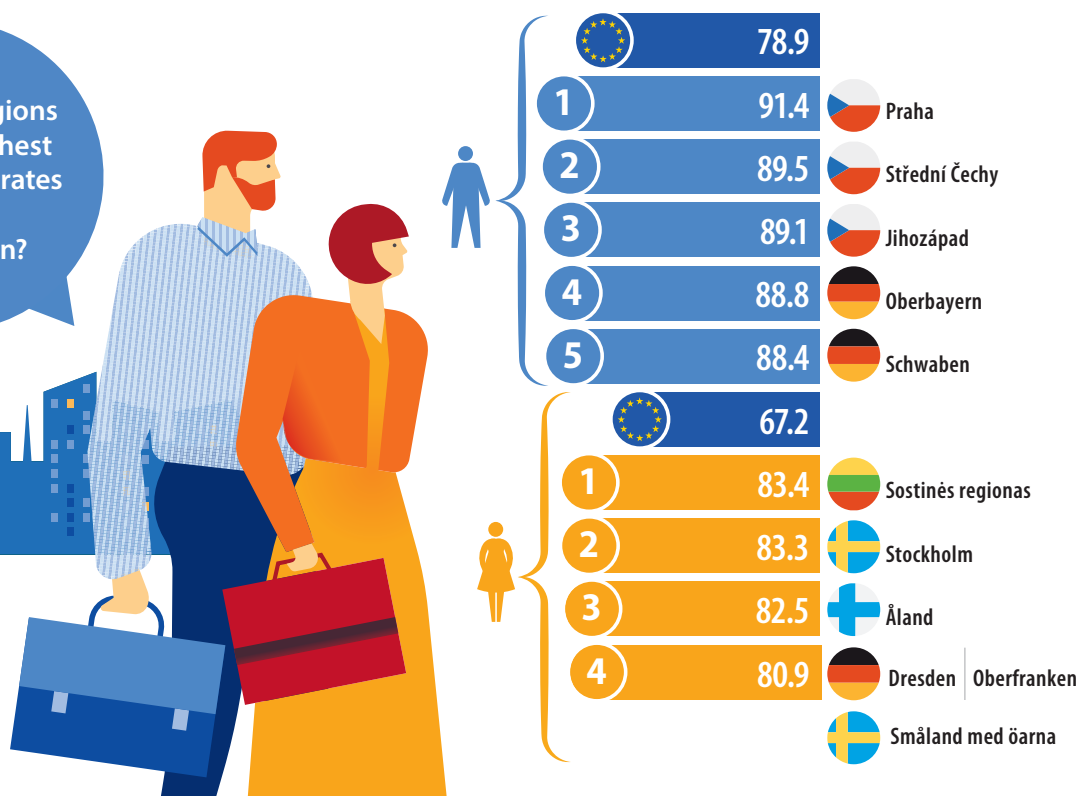
Labour market



Which EU regions have the highest employment rates for men and women?



(% of men/women aged 20-64 years, 2019 data)



As well as being of interest to governments and policymakers, labour markets are also paramount to personal development, as [employment](#) opportunities provide a means, among others, of gaining independence, financial security and a sense of belonging.

The [European Commission's](#) priorities for 2019-2024 highlight the desire to develop a social market economy that works for people, by promoting fairness and prosperity. Some of the principal challenges outlined by President von der Leyen include: fully implementing the [European pillar of social rights](#); ensuring that every worker has a fair minimum wage; promoting a better work-life balance; tackling gender pay gaps and other forms of workplace discrimination; getting more disabled people into work; and protecting citizens who are made unemployed.

This chapter analyses [European Union \(EU\)](#) labour markets and is split into two main sections, covering:

- regional employment, including information on [employment rates](#), the employment gender gap, and employment rates for older people;

- regional [unemployment rates](#), including analyses of two structural issues — [youth unemployment](#) and [long-term unemployment](#).

The chapter closes with a concise analysis of the impact that childcare responsibilities may have on the employment opportunities of the working-age population.

In 2019, the population aged 15-74 of the [EU-27](#) numbered 332.3 million persons. The [labour force](#) — also referred to as the economically active population — was composed of 213.8 million people, while 118.5 million people in this age range were considered to be outside the labour force, in other words economically [inactive](#). This latter cohort is largely composed of school-age children, students, pensioners, people caring for other family members, as well as volunteers and people unable to work because of long-term sickness or disability. Looking in somewhat more detail: the EU-27 labour force aged 15-74 was composed of 199.4 million [employed persons](#) and 14.4 million [unemployed persons](#) who were not working (but were actively seeking and available for work).



Employment rates

The [employment rate](#) is the ratio of employed persons (of a given age) relative to the total population (of the same age). Within this section, data are presented for the working-age population, defined here as people aged 20-64 years. The choice of this age range reflects the growing proportion of young people who remain within education systems into their late teens (and beyond), potentially restricting their participation in the labour market, while at the other end of the age spectrum the vast majority of people in the EU have retired by the time they reach the age of 65.

Increasing the number of people in work has been one of the EU's main policy objectives in recent decades. It has been part of the [European employment strategy \(EES\)](#) from its outset in 1997 and was subsequently incorporated as a target in the Lisbon and Europe 2020 strategies. The employment rate is also included as one of the indicators in the [social scoreboard](#) which is used to monitor the implementation of the European pillar of social rights.

The EU-27 employment rate was 73 % in 2019 — its highest rate since the beginning of the time series

The employment rate for the working-age population (20-64 years) of the EU-27 was 73 % in 2019, marking its sixth consecutive increase since a relative low of 67 % in 2013. This was the highest rate recorded since the beginning of the time series in 2000.

Map 4.1 presents the employment rate for [NUTS](#) level 2 regions: the highest rates — equal to or above the Europe 2020 benchmark target of 75 % — are shown in a blue shade. In 2019, there were 111 out of 240 regions across the EU that had reached or surpassed this target. Every region in the [Baltic Member States](#), Czechia, Denmark, Germany, Cyprus, Malta and Sweden had an employment rate above 75 %. Some of the highest rates were concentrated across Germany and Sweden, with peaks of 84.8 % in Oberbayern and 84.9 % in

Stockholm. However, the highest employment rate — 85.1 % — was recorded in the island region of Åland (Finland). By contrast, more than half (129 out of 240) of all EU regions recorded employment rates that were below the benchmark level of 75 % in 2019 (as shown by the yellow/orange shades). Among these, there were four regions — Sicilia, Campania and Calabria (in southern Italy) and Mayotte (France) — where less than half of the working-age population was employed.

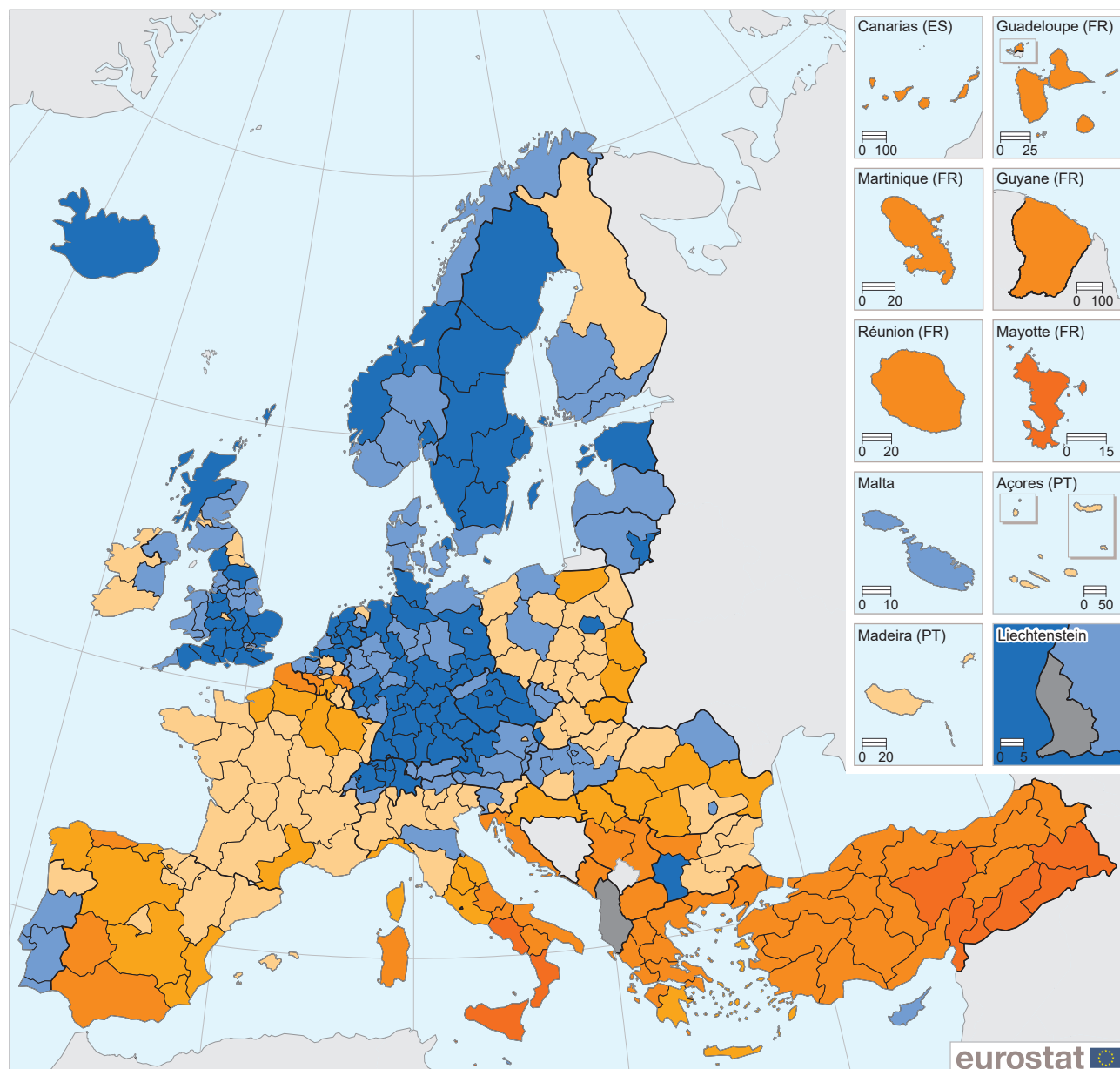
There was a stark contrast in employment rates for EU capital regions

Within individual EU Member States, there were often relatively large intra-regional differences in employment rates. For example, in most of the multi-regional eastern and Baltic Member States it was common to find the capital region had the highest employment rate, as was the case in Bulgaria, Czechia, Croatia, Lithuania, Poland, Slovenia and Slovakia. The situation was reversed in a number of western Member States — for example, Belgium, Germany and Austria — where the capital region had one of the lowest employment rates.

Rural, sparsely populated and peripheral regions recorded some of the lowest regional employment rates in the EU. This pattern was apparent in southern Spain and southern Italy, the régions ultrapériphériques of France, and many of the rural areas in eastern Europe (some of which remain characterised by semi-subsistence agriculture). Most of these regions were characterised by a lack of intermediate and highly-skilled employment opportunities. Former industrial heartlands that have been left behind are another group of regions characterised by relatively low employment rates. Many of these have witnessed the negative impact of globalisation on traditional areas of their economies (such as coal mining, steel and textiles manufacturing, or shipbuilding). Examples may be found in a band or regions running from north-east France, through parts of the région Wallonne (Belgium) and into northern Germany.

Map 4.1: Employment rate, 2019

(% share of people aged 20-64 years, by NUTS 2 regions)



EU-27 = 73.0

< 50

50 - < 65

65 - < 70

70 - < 75

75 - < 80

≥ 80

Data not available

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 06/2020

0 200 400 600 800 km

Note: Corse (FRM0), low reliability.

Source: Eurostat (online data code: [lfst_r_lfe2empn](#))



Employment gender gap

Policymakers have placed particular emphasis on trying to increase the number of women, older people and migrants in work, hoping this might offset some of the challenges posed by demographic ageing.

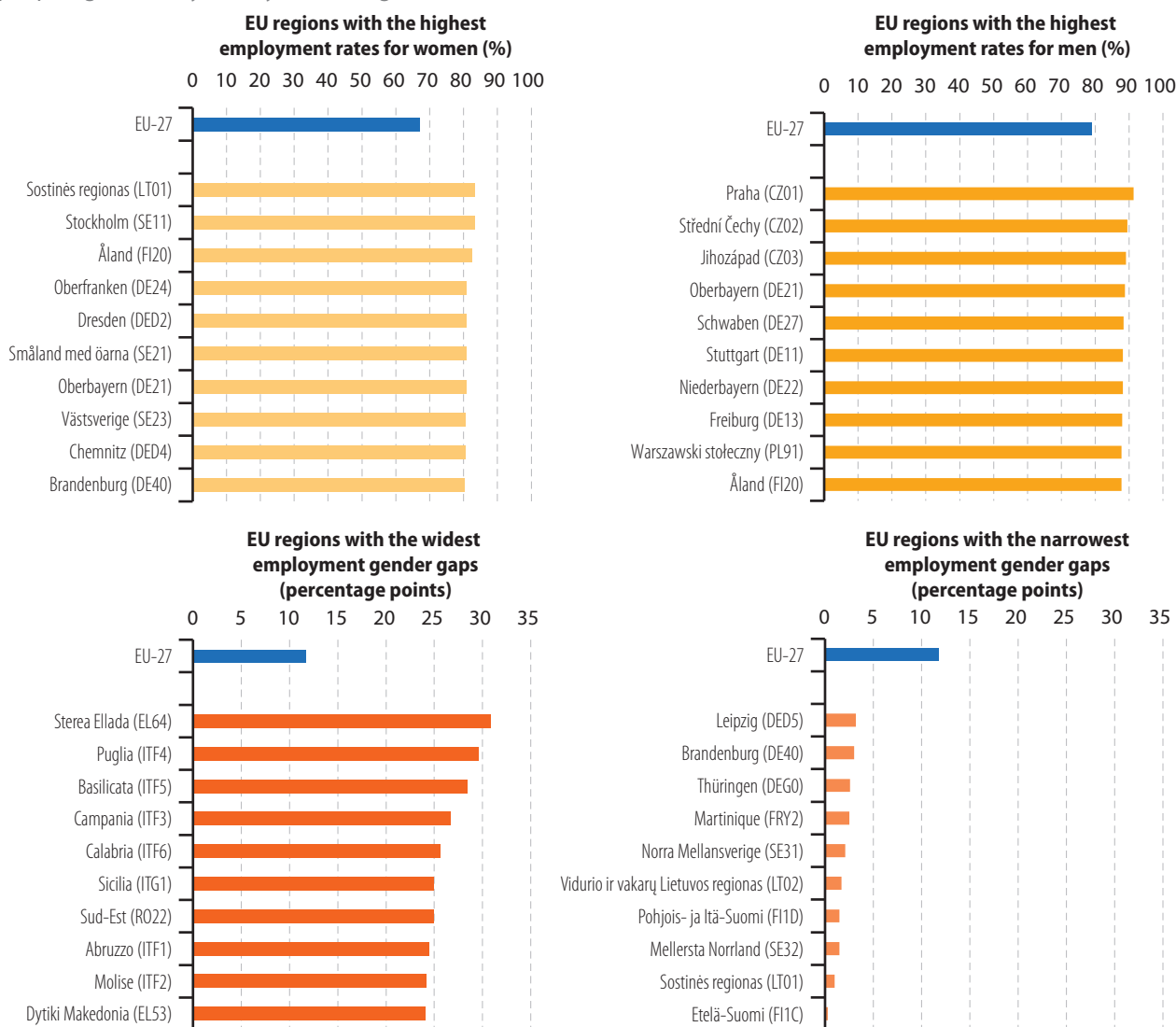
Every region of the EU reported a higher share of men (than women) in employment

In 2019, the EU-27 female employment rate was 67.2 %, some 11.7 percentage points lower than the corresponding rate for men (78.9 %). The employment gender gap narrowed over the last couple of decades, as an increasing share of women entered the labour market. Nevertheless, the female employment rate was consistently lower than the male employment rate

across each of the 240 NUTS level 2 regions for which data are available.

Figure 4.1 shows that in 2019 the highest male employment rate was recorded in the Czech capital region of Praha, where more than 9 out of 10 (91.4 %) men were in employment. The Lithuanian capital region of Sostinės regionas had the highest female employment rate (83.4 %). Some of the narrowest employment gender gaps were recorded in the Baltic and Nordic Member States, where female participation was high and where a large proportion of the population lived alone. There were five regions in the EU where the employment gender gap was less than 2.0 percentage points: both Lithuanian regions, the Finnish regions of Etelä-Suomi and Pohjois- ja Itä-Suomi, and Mellersta Norrland in Sweden.

Figure 4.1: Employment rate and employment gender gap, 2019
(people aged 20-64 years, by NUTS 2 regions)

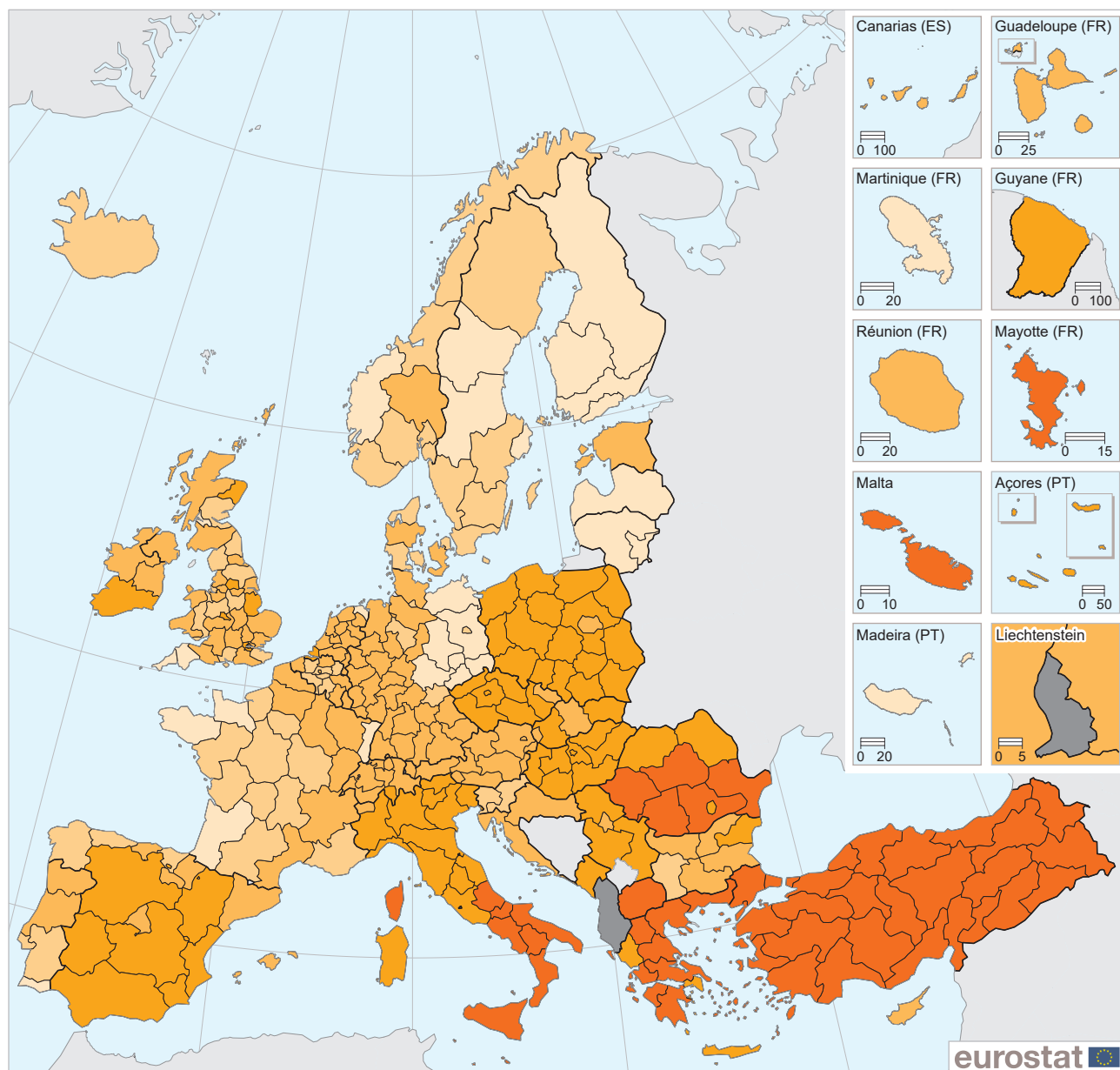


Note: the employment gender gap is defined as the difference between the male employment rate and the female employment rate; the male employment rate was higher than the female employment rate across all NUTS 2 regions. Corse (FRM0): low reliability.

Source: Eurostat (online data code: [lfst_r_lfe2emprtn](#))

Map 4.2: Employment gender gap, 2019

(percentage points, based on people aged 20-64 years, by NUTS 2 regions)



Note: the employment gender gap is defined as the difference between the male employment rate and the female employment rate; the male employment rate was higher than the female employment rate across all NUTS 2 regions. Corse (FRM0): low reliability.

Source: Eurostat (online data code: [lfst_r_lfe2emprtn](#))



Half (120 out of 240) of EU regions recorded a double-digit employment gender gap in 2019. This situation was particularly evident across southern Europe, where female employment rates tended to be particularly low. This lack of female labour force participation may be explained, at least to some degree, by cultural attitudes, gender stereotypes, labour market inflexibility and government policies on issues such as childcare provision, parental leave or family tax allowances. There were five regions in the EU where the employment gender gap was more than 25.0 percentage points: four of these — Puglia, Basilicata, Campania and Calabria — were located in southern Italy, while the widest gap (30.8 points) was in the Greek region of Sterea Ellada.

Employment rates for older persons

With an ageing population, it is likely that policymakers will need to find ways of covering the additional costs associated with pensions, health and social care. One way of doing so is to encourage older people (defined here as those aged 55-64 years) to remain longer in the labour market, for example, by increasing the mandatory retirement age.

In approximately one quarter of EU regions, less than 50 % of older persons were employed

In 2002, the number of older people employed across the EU-27 stood at 17.0 million. This number increased every year thereafter — even through the global financial and economic crisis — more than doubling to a peak of 35.2 million in 2019. During the same period, the total number of persons employed (aged 20-64 years) increased by 20.4 million. As such, older people (aged 55-64 years) accounted for 89 % of the total

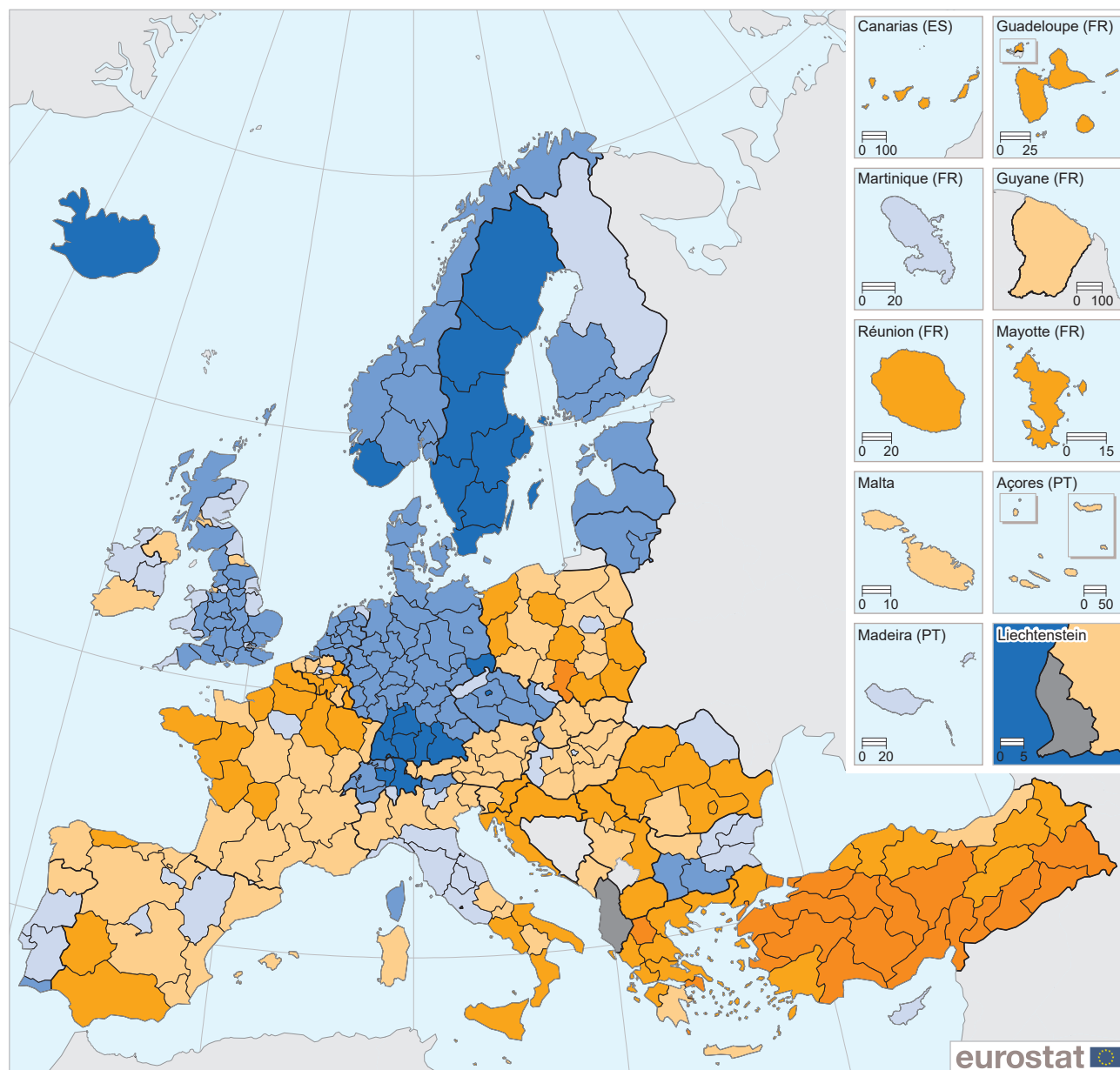
expansion in the EU-27 workforce during the last two decades.

Despite such rapid changes, the EU-27 employment rate for older persons was, at 59.1 % in 2019, some 13.9 percentage points below the rate for the working-age population (73.0 %). Map 4.3 distinguishes those regions where the employment rate for older persons was above (shaded in blue) and below (shaded in yellow/orange) the EU-27 average. The distribution was relatively normal, insofar as there were 114 (out of 240) regions that had rates above the EU-27 average. These included every region of the northern EU Member States, Czechia, Germany, Cyprus and the Netherlands. As for the employment rate for working-age people, some of the highest regional employment rates for older people were recorded in Germany and Sweden, with peaks of 78.4 % in Stuttgart and Tübingen and 79.8 % in Småland med öarna and Västsverige; there was also a relatively high rate in the Finnish region Åland (78.5 %).

The decision on when to retire reflects, among other factors, job characteristics, health, flexible retirement schemes and earnings potential in retirement. It also varies in relation to educational attainment, as older people with a low education level are less likely to remain in employment (than those with a tertiary education level), which may reflect the physical nature of some low-skilled, manual jobs. Relatively few older people were employed in southern and eastern EU Member States, as well as across much of France. The lowest employment rate for this cohort was recorded in the Greek capital region of Attiki, where less than two fifths (39.1 %) of the population aged 55-64 years had a job in 2019. There were only two other regions in the EU below 40.0 %, Dytiki Makedonia (also in Greece) and Śląskie (Poland); they both had employment rates for older people of 39.8 %.

Map 4.3: Employment rate of older persons, 2019

(% share of people aged 55-64 years, by NUTS 2 regions)



EU-27 = 59.1

< 40.0

40.0 - < 50.0

50.0 - < 59.1

59.1 - < 65.0

65.0 - < 75.0

≥ 75.0

Data not available

Note: Ciudad Autónoma de Melilla (ES64), Corse (FRM0), Mayotte (FRY5) and Åland (FI20), low reliability.

Source: Eurostat (online data code: [lfst_lfe2empn](#))



Unemployment rates

Unemployment can have a bearing not just on the macroeconomic performance of a country (lowering productive capacity) but also on the well-being of individuals who are without work. The personal and social costs of unemployment are varied and include a higher risk of **poverty** and social exclusion, debt or homelessness, while the stigma of being unemployed may have a potentially detrimental impact on (mental) health.

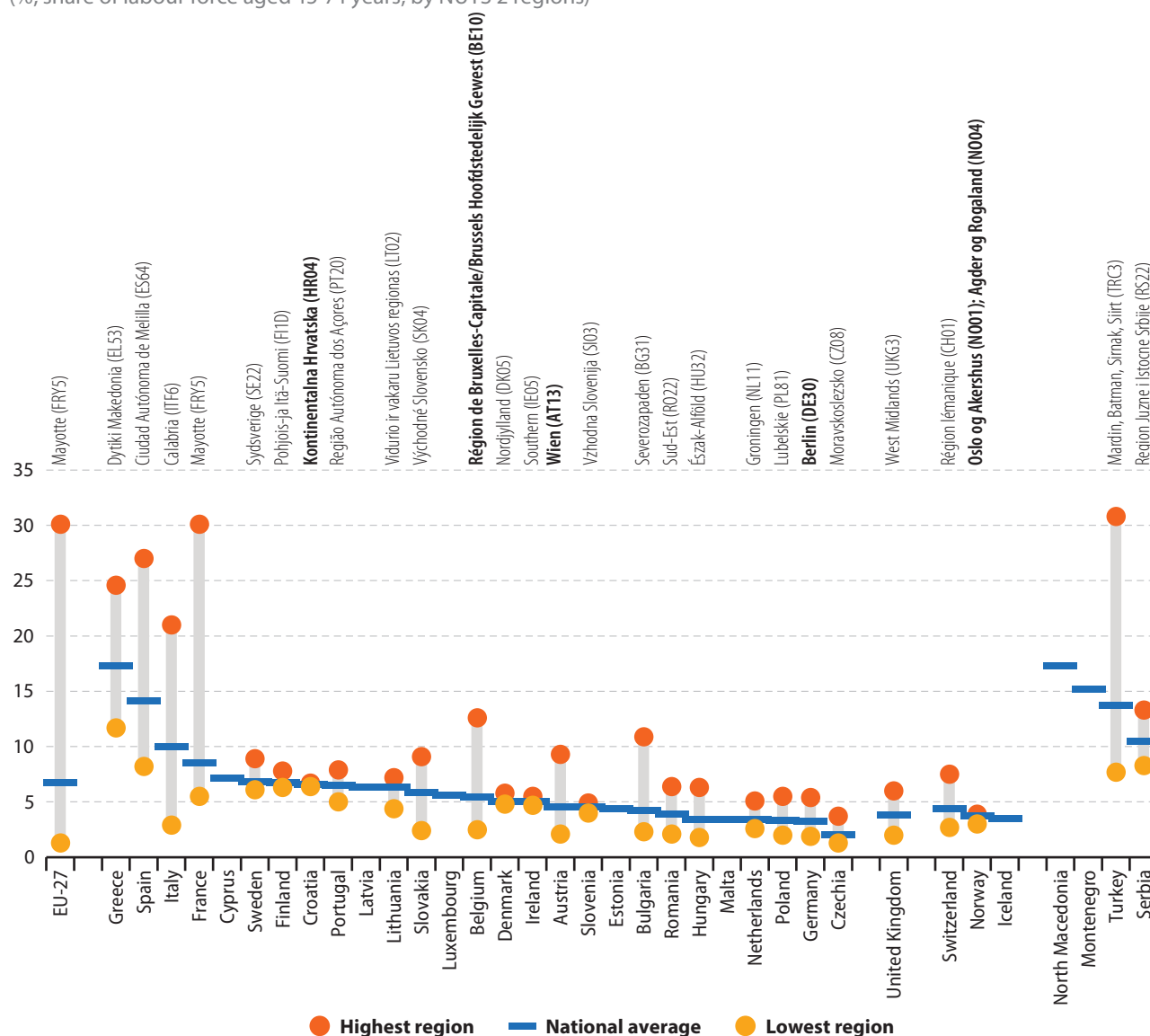
In 2019, there were 14.2 million unemployed people (aged 15-74 years) in the EU-27, while the unemployment rate was 6.7 %; both of these figures were the lowest recorded since the beginning of the time series 2000. The decline in unemployment

rates in recent years took place alongside a rise in the dispersion of unemployment rates across regions. Some EU Member States continued to record considerable regional disparities in their unemployment rates. This was particularly the case in Italy, France and Belgium, where the difference in unemployment rates between the highest and lowest regional values in 2019 was at least a factor of 5 : 1 (see Figure 4.2).

Many of the lowest regional unemployment rates in 2019 were concentrated in a cluster of regions that started in western Austria, moved up through southern Germany and across into Czechia and (western) Hungary. The three lowest rates were all recorded in Czechia: Střední Čechy, the capital region of Praha (both 1.3 %) and Jihozápad (1.5 %).

Figure 4.2: Unemployment rate, 2019

(%, share of labour force aged 15-74 years, by NUTS 2 regions)



Note: ranked on national average. Corse (FRM0), Burgenland (AT11), Lubuskie (PL43), Opolskie (PL52), Åland (FI20), Cumbria (UKD1), Cornwall and Isles of Scilly (UKK3), North Eastern Scotland (UKM5), Highlands and Islands (UKM6), Hedmark og Oppland (NO02), Trøndelag (NO06) and Nord-Norge (NO07): low reliability. Regions listed above the figure are those with the highest ratio. Capital regions are indicated by a bold typeface.

Source: Eurostat (online data code: lfst_r_lfu3rt)

Although the EU-27 unemployment rate was at a historic low in 2019, there remained 47 regions — predominantly located in southern Europe — with double-digit unemployment rates. These included every region of Greece, a majority of the regions in Spain, approximately one third of the regions in Italy and one quarter of the regions in France, as well as Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (the capital region of Belgium) and Severozapaden (in Bulgaria). Some of these regions face structural issues (such as youth unemployment or long-term unemployment — both covered in more detail below), while others had yet to fully recover from the global financial and economic crisis.

YOUTH UNEMPLOYMENT

One of the most pressing concerns in the area of social policymaking is youth unemployment. The performance of youth labour markets is closely linked to education and training systems and reflects, at least to some degree, a mismatch between the skills obtained by young people and the skills that are required by employers (to fill job vacancies).

In recent years, several EU Member States have enacted new employment laws with the goal of liberalising labour markets, for example, by providing a wider range of possibilities for hiring staff through temporary, fixed-term or zero hours contracts. In some cases this has resulted in a division between permanent, full-time employees and those with more precarious employment contracts. The latter are often young people and/or people with relatively low levels of educational attainment. This may explain, at least to some degree, why young people in the labour market generally fare worse during economic downturns; employers are also less likely to recruit new workers (young people coming into the labour market) or to replace those who retire during a downturn.

The EU-27 youth unemployment rate was 15.1 %

The youth (people aged 15-24 years) unemployment rate in the EU-27 fell from a peak of 24.4 % in 2013 down to 15.1 % by 2019; it was more than twice as high as the overall unemployment rate (6.7 % in 2019). Note that the youth unemployment rate is based on the same principles as the definition for the [unemployment rate](#) among the working-age population and that not every young person is in the labour market. As such,

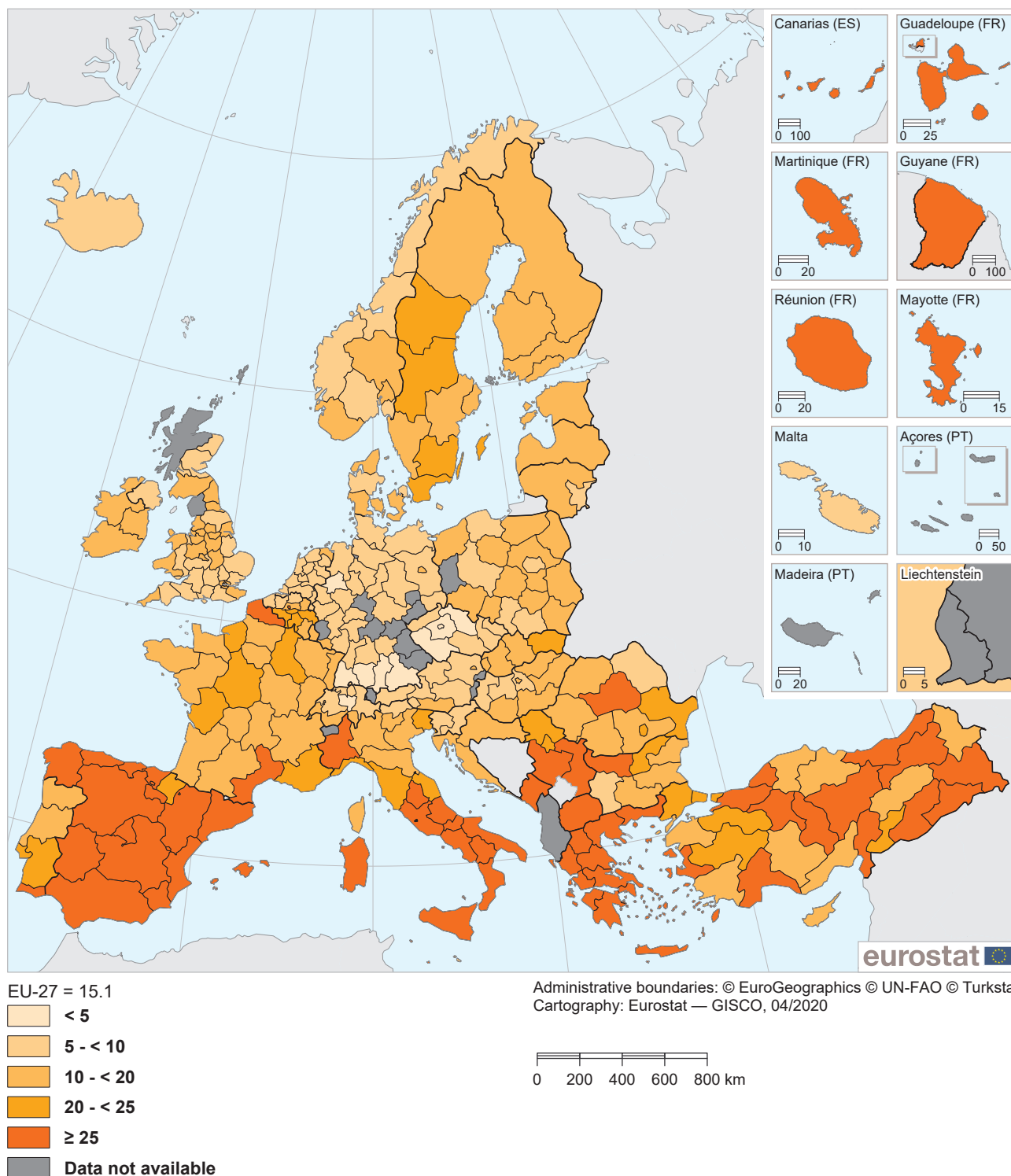
there is potential for the youth unemployment rate to be misinterpreted. For example, when the youth unemployment rate is 25 %, this does not mean that one quarter of all youths is unemployed. Rather, a quarter of those youths who are in the labour force are unemployed (and three quarters are employed), while those youths outside the labour market are neither in the numerator nor the denominator. An alternative indicator for analysing labour market patterns among young people is the [youth unemployment ratio](#): this has the same numerator as the youth unemployment rate, but the denominator is the total population aged 15-24 years; it therefore provides a measure of unemployment-to-population.

Map 4.4 shows that approximately 7 out of 10 EU regions had double-digit youth unemployment rates in 2019, with rates rising above 20.0 % in more than one third of all regions. Youth unemployment was particularly concentrated in southern Europe. More than one out of every five members of the labour force aged 15-24 years was unemployed in every region of Greece and Spain, as well as every region in the south of Italy. At the top end of the range, there were six — largely peripheral — regions where the youth unemployment rate climbed to over 50.0 %: Ciudades Autónomas de Ceuta y Melilla (Spain), Mayotte, Guadeloupe (France), Dytiki Makedonia (Greece) and Sicilia (Italy).

At the other end of the range, there were nine regions in the EU where the youth unemployment rate was less than 5.0 % (note the latest data for Tübingen (Germany) refers to 2016). As for the overall unemployment rate, some of the lowest youth unemployment rates were recorded in Czechia and southern Germany, with lows of 2.8 % in Severovýchod and 3.3 % in Praha and Oberbayern. These rates may be explained, at least in part, by demographic factors that have led to a decrease in the overall number of young people (with the number of economically active people aged 15-24 years often reduced even more — as an increasing share of young people choose to remain in education). With a smaller pool of young persons, it might be expected that those who are looking for work are in high demand. For example, the number of young people aged 15-24 years living in Praha fell by more than one third (36.3 %) between 2000 and 2019, while the number of economically active people within this age cohort declined by more than half (50.2 %) over the same period.

**Map 4.4: Youth unemployment rate, 2019**

(% share of labour force aged 15-24 years, by NUTS 2 regions)

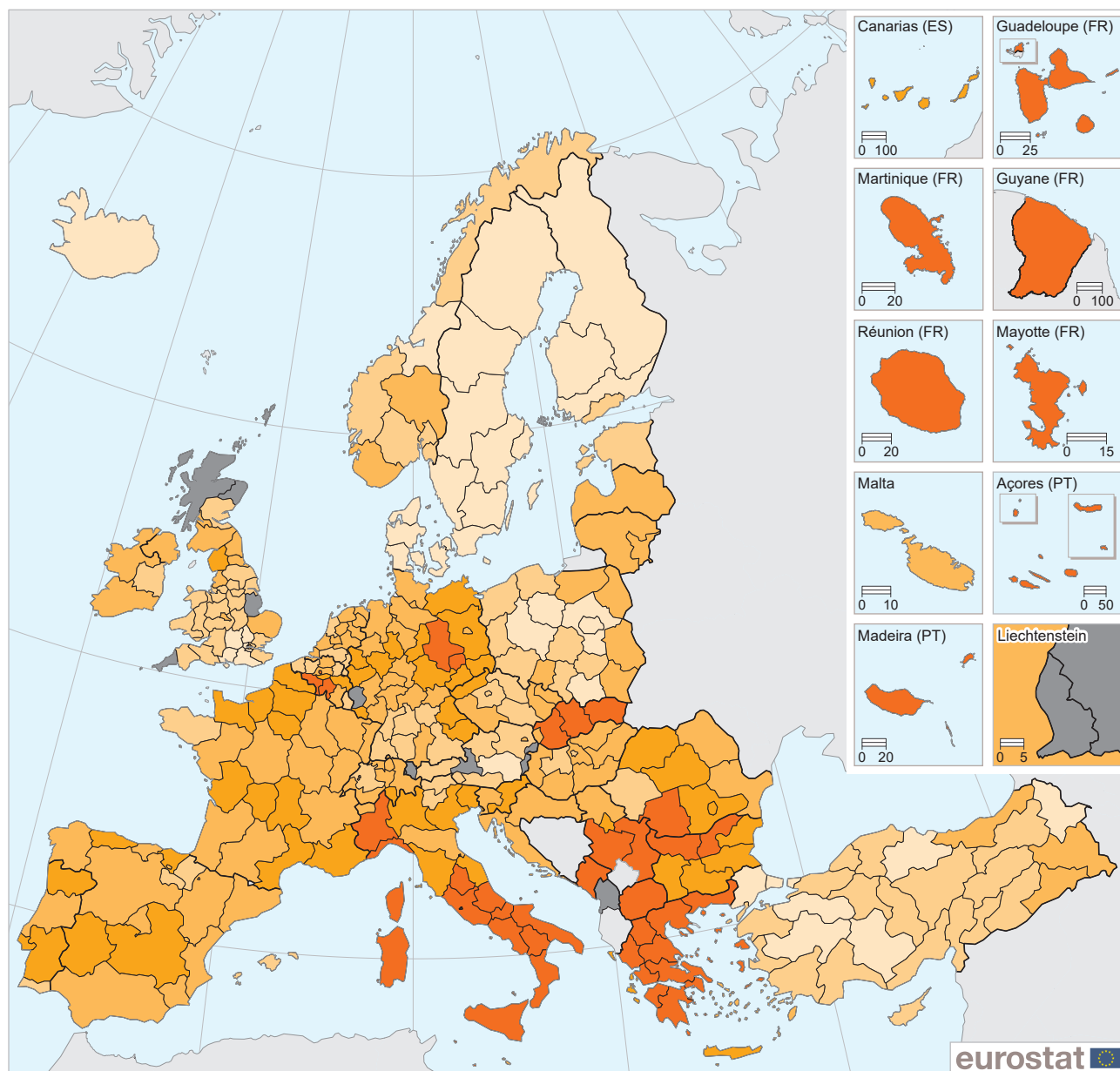


Note: includes data of low reliability for some regions (too many to document). Bulgaria (except Severozapaden (BG31)), Mecklenburg-Vorpommern (DE80), Detmold (DE44), Ionia Nisia (EL62), Közép-Dunántúl (HU21), Zachodniopomorskie (PL42), Warmińsko-mazurskie (PL62), Świętokrzyskie (PL72) and Alentejo (PT18): 2018. Gießen (DE72), Lüneburg (DE93), Koblenz (DEB1), Limousin (FR12), Corse (FRM0), Nyugat-Dunántúl (HU22), Zeeland (NL34), Tirol (AT33), Podlaskie (PL84), Bucureşti-Ilfov (RO32) and Bratislavský kraj (SK01): 2017. Tübingen (DE14), Saarland (DECO), Kärnten (AT21), Salzburg (AT32), Vest (RO42), North Eastern Scotland (UKM5), Hedmark og Oppland (NO02), Trøndelag (NO06) and Nord-Norge (NO07): 2016. Mittelfranken (DE25), Dresden (DED2), Opolskie (PL52), Algarve (PT15) and Cornwall and Isles of Scilly (UKK3): 2015.

Source: Eurostat (online data code: `lfst_r_lfu3rt`)

Map 4.5: Long-term unemployment share, 2019

(% share of unemployed persons aged 15-74 years, by NUTS 2 regions)



Note: includes data of low reliability for some regions (too many to document). Tübingen (DE14), Niederbayern (DE22), Oberpfalz (DE23), Valle d'Aosta/Vallée d'Aoste (ITC2), Nyugat-Dunántúl (HU22), Kärnten (AT21), Zachodniopomorskie (PL42), Dolnośląskie (PL51), Pomorskie (PL63), Warszawski stołeczny (PL91), Övre Norrland (SE33), Southern Scotland (UKM9), Iceland, Agder og Rogaland (NO04) and Vestlandet (NO05): 2018. Oberfranken (DE24), Corse (FRM0), Podlaskie (PL84), North Yorkshire (UKE2), East Wales (UKL2) and Sør-Østlandet (NO03): 2017. Unterfranken (DE26), Tirol (AT33), Lubuskie (PL43), Dorset and Somerset (UKK2), Hedmark og Oppland (NO02), Trøndelag (NO06) and Nord-Norge (NO07): 2016. Opolskie (PL52), Cumbria (UKD1) and Cheshire (UKD6): 2015.

Source: Eurostat (online data code: [lfst_r_lfu2ltu](#))



LONG-TERM UNEMPLOYMENT

Long-term unemployment may have a considerable impact on an individual's health, well-being and overall life satisfaction, while people in this situation have a far higher risk of falling into poverty and social exclusion. Furthermore, the longer somebody remains unemployed, the less attractive they are likely to be for potential employers.

Long-term unemployment disproportionately affects people at the end of their working lives: older people face a range of barriers that may prevent them from returning to the workforce, including age bias/discrimination and skills mismatches (outdated skills and qualifications with limited opportunities to retrain). The EU-27 long-term unemployment share, defined here as the share of unemployed persons (aged 15-74 years) who had been without work for at least 12 months, stood at 41.8 % in 2019; the corresponding share among older people (aged 55-64 years) was 57.7 %.

Map 4.5 shows that the long-term unemployment share was above 50.0 % in approximately one sixth (40 out of 235) of EU regions for which data are available. This form of structural unemployment was widespread across much of Greece, Italy and Slovakia. High long-term unemployment shares were also recorded in the peripheral regions of Spain, France and Portugal, as well as pockets of Belgium, Bulgaria, Germany and Romania. The highest long-term unemployment shares were recorded in Mayotte in France (84.4 %), Severozapaden in Bulgaria (83.1 %) and Dytiki Ellada, Peloponnisos and Attiki in Greece (75.2-75.4 %).

By contrast, the lowest long-term unemployment shares were concentrated in the Nordic Member States. Helsinki-Uusimaa — the capital region of Finland — was the only region across Denmark, Finland and Sweden to report that more than one fifth of all unemployed people in 2019 had been without work for at least a year. Relatively low long-term unemployment shares (below 20 %) were also recorded in five predominantly central regions of Poland (including the capital) as well as Steiermark (southern Austria).

Impact of childcare responsibilities on employment opportunities

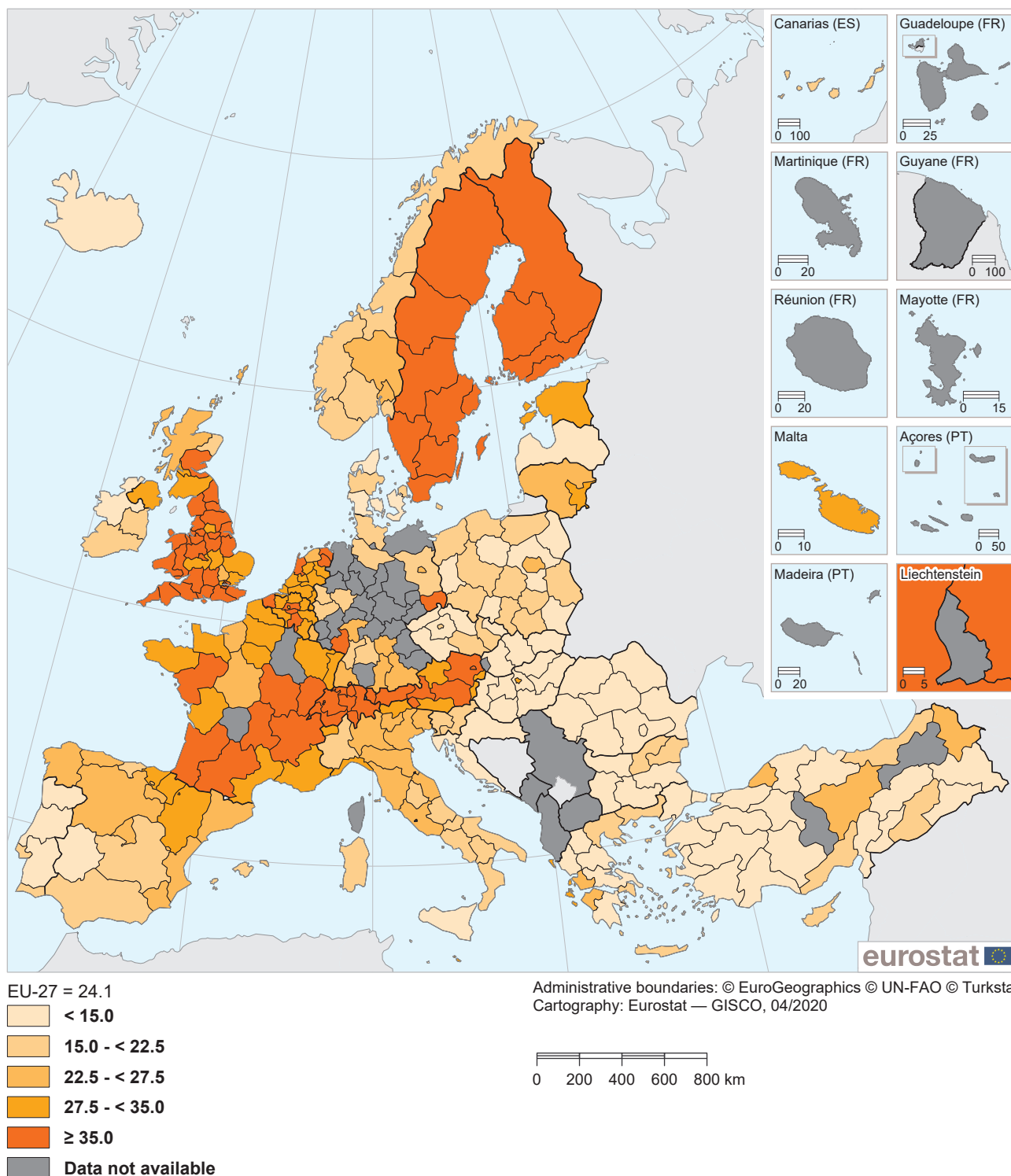
As noted above, the challenges posed by issues such as population ageing have led policymakers to seek

new methods for encouraging more people into work. Among these, more flexible working patterns and additional childcare services have promoted higher levels of female labour force participation. An ad-hoc module that formed part of the labour force survey addressed reconciliation between work and family life: one of its main aims was to measure how care responsibilities might impede upon labour market participation. The final section of this chapter provides an analysis of the impact that childcare responsibilities may have on the employment opportunities of the working-age population.

In 2018, almost one quarter (24.1 %) of the EU-27 workforce aged 18-64 years stated that childcare responsibilities had (at some stage in their lives) an effect on their employment, for example: a reduction in working time, taking parental leave, a change of job/employer, or taking on less demanding tasks at work to allow better reconciliation, or an increase in workload to earn more income to support a family. The share of employed persons who stated that they had adapted their work to facilitate childcare responsibilities varied considerably across EU regions. For example, more than two thirds (67.7 %) of the workforce in Sydsverige (Sweden) said that childcare responsibilities had an effect on their employment, in contrast to just 2.4 % of the workforce in Vest (Romania). The impact of childcare responsibilities was particularly high in the Netherlands, Finland, Sweden, a band of regions running from south-west France across to Austria, as well as a several other regions in western Europe.

These figures may be linked to the effectiveness of policy reforms and cultural differences. In those regions where social and welfare support systems are most highly developed (for example, Finland or Sweden) it was common to find a high proportion of respondents reporting that childcare responsibilities had an effect on their employment. This may reflect increased workplace flexibility, highly-subsidised childcare encouraging parents to remain in the labour force, or the opportunity for one or both parents to take parental leave. By contrast, childcare provisions and other support systems are less developed across many southern and eastern EU Member States. In these regions, a high proportion of mothers tend to remain outside of the workforce, taking on unpaid care responsibilities (which are not reflected in the calculation of this indicator) and hence childcare responsibilities are less likely to have an effect on their employment.

Map 4.6: People who stated that childcare responsibilities had an effect on their employment, 2018
(%, share of people aged 18-64 years in employment, by NUTS 2 regions)



Note: includes information of low reliability for some regions (too many to document).

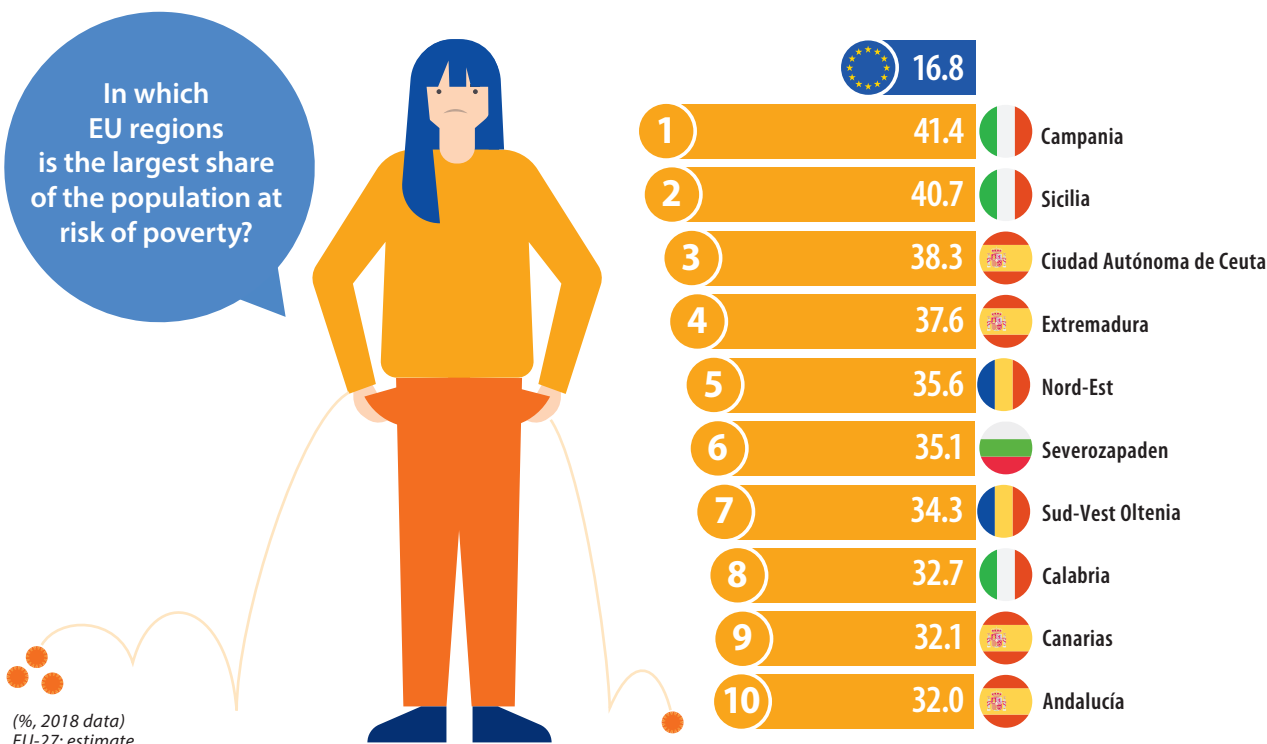
Source: Eurostat (online data code: [lfsa_18ceffdu](#)) and LFS ad-hoc module 2018 — reconciliation between work and family life

5

Living conditions



In which EU regions is the largest share of the population at risk of poverty?



By global standards, most Europeans are relatively prosperous. According to the OECD, the subjective well-being of the European Union (EU) population — as measured by life satisfaction — is also relatively high. This likely reflects the EU's high income/wealth levels and its network of established social protection systems that provide a safety net for the less fortunate.

Sociodemographic characteristics like age, level of educational attainment, gender or country of birth/citizenship can play an important role in determining an individual's living conditions. Wider societal developments, such as the impact of globalisation, coupled with unexpected shocks — for example, the global financial and economic crisis or the coronavirus epidemic — can also have a considerable impact, in some cases exacerbating patterns of inequality and exclusion. In the aftermath of the global financial and economic crisis, there was a widening of socioeconomic inequalities as service-based, predominantly urban regions continued to thrive, while industrial heartlands and rural regions were 'left behind'. Such inequalities have played an increasingly important role in society, as witnessed by the creation of various movements (from different political perspectives) that purport to represent places/groups of people that may be considered to have benefited less from economic progress or that fear they may lose out in the future.

Poverty and deprivation

There are two principal measures of poverty. Relative poverty concerns the situation where people whose income and/or resources prevent them from enjoying a

'normal' standard of living for the society in which they live. By contrast, **absolute poverty** is the deprivation of basic human needs, for example, a lack of food, water, sanitation facilities, health or education. Based on the above definitions, the most common form of poverty in the EU is relative poverty.

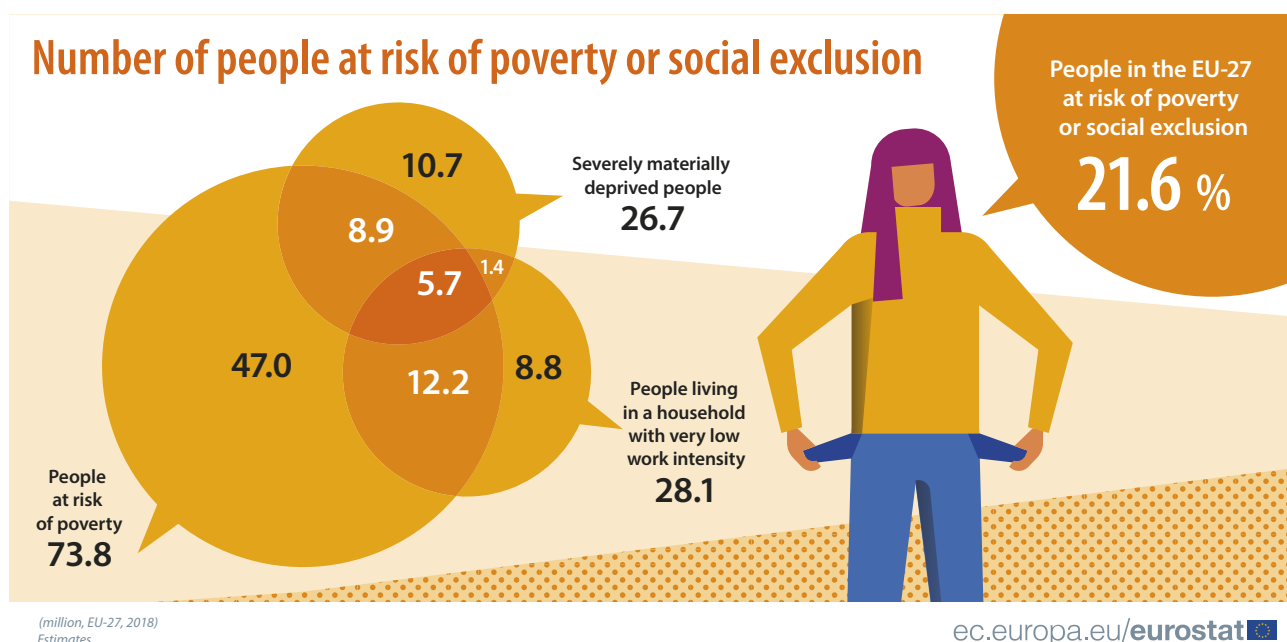
PEOPLE AT RISK OF POVERTY OR SOCIAL EXCLUSION

The **risk of poverty or social exclusion** is a broader concept than just the risk of poverty. It does not depend exclusively on a household's level of income, as it may also be a reflection of deprivation or joblessness. The number/share of people at-risk-of-poverty or social exclusion combines three separate criteria covering people who are in at least one of the following situations:

- **at-risk-of-poverty** — people with a **median equivalised disposable income** (after social transfers) below the **at-risk-of-poverty threshold**;
- suffering from **severe material deprivation** — people unable to afford at least four out of nine material items that are considered by most to be desirable (or even necessary) for having an adequate quality of life;
- **living in a household with very low work intensity** — where working-age adults worked no more than 20 % of their total potential during the previous 12 months.

In 2018, more than one fifth of the EU-27 population was at risk of poverty or social exclusion

In the aftermath of the global financial and economic crisis the number of people at risk of poverty or social



Source: Eurostat.

exclusion in the EU-27 climbed to reach a peak of 108.7 million people in 2012. There followed six consecutive annual reductions, as the number of people at risk of poverty or social exclusion fell to 94.8 million by 2018; this latest figure was equivalent to 21.6 % of the EU-27 population.

Map 5.1 shows the regional distribution of people at risk of poverty or social exclusion across NUTS level 2 regions. Note that the statistics presented for Poland relate to NUTS level 1 regions and that only national data are available for Belgium, France and Portugal. The share of the population that was at risk of poverty or social exclusion was skewed, as approximately three fifths of all regions in the EU (114 out of the 187 for which data are available) recorded a share below the EU-27 average. At the bottom end of the distribution, only four regions reported less than 10 % of their population being at risk of poverty or social exclusion in 2018: three Czech regions in Bohemia (including the capital region, Praha) and the Slovakian capital region of Bratislavský kraj.

While some of the lowest risks of poverty or social exclusion were recorded in predominantly urban regions of eastern EU Member States, this was often in stark contrast to the situation in more rural regions. In 2018, there were 10 regions situated in eastern and southern EU Member States where more than 40 % of the population was at risk of poverty or social exclusion (as shown by the darkest shade in the map); these regions were situated in Bulgaria, Romania, Greece, Spain and Italy. The highest risk of poverty or social exclusion was recorded in two southern Italian regions — Campania (53.6 %) and Sicilia (51.6 %).

AT-RISK-OF-POVERTY RATE

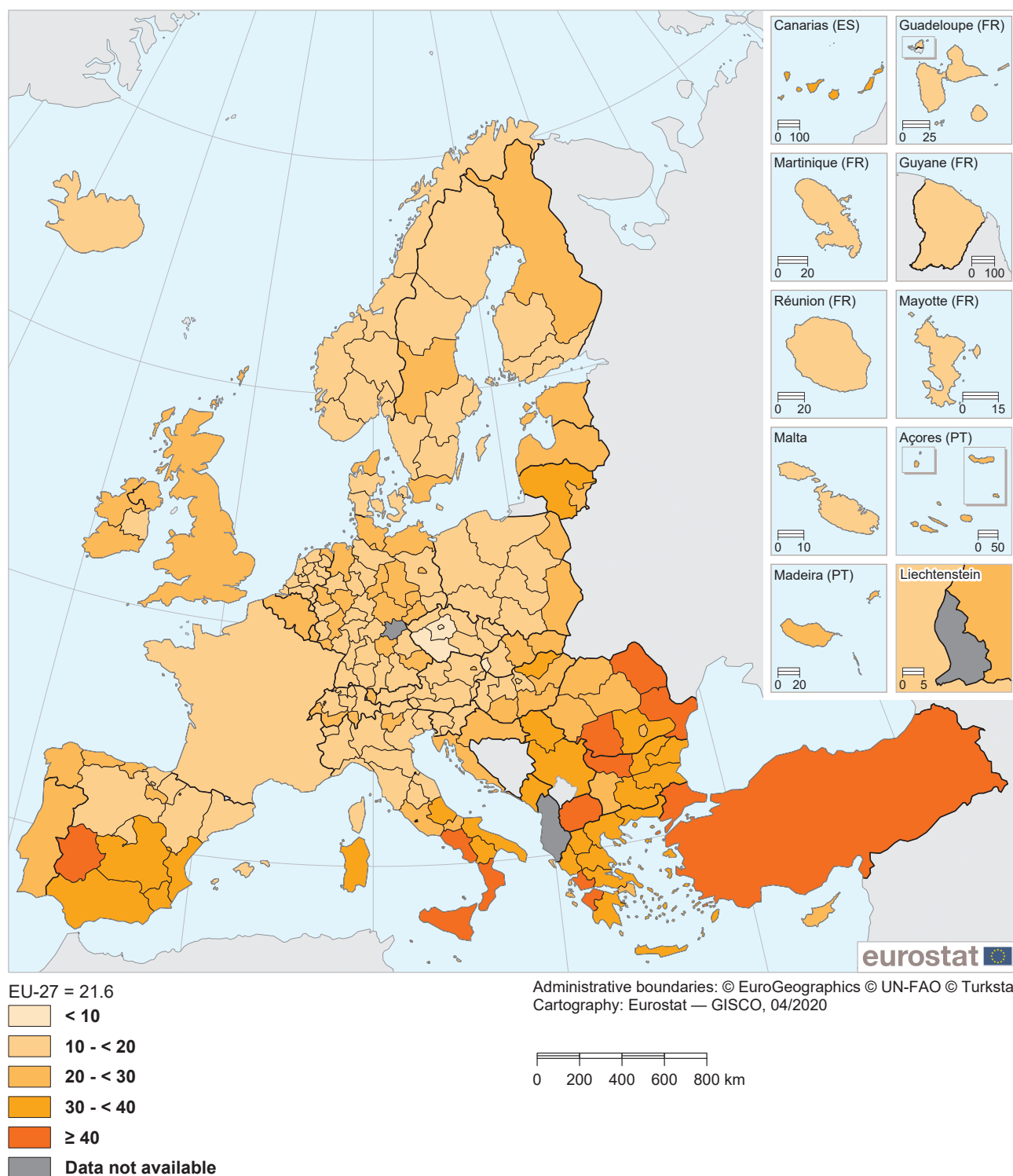
The European social model is based on offering protection to those who are most in need. When comparing at-risk-of-poverty rates before and after social transfers it is possible to make an assessment of the impact of welfare systems. In 2018, some 25.0 % of the EU-27 population was exposed to **monetary poverty**, with this proportion falling to 16.8 % after social transfers. Note that at-risk-of-poverty rates do not measure (a lack of) income in itself, rather they provide information on the share of the population with a level of income that is below a set threshold; this does not necessarily imply a low overall standard of living.

In 2018, Czechia, Denmark, Slovenia and Finland were the only multi-regional EU Member States to report that every region had an at-risk-of-poverty rate (after social transfers) that was below the EU-27 average (see Map 5.2). Note that the statistics presented in this section for Poland relate to NUTS level 1 regions and that only national data are available for Belgium, Germany, France and Portugal.

The lowest at-risk-of-poverty rates were recorded in capital regions of eastern EU Member States

Looking in more detail, people living in the capital regions of many eastern and some southern EU Member States were less likely to be at risk of poverty than their rural populations. The Romanian capital region of București - Ilfov had the lowest risk of poverty (4.1 %) among NUTS level 2 regions in 2018 and was followed by three more capital regions — Bratislavský kraj (4.3 %), Praha (6.0 %) and Helsinki-Uusimaa (6.9 %).

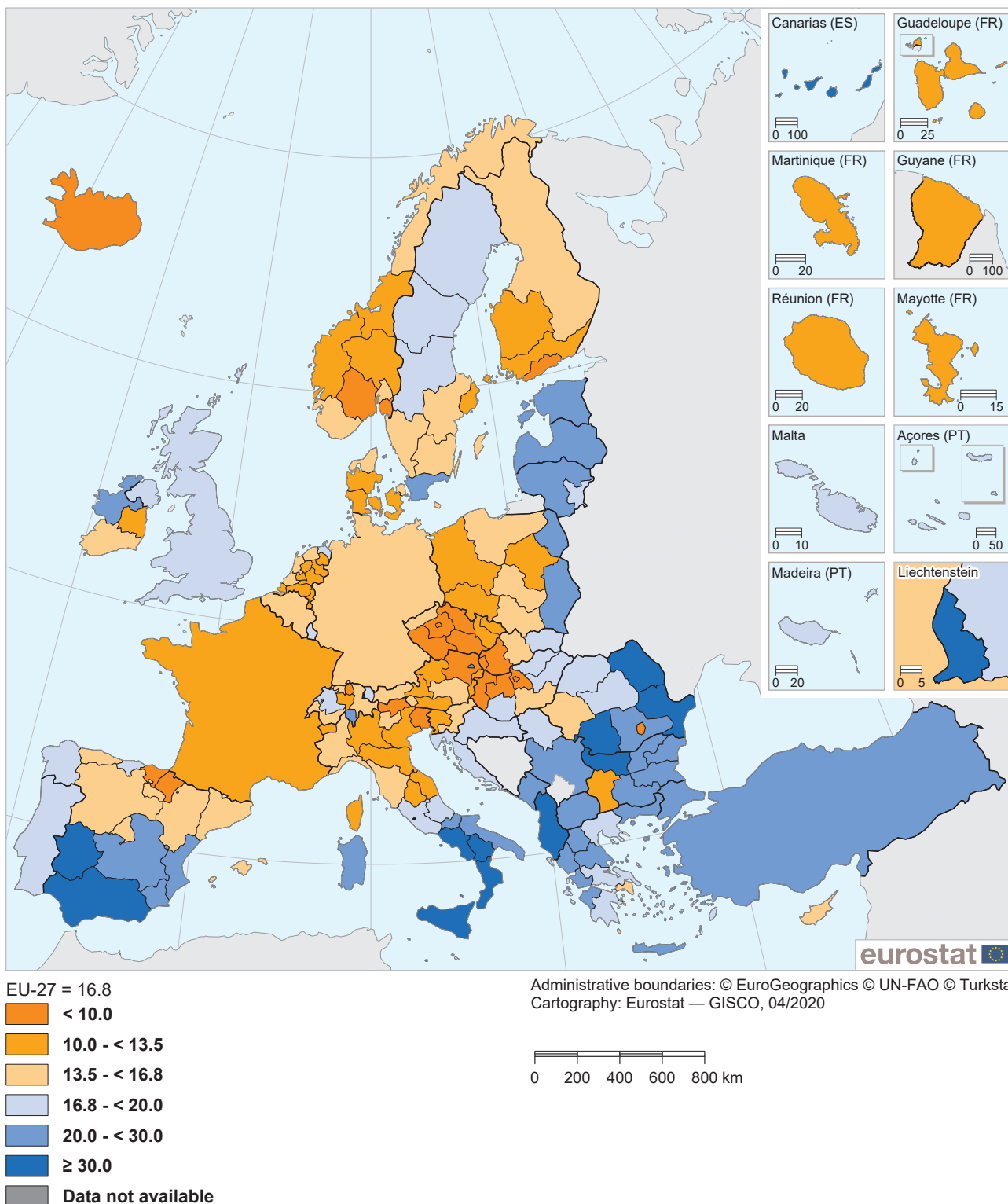
Map 5.1: People at risk of poverty or social exclusion, 2018
(%, by NUTS 2 regions)



Note: Poland and Serbia, NUTS 1 regions. Belgium, France, Portugal, the United Kingdom and Turkey: national data. Länsi-Suomi (FI19) and Åland (FI20): the value shown covers both regions. EU-27, Germany and Austria: estimates. The United Kingdom: provisional. Burgenland (AT11): low reliability. Germany, Austria, Montenegro and Turkey: 2017. Iceland: 2016.

Source: Eurostat (online data codes: [ilc_peps11](#) and [ilc_peps01](#))

Map 5.2: At-risk-of-poverty rate, 2018
(%, by NUTS 2 regions)



Note: the at-risk-of-poverty rate is the share of people with an equivalised disposable income below the at-risk-of-poverty threshold, which is set at 60 % of the national median equivalised disposable income (after social transfers). Poland and Serbia: NUTS 1 regions. Belgium, Germany, France, Portugal, the United Kingdom and Turkey: national data. Länsi-Suomi (FI19) and Åland (FI20): the value shown covers both regions. EU-27 and Austria: estimates. The United Kingdom: provisional. Austria, Montenegro and Turkey: 2017. Iceland: 2016.

Source: Eurostat (online data codes: [ilc_li41](#) and [ilc_li02](#))

By contrast, the opposite pattern was apparent in several western Member States. Despite their capital regions (and other large cities) often being among the most affluent regions in the EU, they were often characterised by pockets of social deprivation in specific neighbourhoods. For example, more than one fifth (21.3 %; 2017 data) of the population in the Austrian capital region of Wien was at risk of poverty, a higher share than in any other region of Austria. A similar pattern was apparent in Denmark, as the highest risk of poverty was recorded in the capital region of Hovedstaden (15.2 % in 2018).

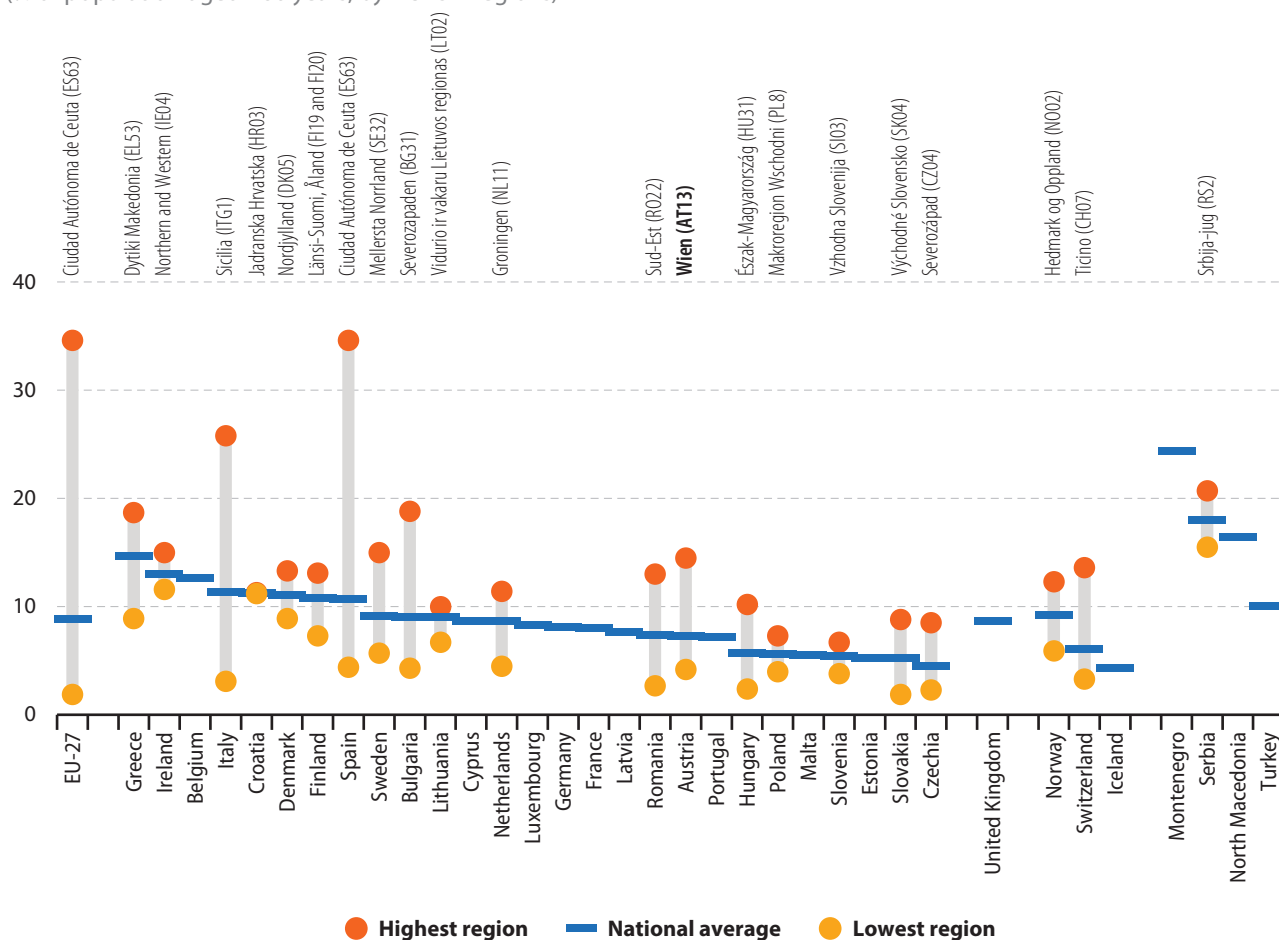
Some of the highest at-risk-of-poverty rates were recorded in rural and remote regions of eastern and southern Europe. There were 12 regions across the EU where this rate exceeded 30.0 % in 2018 (as shown by the darkest blue shade in Map 2). These were situated in Bulgaria, Romania, Spain or Italy. The highest rate was reported in the southern Italian region of Campania (41.4 %), where the risk of poverty was approximately 10 times as high as in Bucureşti - Ilfov.

PEOPLE LIVING IN A HOUSEHOLD WITH VERY LOW WORK INTENSITY

The proportion of **people living in a household with very low work intensity** is one of the three headline criteria used to evaluate poverty and social exclusion in the EU. It is calculated as the share of the population (aged 0-59 years) living in a household where adult members (18-59 years) provided less than 20 % of their total working potential during the previous 12 months. Note that households composed exclusively of students (aged 18-24 years) are excluded and that the statistics presented in this section for Poland relate to NUTS level 1 regions and that only national data are available for Belgium, Germany, France and Portugal.

While some people might view having a job as a guarantee against the risks of poverty or social exclusion, increasing labour market flexibility has led to a growing share of the EU's workforce being employed involuntarily on a temporary or part-time basis or through zero hours contracts. In the aftermath of the global financial and economic crisis, the number of working poor increased across the EU, with real wages and consumer purchasing power falling in several EU Member States.

Figure 5.1: People living in a household with a very low work intensity, 2018
(% of population aged <60 years, by NUTS 2 regions)



Note: ranked on national average. Regions listed above the figure are those with the highest rate. Capital regions are indicated by a bold typeface. Poland and Serbia: NUTS 1 regions. Belgium, Germany, France, Portugal, the United Kingdom and Turkey: national data. EU-27 and Austria: estimates. The United Kingdom: provisional. Austria, Montenegro and Turkey: 2017. Iceland: 2016.

Source: Eurostat (online data codes: [ilc_lvhl21](#) and [ilc_lvhl11](#))

Less than 1 in 50 people lived in a household characterised by very low work intensity in the capital region of Slovakia ...

In 2018, the share of the EU-27 population (aged 0-59 years) living in a household with very low work intensity was 8.8 %. An analysis by [degree of urbanisation](#) reveals that the highest share of EU-27 households with very low work intensity was recorded among people living in [cities](#) (9.7 %), while somewhat lower shares were recorded for those living in [towns and suburbs](#) (8.2 %) or [rural areas](#) (8.0 %). This pattern was particularly apparent in the cities of western EU Member States, for example, Belgium, Denmark, Germany, the Netherlands and Austria. Although their cities accounted for a high number of jobs, as witnessed by the influx of commuters into their urban agglomerations every day, they were also somewhat paradoxically home to a relatively high proportion of people living in households with very low work intensity. This may, at least in part, be due to a skills mismatch, pockets of urban unemployment, different household structures, or the precarious nature of some jobs.

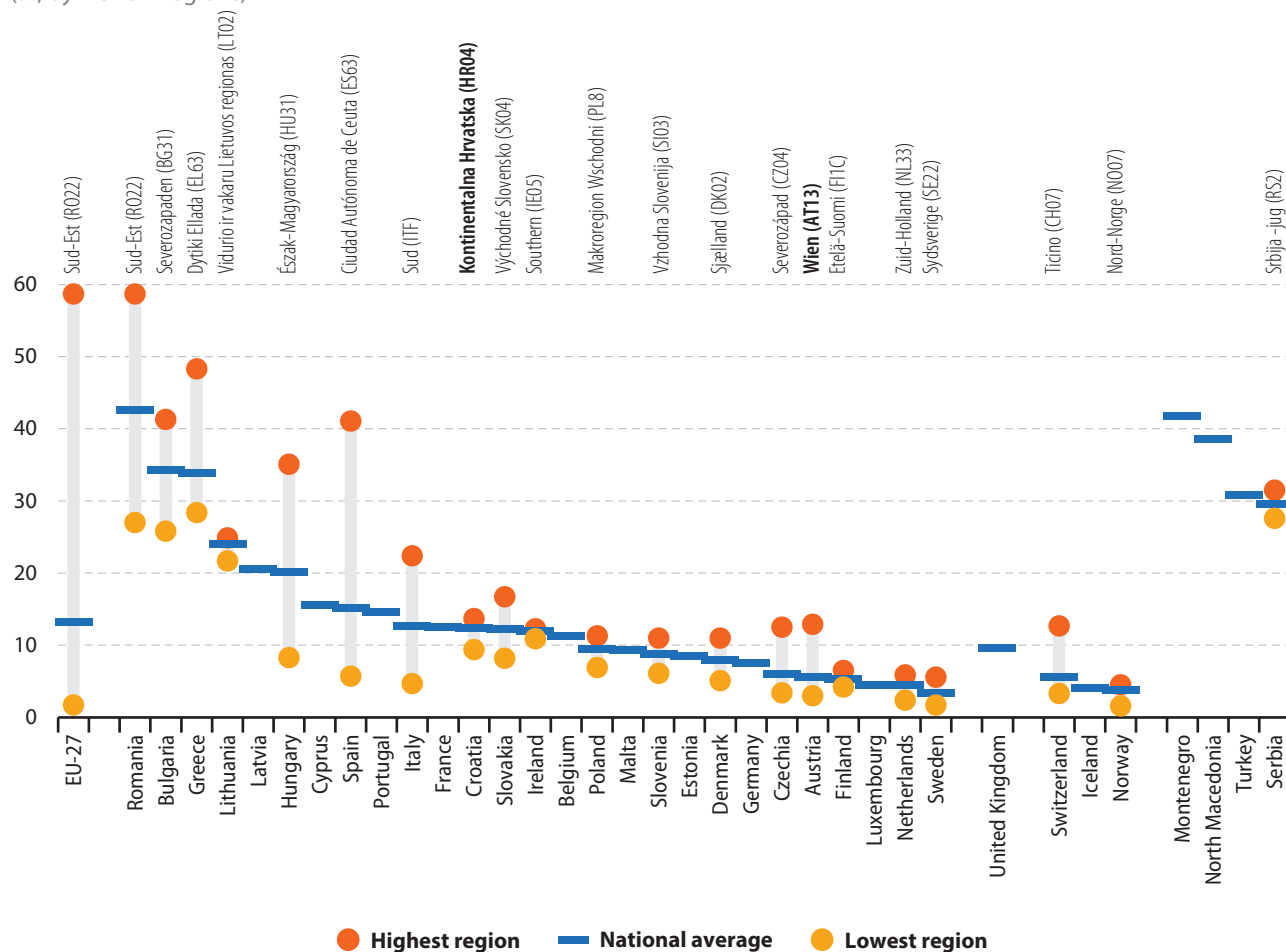
A more detailed analysis for NUTS level 2 regions reveals that the lowest share of people (aged 0-59 years) living in

households with very low work intensity was recorded in Bratislavský kraj (1.9 %). There were six other predominantly urban regions located across eastern EU Member States that had very low shares (below 3.0 %), two of which were capital regions: Bucureşti - Ilfov and Praha.

... while several southern European regions reported that more than 1 in 5 people lived in a household with very low work intensity

At the other end of the range, the highest share of people living in households with very low work intensity in 2018 was recorded in Ciudad Autónoma de Ceuta (34.6 %). The next highest shares were recorded in several island and southern regions of Italy, as well as regions situated in Greece and Spain. It is interesting to note that in Italy and Spain there was a very wide spread across regions between the shares of people living in households with very low work intensity. For example, in Italy the uppermost share was recorded in Sicilia (25.8 %), which was approximately eight times as high as in Provincia Autonoma di Bolzano/Bozen (3.1 %).

Figure 5.2: Material and social deprivation rate, 2018
(%, by NUTS 2 regions)



Note: ranked on national average. Regions listed above the figure are those with the highest rate. Capital regions are indicated by a bold typeface. Italy, Poland and Serbia: NUTS 1 regions. Belgium, Germany, France, Portugal, the United Kingdom and Turkey: national data. EU-27 and Austria: estimates. The United Kingdom: provisional. Austria, Montenegro and Turkey: 2017. Iceland: 2016.

Source: Eurostat (online data codes: [ilc_md5d08](#) and [ilc_md5d06](#))

MATERIAL AND SOCIAL DEPRIVATION RATE

The material and social deprivation rate shows the share of the population who could not afford (rather than did not want or did not need) at least 5 out of the following 13 items: to face unexpected expenses; one week annual holiday away from home; to pay on time (mortgage/house loan, rent, utility bills and/or hire purchase instalments); a meal with meat, chicken or fish or vegetarian equivalent every second day; to keep their home adequately warm; a car/van for personal use; to replace worn-out furniture; to replace worn-out clothes with some new ones; to have two pairs of properly fitting shoes; to spend a small amount of money each week on themselves (pocket money); to have regular leisure activities; to get together with friends/family for a drink/meal at least once a month; to have an internet connection. Many of these items are considered by most people to be desirable or even necessary to lead an adequate quality of life. Note that the statistics presented in this section for Italy and Poland relate to NUTS level 1 regions and that only national data are available for Belgium, Germany, France and Portugal.

In two Romanian regions, more than half the population was affected by material and social deprivation

The EU-27 material and social deprivation rate stood at 13.2 % in 2018. More than one fifth of the population was impacted by material and social deprivation in every region of Bulgaria, Greece, Latvia, Lithuania and Romania. The Romanian regions of Sud-Est (58.7 %) and Sud - Muntenia (52.9 %) were the only NUTS level 2 regions across the EU where more than half of the population was affected by material and social deprivation.

In 2018, less than one tenth of the population was impacted by material and social deprivation in each region of Sweden, the Netherlands, Luxembourg, Finland and Estonia (see Figure 5.2). The three Swedish regions of Övre Norrland, Stockholm and Småland med öarna had the lowest material and social deprivation rates in the EU (all close to 2.0 %).

Income

Median **equivalised income** is a measure of (net) income that takes account of differences in household size and composition. This is done by calculating the number of 'equivalent adults' in each household, based on the 'modified OECD scale' that assigns a weight to each household member. Total household income, derived as the sum of the income received by every member of the household and by the household as a whole, is

divided by the equivalised household size to determine the equivalised income attributed to each household member. The use of the median (in contrast to the arithmetic mean) avoids potential distortions that may be caused by the existence of extreme values, such as a few extremely rich individuals/households.

The median income of people living in Belgian cities was more than 10 % below the national average

In 2018, median equivalised net income in the EU-27 was EUR 16 839 per inhabitant, ranging from a high of more than EUR 40 000 in Luxembourg down to less than EUR 5 000 in Bulgaria and Romania. Figure 5.3 shows that median income levels per inhabitant in the EU-27 were higher in urban areas (cities or towns and suburbs) than they were in rural areas.

A closer examination reveals that the lowest levels of median income were recorded among city-dwellers in four of the western EU Member States — Belgium, Germany, the Netherlands and Austria — as well as Malta (where there are no data available for rural areas). In Belgium, the median income of people living in the cities was relatively low, more than 10 % below the national average. These figures tend to reinforce the view that some of the largest cities in western Europe are characterised by pockets of social deprivation, and that some of their highest earners may move out of city centres to satellite towns and suburbs.

By contrast, in the 11 Member States that recorded the lowest levels of median income (at a national level), it was consistently the case that city-dwellers had the highest levels of median income, and — with the exception of Czechia — people living in rural areas had the lowest median incomes. The (economic) pull of living in the cities was particularly apparent in three of these Member States, as the median income of city-dwellers in Lithuania and Bulgaria was more than 20 % above the national average, reaching almost 50 % higher in Romania.

Housing

Some sections of the population are particularly exposed to housing poverty, for example: the unemployed, migrants, single people, people in rented accommodation, and those living in particularly large (and relatively expensive) cities. While for instance elderly homeowners who have paid off their mortgage might be considered to be in a fortunate situation, their income may be low and they are consequently unable to pay for the costs of any necessary repairs or for heating during the winter months. In a similar vein, although social housing and housing benefits constitute a buffer against the effects of poverty, they do not preclude people from living in poverty or in substandard buildings.

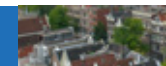
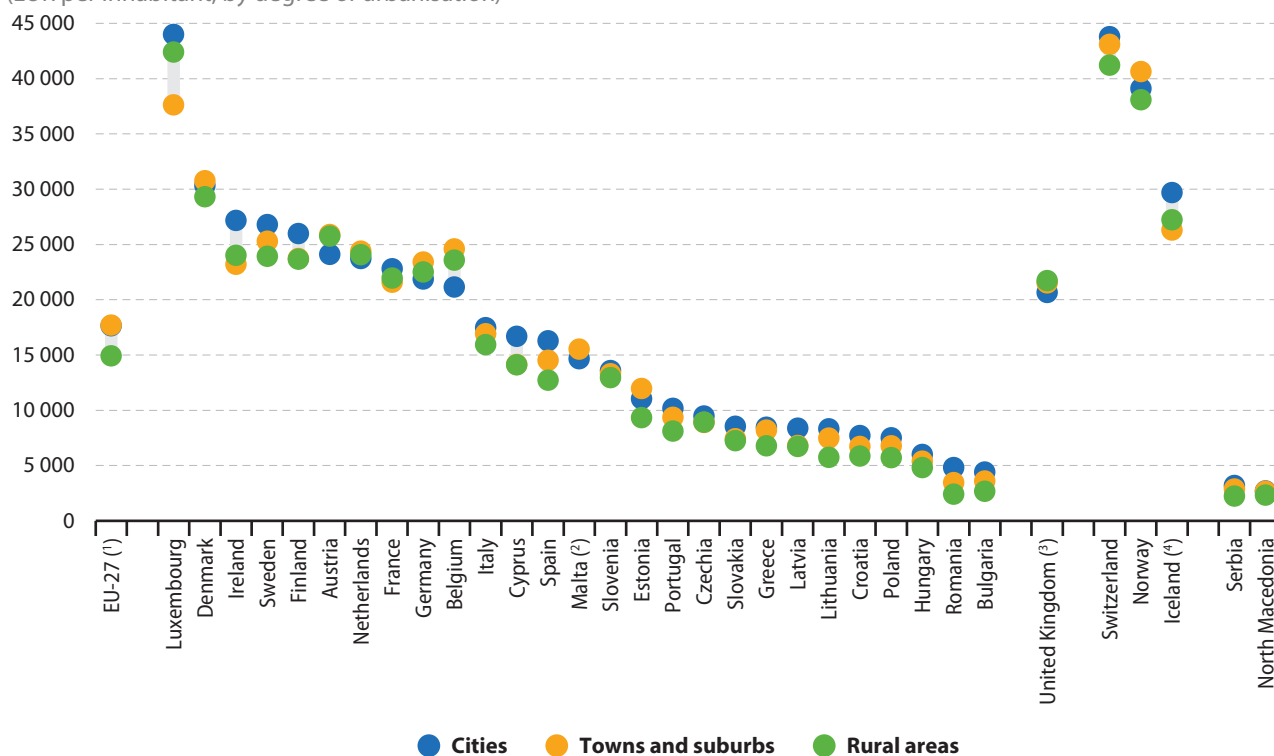


Figure 5.3: Median equivalised net income, 2018
(EUR per inhabitant, by degree of urbanisation)



Note: ranked on cities.

⁽¹⁾ Estimates.

⁽²⁾ Rural areas: low reliability, not available.

⁽³⁾ Provisional.

⁽⁴⁾ 2016.

Source: Eurostat (online data codes: [ilc_di17](#) and [ilc_di03](#))

DISTRIBUTION OF POPULATION BY DWELLING TYPE

A **dwelling** is a **room** or collection of rooms — including its accessories, lobbies and corridors — in a permanent **building** or a structurally separated part of a building which is designed for habitation by a **private household**. Dwellings are found in a range of different types of buildings: the most common distinction is made between houses (detached, semi-detached and terraced) on one hand and flats (or apartments) on the other.

More than half (53.3 %) of the EU-27 population lived in a house in 2018, while 46.0 % of the population lived in flats. Note that some people live in other forms of dwelling, for example in student halls of residence, mobile or recreational homes, and houseboats. Other people live in dwellings that form part of non-residential buildings, such as commercial (shopkeepers who live above their shop) or agricultural buildings (living on a farm); these residual types of other dwelling are excluded from the information presented in Figure 5.4.

City-dwellers were more likely to live in a flat, while people living in rural areas were more likely to live in a house

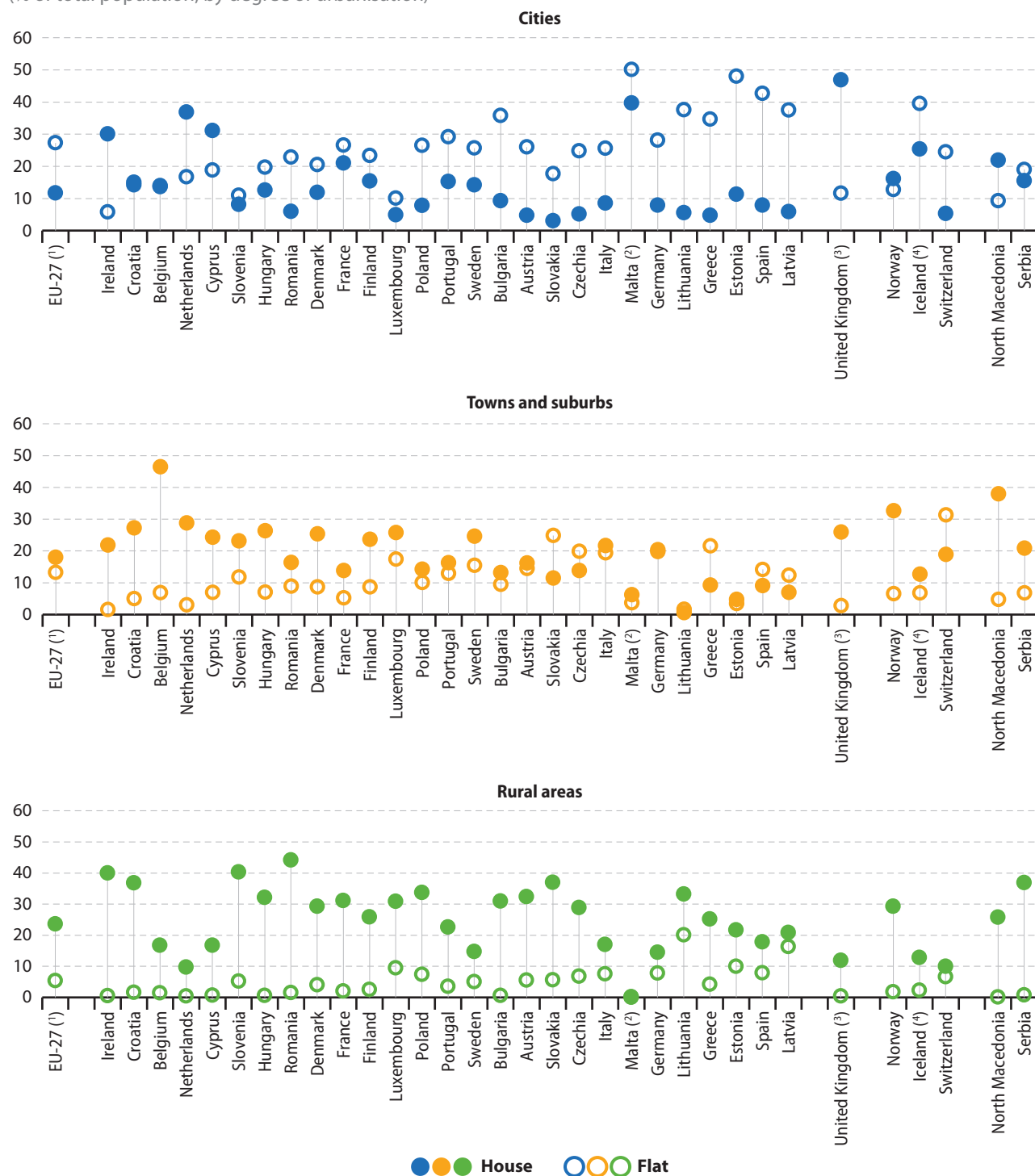
In the vast majority of EU Member States, most city-dwellers lived in flats rather than houses; Ireland, the Netherlands and Cyprus were the only exceptions. At the other end of the range, more than four fifths of the population living in the cities of the **Baltic Member States**, Czechia, Spain, Austria, Slovakia and Greece resided in flats.

One of the advantages of living in rural areas is that they generally offer more space. In every one of the EU Member States, a majority of the rural population lived in houses. In Ireland, Hungary and Bulgaria, the rural population was more than 50 times as likely to be residing in a house as in a flat.

HOUSING COST OVERBURDEN RATE

Housing costs comprise rental payments, mortgage interest payments, utility costs (such as water or energy charges), the cost of repairs and other local taxes/charges. Together these may account for a considerable

Figure 5.4: Distribution of population by dwelling type, 2018
(% of total population, by degree of urbanisation)



Note: ranked on the share of the total population living in houses. The share of houses and flats does not always sum to 100 % as there is a miscellaneous category of other types of building.

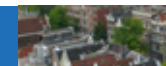
(1) Estimates.

(2) Rural areas: low reliability.

(3) Provisional.

(4) 2016.

Source: Eurostat (online data code: ilc_lvho01)



proportion of a household's disposable income. Indeed, rising housing costs are often cited as a key factor impacting on the share of the population affected by monetary poverty. The **housing cost overburden rate** is defined as the percentage of the population living in a household where total housing costs represent more than 40 % of disposable income (both measures are 'net' of housing allowances/benefits).

The impact of housing costs on living conditions varies considerably both between and within EU Member States. For example, somebody who lives in central Paris can expect to spend a considerably higher proportion of their income on housing costs, in contrast to someone who lives in Limousin (a rural, sparsely-populated region in central France).

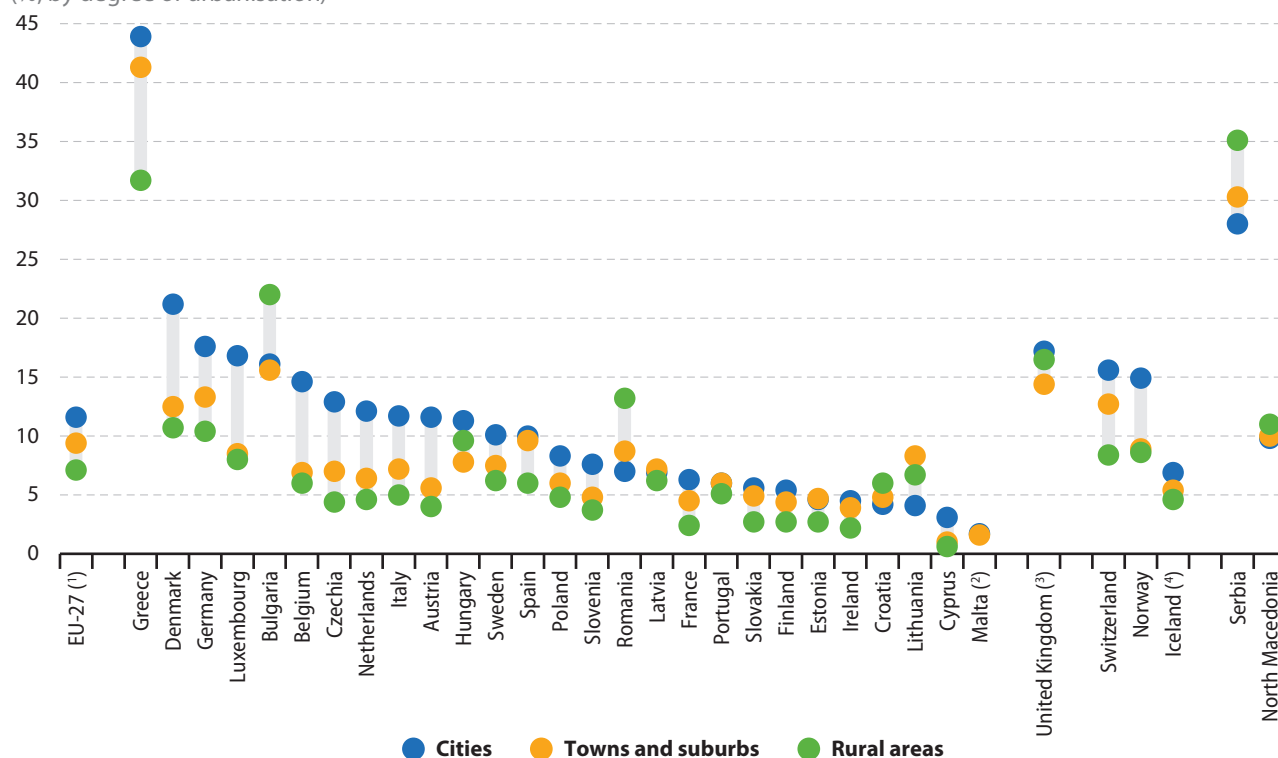
People living in cities tended to spend a greater share of their disposable income on housing

In 2018, the EU-27 housing cost overburden rate was 9.6 %: this burden was particularly pronounced in Greece, Bulgaria, Denmark and Germany. A more

detailed analysis by degree of urbanisation is shown in Figure 5.5. This reveals that the housing cost overburden rate in the EU-27 was, on average, greater among people living in cities (11.6 %) than among people living in rural areas (7.1 %); this pattern was repeated in a majority of the EU Member States. In France, the Netherlands, Austria and Czechia, the housing cost overburden rate for city-dwellers was more than 2.5 times as high as the corresponding rate for people living in rural areas; this was also the case in Cyprus, although it should be noted that only a very small proportion of the overall population in Cyprus (and Malta) were overburdened by housing costs.

While the housing cost overburden rate was typically higher for people living in cities (where the price of owning/renting property tends to be higher), there were some exceptions. In 2018, the highest housing cost overburden rates in all three Baltic Member States were recorded for people living in towns and suburbs, while in Bulgaria, Romania and Croatia the highest rates were reported among the rural population; the latter may reflect relatively low income levels in areas characterised by semi-subsistence farming.

Figure 5.5: Housing cost overburden rate, 2018
(%, by degree of urbanisation)



Note: ranked on cities.

⁽¹⁾ Estimates.

⁽²⁾ Rural areas: low reliability, not available.

⁽³⁾ Provisional.

⁽⁴⁾ 2016.

Source: Eurostat (online data code: ilc_lvho07d)

SEVERE HOUSING DEPRIVATION RATE

The **severe housing deprivation rate** is defined as the share of the population living in dwellings that are considered to be **overcrowded**. An overcrowded household is one that does not have at its disposal a minimum number of rooms, while also exhibiting at least one of the following housing deprivation measures: a leaking roof, damp walls, floors or foundation, or rot in window frames or floor; neither a bath nor a shower; no indoor flushing toilet; a dwelling that is considered too dark.

In 2018, the EU-27 severe housing deprivation rate was 4.3 %. The highest rates among the EU Member States were recorded in Romania (16.1 %) and Latvia (14.9 %), while much lower shares of the population in Spain, the Netherlands, Malta, Cyprus, Finland and Ireland experienced severe housing deprivation (1.5 % or less).

A particularly high share of the rural population in Romania suffered from severe housing deprivation

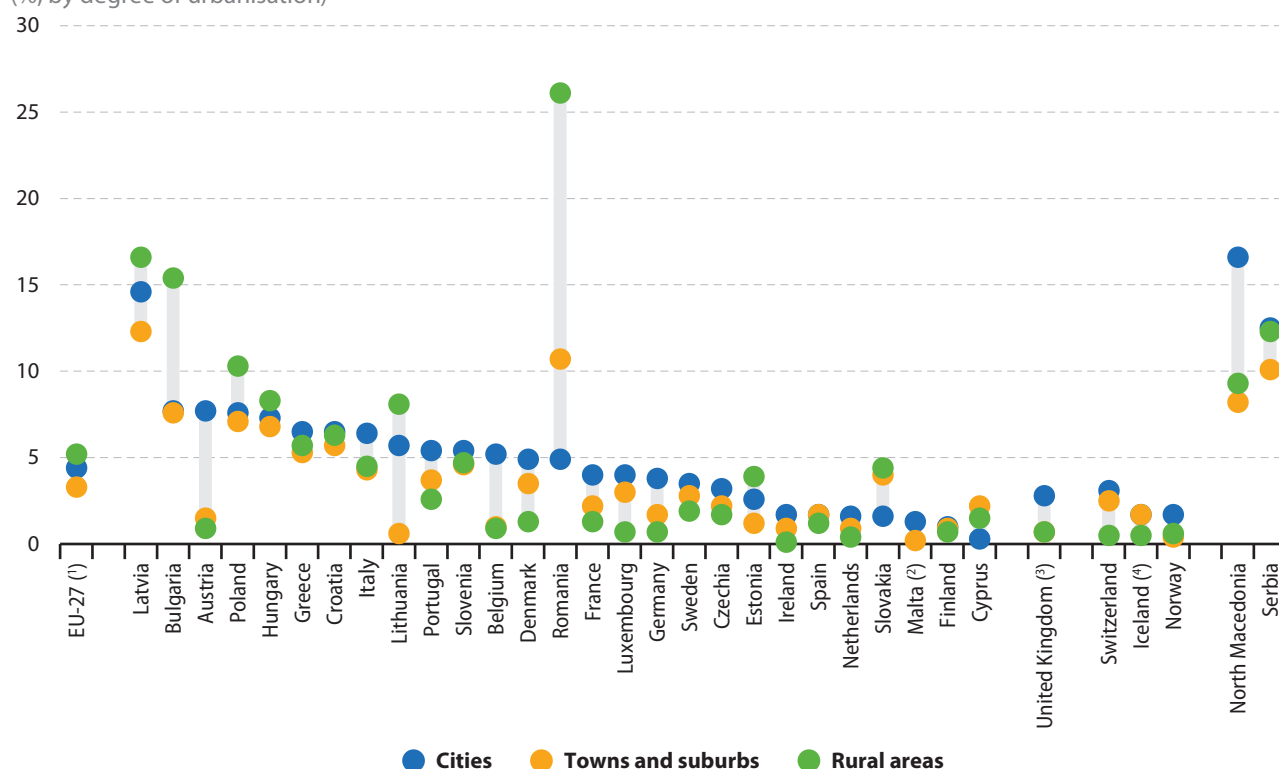
Figure 6 shows that in 2018 the highest shares of severe housing deprivation in the EU-27 were recorded in

rural areas (5.2 %), followed by cities (4.4 %) and towns and suburbs (3.3 %). As with several other indicators presented in this chapter, the severe housing deprivation rate was often highest in eastern and Baltic Member States (where it was usually concentrated in rural areas), whereas many of the western EU Member States reported lower rates (with severe housing deprivation usually more apparent in cities).

In 2018, the severe housing deprivation rates for people living in the cities of Ireland, Austria, Belgium, Luxembourg and Germany were more than five times as high as the rate recorded for people living in rural areas. By contrast, the severe housing deprivation rate for people living in rural areas of Romania (26.1 %) was particularly high and more than five times as high as the rate recorded for city-dwellers (4.9 %). It is interesting to note that almost half of the Romanian population in rural areas and in cities lived in overcrowded dwellings. As such, the relatively high severe housing deprivation rate for rural areas could be directly attributed to persistently poor amenities in the stock of rural dwellings.

Figure 5.6: Severe housing deprivation rate, 2018

(%, by degree of urbanisation)



Note: ranked on cities.

(1) Estimates.

(2) Rural areas: low reliability, not available.

(3) Provisional.

(4) 2016.

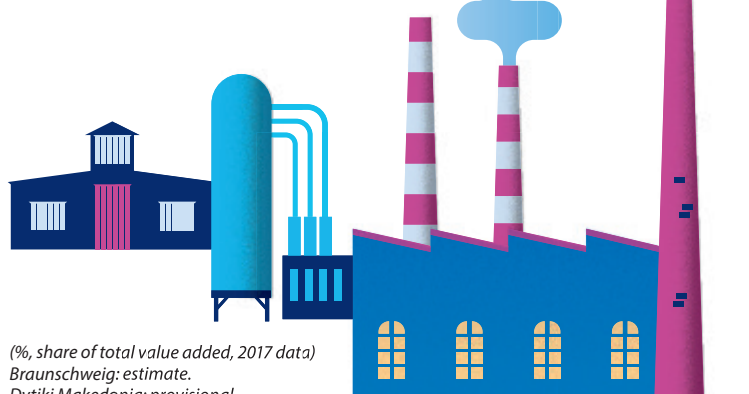
Source: Eurostat (online data code: ilc_mdho06d)

6

Economy

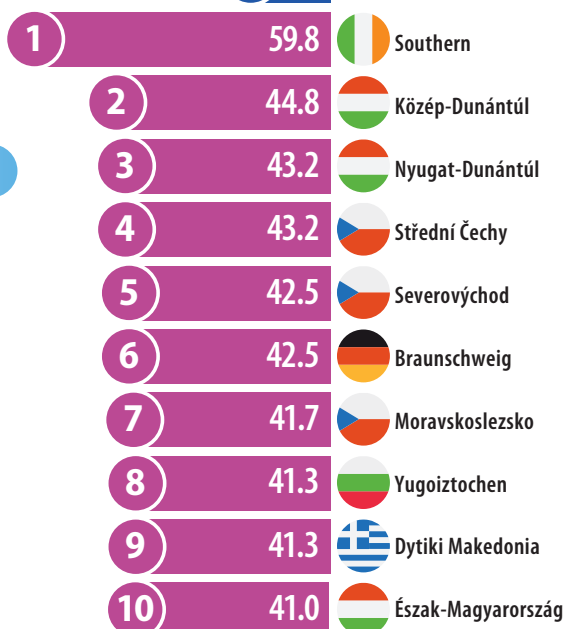


Which EU regions are most specialised in industry?



(%, share of total value added, 2017 data)
Braunschweig: estimate.
Dytiki Makedonia: provisional.

20.3



The European Union (EU's) regional policy aims to support broader socioeconomic priorities such as the [European semester](#) and the [European pillar of social rights](#). [Regional accounts](#) are important in this context, in that they are used to determine the extent to which EU Member States should contribute towards the EU's budget, while also serving as a key element when deciding upon the regional allocation of [cohesion policy](#) expenditure. The EU's regional expenditure has historically been allocated on the basis of [gross domestic product \(GDP\)](#) per capita and [gross national income \(GNI\)](#) per capita. From 2021 onwards, the rules for allocating funding will become simpler and will be tailored to locally-led development strategies that take account of the socioeconomic and environmental situation (for example, youth unemployment, low levels of educational attainment, the reception and integration of migrants, or climate change).

This chapter starts with information on regional GDP, the principal aggregate for measuring economic output (presented in absolute values and per inhabitant ratios). It is followed by a broad sectoral analysis of [gross value added](#) that highlights the principal wealth generating sectors across EU regions. Having analysed GDP using an output approach, the focus of the second section switches to the income of households: it presents data for [primary income](#) per inhabitant (from paid work and self-employment, as well as from interest, dividends and rents) and the [compensation of employees](#) (per hour worked). The second of these two indicators may be

used in conjunction with [labour productivity](#) (gross value added per hour worked) to assess patterns of regional competitiveness.

Regional gross domestic product (GDP)

GDP at market prices in the EU-27 was valued at EUR 13.5 trillion in 2018, equivalent to an average of EUR 30 200 per inhabitant. Behind these overall figures there are considerable differences between EU regions in terms of their economic performance. These might be explained, among other factors, by: the availability of natural and human resources; changes brought about by globalisation, such as the relocation and outsourcing of manufacturing and some service activities; the legacy of former economic systems; socioeconomic developments; geographic proximity to markets or remoteness.

The main focus of the EU's cohesion policy is to help regions converge/catch-up. Many of the less-developed and transition regions in the EU may be characterised by relatively low-growth, low-income (primarily in eastern, southern and Baltic Member States) or by pockets of poverty, social exclusion and/or industrial decline (regions that have been 'left-behind'); these are the regions that receive the bulk of EU regional funds.



Measuring the size of an economy

The central measure of national accounts, GDP, summarises the economic position of a country or a region. This well-known balance has traditionally been divided by the total number of inhabitants to create a proxy measure for analysing overall living standards, namely, GDP per inhabitant.

While GDP continues to be used for monitoring economic developments, playing an important role in economic decision-making, it has been complemented by other indicators as a source of information for informing policy debates on social and environmental aspects of well-being. This is because GDP does not take account of externalities such as environmental sustainability or issues such as income distribution or social inclusion, which are increasingly seen as important drivers for [sustainable development](#) and the overall quality of life.

In order to compensate for price level differences across countries, GDP can be converted using conversion factors known as [purchasing power parities \(PPPs\)](#). The use of PPPs, rather than market [exchange rates](#), results in data being denominated in an artificial common currency unit called a [purchasing power standard \(PPS\)](#). The use of PPS series, rather than euro-based series, tends to have a levelling effect, as countries and regions with very high GDP per inhabitant in euro terms also tend to have relatively high price levels (for example, the cost of living in Luxembourg is generally much higher than the cost of living in Bulgaria).

The French capital region of Île-de-France generated 5.4 % of the EU-27's economic output

There are 240 NUTS level 2 regions across the EU from which a detailed typology for analysing economic activity can be established. Map 6.1 is based on absolute values of regional GDP in euro terms; note that some of the differences between regions reflect the (often artificial) administrative boundaries that are used to delineate each region.

In 2018, the highest levels of GDP were recorded in major hubs of business activity. The French capital region of Île-de-France had by far the largest economy (EUR 734 billion), and was followed by the northern Italian region of Lombardia (EUR 388 billion) and the southern German region of Oberbayern (EUR 274 billion). There were six more regions in the EU where GDP was in excess of EUR 200 billion, all of which could also be characterised as major hubs of business activity: Düsseldorf, Stuttgart and Darmstadt (in Germany), Comunidad de Madrid and Cataluña (in Spain) and Rhône-Alpes (in France).

The largest circles in Map 6.1 highlight regions where GDP was at least EUR 100 billion in 2018. There were 33 NUTS level 2 regions in the EU that met this criterion; together, they accounted for 45.3 % of the EU-27's total economic activity. This is largely a result of these major hubs of economic activity also having much higher levels of regional population, although their economic output is typically boosted by commuters who live in surrounding regions. To give an idea of how concentrated economic activity was in these regions, at the other end of the range the smallest 33 regions (in terms of GDP) together provided a cumulative share of just 1.5 % of the EU-27's economic output.

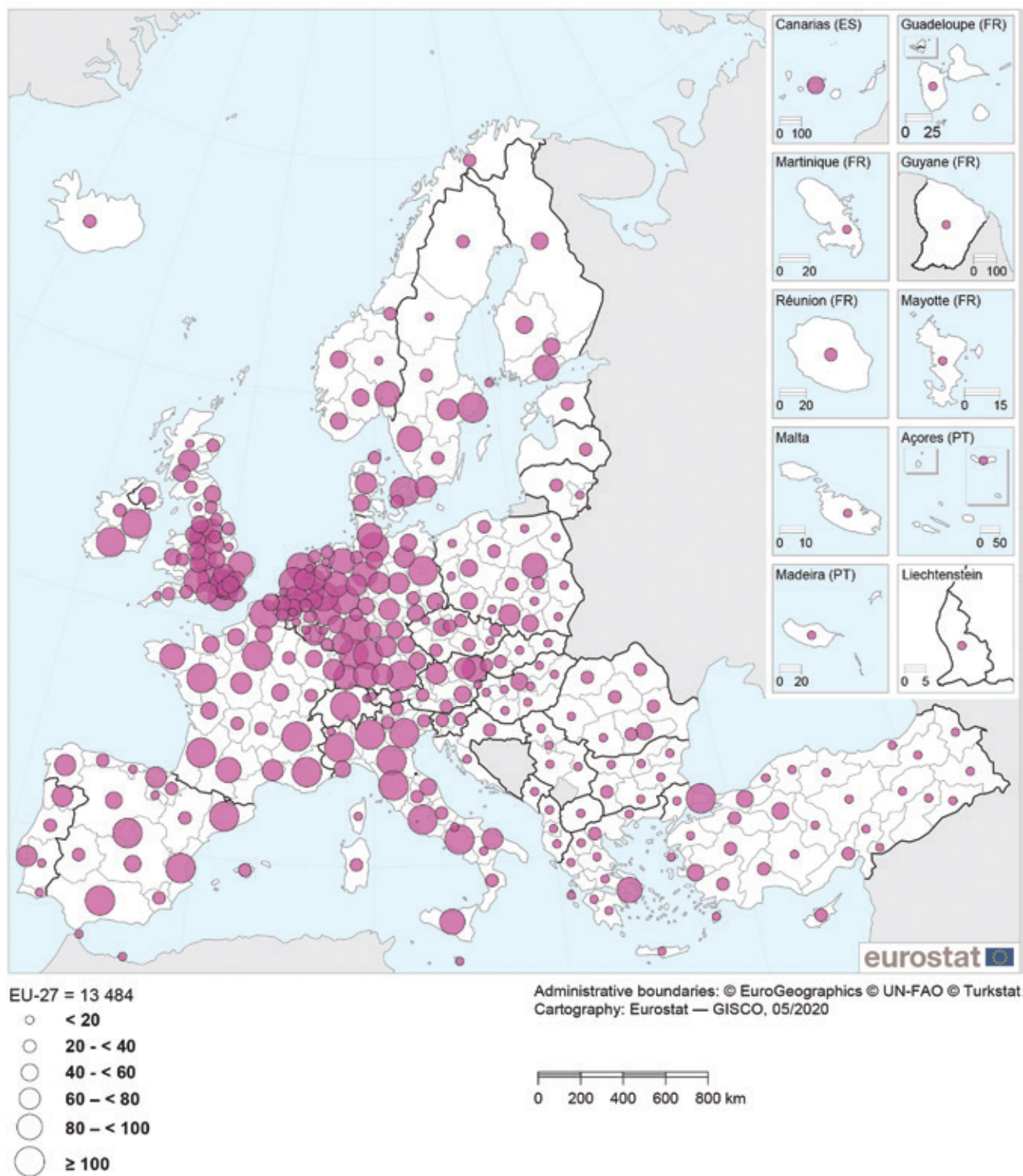
Map 6.2 presents information for regional GDP per inhabitant in PPS terms; data are shown as an index, relative to the EU-27 average (EU-27 = 100). Those regions considered as relatively 'rich' — where GDP per inhabitant was above the EU-27 average — are shown in blue. In 2018, higher than average levels of GDP per inhabitant were primarily found in a band of regions that ran from the [Nordic Member States](#), down through Germany and the [Benelux](#) countries into Austria and northern Italy. Otherwise, there were a few isolated pockets of relatively high GDP per inhabitant, for example, most parts of Ireland, specific regions in Spain, as well as many capital regions.

The 'poorest' regions in the EU — where GDP per inhabitant was less than 75 % of the EU-27 average — are shown by the darkest shade of purple in Map 6.2; a large proportion of the EU's cohesion policy funding is directed at these 'less developed regions'. They were primarily located in a band running from Latvia in the north, down through eastern parts of the EU into Greece and southern Italy, before extending across the Mediterranean Sea to southern regions of Spain and most of Portugal.

Germany and Italy were characterised by a polycentric pattern of economic development

There is often a stark contrast between the economic performance of capital regions and their surrounding regions. In 2018, this pattern was most apparent in eastern EU Member States: for example, Praha (Czechia) and Bratislavský kraj (Slovakia) both featured among the 10 regions in the EU with the highest levels of GDP per inhabitant, while their surrounding regions had levels of economic activity that were below the EU-27 average. A similar, although less pronounced, pattern could be observed in Warszawski stołeczny (Poland), București-Ilfov (Romania), Budapest (Hungary), Sostinės regionas (Lithuania) and Área Metropolitana de Lisboa (Portugal).

Map 6.1: Gross domestic product (GDP), 2018
(billion EUR, by NUTS 2 regions)

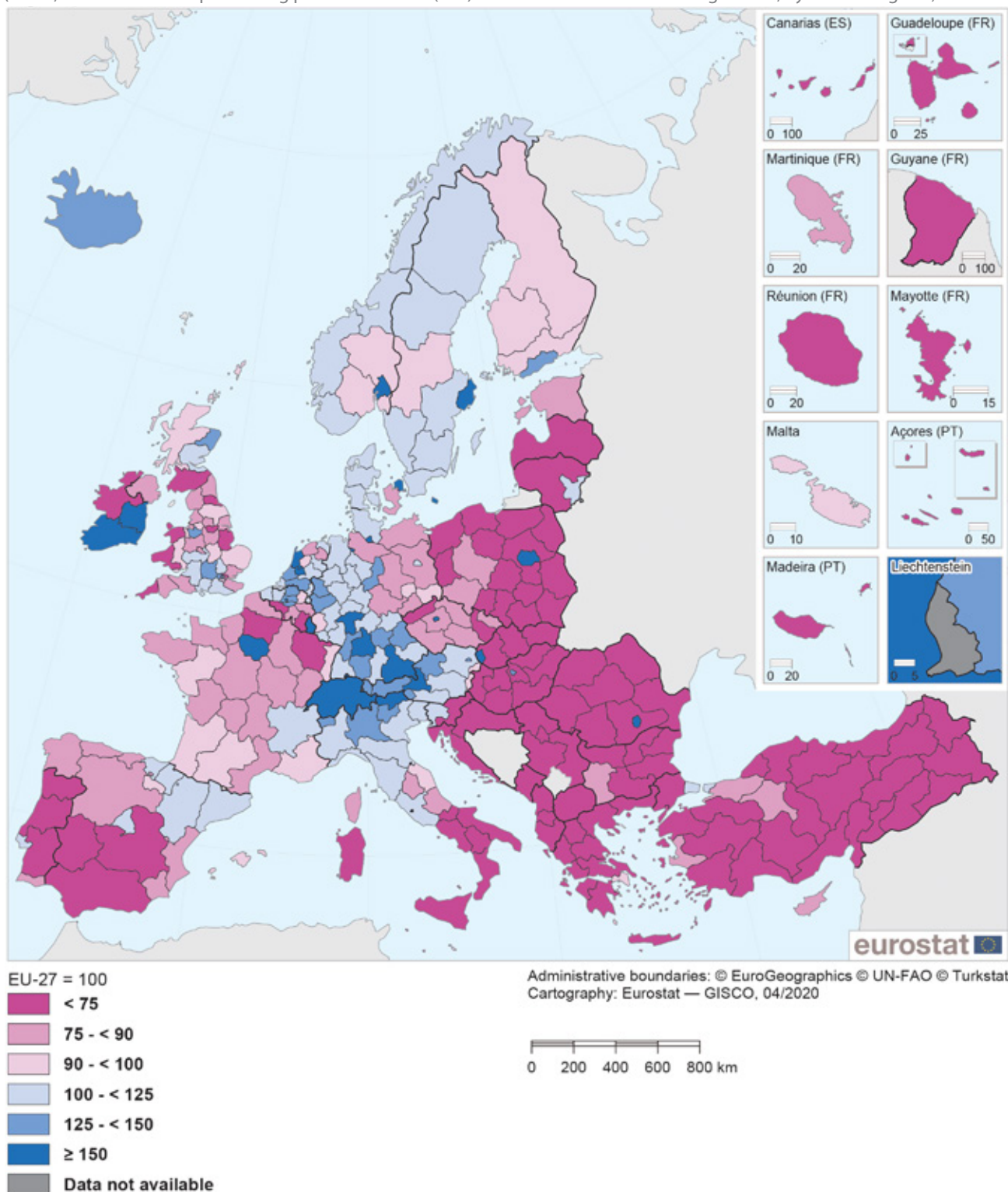


Note: Switzerland, national data. Germany, Ireland, France, Slovakia and Liechtenstein: estimates. Bulgaria, Greece, Spain, Cyprus, the Netherlands, Poland, Romania and Albania: provisional. Liechtenstein, Norway and Albania: 2017.

Source: Eurostat (online data codes: [nama_10r_2gdp](#) and [nama_10_gdp](#))

Map 6.2: Gross domestic product (GDP) per inhabitant, 2018

(index, based on GDP in purchasing power standards (PPS) in relation to the EU-27 average = 100, by NUTS 2 regions)



Note: Switzerland, national data. Germany, Ireland, France and Slovakia: estimates. Bulgaria, Greece, Spain, Cyprus, the Netherlands, Poland, Romania and Albania: provisional. Norway, North Macedonia and Albania: 2017.

Source: Eurostat (online data codes: nama_10r_2gdp, nama_10_gdp, nama_10r_3popgdp and nama_10_pe)

Regional GDP per inhabitant was generally highest in capital regions, which often act as hubs of business (and cultural) activity. Many of the EU Member States were characterised by this monocentric pattern of economic development, with the only exceptions (among Member States composed of more than one NUTS level 2 region) being: Germany (where the highest level of GDP per inhabitant was recorded in Hamburg), Ireland (Southern), Italy (Provincia Autonoma di Bolzano/Bozen) and Austria (Salzburg). The situation in Germany and Italy was atypical insofar as they were both characterised by a more polycentric pattern of economic development. Indeed, GDP per inhabitant in the German capital city region of Berlin was lower than in 13 of the 37 other German regions, while a similar analysis for Italy reveals that GDP per inhabitant in Lazio was lower than in 5 of the 20 other Italian regions.

GDP per inhabitant in Luxembourg was almost nine times as high as in Mayotte

Luxembourg had the highest level of regional GDP per inhabitant in 2018; its level of economic output was 2.6 times as high as the EU-27 average. There were three other NUTS level 2 regions in the EU where economic output per capita was at least twice as high as the EU-27 average: two of these regions were in Ireland — Eastern and Midland (the capital region) and Southern — while the third was Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (the Belgian capital region).

The lowest levels of regional GDP per inhabitant in 2018 were recorded in Mayotte (one of the régions ultrapériphériques in France), Severozapaden and Severen tsentralen (both in Bulgaria). GDP per inhabitant in Luxembourg was almost nine times as high as it was in Mayotte.

VALUE ADDED SPECIALISATION

There are a wide variety of reasons that explain the distribution and concentration of economic activities across EU regions. Natural resource endowments may reveal why some regions are particularly specialised in activities such as mining or forest-based activities. In a similar vein, the weather, location and landscape can help shed light on why others might be specialised in agriculture or tourism-related activities. A critical mass of clients (either other enterprises or households/consumers) or the supply of skilled labour may also explain specialisations: for example, research parks tend to develop near to universities, whereas financial, communications and media services are often concentrated in capital regions.

Figure 6.1 shows the 10 NUTS level 2 regions in the EU with the highest shares of activity across six main economic activities. Note that the figure does not indicate those regions with the highest overall levels of value added in a particular activity, rather it shows relative shares of total value added within each region.

More than half of the value added generated in Southern (Ireland) was attributed to industrial activities ...

In 2017, there were eight regions in the EU where the primary activities of agriculture, forestry and fishing accounted for a double-digit share of total value added. The highest value was recorded in the Greek region of Thessalia (12.2 %). The relative importance of these activities was particularly pronounced in eastern and southern parts of the EU: 12 regions reported value added shares for agriculture, forestry and fishing that were at least five times as high as the EU-27 average (1.9 %).

Southern (Ireland) was the only region in the EU where industry accounted for more than half (59.8 %) of total value added in 2017. This region's industrial economy is characterised by a high number of multinational enterprises in areas such as biotechnology, electronics, information technology and pharmaceuticals. The 10 regions in the EU that were most relatively specialised in industrial activities included three regions from each of Czechia and Hungary. This may be linked, at least in part, to their integration within international supply chains (such as the manufacture of motor vehicles), benefitting from close geographic proximity (to western neighbours) and relatively low labour costs.

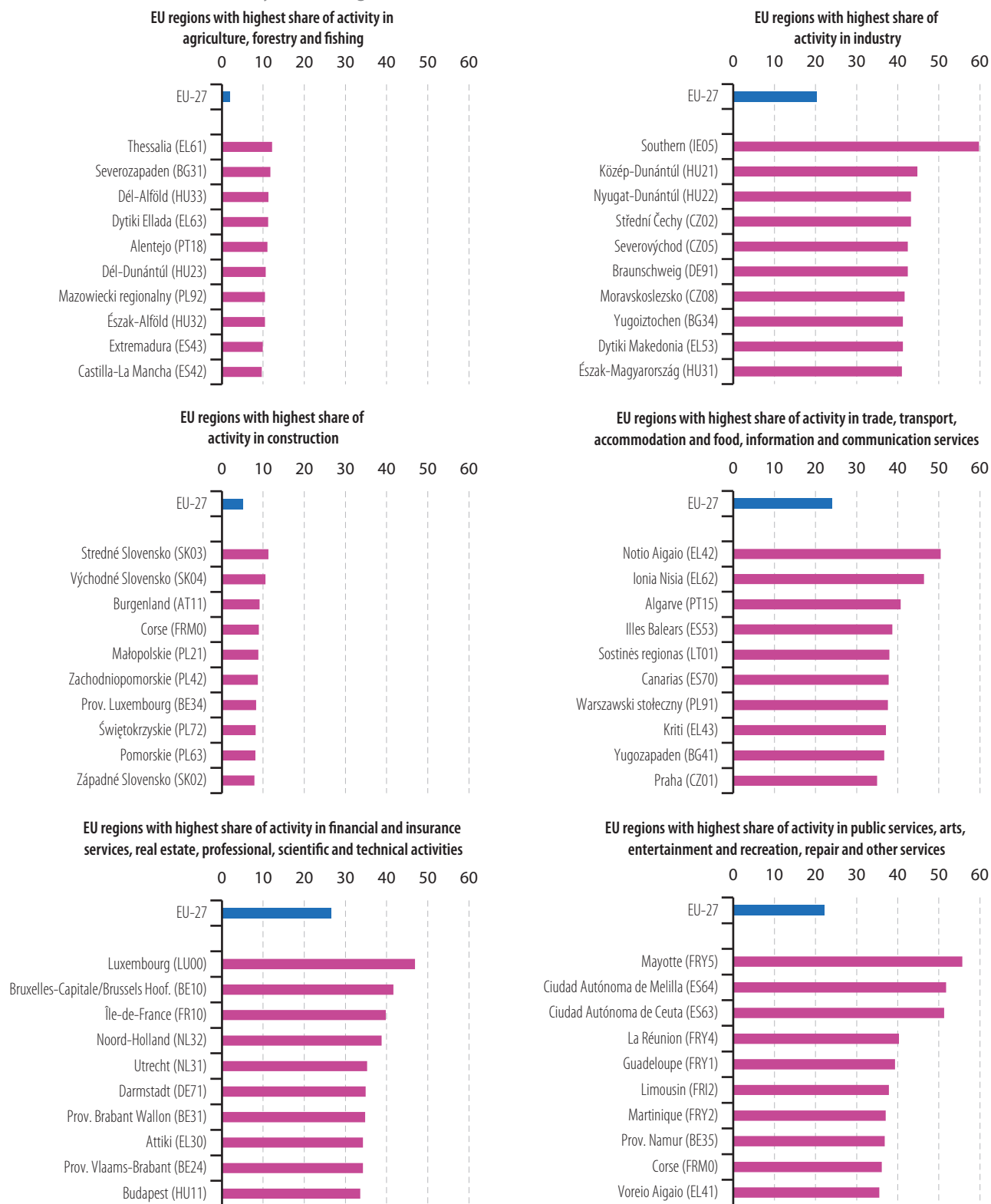
... while trade, transport, accommodation and food, and information and communication services accounted for more than 50 % of regional value added in the popular holiday destination of Notio Aigaio

In 2017, more than half (50.4 %) of the total value added generated in the Greek island region of Notio Aigaio was derived from trade, transport, accommodation and food, and information and communication services. Notio Aigaio was joined by five other popular holiday destinations — Ionia Nisia, Kriti (both also in Greece), Illes Balears, Canarias (both in Spain) and Algarve (in Portugal) — among the 10 regions with the highest shares of their regional economic activity in trade, transport, accommodation and food, information and communication services.

Almost half (46.9 %) of the total value added that was generated in Luxembourg came from financial and insurance services, real estate, professional, scientific and technical activities. The 10 regions with the highest shares of regional value added concentrated in these activities were characterised as major financial centres and/or hubs of business activity. They included six capital regions, where it is relatively common to find a high concentration of business headquarters that rely on a broad range of financial and business services (for example, management and tax consultancies, legal activities, advertising or market research).



Figure 6.1: Value added specialisation, 2017
(%, share of total value added, by NUTS 2 regions)



Note: Germany, estimates. Greece, France and the Netherlands; provisional. France, 2016.

Source: Eurostat (online data codes: [nama_10r_3gva](#) and [nama_10_a10](#))

Regional income

The information presented above has already highlighted that wealth creation is concentrated in capital and metropolitan regions across the EU. However, it is likely that part of the income created in these hubs of business activity may be attributed to commuters who live in surrounding regions (where the price of property and cost of living may be lower). As a result, GDP per inhabitant in capital and metropolitan regions tends to be relatively high (compared with income measures), whereas surrounding regions are often characterised by relatively high levels of income per inhabitant (when contrasted against their economic output).

PRIMARY INCOME PER INHABITANT

Primary income covers income from paid work and self-employment, as well as from interest, dividends and rents. In 2017, EU-27 primary income per inhabitant averaged 18 800 PPS; the use of data in PPS based on consumption (rather than in euro terms) takes account of price level differences between countries and that household expenditure mainly relates to consumption.

Oberbayern had the highest level of primary income per inhabitant

There were 31 regions spread across eight different EU Member States where income per inhabitant was at least 25 000 PPS; these are shown by the darkest shade of purple in Map 6.3. A majority (21 regions) of these were located in Germany, with the highest income levels predominantly found in western (rather than eastern) regions.

At the other end of the range, there were 23 regions (also spread across eight different EU Member States) where primary income per inhabitant was less than 10 000 PPS in 2017; these regions are shown by the lightest shade of purple in Map 6.3. These were concentrated in south-eastern Europe, including: all but one of the six regions that compose Bulgaria (the exception being the capital region of Yugoapaden), all but two of the eight regions that compose Romania (the exceptions being the capital region of Bucureşti-Ilfov and Vest), and 6 out of the 13 regions that make up Greece.

In 2017, primary income ranged from a high of 34 800 PPS per inhabitant in Oberbayern (Germany) down to 4 800 PPS in Severozapaden (Bulgaria). As such, the average level of income in Oberbayern was more than seven times as high as the level recorded in Severozapaden. Three more German regions featured at

the top of the ranking with the highest levels of income per inhabitant — Stuttgart, Darmstadt and Hamburg — and they were followed by Luxembourg. Note that Luxembourg had the highest level of income in euro terms (EUR 37 900 per inhabitant), although its relatively high cost of living meant that it ranked fifth when analysing the data in PPS terms.

COMPENSATION OF EMPLOYEES

One of the principal areas of interest/concern for many employees is their level of remuneration. Employee compensation is defined (within national accounts) as remuneration, in cash or in kind (such as a company car or vouchers for meals), payable by an employer to an employee in return for work done; it also includes payments linked to employers' social contributions (such as health or pension contributions). The figures presented below refer to gross (in other words, before tax) hourly compensation in euro terms.

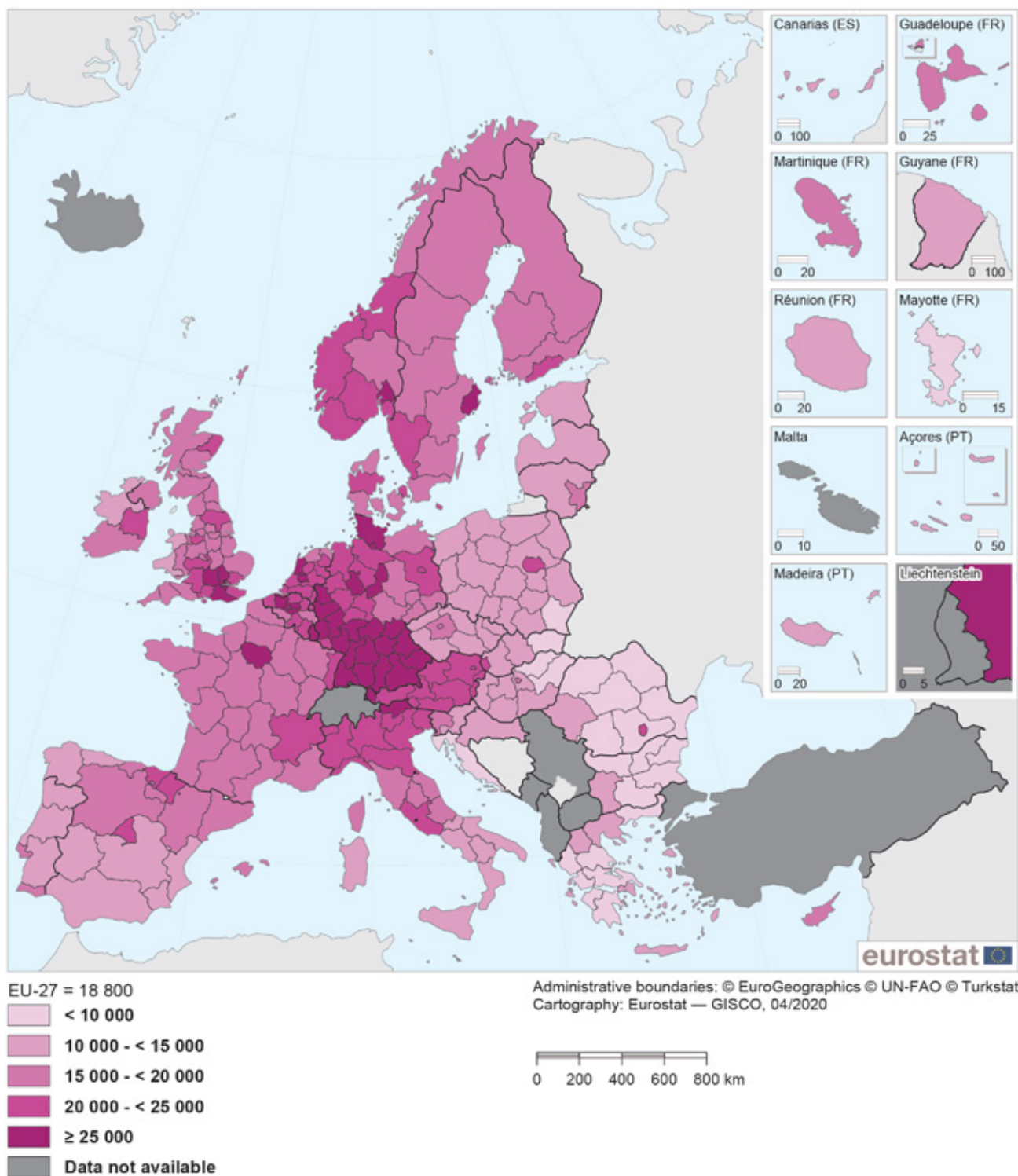
The highest level of employee compensation was recorded in the Belgian capital region

In 2017, employees working in the EU-27 received an average of EUR 22.7 in gross compensation for each hour that they worked. The highest level of employee compensation was recorded in the Belgian Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (EUR 45.6 per hour), while the lowest was in the Bulgarian region of Severen tsentralen (EUR 4.1 per hour). As such, the ratio between the highest and lowest levels of employee compensation was 11 : 1.

Capital regions often recorded the highest levels of employee compensation — which is perhaps unsurprising given the relatively high cost of living in these regions and the fact that they are often the location for company and public sector headquarters. This pattern was repeated in a majority of multi-regional EU Member States in 2017: Figure 6.2 shows that the only exceptions were Oberbayern (that had the highest level of compensation per hour worked in Germany), Dytiki Makedonia (Greece), País Vasco (Spain), Jadranska Hrvatska (Croatia) and Provincia Autonoma di Bolzano/Bozen (Italy).

There were six NUTS level 2 regions in the EU where the level of employee compensation was above EUR 40.0 per hour. Aside from the Belgian capital region, they were: Luxembourg (EUR 45.4 per hour); the Danish capital region of Hovedstaden (EUR 43.0); two other Belgian regions that surround the capital region, Prov. Vlaams-Brabant and Prov. Brabant Wallon (EUR 42.4 and EUR 41.7); and the French capital region of Île-de-France (EUR 41.1).

Map 6.3: Primary income per inhabitant, 2017
(purchasing power standard (PPS), by NUTS 2 regions)



Note: Germany, estimates. Bulgaria, Greece, France, Croatia and the Netherlands: provisional. Norway: 2016.

Source: Eurostat (online data code: [nama_10r_2hhinc](#))

Regional labour productivity

Labour productivity may be defined as gross value added divided by a measure of labour input, typically either the number of persons employed or the number of hours worked. When based on a simple headcount of labour input, changes observed for this indicator can, at least to some degree, reflect changes in the structure of the employment market. For instance, the ratio falls when there is a shift from full-time to part-time work. As such, labour productivity ratios that are based on the total number of hours worked are normally preferred as a more informative measure. High regional levels of labour productivity may be linked to the efficient use of labour and/or reflect the skills and experience of the labour force. These in turn may result from the specific mix of activities present in each regional economy, as some activities — for example, knowledge-intensive industrial activities, business or financial services — tend to be characterised by higher levels of labour productivity.

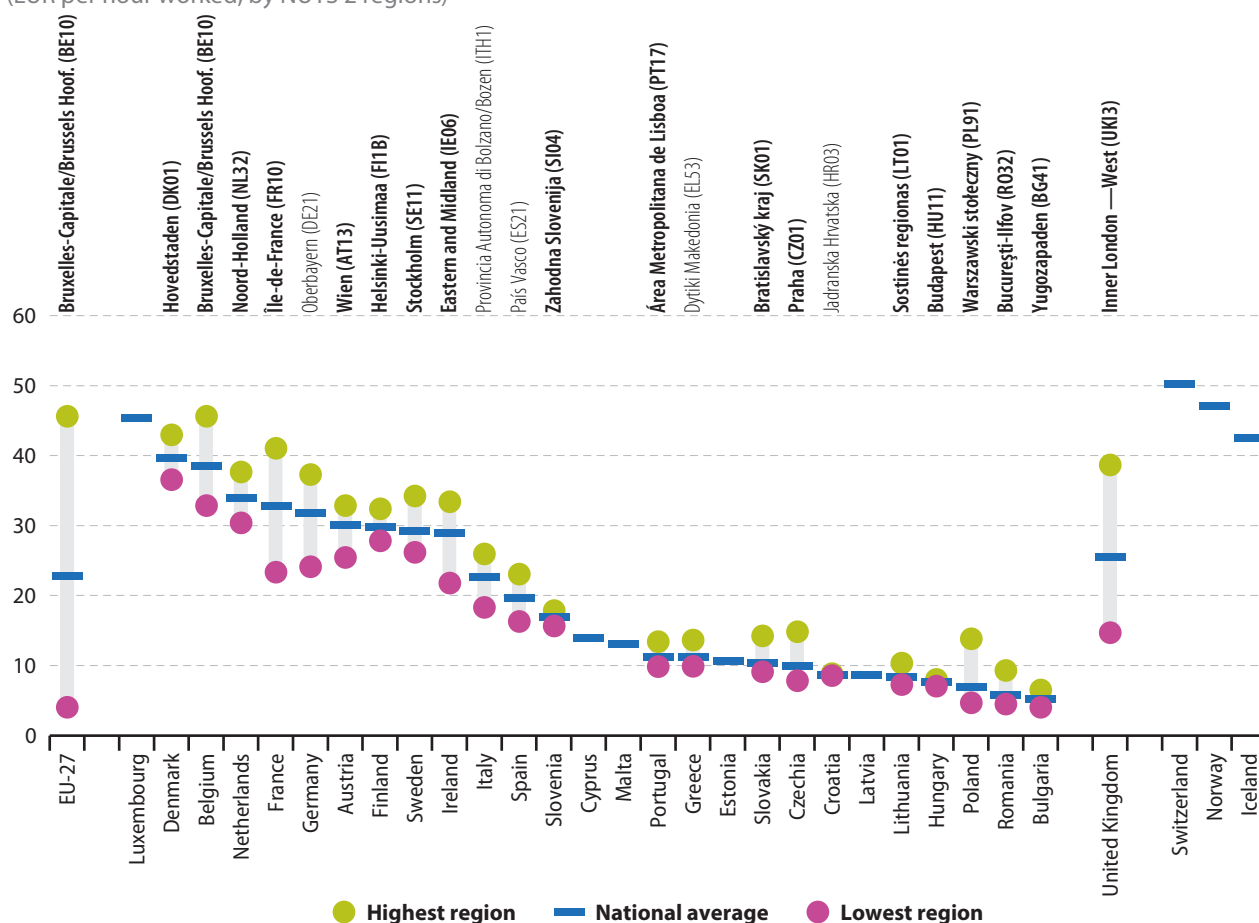
In 2017, an average of EUR 35.1 of value was added for each hour worked in the EU-27. This figure can be used as

the basis for deriving a set of labour productivity indices, which are presented relative to the EU-27 average = 100 (see Map 6.4). There were three NUTS level 2 regions where labour productivity was more than twice as high as the EU-27 average in 2017: two of these were situated in Ireland — Southern (which had the highest level at EUR 86.8 per hour worked) and the capital region of Eastern and Midland (EUR 76.6) — while the third was Luxembourg (EUR 79.2). The next highest levels of labour productivity — within the range of EUR 64.0-68.0 per hour worked — were recorded in the capital regions of Belgium, Denmark, Sweden and France.

At the other end of the range, there were 15 NUTS level 2 regions in the EU where labour productivity was less than EUR 10.0 per hour worked in 2017, all located in Bulgaria, Romania or Poland. The lowest levels of labour productivity — under EUR 6.0 per hour worked — were recorded in Yuzhen tsentralen and Severen tsentralen (both of which are in Bulgaria).

As for employee compensation, it was relatively common to find the highest levels of labour productivity in capital regions. The only exceptions (among the multi-regional

Figure 6.2: Compensation of employees, 2017
(EUR per hour worked, by NUTS 2 regions)



Note: ranked on national average. Regions listed above the figure are those with the highest ratio. Capital regions are indicated by a bold typeface. Norway and Switzerland: national data. Germany, Jadranska Hrvatska (HR03) and Kontinentalna Hrvatska (HR04): estimates. Bulgaria, Greece, Spain, France, the Netherlands and Iceland: provisional. Sostinės regionas (LT01), Vidurio ir vakarų Lietuvos regionas (LT02), Warszawski stołeczny (PL91) and Mazowiecki regionalny (PL92): definition differs. France and Italy: 2016.

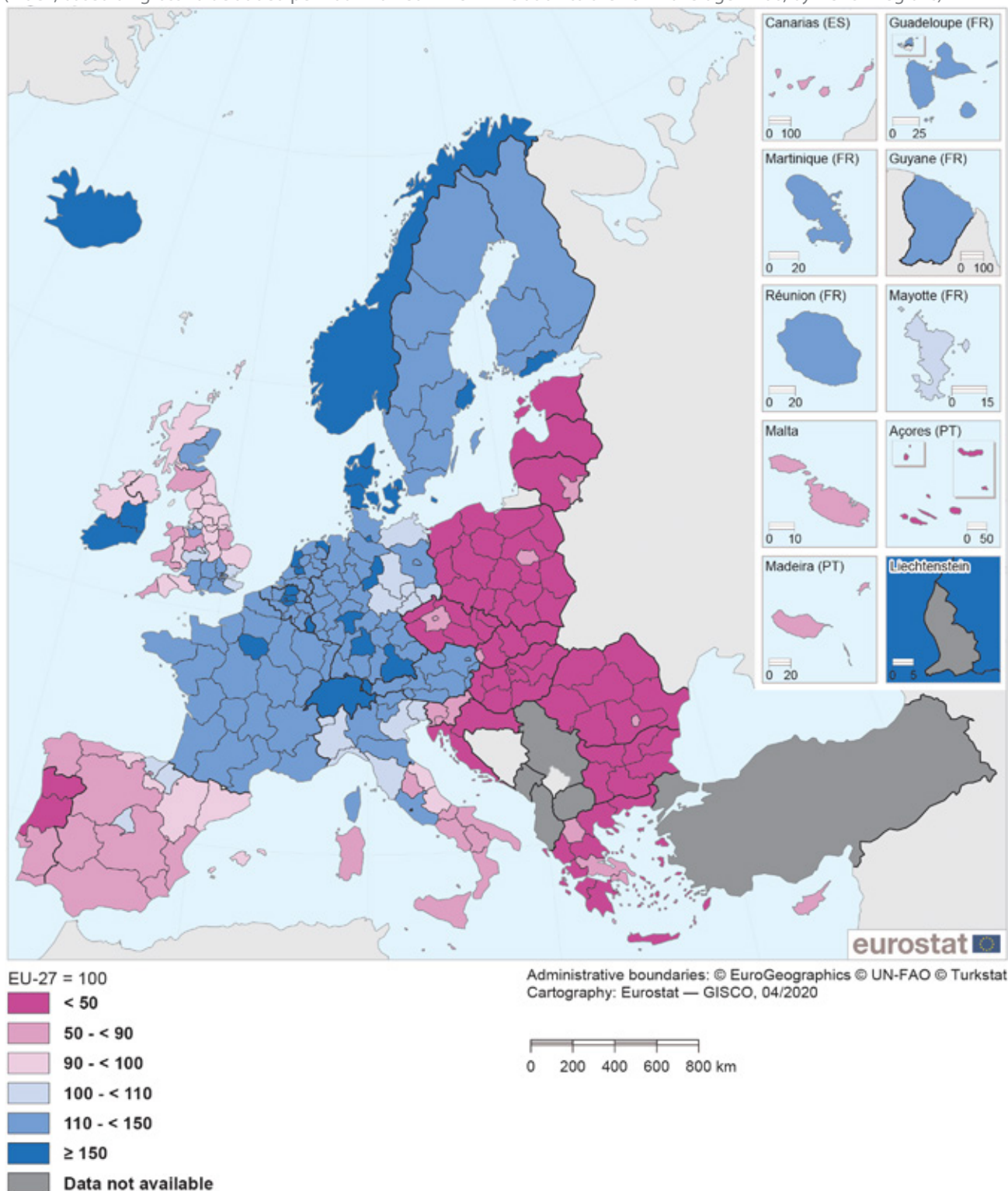
Source: Eurostat (online data codes: [nama_10r_2coe](#), [nama_10_a10](#), [nama_10r_2emhrw](#) and [nama_10_a10_e](#))

EU Member States) were: Oberbayern (Germany), Southern (Ireland), País Vasco (Spain), Jadranska Hrvatska (Croatia), Provincia Autonoma di Bolzano/Bozen (Italy) and Vorarlberg (Austria). Note that four of these —

Oberbayern, País Vasco, Jadranska Hrvatska and Provincia Autonoma di Bolzano/Bozen — recorded both the highest ratios for labour productivity and employee compensation within their Member States.

Map 6.4: Labour productivity per hour worked, 2017

(index, based on gross value added per hour worked in EUR in relation to the EU-27 average = 100, by NUTS 2 regions)



Note: Norway and Switzerland, national data. Germany: estimates. Bulgaria, Greece, Spain, France, the Netherlands and Iceland: provisional. Sostinės regionas (LT01), Vidurio ir vakarų Lietuvos regionas (LT02), Warszawski stołeczny (PL91) and Mazowiecki regionalny (PL92): definition differs. France and Italy: 2016.

Source: Eurostat (online data codes: [nama_10r_3gva](#), [nama_10_a10](#), [nama_10r_2emhrw](#) and [nama_10_a10_e](#))

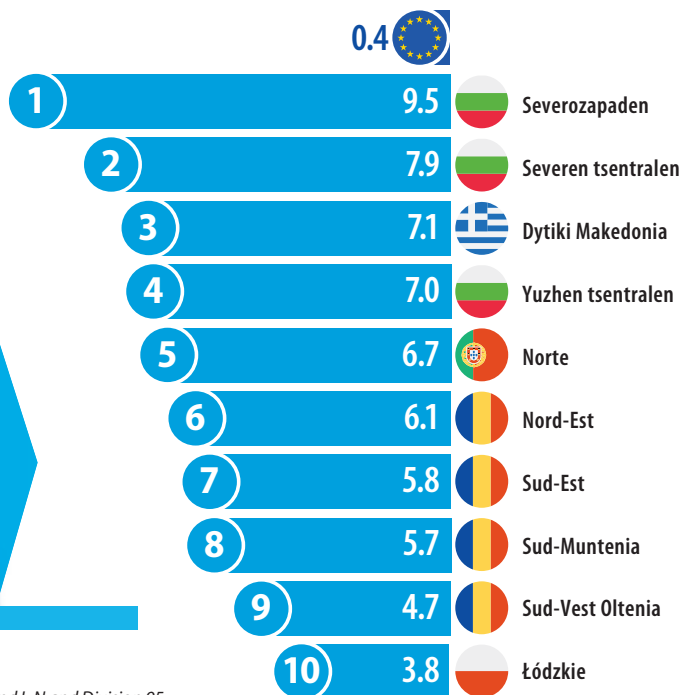
7

Business





(% of non-financial business economy workforce, 2017 data)
 The manufacture of wearing apparel is defined as NACE Division 14.
 The non-financial business economy is defined as NACE Sections B-J and L-N and Division 95.
 Based on non-confidential data.



Businesses in the EU are leaders in many sectors. However, the global business environment is undergoing rapid change. This may take the form of technological change, evolving patterns of trade and investment, increased awareness of environmental responsibilities, sudden economic shocks, or the introduction of new and more flexible working practices. Many of these changes threaten to disrupt markets or impact how businesses work. To remain competitive, businesses in the EU need to (among others): innovate; embrace technological change; adopt methods that use less energy, reduce waste and avoid pollution; invest in skills.

Presented according to the activity classification **NACE**, the first part of this chapter is based on a selection of regional **business demography** statistics with information on **enterprise birth** and **death** rates, changes in the number of active enterprises, as well as **high-growth enterprises**. The second part presents **structural business statistics (SBS)** which may be used to analyse patterns of specialisation and concentration across the **European Union's (EU's)** regional business economies. Special focuses are provided for the manufacture of wearing apparel and for food and beverage service activities.

Enterprise demography

Business demography statistics describe enterprise characteristics: they cover, among other things, the birth of new enterprises, the growth and survival of

existing enterprises (with particular interest centred on their employment impact) and enterprise deaths. These indicators provide an important insight into business dynamics, as new enterprises/fast-growing enterprises tend to be innovators that may improve the overall level of efficiency and productivity in an economy.

Note that throughout this section on enterprise demography the business economy is generally defined as NACE Sections B to S, excluding Group 64.2. For the **EU-27**, Sweden and Iceland, information is presented for a narrower range of activities (NACE Sections B to N, excluding Group 64.2).

BIRTHS AND DEATHS

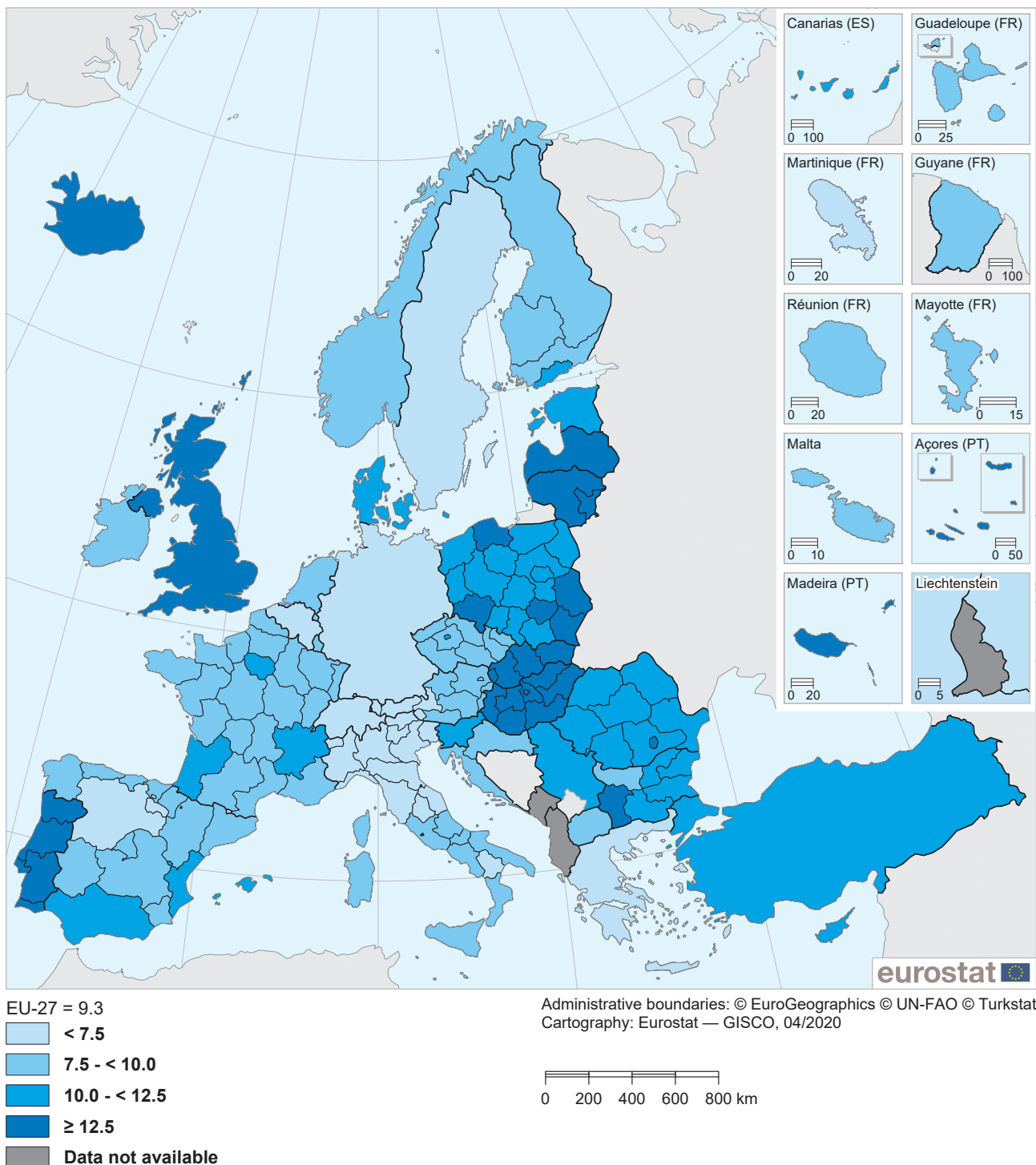
The EU-27 enterprise birth rate was 9.3 %

The enterprise birth rate measures the number of new enterprises born during the course of a year in relation to the total population of active enterprises in the same year. The birth rate in the EU-27's business economy was 9.3 % in 2017, while the death rate was 8.1 % in 2016. Note the reference year for enterprise death rates generally lags that for births as statistics on deaths need to ensure that enterprises have remained inactive during a period of two years (without being reactivated).

In 2017, more than one in five (20.5 %) enterprises active in the business economy of Vidurio ir vakarų Lietuvos regionas (Lithuania) were newly born. This was

Map 7.1: Enterprise birth rate, 2017

(% of active enterprises in the business economy, by NUTS 2 regions)



Note: the business economy is defined as NACE Sections B to S excluding the activities of holding companies (NACE Group 64.2). EU-27, Sweden and Iceland: NACE Sections B to N excluding the activities of holding companies (NACE Group 64.2). Belgium, Denmark, Germany, Ireland, Greece, the Netherlands, Slovenia, Sweden, the United Kingdom, Norway, Switzerland, Serbia and Turkey: national data. Ireland: estimate. Greece, Austria and Serbia: provisional. Cyprus: 2016. Turkey: 2015.

Source: Eurostat (online data codes: [bd_size_r3](#) and [bd_9bd_sz_cl_r2](#))

the highest enterprise birth rate among NUTS level 2 regions; note that several EU Member States are unable to provide a regional breakdown for these statistics (see Map 7.1 for more details). The next highest enterprise birth rates were recorded in two capital regions: Sostinės regionas (also Lithuania; 19.6 %) and Área Metropolitana de Lisboa (18.0 %).

Almost one fifth of EU regions (29 out of 156 for which data are available) recorded enterprise birth rates across their business economies in 2017 of at least 12.5 % (as shown by the darkest shade in Map 7.1). This group included every region in Hungary, Latvia, Lithuania, Portugal and Slovakia, as well as several (other) regions in eastern Member States, mainly in Poland. As enterprise birth rates were regularly high (or low) across whole economies, this tends to suggest that birth rates were influenced by the underlying national business environment as influenced by macro- and socioeconomic conditions.

At the other end of the range, there were 23 regions where the enterprise birth rate in 2017 was below 7.5 %. Most of these regions were located in a band running from central and northern Italy, through western Austria

into Germany, before dividing towards Belgium and Sweden. However, the lowest enterprise birth rate was recorded in Greece, at 4.6 %. Note these relatively low figures are likely to reflect a range of factors, including: underlying economic conditions, attitudes to risk, the level of competition, sectoral specialisation and the pace of structural change.

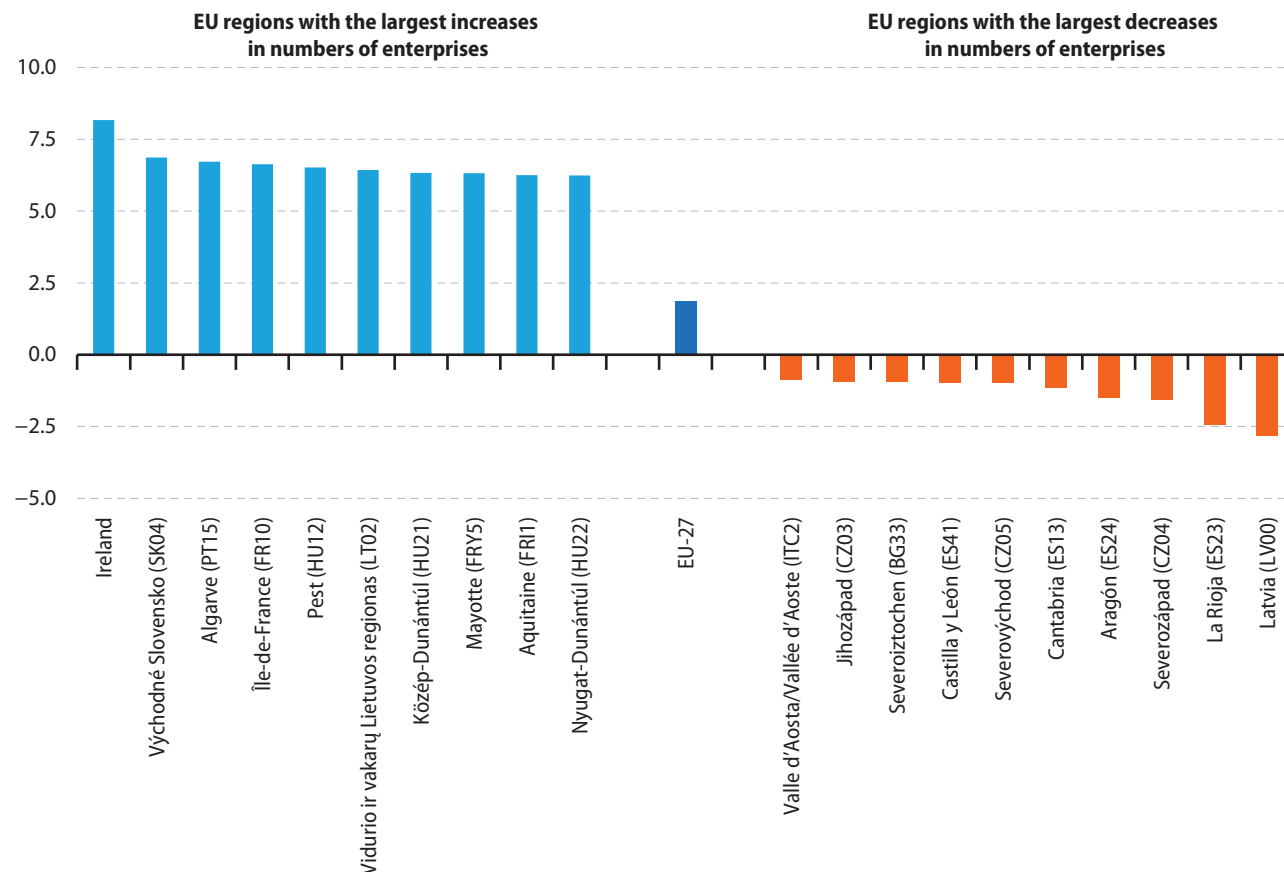
In the Irish business economy, there was a net increase of 8.2 % in the number of enterprises

A net change in the number of active enterprises reflects the difference between the number of enterprise births and the number of enterprise deaths. Figure 7.1 shows the change in the population of business enterprises: it focuses on those regions with the largest increases/decreases between 2016 and 2017. During this period, the number of active enterprises in the EU-27's business economy rose by 1.9 %.

At a regional level, there was a net increase in the number of active enterprises between 2016 and 2017 in three quarters (118 out of 156) of EU regions. There were five regions across the EU that reported no change in their stock of enterprises, while the remaining 33

Figure 7.1: Change in the number of enterprises, 2016-2017

(%, net change in the number of active enterprises in the business economy, by NUTS 2 regions)



Note: the business economy is defined as NACE Sections B to S excluding the activities of holding companies (NACE Group 64.2). EU-27 and Sweden: NACE Sections B to N excluding the activities of holding companies (NACE Group 64.2). Belgium, Denmark, Germany, Ireland, Greece, the Netherlands, Slovenia and Sweden: national data. Austria: estimate. Greece and Austria: provisional. Cyprus: 2015-2016.

Source: Eurostat (online data codes: [bd_size_r3](#) and [bd_9bd_sz_cl_r2](#))



regions recorded a decrease in enterprise numbers. The largest increase was recorded in Ireland, at 8.2 %, which was more than four times as high as the EU-27 average. It was followed by Východné Slovensko (Slovakia), Algarve (Portugal), Île-de-France (the French capital region) and Pest (Hungary): the number of active enterprises increased by 6.5-6.9 % in each of these regions. By contrast, the largest decreases in enterprise numbers were recorded in La Rioja (Spain) and Latvia, where the stock of enterprises in the business economy fell by 2.4 % and 2.8 % respectively.

The EU-27 enterprise death rate was 8.1 %

Map 7.2 confirms that it was relatively common for regions with high enterprise birth rates to also record high enterprise death rates. This is perhaps not surprising, as dynamic and innovative enterprises entering a market may be in a position to drive inefficient incumbents out of the market (creative destruction). For example, within individual EU Member States (composed of more than one NUTS level 2 region) and subject to data availability, the capital regions of France, Portugal, Romania and Finland recorded the highest rates for enterprise births and for deaths within their national territories.

In 2016, the highest enterprise death rates were recorded in the two Lithuanian regions of Vidurio ir vakarų Lietuvos regionas (18.0 %) and Sostinės regionas (17.7 %), followed by Área Metropolitana de Lisboa (16.1 %) and Latvia (15.9 %). As such, the same three regions featured at the top of the rankings for both rates. They therefore had the highest levels of business churn — a measure of how frequently new enterprises are created and existing enterprises close down — indicating a high degree of business dynamism (which is often linked to productivity growth).

Some of the lowest enterprise death rates in 2016 — less than 7.5 % (as shown by the lightest shade in Map 7.2) — were recorded at the margins of the EU in ultra-peripheral regions, as well as in Ireland, Greece, Cyprus (2015 data), Malta, Finland and Sweden. Enterprise death rates were also relatively low in a band of regions running from the Benelux Member States through France into northern and central Italy and Austria.

HIGH-GROWTH ENTERPRISES

High-growth enterprises are of particular interest to policymakers insofar as they can rapidly change the economic structure and performance of a region. For the analysis presented here, high-growth enterprises are defined as those: born before 2014 which had

survived up to 2017; with at least 10 employees in 2014; and with average employee growth of more than 10.0 % per annum between 2014 and 2017. The threshold of 10 employees in 2014 is designed to avoid including very small enterprises where employment increases could be very high in relative terms, but with little economic impact in absolute terms. This indicator should be analysed with caution as it fails to capture potential downsides, insofar as high-growth enterprises may displace incumbents and/or disrupt markets, possibly lowering overall economic performance.

High-growth enterprises accounted for more than 1 out of every 10 enterprises active in the EU-27's business economy, some 11.3 % in 2017. The darkest shade in Map 7.3 shows those regions where high-growth enterprises accounted for 13.5 % or more of all active enterprises in 2017. These regions were largely concentrated across southern and eastern parts of the EU, as well as in Ireland, the Netherlands and Sweden. On this basis, the biggest cluster of high-growth enterprises was on the Iberian Peninsula, where the only exceptions were along the northern coast of Spain and in the neighbouring rural regions of Extremadura (Spain) and Alentejo (Portugal). The capital regions of Bulgaria, Czechia, Croatia, Lithuania, Austria, Poland, Romania, Slovakia and Finland recorded the highest proportions of high-growth enterprises on their national territories. This might reflect, among other factors, the availability of: capital for business start-ups; highly-qualified people to staff rapidly growing enterprises; a critical mass of potential business and/or consumer clients.

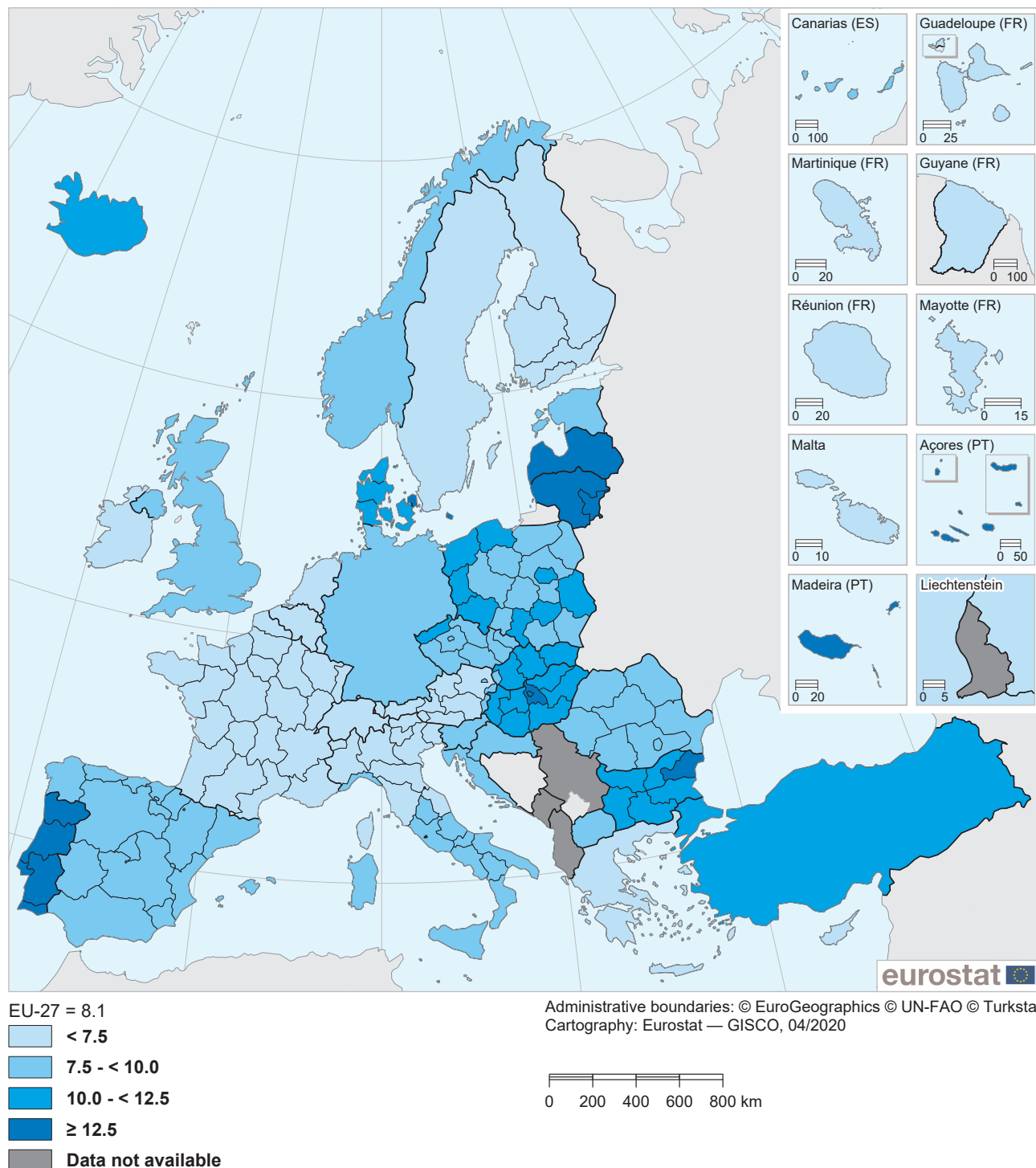
Patterns of employment specialisation and concentration in manufacturing

Structural business statistics (SBS) can be analysed at a very detailed sectoral level (several hundred economic activities), by enterprise size class (for micro, small, medium and large-sized enterprises) or, as here, by region. They provide data covering issues such as labour input, wealth creation, productivity, investment and profitability. This information can be used to analyse (among other issues) structural shifts in an economy, national or regional specialisations and sectoral patterns.

In 2017, there were 22.2 million enterprises active in the EU-27's [non-financial business economy](#) (defined here as NACE Sections B to J and L to N and Division 95); together, they generated EUR 6 203 [billion of gross value added](#) and [employed](#) 125.3 million persons.

Map 7.2: Enterprise death rate, 2016

(% of active enterprises in the business economy, by NUTS 2 regions)

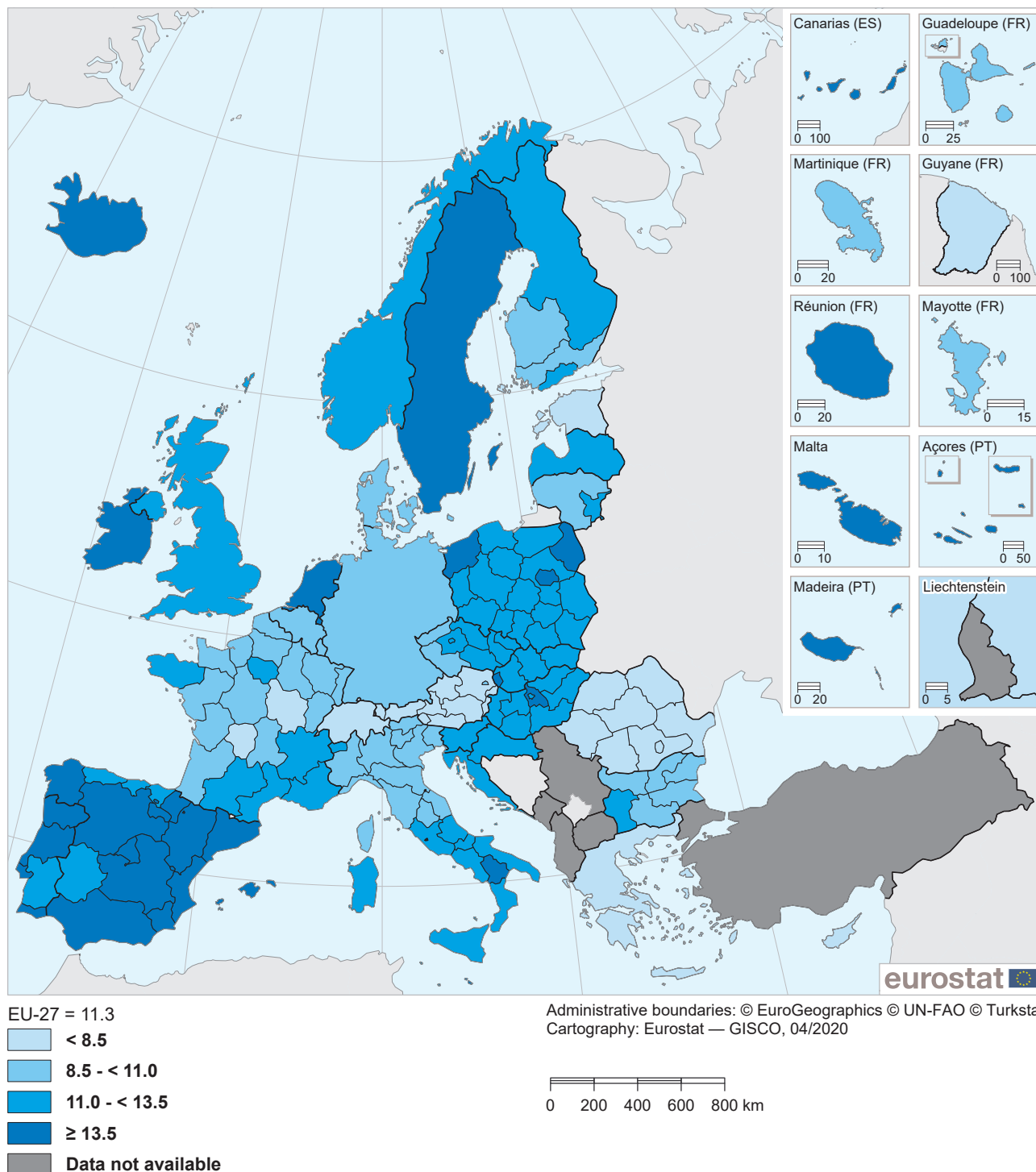


Note: the business economy is defined as NACE Sections B to S excluding the activities of holding companies (NACE Group 64.2). EU-27, Sweden and Iceland: NACE Sections B to N excluding the activities of holding companies (NACE Group 64.2). Belgium, Germany, Ireland, Greece, the Netherlands, Slovenia, Sweden, the United Kingdom, Norway, Switzerland and Turkey: national data. Lithuania: estimate. Bulgaria, Czechia, Ireland, Italy, Hungary, Austria, Poland, Portugal, Slovakia, Iceland, Norway and Turkey: provisional. Cyprus and Switzerland: 2015. Turkey: 2014. Denmark: 2013.

Source: Eurostat (online data codes: [bd_size_r3](#) and [bd_9bd_sz_cl_r2](#))

**Map 7.3: High-growth enterprises, 2017**

(% share of total number of enterprises in the business economy with 10 employees or more, by NUTS 2 regions)



Note: the business economy is defined as NACE Sections B to S excluding the activities of holding companies (NACE Group 64.2). EU-27, Belgium, Denmark, Germany, Ireland, Greece, Cyprus, Luxembourg, Malta, the Netherlands, Slovenia, Sweden, the United Kingdom, Iceland, Norway and Switzerland: NACE Sections B to N excluding the activities of holding companies (NACE Group 64.2). Belgium, Denmark, Germany, Ireland, Greece, the Netherlands, Slovenia, Sweden, the United Kingdom, Norway and Switzerland: national data. Ireland: estimate. Greece, Austria and Iceland: provisional. Cyprus: 2016.

Source: Eurostat (online data codes: [bd_hgnace2_r3](#) and [bd_9pm_r2](#))

MANUFACTURING

Manufacturing (NACE Section C) provides goods for domestic consumption and for export and has traditionally been considered a cornerstone of economic prosperity within the EU. However, in recent decades this sector has experienced wide-ranging transformations, such as deindustrialisation, outsourcing, globalisation, changes to business paradigms (such as just-in-time manufacturing), the growing importance of digital technologies, or concerns linked to sustainable production and the environment.

The EU's manufacturing base has gradually migrated eastwards

There has been a gradual eastward shift in the EU's manufacturing base during the last couple of decades, reflecting, among other factors, differences in: labour costs; inflows of [foreign direct investment \(FDI\)](#); the presence of [multinational enterprises](#); natural resource endowments; environmental standards. Eastern EU Member States are increasingly used as manufacturing bases by enterprises from other EU Member States, in particular neighbouring countries such as Germany. They often form an integral part of international supply chains, with a relatively highly-skilled but low-cost workforce.

In 2017, manufacturing employed close to one quarter (22.8 %) of the EU-27 non-financial business economy workforce, while its share of value added was 6.6 [percentage points](#) higher, at 29.3 %. The largest manufacturing subsector in the EU-27 — in employment terms and as defined by NACE divisions — was the manufacture of food products (3.1 % of the non-financial business economy total), while there were only two other subsectors which accounted for more than 2.0 % of the non-financial business economy workforce: the manufacture of fabricated metal products, except machinery and equipment (2.7 %) and the manufacture of machinery and equipment not elsewhere classified (2.3 %).

Figure 7.2 shows information for 24 different manufacturing activities. The bars show the number of persons employed in a specific manufacturing activity as a share of the non-financial business economy workforce, with the top/bottom ends of each bar providing information on the regions with the highest/lowest regional shares; the vertical line within each bar indicates the EU-27 average. For example, in the Polish region of Mazowiecki regionalny, manufacturing food products employed 15.3 % of the non-financial

business economy workforce in 2017; this was almost five times as high as the EU-27 average (3.1 %).

Primary processing activities are often located close to the source of raw materials

The information presented in Figure 7.2 confirms that the distribution of employment across the various manufacturing subsectors was often highly skewed, with particularly high levels of production concentrated in a handful of regions. Activities that involve the primary processing stages of agricultural, fishing or forestry products were often located close to the source of their raw materials. This was the case for manufacturing food products in Mazowiecki regionalny (as mentioned above). There were three other agricultural regions where manufacturing food products accounted for more than 10.0 % of employment within the non-financial business economy in 2017: Pays de la Loire, Bretagne (both France) and Thessalia (Greece). The highest employment share for the manufacturing of beverages (NACE Division 11) was recorded in La Rioja (Spain; 3.4 %). Regions specialised in the manufacture of textiles (NACE Division 13) were often located close to an abundant supply of water; the highest share was recorded in Norte (Portugal; 3.3 %). Norra Mellansverige (Sweden) had the highest employment shares for both the manufacture of basic metals (NACE Division 24; 5.2 %) and the manufacture of paper and paper products (NACE Division 17; 3.5 %).

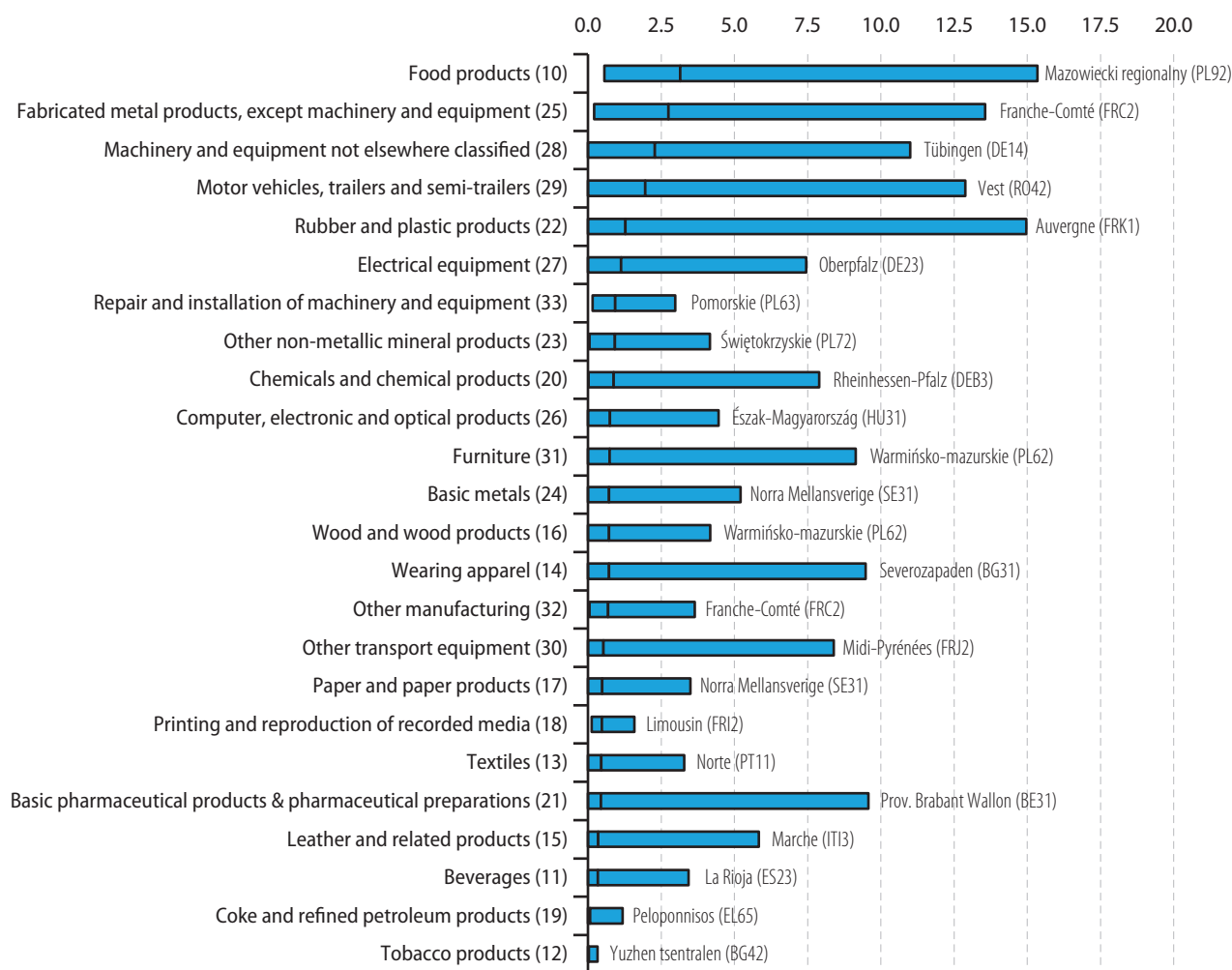
Several southern regions of Germany were prominent in terms of their specialisation in engineering. For example, Tübingen had the highest employment share for the manufacture of machinery and equipment (NACE Division 28; 11.0 %) and Oberpfalz for the manufacture of electrical equipment (NACE Division 27; 7.4 %).

The manufacture of transport equipment is characterised by clusters of economic activity

Manufacturing transport equipment is characterised by clusters of economic activity and highly-integrated production chains. In 2017, the westernmost Romanian region of Vest had the highest degree of employment specialisation for the manufacture of motor vehicles, trailers and semi-trailers (12.9 %). Nyugat-Dunántúl (Hungary) and Střední Čechy (Czechia) also reported double-digit employment shares for this activity. Midi-Pyrénées (France), where there is a large cluster of enterprises working in aerospace, was the most specialised region for the manufacture of other transport equipment (NACE Division 30; 8.4 %).



Figure 7.2: Regional specialisation within the manufacturing economy, 2017
(%, share of regional non-financial business economy employment, by NUTS 2 regions)



Note: the range of regional values across NUTS level 2 regions is shown by the bar; the EU-27 average is shown by the vertical line inside the bar; the figure is ranked on this share; the name of the region with the highest share is also shown. NACE division codes are given in brackets after each of the activity labels. The figure is based on non-confidential data (some activities are not available for a limited number of regions). France: estimates. Corse (FRM0): 2016. Mayotte (FRY5): not available.

Source: Eurostat (online data codes: [sbs_r_nuts06_r2](#) and [sbs_na_sca_r2](#))

FOCUS ON THE MANUFACTURE OF WEARING APPAREL

The manufacture of wearing apparel (NACE Division 14) involves design (styling, prototyping and choice of collections), development (patterns, sourcing fabric) and production (cutting, sewing, pressing and finishing) processes. It is generally a labour-intensive activity and has experienced considerable changes since markets were opened up to global competition. This resulted in the widespread transfer of production to lower cost bases (primarily in Asia).

In 2017, there were almost 900 000 persons manufacturing wearing apparel in the EU-27. A high share of the workforce was located in southern (Italy and Portugal) and eastern (Romania, Bulgaria and Poland) EU Member States; together they accounted for almost 70 % of the total number of persons employed in this activity. There were eight NUTS level 2 regions where at least 5.0 % of the non-financial business economy workforce was employed in the manufacture of wearing apparel (as shown by the darkest shade in the map). They comprised: three regions in Bulgaria, including Severozapaden (which had the highest employment share in the EU, at 9.5 %); three regions in Romania; Norte (in Portugal) and Dytiki Makedonia (in Greece). Employment shares were somewhat lower in Italian regions, in part reflecting the focus of Italian clothes manufacturers on higher value products (for example, designer and luxury brands) as opposed to the more labour-intensive stages of clothing production and mass-market products.

Patterns of employment specialisation and concentration in non-financial services

Non-financial services (NACE Sections G to J and L to N and Division 95) provided work to 82.2 million persons across the EU-27 in 2017. This equated to slightly less than two thirds (65.6 %) of the total number of persons employed in the non-financial business economy. The contribution of non-financial services to the non-financial business economy workforce ranged — among NUTS level 2 regions — from a low of 35.8 % in Mazowiecki regionalny (a region which surrounds the Polish capital) up to a high of 94.2 % in Ionia Nisia (a Greek region that is a popular holiday destination).

Some service activities are commonly spread across the EU territory, whereas others are concentrated within close proximity of a mass of potential clients

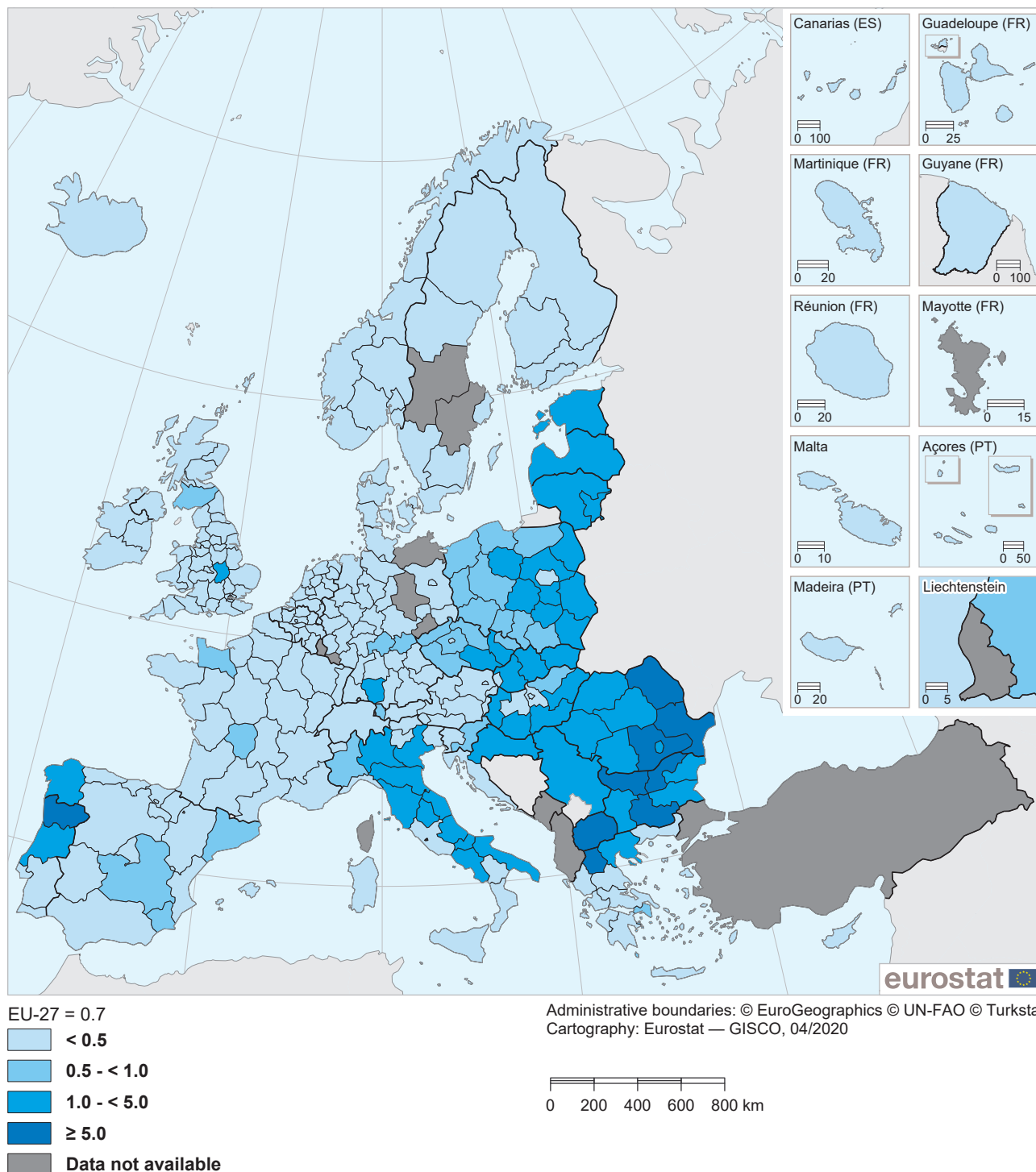
Figure 7.3 provides information for 31 different service activities, presenting those regions with the highest degree of employment specialisation (based on regional shares for each activity in the non-financial business economy workforce). Some of the variations in employment specialisation may reflect, among other issues: access to skilled employees; the adequate provision of infrastructure; climatic and geographic conditions; proximity to or a critical mass of customers; access to markets; or legislative constraints.

Some service activities are common, appearing in every region: for example, retail and wholesale trade or food and beverage services. They were also the largest employers, as retail trade (NACE Division 47) accounted for 12.8 % of the EU-27's non-financial business economy workforce, followed by wholesale trade (NACE Division 46; 7.5 %) and food and beverage service activities (NACE Division 56; 6.2 %). The northern French region of Nord-Pas de Calais had the highest employment share (35.4 % in 2017) for retail trade, which may reflect, at least to some degree, its location — providing ease of access to cross-border shoppers from Belgium or the United Kingdom. The highest employment share for wholesale trade was recorded in Región de Murcia (Spain; 15.5 %), reflecting the high level of fruit and vegetables transported out of this region. In regions traditionally associated with tourism and in densely-populated regions, it was commonplace to find that a relatively high share of the non-financial business economy workforce was employed within food and beverage service activities. The highest employment share for these activities was recorded in the island region of Ionia Nisia (Greece; 28.7 %).

Capital regions were among some of the most specialised regions for a range of activities that rely on the close proximity of a large number of potential clients (be these other businesses or households). For example, in 2017 Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (Belgium) had the highest employment share for land transport (10.4 %), Área Metropolitana de Lisboa (Portugal) for office administrative/support and other business support activities (9.9 %), Bratislavský kraj (Slovakia) for telecommunications (2.9 %) and for advertising and market research (2.6 %), Praha (Czechia) for other professional, scientific and technical activities (2.8 %) and Berlin (Germany) for scientific research and development (2.2 %).

Map 7.4: Employment in the manufacture of wearing apparel, 2017

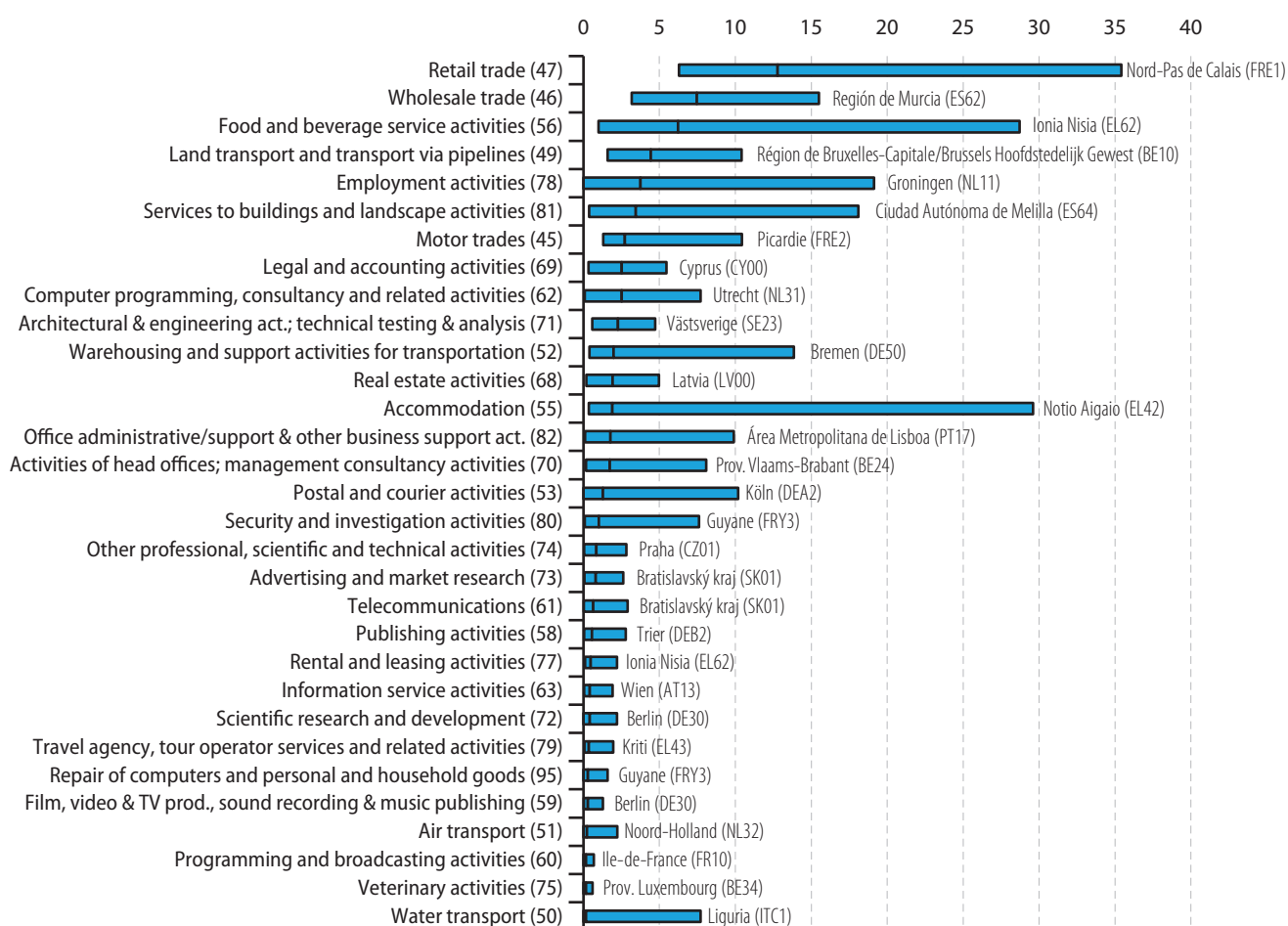
(%, share of regional non-financial business economy employment, by NUTS 2 regions)



Note: the manufacture of wearing apparel is defined as NACE Division 14. Figures are based on non-confidential data. Switzerland and Serbia: national data. France: estimates. Iceland and Serbia: provisional.

Source: Eurostat (online data codes: [sbs_r_nuts06_r2](#) and [sbs_na_sca_r2](#))

Figure 7.3: Regional specialisation within the non-financial services economy, 2017
(%, share of regional non-financial business economy employment, by NUTS 2 regions)



Note: the range of regional values across NUTS level 2 regions is shown by the bar; the EU-27 average is shown by the vertical line inside the bar; the figure is ranked on this share; the name of the region with the highest share is also shown. NACE division codes are given in brackets after each of the activity labels. Capital regions are shown with a bold font. The figure is based on non-confidential data (some activities are not available for a limited number of regions). France: estimates. Corse (FRM0): 2016. Mayotte (FRY5): not available.

Source: Eurostat (online data codes: sbs_r_nuts06_r2 and sbs_na_sca_r2)

FOCUS ON FOOD AND BEVERAGE SERVICE ACTIVITIES

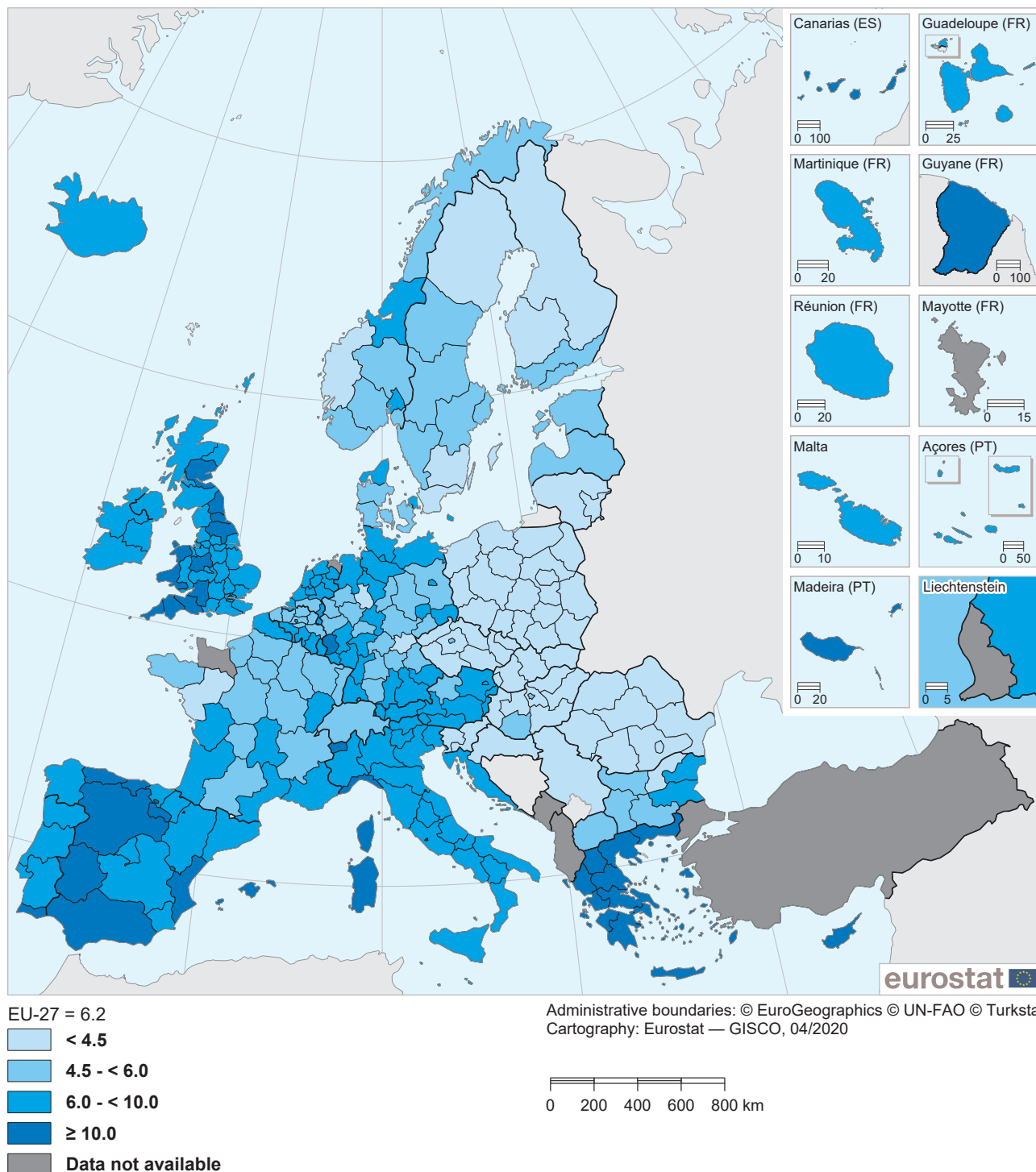
Food and beverage service activities (NACE Division 56) use a broad range of formats to supply consumers. These range from mobile food carts or fast-food outlets to gastronomic restaurants and from cafés or bars to cocktail lounges. Also covered are the activities of food service contractors and concessions, for example, the operation of staff canteens or the provision of food and drink on transport services.

Across the EU-27, food and beverage service activities employed 7.8 million persons in 2017. This represented

6.2 % of the non-financial business economy workforce. Map 7.5 shows the employment share of food and beverage service activities in the non-financial business economy, with employment concentrated in southern regions of the EU. This pattern was most evident across Greece and Spain, where a visit to a café or bar is part of everyday life for many people. Food and beverage service activities provided work to more than one quarter of the non-financial business economy workforce in three Greek island regions: Ionia Nisia (28.7 %), Notio Aigaio (26.4 %) and Voreio Aigaio (25.6 %).

Map 7.5: Employment in food and beverage service activities, 2017

(%, share of regional non-financial business economy employment, by NUTS 2 regions)



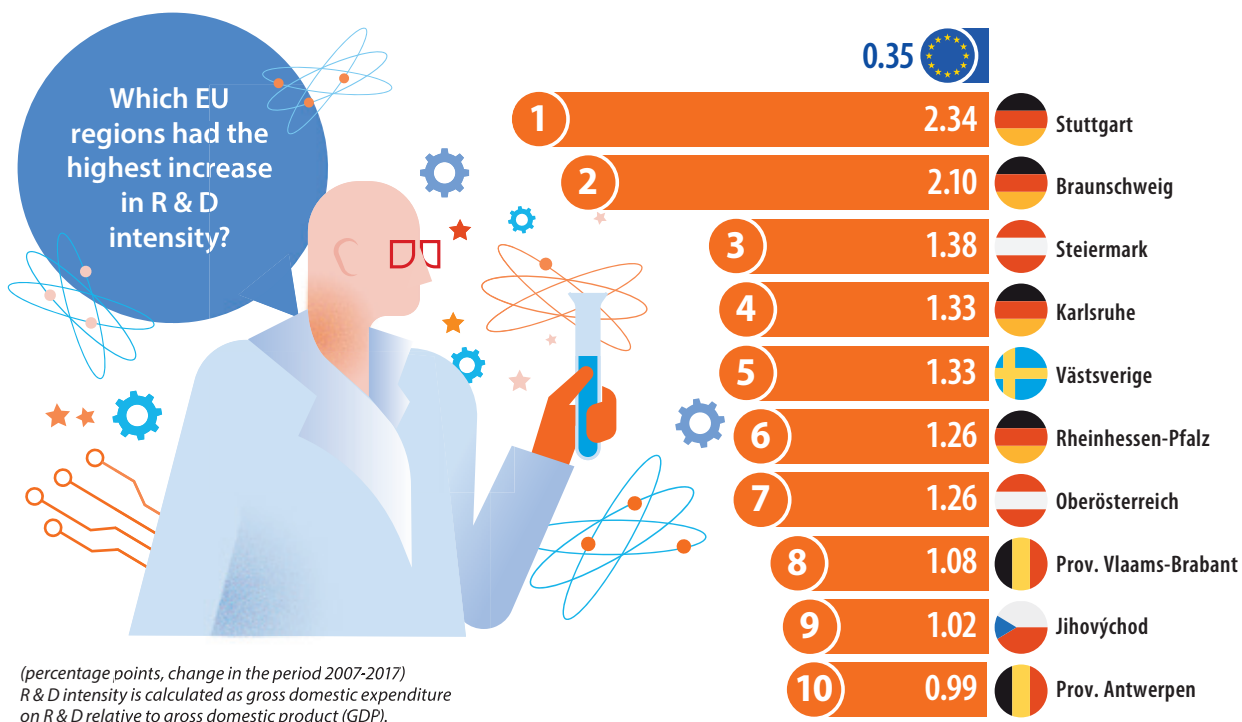
Note: food and beverage service activities are defined as NACE Division 56. Figures are based on non-confidential data. Switzerland and Serbia: national data. France: estimates. Iceland and Serbia: provisional. Corse (FRM0): 2016.

Source: Eurostat (online data codes: [sbs_r_nuts06_r2](#) and [sbs_na_sca_r2](#))

8

Research and innovation





Investing in research and innovation has the potential to improve the daily lives of millions of people, both within the [European Union \(EU\)](#) and elsewhere, by helping to solve some of the world's largest societal and generational challenges. For example, the [European Commission's political guidelines for the period 2019-2024](#) include a target to become the world's first climate-neutral continent. These guidelines are backed-up by a commitment to invest in innovation and research through the [European Green Deal Investment Plan](#), to help facilitate a transition towards a climate-neutral, competitive and inclusive European economy.

The EU is one of the world's leading producer of scientific knowledge: it welcomes [researchers](#) from all over the globe. However, it is often claimed that Europe faces an innovation deficit. Most commentators agree that this is not due to an absence of new ideas or discoveries, but instead reflects a lack of success in diffusing/commercialising inventions. Part of this deficit may be linked to EU businesses and financial systems being risk-averse, which may impinge upon their

ability to identify disruptive research and breakthrough innovations.

This chapter presents statistical information analysing regional developments for a range of research and innovation-related indicators within the EU, including the following topics: [R & D intensity](#), the number of researchers, and the share of [human resources in science and technology \(HRST\)](#).

Research and development expenditure

[Research and experimental development \(R & D\)](#) — creative and systematic work undertaken to increase the stock of knowledge or to devise new applications of existing knowledge — tends to be concentrated in clusters. Research-intensive regions are often situated around academic institutions, high-technology industrial activities and/or knowledge-based services, which attract new start-ups and highly qualified personnel.



Gross domestic expenditure on R & D (GERD) includes research expenditure made by business enterprises, higher education institutions, government and private non-profit organisations. In 2017, GERD was valued at EUR 280.3 billion across the EU-27. The skewed nature of innovation activity was such that more than half of the EU's intramural R & D expenditure took place in 22 out of 208 NUTS level 2 regions (no regional data available for Ireland and France). These were the only regions in the EU where R & D expenditure was in excess of EUR 3.0 billion, underlining the significance of clusters of scientific and technological excellence. The three regions with the highest levels of R & D expenditure were all located in Germany: Stuttgart (EUR 15.9 billion), Oberbayern (EUR 10.7 billion) and Darmstadt (EUR 6.6 billion).

The highest R & D intensity was recorded in Braunschweig

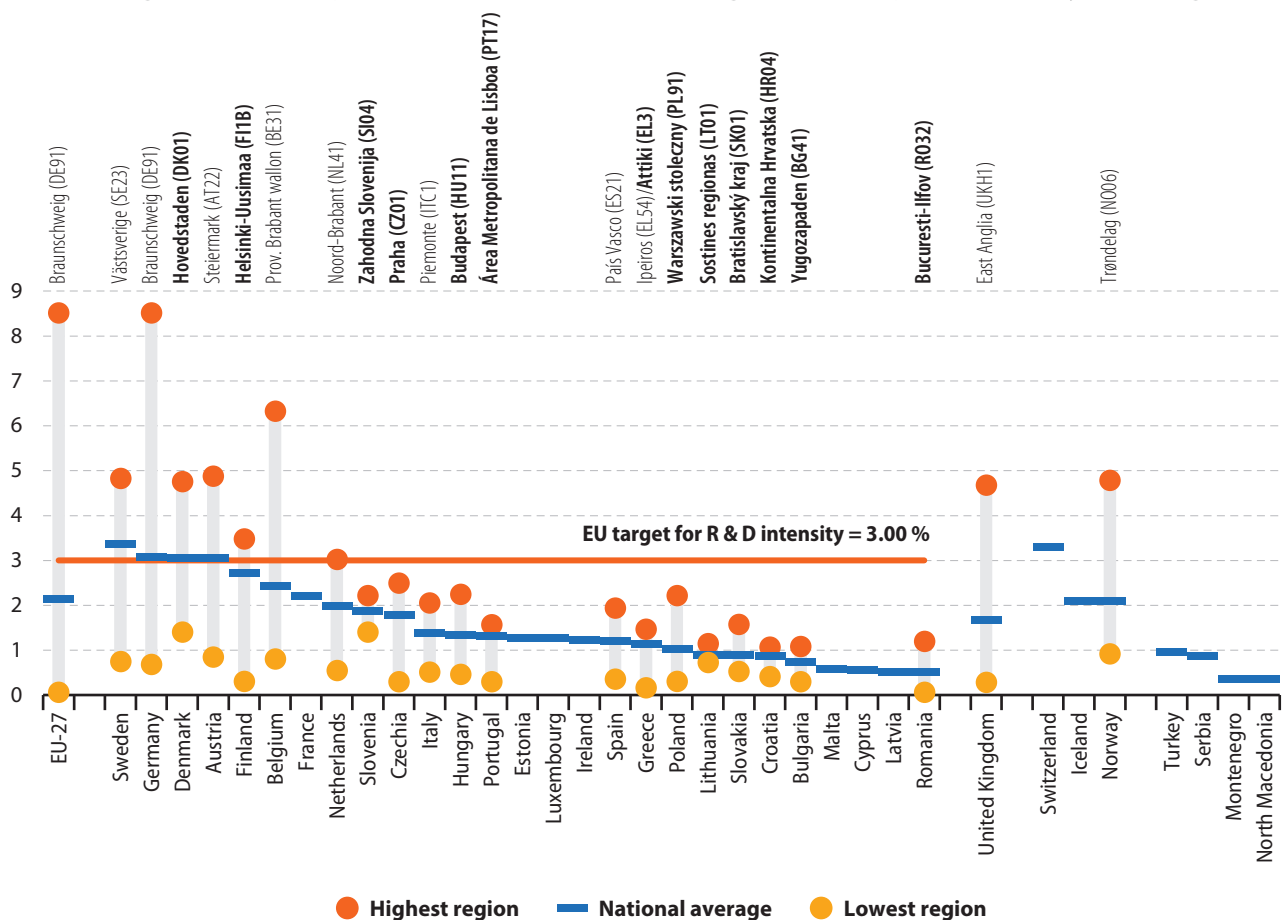
R & D intensity is frequently used as a measure to determine an economy's creative/innovative capacity. It

is calculated as the ratio of R & D expenditure relative to gross domestic product (GDP). Despite modest annual increases over most of the last decade, R & D intensity remained below its Europe 2020 benchmark target of 3.00 %: the EU-27 ratio stood at 2.15 % in 2017.

Figure 8.1 identifies those regions with the highest ratios for R & D intensity in each of the EU Member States. Overall, there were 23 NUTS level 2 regions that recorded ratios of at least 3.00 % in 2017 (2015 data for Belgium; no regional data available for Ireland and France). They were predominantly located in Germany, Austria, Sweden and Belgium, although this group also included single regions from each of Denmark, the Netherlands and Finland. The highest ratios for R & D intensity were recorded in Germany: Braunschweig (8.52 %) and Stuttgart (7.69 %). Both of these regions are characterised by clusters of innovative automotive manufacturers, engineering and component suppliers. The Braunschweig region includes Wolfsburg (which is headquarters to the Volkswagen Group), while the Stuttgart region is home, among others, to the headquarters of Bosch, Mercedes-Benz and Porsche.

Figure 8.1: R & D intensity, 2017

(%, based on gross domestic expenditure on R & D (GERD) relative to gross domestic product (GDP), by NUTS 2 regions)



Note: ranked on national average. Regions listed above the figure are those with the highest ratio. Capital regions are indicated by a bold typeface. Ireland, France, Switzerland, Serbia and Turkey: national data. Denmark and France: provisional. Belgium, Ciudad Autónoma de Ceuta (ES63), Ciudad Autónoma de Melilla (ES64), Småland med öarna (SE21) and Mellersta Norrland (SE32): 2015.

Source: Eurostat (online data code: [rd_e_gerdreg](#))

The largest increase in R & D intensity between 2007 and 2017 was recorded in Stuttgart

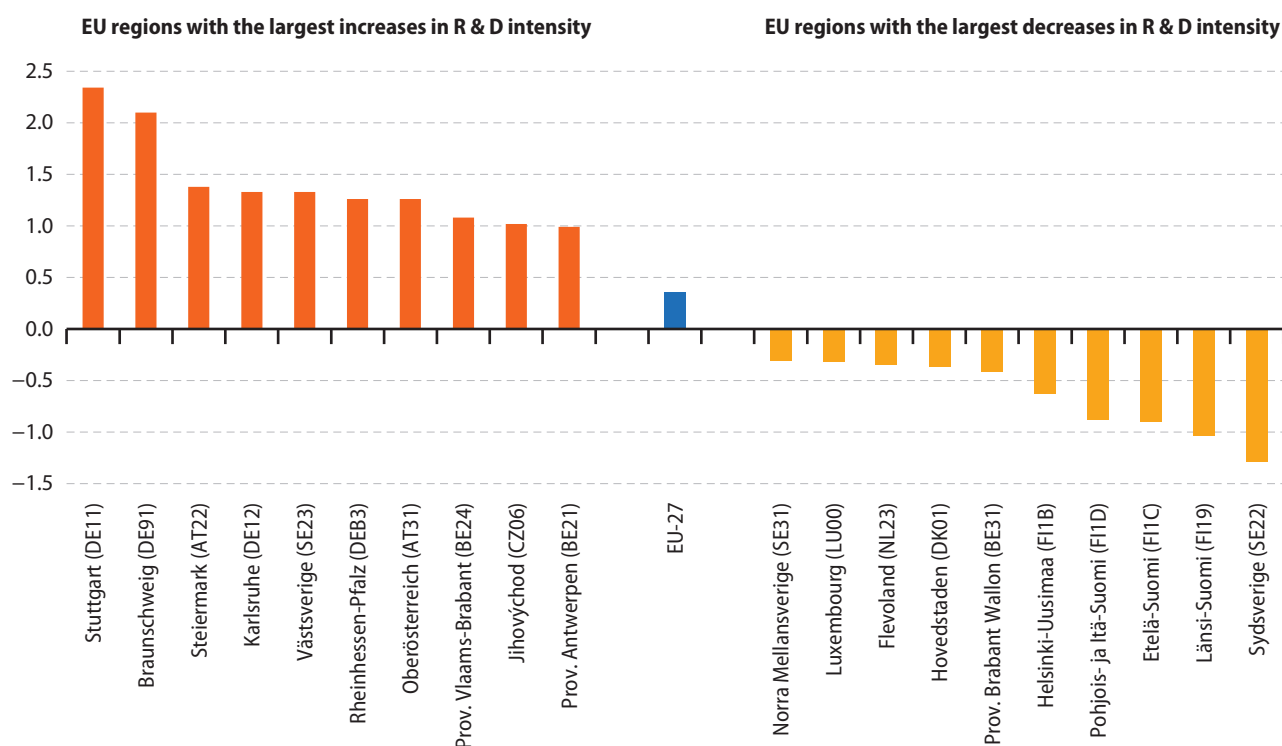
Between 2007 and 2017, R & D intensity in the EU-27 rose by 0.35 percentage points to 2.15 %. More than three quarters (156 out of 203) of EU regions recorded an increase in R & D intensity over this period, with no change reported in four regions. The largest increases in R & D intensity were recorded in Stuttgart and Braunschweig — the two regions with the highest levels of R & D intensity. In Stuttgart, R & D intensity increased by 2.34 points between 2007 and 2017, while the gain in Braunschweig was somewhat lower (2.10 points). Both values were considerably higher than the next highest increases, as R & D intensity rose by 1.26–1.38 points in five regions: Steiermark, Oberösterreich

(both Austria), Karlsruhe, Rheinhessen-Pfalz (both Germany) and Västsverige (Sweden).

At the other end of the range, there were 43 regions across the EU where R & D intensity decreased between 2007 and 2017. These declines were usually relatively modest, with only 10 regions recording a decrease of at least 0.3 percentage points (see the second half of Figure 8.2). All 10 of these regions were located in northern or western EU Member States. The largest decrease was in Sydsverige (Sweden), as its R & D intensity fell by 1.28 percentage points. The only other EU region to record a decrease of more than 1.00 points was Länsi-Suomi (Finland; 1.03 points). Three of the four remaining regions in Finland — Etelä-Suomi, Pohjois- ja Itä-Suomi and Helsinki-Uusimaa — also recorded relatively large decreases in their R & D intensity during this period.

Figure 8.2: Change in R & D intensity, 2007-2017

(percentage points, based on gross domestic expenditure on R & D (GERD) relative to gross domestic product (GDP), by NUTS 2 regions)



Note: Közép-Magyarország (HU1), Makroregion Centralny (PL7), Makroregion Wschodni (PL8) and Makroregion Województwo Mazowieckie (PL9), NUTS 1 regions. Ireland, France, Lithuania and Slovenia: national data. Luxembourg and the Netherlands: estimates. Denmark and France: provisional. France, Italy, Luxembourg, Austria, Portugal and Slovenia: break in series. Niederbayern (DE22) and Oberpfalz (DE23): not available. Croatia: 2008-2017. Schwaben (DE27), Chemnitz (DED4), Leipzig (DED5), Helsinki-Uusimaa (FI1B) and Etelä-Suomi (FI1C): 2009-2017. Greece: 2011-2017. Belgium, Ciudad Autónoma de Ceuta (E563), Ciudad Autónoma de Melilla (E564), Småland med öarna (SE21) and Mellersta Norrland (SE32): 2015.

Source: Eurostat (online data code: [rd_e_gerdreg](#))



SECTORS OF PERFORMANCE

As noted above, gross domestic expenditure on R & D (GERD) includes spending that is made by business enterprises, higher education institutions, governments and private non-profit organisations. In 2017, almost two thirds (66.0 %) of gross domestic expenditure on R & D in the EU-27 was carried out by the business enterprise sector. The second and third largest contributions to R & D expenditure were provided by the higher education (21.9 %) and government sectors (11.6 %).

Map 8.1 confirms that the business enterprise sector usually accounted for the highest spend on R & D. These regions are split into two groups within the map: those where the business enterprise sector had a relatively high degree of research intensity (expenditure of at least 1.5 % relative to GDP) are shown in dark orange, whereas those regions with a lower level of research intensity are shown in a lighter orange shade.

Of the 191 NUTS level 2 regions for which data are available (Belgium, NUTS level 1; Ireland, France and the Netherlands, national data), almost four fifths (79 %) recorded their highest level of expenditure made by the business enterprise sector. The map highlights 34 regions across the EU where business enterprise expenditure on R & D was at least 1.5 % of GDP (the darker orange shade); these regions were predominantly located in Germany, Austria, Sweden and Finland. The prominence of the business enterprise sector was most apparent in Stuttgart, where its R & D expenditure was valued at 7.21 % of GDP. Business enterprises in Stuttgart accounted for 93.8 % of total R & D expenditure — also the highest share among NUTS level 2 regions.

Higher education spending on research and development was relatively high in Nordic regions

In 2017, there were 31 regions across the EU where the higher education sector accounted for the largest share of R & D expenditure; many of these were peripheral regions. Övre Norrland, the northernmost

region of Sweden, was one of these 31 regions and also had the highest ratio of expenditure by the higher education sector (relative to GDP), at 1.56 %. It was followed (among all regions) by Hovedstaden and Wien — the Danish and Austrian capital regions — where R & D expenditure by the higher education sector was equivalent to 1.33 % of GDP. There were only five other regions across the EU where higher education spending on R & D was in excess of 1.00 % of GDP: Östra Mellansverige, Sydsverige (both Sweden), Gießen (Germany), Steiermark (Austria) and Nordjylland (Denmark). As such, several **Nordic** regions reported a relatively high proportion of their R & D expenditure made within the higher education sector.

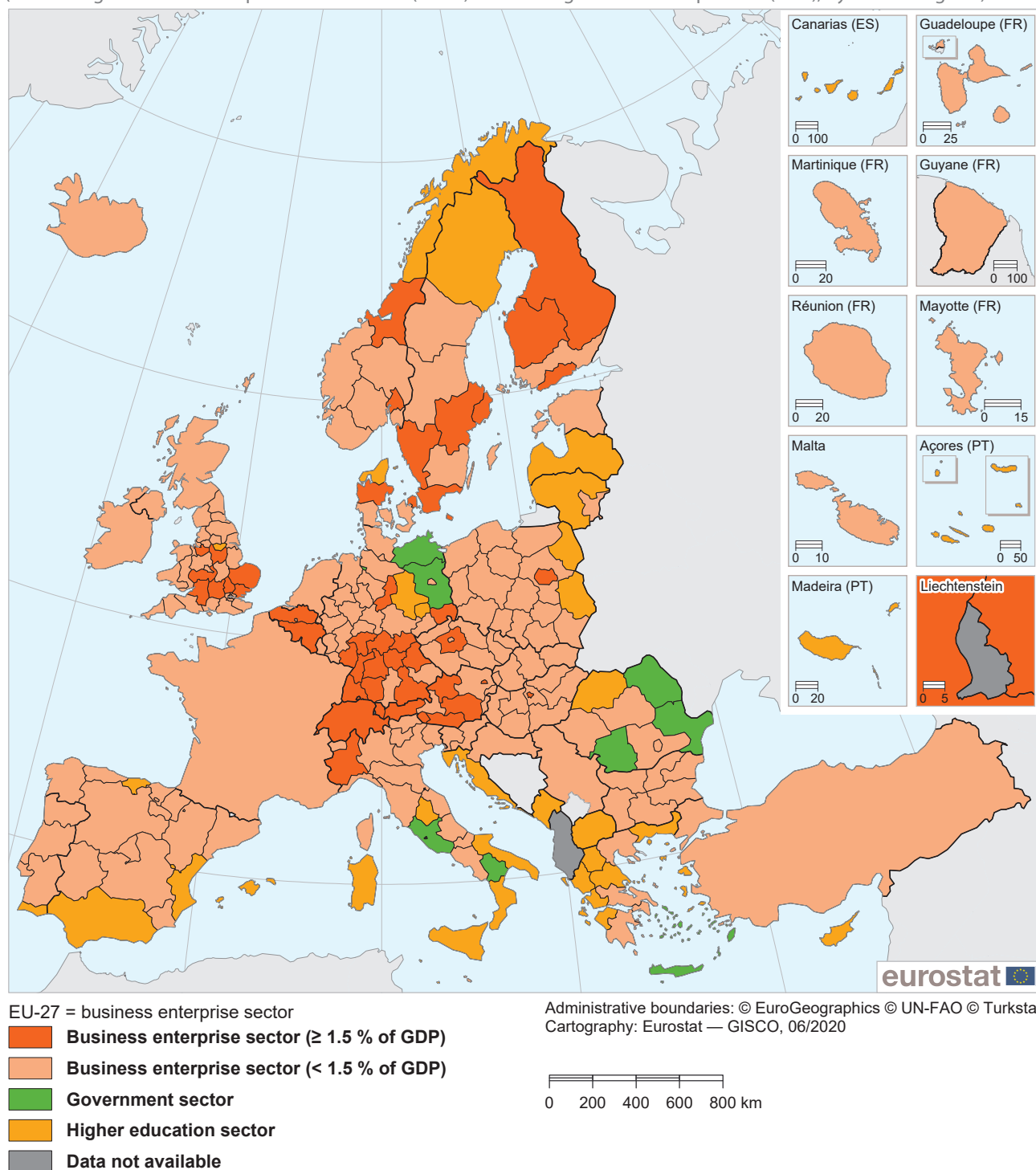
Government spending on research and development was relatively high in Germany

In 2017, there were 10 regions across the EU where the government sector had the highest level of expenditure on R & D. These regions were located in Germany, Greece, Italy and Romania. They were characterised by relatively low levels of research intensity, with their expenditure being financed principally by public research.

Among all regions, the highest ratio of government expenditure on R & D was recorded in Braunschweig (1.24 % of GDP in 2017) — which had the highest ratio of research intensity in the EU. It is interesting to note that government spending on R & D in Germany took place not only in regions with low levels of research intensity, but also in regions with an established and thriving research base. Apart from Braunschweig, there were only three other regions in the EU where government expenditure on R & D accounted for more than 1.00 % of GDP. They were also located in Germany: Berlin (1.20 %), Dresden (1.17 %) and Bremen (1.12 %). These figures underline the importance given by successive German administrations to financing public research. For example, the German federal government has set itself a target whereby research expenditure from the government sector should attain at least 1.15 % of GDP by 2025.

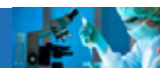
Map 8.1: Most common sector of performance for R & D expenditure, 2017

(based on gross domestic expenditure on R & D (GERD) relative to gross domestic product (GDP), by NUTS 2 regions)



Note: Belgium and Scotland (UKM), NUTS 1 regions. Ireland, France, the Netherlands, Switzerland, Serbia and Turkey: national data. Italy: estimates. Denmark and France: provisional. Småland med öarna (SE21) and Mellersta Norrland (SE32): 2015.

Source: Eurostat (online data code: [rd_e_gerdreg](#))



Researchers

Researchers are persons engaged in R & D activities: they are defined as 'professionals engaged in the conception or creation of new knowledge. They conduct research and improve or develop concepts, theories, models, techniques instrumentation, software operational methods.'

Researchers made up almost 3 % of the workforce in the Danish capital region

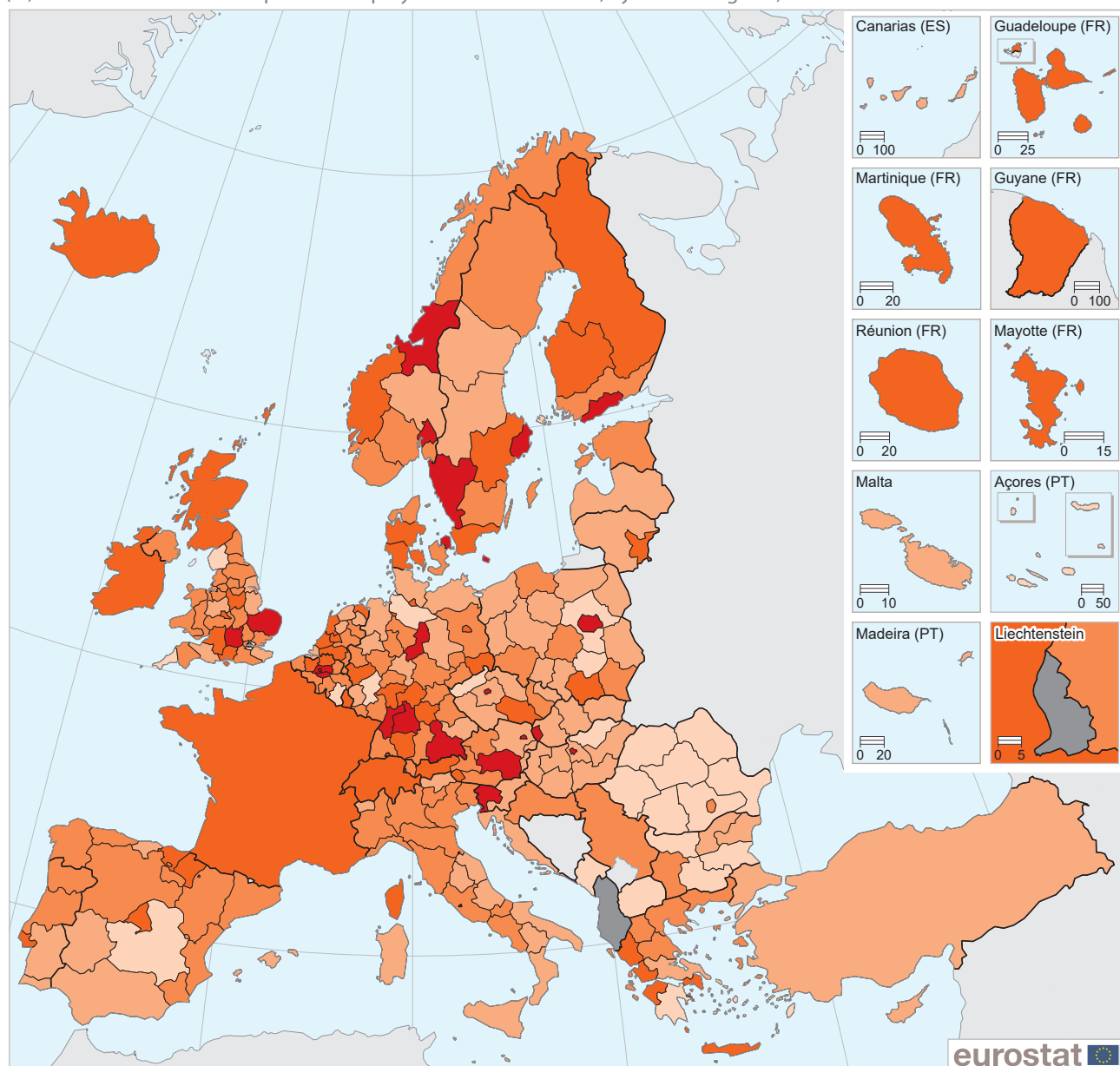
In 2017, there were 2.58 million researchers employed in the EU-27. Adjusting this total to take account of different working hours and working patterns, the number of **full-time equivalent (FTE)** researchers was 1.70 million, equivalent to 0.89 % of the EU-27 workforce.

The distribution of researchers across EU regions was highly skewed. It was commonplace to find researchers accounting for less than 1.00 % of the total number of persons employed (as shown by the three lightest

shades in Map 8.2). This criterion covered almost three quarters (157 out of 212) of the NUTS level 2 regions for which data are available in 2017. At the top end of the distribution, the relative importance of researchers (in FTEs) peaked at 2.96 % of the total workforce in Hovedstaden (the Danish capital region). There were only three other regions in the EU where researchers accounted for more than 2.50 % of the workforce: Prov. Brabant Wallon (Belgium), Warszawski stołeczny (the Polish capital region) and Stuttgart (Germany). As such, those regions with the highest shares of researchers were either characterised by high levels of R & D intensity and/or by being capital regions. Map 8.2 confirms this pattern, insofar as 10 out of the 18 EU regions where researchers accounted for at least 1.50 % of the total workforce — as shown by the darkest shade — were capital regions. They comprised the capital regions of: Denmark, Poland, Czechia, Slovakia, Finland, Hungary, Sweden, Belgium, Austria and Slovenia. The relatively high proportion of researchers in capital regions may reflect, at least in part, a tendency for public research and academic institutions to be concentrated in capital cities.

Map 8.2: Researchers, 2017

(% share of total number of persons employed measured in FTEs, by NUTS 2 regions)



EU-27 = 0.89

< 0.25

0.25 - < 0.50

0.50 - < 1.00

1.00 - < 1.50

≥ 1.50

Data not available

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 06/2020

0 200 400 600 800 km

Note: the numerator for researchers is measured in full-time equivalents (FTEs). Scotland (UKM): NUTS 1 region. Ireland, France, Switzerland, Serbia and Turkey: national data. Sweden: estimates. Denmark and France: provisional. Belgium, Ciudad Autónoma de Ceuta (ES63), Ciudad Autónoma de Melilla (ES64), Småland med öarna (SE21) and Mellersta Norrland (SE32): 2015.

Source: Eurostat (online data code: [rd_p_persreg](#))



The number of researchers in the EU-27 rose, on average, by 3.5 % each year between 2007 and 2017

Having stood at 1.21 million in 2007, the number of researchers (in FTEs) in the EU-27 rose continuously, up by almost half a million, to a relative peak of 1.70 million in 2017. As such, the number of researchers in the EU-27 grew, on average, by 3.5 % each year during this period.

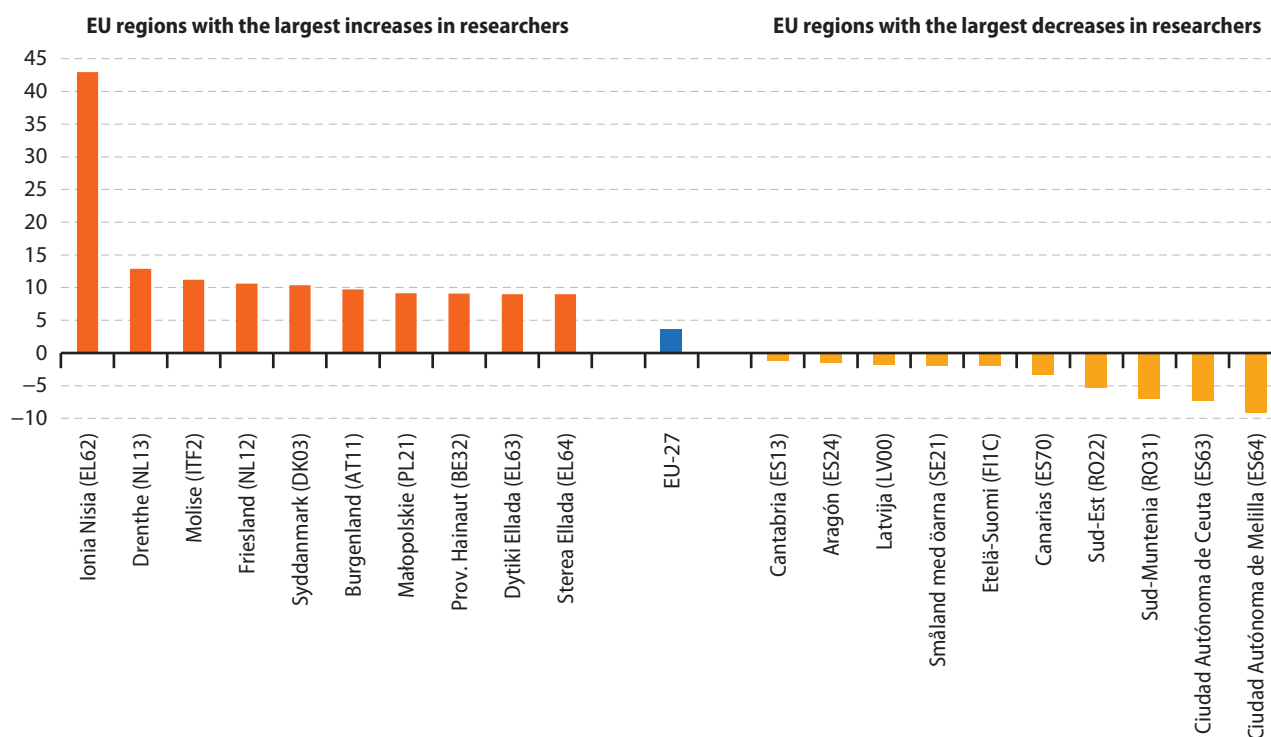
Figure 8.3 details those regions with the largest percentage increases/decreases in numbers of researchers between 2007 and 2017. Note that very high rates of change may be recorded by regions that have relatively small numbers of researchers. For example, despite an average growth rate of 43 % each year (between 2011 and 2017), the overall number of researchers in Ionia Nisia (Greece) increased by just 528. It was common to find that some of the largest growth rates were recorded in regions characterised by relatively low levels of research intensity. Among the 10 regions with the highest growth rates (as shown in Figure 8.3), there were only four where the absolute

number of researchers increased by more than 1 000. They were: Małopolskie in Poland (an increase of 10 200 between 2007 and 2017), Syddanmark in Denmark (3 500), Prov. Hainaut in Belgium (1 400) and Dytiki Ellada in Greece (1 200). A similar pattern was observed when analysing relative decreases in researchers, as the impact of declining numbers was generally quite small in absolute terms. Indeed, Sud-Muntenia in Romania was the only region (among the 10 shown with negative rates of change) to report a decrease in numbers of researchers of more than 1 000.

There were other regions (outside of those shown in Figure 8.3) where the number of researchers increased by a greater margin in absolute terms. The count of researchers (in FTEs) increased by more than 10 000 between 2007 and 2017 in three regions: Stuttgart in Germany (up 22 400), Lombardia in Italy (10 300) and Małopolskie in Poland (10 200). The largest overall decline in numbers of researchers was recorded in Sud-Muntenia (already mentioned above).

Figure 8.3: Average annual change in the number of researchers, 2007-2017

(% per annum, based on the number of researchers measured in FTEs, by NUTS 2 regions)



Note: Közép-Magyarország (HU1), Makroregion Centralny (PL7), Makroregion Wschodni (PL8) and Makroregion Województwo Mazowieckie (PL9), NUTS 1 regions. Ireland, France, Lithuania and Slovenia: national data. Luxembourg, the Netherlands and Sweden: estimates. Denmark and France: provisional. France, Italy, Luxembourg, Austria, Portugal, Slovenia and Finland: break in series. Niederbayern (DE22) and Oberpfalz (DE23): not available. Croatia: 2008-2017. Chemnitz (DED4), Leipzig (DED5), Helsinki-Uusimaa (FI1B) and Etelä-Suomi (FI1C): 2009-2017. Greece: 2011-2017. Belgium, Ciudad Autónoma de Ceuta (ES63), Ciudad Autónoma de Melilla (ES64), Småland med öarna (SE21) and Mellersta Norrland (SE32): 2007-2015.

Source: Eurostat (online data code: [rd_p_persreg](#))

Human resources in science and technology

Human resources in science and technology (HRST) are defined as persons who fulfil one or other of the following two criteria:

- have successfully completed a [tertiary education](#);
- are not formally qualified as above, but are employed in a science and technology occupation where the above qualifications are normally required (defined here as those who work as professionals, technicians and associate professionals — as defined by the [international standard classification of occupations \(ISCO\)](#) major groups 2 and 3).

As such, the concept of HRST relates mainly to the education of persons irrespective of their actual professional occupation. By contrast, the concept of R & D personnel relates specifically to the actual occupation of persons, namely, if they are directly engaged in R & D (creative and systematic work undertaken to increase the stock of knowledge or to devise new applications of existing knowledge). Therefore, the criteria for HRST are less strict, with numbers of HRST considerably higher than levels of R & D personnel.

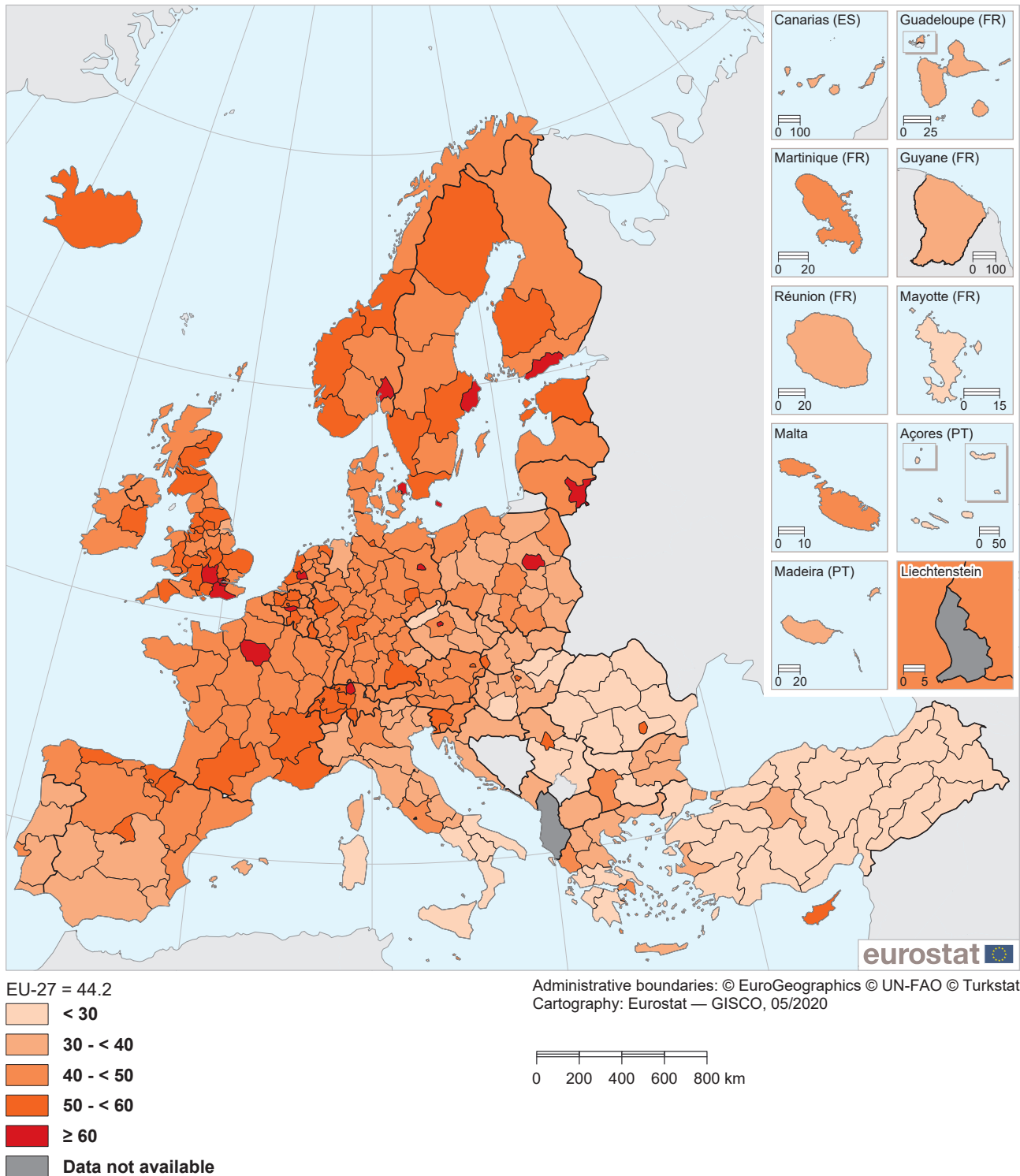
In 2018, there were 110.5 million persons employed in the EU-27 as HRST; among these were 45.2 million who met both the educational and occupational

criteria (otherwise referred to as HRST core). Map 8.3 shows the share of HRST in the [economically active population](#) (hereafter referred to as the labour force). In 2018, the share of HRST in the EU-27 labour force was 44.2 %. Unlike other science and technology indicators, the regional distribution for this indicator was not highly skewed. Rather, there was an almost equal split in the number of regions with shares above (118 regions) and below (122 regions) the EU-27 average. In keeping with other science and technology indicators, some of the highest shares of HRST in the labour force were recorded in capital regions. Indeed, capital regions accounted for 8 out of the 10 regions in the EU where the share of HRST was greater than or equal to 60.0 % (as shown by the darkest shade in Map 8.3). They included the capital regions of Poland, the Nordic Member States, France, Czechia, Germany and Lithuania; the other two regions were Prov. Brabant Wallon (Belgium) and Utrecht (the Netherlands). In 2018, the highest share of HRST was recorded in Warszawski stołeczny (the Polish capital region), where HRST accounted for around 7 out of 10 persons (70.7 %) in the labour force.

At the other end of the range, there were 27 regions across the EU where the share of HRST in the labour force was less than 30.0 %. Generally they were characterised as rural and peripheral regions that were concentrated in eastern and southern parts of the EU. Nord-Est (Romania) had the lowest regional share, with HRST accounting for around one sixth (16.9 %) of its labour force.



Map 8.3: Human resources in science and technology, 2018
(%, share of the economically active population, by NUTS 2 regions)



Note: Corse (FRM0), low reliability.

Source: Eurostat (online data code: [hrst_st_rcat](#))

Between 2008 and 2018, human resources in science and technology increased by almost one quarter across the EU-27

From 88.9 million in 2008, the number of HRST across the EU-27 rose to 110.5 million in 2018. This was equivalent to an overall gain of 24.2 %, or an average increase of 2.2 % each year during the period under consideration.

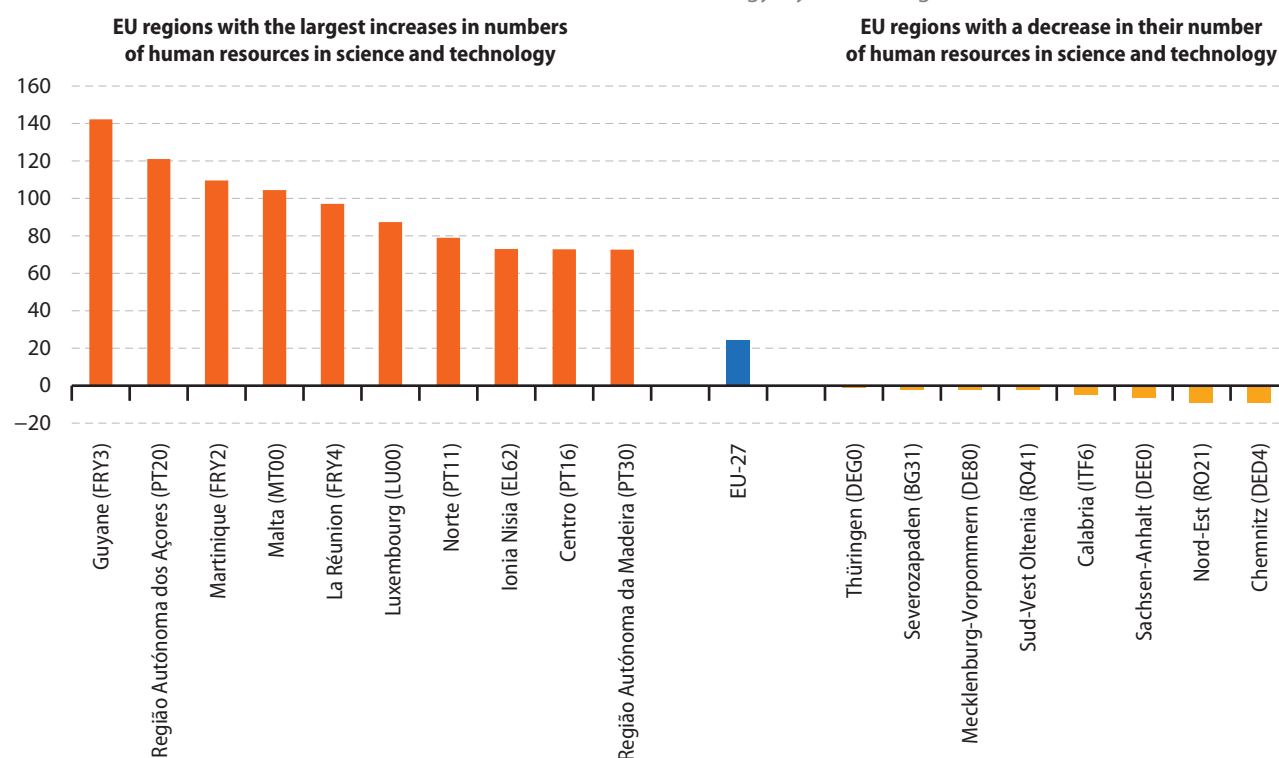
Figure 8.4 details those regions with the largest percentage increases/decreases in numbers of HRST between 2008 and 2018. Of the 240 NUTS level 2 regions for which data are available, the vast majority (232 regions) reported an increase in their number of HRST. The five largest percentage increases were recorded in peripheral regions of the EU, with the number of HRST more than doubling in Guyane, Martinique (both France), Região Autónoma dos Açores (Portugal) and Malta, while it almost doubled in La Réunion (also France). There was also a relatively large increase in the number of HRST in Luxembourg and three more Portuguese regions (Norte, Centro and Região Autónoma da Madeira). Note that very high percentage rates of change may be recorded by regions that have relatively few HRST. Among the 10 regions shown in Figure 8.4 with the highest relative increases, the biggest gains in absolute terms were

recorded in Norte (292 000 more HRST between 2008 and 2018) and Centro (170 000).

Four out of the eight regions which reported falling numbers of HRST between 2008 and 2018 were in eastern Germany. They included Chemnitz, where the number of HRST fell by 9.2 % — the largest percentage reduction in the EU. Note that some of these regions experienced a decline in their labour forces and/or populations during the period under consideration, often at a faster pace than the decline in numbers of HRST. For example, although the overall number of HRST in Chemnitz decreased between 2008 and 2018, the share of HRST in the regional labour force rose from 39.0 % to 42.6 %.

Outside of the regions with the highest increases in relative terms (shown in Figure 8.4), there were other regions where the overall count of HRST increased between 2008 and 2018 by a considerably larger margin in absolute terms. Many of these could be characterised as vibrant hubs of business activity. For example, the highest increase was recorded in Île-de-France — the capital region of France — with almost 750 000 additional HRST. It was followed by Rhône-Alpes (France; 576 000) and Cataluña (Spain; almost 500 000), while the number of HRST also increased by more than 300 000 in Provence-Alpes-Côte d'Azur (France), Oberbayern (Germany), Andalucía (Spain), Śląskie (Poland) and Lombardia (Italy).

Figure 8.4: Overall change in the number of human resources in science and technology, 2008-2018
(%, based on the number of human resources in science and technology, by NUTS 2 regions)



Note: there were only eight regions in the EU where the number of human resources in science and technology fell during the period under consideration. Corse (FRM0): low reliability. All regions: break in series. Slovenia: 2010-2018. Ireland: 2012-2018. Mayotte (FRY5), Lithuania, Budapest (HU11), Pest (HU12), Warszawski stołeczny (PL91) and Mazowiecki regionalny (PL92): 2013-2018.

Source: Eurostat (online data code: [hrst_st_rcat](#))



Fewer women (than men) were employed as scientists and engineers

In 2018, there were 14.7 million [scientists and engineers](#) working in the EU-27. Of these, 6.3 million (or 41.1 % of the total) were women. Policymakers have taken steps to redress this gender imbalance: for example, by promoting female role models or setting-up programmes to encourage more girls to study sciences. Among other effects, this has led to an increase in female participation within sciences at a tertiary level, although male PhD students continue to outnumber female ones. There has also been an effect in the labour force, as between 2002 and 2018 the number of female scientists and engineers in the EU-27 increased, on average, by 10.7 % per year; this was almost double the rate recorded for men (5.6 % per year).

Scientists and engineers accounted for 6.9 % of the EU-27 labour force in 2018, with a 1.5 percentage points higher share recorded for men (7.6 %) than for women (6.1 %). Map 8.4 presents this gender gap in more detail — for NUTS level 1 regions. It reveals that the gap between the sexes was not universal. Rather, in 29 out of the 89 regions for which data are available, the share of scientists and engineers in the labour force was higher for women than men (these regions are shaded in orange). While this situation occurred in at least one region of Belgium, Germany, France and Austria, these regions were principally located in peripheral regions

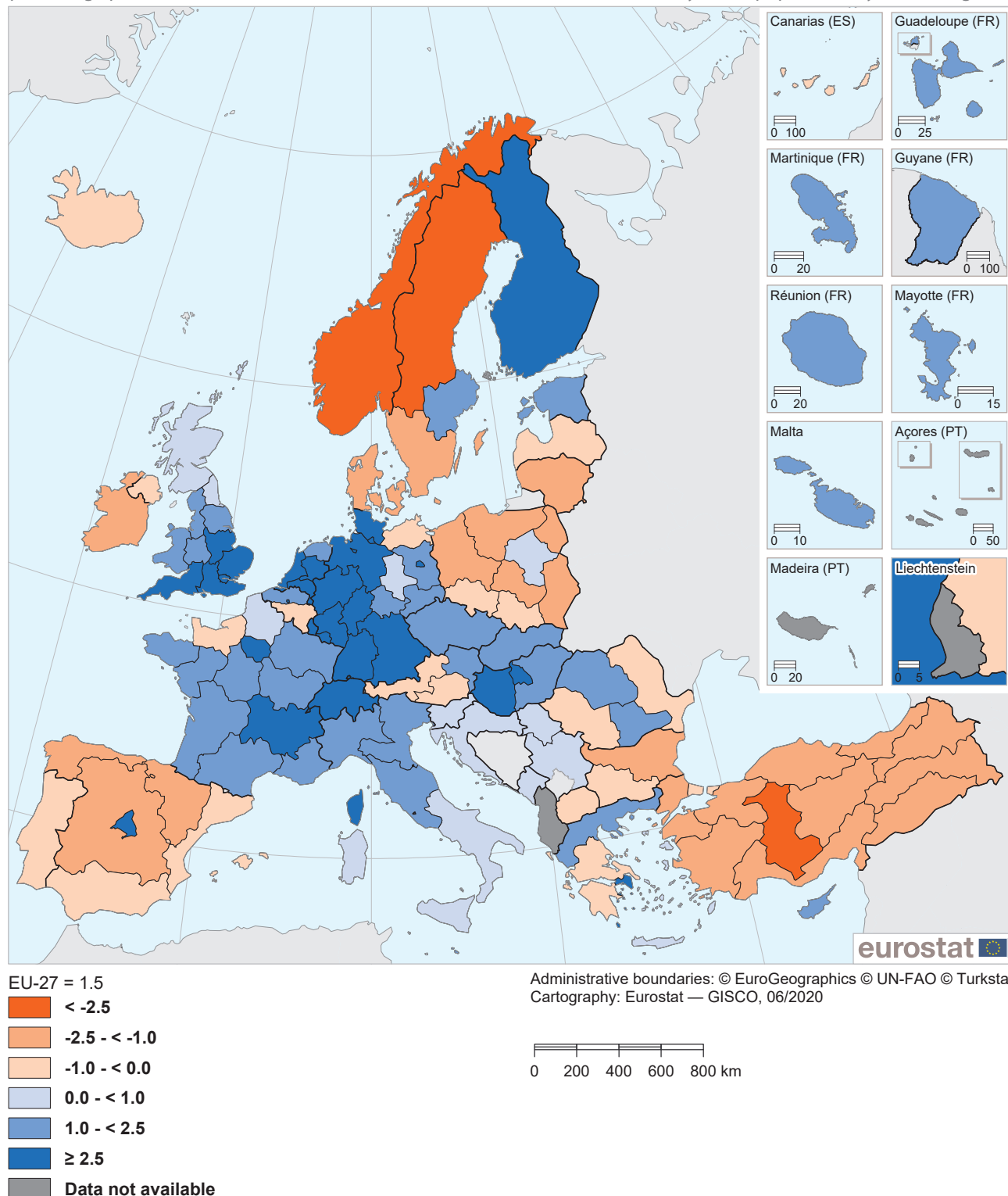
away from the centre of the EU, for example, Ireland, the Iberian Peninsula and a band of regions running from the Nordic and Baltic Member States through easternmost regions of the EU into parts of Greece.

In 2018, the largest gender gap in favour of women was recorded in Norra Sverige (Sweden), where scientists and engineers accounted for 11.1 % of the female labour force compared with a 7.8 % share for men; a gap of 3.3 percentage points. Norra Sverige was one of just six regions across the EU where scientists and engineers accounted for a double-digit share of the female labour force. This group also included the other two regions in Sweden, as well as Ireland, Denmark and Région wallonne (Belgium).

It was however more common for scientists and engineers to account for a higher share of the male (rather than female) labour force. This pattern was reproduced across 60 different regions of the EU (those shaded in blue in Map 8.4). The largest gender gap in favour of men was recorded in Manner-Suomi (Finland), where scientists and engineers represented 14.4 % of the male labour force, some 8.1 percentage points higher than the corresponding share for women (6.3 %). The next highest gender gaps (in favour of men) were registered in Közép-Magyarország (the Hungarian capital region; 6.7 points), Luxembourg (5.6 points), Baden-Württemberg and Bayern (both Germany; both 5.5 points).

Map 8.4: Gender gap for scientists and engineers, 2018

(percentage points, difference between male and female shares of the economically active population, by NUTS 1 regions)



Note: the gender gap for scientists and engineers is defined as the difference between the share of the male labour force employed as scientists and engineers and the share of the female labour force employed as scientists and engineers. The map shows a mixed gender pattern: orange shades (negative values) represent regions where the female share was higher and blue shades (positive values) represent regions where the male share was higher. Corse (FRM0), 2017 and low reliability.

Source: Eurostat (online data code: [hrst_st_rsex](#))

9

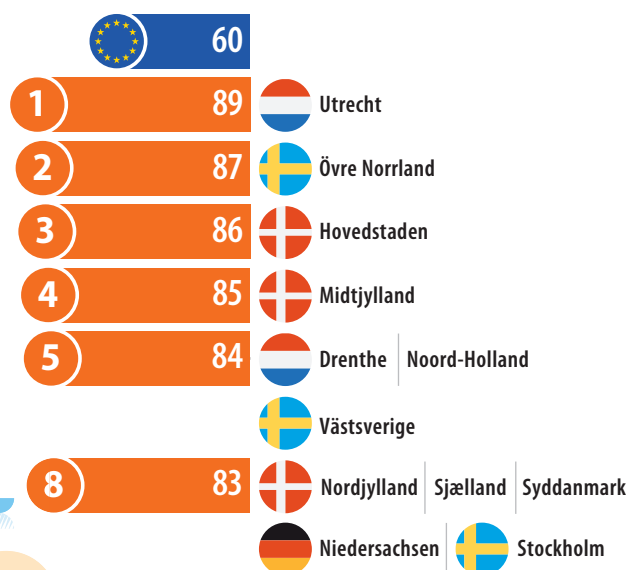
Digital society



Which EU regions have the highest share of people ordering goods or services over the internet?



(% of people aged 16-74 years ordering goods or services for private use during the 12 months preceding the survey, 2019 data)
Niedersachsen: NUTS 1 region.



Information and communication technology (ICT) affect people's everyday lives in many ways, both at work and in the home — for example, when communicating, keeping abreast of the news, being entertained, interacting with public authorities, paying bills or shopping online. In order to be able to benefit from technological innovations, businesses and individuals depend, at least to some extent, on having fast and reliable [internet access](#) (whether fixed or mobile).

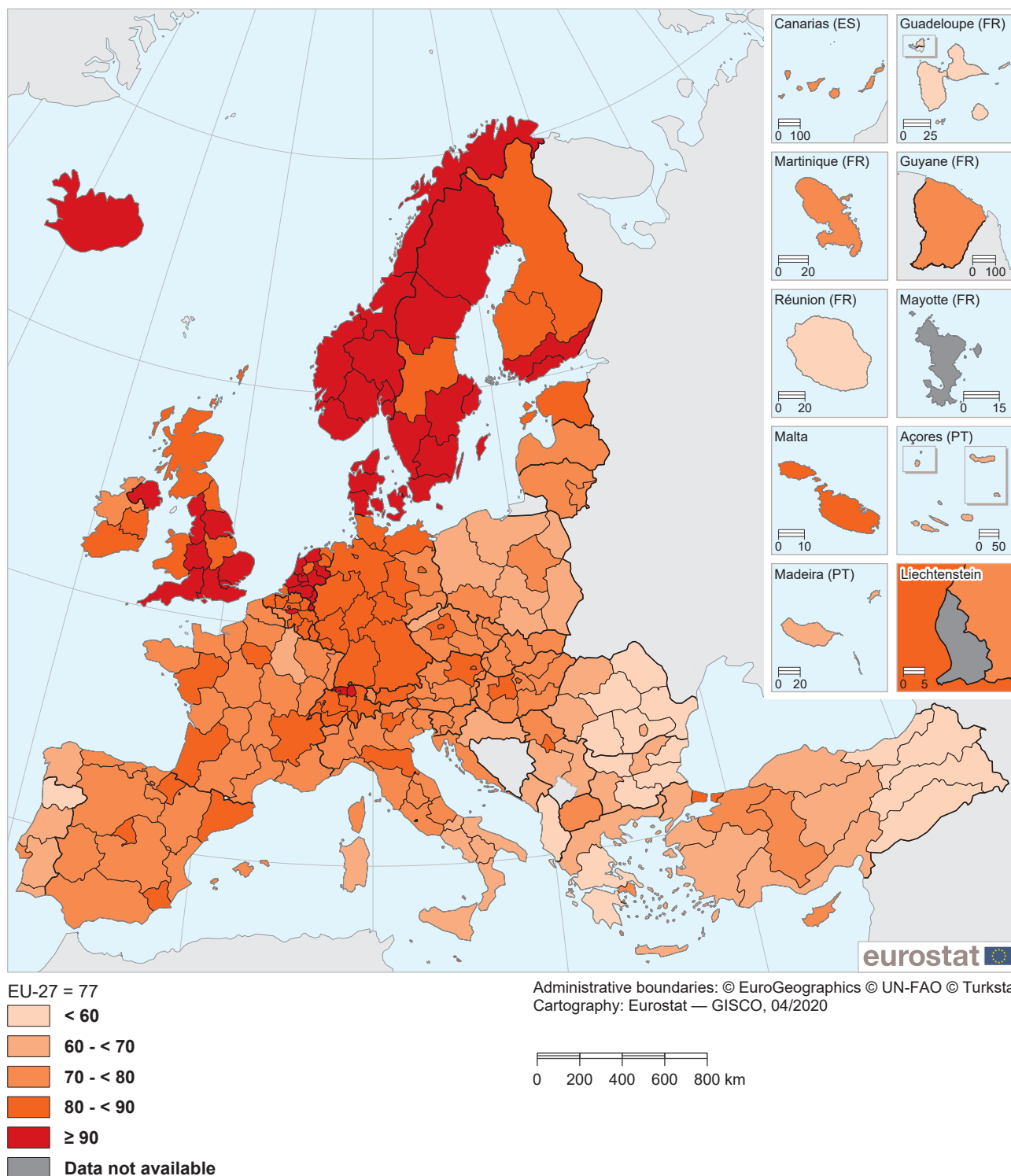
Indeed, access to ICTs is considered, by many, as fundamental for improving productivity levels and the competitiveness of regions. ICTs are credited with delivering greater flexibility in work environments (for example, permitting people to work from home or other remote locations), while offering a broad range of options for staying in contact with colleagues, family and friends. As the internet and digital technologies continue to transform the world, ICT innovations provide a stream of new business opportunities. It is hoped that this new digital world, the *internet of things* — which is working its way into many aspects of society — will provide tools that may be applied to a range of [European Union \(EU\)](#) policy objectives in fields

as diverse as health, security, climate, transport, energy, or the modernisation of the public sector.

Internet users

Although the internet is an almost constant part of the lives of many Europeans, some people are excluded to a greater or lesser extent, resulting in the so-called [digital divide](#). People living in remote regions may be excluded as market forces and a lack of public infrastructure investment lead to access and/or performance issues when trying to use the internet and result in socially undesirable outcomes. Others, particularly older generations, may not have the necessary [e-skills](#) to take full advantage of various services that are provided via the internet. With a growing share of day-to-day tasks being carried out online, the ability to use modern technologies becomes increasingly important to ensure everyone can participate in the digital society. This digital divide is likely to be further challenged in the next few years, as people living in Europe's main cities are given the opportunity to move on to 5G internet services (the fifth generation of cellular network technology).

Map 9.1: Daily internet users during the three months preceding the survey, 2019
(% of people aged 16-74 years, by NUTS 2 regions)



Note: Germany, Greece, Poland, the United Kingdom and Turkey, NUTS 1 regions. Albania: national data. Ciudad Autónoma de Ceuta (ES63), Corse (FRM0) and Mellersta Norrland (SE32): low reliability. Albania: 2018.

Source: Eurostat (online data codes: [isoc_r_iuse_i](#) and [isoc_ci_ifp_fu](#))

More than three quarters of all adults in the EU made use of the internet on a daily basis

An [internet user](#) is defined as a person (aged 16-74 years) making use of the internet in whatever way: whether at home, at work, or anywhere else; whether for private or professional purposes; regardless of the device (desktop computer, laptop, netbook or tablet, smartphone, games console or e-book reader) or type of connection being used. In 2019, some 77 % of the EU-27's adult population reported having used the internet on a daily basis during the three months preceding the survey; this figure was 3 [percentage points](#) higher than in 2018 and 31 points higher than a decade before (46 % in 2009).

There were widespread disparities between EU regions in terms of daily use of the internet. These differences were often along broad geographical lines with northern and western regions generally recording higher levels than southern or eastern regions. Within individual EU Member States, the proportion of adults making daily use of the internet was usually relatively high in capital and other urban regions whereas it was generally lower in more rural or remote regions; this pattern was particularly apparent in eastern Europe.

Across the EU-27, the share of adults making daily use of the internet ranged from a low of 49 % up to a high of 96 % across the [NUTS](#) level 2 regions for which data are available (see Map 9.1); note that the statistics presented for Germany, Greece and Poland relate to NUTS level 1 regions. The lowest share was recorded in Nord-Est (Romania), which was the only region in the EU to report fewer than half of all adults using the internet on a daily basis. The highest share was recorded in Utrecht (the Netherlands).

The digital divide between cities and rural areas was closing

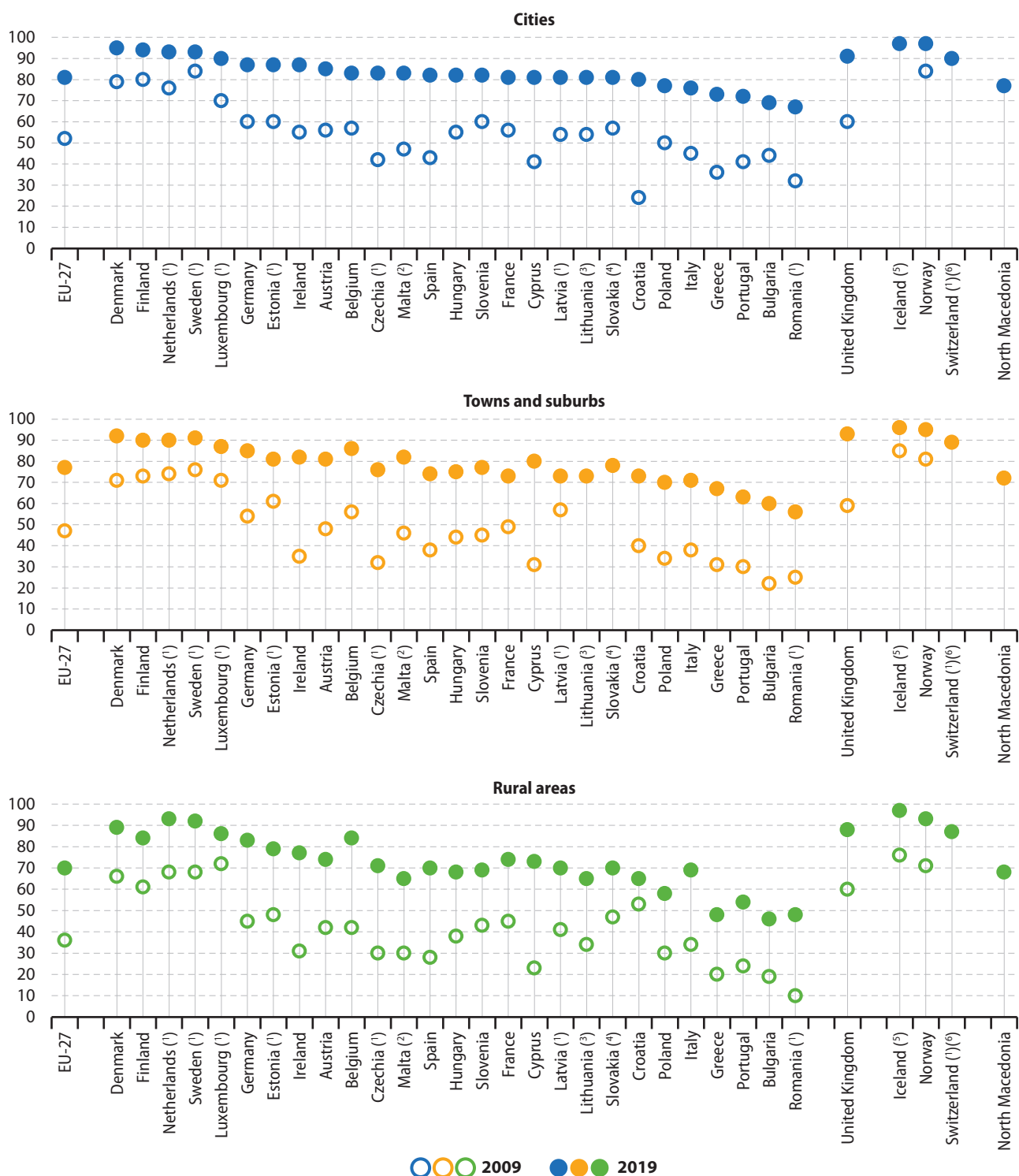
Figure 9.1 shows the development of daily internet use over the last decade with an analysis by [degree of urbanisation](#). It confirms that in 2019 adults (aged 16-74 years) living in [cities](#) across the EU-27 were more likely to use the internet on a daily basis (81 %) than adults living in [towns and suburbs](#) (77 %) or [rural areas](#) (70 %). This pattern — a higher share of daily internet users living in cities — was repeated in the vast majority of the EU Member States. In 2019, the only exceptions were the neighbouring Member States of Belgium and the Netherlands. In the former, adults living in towns and suburbs were more likely to use the internet on a daily basis (than those living in cities), while in the latter, identical shares of adults living in cities and in rural areas made use of the internet on a daily basis.

The gap in daily internet use between adults living in cities and rural areas was relatively small in most of the EU Member States that were characterised by relatively high overall use of the internet (this may reflect widespread internet access). By contrast, the difference was often much wider in the Member States characterised by lower overall levels of internet use. For example, adults living in the rural areas of Greece and Bulgaria were 25 and 23 percentage points less likely to make daily use of the internet in 2019 when compared with their counterparts living in cities.

Although a lower share of adults living in rural areas made daily use of the internet, this digital divide was generally narrower in 2019 than it had been in 2009. While the gap in daily internet use between city-dwellers and people living in rural areas of the EU-27 was 16 percentage points in 2009, it had narrowed to 11 points by 2019. In a majority of EU Member States, the proportion of adults living in rural areas and making use of the internet on a daily basis rose at a faster pace than the increase observed among city-dwellers (where internet use was often near saturation).



Figure 9.1: Daily internet users during the three months preceding the survey, 2009 and 2019
(% of people aged 16-74 years, by degree of urbanisation)



Note: ranked on the share of people aged 16-74 years living in cities and using the internet daily during the three months preceding the 2019 survey.

(1) Break in series.

(2) Rural areas, 2019: low reliability, not available.

(3) Towns and suburbs, 2009: not available.

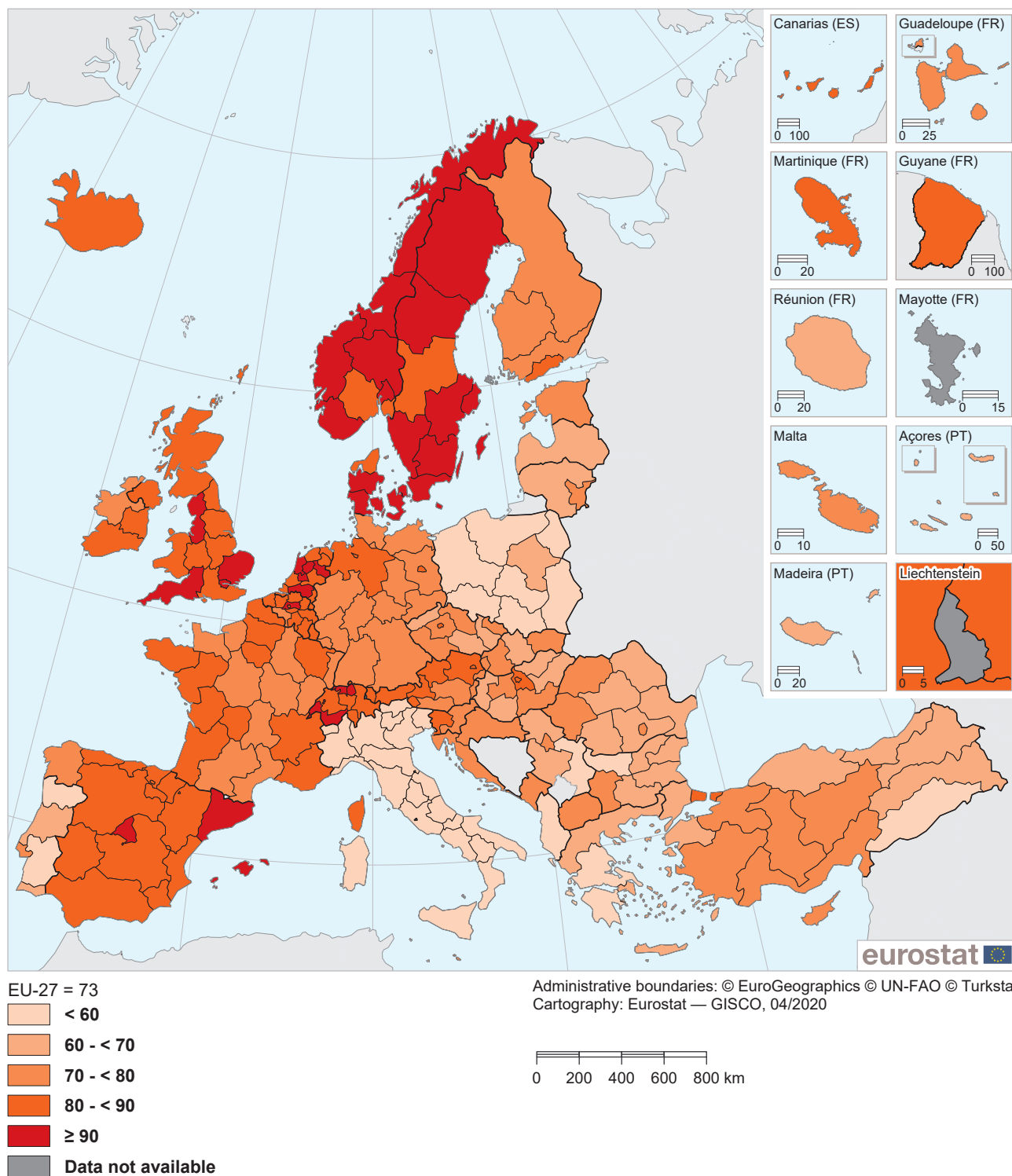
(4) Towns and suburbs, 2009: low reliability, not available.

(5) Cities, 2009: low reliability, not available.

(6) 2009: not available.

Source: Eurostat (online data code: [isoc_ci_ifp_fu](#))

Map 9.2: People accessing the internet away from home or work during the three months preceding the survey, 2019
(% of people aged 16-74 years, by NUTS 2 regions)



Note: Germany, Greece, Poland, the United Kingdom and Turkey, NUTS 1 regions. Albania: national data. Ciudad Autónoma de Ceuta (ES63), Corse (FRM0) and Mellersta Norrland (SE32): low reliability. Finland and Albania: 2018.

Source: Eurostat (online data codes: *isoc_r_iumd_i* and *isoc_ci_im_i*)



In a majority of Italian regions, less than half of all adults accessed the internet away from home or work

Map 9.2 shows the share of the adult population (aged 16-74 years) who reported having accessed the internet away from home or work during the three months preceding the survey. In the EU-27 this share stood at 73 % in 2019 and ranged from a low of 42 % in Calabria (Italy) up to a peak of 95 % in three Swedish regions, including the capital region of Stockholm. This pattern — a relatively high share of adults accessing the internet away from home or work in capital regions — was repeated in most of the EU Member States. The relatively high use that is made of the internet away from home or work in capital regions may reflect, among other factors, high-quality infrastructure providing faster connectivity, a relatively young population age structure, or greater numbers of commuters.

The EU regions where less than three fifths of all adults accessed the internet away from home or work were concentrated in Italy and Poland (as shown by the lightest shade in Map 9.2). In 2019, all 21 NUTS level 2 regions in Italy recorded shares below 60 %, with less than half of all Italians accessing the internet away from home or work in each of the southern and island regions. In Poland, six out of seven (NUTS level 1) regions reported less than 60 % of adults accessing the internet away from home or work. The only exception was the capital region of Makroregion Województwo Mazowieckie, where this share reached almost two thirds (64 %).

Internet activities

With the prolific use in modern society of mobile devices such as smartphones and tablets, the frequency with which people use the internet has grown exponentially. Although it was initially used as a means to exchange information (often in a working environment), the range of activities conducted over the internet has rapidly evolved. For example, it is only slightly more than a decade since commercially successful app stores or streaming services were launched.

PARTICIPATION IN SOCIAL NETWORKS

One of the most popular activities on the internet is participation in social networks, for example, using

Facebook, Instagram, TikTok or Twitter. The propensity to make use of such services is closely linked to age, with a much higher proportion of younger people using social networks on a regular basis. Younger people are also more prone to adopt new apps/services as together with their peers they seek alternative ways of exchanging text, images, sound, video and other information. Note the statistics presented below only cover adults aged 16-74 years.

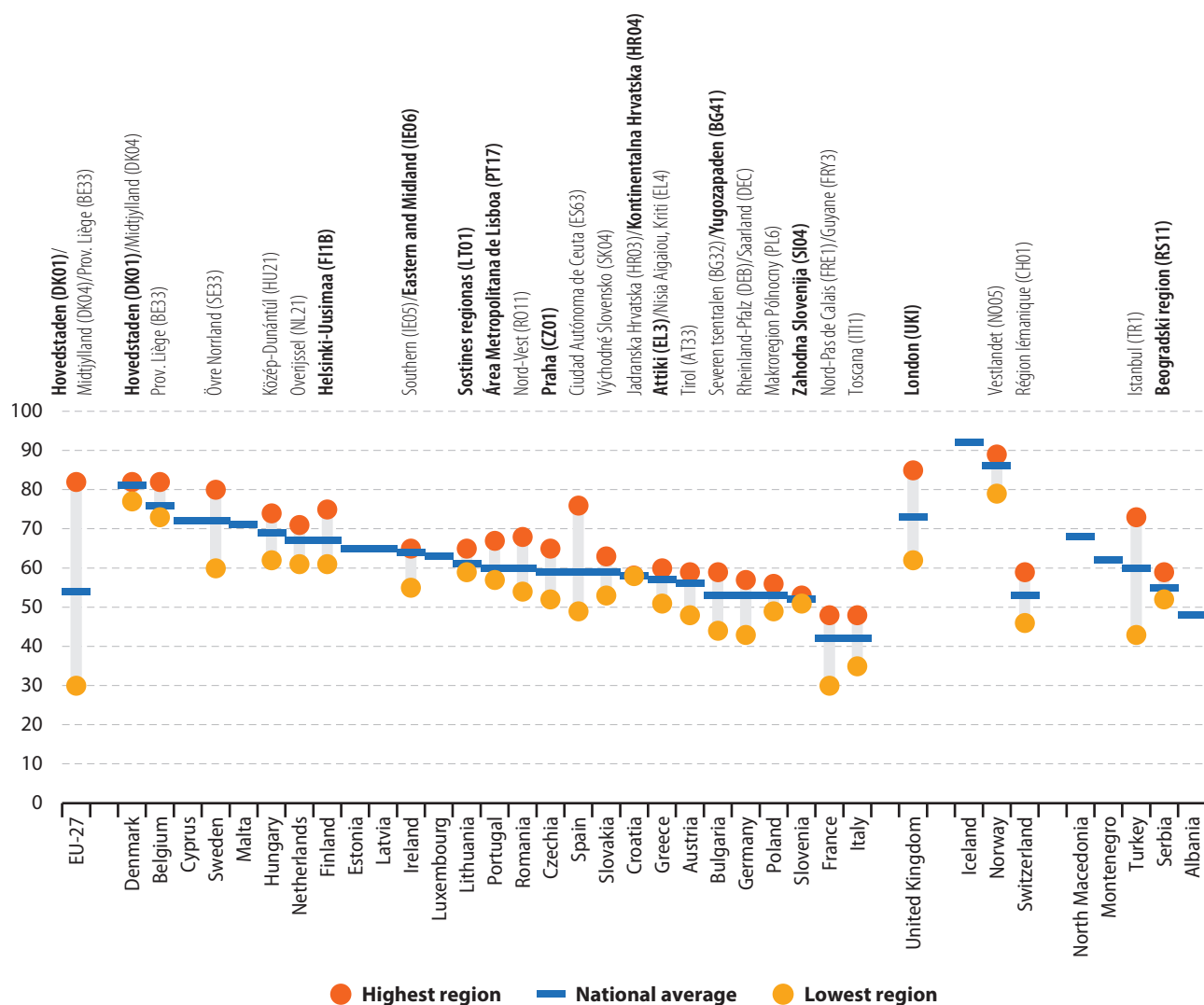
More than four out of every five adults in Hovedstaden, Midtjylland and Prov. Liège participated in social networks

In 2019, just over half (54 %) of the EU-27 adult population participated in social networks during the three months prior to the latest survey (see Figure 9.2). The use of social networks varied considerably between age groups. Close to 9 out of 10 people aged 16-24 years participated in social networks, compared with less than one in five people aged 65-74 years.

At least half of the adult population participated in social networks in 138 out of the 197 NUTS level 2 regions for which data are available in 2019; note again that the statistics presented for Germany, Greece and Poland relate to NUTS level 1 regions. The share of adults participating in social networks peaked at 82 % in three regions — Hovedstaden (the Danish capital region), Midtjylland (also in Denmark) and Prov. Liège (Belgium). In 2019, there were 15 regions across the EU where the share of the adult population participating in social networks was at least three quarters. Most of these regions were located in Belgium (six regions), Denmark (all five regions) or Sweden (two regions). There were also several regions in eastern and southern parts of the EU where the proportion of adults participating in social networks was relatively high, for example, Közép-Dunántúl and Budapest (in Hungary; 74 % and 73 %) or the island regions of Cyprus (72 %) and Malta (71 %).

In approximately 3 out of every 10 NUTS level 2 regions of the EU, less than half of all adults participated in social networks. The lowest shares were concentrated in regions of France and Italy. In the former, there were 10 rural and remote regions where fewer than 4 out of 10 adults participated in social networks, including Corse (34 %), Martinique (33 %) and Guadeloupe (30 %) which had the lowest shares in the EU. There were also six Italian regions where the shares were below 40 %, four of which were situated in the south.

Figure 9.2: People participating in social networks during the three months preceding the survey, 2019
(% of people aged 16-74 years, by NUTS 2 regions)



Note: ranked on national average. Regions listed above the figure are those with the highest ratio. Capital regions are indicated by a bold typeface. Germany, Greece, Poland, the United Kingdom and Turkey: NUTS 1 regions. Albania: national data. Ciudad Autónoma de Ceuta (ES63), Corse (FRM0) and Mellersta Norrland (SE32): low reliability. Albania: 2018.

Source: Eurostat (online data codes: *isoc_r_iuse_i* and *isoc_ci_ac_i*)



ONLINE BANKING

In 2019, more than half (55 %) of the EU-27's adult population (aged 16-74 years) used the internet for banking during the three months prior to the latest survey. Online banking was particularly common among people aged 25-34 years (72 %), while less than one third of population aged 65-74 years made use of the internet for banking.

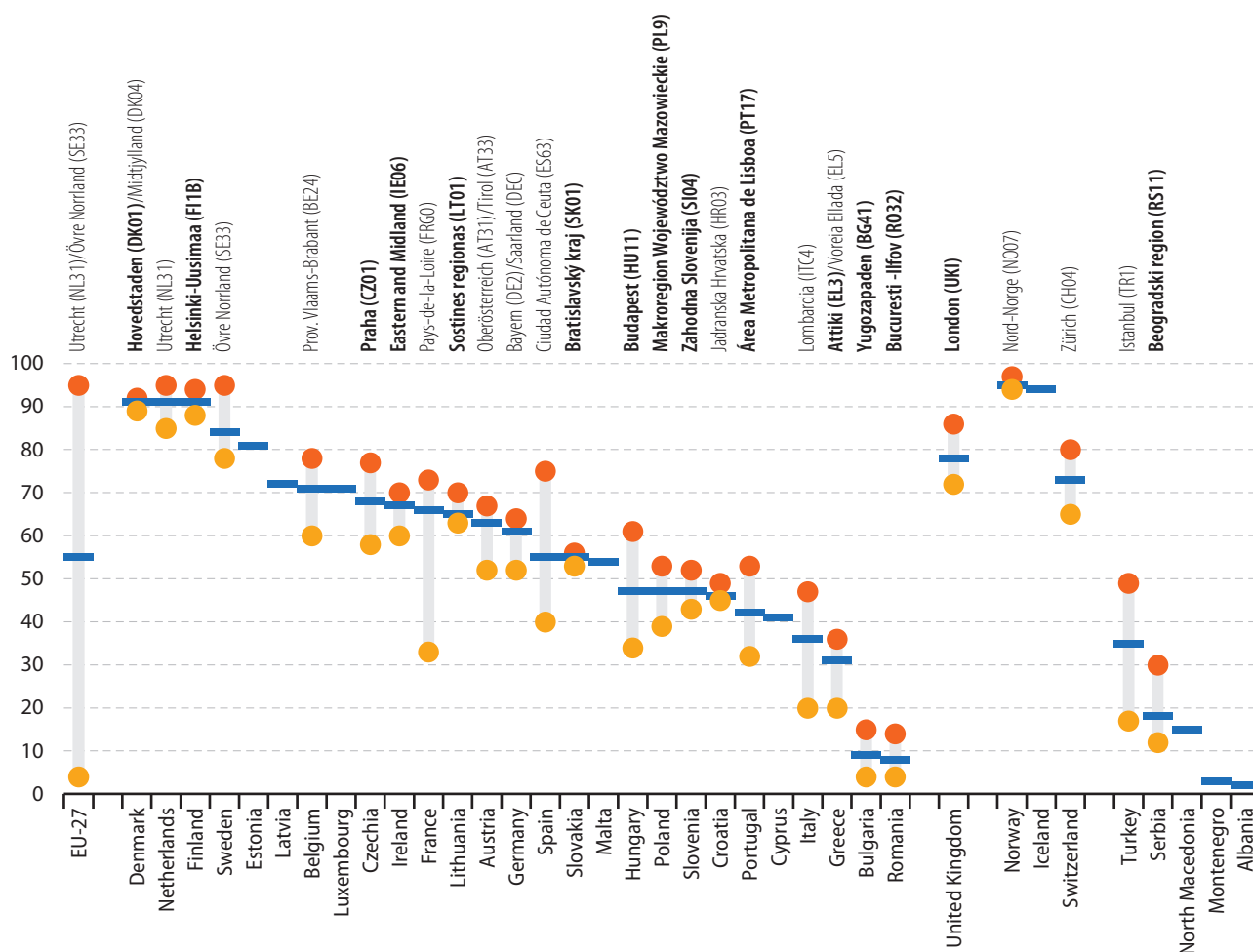
The share of adults using the internet for banking stood at 95 % in Utrecht and Övre Norrland

The use of online banking reflects, to some degree, the availability of broadband internet connections. That said, an individual's choice as to whether or not they use the internet for banking often comes down to a matter of trust (which may reflect national characteristics to some extent). All of the NUTS level 2 regions in Denmark, the Netherlands, Finland, Sweden (except Mellersta Norrland) and Estonia reported that more than four fifths of adults used the internet for banking in 2019 (see Figure 9.3). The

highest shares were recorded in Utrecht (the Netherlands) and Övre Norrland (Sweden), at 95 %. In each of the remaining regions of the EU, less than four fifths of the adult population used online banking; note again that the statistics for Germany, Greece and Poland relate to NUTS level 1 regions.

Approximately one third of all regions across the EU reported that less than 50 % of their adult population made use of the internet for online banking in 2019. The propensity to use the internet for banking was generally lower in rural and remote regions (than it was in urban regions), with some of the lowest shares recorded in regions characterised by a lack of internet connectivity and/or an older population age structure. For example, just one in five adults from Kentriki Ellada (Greece) and Basilicata (Italy) made use of the internet for banking. However, the lowest take-up of online banking was recorded in Bulgaria and Romania. This was particularly notable in Yuzhen tsentralen (Bulgaria) and Sud-Est (Romania), where just 4 % of all adults used the internet for banking. This share did not rise above 15 % in any of the other regions in these two Member States.

Figure 9.3: People making use of the internet for banking during the three months preceding the survey, 2019
(% of people aged 16-74 years, by NUTS 2 regions)



Note: ranked on national average. Regions listed above the figure are those with the highest ratio. Capital regions are indicated by a bold typeface. Germany, Greece, Poland, the United Kingdom and Turkey: NUTS 1 regions. Albania: national data. Ciudad Autónoma de Ceuta (ES63), Corse (FRM0) and Mellersta Norrland (SE32): low reliability. Albania: 2018.

Source: Eurostat (online data codes: [isoc_r_iuse_i](#) and [isoc_ci_ac_i](#))

INTERACTING WITH PUBLIC AUTHORITIES

E-government is defined as the use of ICTs to improve the delivery of services by public authorities. In most of the EU Member States it is possible for private individuals to carry out a broad range of operations by interacting online with their public authorities, for example: making a tax return, requesting a birth certificate, downloading forms, or looking for information about the local transport network; note that contacts with public authorities by manually typed e-mails are excluded from the statistics presented below.

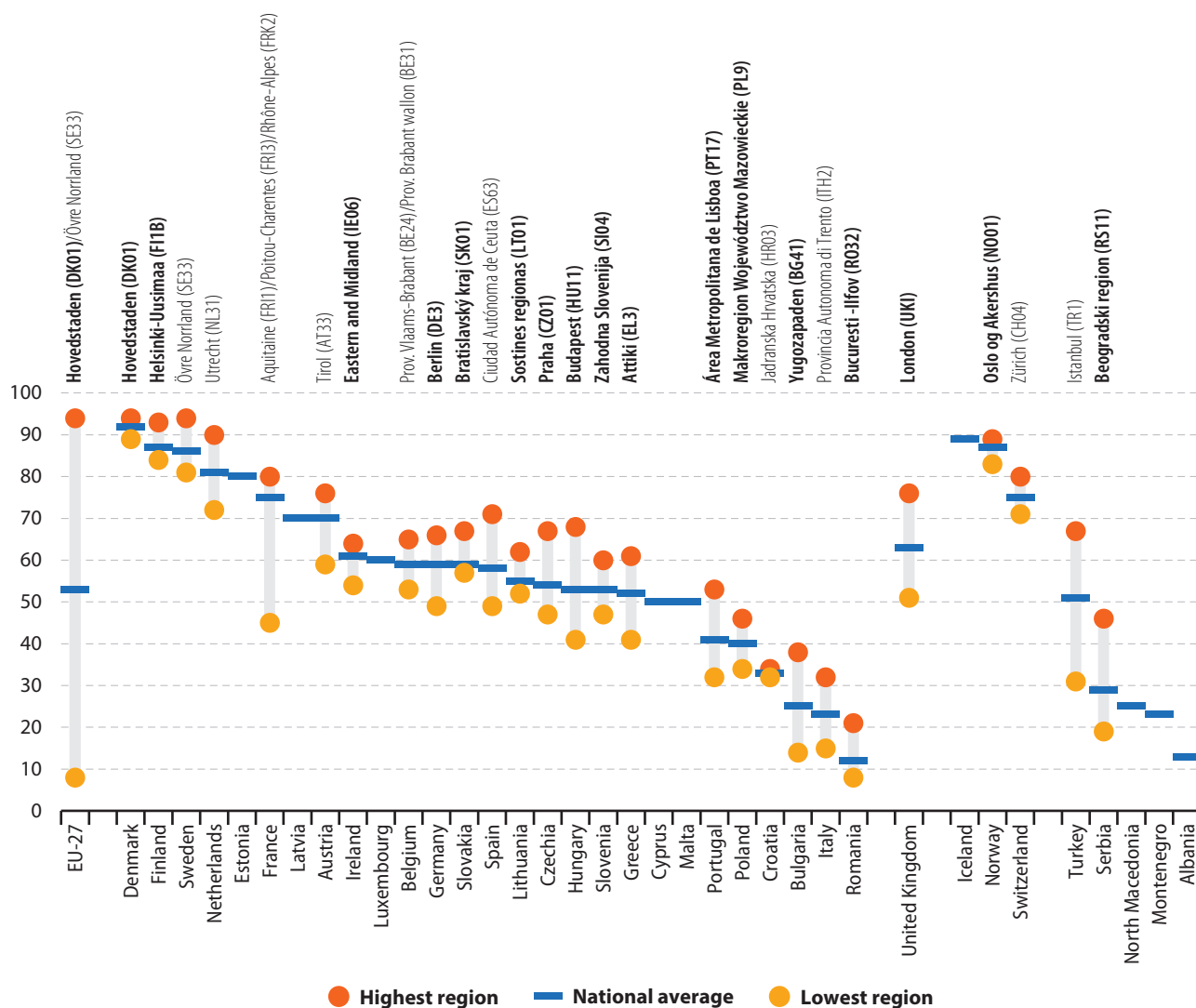
In the Netherlands and the Nordic Member States, a high proportion of the adult population used the internet to interact with public authorities

Just over half (53 %) of the EU-27's adult population (aged 16-74 years) used the internet for interacting

with public authorities during the 12 months prior to the 2019 survey. There were considerable differences between EU Member States in relation to the share of people interacting with public authorities over the internet. However, intra-regional differences within individual Member States were, in most cases, relatively narrow (see Figure 9.4).

Approximately one fifth of the NUTS level 2 regions in the EU reported that at least 75 % of their adult population were using the internet to interact with public authorities in 2019; note again that the statistics for Germany, Greece and Poland relate to NUTS level 1 regions. These regions were exclusively located in northern and western parts of the EU. Some of the highest shares were concentrated in the Netherlands and the **Nordic Member States**. Most French regions — apart from Corse and the régions ultrapériphériques — also had relatively high shares.

Figure 9.4: People interacting with public authorities over the internet during the 12 months preceding the survey, 2019
(% of people aged 16-74 years, by NUTS 2 regions)



Note: ranked on national average. Regions listed above the figure are those with the highest ratio. Capital regions are indicated by a bold typeface. Germany, Greece, Poland, the United Kingdom and Turkey: NUTS 1 regions. Albania: national data. Ciudad Autónoma de Ceuta (ES63), Corse (FRM0) and Mellersta Norrland (SE32): low reliability. Albania: 2018.

Source: Eurostat (online data codes: [isoc_r_gov_i](#) and [isoc_ciegi_ac](#))



Close to 19 out of 20 (94 %) adults in Hovedstaden (the capital region of Denmark) and Övre Norrland (Sweden) used the internet to interact with public authorities during the 12 months prior to the 2019 survey. At the other end of the range, the share of adults interacting with public authorities over the internet was less than 10 % in three Romanian regions, with the lowest share recorded in Sud – Muntenia (8 %).

ORDERING GOODS AND SERVICES OVER THE INTERNET

E-commerce makes it easier for consumers to compare different retail offers. It has the potential to reconfigure the geography of consumption, for example, extending consumer choice and reducing prices in remote regions of the EU, while removing the burden of travelling considerable distances to shop for specific items. As for internet banking, an individual's choice as to whether or not to use e-commerce may in part be related to trust.

For statistical purposes, e-commerce is defined as buying goods or services through electronic transactions, including the placing of orders for goods or services over the internet (payment and the ultimate delivery of the goods or service may be conducted either online or offline); orders via manually typed e-mails are excluded.

In every region of Denmark, the Netherlands and Sweden, at least three quarters of all adults made use of e-commerce

In 2019, 60 % of the EU-27 population aged 16-74 years reported that they had bought/ordered goods or services over the internet in the 12 months prior to the survey. The propensity to make use of e-commerce — as with many other internet activities — is closely

linked to age. For example, people aged 25-34 years were almost three times as likely to have made use of the internet to buy/order goods or services (79 %) when compared with people aged 65-74 years (28 %).

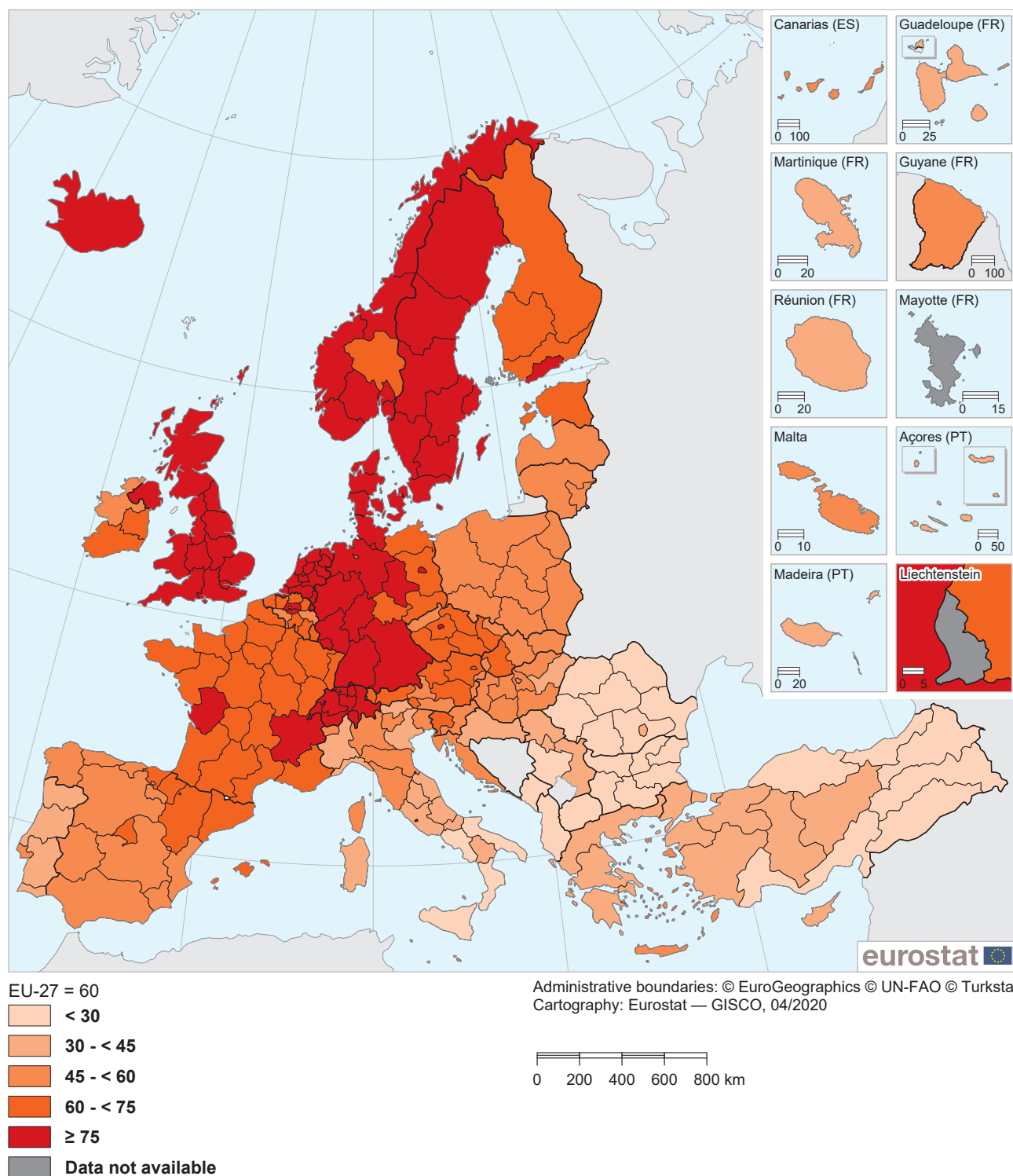
There was a relatively balanced distribution around the EU-27 average when analysing the propensity to make use of e-commerce at a regional level: 99 NUTS level 2 regions recorded shares that were above the EU-27 average, while 97 regions had shares that were below; note again that statistics for Germany, Greece and Poland relate to NUTS level 1 regions.

Map 9.3 shows that some of the highest shares of people buying/ordering goods or services over the internet were concentrated in Denmark, the Netherlands and Sweden. Indeed, each of the 25 regions that cover these three EU Member States reported at least three quarters of all adults making use of e-commerce in 2019. More specifically, the highest proportions of adults buying/ordering goods or services over the internet were in Utrecht (89 %), Övre Norrland (87 %) and Hovedstaden (86 %); note all three of these regions figured in connection with high rates for one or more of the other internet activities analysed earlier in this chapter.

The lowest shares of adults making use of e-commerce were concentrated in Bulgaria, Romania and southern Italy. Indeed, every region of Bulgaria and all but one of the regions in Romania (the exception being the capital region) reported less than 30 % of their adult population buying/ordering goods or services over the internet in 2019 (as shown by the lightest shade in Map 9.3). Among these, there were four regions where fewer than 20 % of all adults made use of e-commerce: Severen tsentralen (which had the lowest share in the EU, at 14 %) and Yuzhen tsentralen in Bulgaria; Nord-Est and Sud-Est in Romania.

Map 9.3: People buying/ordering goods or services over the internet for private use during the 12 months preceding the survey, 2019

(% of people aged 16-74 years, by NUTS 2 regions)



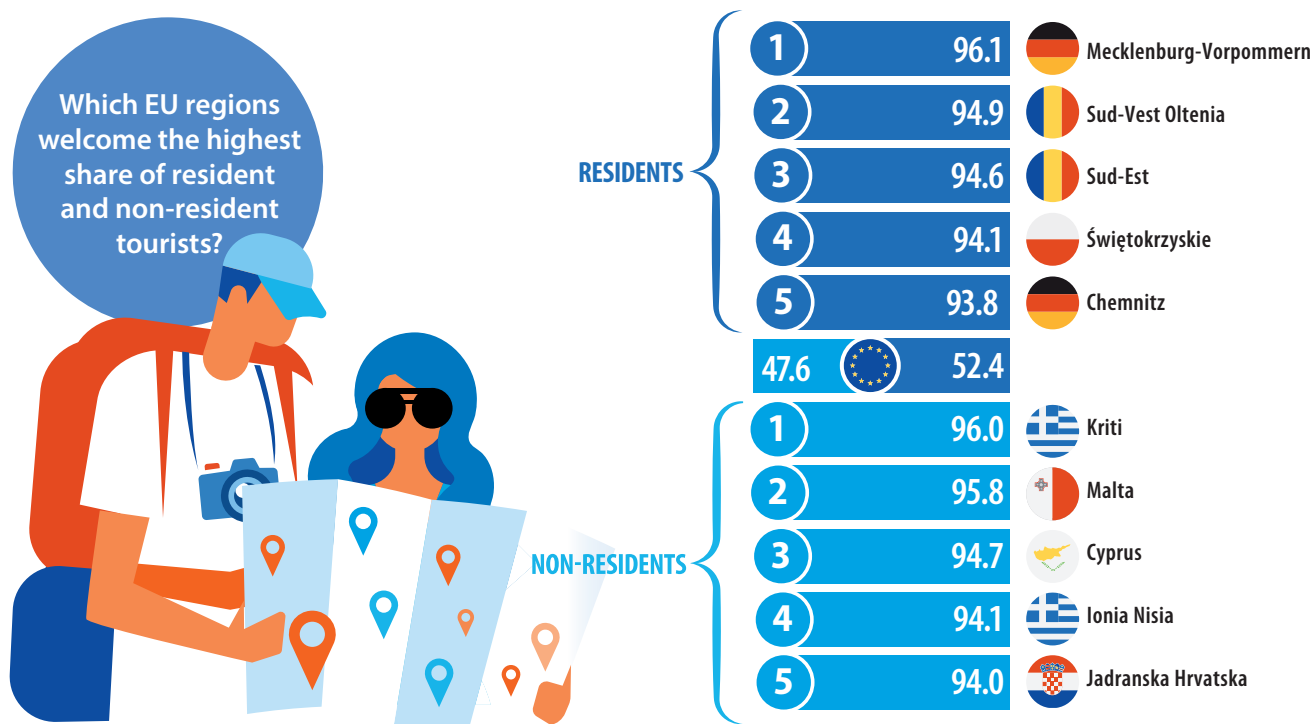
Note: Germany, Greece, Poland, the United Kingdom and Turkey, NUTS 1 regions. Albania: national data. Ciudad Autónoma de Ceuta (ES63), Corse (FRM0) and Mellersta Norrland (SE32): low reliability. Albania: 2018.

Source: Eurostat (online data codes: [isoc_r_blt12_i](#) and [isoc_ec_ibuy](#))

10

Tourism





(%, based on nights spent in tourist accommodation, 2018 data)
Kriti and Ionía Nisia: estimates

Tourism has the potential to play a significant role in the economic aspirations of many European Union (EU) regions and can be of particular importance in remote/peripheral regions, such as the EU's coastal, mountainous or outermost regions. Infrastructure that is created for tourism purposes contributes to local and regional development, while jobs that are created or maintained can help counteract industrial or rural decline. However, (mass) tourism can have negative consequences, as excess demand puts a strain on local infrastructure and may be a nuisance to local communities, while tourists may impact the environment locally through noise, pollution, waste and wastewater, habitat loss and globally through transport-related emissions.

According to the United Nations World Tourism Organisation (UNWTO), the number of global tourist arrivals continued to grow in 2018, maintaining a pattern of positive annual rates since 2009. EU Member States are among the world's leading tourist destinations — France, Spain, Italy and Germany were all present among the top 10 global destinations. The wealth of European cultures, the variety of its landscapes and the quality of its tourist infrastructure are likely to be among the varied reasons why more than one third of the world's international tourists took their holidays in the EU-27.

This chapter presents information on regional patterns of tourism across the EU. Its main focus is the provision

of tourist accommodation services, as measured by the number of nights spent; it concludes with information by degree of urbanisation and data relating to the sustainability of tourism.

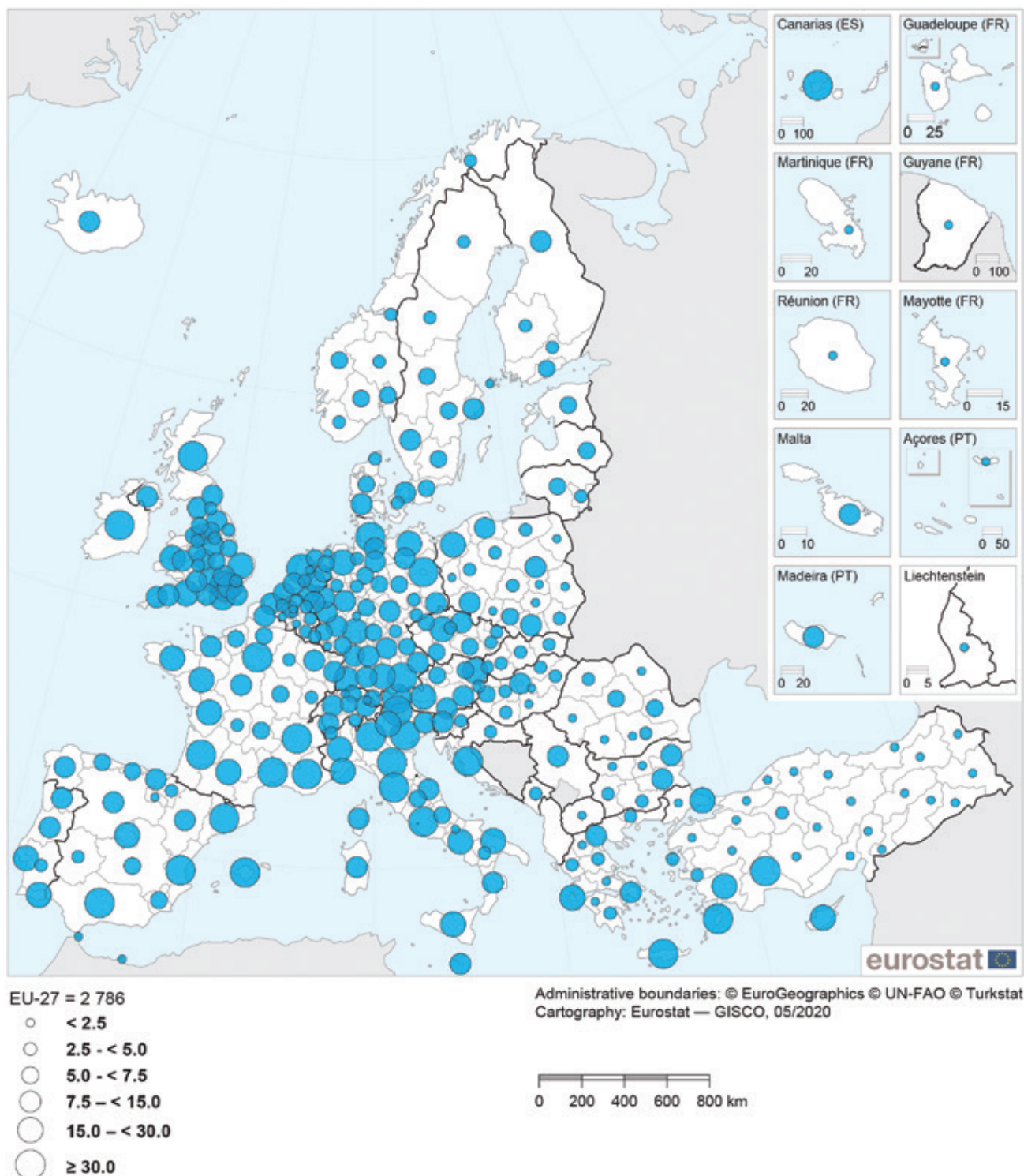
Number of nights spent

Tourism, in a statistical context, refers to the activity of visitors taking a trip to a destination outside their usual environment, for less than a year. It is important to note that this definition is wider than the common everyday definition, insofar as it encompasses not only private leisure trips but also visits to family and friends, as well as business trips.

In 2018, there were 2.8 billion nights spent in tourist accommodation across the EU-27. This figure refers to the total number of nights spent by all tourists and reflects both the length of stay and the number of tourists. It is considered a key indicator for analysing the tourism sector, even if it does not cover stays at non-rented accommodation nor same-day visits.

Map 10.1 shows information on the number of nights spent in tourist accommodation by both residents and non-residents for NUTS level 2 regions. In 2018, there were 25 regions in the EU (out of 238 for which data are available; note that data for Ireland are presented at a national level) where at least 30.0 million nights were spent in tourist accommodation. This list was largely

Map 10.1: Nights spent in tourist accommodation, 2018
(million nights spent, by NUTS 2 regions)



Note: Scotland (UKM), NUTS 1 region. Ireland and Serbia: national data. EU-27 and Ireland: estimates. Île-de-France (FR10), Centre — Val de Loire (FRB0), Franche-Comté (FRC2), Basse-Normandie (FRD1), Nord-Pas de Calais (FRE1), Alsace (FRF1), Lorraine (FRF3), Poitou-Charentes (FRI3), Auvergne (FRK1), Guadeloupe (FRY1), Martinique (FRY2), Guyane (FRY3) and Zürich (CH04): low reliability. Slovenia and Montenegro: 2017. Ireland, the United Kingdom, Iceland, Norway, Switzerland, Serbia and Turkey: 2016.

Source: Eurostat (online data code: [tour_occ_nin2](#))

composed of coastal regions, underlining that the beauty, culture and diversity of the EU's coastal regions has made them a preferred destination for many holidaymakers. A total of 1.3 billion nights were spent in tourist accommodation across these 25 regions. As such, approximately one tenth of the EU regions accounted for a cumulative share of close to 45 % of the total nights spent. This high concentration of tourist numbers in relatively few locations has led to concerns around sustainable development.

The three regions with the highest number of tourist nights in the EU were the island region of Canarias (Spain), Île-de-France (the French capital) and Jadranska Hrvatska (on the Adriatic coast in Croatia)

The list of the EU regions with the highest numbers of tourist nights in 2018 is dominated by coastal regions around the Mediterranean Sea. Nevertheless, the highest number of nights spent in tourist accommodation was recorded in Spain's Atlantic island destination of Canarias (99.9 million). Several other coastal regions featured in the top 10: the Adriatic region of Jadranska Hrvatska (Croatia; 84.8 million), four more Spanish regions — Cataluña (81.8 million), Illes Balears (70.2 million), Andalucía (69.6 million) and Comunidad Valenciana (49.8 million) — Veneto (Italy; 69.2 million) and Provence-Alpes-Côte d'Azur (France; 54.8 million). The top 10 was completed by two non-coastal regions, both of which were located in France: the capital region of Île-de-France (which had the second highest number of nights spent in tourist accommodation at 86.0 million) and Rhône-Alpes (50.9 million).

In 2018, there was an annual increase of 2.6 % in the number of nights spent in EU-27 tourist accommodation

Between 2010 and 2018, the number of nights spent in EU-27 tourist accommodation increased by 28.7 %

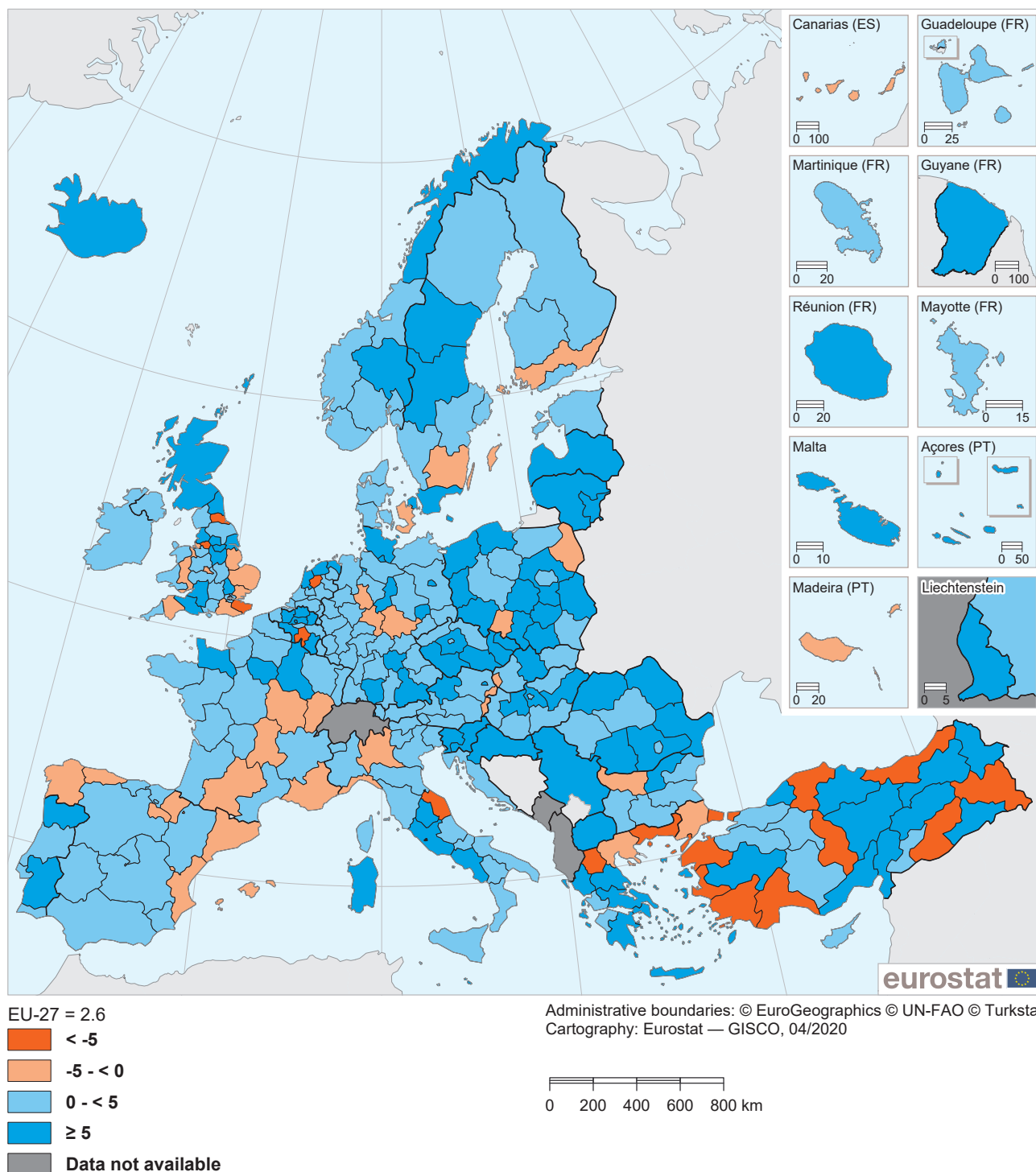
overall. Annual increases ranged between 1.5 % and 5.0 % per year over this period, with the latest annual growth rate — for 2018 — equal to 2.6 %.

Map 10.2 presents regional information for the annual rate of change in the total number of nights spent in tourist accommodation between 2017 and 2018. More than four fifths of NUTS level 2 regions recorded an increase in their number of nights spent during this period (as shown by the blue shades in Map 10.2). This was the case for 199 out of the 238 EU regions for which data are available (note again that data for Ireland are presented at a national level). There were three regions where the change in the number of nights spent was less than 0.1 % (also shown in blue), while the remaining 36 regions recorded a decline (as shown by the orange shades).

Between 2017 and 2018, approximately one third of all EU regions recorded an increase of at least 5.0 % in their total number of nights spent in tourist accommodation. The highest growth rates were recorded in Ipeiros (north-west Greece; 28.5 %), Groningen (the Netherlands; 21.2 %) and Notio Aigaio (a Greek island region in the southern Aegean; 17.1 %). Among these, Notio Aigaio was the only region with high levels of tourism (30.8 million nights spent in 2018), while Ipeiros and Groningen both had less than 3.0 million.

An analysis of the top 10 tourist destinations in the EU reveals a variety of developments between 2017 and 2018. Among these regions, Île-de-France recorded by far the highest growth rate in terms of nights spent (up 7.3 %). By contrast, there was a decline in the total number of nights spent in Provence-Alpes-Côte d'Azur and in four of the top five Spanish destinations (the exception being Andalucía). The largest decline among these regions was recorded in Canarias (-4.3 %), which nevertheless remained the most frequented destination in the EU.

Map 10.2: Annual rate of change for nights spent in tourist accommodation, 2017-2018
(%, by NUTS 2 regions)



Note: Scotland (UKM), NUTS 1 region. Ireland and Serbia: national data. EU-27, Ireland and Greece: estimates. Île-de-France (FR10), Centre — Val de Loire (FRB0), Franche-Comté (FRC2), Basse-Normandie (FRD1), Nord-Pas de Calais (FRE1), Alsace (FRF1), Lorraine (FRF3), Poitou-Charentes (FRJ3), Auvergne (FRK1), Guadeloupe (FRY1), Martinique (FRY2) and Guyane (FRY3): low reliability. Slovenia: 2016-2017. Ireland, the United Kingdom, Iceland, Norway, Serbia and Turkey: 2015-2016.

Source: Eurostat (online data code: [tour_occ_nin2](#))

The three destinations with the highest number of nights spent by resident tourists were French: Île-de-France, Provence-Alpes-Côte d'Azur and Rhône-Alpes

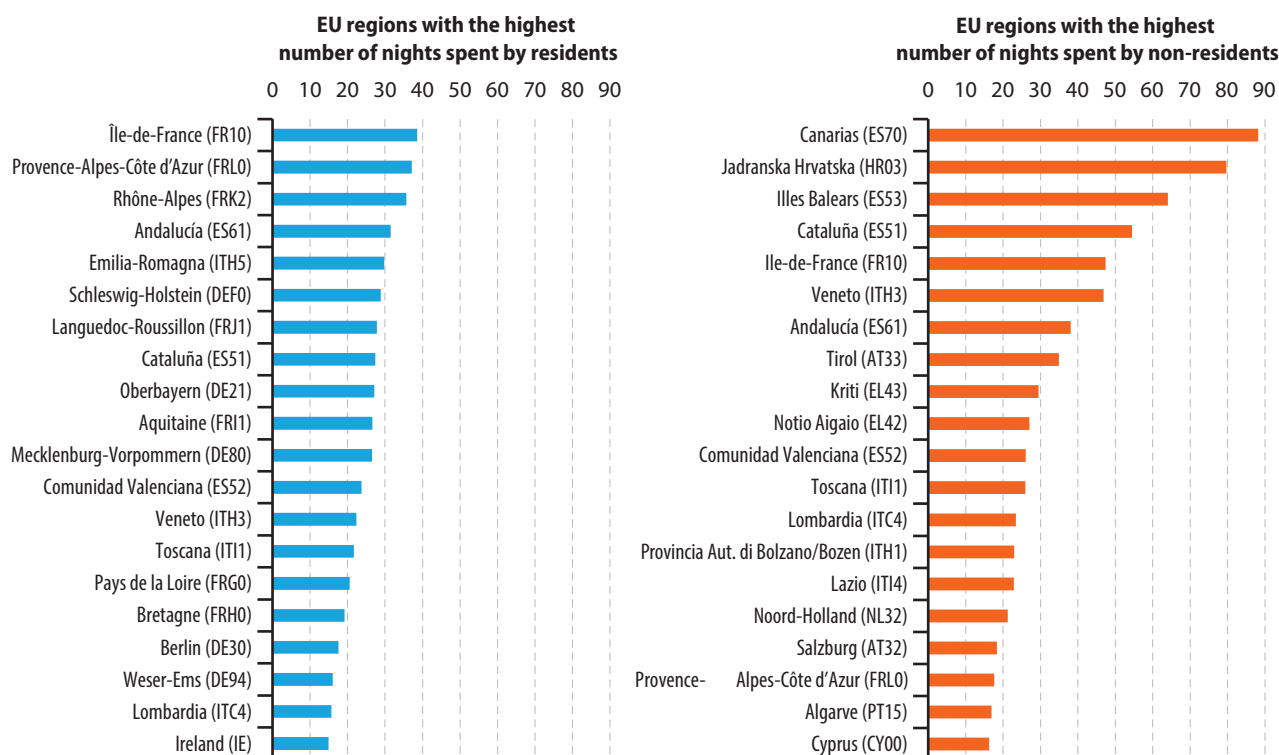
In 2018, domestic tourists (hereafter referred to as resident tourists) accounted for 1.5 billion nights spent in tourist accommodation across the EU-27. This figure was 10 % higher than the 1.3 billion nights spent by international (or non-resident) tourists; note that the latter includes tourists from other EU Member States as well as from non-member countries.

Figure 10.1 presents the most frequented tourist destinations for both resident and non-resident tourists. The ranking for resident tourists is dominated by relatively large EU Member States, as they have a larger number of potential clients. In 2018, the three most frequented regions across the EU for resident tourists were all located in France. There were 38.6 million nights spent by residents in tourist accommodation within Île-de-France, while Provence-Alpes-Côte d'Azur (37.1 million) and Rhône-Alpes (35.7 million) recorded

almost as many nights. Within Spain, Andalucía had the highest number of nights spent by residents (31.5 million), across Italy the most frequented region for resident tourists was Emilia-Romagna (29.8 million), while Schleswig-Holstein had the highest number of nights spent by residents in Germany (28.8 million).

The second half of Figure 10.1 shows that non-resident tourists often flocked to the most frequented holiday destinations in the EU. The large number of nights spent by international tourists in some of these regions may result in considerable pressures on the environment and sustainability, especially as many non-residents arrive by air (particularly for some of the island regions) and tend to travel during high/peak seasons. In 2018, three of the top four most frequented destinations in the EU for non-residents were located in Spain: Canarias (88.2 million nights in tourist accommodation), Illes Balears (64.0 million) and Cataluña (54.4 million). The second most frequented destination for non-residents was Jadranska Hrvatska (79.7 million).

Figure 10.1: Top tourist regions in the EU, 2018
(million nights spent in tourist accommodation, by NUTS 2 regions)



Note: Ireland, national data. Ireland and Greece: estimates. Île-de-France (FR10), Centre — Val de Loire (FRB0), Franche-Comté (FRC2), Basse-Normandie (FRD1), Nord-Pas de Calais (FRE1), Alsace (FRF1), Lorraine (FRF3), Poitou-Charentes (FRJ3), Auvergne (FRK1), Guadeloupe (FRY1), Martinique (FRY2) and Guyane (FRY3): low reliability. Bourgogne (FRC1), Haute-Normandie (FRD2), Picardie (FRE2), Champagne-Ardenne (FRF2), Limousin (FRJ2) and Mayotte (FRY5): not available. Slovenia: 2017. Ireland: 2016.

Source: Eurostat (online data code: [tour_occ_nin2](#))



More than 19 out of 20 nights spent in Kriti and Malta were attributed to non-resident tourists

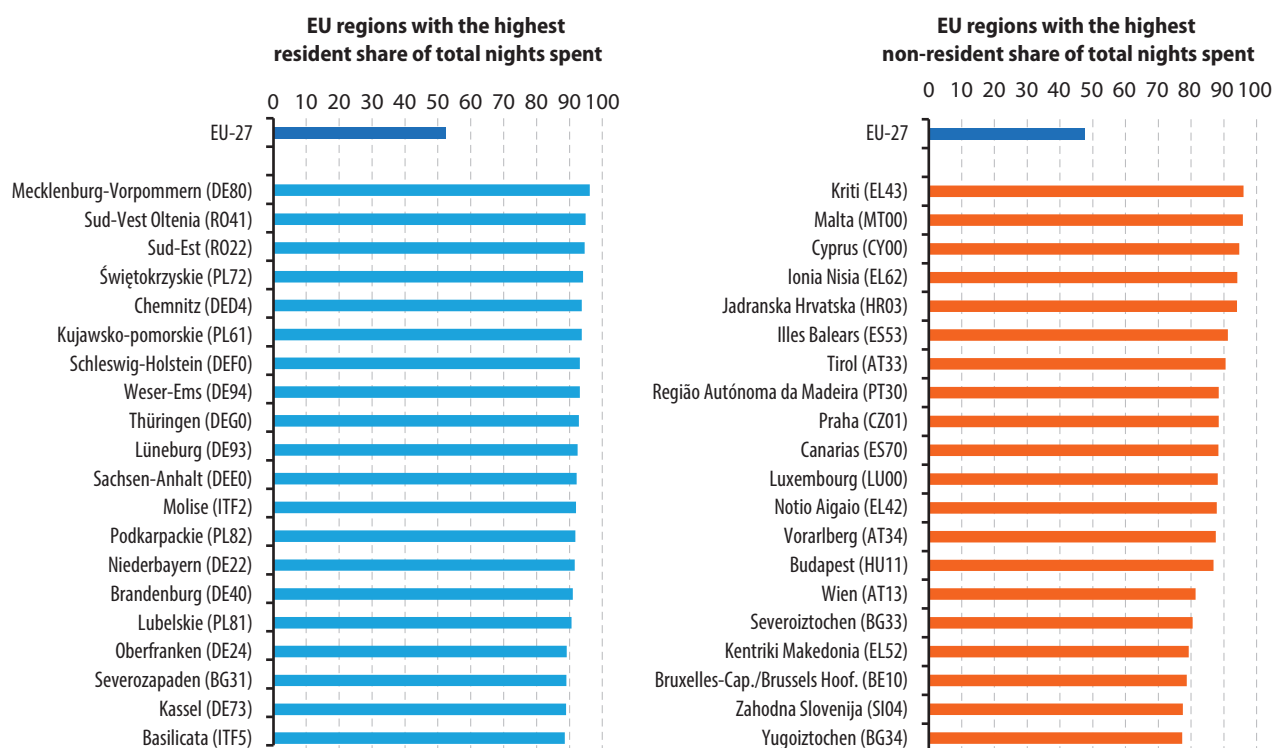
Figure 10.2 extends the analysis of the most frequented destinations by providing information about those regions that were most dependent upon resident and non-resident tourists. In 2018, residents accounted for 52.4 % of the total number of nights spent in EU-27 tourist accommodation.

There were 16 NUTS level 2 regions where at least 90.0 % of nights spent in tourist accommodation in 2018 were attributed to residents. The highest share (96.1 %) was recorded in Mecklenburg-Vorpommern (Germany) on the Baltic Sea, followed by two regions from Romania: Sud-Vest Oltenia (94.9 %) and Sud-Est

(94.6 %). Just over half (11) of the 20 regions with the highest resident shares were located in Germany.

Non-resident tourists accounted for a majority of the nights spent in many of the EU's most frequented tourist destinations. This was most notably the case in the Greek island region of Kriti — where 96.0 % of nights spent in tourist accommodation in 2018 were attributed to non-residents. There were also very high shares for non-residents in Malta (95.8 %) and Cyprus (94.7 %). Aside from coastal and island destinations, non-resident tourists also accounted for a fairly high proportion of the total nights spent in the mountainous western Austrian regions of Tirol and Vorarlberg, as well as several capital regions, for example Praha, Budapest, Wien and Bruxelles/Brussels.

Figure 10.2: Nights spent in tourist accommodation, 2018
(%, share of total nights spent by residents and non-residents, by NUTS 2 regions)



Note: Ireland, national data. Ireland and Greece: estimates. Île-de-France (FR10), Centre — Val de Loire (FRB0), Franche-Comté (FRC2), Basse-Normandie (FRD1), Nord-Pas de Calais (FRE1), Alsace (FRF1), Lorraine (FRF3), Poitou-Charentes (FRI3), Auvergne (FRK1), Guadeloupe (FRY1), Martinique (FRY2) and Guyane (FRY3): low reliability. Bourgogne (FRC1), Haute-Normandie (FRD2), Picardie (FRE2), Champagne-Ardenne (FRF2), Limousin (FRI2) and Mayotte (FRY5): not available. Slovenia: 2017. Ireland: 2016.

Source: Eurostat (online data code: [tour_occ_nin2](#))

Almost three fifths of the nights spent by non-resident tourists in the EU-27 were in coastal areas

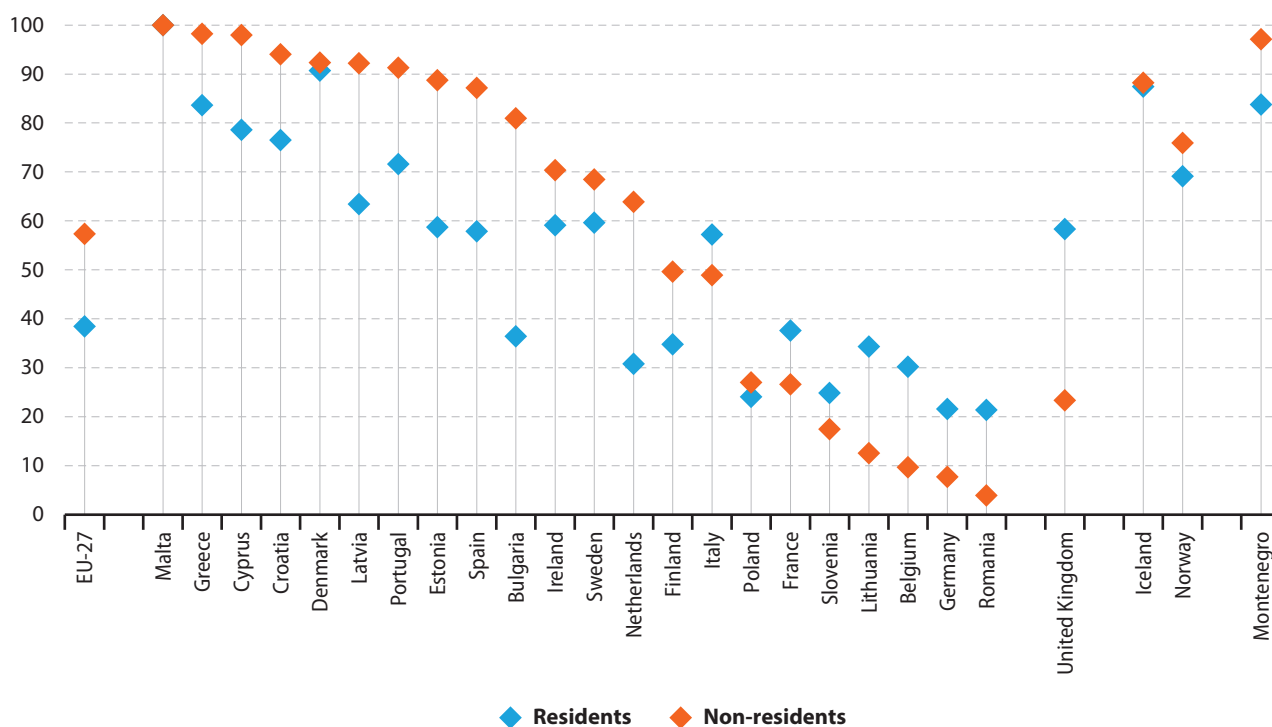
Coastal areas, from a statistical context, consist of **local administrative units (LAUs)** or municipalities that border the sea, or have at least half of their total surface area within 10 km of the sea. Note that five EU Member States — Czechia, Luxembourg, Hungary, Austria and Slovakia — are landlocked.

Figure 10.3 presents information on nights spent in coastal tourist accommodation, with an analysis for residents and non-residents. In 2018, almost three fifths (57.3 %) of the total nights spent by non-residents in EU-27 tourist accommodation were in coastal areas. The proportion of non-resident holidaymakers to visit coastal areas was usually higher in southern and eastern EU Member States characterised by climatic conditions conducive to beach holidays. More than four fifths of the total nights spent by non-residents in Malta, Greece, Cyprus, Croatia, Portugal, Spain and Bulgaria were in coastal areas, although a small majority of nights spent by non-residents in Italy were in non-coastal areas.

In 2018, less than two fifths (38.4 %) of the total nights spent by residents in EU-27 tourist accommodation were in coastal areas — perhaps reflecting a higher proportion of nights linked to business travel or visits to towns and cities. This pattern was most apparent in Romania, Germany, Poland and Slovenia, where less than one quarter of all nights spent by resident tourists were in coastal areas.

Non-resident tourists were generally more likely (than residents) to spend their holidays in coastal areas. For example, in 2018 almost 9 out of every 10 (87.2 %) nights spent by non-residents in Spain were in coastal areas, whereas the corresponding share for residents was less than three fifths (57.8 %). A similar pattern was observed in three other southern EU Member States: Portugal, Cyprus and Greece. It was also repeated in two eastern holiday destinations, Bulgaria and Croatia. The disparity between resident and non-resident tourists was even greater in Bulgaria than it was in Spain, as 80.9 % of the total nights spent by non-residents were in coastal areas, compared with 36.4 % among residents.

Figure 10.3: Nights spent in tourist accommodation in coastal areas, 2018
(%, share of nights spent in tourist accommodation in all regions, by residents and non-residents)



Note: ranked on the share of nights spent in tourist accommodation in coastal areas for non-residents. Czechia, Luxembourg, Hungary, Austria and Slovakia, landlocked countries and therefore not shown. EU-27 and Ireland: estimates. Slovenia: 2017. Ireland, the United Kingdom, Iceland, Norway and Montenegro: 2016.

Source: Eurostat (online data code: tour_occ_ninatc)

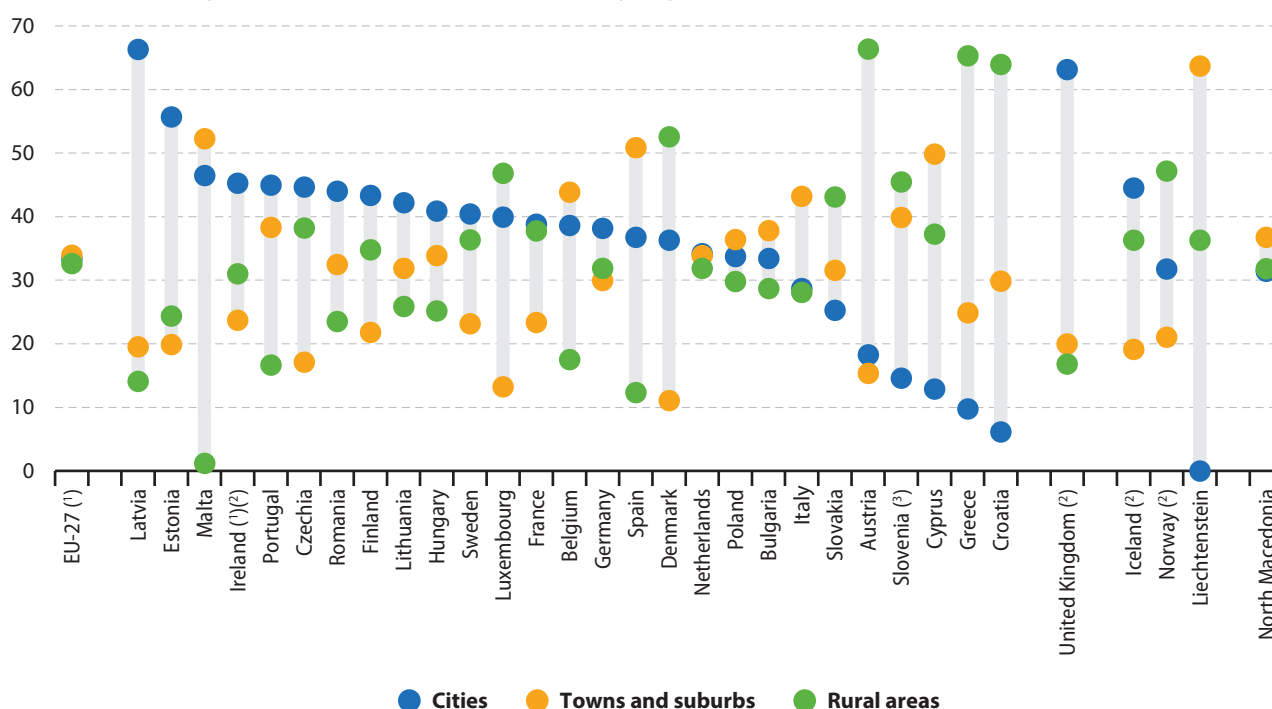
Nights spent in tourist accommodation by degree of urbanisation

Figure 10.4 provides a distribution by **degree of urbanisation** of the number of nights spent in tourist accommodation; the information presented covers both resident and non-resident tourists. This territorial typology categorises 1 km² grid cells according to the spatial distribution of population into one of three classes: **cities**, **towns and suburbs**, and **rural areas**.

In 2018, the total number of nights spent in EU-27 tourist accommodation was evenly distributed: the highest share was recorded for towns and suburbs (34.0 %), while slightly fewer nights were spent in cities (33.4 %) and in rural areas (32.6 %).

Cities were the most frequented destination for tourists in 13 of the 27 EU Member States. In 2018, they accounted for almost two thirds of the total nights spent in Latvia (66.3 %) and for more than half of the nights spent in another Baltic Member State — Estonia (55.7 %). By contrast, more than half of the tourist nights spent in Malta (52.3 %) and Spain (50.9 %) were in towns and suburbs, while an additional five Member States also reported that towns and suburbs were their most frequented destination (although they did not account for an overall majority of tourist nights spent). In a similar vein, more than half of all tourist nights spent in Denmark (52.6 %) were in rural areas, with this share reaching almost two thirds in Croatia (64.0 %), Greece (65.3 %) and Austria (66.4 %) — these nights spent in rural areas in Denmark, Greece and Croatia were in predominantly coastal regions, while those spent in Austria were in predominantly alpine regions.

Figure 10.4: Nights spent in tourist accommodation, 2018
(%, share of total nights spent in tourist accommodation, by degree of urbanisation)



Note: ranked on cities.

⁽¹⁾ Estimates.

⁽²⁾ 2016.

⁽³⁾ 2017.

Source: Eurostat (online data code: [tour_occ_ninatd](#))

Tourism pressures

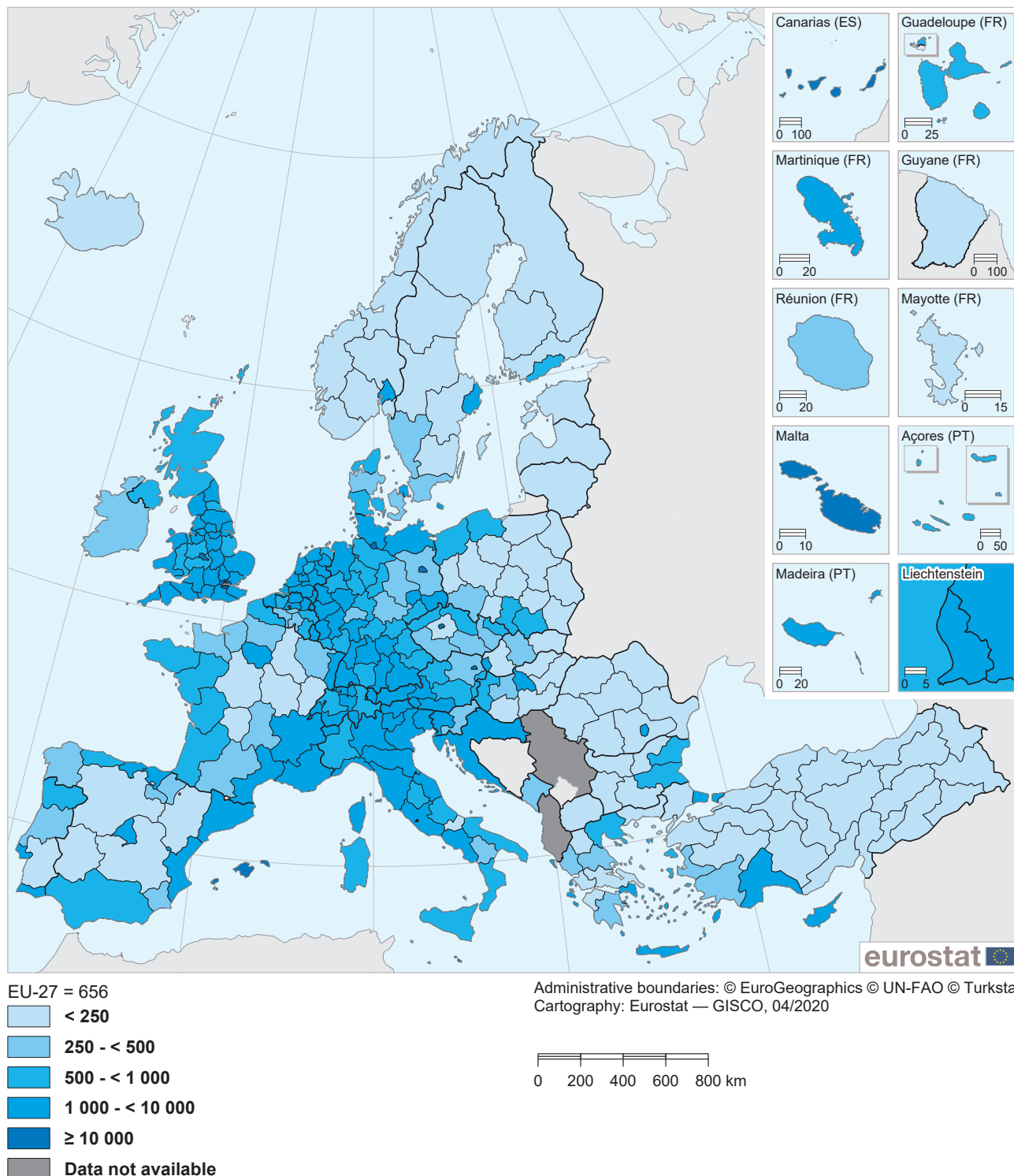
Since the advent of mass tourism in the 1950s and 1960s, EU regions have been affected by tourism in different ways. Some regions continue to receive very few visitors, while others have seen their numbers of tourists grow at a rapid pace. The vast majority of regions receive the bulk of their visitors during a single season, although others have a more steady flow of tourists year-round (note that from 2021 onwards, Eurostat will publish regional accommodation statistics broken down by month). Sustainable tourism involves the preservation and enhancement of cultural and natural heritage, including the arts, gastronomy or the preservation of biodiversity. The success of tourism is, in the long-term, closely linked to its sustainability, with the quality of destinations often influenced by their natural and cultural environment.

Tourism density — defined here as the relationship between the total number of nights spent and the total area of each region — provides one measure that may be used to analyse sustainability issues. In 2018, there were, on average, some 656 nights spent in tourist accommodation for every square kilometre (km²) across the EU-27 territory. Tourism density was generally high in regions where space was at a premium: capital

regions, other major metropolitan regions, and some coastal (particularly island) regions. By contrast, tourism density was relatively low in many eastern and northern regions of the EU, as well as most interior regions of France and Spain.

There were nine NUTS level 2 regions in the EU where tourism density in 2018 stood at more than 10 000 nights per km² (as shown by the darkest shade in Map 10.3). The highest ratios were recorded in capital regions: Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (43 435), Wien (38 178), Praha (36 793) and Berlin (36 636). Regional tourism density was also high in three island destinations that attract tourists year-round: Malta (32 068), Illes Balears (14 066) and Canarias (13 415). There were two other regions that recorded ratios of more than 10 000 nights spent per km²: Hamburg in Germany (19 183) and Ciudad Autónoma de Melilla in Spain (11 597). Note these density ratios are influenced by the administrative boundaries that delineate each region. For example, the four capital regions mentioned above each cover an area of less than 1 000 km². By contrast, the French capital region of Île-de-France — which is the second most frequented tourist destination in the EU — has an area of 12 000 km²; a high proportion of its visitors stay within the city boundaries of Paris (103 km²).

Map 10.3: Nights spent in tourist accommodation relative to total area, 2018
(nights spent in tourist accommodation per km², by NUTS 2 regions)



Note: Közép-Magyarország (HU1), Makroregion Województwo Mazowieckie (PL9) and Scotland (UKM), NUTS 1 regions. Ireland, Croatia and Lithuania: national data. EU-27 and Ireland: estimates. Île-de-France (FR10), Centre — Val de Loire (FRB0), Franche-Comté (FRC2), Basse-Normandie (FRD1), Nord-Pas de Calais (FRE1), Alsace (FRF1), Lorraine (FRF3), Poitou-Charentes (FRI3), Auvergne (FRK1), Guadeloupe (FRY1), Martinique (FRY2), Guyane (FRY3) and Zürich (CH04): low reliability. Slovenia and Montenegro: 2017. Ireland, France, Łódzkie (PL71), Świętokrzyskie (PL72), Lubelskie (PL81), Podkarpackie (PL82), Podlaskie (PL84), Makroregion Województwo Mazowieckie (PL9), the United Kingdom, Iceland, Norway, Switzerland and Turkey: 2016.

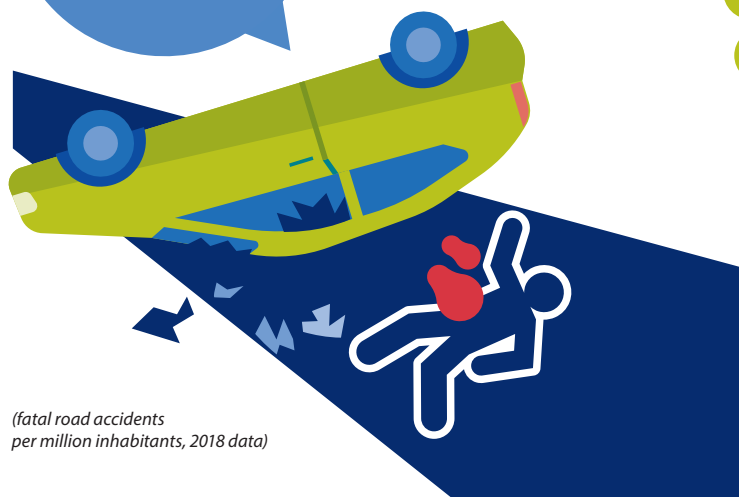
Source: Eurostat (online data code: [tour_occ_nin2](#))

11

Transport



Which EU regions have the highest ratio of people killed in road accidents?



Transport and mobility play a fundamental role in the [European Union \(EU\)](#), linking regions together. EU transport policy promotes environmentally friendly, safe and efficient travel, while underpinning the rights of citizens, goods and services to circulate freely within the [single market](#). To do so, transport policy addresses a broad range of issues, including: climate change, safety, passenger rights and customs-related procedures.

This chapter focuses on regional statistics for road transport and transport infrastructure. The first part presents information concerning: the [motorway](#) network, the number of [passenger cars](#) relative to the total number of inhabitants (otherwise referred to as the motorisation rate), as well as the number of road accidents resulting in injuries or [fatalities](#). The second half provides statistics on the EU's transport infrastructure: the density of [rail networks](#), principal maritime [ports](#) and principal [airports](#) (note that a wider selection of information for air transport services was presented in a [previous edition](#)).

Road transport

Road transport plays an essential role in passenger and freight transport markets. Roads are by far the most common transport mode in the EU for passenger and inland freight transport. Road freight transport is an important component of modern economic systems, providing services that connect producers, traders and consumers. In a similar vein, road passenger

transport is also key, with many individuals and families — especially those living in suburban or more rural regions — dependent to a greater or lesser degree on the use of a car.

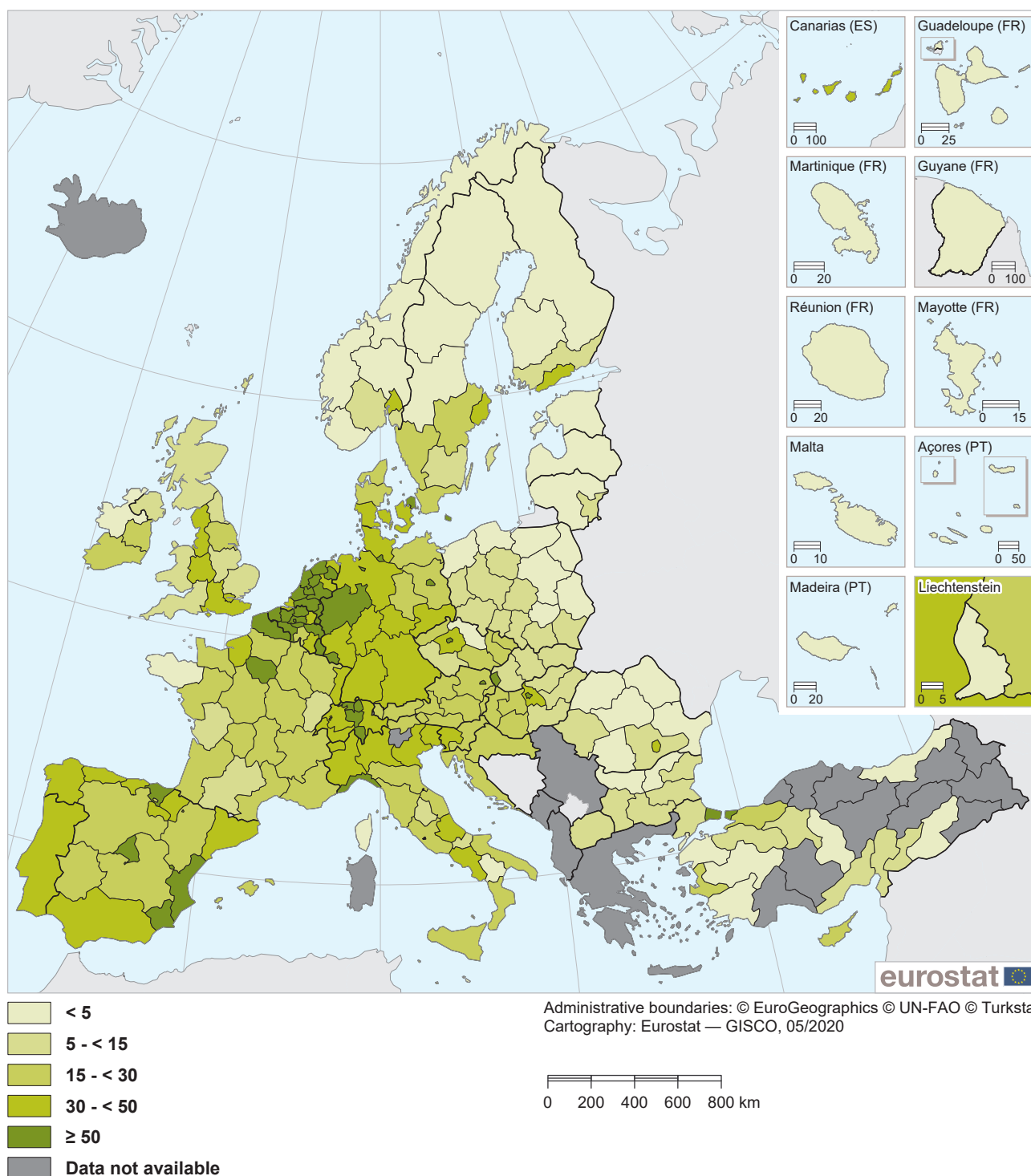
Policy objectives for road transport include, among other issues: ensuring mobility on an ever more congested road network; reducing road fatalities; lowering air pollution (emissions of carbon dioxide and other pollutants) and the carbon footprint to which road transport contributes; decreasing the reliance on fossil fuel use and promoting the use of electric vehicles; reviewing the working conditions of professional drivers.

ROAD INFRASTRUCTURE

Most road networks in the EU were developed from a national perspective. However, the motorway network provides international traffic arteries that facilitate the flow of passengers and freight between EU Member States. The [EU-27](#) motorway network totalled 71 423 km in 2018 (excluding Greece, for which no data are available).

Map 11.1 shows the density of the motorway network across [NUTS](#) level 2 regions, expressed in terms of kilometres (km) of motorway per 1 000 km² of land area. There were 35 NUTS level 2 regions where the density of the motorway network was at least 50 km/1 000 km² (as shown by the darkest shade). By contrast, there were 23 regions with no motorways; many of these were

Map 11.1: Motorway density, 2018
(km per 1 000 km², by NUTS 2 regions)



Note: Germany, Makroregion Województwo Mazowieckie (PL9), Continente (PT1) and the United Kingdom, NUTS 1 regions.
Estonia: provisional. Norway: 2017.

Source: Eurostat (online data codes: [tran_r_net](#), [road_if_motorwa](#) and [reg_area3](#))

peripheral and/or island regions. Note that the statistics presented for Germany, Makroregion Województwo Mazowieckie (Poland) and Continente (Portugal) relate to NUTS level 1 regions.

The density of the motorway network is closely linked to [population density](#), although Malta (the most densely populated EU Member State) is a clear exception. Some of the densest networks are concentrated in an area covering the [Benelux](#) Member States and western regions of Germany. There were also relatively high ratios of motorway density in several capital regions, metropolitan regions, industrial conurbations and regions containing major sea ports.

In 2018, regional motorway density peaked in Bremen (Germany; 205 km/1 000 km²), a relatively small region which is a manufacturing centre that lies at the crossroads of several major transport arteries; it also includes the port of Bremerhaven. The next highest rates were recorded for two regions in the Netherlands: Zuid-Holland (127 km/1 000 km²) which includes the EU's largest port (Rotterdam) and Utrecht (125 km/1 000 km²) which is at the centre of the Netherlands, where a number of motorways intersect.

Some of the densest motorway networks in the EU are found in capital regions: those of Hungary, Austria, the Netherlands, Spain, Czechia, Germany, Denmark, Belgium, Luxembourg, Slovakia and France all reported ratios above 50 km/1 000 km². Many of these regions are relatively small in size, reflecting administrative boundaries, and their high ratios often reflect the close proximity of a motorway ring and its branches around city centres. For example, the network in Budapest (Hungary) was 61 km in length, which was one tenth of the length recorded for Île de France (613 km), even though the density of the motorway network in Budapest (120 km/1 000 km²) was 2.4 times as high as that for Île de France (51 km/1 000 km²).

MOTORISATION RATE

In 2018, there were 237 million passenger cars circulating on the roads of the EU-27. Germany (46.5 million) had the largest stock of vehicles, followed by Italy (39.0 million) and France (32.9 million). The EU-27 motorisation rate — or the average number of passenger cars per inhabitant — stood at 503 per 1 000 inhabitants (2015 data); in other words, around one car for every two persons.

The use of passenger cars may be expected to be relatively low in regions characterised by efficient and extensive public transport systems that have frequent services. In these regions, people may be less inclined to own a vehicle (or multiple vehicles within one

household), especially when the regions where they live/work suffer from congestion and/or difficulties to find a place to park. This pattern was particularly apparent in capital and metropolitan regions of western and [Nordic](#) Member States, in contrast to eastern and southern parts of the EU where the highest motorisation rates were often recorded in capital regions.

Berlin (Germany) had one of the lowest motorisation rates in the EU, at 330 passenger cars per 1 000 inhabitants in 2018. Car ownership in Berlin was considerably lower than in any other part of Germany, with the next lowest motorisation rates being recorded in Hamburg and Bremen (both 425 passenger cars per 1 000 inhabitants). Relatively low motorisation rates — less than 450 passenger cars per 1 000 inhabitants — were also reported in a number of other capital regions, those of: Austria, Hungary, Sweden, Denmark, Belgium, France, Ireland and the Netherlands.

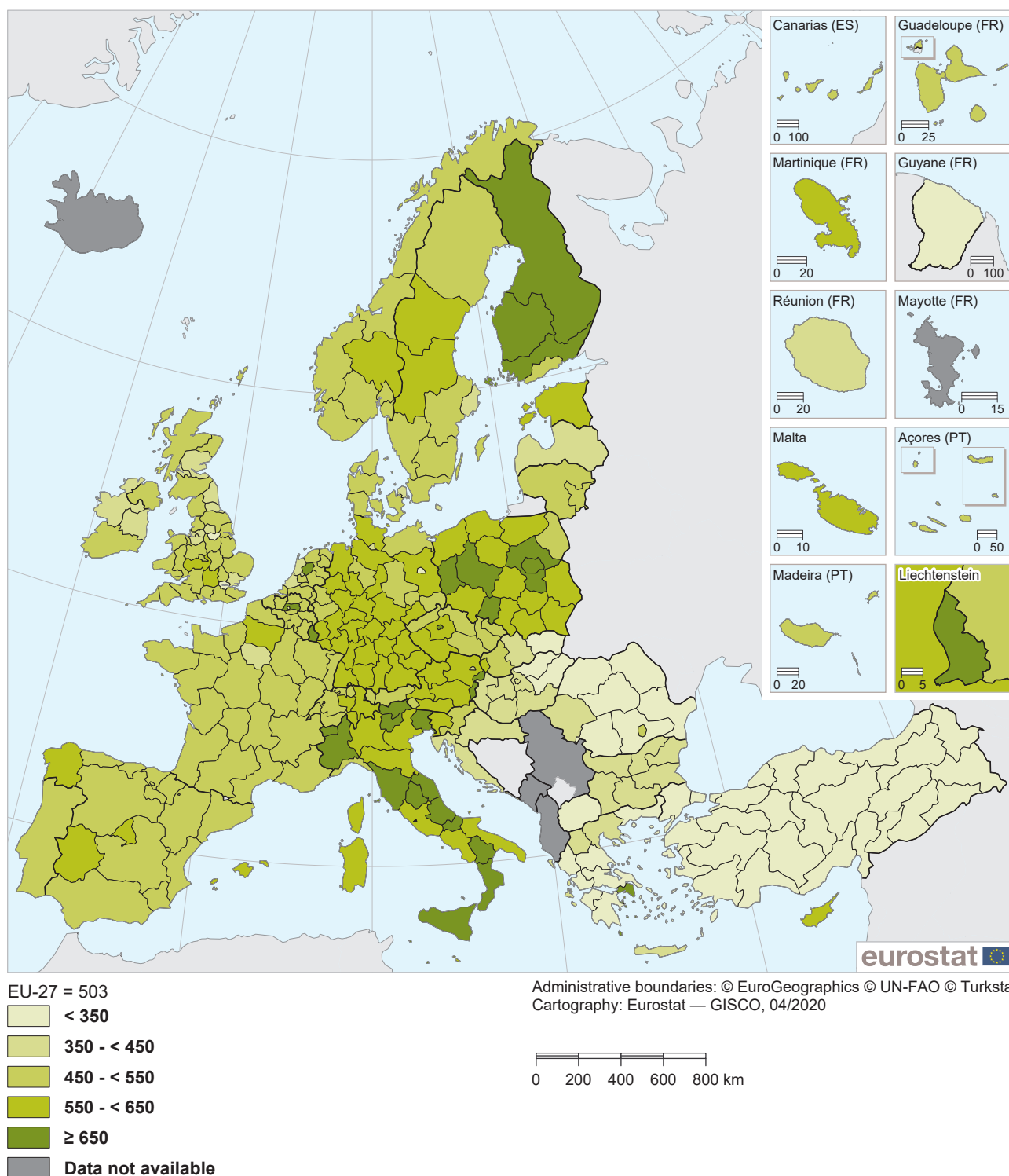
Higher motorisation rates are also often found in suburban, rural and peripheral regions, especially when these lack alternative modes of inland passenger transport. The highest motorisation rates in the EU — at least 650 passenger cars per 1 000 inhabitants in 2018 — are shown by the darkest shade in Map 11.2. These regions were principally located in Italy (13 regions), Poland (five regions) and Finland (four regions). There were six other regions with rates above this threshold. Three of these were within commuting distance of their capital regions: Flevoland (the Netherlands), Prov. Vlaams-Brabant (Belgium) and Burgenland (Austria). The others were the capital regions of Attiki (Greece), Praha (Czechia) and Luxembourg.

The motorisation rate in Valle d'Aosta/Vallee d'Aoste (Italy) was 8.3 times as high as that recorded in Peloponnisos (Greece)

The highest motorisation rates were recorded in northern Italy: Valle d'Aosta/Vallée d'Aoste (1 488 passenger cars per 1 000 inhabitants), Provincia Autonoma di Trento (1 156) and Provincia Autonoma di Bolzano/Bozen (925). Note that these statistics may reflect specific circumstances: for example, the high rate in Valle d'Aosta/Vallee d'Aoste is, at least in part, attributed to lower taxation on new vehicle registrations. At the other end of the range, the lowest motorisation rate was recorded in Peloponnisos (southern mainland Greece), at 179 passenger cars per 1 000 inhabitants. There were 18 other regions with motorisation rates that were below 350 passenger cars per 1 000 inhabitants (as shown by the lightest shade in Map 11.2); a majority of these were regions from Greece and Romania.

Map 11.2: Motorisation rate, 2018

(number of passenger cars per 1 000 inhabitants, by NUTS 2 regions)



Note: London (UKI), NUTS 1 region. Portugal: national data. North Macedonia: 2017. EU-27: 2015.

Source: Eurostat (online data codes: [tran_r_vehst](#), [road_eqs_carage](#) and [demo_pjan](#))

ROAD ACCIDENTS

Road safety in the EU has **improved** in recent decades and EU roads are among the safest in the world. That said, road safety remains a major societal issue: in 2018, there were 23 418 **road fatalities** and no fewer than 1.23 million injuries on the EU-27's roads (the latter figure includes 2017 data for Ireland). In recent years, there has been some evidence of a slowdown in the rate at which the number of EU road fatalities has been falling. To address this issue, the EU has adopted a new approach, **Vision Zero**, which aims to reduce the number of deaths on the EU's roads to almost zero by 2050. Vision Zero provides a strategic plan and monitoring of key safety performance indicators, for example on vehicle safety, seat belt wearing rates, speed compliance or post-crash care. The strategy has set the initial goal of cutting in half the number of fatalities and serious injuries by 2030.

In 2018, there were 52 road fatalities per million inhabitants across the EU-27. Map 11.3 confirms that some of the highest incidence rates for road fatalities were recorded in rural regions. By contrast, urban regions tended to report a much lower incidence of road fatalities. This may be linked to reduced average speeds: for example, lower speed limits in built-up areas or motorway networks in and around major conurbations being frequently congested.

Looking in more detail, there were 15 NUTS level 2 regions where the number of road fatalities was at least 100 deaths per million inhabitants in 2018 (as shown by the darkest shade). These regions were often clustered together: for example, in eastern Bulgaria, southern Belgium, central Poland, southern Portugal or southern and western Romania. The highest incidence rates for road fatalities in 2018 were recorded in Notio Aigaio (Greece; 161 road fatalities per million inhabitants), Alentejo (Portugal; 142), Mazowiecki regionalny (Poland; 127) and Prov. Luxembourg (Belgium; 123). These statistics should be interpreted with care as the data presented may involve vehicles which are in transit through a region or non-residents staying in a region on holiday, for business or other reason. As such, and other things being equal, regions that have transit

corridors or regions with high numbers of visitors may well experience a higher incidence of injuries and fatalities.

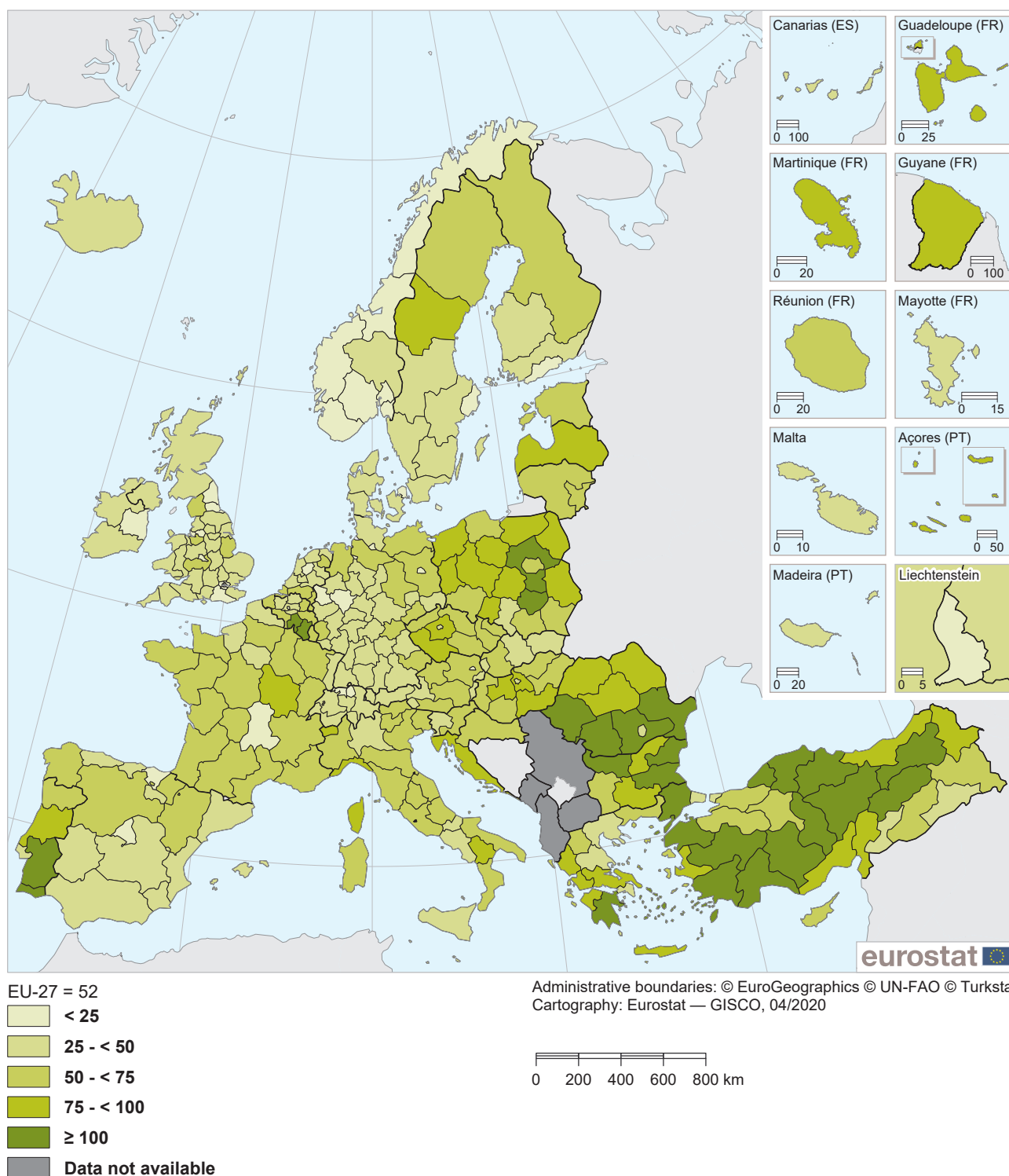
There were 16 regions across the EU where the incidence of road fatalities was less than 25 deaths per million inhabitants in 2018 (as shown by the lightest shade in Map 11.3). The lowest incidence rate was recorded in Finnish autonomous archipelago of Åland, where there were no road fatalities in 2018. However, most regions with relatively low fatality rates were predominantly urban areas. Bremen (Germany) had the second lowest incidence of road fatalities (9 deaths per million inhabitants), while the next lowest ratios were recorded in the capital regions of Austria, Germany, Sweden and Denmark. Wien, Berlin, Stockholm and Hovedstaden each reported an incidence rate for fatal road accidents of 10-14 deaths per million inhabitants.

Lombardia (Italy) had the highest overall number of fatal road accidents (483 deaths) and road injuries (44 625)

In absolute terms (see Figure 11.1), the highest numbers of road fatalities were unsurprisingly recorded in some of the most populated regions of the EU. The northern Italian region of Lombardia had the biggest count of deaths in 2018 (483), followed by Rhône-Alpes (France; 361), Lazio (the capital region of Italy; 338) and Cataluña (Spain; 326).

Figure 11.1 also extends the analysis of victims of road accidents to include road injuries. These injuries are diverse in nature and outcome: some victims will fully recover within a relatively short period of time, whereas others may remain permanently disabled. Alongside the highest number of road fatalities, Lombardia also recorded the highest number of road injuries in 2018 (44 625), followed by Cataluña (35 426). In relative terms, there were several regions across Austria and Germany that recorded relatively high incidence rates for road injuries. The Austrian regions of Tirol, Vorarlberg, Salzburg and Oberösterreich each reported in excess of 6 000 road injuries per million inhabitants in 2018; this was also the case in Ciudad Autónoma de Ceuta (Spain), Liguria (Italy) and Bremen.

Map 11.3: Fatal road accidents 2018
(per million inhabitants, by NUTS 2 regions)



Note: Scotland (UKM), NUTS 1 region. Ireland and Finland: provisional. Guadeloupe (FRY1), Martinique (FRY2), Guyane (FRY3), La Réunion (FRY4), Mayotte (FRY5) and Iceland: 2017.

Source: Eurostat (online data codes: [tran_r_acci](#), [tran_sf_roadse](#) and [demo_pjan](#))

Figure 11.1: Victims of road accidents, 2018
(injuries and fatal accidents, by NUTS 2 regions)



Note: EU-27, including 2017 data for Ireland for road injuries. Ireland and Finland: provisional. Guadeloupe (FRY1), Martinique (FRY2), Guyane (FRY3), La Réunion (FRY4) and Mayotte (FRY5): 2017. Ireland: road injuries, 2017.

Source: Eurostat (online data codes: [tran_r_acci](#), [tran_sf_roadse](#) and [demo_pjan](#))

Rail transport

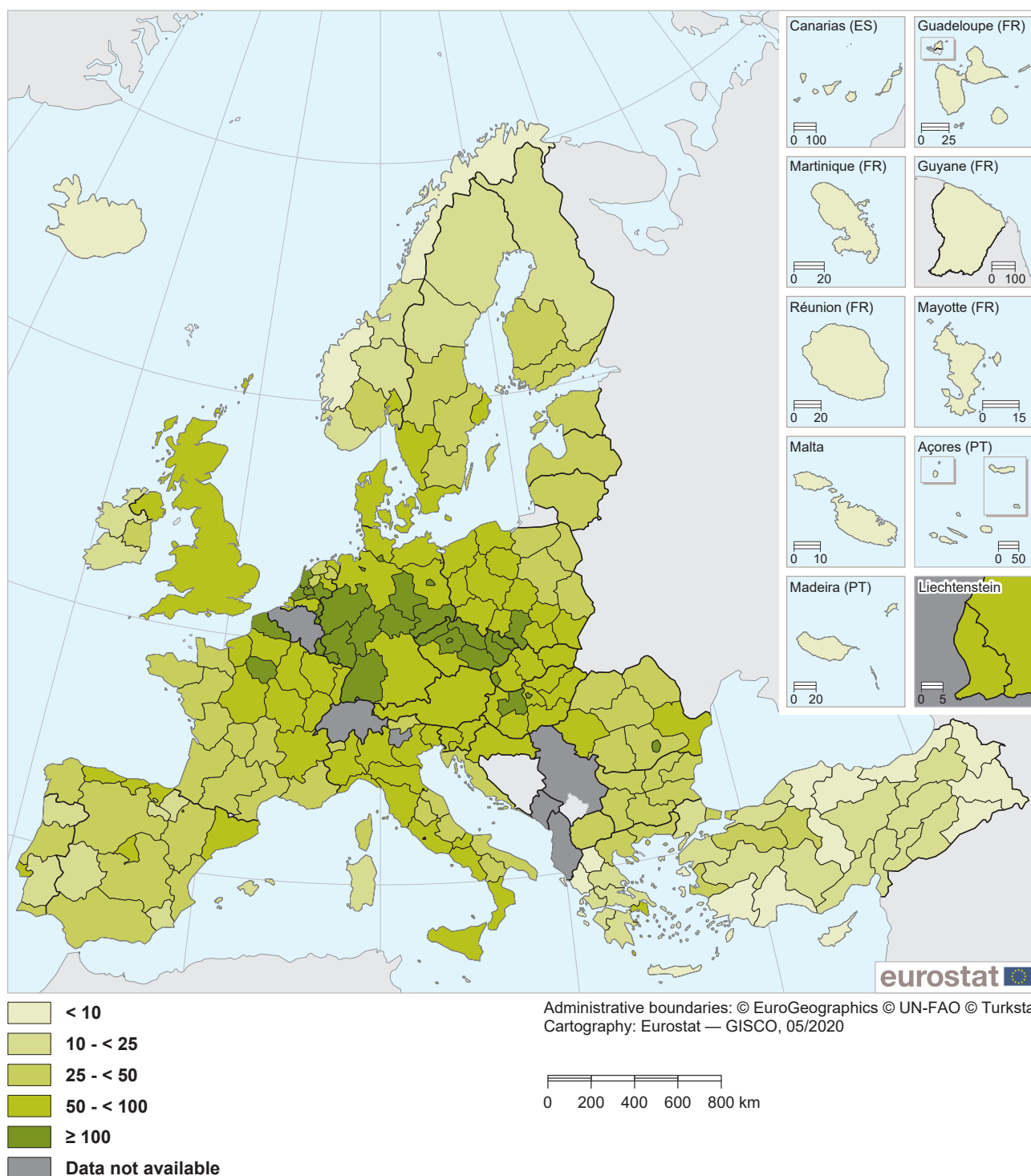
The regional distribution of [railway](#) infrastructure is shaped by specific historical developments, economic developments and the geographical characteristics of regions. For example, several eastern EU Member States have longer rail networks than their western neighbours, reflecting a legacy from the communist era, when there was often a greater reliance on rail (compared with road) for transporting both passengers and goods.

Map 11.4 presents information on railway density — as measured by the length of [railway lines](#) per 1 000 km² of territory. Note that the statistics presented for Germany and Makroregion Województwo Mazowieckie

(Poland) relate to NUTS level 1 regions. In general, the lowest levels of railway density were recorded in peripheral regions of the EU, whereas the highest ratios tended to be in the centre of the EU (where there are more opportunities for establishing a network of connections to surrounding regions). Railway density peaked in a band of regions that ran from northern France, through the Benelux Member States and Germany into eastern regions of the EU. Many of these regions are characterised by high levels of population density and recent investment in the expansion of high-speed rail networks.

Looking in more detail, the densest rail networks in the EU were recorded in the capital regions of Berlin (Germany; 736 km/1 000 km²) and Praha (Czechia; 505 km/1 000 km²). Other capital regions that had

Map 11.4: Railway density, 2018
(km of railway lines per 1 000 km², by NUTS 2 regions)



Note: Germany and Makroregion Województwo Mazowieckie (PL9), NUTS 1 regions. Denmark, Lithuania, Austria and the United Kingdom: national data.

Source: Eurostat (online data codes: [tran_r_net](#), [rail_if_tracks](#) and [reg_area3](#))

relatively high ratios of railway density included Budapest (Hungary; 379 km/1 000km²), Bucureşti-Ifov (Romania; 159 km/1 000 km²) and Île-de-France (France; 153 km/1 000 km²). These high ratios in capital regions may reflect, among other factors, the relatively small area covered by most capital regions, as well as the presence of (several) mainline terminals/stations from which railway lines tend to radiate outwards. Other than capital regions, railway density was also relatively high — at least 150 km/1 000 km² — in several largely urban and densely populated regions, for example: Hamburg, Bremen and Nordrhein-Westfalen in Germany, Zuid-Holland in the Netherlands, Severozápad in Czechia, or Śląskie in Poland.

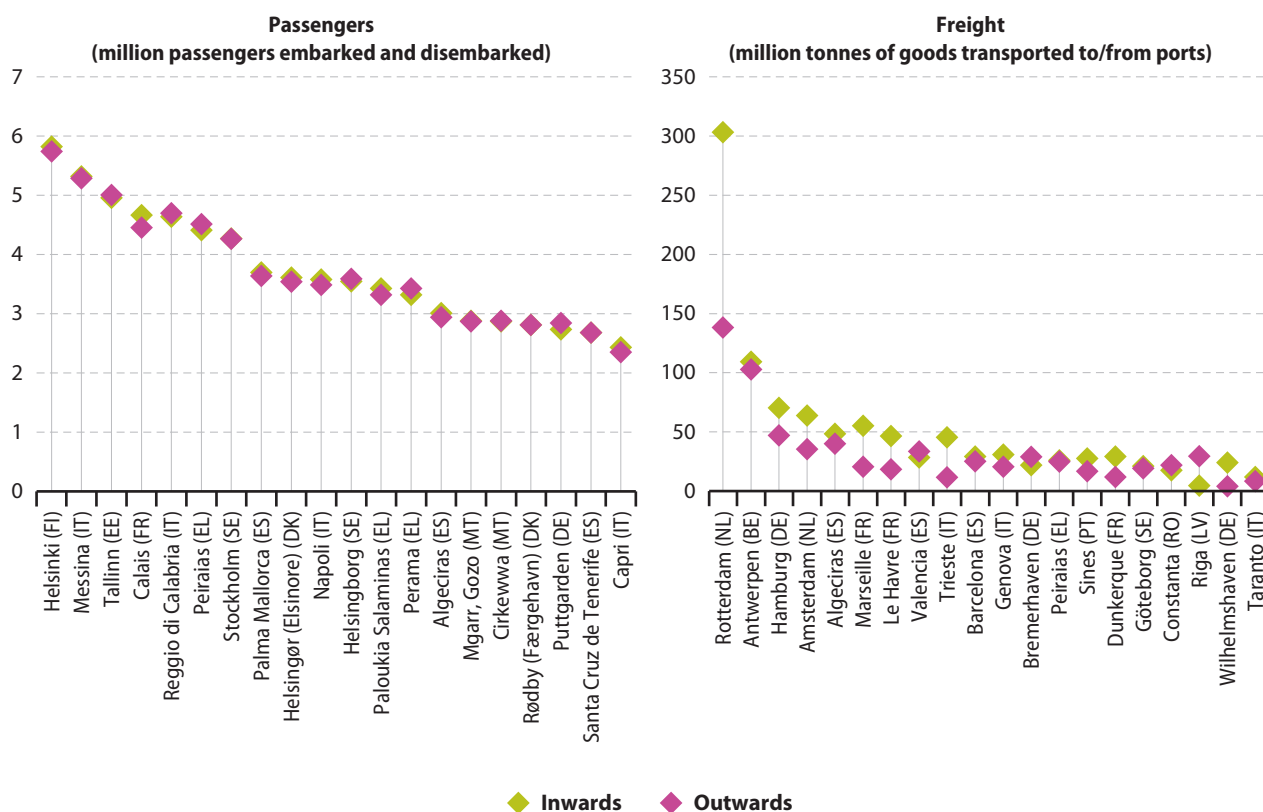
At the other end of the range, there was no railway in 18 regions of the EU. These were predominantly island and/or peripheral regions located in Greece, Spain, France, Cyprus, Malta, Portugal and Finland. They are shown by the lightest shade in Map 11.4 — alongside the Greek region of Dytiki Makedonia, which had the lowest railway density (among those regions with a railway), at 9 km/1 000 km².

Maritime transport

Rotterdam (the Netherlands) was the leading maritime port in the EU for freight, while Helsinki (Finland) was the leading maritime port for passengers

The total tonnage of goods transported by sea to/from EU-27 ports was 3.58 billion tonnes in 2018. Rotterdam (the Netherlands; 441 million tonnes) handled far more goods than any other maritime port in the EU (see Figure 11.2). It accounted for 12 % of all goods transported by sea in the EU-27, and more than twice as many goods as passed through Antwerpen (Belgium; 212 million tonnes). Two other maritime ports on the North Sea coast — Hamburg (118 million tonnes) and Amsterdam (100 million tonnes) — reported at least 100 million tonnes of goods transported by sea in 2018. The next largest ports in the EU — with between 60 and 90 million tonnes of goods handled — were Algeciras, Valencia (both Spain), Marseille and Le Havre (both France).

Figure 11.2: Top maritime ports in the EU for passengers and for freight, 2018



Source: Eurostat (online data codes: [mar_mp_aa_pphd](#) and [mar_mg_aa_pwhd](#))



The number of maritime passengers passing through EU-27 ports stood at 410 million in 2018. Contrary to the EU's maritime freight transport (that is largely based on moving bulky goods over long distances), most passenger journeys by sea are relatively short in distance and remain within the EU. The top 20 passenger ports in the EU-27 accounted for 36.4 % of the total number of maritime passengers embarking and disembarking in 2018. Helsinki (Finland) had the highest number of maritime passengers (11.6 million) despite a modest fall in passenger numbers during 2018. There were two other ports in the EU through which at least 10.0 million passengers passed: Messina (Italy; 10.6 million) and Tallinn (Estonia; 10.0 million). The next largest ports — in terms of maritime passengers — were Calais (France), Reggio di Calabria (Italy), Peiraias (Greece) and Stockholm (Sweden), each with between 8.5 and 9.1 million. Algeciras and Peiraias were the only ports to appear in the list of leading passenger ports and the list of leading freight ports, suggesting that most ports were specialised in one or other of these types of maritime transport.

Air transport

The rapid growth of air passenger transport has been one of the most significant developments in transport services in recent years, both in the EU and the rest of the world. These rapid changes have, at least in part, been driven by liberalisation measures covering, for example, air carrier licensing, market access and fares. These measures have led (in particular) to the growth of low-cost airlines and an expansion of smaller regional airports which are generally less congested and charge lower landing fees than main international airports.

The busiest passenger airport in the EU was Charles De Gaulle (Paris), while the busiest freight airport was Frankfurt

Figure 11.3 presents information relating to the top 20 passenger airports in the EU, as measured by the total number of passengers carried (arrivals plus departures). In 2018, there were 996 million air passengers carried in the EU, with the top 20 airports accounting for close to three quarters (72 %) of these. Charles De Gaulle (Paris, France) was the busiest passenger airport in the EU with a total of 69.4 million passengers carried. There were three other airports with more than 50 million passengers carried in the same year: Schiphol

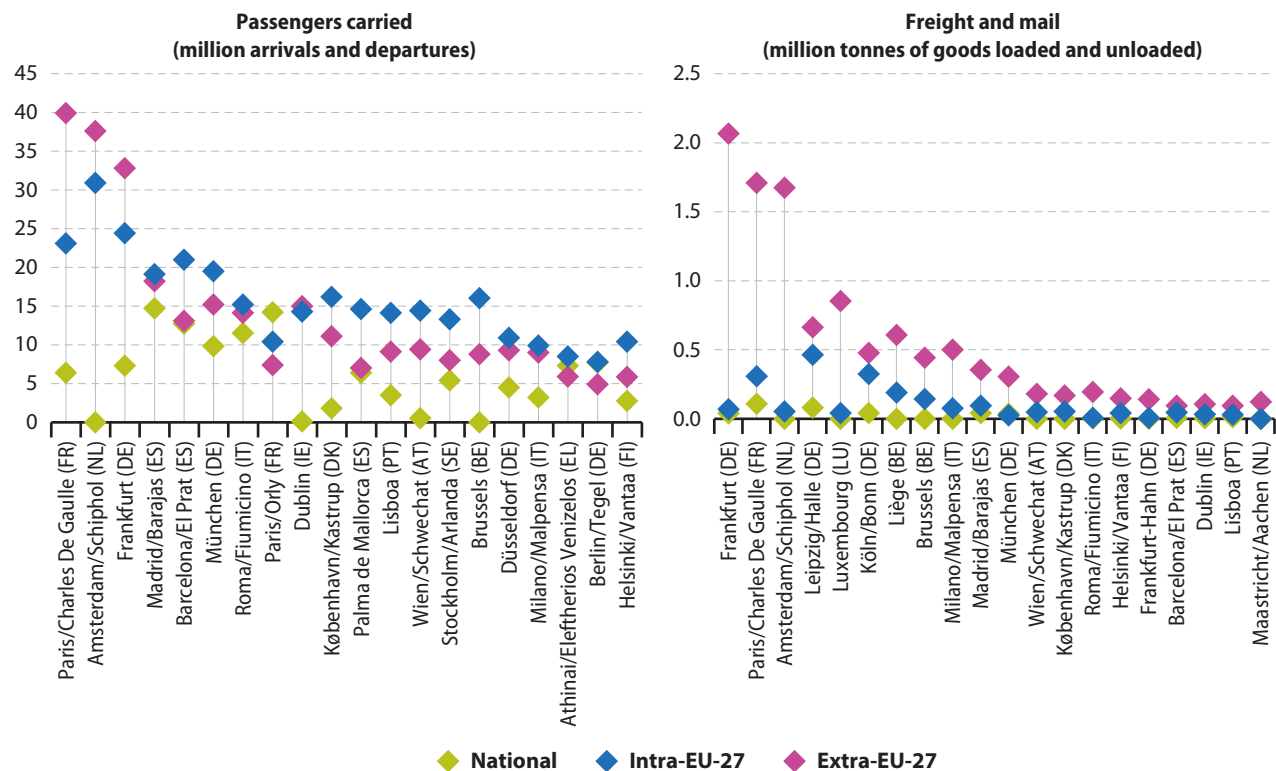
(Amsterdam, the Netherlands), Frankfurt (Germany) and Barajas (Madrid, Spain).

In 2018, more than half of the passengers carried through Charles de Gaulle (57.5 %), Schiphol (54.9 %), Dublin (Ireland; 51.0 %) and Frankfurt (50.9 %) were arriving from/destined to airports in non-member countries. Note that a high number of passengers passing through Dublin were travelling from/destined to airports in the United Kingdom (which is outside the EU since 1 February 2020). By contrast, extra-EU arrivals/departures accounted for no more than 25 % of the total number of passengers that passed through Palma de Mallorca (25.0 %), Tegel (Berlin, Germany; 24.0 %) or Orly (Paris, France; 23.1 %) airports. Orly also stood out insofar as more than two fifths (44.4 %) of its passengers in 2018 were travelling on national flights; the next highest shares for national passengers were recorded for Tegel (37.7 %) and Eleftherios Venizelos (Athina, Greece; 33.6 %).

Figure 11.3 also shows a ranking for the top 20 EU airports handling (loading and unloading) freight and mail. In 2018, the busiest cargo airport was Frankfurt (2.18 million tonnes), closely followed by Charles de Gaulle (2.12 million tonnes), while Schiphol (1.73 million tonnes) and Leipzig/Halle (Germany; 1.21 million tonnes) were the only other airports to record in excess of a million tonnes of freight and mail. As such, the three largest airports in the EU were the same for air freight and mail as they were for air passengers, albeit in a different order. Given the relatively high cost of transporting goods by air, it is perhaps unsurprising to find that the majority of air freight and mail that was loaded and unloaded in the EU's leading cargo airports was destined for/arrived from non-member countries.

The relative specialisation of airports in air freight and mail may, at least to some degree, reflect the geographical proximity of a large population base or business customers specialised in logistics, as well as spare runway capacity to allow cargo planes to fill slots that would otherwise be occupied by passenger flights. In 2018, the six airports that were in the top 20 ranking for freight and mail but were not in the top 20 ranking for passengers included: Leipzig/Halle (Germany), Luxembourg, Köln/Bonn (Germany), Liège (Belgium), Frankfurt-Hahn (Germany) and Maastricht/Aachen (the Netherlands). Some of these airports were particularly specialised in air freight services (with relatively low numbers of air passengers), as a result of developing their freight business as logistics centres.

Figure 11.3: Top airports in the EU for air passengers and for air freight and mail, 2018

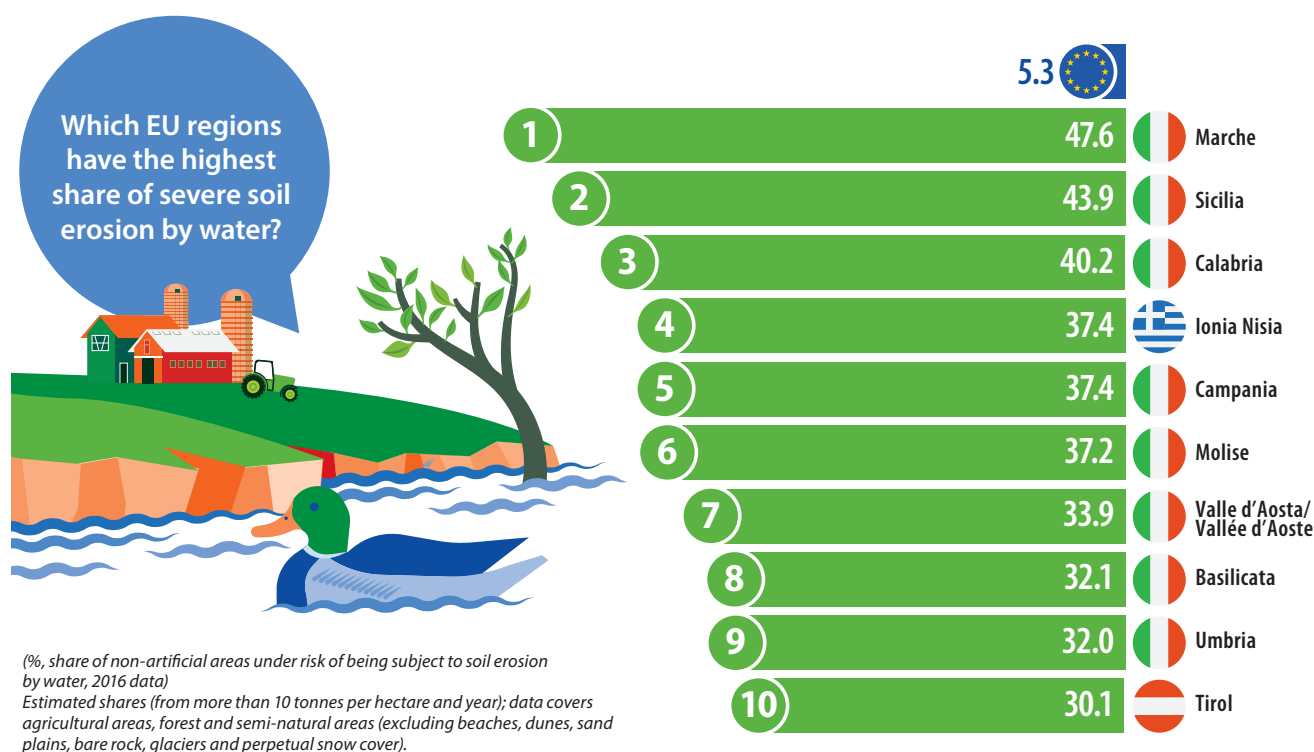


Note: ranked on the total number of passengers carried and the total weight of freight and mail loaded and unloaded.
Source: Eurostat (online data code: [avia_tf_ala](#))

12

Environment





Climate change and environmental degradation are two of the most serious threats to the EU and the wider world. The [United Nations \(UN's\) 2030 Agenda for Sustainable Development](#) is a long-term strategy that seeks, among other socioeconomic and environmental goals, to protect the Earth from environmental degradation, through sustainable consumption and production, coupled with urgent action on climate change. The Agenda introduced a set of 17 sustainable development goals (SDGs) and to monitor progress the UN has adopted 232 indicators.

The sustainable development goals concerned with the environment are fully consistent with the [European Green Deal](#) which is the [European Union's \(EU's\)](#) growth strategy to become a modern, resource-efficient and sustainable economy — the first climate-neutral continent by 2050. The European Green Deal seeks to turn climate and environmental challenges into opportunities, for example, by: undertaking to reduce net emissions of greenhouse gases to zero; ensuring economic growth is decoupled from resource use; cutting pollution; restoring biodiversity.

The first section of this chapter provides a description of [land cover](#) in the EU, with a focus on forests. The second section details information on air pollution and in particular exposure to fine particulate matter that may cause or aggravate, among others, a range of lung and cardiovascular diseases. The chapter concludes with statistics on soil, analysed in relation to soil sealing (imperviousness) and soil erosion.

Land cover

Historically, human activity was generally assumed to have had little lasting impact on the land or the environment, as many people held a common belief that nature could restore or replenish itself. However, land is currently recognised as a common good and a natural and economic resource used for multiple purposes: agriculture and forestry; mining, manufacturing and construction; distributive trades, transport and other services, as well as for residential and leisure use. The effects of certain phenomena — rising temperatures, the rapid disappearance of vast areas of forest, the gradual desertification of certain regions, or the rapid development of urban areas along coastlines — have contributed towards increasing awareness and recognition that land is a finite resource and its use constitutes one of the principal drivers of environmental change, with potential impacts on the climate, ecosystems, biodiversity and the overall quality of life.

The [European Environment Agency \(EEA\)](#) coordinates and integrates national databases on land cover into the [Corine land cover \(CLC\)](#) inventory. Through the visual interpretation of high-resolution satellite images, it produces an inventory of land cover, enabling various biophysical categories to be distinguished: artificial areas, agricultural areas, forests and semi-natural areas, wetland and water bodies. By analysing changes in these features, it is possible to support a broad range of environmental policy developments, such as: climate change mitigation, the conservation of biodiversity,

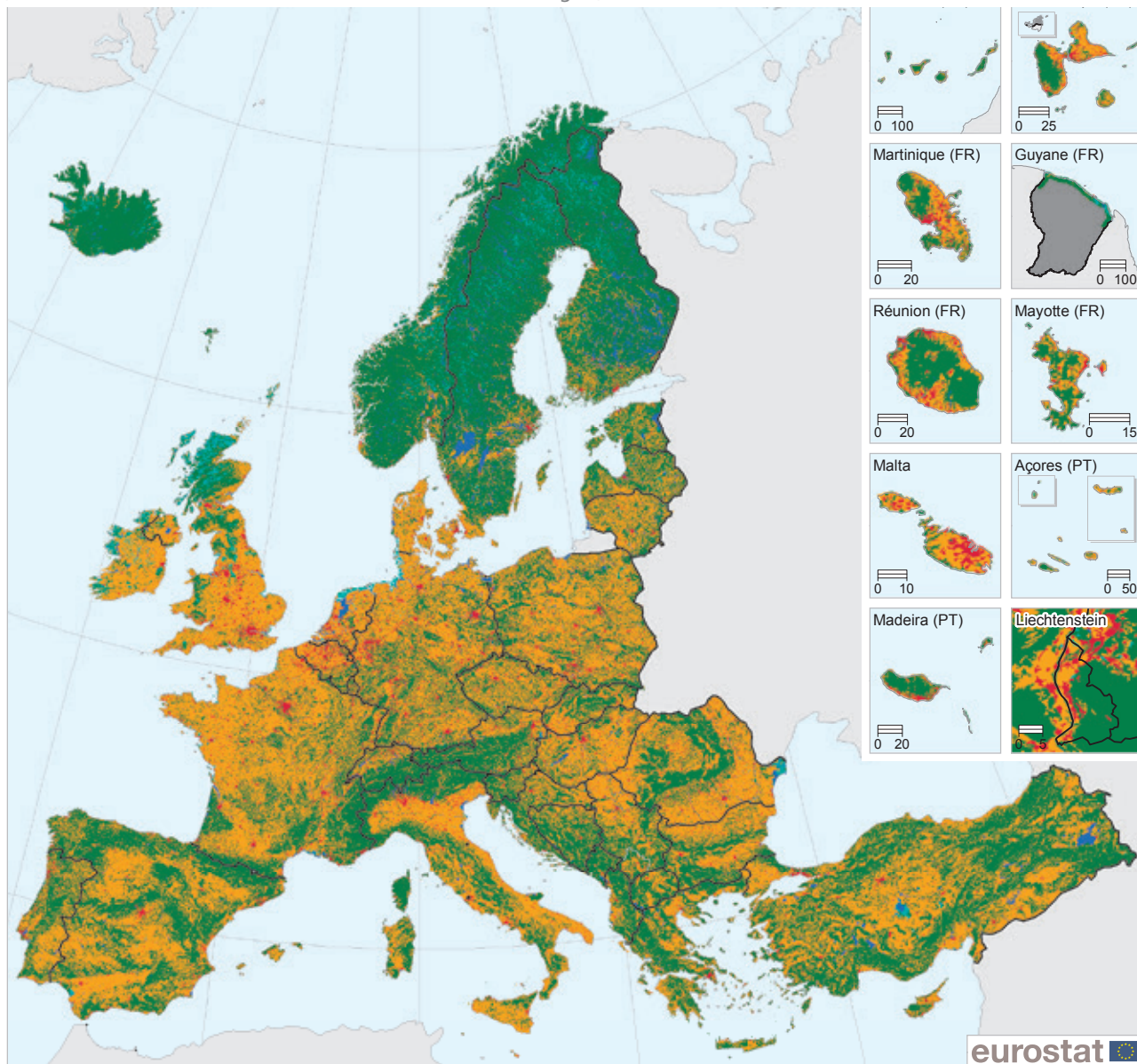
agricultural or forest management, spatial planning, or the effects of soil sealing.

Map 12.1 presents data on land cover for 2018. Information is shown at a very fine level of detail, based on a matrix of 1 km² grid cells that overlay the EU territory. A high proportion of the EU's territory

is used in an intensive form: for artificial land cover (urban settlements, industry and commercial units, or infrastructure). This is particularly true in some of the most densely populated parts of the EU, for example, Malta or an area covering much of Belgium, the Netherlands and north-west Germany. By contrast, forests and semi-natural areas (including moors,

Map 12.1: Land cover, 2018

(based on the most common form of land cover for a 1 km² grid)



- Artificial
- Agricultural
- Forest and semi-natural areas
- Wetlands
- Water bodies

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 05/2020.

0 200 400 600 800 km

Note: the designation of Kosovo is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Source: Corine land cover 2018, European Environment Agency (EEA)

heathlands, bare rock, glaciers and perpetual snow) were more prevalent in sparsely populated areas of the EU — for example, the northern halves of Finland and Sweden or mountainous areas such as the Alps, the Pyrenees, or the Carpathians. Water covered a relatively low proportion of the total area of most EU Member States (particularly in southern parts of the EU). The main exceptions were Finland, Sweden and the Netherlands. The vast majority of the water cover in the Netherlands was composed of coastal wetlands, whereas there are several hundred thousand natural lakes across Finland and Sweden.

FOREST COVER

Forests are an essential part of the natural environment, providing habitats for a wide range of animal and plant life. One of the most important environmental roles that forests can play is to absorb carbon dioxide that would otherwise be in the atmosphere, thereby helping to mitigate climate change. Forests may also help protect landscapes against extreme weather events (such as floods or droughts) or related phenomena (such as erosion).

Contrary to much of the rest of the world, forest cover in the EU has increased gradually in recent years. According to the EEA, some 157 million hectares or 38 % of the EU-27's land surface was covered by forests in 2018. In absolute terms, the largest areas of forest cover were in Sweden (26.5 million hectares), Finland (21.5 million hectares) and France (14.4 million hectares). In relative terms, the highest proportions of forest tree cover were recorded in Finland (64 %), Sweden (59 %) and Slovenia (56 %); these were the only Member States to report that more than half of their land was covered by forests. By contrast, less than one tenth of the land surface areas of Denmark (9 %), the Netherlands (8 %) and Malta (1 %) were covered by forests.

Ecologically, the EU is one of the most forest-rich areas of the world, with great diversity in terms of different forest types, ranging from bogs and floodplain forests to boreal and alpine forests. In Nordic EU Member States and mountainous areas, coniferous forests predominate: they are typically composed of tall trees in dense stands, with little vegetation growing beneath the forest canopy. By contrast, broad-leaved and mixed forests cover much of mainland Europe to the north of the Alps. Southern Member States tend to have lower levels of forest cover or transitional woodland/shrubland and those forests that do exist tend to be characterised by trees that are less tall and less densely set, with more vegetation under the canopy.

Note that while the information for land cover and forest cover (as presented in Maps 12.1 and 12.2) is shown for 1 km² grid cells, the remainder of the data presented in this chapter are shown at a more aggregated, regional level, using the NUTS classification.

Almost three quarters of the total land area of Corse (France), Mellersta Norrland (Sweden) and Pohjois- ja Itä-Suomi (Finland) was covered by forest and other wooded land

As noted above, the Corine land cover inventory is based on satellite images; such images can only be used to register forest cover if there are trees present. Field surveys allow for land that is temporarily unstocked (for example, due to harvesting, fire, or other natural disturbances) to continue to be classified as forest or other wooded land. Eurostat conducts a [Land Use and Cover Area frame Survey \(LUCAS\)](#) every three years. The survey is carried out in-situ, meaning that observations are made and registered on the ground by field surveyors, who classify land cover, land use and landscape features, while also taking a number of soil samples.

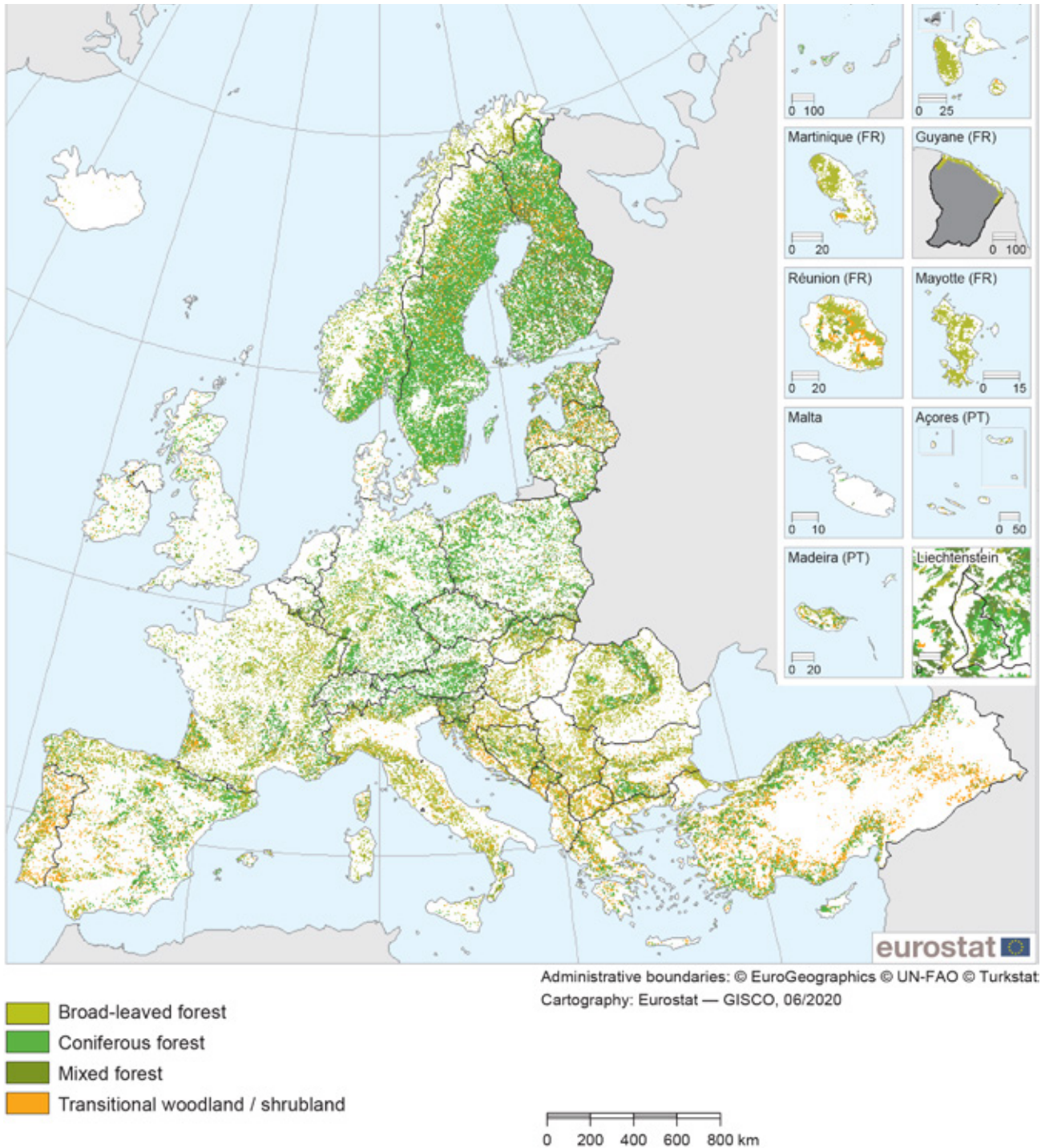
Figure 12.1 shows regional information for the EU regions with the largest areas and highest proportions of forest area and other wooded land. This information is based on harmonised definitions provided by the [United Nations Food and Agriculture Organisation \(FAO\)](#), whereby forests are defined as lands of more than 0.5 hectares (which are not primarily under agricultural or urban land use), with a tree canopy cover of more than 10 % and where trees should be able to reach at least 5 metres in height. Other wooded land is defined as that with a tree canopy cover of 5-10 % or a canopy cover of more than 10 % when smaller trees, shrubs and bushes are included. Note that this definition is somewhat broader than that used in Map 12.1.

Based on the above definitions, the EU-27 had 176 million hectares of forests and other wooded land in 2015; this corresponded to 42.6 % of its land area. In absolute terms and across NUTS level 2 regions, the largest areas of forest and other wooded land were recorded in Pohjois- ja Itä-Suomi (Finland) and Övre Norrland (Sweden), at 16.8 and 11.0 million hectares respectively. The 10 regions with the largest areas of forest and other wooded land (as shown in Figure 12.1) had a cumulative share of approximately one third of the EU-27's total area of forest and other wooded land.

In 2015, almost three quarters of the land area of Corse (France), Mellersta Norrland (Sweden) and Pohjois- ja Itä-Suomi was covered by forest and other wooded land. These were the highest shares recorded among NUTS level 2 regions, while Åland (Finland), Norra Mellansverige (Sweden) and Liguria (Italy) also recorded shares of more than 70.0 %. At the other end of the range, there were 15 regions in the EU-27 where the share of forest area and other wooded land was in single digits. These were principally located in the Netherlands and Vlaams Gewest (the northern half of Belgium), with the lowest shares in Prov. West-Vlaanderen (Belgium), Zeeland and Groningen (both the Netherlands; 2012 data for the latter).

Map 12.2: Forest cover, 2018

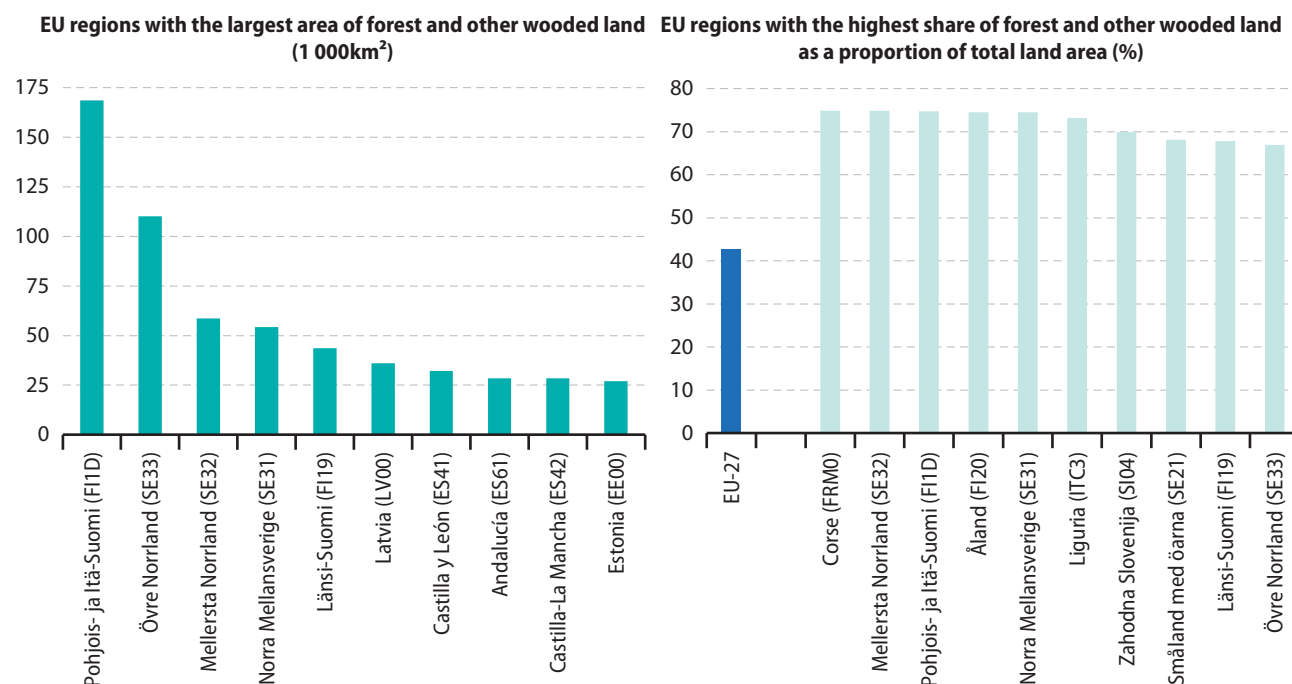
(based on the most common form of forest cover for a 1 km² grid)



Note: the designation of Kosovo is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Source: Corine land cover 2018, European Environment Agency (EEA)

Figure 12.1: Forest area and other wooded land, 2015
(by NUTS 2 regions)



Note: Közép-Magyarország (HU1) and Makroregion Województwo Mazowieckie (PL9), NUTS 1 regions. Ireland and Lithuania: national data. Other wooded land is not available for a limited number of regions (each with a relatively small forest area). Ciudad Autónoma de Ceuta (ES63), Ciudad Autónoma de Melilla (ES64), Canarias (ES70), Guadeloupe (FRY1), Martinique (FRY2), Guyane (FRY3), La Réunion (FRY4), Mayotte (FRY5), Região Autónoma dos Açores (PT20) and Região Autónoma da Madeira (PT30): not available.

Source: Eurostat (online data code: [lan_lcv_fao](#))

Air pollution

Air pollution may be anthropogenic (human-induced) or of natural origin. Examples of human-induced activities that lead to air pollution include the burning of fossil fuels (such as in conventionally-powered vehicles), industrial processes, agriculture or the treatment of waste. Examples of events that lead to naturally occurring air pollution include volcanic eruptions, desert dust, forest fires or sea-salt spray. Air pollution has the potential to harm both human health and the environment: particulate matter (PM), nitrogen dioxide and ground-level ozone are known to pose particular health risks. Long-term and peak exposures to these pollutants may be associated, among other impacts, with cardiovascular and respiratory diseases or an increased incidence of cancer.

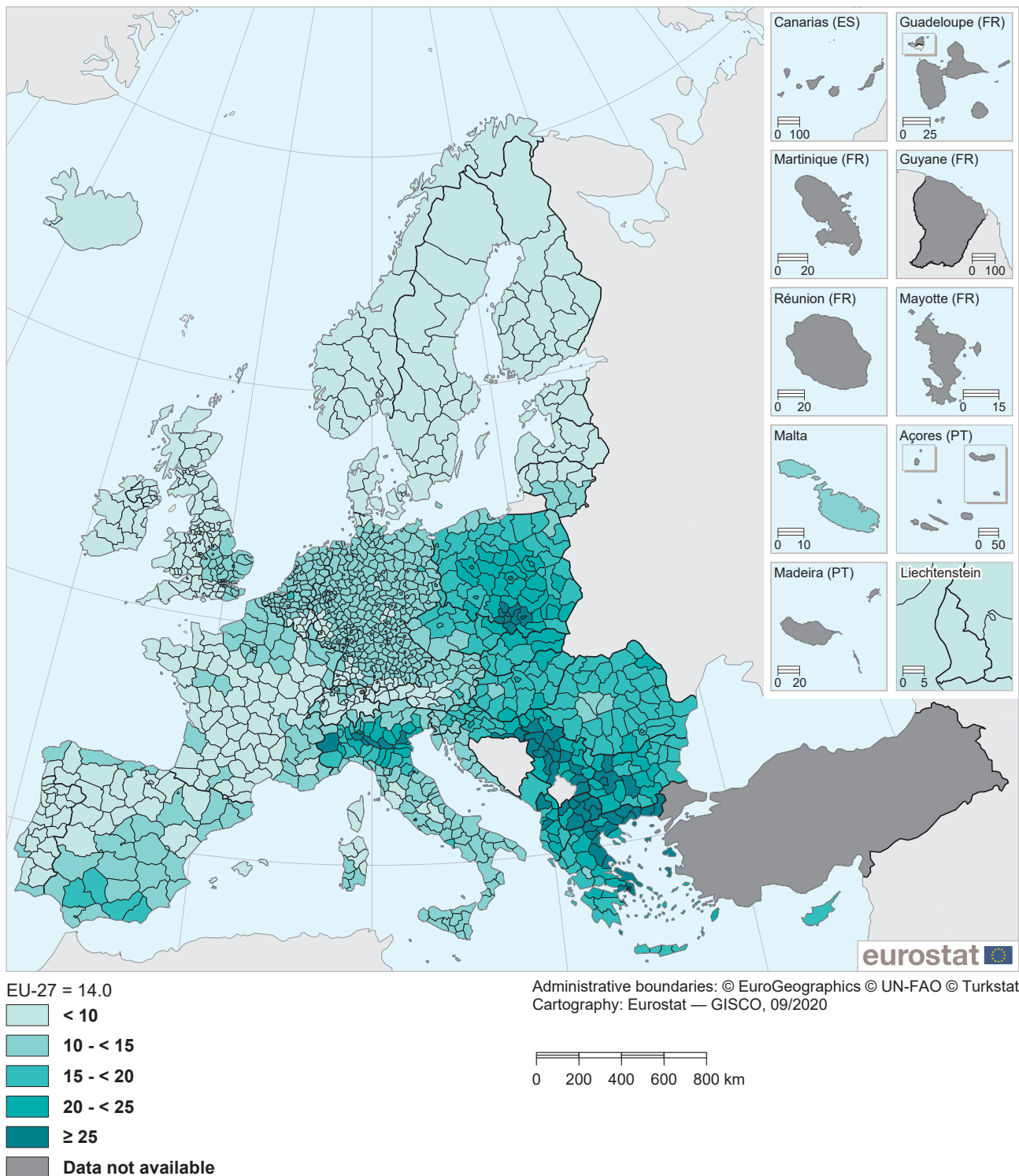
Map 12.3 presents information for NUTS level 3 regions concerning average concentration levels of fine particulate matter (PM_{2.5} — particles with a diameter of 2.5 micrometres or less) to which the population is exposed. The EU set an annual limit of 25 µg/m³ for fine particulate matter in [Directive 2008/50/EC](#) on ambient air quality and cleaner air, while the [World Health Organisation \(WHO\)](#) set a more stringent, but non-binding guideline value, whereby annual mean concentrations should not exceed 10 µg/m³ in order to protect human health. PM_{2.5} is considered by the WHO as the pollutant with the highest impact on human health.

Although air quality in the EU has generally improved in recent decades, some urban populations remain exposed to high concentrations of air pollutants, for example, as a result of industrial and transport activities. Approximately one fifth of NUTS level 3 regions in the EU-27 (242 out of 1 155 regions for which data are available) had an average exposure to fine particulate matter that was less than the WHO target value of 10.0 µg/m³. By contrast, around one tenth of all EU regions (125) presented average exposure of at least 20.0 µg/m³, with 46 of these regions with exposure to at least 25.0 µg/m³ (as shown by the darkest shade in Map 12.3). The highest population exposures were generally recorded in predominantly urban regions located in southern and eastern EU Member States (Bulgaria, Greece, Croatia, Italy and Poland). The highest value was registered in one of the four Greek capital regions: Kentrikos Tomeas Athinon (44.4 µg/m³). By contrast, the lowest value (2.7 µg/m³) was recorded in the predominantly rural region of Jämtlands län, in the middle of Sweden.

Soils

Soil is a vital resource that supports the production of food, while helping to regulate water quality and quantity and plays a role in species diversity. It is also an important factor in mitigating climate change, as it stores carbon (providing the second largest sink after

Map 12.3: Exposure to air pollution by fine particulate matter (PM_{2.5}), 2017
($\mu\text{g}/\text{m}^3$, by NUTS 3 regions)



Note: exposure to fine particulate matter expressed as population-weighted concentration in $\mu\text{g}/\text{m}^3$. The population-weighted concentration indicates the concentration to which an average person in a specific spatial unit, here NUTS 3 regions, is exposed. The World Health Organisation has set an air quality guideline for annual mean concentrations that should not exceed $10 \mu\text{g}/\text{m}^3$, while the EU set an annual limit of $25 \mu\text{g}/\text{m}^3$ for fine particulate matter in the Ambient Air Quality Directive (2008/50/EC, Annex XIV). The PM_{2.5} population-weighted concentrations shown have been obtained from interpolated maps according to the methodology described in ETC/ATNI (2020) and references therein and not only from monitoring stations.

Source: European Environment Agency (EEA)

the oceans). However, changes in land cover and land use have the potential to result in carbon losses, for example, as a result of draining peatlands, intensive agriculture or soil sealing.

SEALED SOIL SURFACES

There is growing competition for finite land resources which has, in most EU Member States, resulted in increased use of land for urban or industrial developments as well as related infrastructure. These changes have potentially significant implications for soil functions (including carbon storage and sequestration). Soil sealing (or imperviousness) is defined as the covering of soil surfaces with impervious materials as a result of urban development and infrastructure construction (buildings, construction and laying completely/partially impermeable artificial materials such as asphalt, metal, glass, plastic or concrete). There are a range of factors that may affect the extent of soil sealing, among which: land availability; population size, density and distribution; housing type preferences; average numbers of occupants per household; spatial planning.

The indicator shown in Map 12.4 provides information on the share of the total land area impacted by soil sealing (as a result of artificial and urban land use). In 2015, according to the EEA, some 1.7 % of the EU-27's total land area was sealed. The highest levels of soil sealing were recorded in the most densely populated regions (as shown by the darkest shades in the map): these were generally capital and metropolitan regions, with a large number of the highest shares concentrated in north-west Germany.

Paris (France) had the highest share of sealed soil surfaces, 70.6 % in 2015

An analysis by NUTS level 3 regions reveals that the share of sealed soil surfaces in 2015 was highest at 70.6 % in Paris (France) — the most densely populated region in the EU-27. There were only two other regions in the EU — both of which were in the suburbs of Paris — where the share of sealed soil surfaces was above 50 %: Seine-Saint-Denis (55.1 %) and Hauts-de-Seine (52.2 %). By contrast, the lowest shares of sealed soil surfaces (0.1 %) were recorded in Evrytania (located in central Greece) and five northern or central regions of Finland (Lappi and Kainuu) and Sweden (Jämtlands län, Västerbottens län and Norrbottens län).

SOIL EROSION

Having looked at the impact of soil sealing from artificial and urban land use, this final section analyses another environmental impact on soils. Soil erosion — the physical displacement of soil particles — principally occurs as a result of water or wind processes (the former is covered here).

With climate change leading to more extreme weather events, there is an increased risk that storms and prolonged periods of rainfall or drought will result in higher levels of soil erosion. Processes like rain splash, overland flow/sheet wash and rill formation can remove soil, leading to, among other results: the potential loss of fertile topsoil; the breakdown of soil structures (and associated losses of soil carbon); a reduction in the level of stored water; an increased risk of flooding or landslides; the pollution of water bodies; or negative impacts on habitats and biodiversity.

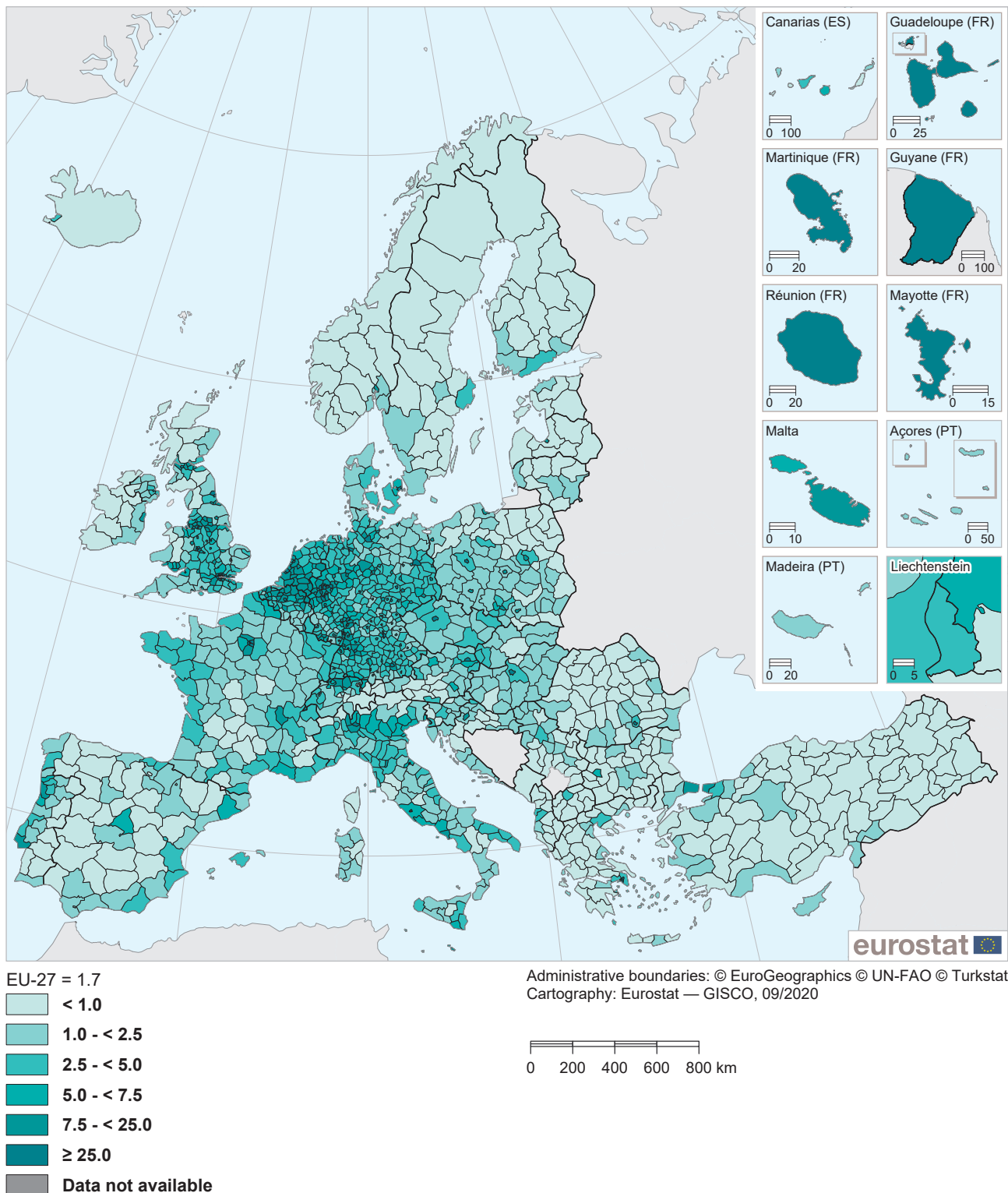
Severe soil erosion by water is defined as a situation where non-artificial areas — agricultural areas, forest and semi-natural areas (excluding beaches, dunes, sand plains, bare rock, glaciers and perpetual snow cover) — are under risk of being subject to the removal of upwards of 10 tonnes of soil per hectare and year. Estimates made by the [European Commission's Joint Research Centre \(JRC\)](#) suggest that some 5.3 % of the EU-27's non-artificial areas in 2016 were subject to severe soil erosion by water.

In Marche (Italy), an estimated 47.6 % of non-artificial areas were at risk of severe soil erosion by water

Map 12.5 shows that southern and mountainous regions of the EU tended to have the highest levels of severe soil erosion by water. This pattern was particularly apparent across Italy, in the Alps (Italy, Austria and Slovenia), the Pyrenees (along the border between Spain and France) or the Tatra Mountains (along the border between Poland and Slovakia), as well as in parts of southern Spain and Greece. The risk of soil erosion was particularly pronounced in regions where the local topography was composed of lengthy, steep slopes, or in regions around the Mediterranean Sea that were particularly prone to soil erosion by water because of long dry periods followed by heavy bursts of intense precipitation on steep slopes with fragile soils.

In 2016, there were 24 NUTS level 2 regions (out of 231 for which data are available) where at least one fifth of non-artificial areas were subject to severe soil erosion by water. These regions (as shown by the darkest shade in the map) were principally located in Greece, Italy and Austria. The highest risks were recorded in the Italian regions of Marche, Sicilia and Calabria, where upwards of 40 % of non-artificial areas were estimated to be subject to severe soil erosion by water. By contrast, estimates suggest that in 4 out of every 10 regions of the EU less than 1.0 % of non-artificial areas were subject to severe soil erosion by water. These regions with relatively low rates of soil erosion from water were usually very flat, for example: the lowland plains that run from northern France to the Baltic Member States. This was also the case on the plains of Hungary or Portugal, as well as across a majority of Irish and [Nordic](#) regions.

Map 12.4: Sealed soil surfaces with impervious materials, 2015
(% of total land area, by NUTS 3 regions)



Note: the indicator provides information on the share of the total land area impacted by soil sealing resulting from artificial and urban land use, for example, building, construction and laying completely/partially impermeable artificial materials (such as asphalt, metal, glass, plastic or concrete).

Source: European Environment Agency (EEA)

CHANGES IN SOIL ORGANIC CARBON STOCKS IN CROPLANDS

Most people are unaware that after the oceans, soil is the largest store of organic carbon on the planet, holding more organic carbon than all the vegetation on Earth and the atmosphere combined. Organic carbon is associated with living matter and is found in soil dwelling flora and fauna, together with plant and animal remains at various stages of decomposition, and humus (which is a stable form of decomposed matter). Through photosynthesis, plants take carbon dioxide out of the atmosphere, where upon the carbon becomes incorporated in the soil through roots or eventually as litter fall. In this context, soils have the capacity to regulate climate by offsetting carbon dioxide emissions elsewhere. However, this capacity is heavily dependent on how the land is used. Natural habitats tend to act as carbon sinks while land cover change (for example, deforestation) and some agricultural practices resulting in low return of organic material, mineralisation, leaching and erosion can lead to a loss of carbon from the soil. In addition, organic carbon is a major component of several key ecosystem services, which include soil fertility, nutrient cycling, water retention and pollution control. Soils with low levels of organic carbon will have lower resilience to pressures such as drought, compaction and flood prevention.

The amount of carbon in a soil sample is expressed as a (mass) percentage (for example as g per kg or as a percentage) relative to the mass of the sample. The concentration of organic carbon in most soils is generally around 3-5 % (but can be lower than 1 % in deserts) partially as a result of the low density of carbon compared with the mineral components of soil. Soils with more than 20 % carbon are referred to as organic soils or peat, where the carbon content can be as high as 90 %. The amount of organic carbon stored in soil is referred to as its stock. Changes in stocks are based on laboratory measurements of samples collected in a harmonised manner from all over the EU as part of the LUCAS survey.

Soils in the EU exhibit a general decrease in organic carbon stocks from north to south and west to east. The highest stocks are found in the wetter and cooler climates of Scandinavia and Ireland, while the lowest levels are found in drier and warmer regions (such as close to the Mediterranean Sea) and in high mountainous regions of the EU (where vegetation levels are low).

In overall terms, most cropland soils in the EU show relatively small changes in soil carbon stocks: however, cropland soils exhibit the lowest soil carbon stocks of all land cover types apart from artificial areas

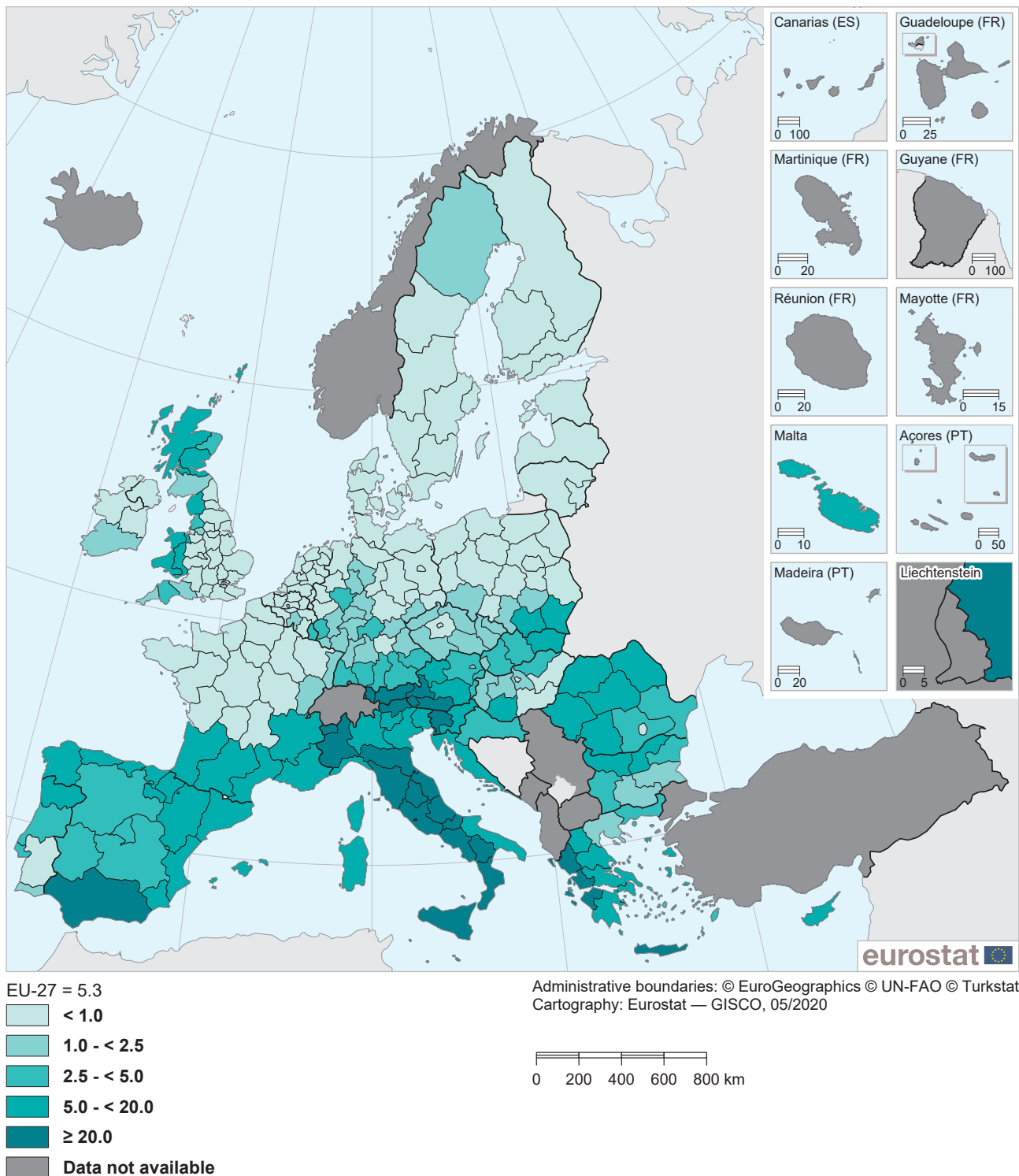
Croplands occupy just over 1 million km² of the EU, which is 23 % of the total land area. Croplands exhibit the lowest soil carbon stocks of all land cover types apart from artificial areas (around 17 g per kg — by comparison, average levels for permanent grasslands are almost 2.5 times higher). In addition, most croplands soils are thought to be already at sub-optimal levels, with around 2.6 % of arable soils showing soil organic carbon levels close to 1 %.

Map 12.6 shows the percentage changes in soil organic stocks in the uppermost 20 cm of cropland soils between 2009 (from 2012 for Bulgaria and Romania) and 2015.

Cropland soils in the EU recorded a small overall loss (-0.04 %) of carbon stocks between 2009 and 2015. Around 140 regions had decreasing soil carbon stocks with a mean reduction of -1.6 %, while some 120 regions displayed increasing levels with a mean increase of 1.4 %. Changes during the period were generally quite small, accounting for less than 1 % of the total stock. The map shows decreasing stocks in regions closer to the Atlantic Ocean (for example, Portugal, the northern regions of Spain, north-western France), the Benelux Member States, northern regions of Germany and Denmark. Decreases were also recorded in Bulgaria, Poland and Romania. Most of the regions surrounding the Alps had increasing stocks (except in parts of Austria). Increases were broadly found in most Alpine regions, in southern France, most of Germany, Czechia, parts of Slovakia, together with most regions of northern and central Italy. This pattern might reflect the impact of climate change, insofar as wetter and cooler areas are gradually becoming drier and warmer, resulting in the mineralisation of soil carbon. Unless action is taken, the continued loss of carbon from croplands will mean that the EU will not meet the sustainable development goal target on land degradation neutrality (SDG 15) by 2030 as a net loss of soil carbon is considered to indicate a degraded state.

When looking at the map, two other issues should be considered. Firstly, unless there is a dramatic environmental issue, changes in soil carbon stocks generally occur slowly over time. In this sense, one would not expect to see significant changes over a six-year period (as shown here). Secondly, although some regions do report large changes in soil organic stocks (for example, specific regions in Greece and northern Sweden) these should be viewed within the context of only a small part of their overall area being covered by croplands.

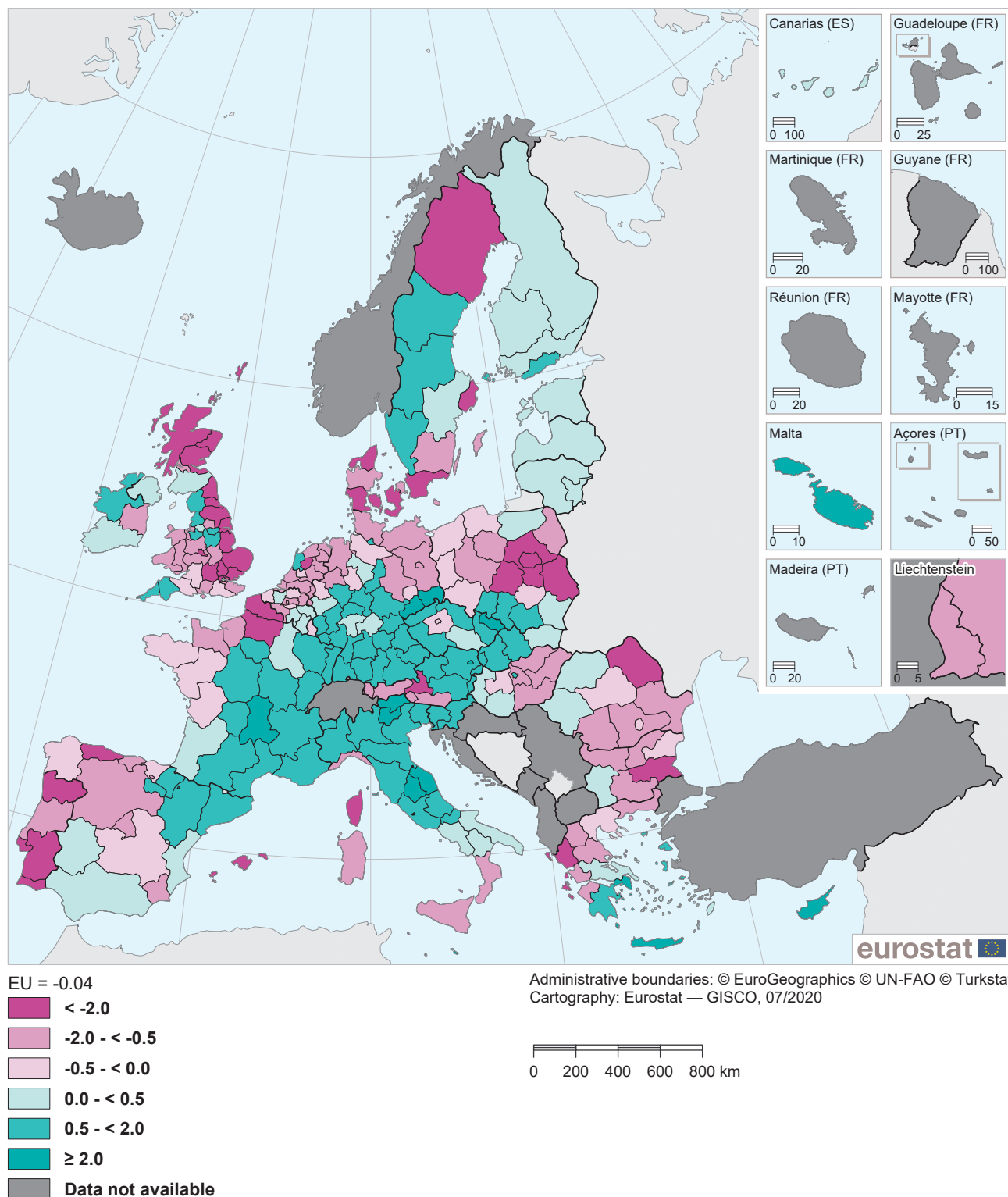
Map 12.5: Severe soil erosion by water, 2016
(%, by NUTS 2 regions)



Note: severe soil erosion by water is defined as the estimated share of non-artificial areas under risk of being subject to soil erosion by water (from more than 10 tonnes per hectare and year). Non-artificial areas are agricultural areas, forest and semi-natural areas (excluding beaches, dunes, sand plains, bare rock, glaciers and perpetual snow cover).

Source: European Commission, Joint Research Centre (JRC)

Map 12.6: Overall change in soil organic carbon stock for croplands, 2009-2015
(%, by NUTS 2 regions)



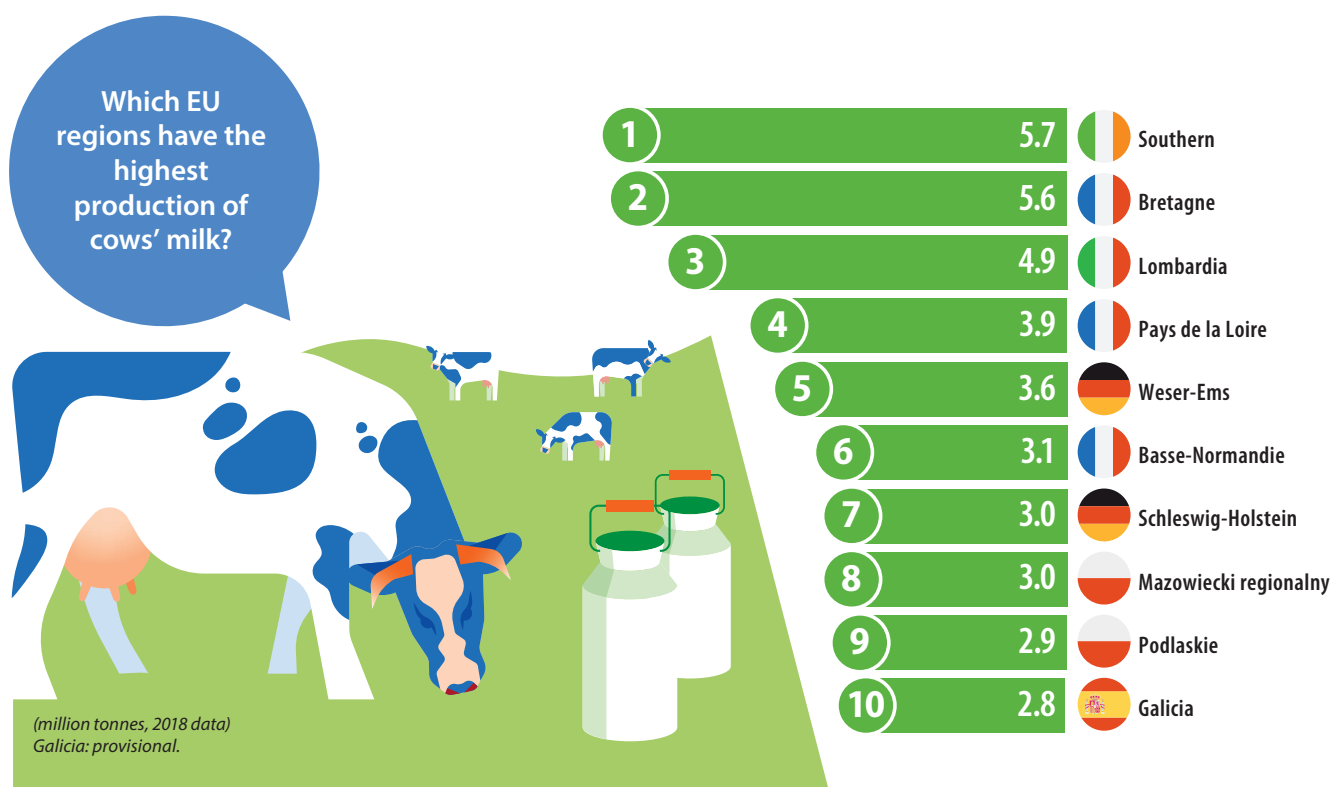
Note: EU excluding Croatia. The indicator shows the changes in soil organic carbon stocks in croplands between 2009 and 2015 for a depth of 20 cm, relative to 2009 levels. Changes were assessed by fitting a machine learning algorithm (Gradient Boosting Trees model) on measured organic carbon concentrations of samples taken during the 2009 (2012 for Romania and Bulgaria) and 2015 LUCAS surveys. While the results are presented for NUTS 2 regions, the area of cropland is smaller. Negative values indicate environmental degradation. Changes in soil organic carbon stocks generally occur slowly.

Source: European Commission, Joint Research Centre (JRC)

13

Agriculture





Agricultural products, food and culinary traditions are a major part of the [European Union's \(EU's\)](#) regional and cultural identity. This is, at least in part, due to a diverse range of natural environments, climates and farming practices that feed through into a wide array of agricultural products. A growing share of consumers give importance to the provenance of their food, for example choosing regional products or traditional specialities. This may be contrasted with the growing share of consumers who choose to shop in discount retailers that have radically changed the market for groceries in several EU Member States.

Around two fifths of the EU's land is farmed: this underlines the important impact that farming can have on natural environments, natural resources, wildlife as well as soil and water quality. Farmers are increasingly being asked to manage the countryside for the benefit of everyone, delivering a public good, so that the whole of society can benefit from a countryside that is carefully managed and well looked after. There are a range of environmental issues that affect farmers in the EU, among which: the impact of climate change on agriculture and of agriculture on climate change; water pollution and scarcity; soil erosion and compaction; the impact of agriculture on air quality; preserving landscapes and biodiversity.

This chapter presents regional agricultural statistics focusing on four specific areas with information on: the age of [farm managers](#); the [harvested production](#) of various [cereals](#) (common wheat and spelt; grain maize

and corn-cob-mix); the number of [bovine](#) animals and [milk production](#); the share of agricultural area that has been converted to [organic farming](#).

Farm managers by age

Farm managers are people responsible for the normal daily financial and production routines of running a farm, such as what and how much to plant or rear and what labour, materials and equipment to employ. Often the farm manager is also the owner (otherwise referred to as the '[holder](#)') of the farm but this need not be the case, especially when the farm has a separate legal identity.

Slow [generational renewal](#) and a high average age for farmers are widespread issues across the EU's farming sector. Access to finance is a particular concern for many young farmers: a high proportion of loan applications from young farmers are rejected by banks (see a [Survey on financial needs and access to finance of EU agricultural enterprises](#)). In May 2019, the [European Commission](#) and the [European Investment Bank \(EIB\)](#) launched a [loans package](#) for agriculture and the bioeconomy with specific targets to support young farmers. It forms part of a broader [Young Farmers initiative](#) that is managed by local banks and leasing companies active across the EU that includes a minimum 10 % allocation for farmers under the age of 40 years.



Around 10 % of all farm managers in the EU-27 were aged less than 40 years

In 2016, there were 10.3 million farms in the EU-27; together they used 157 million hectares of land for agricultural production. As there is only one farm manager per farm, the number of managers and the number of farms is the same. Young farmers — defined here as those aged less than 40 years — numbered almost 1.1 million in the EU-27. As such, they accounted for approximately one tenth (10.7 %) of all farm managers. The share of young farmers was highest in Austria (22.2 %) and Poland (20.3 %). By contrast, young farmers accounted for less than 5 % of farm managers in Portugal (4.2 %) and Cyprus (3.3 %).

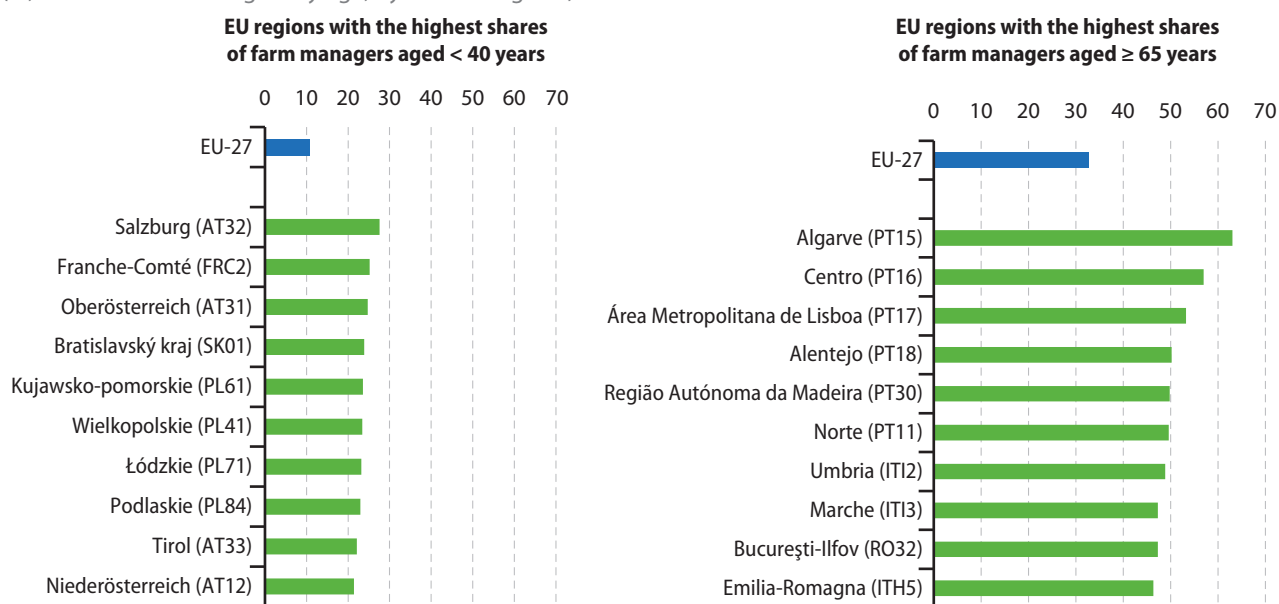
Figure 13.1 provides a more detailed analysis for NUTS level 2 regions, listing the regions with the highest shares of young and old farm managers. In the vast majority of EU regions, the share of young farmers was less than 20.0 %: there were 18 regions in 2016 (out of 225 for which data are available) that reported a higher share. These regions were concentrated in Poland (nine) and Austria (six), while there were also two regions from Slovakia and a single region from France. The highest share of young farm managers was recorded in Salzburg (Austria; 27.6 %), while Franche-Comté (France; 25.2 %) was the only other region to report more than one quarter of all farm managers aged less than 40 years.

Although most of the EU population has settled into retirement by the age of 65, a relatively high share of the farming community continues to work beyond this age. In 2016, almost one third (32.8 %) of all farm managers in the EU-27 were older farmers — defined here as those aged 65 years or over. There were particularly high numbers of older farm managers in southern EU Member States and those eastern Member States characterised by a high level of semi-subsistence farming. This was notably the case in Portugal where older farmers accounted for more than half (51.9 %) of all farm managers. The highest share of older farm managers was recorded in the Algarve (63.1 %), while there were three more Portuguese regions — Centro, Área Metropolitana de Lisboa and Alentejo — that reported that a majority of their farm managers were aged 65 years or over.

Map 13.1 shows the regional share of young farm managers in 2016. As noted above, a relatively high share of farm managers were aged less than 40 years in Austria and Poland and, to a lesser degree, a broad swathe of regions running across mainland Europe from western France to eastern Poland.

By contrast, farm managers aged less than 40 years were less common in more southerly regions of the EU. A low share of young farm managers may also reflect, among others, negative perceptions concerning careers in agriculture or a lack of access to land, capital and knowledge. In 2016, there were 43 regions in the EU where fewer than 7.5 % of all farm managers were

Figure 13.1: Farm managers, 2016
(%, share of farm managers by age, by NUTS 2 regions)

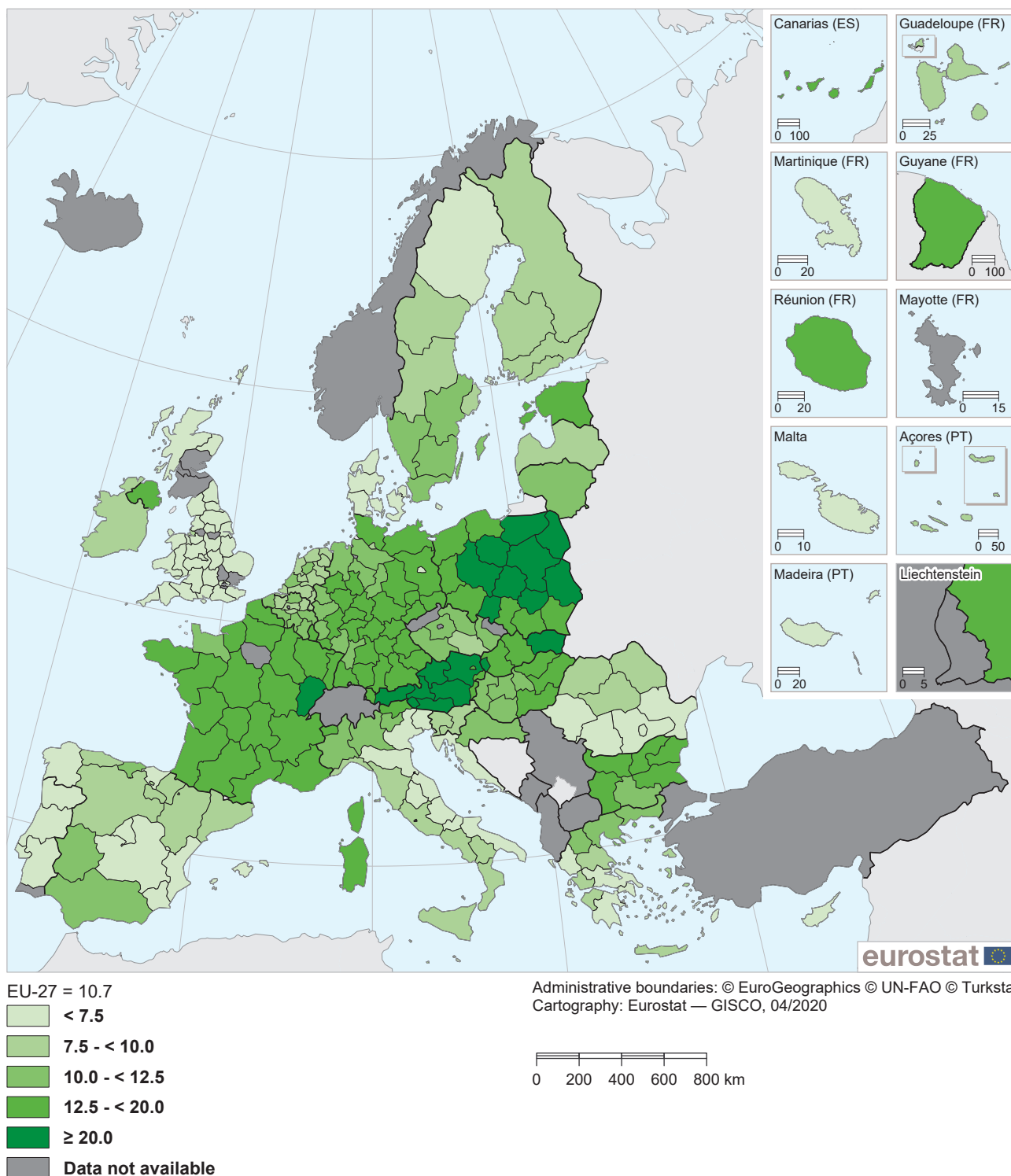


Note: Közép-Magyarország (HU1) and Makroregion Województwo Mazowieckie (PL9), NUTS 1 regions. Ireland and Lithuania: national data. Ireland and Italy: provisional. Ciudad Autónoma de Ceuta (ES63), Ciudad Autónoma de Melilla (ES64), Mayotte (FRY5): not available. Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (BE10), Praha (CZ01), Severozápad (CZ04), Moravskoslezsko (CZ08), Bremen (DE50), Île-de-France (FR10) and Algarve (PT15): farm managers < 40 years, not available.

Source: Eurostat (online data code: ef_m_farmang)

Map 13.1: Young farm managers, 2016

(%, share of farm managers aged < 40 years, by NUTS 2 regions)



Note: Közép-Magyarország (HU1) and Makroregion Województwo Mazowieckie (PL9), NUTS 1 regions. Ireland and Lithuania: national data. Ireland and Italy: provisional.

Source: Eurostat (online data code: ef_m_farmang)



aged less than 40 years (as shown by the lightest shade in Map 13.1). They included, among others, the Mediterranean islands of Cyprus and Malta, a majority of regions in Portugal and Romania and several regions of Greece, Spain and Italy, as well as all five regions of Denmark.

Cereals

Arable land is often used for the production of cereals, one of the most important outputs of the EU's agricultural sector. Cereals are used primarily for human consumption and animal feed, but they may also be used to make drinks and industrial products (for example, starch).

COMMON WHEAT AND SPELT

There is considerable diversity in relation to the types of cereal that are grown in the EU, with regional specialisation reflecting, at least to some degree, topography, soil type, climate and rainfall, or competing land uses. In 2018, the harvested production of cereals in the EU-27 was 274.3 million tonnes. Common wheat and spelt (115.6 million tonnes or 42.1 % of total cereals production) was the most frequently grown category of cereals.

Map 13.2 shows the level of common wheat and spelt production across NUTS level 2 regions. Common wheat and spelt accounted for a majority of all cereals production in almost one third of EU regions (67 out of 215 for which data are available; note that the statistics presented for Germany relate to NUTS level 1 regions and that data for Italy refer to 2016). Production was principally located in lowland regions characterised by large plains, a temperate climate and relatively modest levels of rainfall. The highest levels of harvested production generally ran in a band of regions from northern France, through Germany, extending into eastern regions of the EU along the floodplains of the Danube. Much lower levels of production were recorded in some of the most northerly and southerly regions of the EU (where soil and climatic conditions were less favourable) and mountainous areas (for example in much of Austria).

In 2018, the highest level of harvested production of common wheat and spelt was recorded in Centre — Val de Loire (France; 4.4 million tonnes). There was a similar level of output in Picardie (also France; 4.3 million tonnes), while three more French regions — Champagne-Ardenne, Nord-Pas de Calais and Pays de la Loire — were also present among the 10 EU regions with the highest levels of production (see Figure 13.2). The harvested production of common wheat and spelt was also relatively high in Castilla y León (north-west Spain) and Bayern (southern Germany), as both of these

regions produced 3.6 million tonnes (note again that the statistics presented for Germany relate to NUTS level 1 regions).

Figure 13.2 also presents information on the 10 EU regions with the largest cultivated areas of common wheat and spelt. As may be expected, most regions with high levels of harvested production also had large cultivated areas. The differences between the two rankings reflect regional yields, which in turn reflect variations in a wide range of factors, such as: rainfall, temperature, or the use of nutrients and pesticides. In 2018, Castilla y León had the largest cultivated area of common wheat and spelt (8 730 km²), followed by Vidurio ir vakarų Lietuvos regionas (Lithuania; 7 240 km²) and Centre — Val de Loire (6 450 km²).

GRAIN MAIZE AND CORN-COB-MIX

A majority of the EU's production of grain maize and corn-cob mix is used by livestock farmers as a high energy ingredient in animal feed. The data presented below excludes the production of sweet corn cobs for human consumption and maize that is harvested green for fodder or renewable energy use.

In 2018, grain maize and corn-cob-mix accounted for one quarter (25.2 %) of the EU-27's total cereals production. As such, this was the second most frequently produced category of cereals (behind common wheat and spelt). EU-27 production of grain maize and corn-cob-mix was 69.0 million tonnes in 2018.

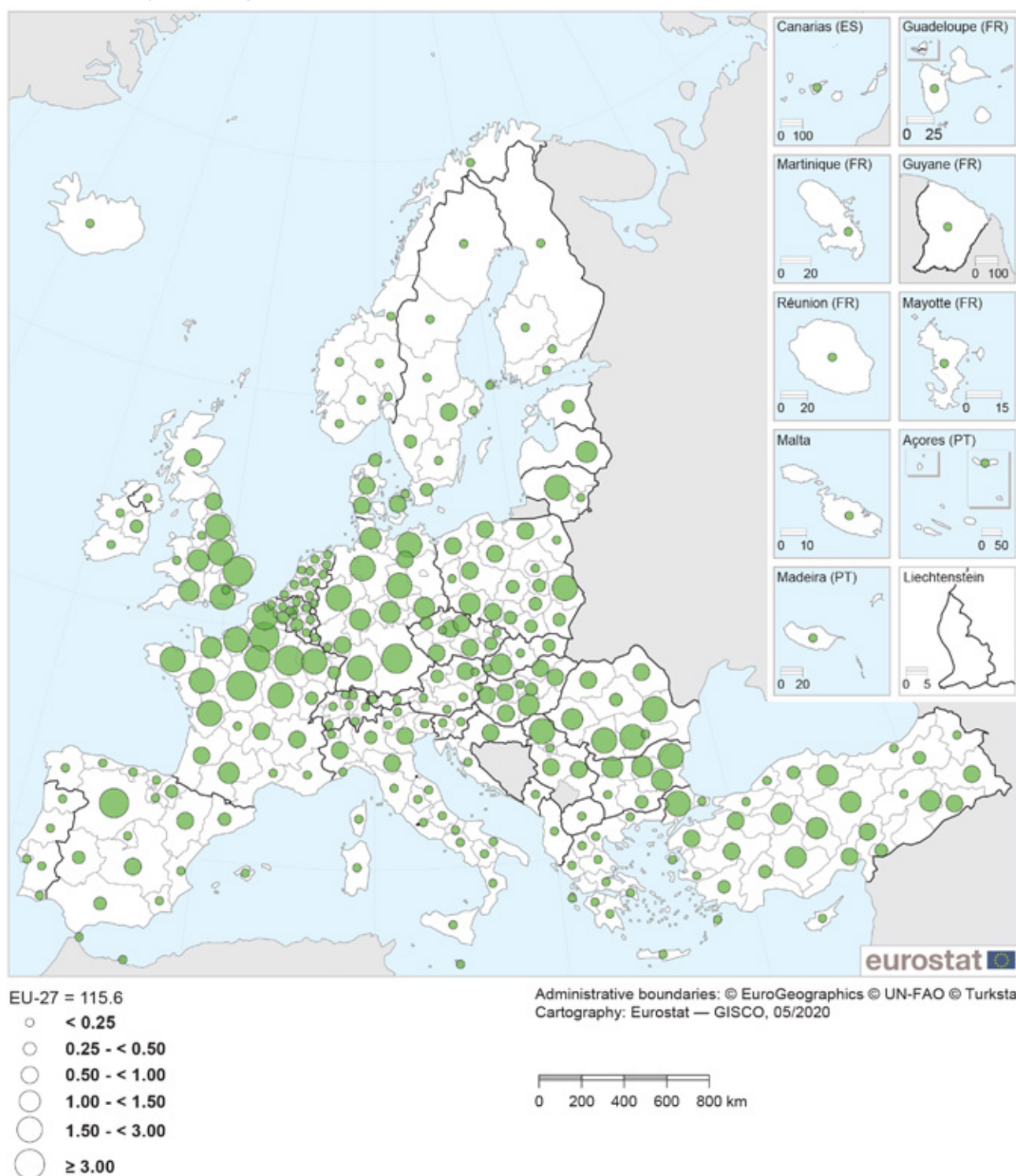
There were 28 different NUTS level 2 regions (out of 214 for which data are available) where the production of grain maize and corn-cob-mix was higher than 1.0 million tonnes in 2018. Note that the statistics presented for Germany relate to NUTS level 1 regions and that data for Italy refer to 2016. The production of grain maize and corn-cob-mix was relatively concentrated, as these 28 regions together accounted for approximately 70 % of the EU's output. A majority of the regions that were specialised in the production of grain maize and corn-cob mix were located in southern and eastern EU Member States, where there are typically the necessary warm temperatures required. From the western Member States, there were several French regions as well as Bayern in Germany that were relatively specialised in the production of grain maize and corn-cob mix.

In 2018, the four EU regions with the highest levels of harvested production of grain maize and corn-cob-mix were all located in Romania; 3.7 million tonnes of output was recorded in Sud-Muntenia, closely followed by Sud-Est (3.6 million tonnes), while lower levels of output were recorded in Nord-Est (3.2 million tonnes) and Vest (2.6 million tonnes). Two other regions in Romania — Sud-Vest Oltenia and Nord-Vest — were

also among the 10 EU regions with the highest levels of production (see Figure 13.3). They were joined by single regions from France (Aquitaine), Croatia (Kontinentalna Hrvatska), Hungary (Dél-Dunántúl) and Italy (Lombardia; 2016 data). The three Romanian regions with the

highest levels of production also recorded the largest cultivated areas for grain maize and corn-cob-mix: more than 4 500 km² in each of Sud-Muntenia, Sud-Est and Nord-Est.

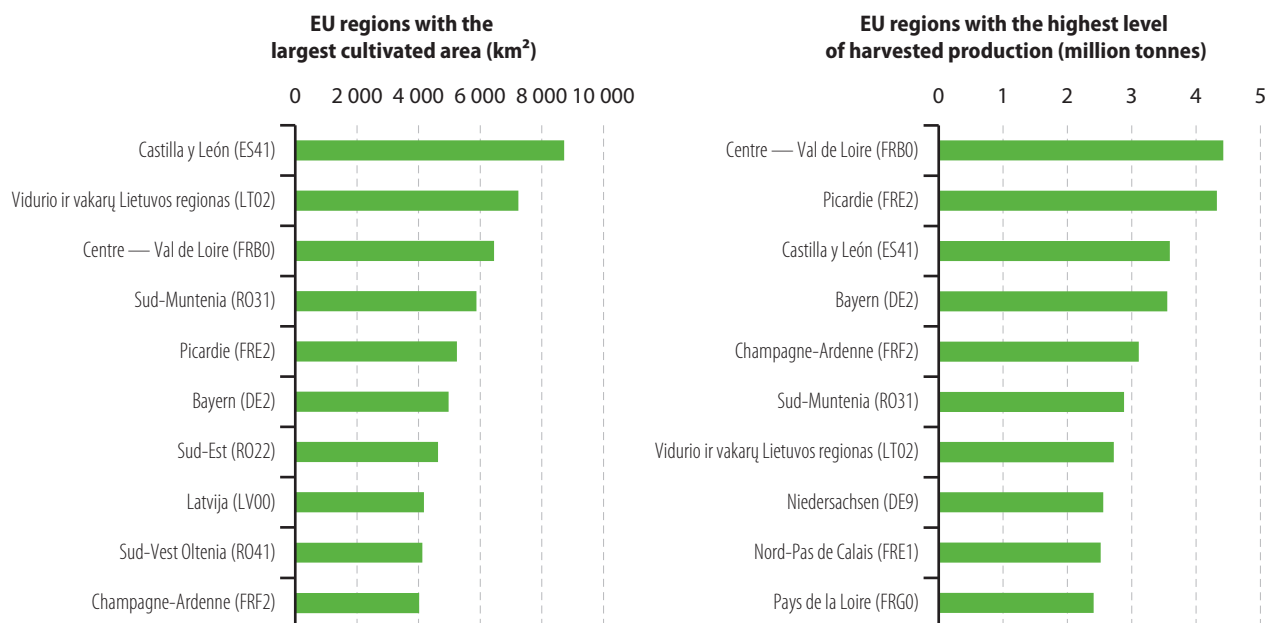
Map 13.2: Harvested production of common wheat and spelt, 2018
(million tonnes, by NUTS 2 regions)



Note: Germany and the United Kingdom, NUTS 1 regions. Albania: national data. Montenegro: provisional. Italy and Norway: 2016.

Source: Eurostat (online data code: [apro_cpshr](#))

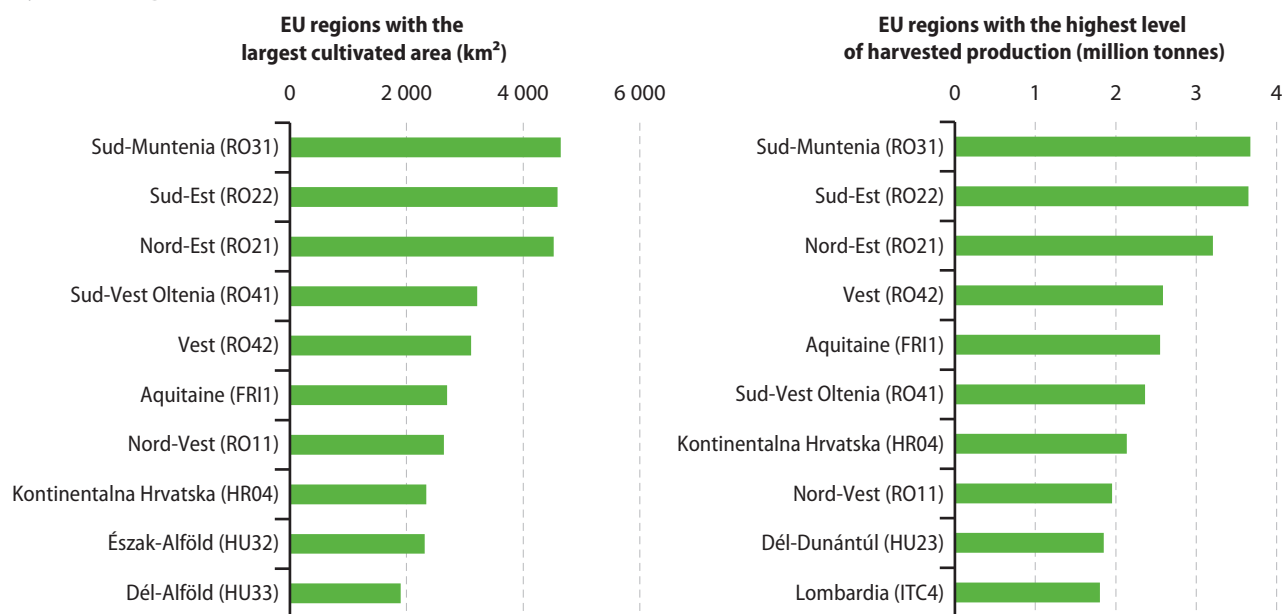
Figure 13.2: Top regions in the EU for the production of common wheat and spelt, 2018
(by NUTS 2 regions)



Note: Germany, NUTS 1 regions. Italy: 2016. Berlin (DE3) and Bremen (DE5): not available. Hamburg (DE6): harvested production, not available.

Source: Eurostat (online data code: [apro_cpshr](#))

Figure 13.3: Top regions in the EU for the production of grain maize and corn-cob-mix, 2018
(by NUTS 2 regions)



Note: Germany, NUTS 1 regions. Italy: 2016. Hamburg (DE6) and Schleswig-Holstein (DEF): not available. Berlin (DE3) and Bremen (DE5): harvested production, not available.

Source: Eurostat (online data code: [apro_cpshr](#))

Bovine animals and milk

In December 2018, pigs were the most commonly reared animals in the EU-27 (143.5 million head), followed by bovine animals (77.8 million head), sheep (an estimated 63.0 million head) and goats (an estimated 12.2 million head). The total livestock population for these four types of animals in the EU-27 was 297 million head.

Several EU Member States have clear livestock rearing specialisations that were common to most or even all of their regions. For example, this was the case for goats in Greece, or pigs in Denmark. This section focuses on bovine animals: in relative terms, Czechia, Lithuania, Slovenia and Sweden were all specialised in rearing these animals.

LIVESTOCK: NUMBER OF BOVINE ANIMALS

The information presented in Map 13.3 details the number of bovine animals across NUTS level 2 regions. When considering these livestock populations it should be remembered that some regions are larger than others in terms of their area and that data for Germany are shown for more aggregated (NUTS level 1) regions.

In December 2018, there were 19 regions (out of 218 for which data are available) where the count of bovine animals was higher than one million head. Most of these regions were located in an arc that ran from Ireland through France and Germany and finished in Poland. Many of them are characterised by a temperate climate, relatively high levels of rainfall and sparsely populated areas that provide enough space for grazing pasture.

Southern (Ireland) had the highest count of bovine animals, at 3.5 million head

Southern (Ireland) had the highest regional count of bovine animals in the EU, at 3.5 million head in December 2018. The other two regions of Ireland — Northern and Western and Eastern and Midland — also recorded more than one million head. Note that the count of bovine animals in the Southern and in the Northern and Western regions was higher than their respective number of inhabitants.

Elsewhere, there were seven regions in France that surpassed one million head of bovine animals, with the highest counts recorded in the north-western regions of Pays de la Loire (2.4 million head) and Bretagne (2.0 million head). In Germany, there were four (NUTS level 1) regions with more than one million head of bovine animals: the highest counts were recorded in the southern region of Bayern (3.1 million head) and the north-western region of Niedersachsen (2.5 million

head). Away from Ireland, France and Germany, there were five other regions across the EU with more than one million head of bovine animals. Three of these were located in a band running through central Poland — Mazowiecki regionalny, Wielkopolskie and Podlaskie — while the others were Lombardia in northern Italy and Castilla y León in north-western Spain.

MILK PRODUCTION

Cows' milk production is generally high in regions characterised by a temperate climate and a relatively high degree of rainfall. These conditions are ideal for lush dairy pasture and arable land given over to fodder crops (grass, clover and other legumes, fodder cereals) some of which may be stored as winter feed.

EU-27 production of cows' milk was 151 million tonnes in 2018. In general, cows' milk production was relatively high in many of the regions with the highest numbers of bovine animals. This encompassed an arc of regions running from Ireland in the west to Poland in the east, although there was also a relatively high quantity of milk production in Denmark, northern Italy, the Netherlands, and some Alpine regions. Dairy cow farming tended to be relatively uncommon in regions where grassland was scarcer (for example, around the Mediterranean or in south-eastern parts of the EU).

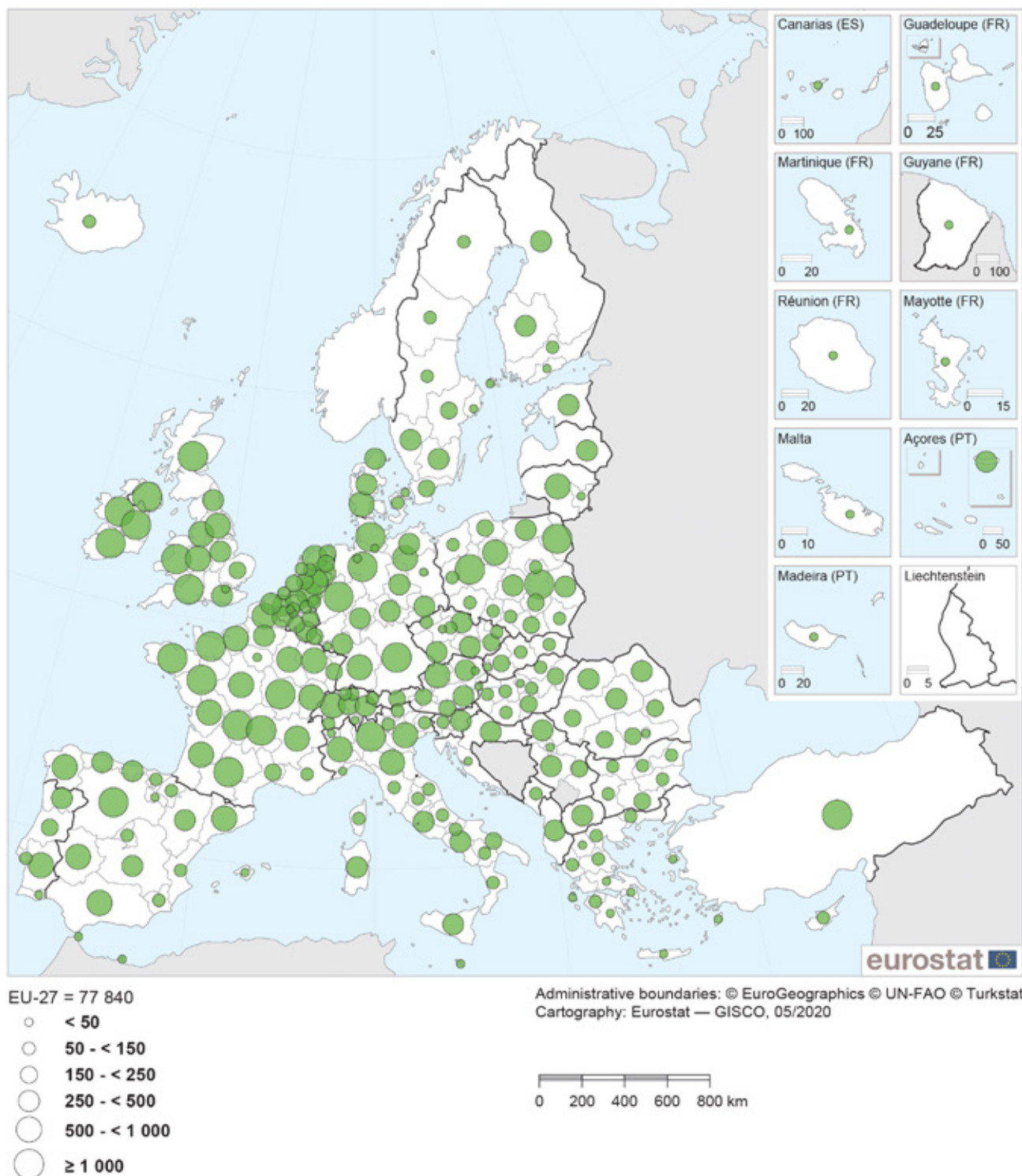
EU-27 production of cows' milk increased overall by 2.6 % between 2015 and 2018

On 1 April 2015, dairy quotas were abolished in the EU. This major change to the EU's farming sector allowed farmers the flexibility to expand their production and (potentially) to profit from the growing external demand for EU milk products. However, although limiting the amount of milk that was produced on EU farms, the quota system did provide protection to farmers, through price stability and a minimum income.

Map 13.4 analyses changes in cows' milk production during the period 2015 to 2018. Milk production in the EU-27 rose overall by 2.6 %, with contrasting developments at a regional level. Almost one quarter of EU regions (55 out of 238 for which data are available) recorded an increase of at least 7.5 % in their level of cows' milk production between 2015 and 2018. By contrast, almost one fifth of EU regions (46) recorded a decline of more than 7.5 % during the same period.

Some EU Member States recorded a relatively homogeneous development, for example, the level of cows' milk production rose in every region of Ireland and the Netherlands during the period under consideration. This was also the case for the vast majority of regions within a band that ran from north-east Poland down through all of Czechia, the Alps and into northern Italy.

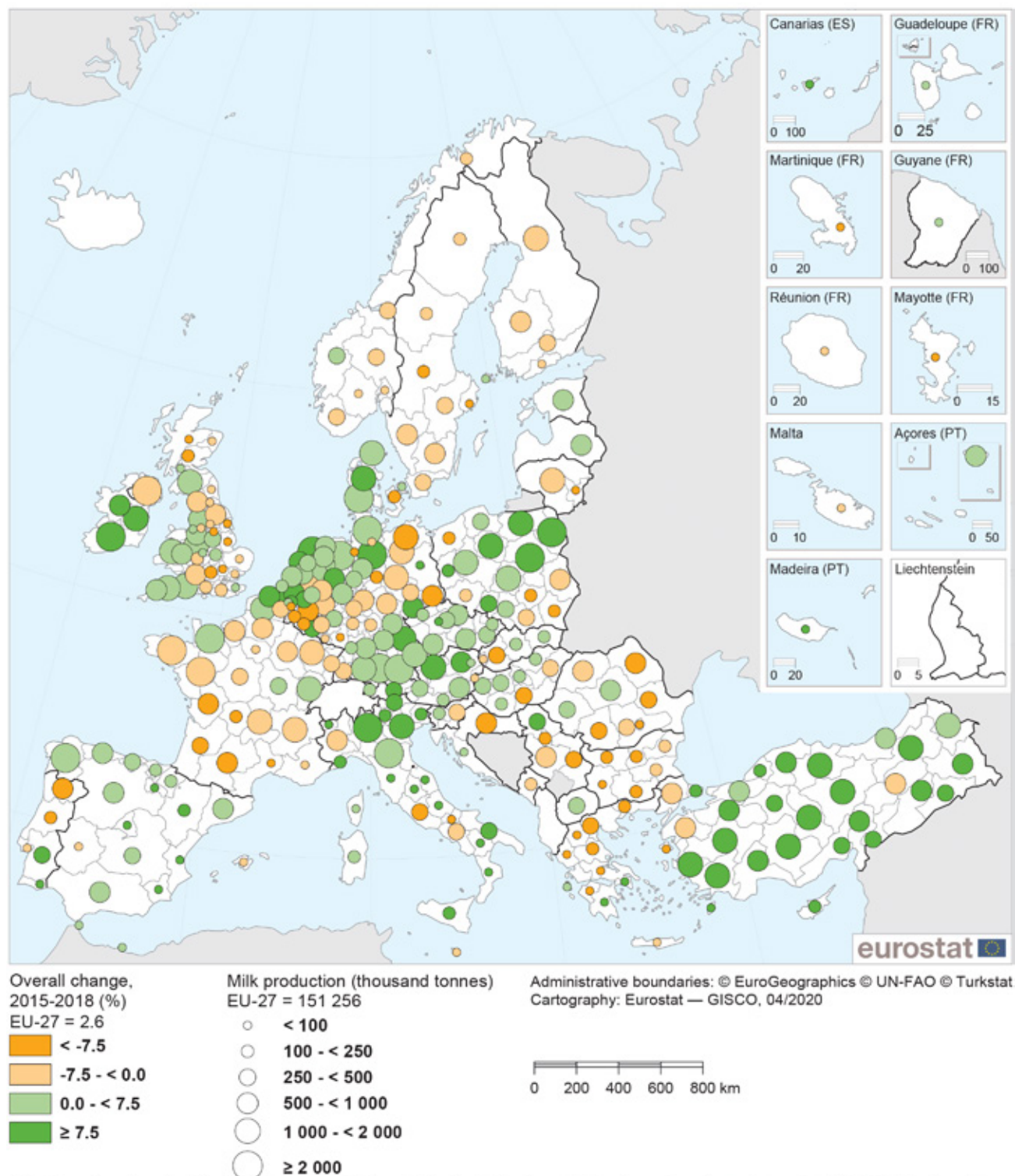
Map 13.3: Number of bovine animals, December 2018
(thousand head of livestock, by NUTS 2 regions)



Note: Germany and the United Kingdom, NUTS 1 regions. Albania and Turkey: national data. Attiki (EL30), Spain, Latvia, Northern Ireland (UKN), Montenegro and Turkey: provisional.

Source: Eurostat (online data codes: [agr_r_animal](#) and [apro_mt_lscatl](#))

Map 13.4: Cows' milk production, 2018
(thousand tonnes and % change compared with 2015, by NUTS 2 regions)



Note: the colour of each circle denotes the overall change in the level of milk production for each region (for the period 2015-2018); milk quotas were abolished in the EU in 2015. The size of each circle represents the level of milk production in 2018. Közép-Magyarország (HU1) and Makroregion Województwo Mazowieckie (PL9): NUTS 1 regions. Belgium (other than Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (BE10)): estimates. EU-27, Spain and Montenegro: provisional. France, Cyprus, the United Kingdom (other than regions for which the period 2015-2018 is not available): overall change, provisional. Mayotte (FRY5), Shropshire and Staffordshire (UKG2), West Midlands (UKG3), East Anglia (UKH1), Essex (UKH3) and North Macedonia: overall change, 2016-2018. Northumberland and Tyne and Wear (UKC2), Merseyside (UKD7), Kent (UKJ4), West Central Scotland (UKM8) and Southern Scotland (UKM9): overall change, 2017-2018. Norway: overall change, 2015-2016. Norway: milk production, 2016.

Source: Eurostat (online data codes: [agr_r_milkpr](#) and [apro_mk_farm](#))



The situation was quite different in Belgium, Germany and France, where there were considerable regional variations. For example, while there was a marked expansion of milk production in the five regions that compose Vlaams Gewest (overall growth of 18.8-21.8 %), output fell across the five regions that make up Région wallonne (overall declines of 5.6-10.9 %). More generally, the production of cows' milk declined in a band of regions running from Finland down through northern Germany and into much of France; there were also reduced levels of output in most south-eastern regions of the EU.

Southern (Ireland) and Bretagne (France) were the only regions in the EU to record more than 5.0 million tonnes of cows' milk production

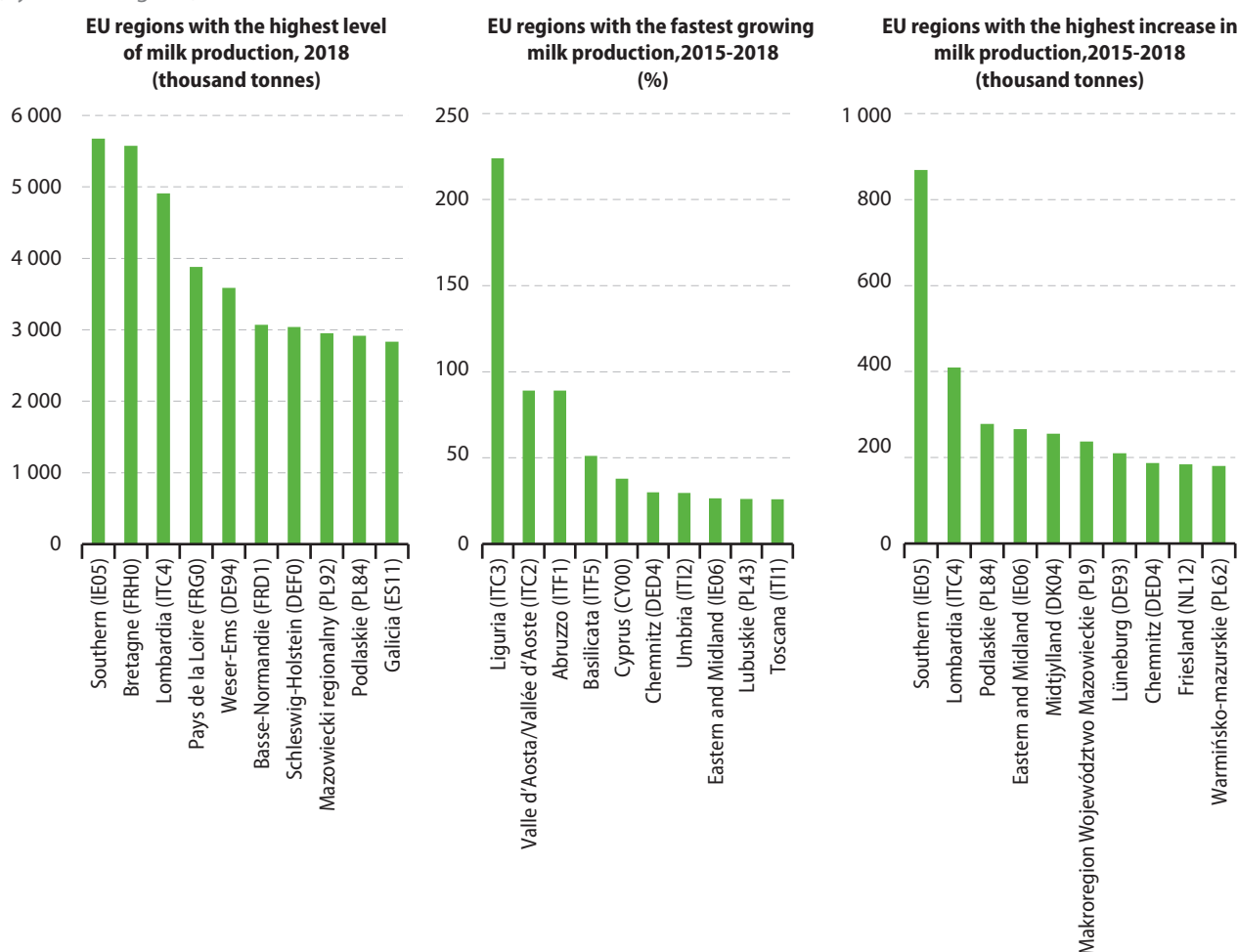
There were 18 NUTS level 2 regions in the EU-27 where cows' milk production reached 2.0 million or more tonnes in 2018. Together these regions (denoted by

the largest circles in Map 13.4) accounted for almost two fifths (38 %) of the milk produced in the EU-27. The highest levels of production were recorded in Southern (Ireland; 5.7 million tonnes), Bretagne (France; 5.6 million tonnes) and Lombardia (Italy; 4.9 million tonnes).

Among the 18 regions with the highest levels of cows' milk production there were six where milk production increased at a rapid pace (overall growth of at least 7.5 % between 2015 and 2018), thereby consolidating their position among the leading producers of cows' milk in the EU. They were: Southern (Ireland), Podlaskie, Makroregion Województwo Mazowieckie (both Poland; note the latter is a NUTS level 1 region), Lombardia (Italy), Lüneburg (Germany) and Friesland (the Netherlands).

Figure 13.4 summarises the NUTS level 2 regions in the EU with the highest levels of cows' milk production in 2018, as well as those regions with the highest relative and absolute increases in production between 2015 and 2018. Note that the information presented has

Figure 13.4: Top regions in the EU for cows' milk production
(by NUTS 2 regions)



Note: based on those regions with a production threshold of at least 50 thousand tonnes in 2018. Közép-Magyarország (HU1): NUTS 1 region. Makroregion Województwo Mazowieckie (PL9) for 2015-2018: NUTS 1 region. Belgium (other than Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (BE10)): estimates. Spain: provisional. France and Cyprus: 2015-2018, provisional. Mayotte (FRY5): 2016-2018 instead of 2015-2018.

Source: Eurostat (online data codes: [agr_r_milkpr](#) and [apro_mk_farm](#))

been filtered to include only those regions attaining a threshold of at least 50 000 tonnes of production in 2018. The highest relative increases in cows' milk production were recorded in four Italian regions: Liguria, Valle d'Aosta/Vallée d'Aoste, Abruzzo and Basilicata. All four of these regions had relatively low levels of cows' milk production, with output highest in Liguria (111 000 tonnes). In absolute terms, the biggest increase in cows' milk production was recorded in Southern (Ireland) — the region with the highest level of output — as its production rose by almost 870 000 tonnes (or 18.1 %). The next highest increases were recorded in Lombardia and Podlaskie, where the output of cows' milk increased by almost 410 000 tonnes (or 9.1 %) and by almost 280 000 tonnes (or 10.5 %) respectively.

Area under organic farming

Intensive farming can have a considerable environmental impact. Among other impacts, it can lead to an increase in greenhouse gas emissions or soil erosion, or result in habitat and biodiversity loss, deforestation or contaminated waters.

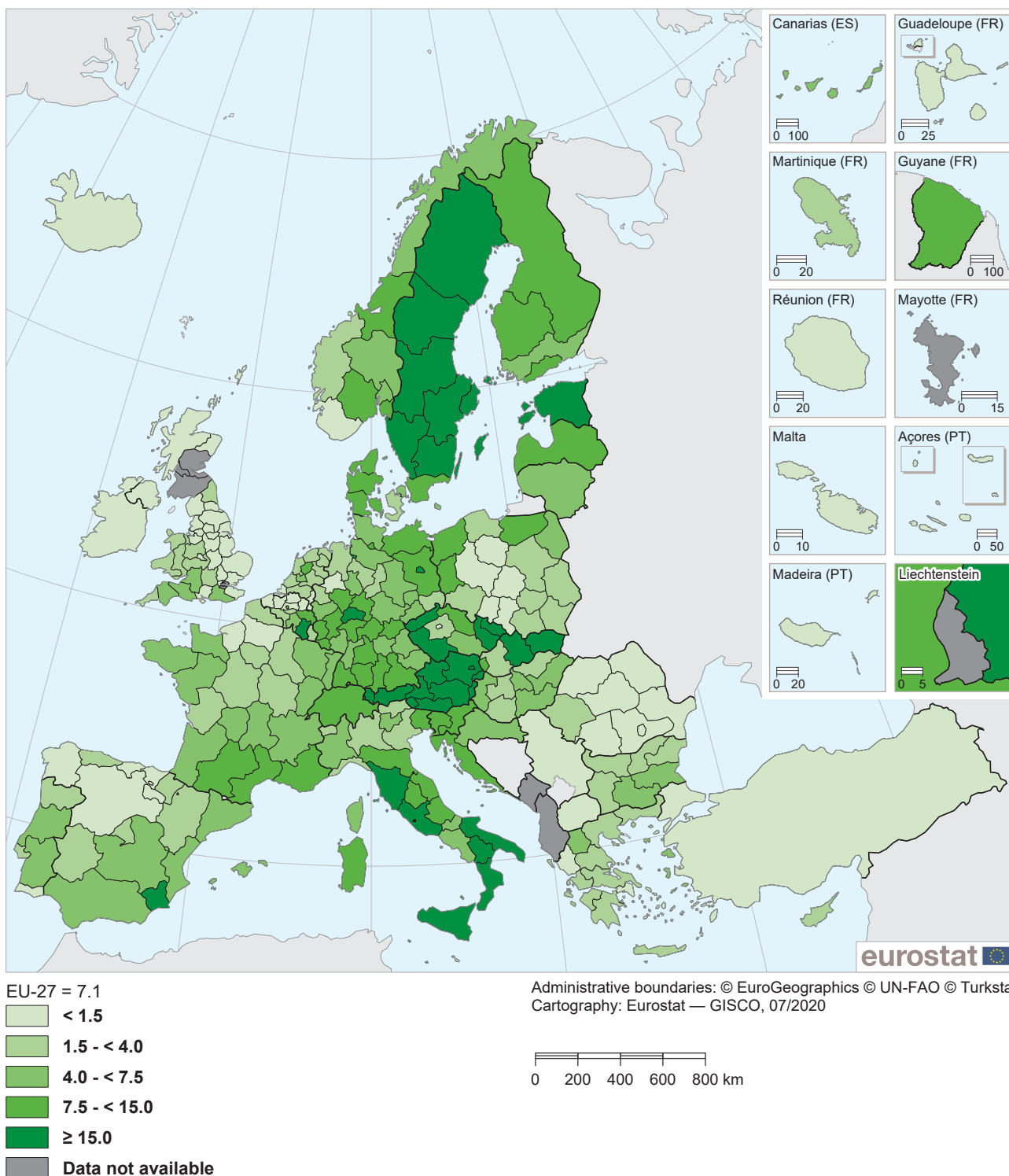
EU regulations on organic farming are designed to provide a clear structure for the production of organic goods. Consumers are increasingly aware of provenance and farming methods: this may explain, at least in part, why a growing proportion of EU farmers have adopted organic farming methods. In 2016, the EU-27's [organic area](#) covered 11.4 million hectares, which corresponded to a 7.1 % share of the total [utilised agricultural area](#). Note the organic area includes the agricultural area fully converted and the agricultural area that is under conversion.

The share of the utilised agricultural area that was under organic farming varied considerably between EU Member States and between regions. Out of 233 regions for which data are available, there were 35 where in 2016 the area under organic farming represented at least 15.0 % of the total (as shown by the darkest shade in Map 13.5); note that the statistics presented for Közép-Magyarország (Hungary) and Makroregion Województwo Mazowieckie (Poland) relate to NUTS level 1 regions. There were extensive areas of agricultural land given over to organic farming methods in Austria, Sweden, Estonia, and to a somewhat lesser degree, Czechia and Italy. By contrast, organic farming was much less common in Ireland (only national data) and Malta, as well as in several regions of Belgium, Spain, Poland and Romania.

Salzburg (Austria) was the only region in the EU where organic farming accounted for more than half of the total utilised agricultural area

The highest share of organic farming was recorded in Salzburg (Austria). It was the only region in the EU to report that more than half (51.8 %) of its utilised agricultural area in 2016 was under organic farming, some 93 000 hectares. The next highest shares — all within the range of 29.3-29.6 % — were recorded in Severozápad (Czechia), Norra Mellansverige (Sweden) and Calabria (Italy). Among the 35 regions where the area under organic farming represented at least 15.0 % of the total utilised agricultural area, the largest areas under organic farming were in: Sicilia (Italy; 375 000 hectares), Puglia (also Italy; 194 000 hectares) and Estonia (181 000 hectares).

Map 13.5: Area under organic farming, 2016
(%, relative to utilised agricultural area (UAA), by NUTS 2 regions)



Note: the total area for organic farming includes both the agricultural area fully converted and the agricultural area under conversion. Közép-Magyarország (HU1) and Makroregion Województwo Mazowieckie (PL9): NUTS 1 regions. Ireland, Lithuania, Switzerland, Serbia and Turkey: national data. Italy: provisional. Iceland: 2015. Praha (CZ01), Ciudad Autónoma de Ceuta (ES63), Malta, Região Autónoma da Madeira (PT30), București-Ilfov (RO32), Merseyside (UKD7), South Yorkshire (UKE3) and Norway: 2013.

Source: Eurostat (online data codes: [ef_lus_main](#) and [org_cropar](#))

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Publications Office
of the European Union

Print: ISBN 978-92-76-20729-0
PDF: ISBN 978-92-76-20728-3

doi:10.2785/764915
doi:10.2785/98733