ISSN 2363-1716

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# Eurostat regional yearbook 2014

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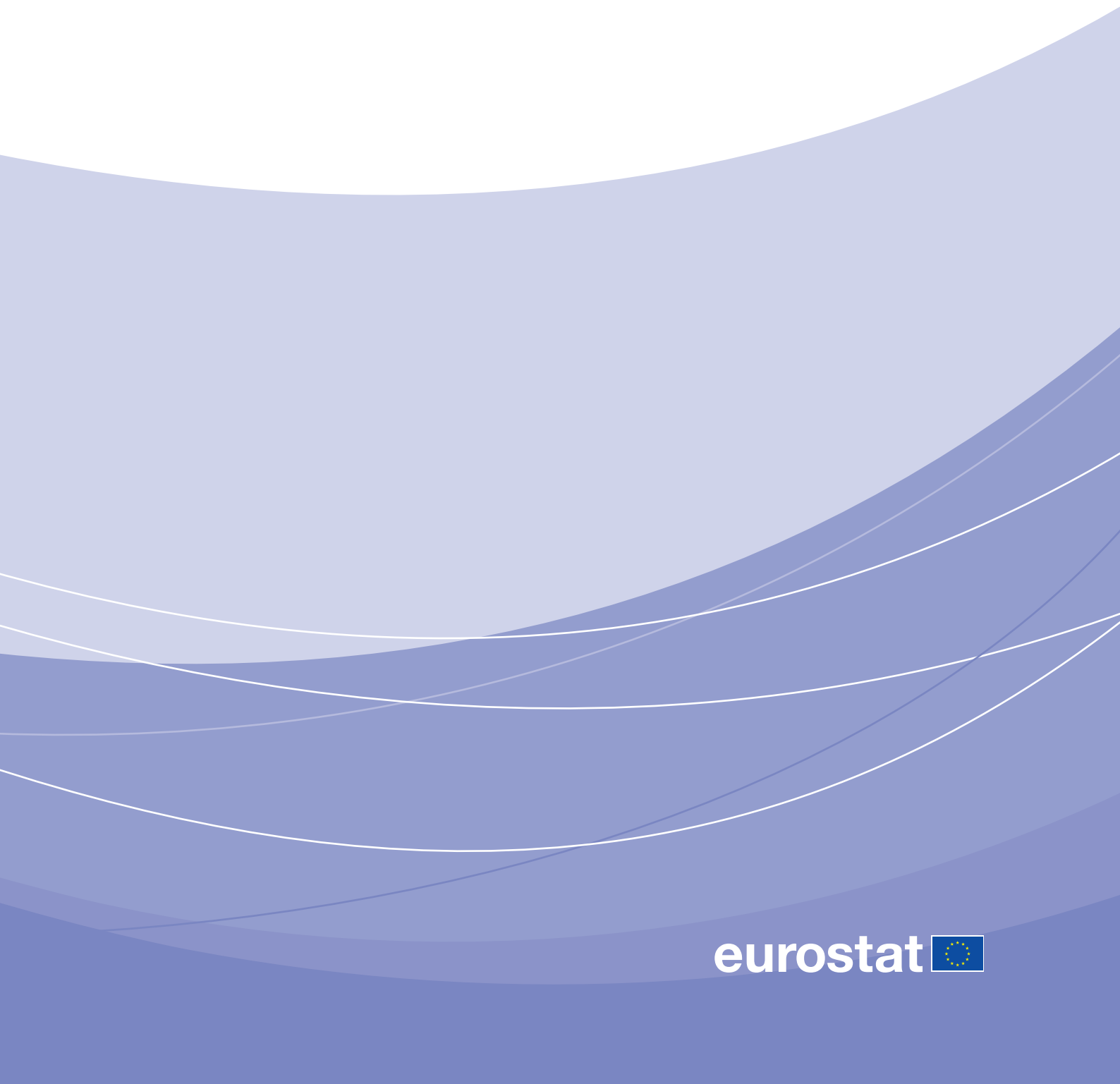

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Cataloguing data can be found at the end of this publication.

Luxembourg: Publications Office of the European Union, 2014

ISBN 978-92-79-38906-1
ISSN 2363-1716
doi:10.2785/54659
Cat. No: KS-HA-14-001-EN-N

**Theme: General and regional statistics**
**Collection: Statistical books**

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*Printed in Belgium*

PRINTED ON ELEMENTAL CHLORINE-FREE BLEACHED PAPER (ECF)

# Foreword

The European Union places considerable emphasis on cohesion policy, with the objective of bringing Europe's regions and cities closer together in economic, social and environmental spheres.

The *Eurostat regional yearbook* provides an overview of official, regional statistics that are available within Europe. It is thus a helpful tool to understand the regional diversity that exists and also shows that considering national figures alone does not reveal the full picture of what is happening in the European Union; indeed, there are often significant differences between regions of the same country when one looks at smaller geographical areas. The publication may therefore be seen as a valuable supplement to the online version of *Europe in figures — Eurostat's yearbook*, which concentrates on national statistics for the European Union and its Member States.

Regional statistics are based on a harmonised convention in the definition of regions which is contained in the classification of territorial units for statistics, known by the acronym NUTS. This classification has implications beyond the direct field of statistics: it is used more and more in other areas, and thus contributes to shaping the perception of EU citizens as regards how they identify with a certain regional structure and a common notion of regions.

The *Eurostat regional yearbook* maintains its emphasis on the most recent data available, but also provides (when possible) analysis of changes over a period of five or 10 years — thereby analysing structural changes. The analysis is supported by a range of tables, figures and maps, which seek to reveal regional variations at a glance. This edition contains four special focus chapters: providing regional data for the environment, land cover and land use, European cities and regional competitiveness.

The content of this book is available online in Statistics Explained on the Eurostat website. The latest data can be downloaded from Eurostat's database, where more disaggregated data can often be found.

Eurostat is the statistical office of the European Union. Working together with national statistical authorities in the European Statistical System, our mission is to be the leading provider of high quality statistics on Europe.

I wish you an enjoyable reading experience!

**Walter Radermacher**

Director-General, Eurostat

Chief statistician of the European Union

# 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 2014* gives a detailed picture relating to a broad range of statistical topics across the regions of the Member States of the European Union (EU), as well as the regions of EFTA and candidate countries. Each chapter presents statistical information in maps, figures and tables, accompanied by a description of the policy context, main findings and data sources. These regional indicators are presented for the following 11 subjects: population, health, education, the labour market, the economy, structural business statistics, research and innovation, the information society, tourism, transport, and agriculture. In addition, four special focus chapters are included in this edition: these look at the environment, land cover and land use, European cities, and regional competitiveness.

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## Data extraction

Data were extracted on 17 March 2014.

# Acknowledgements

The chief editor and editors of the *Eurostat regional yearbook 2014* would like to thank their colleagues who contributed to this publication and, in particular, to members of the steering group for this publication — Tim Allen, Philippe Bautier, Louise Corselli-Nordblad, Christophe Demunter, Pedro Díaz Muñoz, Fabienne Montaigne, Andrew Redpath, Gunter Schäfer, Helene Strandell and Sylvie Villaume — and to those involved closely in the editorial work for each specific chapter:

- **Population**: Gabriela Şenchea-Badea (Eurostat, Unit F.2., Population)
- **Health**: Hartmut Buchow, Margarida Domingues de Carvalho, Monica Pace and Anke Weber (Eurostat, Unit F.5., Education, health and social protection)
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- **Economy**: Andreas Krüger (Eurostat, Unit C.2., National and regional accounts production)
- **Structural business statistics**: Aleksandra Stawińska (Eurostat, Unit G.2., Structural business statistics and global value chains)
- **Research and innovation**: Bernard Félix, Ángeles Hermosa López, Branka Meštrović, Corina Mihaela Niculeț, Reni Petkova and Veijo Ritola (Eurostat, Unit G.4., Innovation and information society)
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- **Agriculture**: Roberta Forti, Ruben Garcia Nuevo, Jean-Claude Jeanty, Marjo Kasanko, Werner Kerschenbauer, Garry Mahon, Pol Marquer, Johanna Pleijte, Teresa Rabade, Johan Selenius, Herta Schenk, Vincent Tronet and Ute Walsemann (Eurostat, Unit E.1., Agriculture and fisheries)
- **Focus on the environment**: Jürgen Förster and Monique Loos (Eurostat, Unit E.2., Environmental statistics and accounts; sustainable development)
- **Focus on land cover and land use**: Beatrice Eiselt and Alessandra Palmieri (Eurostat, Unit E.4., Regional statistics and geographical information)
- **Focus on European cities**: Filipe Alves, Teodóra Brandmüller and Kristina Dourmashkin (Eurostat, Unit E.4., Regional statistics and geographical information)
- **Focus on regional competitiveness**: Paola Annoni (Joint Research Centre, Unit A.3., Resource, Efficiency, Sustainability and Health) and Lewis Dijkstra (Directorate-General for Regional and Urban Policy, Unit B.1., Economic analysis)

We are also grateful to:

- Paola Annoni (Joint Research Centre, Unit A.3., Resource, Efficiency, Sustainability and Health), Lewis Dijkstra and Hugo Poelman (Directorate-General for Regional and Urban Policy, Unit B.1., Economic analysis) and Wolfgang Petzold (Committee of the Regions) for their invaluable comments on the draft;
- the Directorate-General for Translation of the European Commission, particularly the German and French translation units;
- the Publications Office of the European Union, and in particular François Andrianne, Unit B.2., Publications

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# Introduction

**Eurostat, the statistical office of the European Union (EU), collects and publishes statistics for the EU and euro area aggregates, national and regional data, primarily for the Member States of the EU, but also for the EFTA and candidate countries. The aim of this publication is to give a flavour of the statistics collected on regions and cities through the most recent data available across a range of subjects.**

# EU statistics on regions and cities

The EU Member States are often compared with each other, but in reality it is very difficult to compare a small Member State like Malta, which has around 420 000 inhabitants, or Luxembourg, which has around 540 000 inhabitants, with Germany, the most populous EU Member State at close to 81 million inhabitants. Comparing regional data that are as detailed as possible is often more meaningful, as such an analysis has the potential to highlight potential regional disparities that may be hidden when studying aggregated data at the level of EU Member States.

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

| | (number of NUTS 2010 regions) | | |
|---|---|---|---|
| | NUTS level 1 | NUTS level 2 | NUTS level 3 |
| **EU-28** | 98 | 272 | 1 315 |
| Belgium | 3 | 11 | 44 |
| Bulgaria | 2 | 6 | 28 |
| Czech Republic | 1 | 8 | 14 |
| Denmark | 1 | 5 | 11 |
| Germany | 16 | 38 | 412 |
| Estonia | 1 | 1 | 5 |
| Ireland | 1 | 2 | 8 |
| Greece | 4 | 13 | 51 |
| Spain | 7 | 19 | 59 |
| France | 9 | 26 | 100 |
| Croatia | 1 | 2 | 21 |
| Italy | 5 | 21 | 110 |
| Cyprus | 1 | 1 | 1 |
| Latvia | 1 | 1 | 6 |
| Lithuania | 1 | 1 | 10 |
| Luxembourg | 1 | 1 | 1 |
| Hungary | 3 | 7 | 20 |
| Malta | 1 | 1 | 2 |
| Netherlands | 4 | 12 | 40 |
| Austria | 3 | 9 | 35 |
| Poland | 6 | 16 | 66 |
| Portugal | 3 | 7 | 30 |
| Romania | 4 | 8 | 42 |
| Slovenia | 1 | 2 | 12 |
| Slovakia | 1 | 4 | 8 |
| Finland | 2 | 5 | 19 |
| Sweden | 3 | 8 | 21 |
| United Kingdom | 12 | 37 | 139 |
| | (number of statistical regions) | | |
| | Level 1 | Level 2 | Level 3 |
| Iceland | 1 | 1 | 2 |
| Liechtenstein | 1 | 1 | 1 |
| Norway | 1 | 7 | 19 |
| Switzerland | 1 | 7 | 26 |
| Montenegro | 1 | 1 | 1 |
| FYR of Macedonia | 1 | 1 | 8 |
| Serbia | : | : | : |
| Turkey | 12 | 26 | 81 |

## The NUTS classification

At the heart of regional statistics is the NUTS classification — the classification of territorial units for statistics. This is a regional classification for the EU Member States providing a harmonised hierarchy of regions: the NUTS classification subdivides each Member State into regions at three different levels, covering NUTS 1, 2 and 3 from larger to smaller areas.

It should be noted that some EU Member States have a relatively small population and may therefore not be subdivided into different levels of the NUTS classification. Data for NUTS 2 regions are identical to national data for six EU Member States according to the 2010 version of the NUTS classification: Estonia, Cyprus, Latvia, Lithuania, Luxembourg and Malta. This also applies to the statistical regions at level 2 for the EFTA countries of Iceland and Liechtenstein and the candidate countries of Montenegro and the former Yugoslav Republic of Macedonia ([1]). In each case, the whole country consists of a single NUTS 2 or level 2 region. **Table 1** provides an overview of the number of NUTS regions and statistical regions by country.

([1]) The name of the former Yugoslav Republic of Macedonia is shown in tables and figures in this publication as FYR of Macedonia. This does not prejudge in any way the definitive nomenclature for this country, which is to be agreed following the conclusion of negotiations currently taking place on this subject at the United Nations.

### 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 for each update of the classification (each NUTS version). 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 regions from new EU Member States into the classification. Since 2003, the NUTS classification has been amended several times, partly in the framework of regular amendment round, partly due to accession of new Member States to the EU. The second regular amendment (Commission Regulation No 31/2011) was adopted in January 2011 and has applied as of 1 January 2012 and is referred to as the NUTS 2010 version. The NUTS 2013 version has already been adopted by the European Commission (Commission Regulation No 1319/2013). However, this version will only be applicable as of 1 January 2015.

#### *The main principles of the NUTS classification*

**Principle 1**: the NUTS regulation defines minimum and maximum population thresholds for the size of NUTS regions (as shown in **Table 2**).

**Table 2:** Size constraints for NUTS 2010 regions, by population
(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 |

**Principle 2**: NUTS favours administrative divisions (normative criterion). If available, administrative structures are used for the different NUTS levels. In those Member States where there is no administrative layer corresponding to a particular level, artificial regions are created by aggregating smaller administrative regions

**Principle 3**: NUTS favours general geographical units. These are normally more suitable for any given indicator than geographical units specific to certain fields of activity.

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. There is currently no agreement on statistical regions with Serbia and so information for this country is currently presented only at the national level.

For more information about the NUTS classification, please refer to the NUTS dedicated section on the Eurostat website, available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction

### The use of NUTS in this publication

The data presented in the *Eurostat regional yearbook* are based exclusively on NUTS 2010. Most of the regional statistics shown are for NUTS 2 regions, but some tables, figures and maps are based on NUTS 3 regions (the most detailed NUTS level); these are generally included when data at this level of detail are available (for example, maps relating to regional accounts and demography). There are also some tables, figures and maps in the *Eurostat regional yearbook* where use is made of data for NUTS 1 regions.

There may also be specific cases where particular regions are presented using a different NUTS level compared with the remainder of the regions in the same map, table or figure — these changes are documented in footnotes and are generally made in order to improve data coverage. Where little or no regional data exists for a particular country and indicator, use has been made of national data; these exceptions are again documented in footnotes.

The *Eurostat regional yearbook* contains a folded map which may be located on the inside of the front cover. It shows all NUTS 2 regions in the EU Member States and the corresponding level 2 statistical regions in the EFTA and candidate countries; it also has a full list of names and codes. The map is intended to help readers locate the name and code of a specific region when analysing the statistical maps in the publication.

## Coverage and timeliness of statistics on regions and cities

The *Eurostat regional yearbook* contains statistics on the EU-28 Member States and, where available, data are also shown for the EFTA countries (Iceland, Liechtenstein, Norway and Switzerland) and the candidate countries (Montenegro, the former Yugoslav Republic of Macedonia, Serbia and Turkey). The 2014 edition includes Croatia as an EU Member State for the first time, following its accession to the EU on 1 July 2013.

Since 27 July 2010, Iceland has been both an EFTA country and a candidate country and in this publication is grouped together with the other EFTA countries. Since 1 March 2012, Serbia has been a candidate country. There is currently no agreement on its regional boundaries, especially concerning Kosovo ([2]) — the latter is not covered in this publication — and so only national statistics are presented for Serbia (subject to data availability). On 27 June 2014, the European Council granted candidate country status to Albania. This change in status occurred after this publication was made, and hence explains why there is no data for Albania included in this edition.

There are a wide range of surveys and data collection exercises whose data are used within the *Eurostat regional yearbook*. As a result, there may be differences with respect to the latest available reference year across the different chapters of the publication; each chapter aims to show the latest information available for that subject area. In the

([2]) This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence.

**Table 3:** Summary of the latest available reference period for each chapter in the Eurostat regional yearbook (2014 edition)

| Chapter number and title | Latest available reference period on 17 March 2014 |
|---|---|
| 1. Population | 2012 or 1 January 2013 |
| 2. Health | 2010 or 2011 |
| 3. Education | 2012 |
| 4. Labour market | 2012 |
| 5. Economy | 2011 |
| 6. Structural business statistics | 2011 |
| 7. Research and innovation | 2011 for research and development; 2012 for human resources; 2010 for patents |
| 8. Information society | 2013 |
| 9. Tourism | 2012 |
| 10. Transport | 2012 |
| 11. Agriculture | 2010 for farm structure; 2011 for agricultural accounts; 2012 for agricultural products; 2013 for livestock |
| 12. Focus on the environment | 2011 |
| 13. Focus on land cover and land use | Not relevant |
| 14. Focus on European cities | 2012 |
| 15. Focus on regional competitiveness | 2013 |

light of the global financial and economic crisis, which had severe implications for some of the subjects covered, it is important to keep in mind which reference years are used. **Table 3** provides an overview of the latest reference period for which statistics are presented in each chapter.

The statistical information in the *Eurostat regional yearbook* was extracted on 17 March 2014. It is therefore possible that Eurostat's website has fresher data available due to the on-going nature of data processing resulting in updates and new reference periods being added.

The online data code(s) below each table, figure or map help users to locate the freshest data (see below for more information pertaining to online data codes). Regional data sets on Eurostat's website generally include national data alongside regional information. As such, both national and regional statistics may be accessed through a single online data code. In some exceptional cases, use has been made of national data sets on Eurostat's website in order to fill gaps in the regional data sets.

The online data includes information for each data cell pertaining to its status, flags which detail whether the data are estimated, provisional, forecasted, revised, or of low reliability.

## More information about regions and cities on Eurostat's website

### Statistics on regions

A dedicated section containing information on regional statistics may be found on Eurostat's website under the heading Regions and cities, available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/introduction.

When compared with the information in this publication, Eurostat's regional database provides a wealth of information — with a wider range of indicators, longer time series, and all levels of the NUTS classification. For the full database on regional statistics, please consult: http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/regional_statistics/data/database.

A set of MS Excel files that contain the data found in the tables, figures and maps for each chapter of this publication are provided on Eurostat's website on the *Eurostat regional yearbook* product page, available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/publications/regional_yearbook. These contain background information pertaining to the status of each data cell, flags which detail whether the data are estimated, provisional, forecasted, revised, or of low reliability.

### Statistics on cities

Eurostat's statistics on cities are collected through the Urban Audit. Its main goal is to provide information to assess the quality of life in European towns and cities, supplementing regional statistics. The Urban Audit collects data on several hundred indicators relating to the quality of urban life and living standards, including statistics on: demography, housing, health, crime, the labour market, economic activity, income disparities, local administration, civic involvement, educational qualifications, cultural infrastructure and tourism. Eurostat plans to release a flagship publication on the topic of European cities, probably in 2016.

Eurostat's Urban Audit database provides access to data for towns, cities, greater cities and larger urban zones, as well as a perception survey that presents data on how urban city dwellers perceive their quality of life. The most recent perception survey was conducted at the end of 2012 and covered 79 European cities, with questions on issues such as employment, the environment, housing, transport, culture, city services and immigration. For the full Urban Audit database, please consult: http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/city_urban/data_cities/database_sub1.

Within this publication, Urban Audit statistics are presented in their own chapter that focuses on European cities. Background information relating to the Urban Audit data collection is presented on the Eurostat website, available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/city_urban.

### Statistics on metropolitan regions

Background information pertaining to statistics on metropolitan regions (defined as agglomerations of at least 250 000 inhabitants) is presented as part of the dedicated section for regions and cities, available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/metropolitan_regions. Eurostat's database on metropolitan regions covers topics such as demography, the economy and the labour market, it is available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/metropolitan_regions/data_metro/database_sub3.

## Eurobase — Eurostat's online database

In all Eurostat publications each table, figure or map is presented together with hyperlinks for online data codes, which provide easy access to the most recent data on Eurobase, Eurostat's online database. Online data codes lead to either a two- or three-dimensional table in the TGM (tables, graphs, maps) interface or to an open dataset which generally contains more dimensions and longer time series using the Data Explorer interface. These online data codes are given as part of the source below each table, figure or map.

In the PDF version of this publication, the reader is led directly to the freshest data when clicking on these hyperlinks. Readers of the printed version can access the freshest data by typing a standardised address for the hyperlink into a web browser, for example:

http://ec.europa.eu/eurostat/product?code=<data_code>&mode=view, where <data_code> is to be replaced by the online data code in question.

## Statistics Explained

All the chapters in the *Eurostat regional yearbook* are also included as articles in Statistics Explained (http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Main_Page), Eurostat's user-friendly guide to European statistics. Statistics Explained is a wiki-based system, which presents statistical topics in an easy-to-understand way. Together, the articles make up an encyclopaedia of European statistics, which is completed by a statistical glossary clarifying the terms used. In addition, numerous links are provided to data, metadata, and further information; as such, Statistics Explained a portal for regular and occasional users alike.

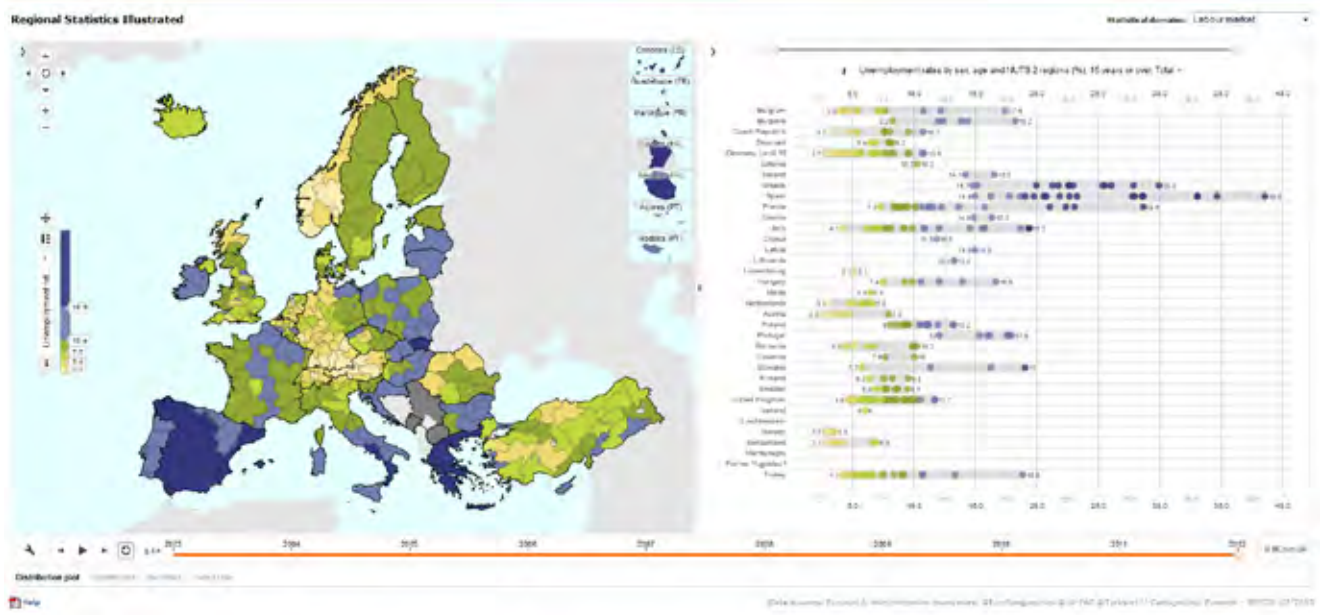
In March 2014, Statistics Explained contained around 650 statistical articles and more than 1 700 glossary items; its content is regularly expanded, while ongoing efforts are being made to increase its user-friendliness, for example, by extending the portal to cover additional languages or providing ways of improving print-outs via a PDF plug-in.

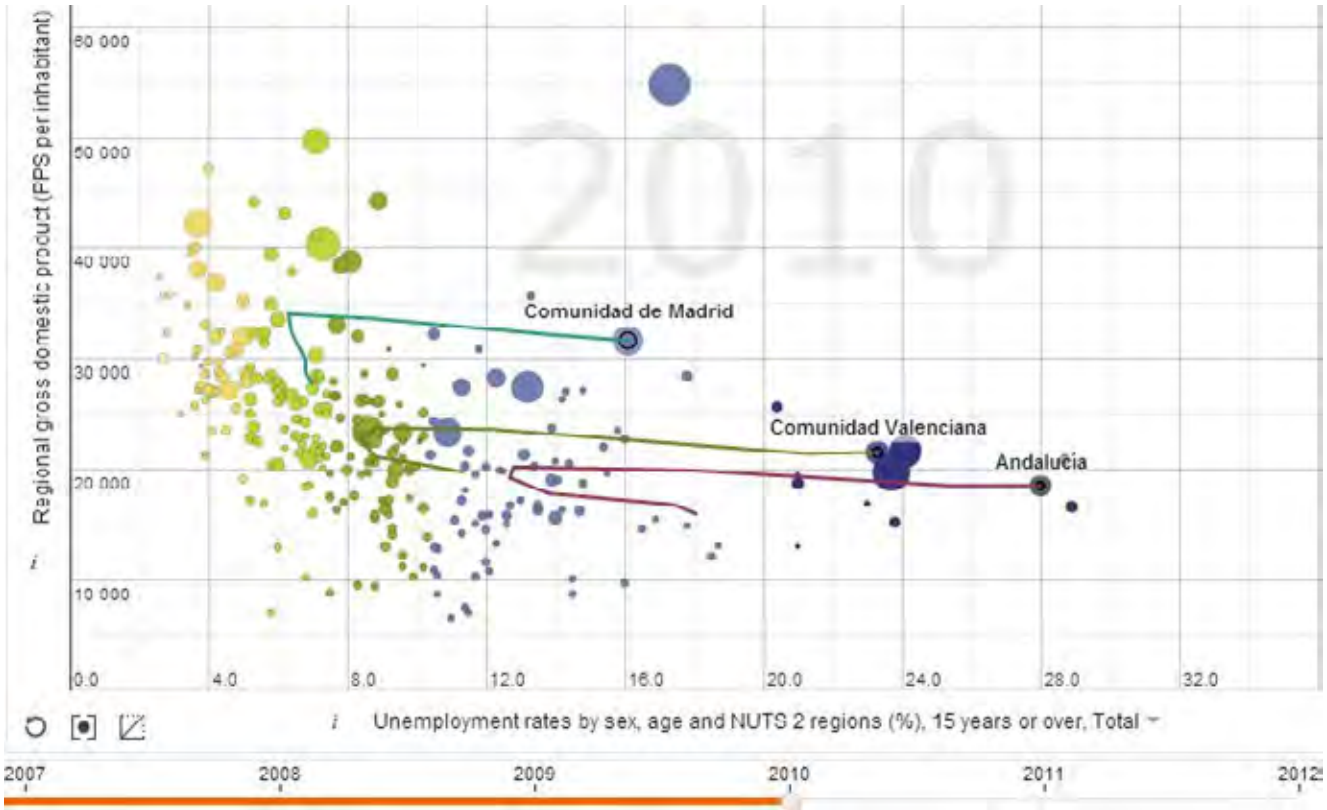
Statistics Explained is used to publish new content for the *Eurostat regional yearbook* as each chapter is finalised. This means that the latest text on each topic may be made available in Statistics Explained earlier than in the printed version. In this way, the most recent results are provided to users without the inevitable delays that are part of the process of producing printed publications.

Since the 2011 edition, the German and French versions of the *Eurostat regional yearbook* are only available on Statistics Explained, rather than as printed publications. Since the 2012 edition, three of the chapters from the *Eurostat regional yearbook* — those on population, education and the economy — are available on Statistics Explained in 18 additional European languages (Croatian has been included as of the 2014 edition). Note also that as of the 2014 edition, all of the tables, figures and maps used to illustrate data in the *Eurostat regional yearbook* are only provided in English; this applies to the German and French versions, as well as the 19 additional language versions. All of the tables, figures and maps are included in a set of MS Excel worksheets that are distributed on Statistics Explained — there is one file for each chapter of the *Eurostat regional yearbook*.

## Regional statistics illustrated

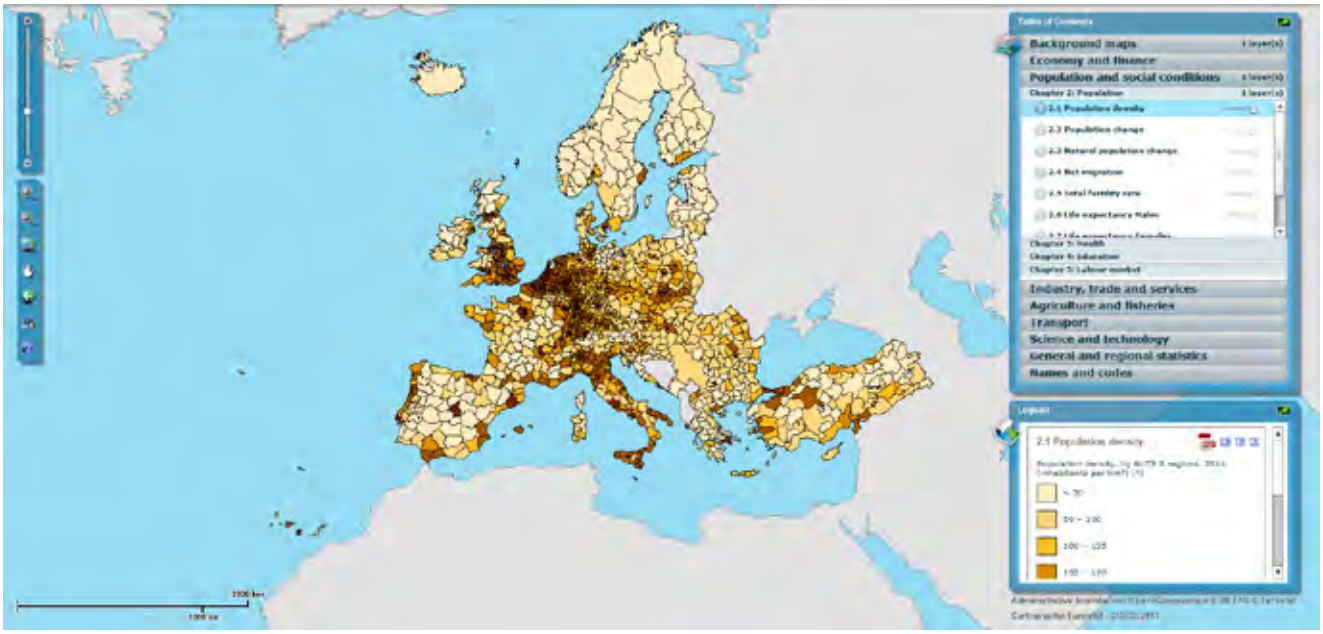
Eurostat offers two interactive applications on its website which provide tools for visualising and analysing sub-national data. The first of these, Regional statistics illustrated (http://epp.eurostat.ec.europa.eu/cache/RSI/), contains data for a wide range of statistical indicators across European regions. There are four standard visualisations (a distribution plot, a scatter plot, a bar chart and a data table); these provide an opportunity to make deeper analyses of regional data as well as comparisons and rankings of different regions. In addition, an animated timeline can be used to explore how indicators for specific regions have developed over time.



## Statistical atlas

The second application, Eurostat's statistical atlas (http://ec.europa.eu/eurostat/statistical-atlas/gis/viewer), is an interactive viewer that allows users to study layers of statistical data in combination with layers of geographical information (for example, statistical regions, cities, roads or rivers). The statistical atlas can be used for viewing all of the maps that are contained within the *Eurostat regional yearbook* and provides users with the opportunity to request specific information for a single administrative region or city in Europe; the maps can also be downloaded as high-resolution PDFs. This application is also used to present results from LUCAS (the EU's land cover and land use survey).



# Principal EU policies impacting upon Europe's regions

## The Europe 2020 strategy

The Europe 2020 strategy, designed as the successor to the Lisbon strategy, was adopted by the European Council on 17 June 2010. It is the EU's common agenda for this decade — placing emphasis on promoting a growth pact that can lead to a smart, sustainable and inclusive economy, in order to overcome the structural weaknesses in Europe's economy, improve its competitiveness and productivity, and underpin a sustainable social market economy.

The key targets of the Europe 2020 strategy are summarised under five headline topics, each translated into national targets for each EU Member State (in some countries these are further broken down to reflect the specific situation of each region). As such, care should be taken in interpreting statistics for a single region and comparing these with EU-wide headline targets as the region itself or the country to which it belongs may have a different emphasis for its growth path.

The Europe 2020 strategy seeks to achieve the following targets by 2020.

- **Employment** — increasing the employment rate of the population aged 20–64 to at least 75 %.
- **Research and development** — increasing combined public and private investment in R & D to 3 % of GDP.
- **Climate change and energy sustainability** — reducing greenhouse gas emissions by at least 20 % compared to 1990 levels, increasing the share of renewable energy in final energy consumption to 20 %, and moving towards a 20 % increase in energy efficiency.
- **Education** — reducing school drop-out rates to less than 10 % and increasing the share of the population aged 30–34 having completed tertiary education to at least 40 %.
- **Fighting poverty and social exclusion** — lifting at least 20 million people out of the risk of poverty and social exclusion.

The European Commission has adopted seven flagship initiatives in order to drive progress towards the Europe 2020 goals; these are grouped together under three headings for:

- smart growth (the digital agenda for Europe, the innovation union, and youth on the move);
- sustainable growth (resource efficient Europe and an industrial policy for the globalisation era);
- inclusive growth (an agenda for new skills and jobs, and the European platform against poverty).

Impartial and objective statistical information is essential for evidence-based political decision-making and forms the basis of Eurostat's role in the context of the Europe 2020 strategy, principally through the provision of statistical and methodological support, helping to develop and choose the most relevant indicators to support the strategy, to produce and supply statistical data, and to ensure its high quality. In 2013, Eurostat released a publication titled Smarter, greener, more inclusive? — Indicators to support the Europe 2020 strategy. It traces the development of the key headline indicators for the Europe 2020 strategy, together with other statistics which enable a better understanding of the driving forces behind these indicators.

Eurostat publishes the latest information available for each of the Europe 2020 headline indicators, available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/europe_2020_indicators/headline_indicators.

### Towards a mid-term review of the Europe 2020 strategy

On 5 March 2014, the European Commission released a Communication titled, 'Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth' (COM(2014) 130). This provides a review of the achievements made and the difficulties encountered during the first four years of the Europe 2020 strategy and also launched a mid-term review of the strategy. After an endorsement by the European Council in March 2014, the European Commission launched a public consultation on the review of Europe 2020 (which will remain open until 31 October 2014).

More detailed information about the Europe 2020 strategy is provided on the European Commission's website, available at: http://ec.europa.eu/europe2020/index_en.htm.

## Cohesion policy — alignment with the Europe 2020 strategy

### What is cohesion policy?

The EU's cohesion policy has the goal of investing in growth and jobs and promoting territorial cooperation. Cohesion policy is established on the basis of seven-year programming periods; the programming period that is currently in force covers 2014–20.

The vast majority of the statistics presented in the *Eurostat regional yearbook* cover the seven-year programming period from 2007–13. During this time, the EU allocated almost EUR 350 billion to cohesion policy with the objective of furthering economic, social and territorial cohesion, through reducing development gaps between regions and among EU Member States. Each national programme was co-financed by EU Member States, and so the total amount of funding made available reached almost EUR 500 billion.

### How is the budget decided?

The total budget for cohesion policy and the rules associated with its allocation are jointly decided by the European Council and the European Parliament. A legislative package for cohesion policy for 2014–20 was adopted on 17 December 2013. This included a common provisions regulation (CPR) which lays down general provisions for all structural and investment funds (the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund, the European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF)); in addition, the legislative package also included specific regulations for each of the individual funds and the setting-up of a Globalisation Adjustment Fund and a new Programme for Social Change and Innovation.

Cohesion policy funds are attributed through a collective process which involves authorities at European, national, regional and local levels, as well as social partners and organisations from civil society. The EU does not fund individual projects per se — rather, cohesion policy funds are attributed to multi-annual national programmes in each of the EU Member States — these programmes should be aligned with general EU objectives and priorities.

Cohesion policy funding for the period 2014–20 is foreseen to be almost EUR 352 billion — equivalent to almost one third (32.5 %) of the EU's total budget during this period. A raft of policy reforms have been designed with the aim of ensuring maximum impact for this strand of EU funding, with the lion's share of cohesion policy funding targeted at those regions with relatively low levels of economic development.

#### EU COHESION POLICY — THE THREE PRINCIPLE FUNDS

The European Regional Development Fund (ERDF) concentrates its intervention on innovation and research, the digital agenda, support for small and medium-sized enterprises (SMEs) and the low-carbon economy. The resources allocated to each of these priorities depends upon the region — for example, in more developed regions, at least 80 % of any funding should focus on at least two of these priorities, whereas in less developed regions this share falls to 50 %.

The European Social Fund (ESF) aims to improve employment and education opportunities, as well as the situation of the most vulnerable people (for example, those at risk of poverty). During the period 2014–20 the ESF will focus on supporting four thematic objectives: promoting employment and supporting labour mobility; promoting social inclusion and combating poverty; investing in education, skills and lifelong learning; enhancing institutional capacity and an efficient public administration.

The Cohesion Fund supports investment in the environment, trans-European networks and other infrastructure projects, through a focus on the following areas: the shift towards a low-carbon economy; promoting climate change adaptation and risk prevention; preserving and protecting the environment and promoting resource efficiency; promoting sustainable transport and removing key bottlenecks in network infrastructures; enhancing institutional capacity. It is subject to the same rules of programming, management and monitoring as the ERDF and ESF.

***For more information:***

Directorate-General for Regional and Urban Policy — cohesion policy for 2014–20:
http://ec.europa.eu/regional_policy/what/future/index_en.cfm

### COHESION POLICY — A SHORT GUIDE TO PROGRAMMING

Each Member State produces a draft partnership agreement, which outlines their strategy and proposes a list of programmes; the European Commission negotiates with the national authorities on the content of these agreements. Programmes are implemented by the EU Member States and their regions, through one or more managing authorities — this can involve selecting, monitoring and evaluating hundreds of thousands of projects.

The European Commission commits cohesion policy funds which allow the EU Member States to spend the budget allocated to their programmes — any funds that are allocated have to be spent within two years of having been awarded. Financing from EU structural funds (financial assistance granted to specific regions to resolve structural economic and social problems) may not be used to replace national spending by an EU Member State and the European Commission agrees with each country upon the level of spending to be maintained throughout the programming period. Funding is only provided for certified expenditure and each programme is closely monitored.

***For more information:***

Partnership agreements — cohesion policy programmes for EU Member States:
http://ec.europa.eu/regional_policy/what/future/program/index_en.cfm

## The NUTS classification — an objective basis for the allocation of funds

Regional statistics are employed when allocating funds. The NUTS classification is used to define regional boundaries and determine geographic eligibility for structural and investment funds. Regional eligibility for the ERDF and the ESF during the programming period 2014–20 was calculated on the basis of regional GDP per inhabitant (in PPS and averaged over the period 2007–09). NUTS 2 regions were ranked and split into three groups:

- less developed regions (where GDP per inhabitant was less than 75 % of the EU-27 average);
- transition regions (where GDP per inhabitant was between 75 % and 90 % of the EU-27 average); and
- more developed regions (where GDP per inhabitant was more than 90 % of the EU-27 average).

**Map 1** shows the eligibility of NUTS 2 regions for structural funds over the programming period 2014–20. The less developed regions of the EU, which receive the highest proportion of structural funds, lie predominantly in eastern and southern Europe, as well as the Baltic Member States.

Regional eligibility for the Cohesion Fund was calculated on the basis of gross national income per inhabitant (in PPS and averaged over the period 2008–10). Only countries whose gross national income per inhabitant was less than 90 % of the EU-27 average are supported. Eligibility for the Cohesion Fund during the programming period 2014–20 covers actions in Bulgaria, the Czech Republic, Estonia, Greece, Croatia, Latvia, Lithuania, Hungary, Malta, Poland, Portugal, Romania, Slovenia and Slovakia; Cyprus is eligible for a phase-out fund.

**Table 4** provides an overview of the allocation of cohesion policy funds (both structural funds and the Cohesion Fund) for the programming period 2014–20. During the 2014–20 programming period, Poland has been allocated 22.0 % of the EU-28's cohesion policy funds, while the next highest allocations were for Italy (9.3 %) and Spain (8.1 %).

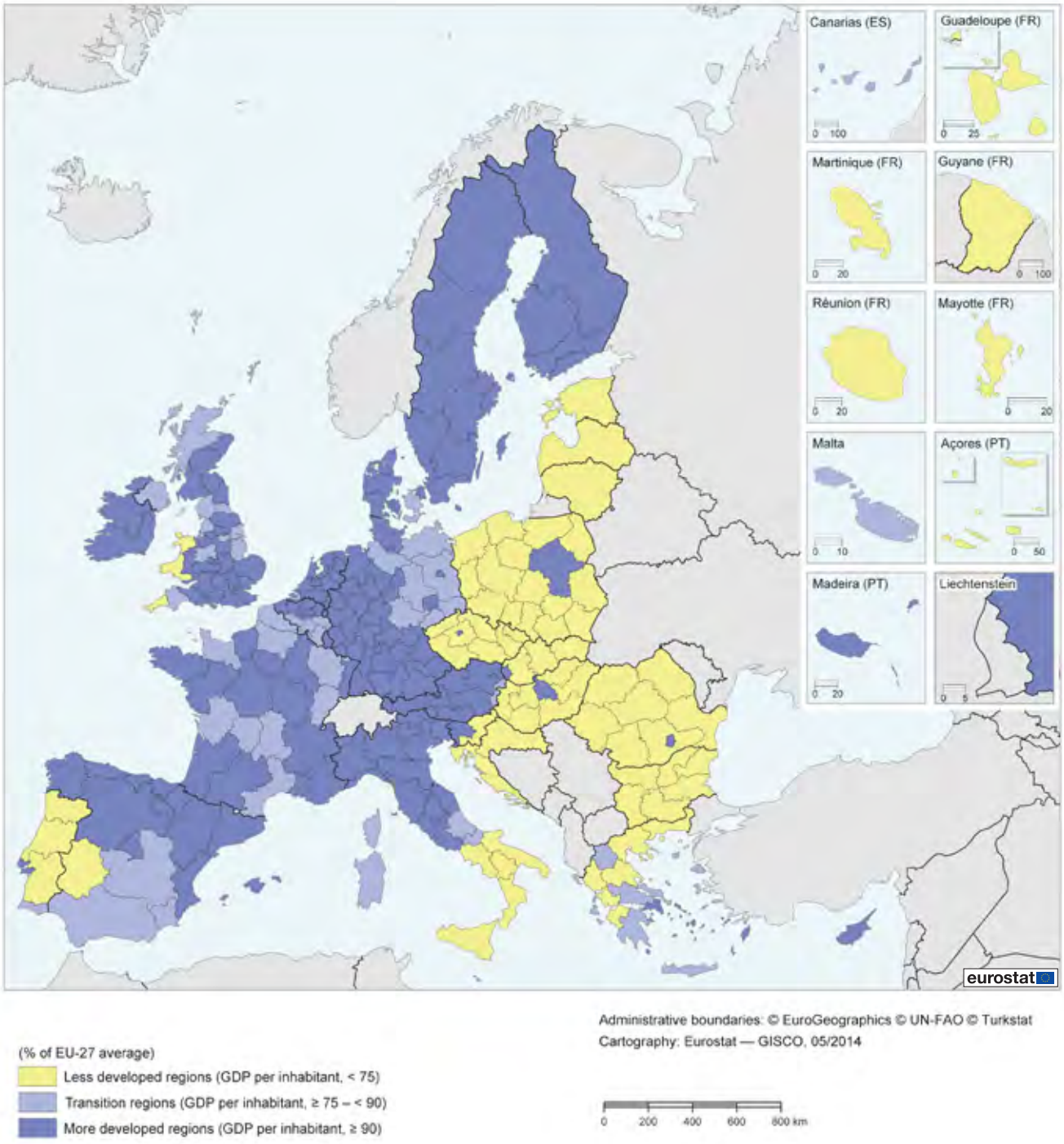
## Recent economic and social developments by funding eligibility

Historical time series provide evidence of a general pattern of convergence between EU regions (with the least developed regions tending to catch-up with other regions). Between 2008 and 2012, unemployment increased in just over four out of every five NUTS 2 regions across the EU, while regional value added in constant prices fell in almost two thirds of the EU's regions between 2008 and 2010 (subject to data availability). As such, the financial and economic crisis had a widespread effect on Europe's regions, including both more and less developed regions. The post-crisis period shows some evidence of growing disparities between EU regions after a long period of convergence.

**Figure 1** presents three key indicators (GDP per inhabitant, population change and the unemployment rate), with regional information aggregated according to structural funds eligibility; the figures show developments since 2000 for the EU-28 average, less developed, transition and more developed regions.

The information shown for GDP per inhabitant reflects not only changes in regional output but also changes in population numbers. In 2000, more developed regions had an average GDP per inhabitant that was 2.6 times as high as that for less developed regions. This ratio fell in successive years to 2009 and remained unchanged in 2010, before declining one again (albeit by a small margin) in 2011, when GDP per inhabitant in developed regions was 2.1 times as high as in less developed regions.

**Map 1:** Regional eligibility for structural funds, by NUTS 2 regions, 2014–20 (1)
(% of EU-27 average)




(1) GDP per inhabitant over the period 2007–09 was used as the basis for the allocation of structural funds for 2014–20; as such, calculations relating to regional eligibility were based on the NUTS 2006 classification. EU-28 regions in this publication are delineated on the basis of the NUTS 2010 classification and as a result there are two regions where regional eligibility does not follow the new NUTS boundaries: Chemnitz (DED4) and Merseyside (UKD7). Both regions are partly eligible as transition regions and partly as more developed regions.

*Source:* European Commission, Directorate General for Regional and Urban Policy

**Table 4:** Allocation of cohesion policy funds for the programming period 2014–20
(million EUR)

| | European Regional Development Fund and European Social Fund | | | Cohesion Fund | Total cohesion policy (1) | Share of EU-28 cohesion policy funds (%) |
|---|---|---|---|---|---|---|
| | Less developed regions | Transition regions | More developed regions | | | |
| **EU-28** | 182 171.8 | 35 381.1 | 54 350.5 | 63 399.7 | 351 854.2 | 100.0 |
| Belgium | - | 1 039.7 | 938.6 | - | 2 283.9 | 0.6 |
| Bulgaria | 5 089.3 | - | - | 2 278.3 | 7 588.4 | 2.2 |
| Czech Republic | 15 282.5 | - | 88.2 | 6 258.9 | 21 982.9 | 6.2 |
| Denmark | - | 71.4 | 255.1 | - | 553.4 | 0.2 |
| Germany | - | 9 771.5 | 8 498.0 | - | 19 234.9 | 5.5 |
| Estonia | 2 461.2 | - | - | 1 073.3 | 3 590.0 | 1.0 |
| Ireland | - | - | 951.6 | - | 1 188.6 | 0.3 |
| Greece | 7 034.2 | 2 306.1 | 2 528.2 | 3 250.2 | 15 521.9 | 4.4 |
| Spain | 2 040.4 | 13 399.5 | 11 074.4 | - | 28 559.5 | 8.1 |
| France | 3 407.8 | 4 253.3 | 6 348.5 | - | 15 852.5 | 4.5 |
| Croatia | 5 837.5 | - | - | 2 559.5 | 8 609.4 | 2.4 |
| Italy | 22 324.6 | 1 102.0 | 7 692.2 | - | 32 823.0 | 9.3 |
| Cyprus | - | - | 421.8 | 269.5 | 735.6 | 0.2 |
| Latvia | 3 039.8 | - | - | 1 349.4 | 4 511.8 | 1.3 |
| Lithuania | 4 628.7 | - | - | 2 048.9 | 6 823.1 | 1.9 |
| Luxembourg | - | - | 39.6 | - | 59.7 | 0.0 |
| Hungary | 15 005.2 | - | 463.7 | 6 025.4 | 21 905.9 | 6.2 |
| Malta | - | 490.2 | - | 217.7 | 725.0 | 0.2 |
| Netherlands | - | - | 1 014.6 | - | 1 404.3 | 0.4 |
| Austria | - | 72.3 | 906.0 | - | 1 235.6 | 0.4 |
| Poland | 51 163.6 | - | 2 242.4 | 23 208.0 | 77 567.0 | 22.0 |
| Portugal | 16 671.2 | 257.6 | 1 275.5 | 2 861.7 | 21 465.0 | 6.1 |
| Romania | 15 058.8 | - | 441.3 | 6 935.0 | 22 993.8 | 6.5 |
| Slovenia | 1 260.0 | - | 847.3 | 895.4 | 3 074.8 | 0.9 |
| Slovakia | 9 483.7 | - | 44.2 | 4 168.3 | 13 991.7 | 4.0 |
| Finland | - | - | 999.1 | - | 1 465.8 | 0.4 |
| Sweden | - | - | 1 512.4 | - | 2 105.8 | 0.6 |
| United Kingdom | 2 383.2 | 2 617.4 | 5 767.6 | - | 11 839.9 | 3.4 |

(1) The totals presented include a number of allocations which are not detailed in this table: European territorial cooperation, special allocations for outermost and northern sparsely populated regions, additional allocations for the Youth Employment Initiative, urban innovative actions and technical assistance.

*Source:* European Commission, Directorate General for Regional and Urban Policy

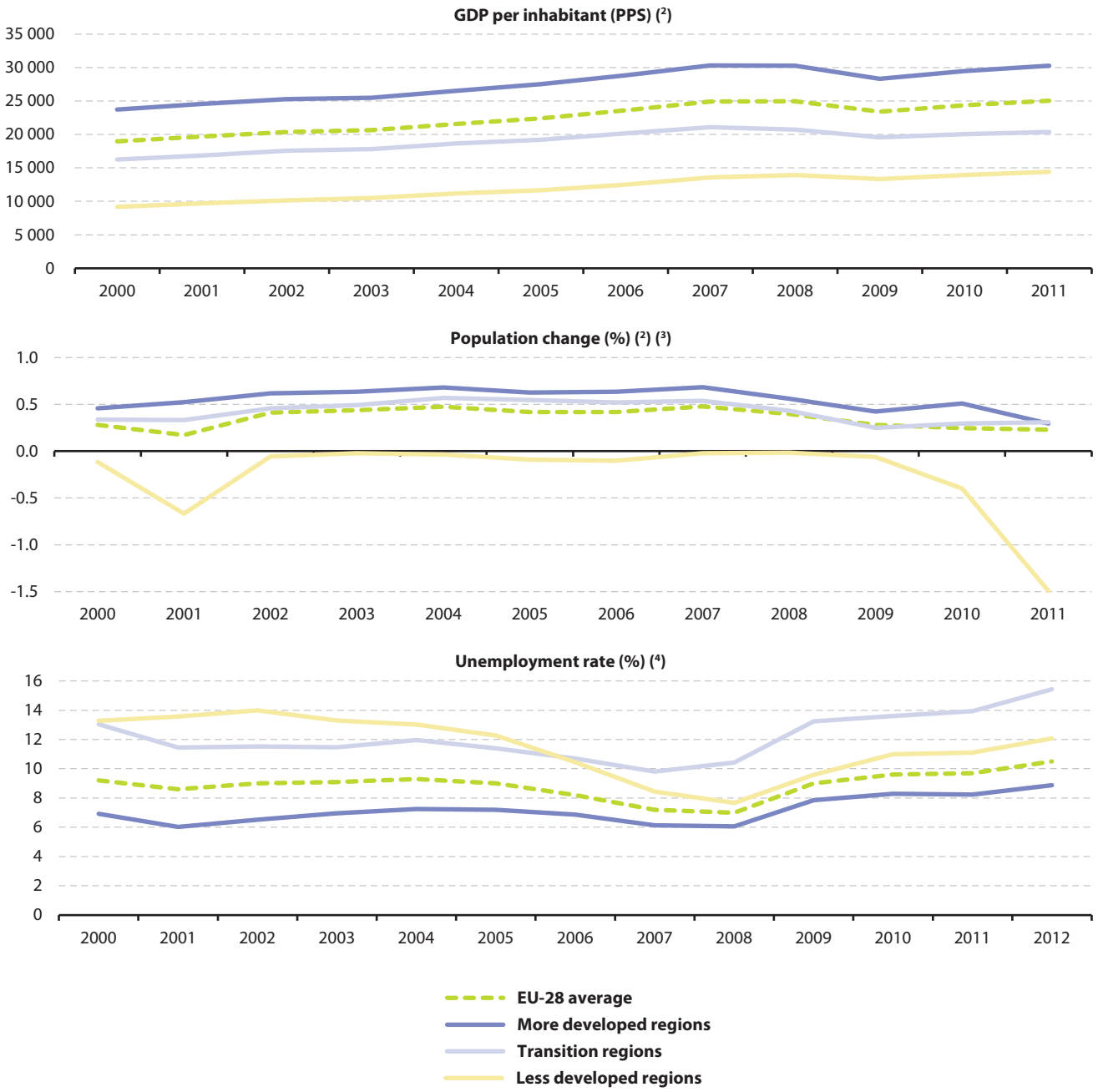
One of the most striking aspects of the figures is the general pattern of much lower population growth in less developed regions and the tendency for this pattern to be accentuated in the post-crisis period, suggesting that there were relatively large numbers of persons leaving less developed regions (perhaps to look for work or additional opportunities in other regions). Indeed, while pre-crisis the most rapid reductions in unemployment rates were recorded for less developed regions (the unemployment rate for less developed regions falling from a high of 14.0 % in 2002 to 7.7 % by 2007), since 2008 this pattern was reversed and the unemployment rate for less developed regions rose at a faster than average pace. Note that since 2006 the unemployment rate for transition regions has been higher than that for less developed regions: this may, at least in part, be explained by changes in population numbers in these two types of region.

For a more detailed analysis of the urban and regional dimension of the financial and economic crisis, refer to the European Commission's Directorate-General for Regional and Urban Policy eighth progress report on economic, social and territorial cohesion.

## Cohesion policy — the EU's principle investment tool for Europe 2020 targets

To conclude, cohesion policy during the 2014–20 programming period seeks to encourage a more results-orientated approach with more transparent controls and less red tape; these initiatives are designed to boost growth and jobs across Europe. Programming is, for the first time, embedded within overall economic policy coordination, in particular the European semester, an annual cycle of economic policy coordination that is designed to coordinate the individual efforts of all EU Member States so they result in the desired impact on growth. As such, the EU's cohesion policy is closely integrated with the Europe 2020 strategy and cohesion policy will, over the next six years, be the EU's principle investment tool for delivering the Europe 2020 targets.

**Figure 1:** Main indicators for EU regions according to their structural funds eligibility, 2000–12 (1)




(1) Regions are defined in terms of GDP per inhabitant in relation to the EU-27 average; less developed regions < 75%; transition regions ≥ 75% – < 90%; more developed regions ≥ 90%.
(2) Note: the x-axis only runs to 2011, as 2012 is not available.
(3) Denmark, Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Cheshire (UKD6) and Merseyside (UKD7): excluded.
(4) EU-27 instead of EU-28: 2000–01. Denmark, Chemnitz (DED4), Leipzig (DED5), Ciudad Autónoma de Ceuta (ES63), Ciudad Autónoma de Melilla (ES64), Corse (FR83), Guadeloupe (FR91), Martinique (FR92), Guyane (FR93), Réunion (FR94), Croatia, Slovenia, Cheshire (UKD6), Merseyside (UKD7), Cornwall and Isles of Scilly (UKK3) and North Eastern Scotland (UKM5): excluded.
*Source:* Eurostat (online data codes: nama_r_e2gdp, demo_r_d2jan, lfst_r_lfu3rt, lfst_r_lfp2act and lfst_r_lfu3pers)

## Committee of the Regions

### A territorial dimension for Europe 2020

At its 6th European summit of regions and cities on 7/8 March 2014, the Committee of the Regions adopted its Athens Declaration, which calls for a stronger territorial dimension in the shaping and implementation of Europe 2020. It makes the case for shifting the focus of the Europe 2020 strategy towards the local dimension by identifying regional indicators and targets and calls for the current tools for coordinating Member States' macroeconomic policies under the European semester to be more oriented towards growth and job creation. The declaration includes a seven-point plan for Europe 2020, to:

- give the strategy a territorial dimension;
- make local and regional authorities partners in the preparation of National Reform Programmes;
- make multi-level governance the standard approach;
- align the European semester with the objectives of Europe 2020;
- use the Europe 2020 flagship initiatives for enhanced policy coordination;
- mobilise funding for long-term investment, ensuring better spending;
- strengthen administrative capacity for more effective implementation.

With respect to the need for a territorial dimension of Europe 2020, the Athens Declaration also called for "… the introduction of an enhanced monitoring system for Europe 2020 at regional level, which requires the timely development of an adequate statistical basis at regional and local level and the possible development of regional progress indicators".

A full report on the proceedings of this Athens summit, including the Declaration, is available on the Committee of the Regions website, at: http://cor.europa.eu/en/events/summits/Documents/summit2014_proceedings_EN.pdf.

### Europe 2020: monitoring platform

The Committee of the Regions set up a Europe 2020 monitoring platform to analyse the implementation of the Europe 2020 strategy on the ground with the help of experienced EU regional and local practitioners. The platform provides a means for regional and local authorities to have a say in this policy area and stimulates the exchange of information, experiences and best practices.

The goal of the monitoring platform is to help the Committee of the Regions ensure an effective implementation of policies linked to Europe 2020 goals, by promoting the active involvement of EU regional and local authorities, and by considering the developing relationship between the Europe 2020 strategy and cohesion policy in the years 2014–20.

For more information, refer to the Committee of the Regions' portal for the Europe 2020 monitoring platform, available at: https://portal.cor.europa.eu/europe2020/Pages/welcome.aspx.

#### WHAT IS THE COMMITTEE OF THE REGIONS?

The Committee of the Regions was established in 1994. It is an assembly of regional and local representatives, composed of 353 members. Successive European treaties have broadened its role and since the entry into force of the Lisbon Treaty the Committee of the Regions has to be consulted throughout the European legislative process. As such, the Committee of the Regions works closely with the European Commission, the European Parliament and the Council of the European Union, as well as the EU Member States and the various tiers of regional and local authorities.

The Committee of the Regions is founded on the belief that cooperation at a European, national, regional and local level is essential to build an ever closer and more mutually supportive union. The Committee of the Regions provides input to and monitors the development and entry into force of European policies to ensure that the principles of subsidiarity and proportionality are upheld, so that common policies are implemented more effectively and at greater proximity. It champions the objectives of economic, social and territorial cohesion in the EU, through autonomy for regional and local authorities, the principles of good governance, and encouraging decentralisation and cooperation at a regional and local level.

OPEN DAYS — AN EVENT TO MARK THE EUROPEAN WEEK OF REGIONS AND CITIES

12th European Week of Regions and Cities
OPEN DAYS Brussels
6 - 9 October 2014

Open Days is an annual four-day event during which cities and regions showcase their capacity to create growth and jobs, implement EU cohesion policy, and provide evidence of the importance of the regional level for good European governance.

The event was created in 2003 by the Committee of the Regions and it has subsequently become a networking platform for regional and local development, which is viewed as a key event for policy practitioners. It welcomes around 6 000 participants each year (local, regional, national and European decision-makers) for more than 100 workshops and debates, exhibitions and networking opportunities. Some of the topics covered include exchanging good practice in economic development and social inclusion, cross-border cooperation, public-private partnerships, regional innovation and community-led local development.

It is likely that first experiences relating to the implementation of national, regional and territorial cooperation programmes will be at the forefront of debate during the 12th Open Days event, given that the programming cycle (2014–20) for EU cohesion policy has just begun. The next Open Days event is due to be held in October 2014 under the title Growing together — smart investment for people.

***For more information:***

Open Days 2014 — Committee of the Regions: http://ec.europa.eu/regional_policy/conferences/od2014/index.cfm

## Urban development policies

Europe's towns and cities are centres of economic activity, attracting innovation and employment; almost three quarters of the EU's population lives in urban areas. In some cities, a relatively high share of the urban population faces problems such as crime, poverty, unemployment, inadequate housing, traffic congestion or environmental pressures. As such, it is not surprising to find that urban development is a particular focus for cohesion policy.

Indeed, Europe's towns and cities symbolise the two-fold challenge currently being faced within the wider EU: namely, how to improve competitiveness while meeting social, cultural and environmental demands. There are a range of initiatives that seek to respond to these challenges, including: green cities (environmentally-friendly cities), open cities (that promote integration between various sub-groups of the population), innovative cities (which focus on support for the sustainable development of energy, transport, digital communications and health) and creative cities (that promote culture).

Urban policy was initially founded upon the URBAN I and URBAN II Community initiatives that ran from 1994–2006. As of 2007, the EU reinforced the urban dimension of its policies and integrated these into the broader goals of cohesion policy, with particular attention given to promoting economic growth, social cohesion and environmental sustainability. Preparations for the third URBAN programme are underway and it is likely that these will be concluded later in 2014.

The EU's cohesion policy for the 2014–20 programming period seeks to support towns and cities. Urban areas are directly targeted by several of the European Regional Development Fund's (ERDF's) investment priorities. In each EU Member State, at least 5 % of the funding allocated through the ERDF will be invested in sustainable urban development. An urban development network will review the deployment of funds, while providing support for the exchange of experiences between cities.

More detailed information on the EU's urban development policy is provided on the European Commission's website, available at: http://ec.europa.eu/regional_policy/activity/urban/index_en.cfm.

## Rural development policies

Predominantly rural areas make up half of Europe's land area, but represent less than one in five of its population. The EU's rural development and cohesion policies complement each other by promoting the diversification of economic activity in rural areas and seeking to improve the quality of life in rural areas.

As with many towns and cities, rural areas face significant (but usually different) challenges. These include improving the competitiveness of their agricultural and forestry sectors and encouraging younger persons to remain in the region. Average income per inhabitant is generally lower in rural regions than in urban areas, while the skills base is often narrower and the service sector is invariably less developed. By contrast, rural areas provide raw materials, opportunities for rest and recreation, and have a role to play in actions against climate change.

In line with Europe 2020 strategy and the objectives of the Common Agricultural Policy (CAP) towards 2020, three long-term strategic objectives can be identified for EU rural development policy from 2014–20:

- improving the competitiveness of agriculture;
- the sustainable management of natural resources and climate action; and
- a balanced territorial development of rural areas.

Rural development policy has six priorities:

- fostering knowledge transfer and innovation in agriculture, forestry and rural areas;
- enhancing the competitiveness of all types of agriculture and enhancing farm viability;
- promoting food chain organisation and risk management in agriculture;
- restoring, preserving and enhancing ecosystems dependent on agriculture and forestry;
- promoting resource efficiency and supporting the shift towards a low-carbon and climate-resilient economy in agriculture, food and forestry;
- promoting social inclusion, poverty reduction and economic development in rural areas.

These priorities provide the basis for programming and the rolling out of support to EU rural areas through the European Agricultural Fund for Rural Development (EAFRD). Alongside the EAFRD, several other EU funds provide support for rural areas, namely: the ERDF, the European Social Fund (ESF), the Cohesion Fund and the European Maritime and Fisheries Fund (EMFF).

The ERDF promotes programmes that, among other objectives, seek to: create jobs outside of agriculture; develop access and connections between cities and rural areas; provide support to small and medium-sized enterprises (SMEs); or develop basic infrastructure in villages, particularly in those Member States that joined the EU in 2004 or later.

More detailed information on the EU's rural development policy is provided on the European Commission's website, available at: http://ec.europa.eu/agriculture/rurdev/index_en.htm.

# 1 Population

# Introduction

Demographic changes in the European Union (EU) are likely be of considerable importance in the coming decades as the vast majority of models concerning future population trends suggest that the EU's population will continue to age, due to consistently low fertility levels and extended longevity. Although migration plays an important role in the population dynamics of European countries, migration alone will almost certainly not reverse the ongoing trend of population ageing experienced in many parts of the EU. The social and economic consequences associated with population ageing are likely to have profound implications across Europe, both nationally and regionally. For example, low fertility rates will lead to a reduction in the number of students in education, there will be fewer working-age persons to support the remainder of the population, and a higher proportion of elderly persons (some of whom will require additional infrastructure, healthcare services and adapted housing). These structural demographic changes could impact on the capacity of governments to raise tax revenue, balance their own finances, or provide adequate pensions and healthcare services.

During the coming decade, younger cohorts entering the labour market will be much smaller as a result of prolonged low fertility. Despite efforts to increase employment rates, the total number of persons of working-age in the EU could begin to decline; this potential lack of labour could have implications for economic growth. At the other end of the life, baby-boomer cohorts will begin to retire and regional policymakers will probably have to address social changes such as the composition of families, particularly apparent in the growing number of elderly persons living alone.

Those areas that will face the greatest demographic challenges include peripheral, rural and post-industrial regions, where the population is likely to decline. Besides an east–west and north–south polarisation, the territorial dimension of demographic change is affected by other developments, most notably:

- an urban-rural split, with the majority of urban regions continuing to report population growth, while the number of inhabitants in many rural areas is declining;
- a capital region effect, as capitals and some of their surrounding regions (for example, around the larger capitals of Paris and London) display a 'pull effect' associated with increased employment opportunities.

### AGEING EUROPE: POPULATION PROJECTIONS TO 2050

There is likely to be a significant ageing of Europe's population over the coming 35 years. Eurostat's main scenario for population projections (EUROPOP2013) provides some context as to probable developments. The projections suggest that the demographic shift towards an older population will result in the share of the EU-28's population that is 65 or over rising from 18.2 % at the start of 2013 to reach 28.1 % by 2050, while the share of the working-age population would fall from 66.2 % to 56.9 %. As such, there will be almost 40 million persons less in the working-age group. The size and relative weight of the population aged 65 and above will increase at a rapid pace throughout the projection period, with almost 150 million persons in this age group by 2050. The number of very old people (defined here as those aged 80 years and above) is projected to increase at an even more rapid pace, more than doubling to reach 57.3 million by 2050. As a result of these different trends among age-groups, the demographic old-age dependency ratio (people aged 65 or above relative to those aged 15–64) is projected to increase from 27.5 % at the start of 2013 to almost 50 % by 2050. This entails that the EU would move from having almost four working-age people for every person aged 65 and over to two working-age persons for every person aged 65 and over within the space of less than 40 years.

Source: Eurostat (online data code: proj_13npms)

With such major structural changes in the EU's demographics, it is unsurprising that policymakers are concerned by future developments. The Europe 2020 growth strategy is focused on five goals in the areas of employment, innovation, education, poverty reduction and climate/energy. These are addressed through seven flagship initiatives, most of which touch upon demographic challenges in some way. The implementation of the Europe 2020 strategy and its flagship initiatives relies on financial support from cohesion policy instruments, including provisions for tackling demographic change and ageing. For more information on how the Europe 2020 growth strategy impacts upon the regions of the EU please refer to the introductory chapter.

Aside from the innovation union (see below), the digital agenda Europe 2020 flagship initiative promotes digital literacy and accessibility for older members of society, while the flagship initiative for an agenda for new skills and jobs supports longer working lives through lifelong learning and the promotion of healthy and active ageing. The flagship initiative of the European platform against poverty and social exclusion addresses the adequacy and sustainability of social protection and pension systems and the need to ensure adequate income support in old age and access to healthcare systems.

### EUROPEAN INNOVATION PARTNERSHIP ON ACTIVE AGEING AND HEALTHY AGEING

Innovation partnerships are part of the innovation union flagship initiative (which forms part of the Europe 2020 growth strategy). Such partnerships provide an opportunity to bring together public and private actors at EU, national and regional levels to tackle challenges such as climate change, energy and food security, health and an ageing population; these challenges also represent opportunities for new business and the partnerships aim to give the EU a first-mover advantage in these markets.

The partnership on active ageing and healthy ageing was launched in 2011, with the aim of raising by two years the average healthy lifespan of each European by 2020. By doing so, this innovation partnership seeks to:

- enable the elderly to lead healthy, active and independent lives;
- improve the sustainability and efficiency of social and healthcare systems;
- boost and improve the competitiveness of markets for innovative products and services that respond to the ageing challenge both at EU and global level, thus creating new opportunities for businesses.

***For more information:***

European innovation partnership on active and healthy ageing:
http://ec.europa.eu/research/innovation-union/index_en.cfm?section=active-healthy-ageing

Statistics on population change and the structure of population are increasingly used to support policymaking and to provide the opportunity to monitor demographic behaviour within a political, economic, social or cultural context. The European Parliament passed a resolution on 'Demographic change and its consequences for the future of the EU's cohesion policy' (2013/C 153 E/02) which underlined that demographic developments in the regions should be statistically measured and stressed that demographic change should be considered as a horizontal objective in future cohesion policy. While demographic change will undoubtedly lead to considerable challenges, the resolution also identified that demographic change could provide opportunities for new markets, infrastructure developments and products tailored to the needs of the older generations.

This chapter describes regional demographic patterns across the EU. Statistics on regional demography are one of the few areas where detailed NUTS 3 information is collected and published for each of the EU Member States. At the time of writing, the latest information is available for vital demographic events (births and deaths) and a range of demographic indicators generally through to the end of 2012, although earlier reference periods have been used for some countries (principally Ireland, Romania and the United Kingdom — see the footnotes under each map or figure for more information).

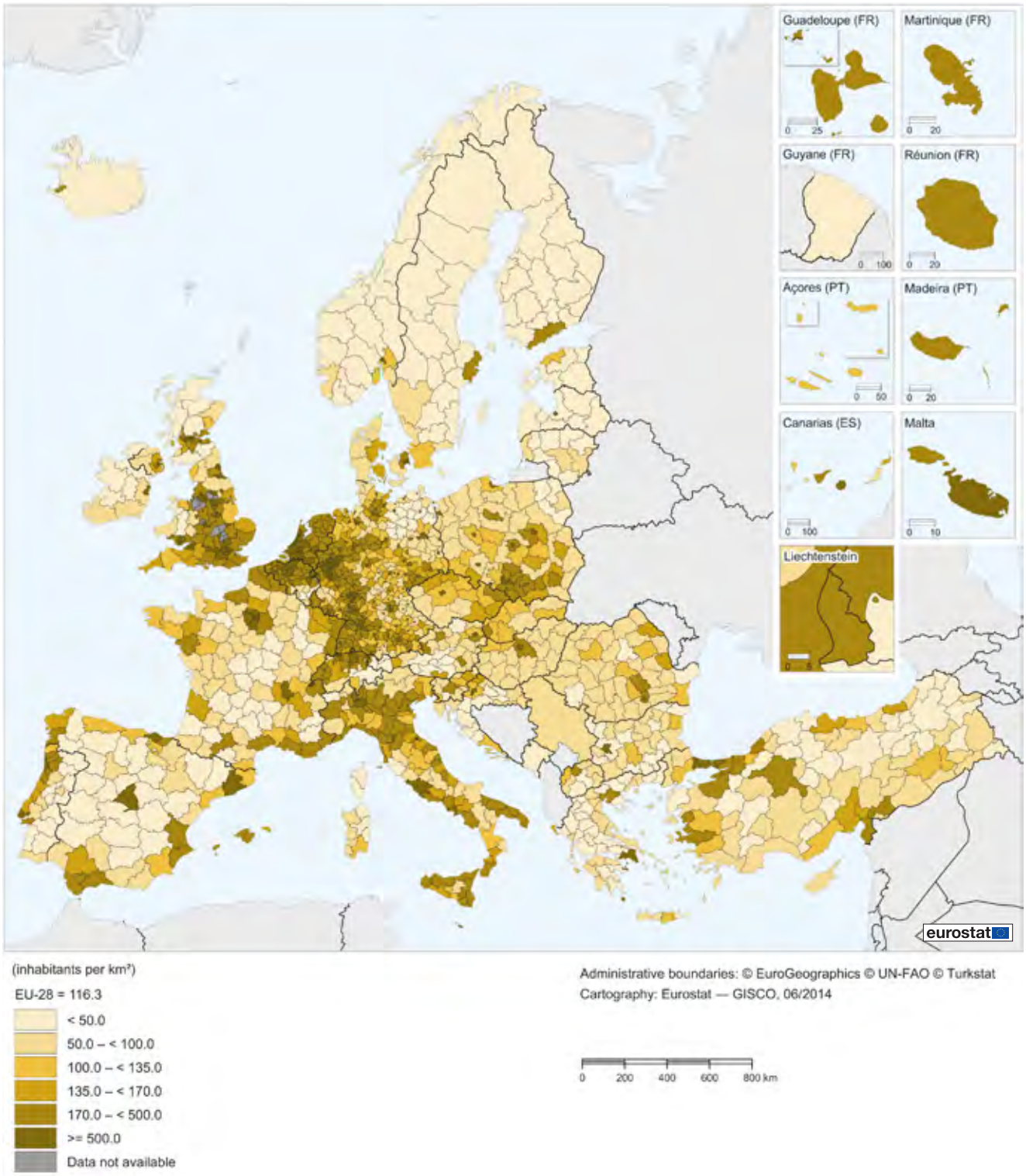
# Main statistical findings

There were 505.7 million inhabitants living in the EU-28 at the start of 2013; there were almost 100 million additional inhabitants when compared with aggregated 1960 population figures for the EU-28 Member States. Between the start of 2012 and the start of 2013, the EU-28's population increased by 1.1 million (or 0.2 %).

## Population density

EU-28 population density was estimated at 116.3 inhabitants per square kilometre (km²) in 2012. **Map 1.1** shows the diversity of NUTS 3 regions across the EU: from the most densely populated areas, such as the capital cities of Paris (21 516 inhabitants per km² in 2012) and London (10 374 and 9 311 in 2010 for Inner London - West and Inner London - East), to remote, sparsely inhabited areas, such as those of northern Scandinavia, for example, the Swedish region of Norrbottens län had the largest total area of all NUTS 3 regions (105 205 km²) and the second lowest population density (2.6 inhabitants per km²). For comparison, the total area covered by Norrbottens län was almost 1 000 times as large as the area covered by Paris (105.4 km²).

**Map 1.1:** Population density, by NUTS 3 regions, 2012 (1)
(inhabitants per km²)




(1) Population density is calculated as the ratio between (annual average) population and the surface (land) area; land area is a region's total area, excluding the area under inland water. Mecklenburg-Vorpommern (DE8), Romania, Iceland, the former Yugoslav Republic of Macedonia: 2011. The United Kingdom: 2010. Serbia: national level.
*Source:* Eurostat (online data codes: demo_r_d3dens, demo_pjan and cpc_agmain)

### *There were 10 regions in the EU where population density was above 5 000 inhabitants per square kilometre*

Aside from Paris and the two Inner London regions, the most densely populated regions in the EU-28 — with above 5 000 inhabitants per km² — included: the suburban regions surrounding Paris (Hauts-de Seine, Seine-Saint-Denis and Val-de-Marne); Bucuresti, the capital of Romania (data are for 2011); the Arrondissement de Bruxelles-Capitale/ Arrondissement van Brussel-Hoofdstad, the capital of Belgium; the Spanish autonomous city of Melilla; and Portsmouth on the southern coast of the United Kingdom (data are for 2010).

### *Within each EU Member State, the highest population density was generally recorded for the capital region*

The highest population densities in 2012 in each of the individual EU Member States were generally recorded in the capital region. There were five exceptions to this rule among the multi-regional Member States: München, Kreisfreie Stadt had a higher population density than Berlin; Melilla and Ceuta had higher densities than Madrid; Napoli, Monza e della Brianza, Milano and Trieste had higher densities than Roma; the Agglomeratie 's-Gravenhage had a higher density than Groot-Amsterdam; and Grande Porto had a higher density than Grande Lisboa.

Among the EFTA countries, the highest population density in Switzerland was registered in Basel-Stadt (5 049.7 inhabitants per km²), considerably above the ratio recorded for the capital of Bern (169.3). Within the candidate countries, the population density of İstanbul (2 644.2 inhabitants per km²) was also much higher than that of the Turkish capital, Ankara (201.0).

### *There were almost 11 000 times as many persons living on each square kilometre of land in Paris as there were in Lappi (in the north of Finland)*

The least densely populated regions in the EU were generally located around the periphery in remote environments. Lappi (the most northerly region of Finland) had the lowest regional population density among NUTS 3 regions in the EU, at 2.0 inhabitants per km² in 2012. As such, there were almost 11 000 times as many persons living on each square kilometre of land in Paris as there were in Lappi. There were 13 other NUTS 3 regions that reported population density below 10.0 inhabitants per km²: four of these were in central and northern Sweden (Norrbottens län; Jämtlands län; Västerbottens län; and Dalarnas län); three were in the north-west of Scotland (Lochaber, Skye and Lochalsh, Arran and Cumbrae, and Argyll and Bute; Caithness and Sutherland, and Ross and Cromarty; Eilean Siar (Western Isles) — data are for 2010); two more were in Finland (Kainuu and Pohjois-Karjala); two in central Spain (Soria and Teruel); while there was also a single region from each of France (the overseas region of Guyane) and Croatia (the rural, quite mountainous region of Ličko-senjska županija to the north of Zadar).

There were seven level 3 regions in Norway that reported population densities of less than 10.0 inhabitants per km² in 2012. However, the lowest population density among EFTA regions was recorded by Landsbyggð (a region which covers the Icelandic countryside outside of Greater Reykjavík), where, on average, there were 1.2 inhabitants per km² in 2011; as such, this region was the most sparsely populated shown in **Map 1.1**. None of the candidate countries had any level 3 region with fewer than 10.0 inhabitants per km².

SPOTLIGHT ON THE REGIONS: LAPPI (FI1D7), FINLAND

**Lake Inari, northern Finland**

The most northerly region of Finland, Lappi, was the least densely populated region in the EU-28 in 2012, with just 2.0 inhabitants per square kilometre (km²). This figure can be compared with the average for the whole of Finland, which was 17.8 inhabitants per km² — the lowest population density among any of the EU Member States — or with the EU-28 average of 116.3 inhabitants per km².

*Photo: Karlis Strazdins*

## Population structure and demographic ageing

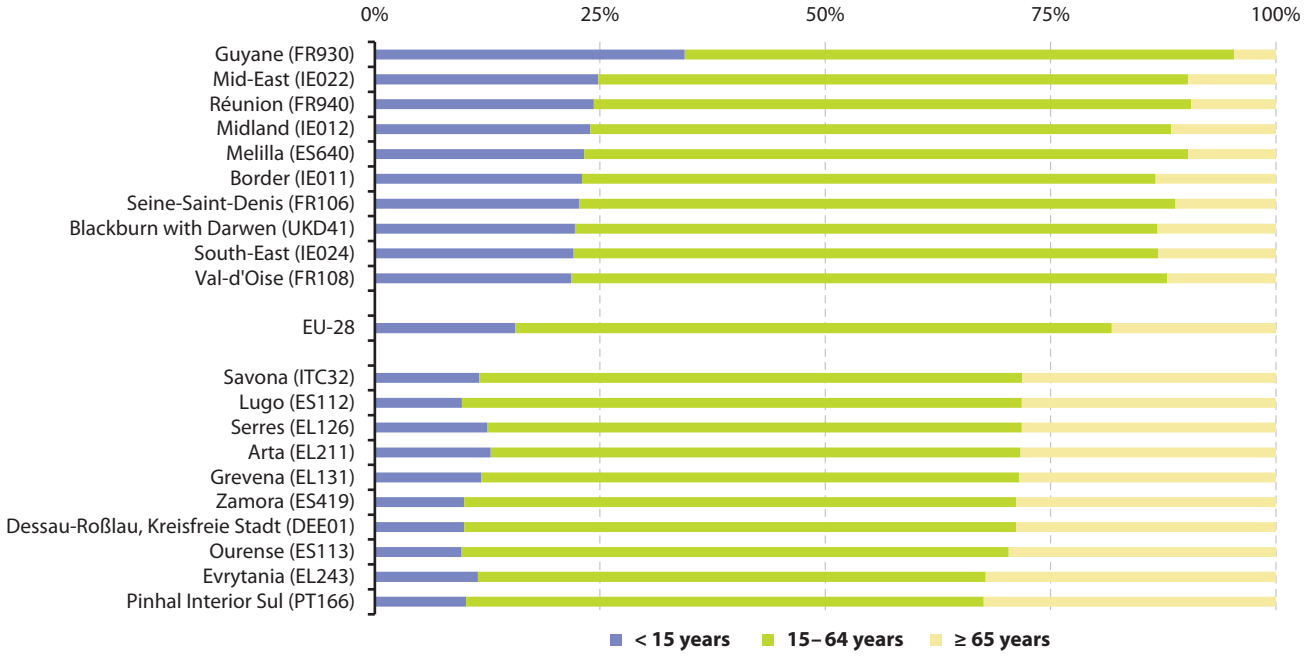
Across the whole of the EU-28, younger persons (0–14) accounted for 15.6 % of the total population as of 1 January 2013, while people of working-age (15–64) accounted for almost two thirds (66.2 %) of the total, leaving some 18.2 % of the population as elderly persons (aged 65 and above).

Demographic structures within individual Member States often show irregular patterns, which have the potential to impact on regional competitiveness and cohesion. Sometimes these divides are quite apparent, such as in Germany (where there is often a contrast between regions in the east and west), France (north-east and south-west), Italy (north and south) and Turkey (east and west). These differences may be attributed to a wide range of factors including: climatic, landscape, historical, political, social and economic developments.

### *Urban regions tended to have younger populations …*

**Figure 1.1** presents information on the 10 NUTS 3 regions in the EU with the highest shares of younger persons (aged less than 15) and the 10 NUTS 3 regions in the EU with the highest shares of elderly persons (aged 65 and above) in their respective populations as of the start of 2013. Those NUTS 3 regions in the EU with the highest shares of young persons were generally located in those Member States which recorded the highest birth and fertility rates (see **Map 1.5** and **Figure 1.4**), thereby boosting the relative importance of younger persons in the total population. This was particularly the case in several Irish and French regions, for example, the overseas regions of Guyane and Réunion or suburban regions around Paris. Age structures of largely urban areas may display a higher proportion of young and working-age persons as a result of a 'pull effect' associated with increased employment opportunities attracting both internal migrants (from different regions of the same country) and international migrants (from other Member States and non-member countries).

**Figure 1.1:** Population structure, by broad age groups, by NUTS 3 regions, 1 January 2013 (1)
(% of total population)




(1) The figure shows the 10 EU regions with the highest share of their population aged 65 years and above and the 10 regions with the highest share of their population aged less than 15 years. Romania and the United Kingdom (except Northern Ireland): 1 January 2012. Mecklenburg-Vorpommern (DE8) and Northern Ireland (UKN): 1 January 2011.
*Source:* Eurostat (online data codes: demo_r_pjanaggr3 and demo_pjangroup)

### … while the relative importance of elderly persons has grown in most EU regions

By contrast, most regions in the EU have witnessed the relative share of their elderly populations becoming progressively larger — as a result of a significant and continuous increase in life expectancy and the entry into retirement of the post-World War II baby-boom generation. Those regions with the highest shares of elderly persons are often characterised as being rural, relatively remote and sparsely populated areas, where the low share of working-age persons may, at least in part, be linked to a lack of employment and education opportunities, thereby motivating younger generations to leave in search of work or to pursue further studies.

The elderly accounted for a particularly high share of the total population in rural and remote regions of Greece, Spain, France and Portugal, as well as a number of regions in eastern Germany. Elderly persons accounted for almost one third (32.4 %) of the total population in the central, inland Portuguese region of Pinhal Interior Sul as of 1 January 2013 — the highest share in the EU. The central Greek region of Evrytania was the only other NUTS 3 region in the EU where elderly persons accounted for upwards of 30 % of the total population, and was one of four Greek regions among the ten regions in the EU with the highest shares (over 28 %) of elderly persons in their respective populations.

### Old-age dependency: an increasing burden on those of working-age

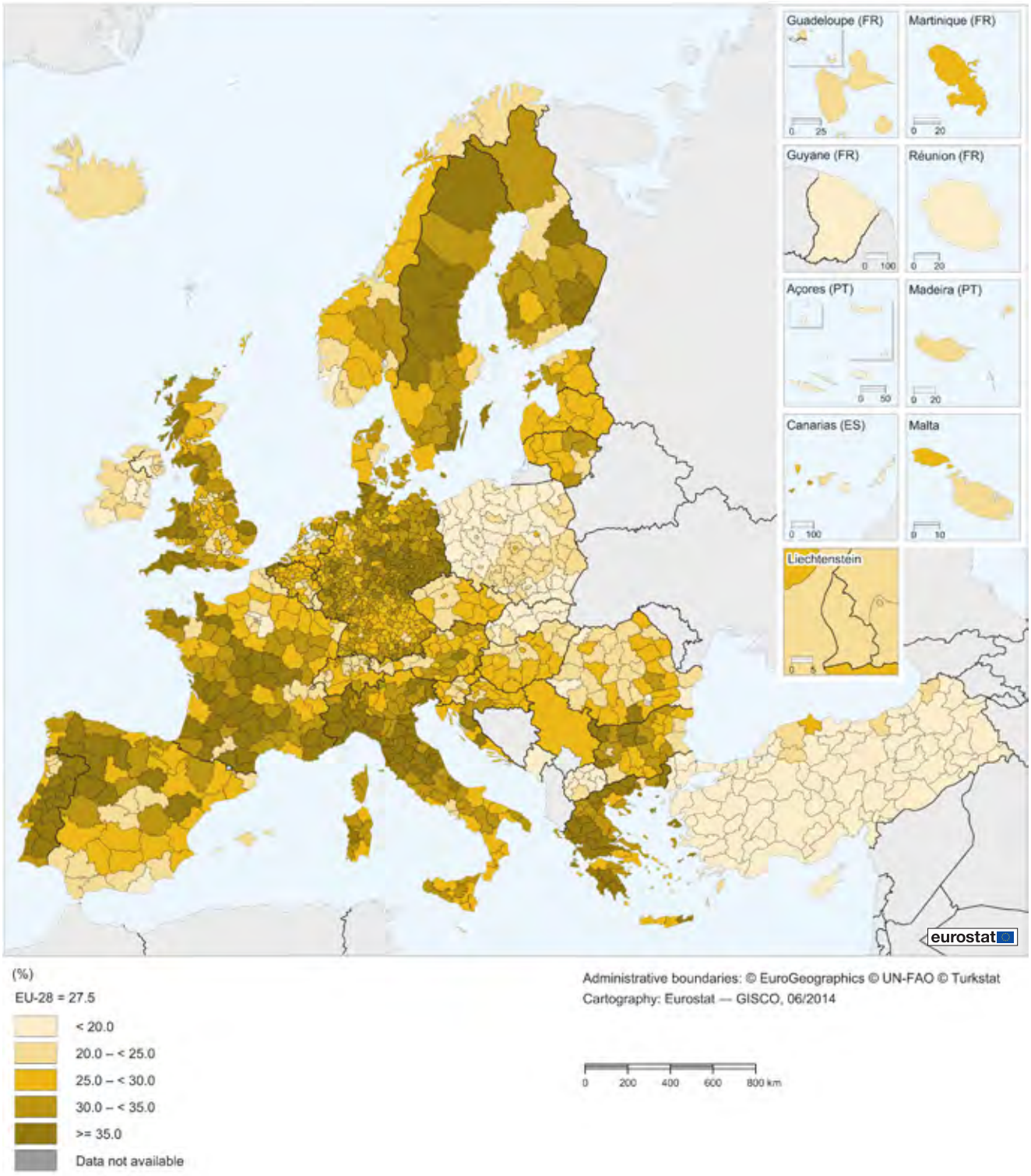
Structural changes in the EU-28's population can be further analysed through dependency ratios that are derived by comparing numbers of dependent persons (young and/or old) with the size of the working-age population, irrespective of whether the latter are actually in employment or not. These ratios are designed to provide information relating to the burden that may be placed on those of working-age, for example, to support the education of children, healthcare expenditure, or pension provisions. As such, rising dependency ratios may be a concern to governments in relation to their public expenditure plans and government finances.

The old-age dependency ratio measures the relationship between the number of elderly persons and the working-age population; it stood at 27.5 % for the whole of the EU-28 as of 1 January 2013. The highest old-age dependency ratios across NUTS 3 regions were recorded in the two regions with the highest shares of elderly persons in their total populations, the Greek region of Evrytania (57.2 %) and the Portuguese region of Pinhal Interior Sul (56.4 %); they were the only regions to report old-age dependency ratios above 50 % (in other words, in both of these regions there were less than two persons of working-age 'supporting' a person aged 65 or over).

### Old-age dependency ratios particularly high in rural and remote regions

Looking in more detail, **Map 1.2** shows there were 274 NUTS 3 regions where the old-age dependency ratio was 35.0 % or higher (those regions with the darkest shading); many of these are characterised as having some of the lowest birth rates in the EU. These regions tended to be located in rural, remote and mountainous regions (especially in north-west Spain, inland Portugal and central-southern France). They are often characterised by falling population numbers, in part due to younger persons being 'pushed' to leave the region in search of work, thereby causing the relative importance of the elderly population to increase. By contrast, some regions with relatively high old-age dependency ratios reported a growing number of elderly persons, as they are 'pulled' into retirement destinations that appeal for their climate or services that are on offer to the elderly. For example, the three regions with the highest old-age dependency ratios in the United Kingdom were all popular retirement destinations on the south coast of England (Dorset CC, the Isle of Wight, and Torbay), while one of the highest old-age dependency ratios in Germany was recorded in the spa town of Baden-Baden, Stadtkreis.

**Map 1.2:** Old-age dependency ratio, by NUTS 3 regions, 1 January 2013 (1)
(%)




(1) Romania and the United Kingdom (except Northern Ireland): 1 January 2012. Mecklenburg-Vorpommern (DE8) and Northern Ireland (UKN): 1 January 2011. Serbia: national level.
*Source:* Eurostat (online data codes: demo_r_pjanaggr3 and demo_pjanind)

## Population change

On the basis of a comparison for the EU-28 Member States, the population increased each and every year between 1 January 1960 and 1 January 2013, with overall growth of 98.9 million inhabitants, equivalent to an annualised growth rate of 0.4 %. Historically, population growth in the EU has largely reflected developments in natural population change (the total number of births minus the total number of deaths), as opposed to migratory patterns. A closer examination shows that natural population growth for an aggregate composed of the EU-28 Member States peaked in 1964, when 3.6 million more births than deaths were recorded. Birth rates progressively fell and life expectancy gradually increased, resulting in a slowdown of the natural rate of population growth. By 2003, natural population growth for the EU-28 Member States was almost balanced, as the number of births exceeded the number of deaths by less than 100 000. Subsequently, the birth rate and natural population growth increased again somewhat in several Member States, although this pattern was generally reversed with the onset of the financial and economic crisis.

### *Since 1985 there has consistently been a net inflow of migrants to the EU-28 Member States*

Overall population change results from the interaction of two components: natural population change and net migration including statistical adjustment (hereafter simply referred to as net migration). These components can combine to reinforce population growth (positive rates of net migration and natural increase) or population decline (negative net migration and a natural decrease) or they may cancel each other out to some extent when moving in opposite directions. Historically, migratory patterns were relatively balanced during the 1960s and by 1970 there was a net outflow of 707 028 persons migrating from the EU-28 Member States to other destinations around the globe; this was the highest number of net emigrants during the whole of the period 1961–2012. The next time there was a net outflow of migrants leaving the EU was between 1982 and 1984 (a recessionary period); thereafter, there were consistently more immigrants arriving in the EU-28 Member States than emigrants leaving. Some of the highest population increases resulting from migration took place during the 1990s and early 2000s, with net migration for the EU-28 Member States peaking at 1.8 million persons in 2003, after which the rate of change slowed somewhat. The EU-28's population grew by almost 900 000 persons in 2012 as a result of net migration.

### *Ilfov in Romania recorded the highest population growth during the period 2008–11*

**Map 1.3** presents the crude rate of total population change over the period 2008–12 (in other words, changes that result from the combined effects of natural change and net migration between 1 January 2008 and 1 January 2013). During this period, the population of the EU-28 rose each year, on average, by 2.6 per thousand inhabitants. Among the 1 277 NUTS 3 regions for which data are shown in **Map 1.3** there was a relatively even split between those regions reporting an increase in their number of inhabitants (699 regions) and those where the population was in decline (572 regions); there were six regions where the population remained unchanged and 38 regions for which no data are available.

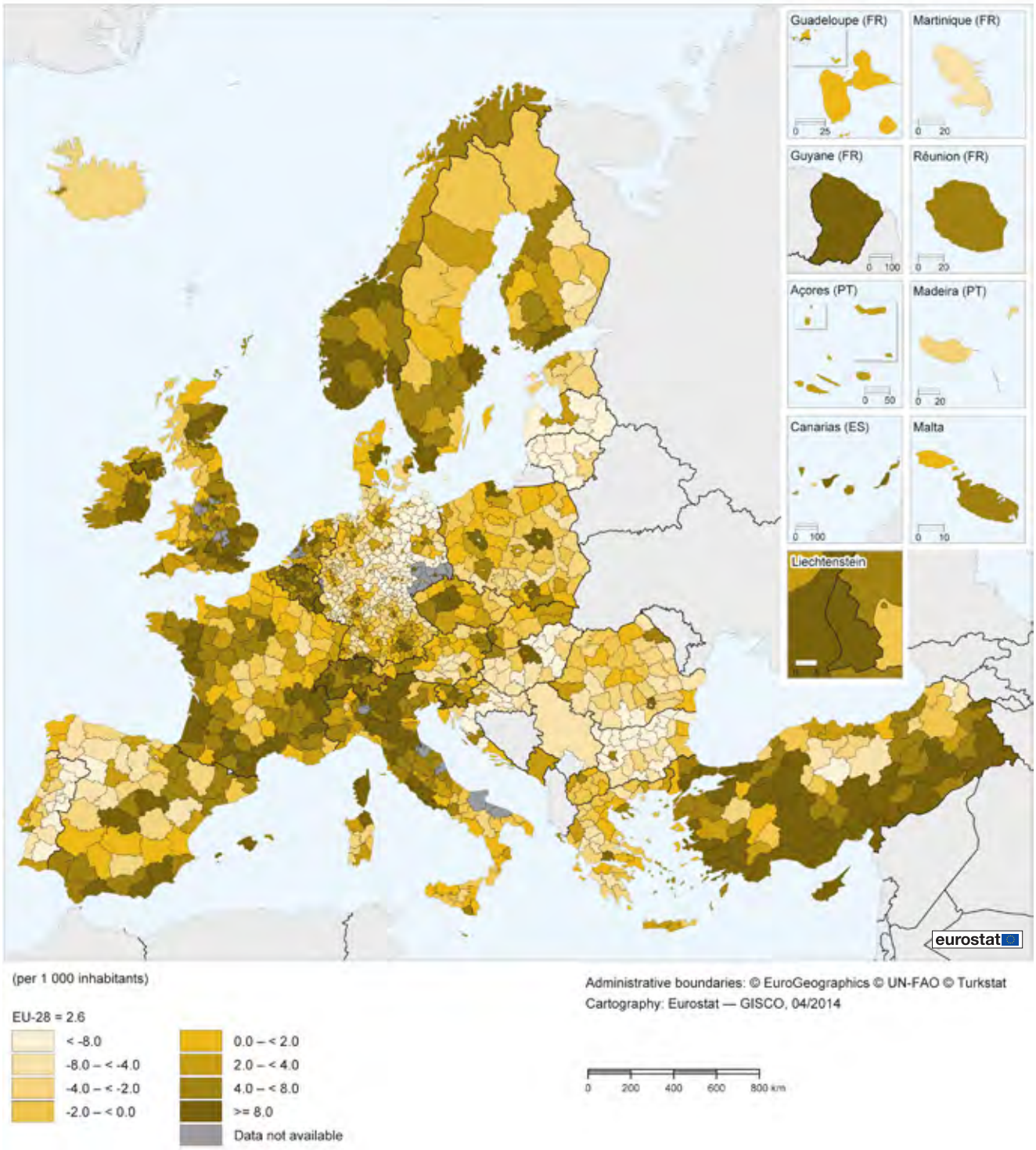
The darkest shade on the map shows the 157 NUTS 3 regions where the population grew, on average, by at least 8.0 per thousand inhabitants each year during the period 2008–12. Of these, there were 18 regions where population growth was more than 15.0 per thousand inhabitants, with the highest growth recorded for Ilfov (33.4 per thousand inhabitants for the period 2008–11), a region which surrounds the Romanian capital of Bucharest. Four of these 18 regions with the highest population growth were capital cities, namely the Arr. de Bruxelles-Capitale / Arr. van Brussel-Hoofdstad (Belgium), Byen København (Denmark), Stockholms län (Sweden) and Luxembourg (which is a single region at this level of analysis). Of the remaining 13 regions, there were: six urban regions spread across England (data cover the period 2008–10); three regions in Spain; two largely urban Polish regions; and a single region from each of Germany and France.

### *Falling regional populations in an arc from Croatia, through Hungary, Romania, Bulgaria and down into Greece*

There were 117 NUTS 3 regions in the EU where the population fell, on average, by more than 8.0 per thousand inhabitants during the period 2008–12 (the lightest shade in **Map 1.3**); please note that when a shorter time series was available, information is only presented for those regions with at least three reference periods. These 117 regions were largely spread across: the Baltic Member States of Lithuania and Latvia; an arc in south-east Europe, starting in Croatia and moving through Hungary, Romania (2008–11), Bulgaria and down into Greece; several inland regions of Portugal and Spain; and many eastern German regions. The biggest reduction in population (20.8 per thousand inhabitants per year) was registered in the Lithuanian region of Šiauliu apskritis, while Utenos apskritis (also in Lithuania) was the only other region to report that its population had declined by at least 20.0 per thousand inhabitants per year.

In absolute terms, the highest overall increases in population during the period 2008–12 were registered in Madrid, Stockholms län, Barcelona, Berlin, the Arr. de Bruxelles-Capitale / Arr. van Brussel-Hoofdstad and Sevilla; these were the only regions where the population rose by more than 100 000 persons (subject to data availability; information for this analysis is not available for Romania or the United Kingdom, nor for a limited number of German regions). The largest population decline in absolute terms was recorded in the Greek capital region of Attiki (where the population fell by more than 100 000 inhabitants between 2008 and the start of 2013); there were two NUTS 3 regions in the EU-28 where the population fell by around 50 000: the Lithuanian region of Kauno apskritis and the Latvian capital of Riga).

**Map 1.3:** Average crude rate of population change, by NUTS 3 regions, 2008–12 (1)
(per 1 000 inhabitants)




(1) Mecklenburg-Vorpommern (DE8), Romania, Iceland and the former Yugoslav Republic of Macedonia: 2008–11. The United Kingdom: 2008–10. Greece, Spain, France, Croatia, Hungary, Poland, Romania, the United Kingdom and the former Yugoslav Republic of Macedonia: provisional. Serbia: national level.

*Source:* Eurostat (online data codes: demo_r_gind3 and demo_gind)

### *Among the EFTA and candidate country regions, the highest variation in population growth was recorded across Turkish regions*

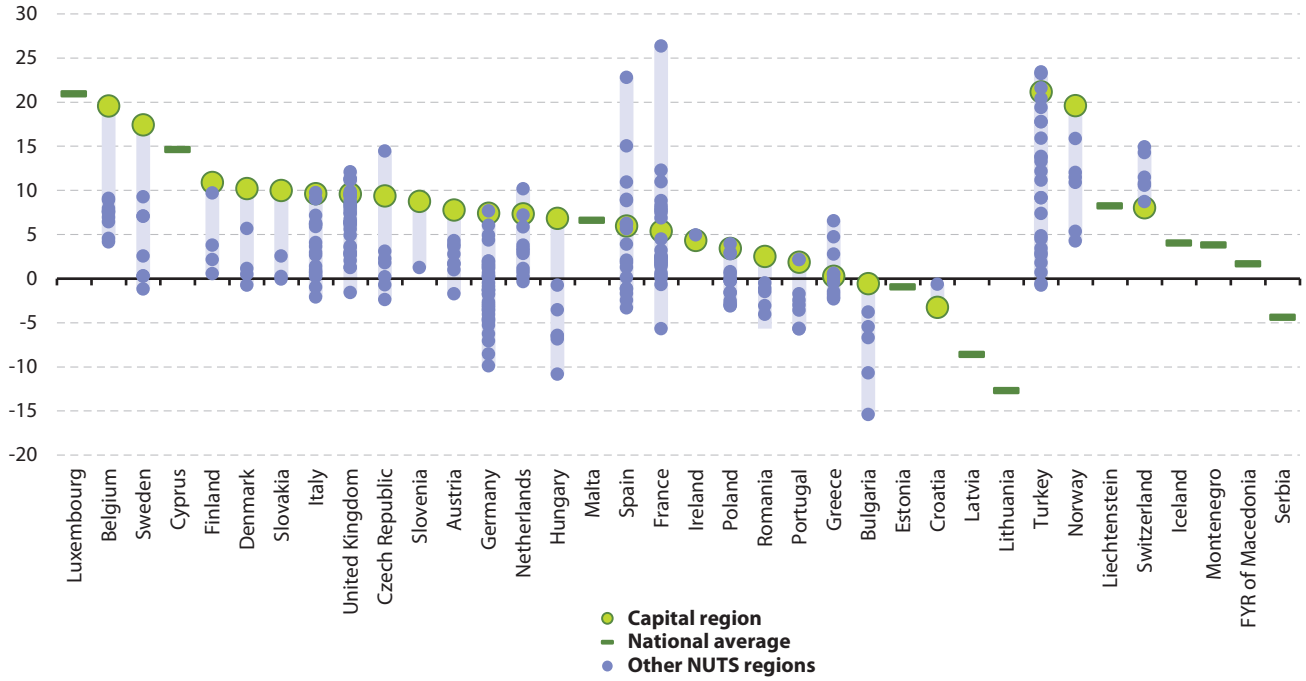
Population growth during the period 2008–12 was generally more common among the EFTA and candidate country regions, as shown in **Map 1.3**, with a positive development registered in 117 regions, while only 22 regions recorded a decline in their number of inhabitants. Among the EFTA countries, population grew in every region of Norway and Switzerland, as well as in Liechtenstein (a single region at this level of analysis) and the Icelandic capital region of Höfudborgarsvædi (2008–11). The fastest population growth (in relative terms) was recorded in Oslo (the capital of Norway) and in Freiburg (western Switzerland). There was only one EFTA region where the population declined, namely, Landsbyggð (which covers the vast majority of Iceland outside of Greater Reykjavík; data are for 2008–11).

Across the candidate countries there was a more mixed picture, with the population declining in Serbia (only national data are available), half of the eight regions from the former Yugoslav Republic of Macedonia (data are for 2008–11), and 16 regions in central and north-eastern Turkey. Declining population numbers in central and north-eastern Turkey could be contrasted with high population growth rates in other parts of the country. Indeed, Turkey displayed the highest degree of variation in population change between level 3 regions, with the crude rate of population growth ranging from a low of -16.5 per thousand inhabitants in Yozgat (in the centre of the country) to a high of 31.4 per thousand inhabitants in Tekirdag (in the far north-west). The considerable differences in population developments across Turkish regions can often be attributed to internal migratory patterns, with a general flow of migrants from eastern to the western regions.

### *Capital regions recorded some of the highest population growth*

There was generally a relatively large variation in crude rates of population change across the regions of each EU Member State, as shown in **Figure 1.2**; note that the figure is based on NUTS 2 regions. The particularly wide variation between the regions of Spain and France is, in part, due to the outlying territories of the Ciudad Autónoma de Melilla (Spain) and Guyane (France) at the top of their distributions. The highest rate of population change in each EU Member State was often recorded in the capital region, and when this was not the case, the capital region was generally among those regions with the highest rates of change. There was a negative development to population change during the period 2008–12 in the majority of German, Hungarian, Polish, Portuguese and Romanian regions (data for the latter cover the period 2008–11), while the population of every region fell in Bulgaria and Croatia (the latter is covered by just two regions at the NUTS 2 level).

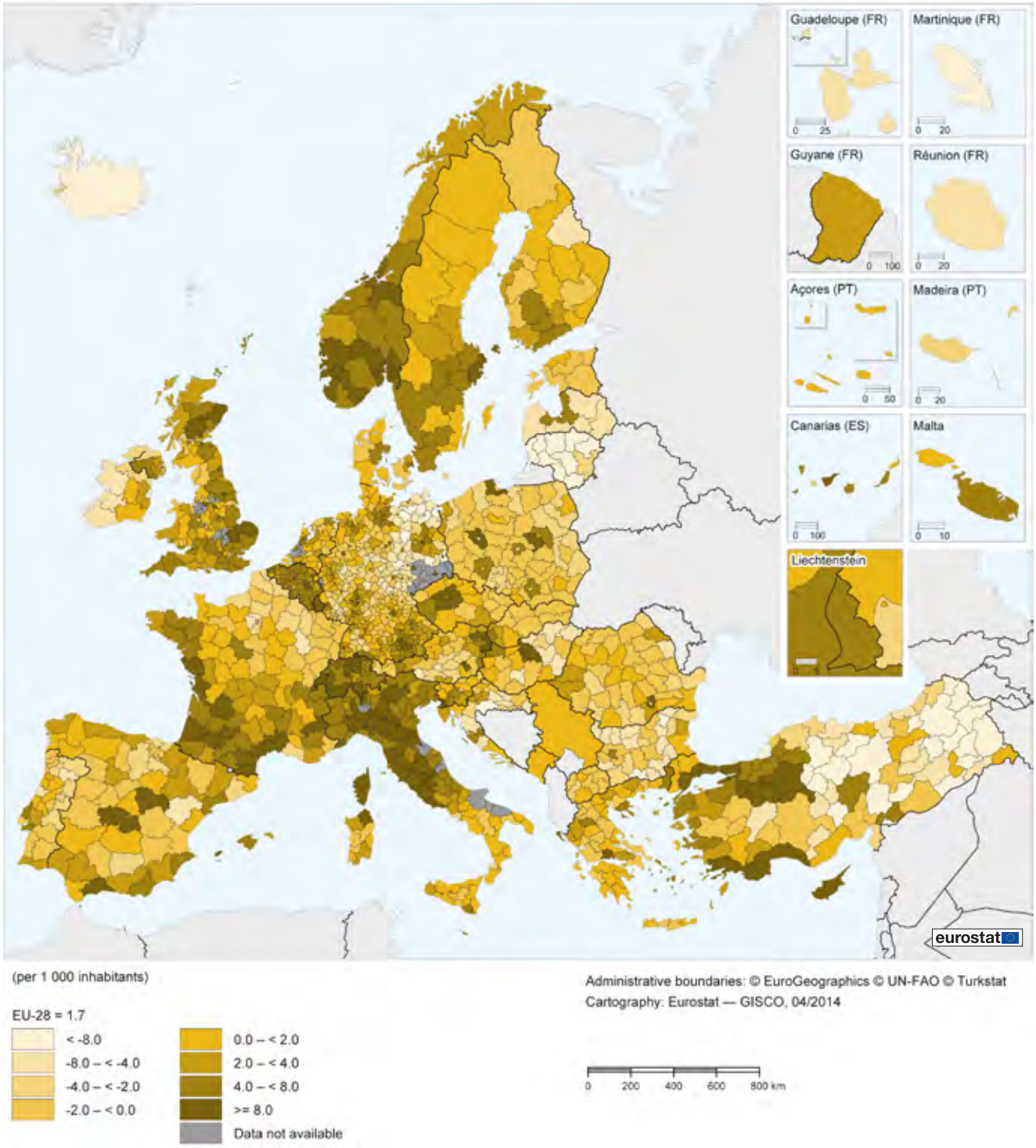
**Figure 1.2:** Average crude rate of population change, by NUTS 2 regions, 2008–12 (1)
(per 1 000 inhabitants)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Mecklenburg-Vorpommern (DE8), Romania, Iceland and the former Yugoslav Republic of Macedonia: 2011. The United Kingdom: 2010. The former Yugoslav Republic of Macedonia: provisional.

*Source:* Eurostat (online data codes: demo_r_gind3 and demo_gind)

**Map 1.4:** Average crude rate of net migration (including statistical adjustment), by NUTS 3 regions, 2008–12 ([1]) (per 1 000 inhabitants)




([1]) Turkey: 2009–12. Ireland, Romania, Iceland and the former Yugoslav Republic of Macedonia: 2008–11. Mecklenburg-Vorpommern (DE8) and the United Kingdom: 2008–10. Greece, Spain, France, Croatia, Hungary, Poland, Romania, the United Kingdom and the former Yugoslav Republic of Macedonia: provisional. Serbia: national level.

*Source:* Eurostat (online data codes: demo_r_gind3 and demo_gind)

### *Net migration particularly concentrated across southern France, northern Italy, the Benelux countries and much of the United Kingdom*

**Map 1.4** presents the crude rate of net migration per thousand inhabitants for the period 2008–12, which averaged 1.8 per thousand inhabitants in the EU-28 over the period under consideration; please note that when a shorter time series was available, information is only presented for those regions with at least three reference periods. There is a striking resemblance between **Maps 1.3** and **1.4**, emphasising the close relationship between migratory patterns and overall population change, a development which is enhanced as the rate of natural population change was close to being balanced in many regions. The net inflow of migrants (from other regions of the same Member State, from other EU regions, or from non-member countries) was particularly concentrated across southern France, northern Italy, the Benelux countries and much of the United Kingdom, while there were also pockets of relatively high net migration in a number of urban regions.

### *Urban regions across the EU (except in France) tended to record the highest population growth resulting from net migration*

There were 784 NUTS 3 regions in the EU-28 that had positive net migration (more immigrants than emigrants) during the period 2008–12. Among these, the highest influx of migrants was registered in the two regions that recorded the highest overall population growth, namely, the Ilfov region that surrounds the Romanian capital and the Spanish Balearic islands of Eivissa and Formentera, where crude rates of net migration averaged 32.7 and 22.6 per thousand inhabitants respectively. The next highest net migration rate was recorded in Luxembourg (a single region at this level of analysis), where the population rose by 16.9 per thousand inhabitants. The only other regions where the crude rate of net migration was above 15.0 per thousand were the central Greek mainland region of Fokida and York in the north of England. There were a further 100 NUTS 3 regions across the EU where the net change in the population as a result of migration was, on average, an increase of at least 8.0 per thousand during the period 2008–12, as shown by the darkest shade in **Map 1.4**. These regions were predominantly urban, including the capital regions of Belgium (Arr. de Bruxelles-Capitale/Arr. van Brussel-Hoofdstad), Denmark (Byen København), Italy (Roma), Hungary (Budapest) and Sweden (Stockholms län), and a range of cities across Germany (for example, Leipzig, Frankfurt am Main, München, Dresden and Wolfsburg), Italy (for example, Parma, Bologna, Firenze, Pisa and Perugia) and the United Kingdom (for example, Portsmouth, Edinburgh, Luton, Nottingham, Sheffield, Tyneside, Bristol and Greater Manchester South; all data cover the period 2008–10). However, this pattern was reversed in France, where the regions with the highest crude rates of net migration were generally rural and often located in the south of the country (for example, Tarn-et-Garonne, the Dordogne, the Landes, Hérault, Gers, Gard and the Hautes-Alpes).

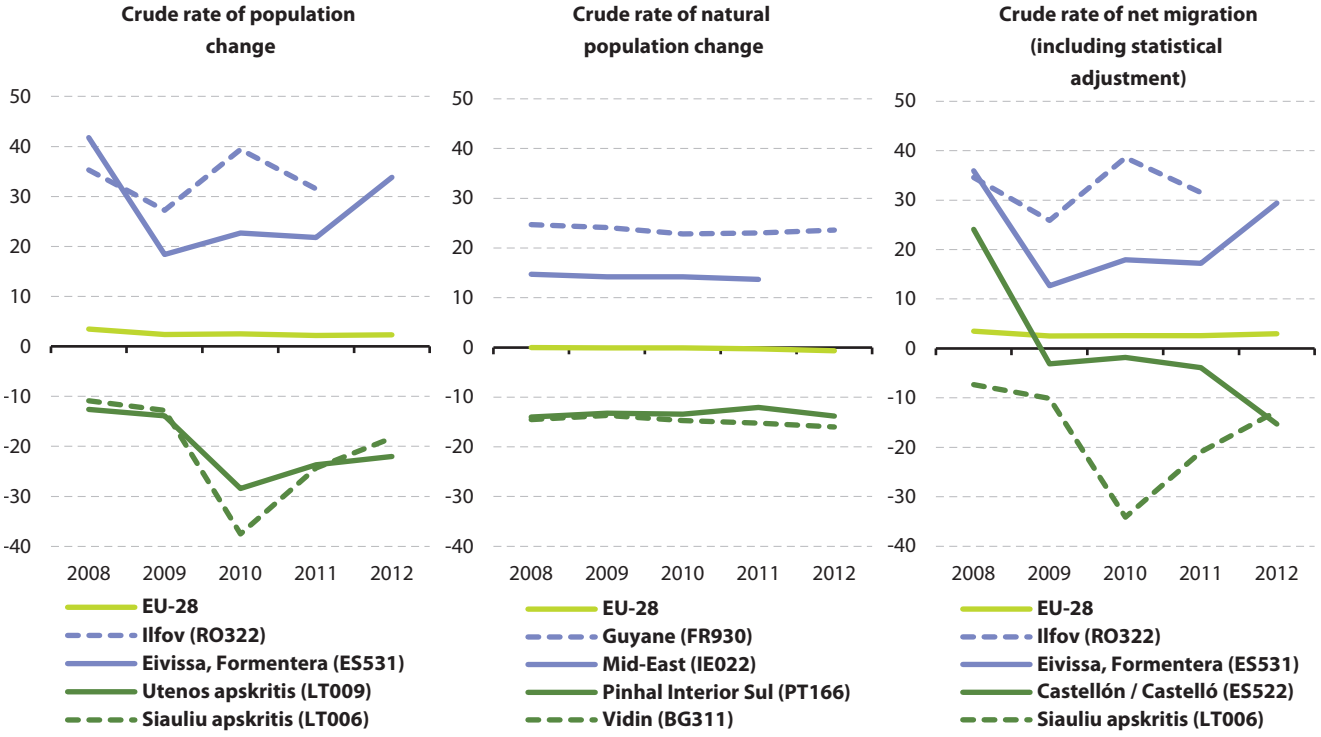
### *Lithuanian regions characterised by net emigration*

There were 481 NUTS 3 regions in the EU-28 where net migration during the period 2008–12 was negative (in other words, where more people left a region than arrived in it). These were spread across much of eastern Europe (particularly Bulgaria, Hungary, Poland and Romania), as well as Latvia, Lithuania, eastern Germany, north-eastern France, pockets of Spain and the southern and western regions of Ireland. The 14 NUTS 3 regions with the biggest negative crude rates of net migration (each in excess of -10.0 per thousand inhabitants) featured 9 of the 10 regions contained within Lithuania (the exception being the capital region of Vilniaus apskritis). The only other regions to report double-digit net outflows of migrants (relative to their respective number of inhabitants) were the three German regions of Suhl, Kreisfreie Stadt, Mecklenburg-Strelitz and Demmin (data for the latter two cover the period 2008–10) and Dublin, the capital region of Ireland (data for 2008–11). Note that these figures may, to some degree, be affected by the shorter time series available for some regions, for example, the number of migrants leaving Dublin was likely to be at a high during the peak of the financial and economic crisis when the economy was particularly badly hit.

**Figure 1.3** shows the NUTS 3 regions in the EU with the highest and lowest crude rates of population change; the dotted lilac and dark green lines show, for each graph, the regions with the highest/lowest average growth for the period 2008–12 and the solid lilac and dark green lines show the regions with the highest/lowest growth for the latest period (generally 2012). The graphs show the wide variations that exist between regions, compared with the EU-28 average which remained relatively unchanged. Perhaps the most striking aspect of **Figure 1.3** is the relatively constant nature of natural population change in relation to the fluctuating pattern of developments for the crude rate of net migration, confirming that migratory patterns are the main determinant/driving force of population change during periods when natural population change is close to zero. This was particularly true in Ilfov and Siauliu apskritis, the two NUTS 3 regions with the highest and lowest rates of population change.

To conclude, while the overall number of inhabitants in the EU-28 continues to rise at a relatively slow pace, there is considerable variation in population developments at a regional level (both between regions of the same Member State and across the EU as a whole). Some regions continue to see their populations expand through a combination of natural population growth and net migration; this is principally the case in many (urban) regions in northern and western Europe. By contrast, the number of inhabitants in most German, Italian and Austrian regions is only sustained through migration, where natural population change is generally negative. Population levels are also in decline across much of Bulgaria, Greece, Spain, Croatia, Hungary, Poland, Portugal, Romania and the Baltic Member States as a result of natural population decline — however, this development is often accentuated by net emigration, which has been particularly apparent in some regions following the financial and economic crisis.

**Figure 1.3:** Population change, selected NUTS 3 regions, 2008–12 (1)
(per 1 000 inhabitants)




(1) The figures show the EU-28 average, the region with the highest and lowest value for the latest reference period and the region with the highest growth/biggest contraction over the period 2008–12. Mid-East (IE022) was the region with the second highest rate average rate of natural population (Guyane was higher). Pinhal Interior Sul (PT166) was the region with the second lowest average rate of natural population change (Vidin was lower). Eivissa, Formentera (ES531) was the region with the second highest average rate for net migration (Ilfov was higher). Ilfov (RO322) and Mid-East (IE022): 2008–11. See Maps 1.3 and 1.4 for details of data availability.

*Source:* Eurostat (online data codes: demo_r_gind3 and demo_gind)

## Birth and fertility rates

Women in the EU are having fewer children, contributing to a slowdown and even reversal of natural population growth. This section presents information on regional crude birth rates (the ratio of the number of births to the average population, expressed per thousand inhabitants) and the fertility rates (the mean number of children born per woman). The EU-28 crude birth rate was 10.4 births per thousand inhabitants in 2012. Across the EU Member States the crude birth rate peaked at 15.7 births per thousand inhabitants in Ireland and was also relatively high in the United Kingdom (12.8) and France (12.6). At the other end of the range, the crude birth rate was 10.0 births per thousand inhabitants or lower in much of eastern Europe (Bulgaria, Croatia, Hungary, Poland and Romania), southern Europe (Greece, Spain, Italy, Malta and Portugal), as well as in Germany, Latvia and Austria.

On the basis of a comparison between 2009 and 2012, crude birth rates fell in most EU Member States — suggesting that the financial and economic crisis impacted upon the decision to have children. Germany, Austria and the United Kingdom were the only Member States to report an increase in their crude birth rates from 2009 to 2012 (in the case of Germany and Austria from very low starting rates), while birth rates remained unchanged in Luxembourg, Malta and Slovenia. Demographic and family policy experts are divided over the reasons for this apparent reluctance to have children; however according to the latest Eurostat population projections there will probably be a reduction in population numbers in the coming decades, with Germany, Spain and the Baltic Member States among the most affected Member States.

### *Some of the highest crude birth rates in the EU were recorded in the capital regions of Belgium, Ireland, France and the United Kingdom*

**Map 1.5** shows crude birth rates at the NUTS 2 level for 2012. Aside from the outlying, overseas regions of Guyane, Réunion (both France) and the Ciudad Autónoma de Melilla (Spain), the highest crude birth rates in the EU were recorded in the capital regions of Inner and Outer London (the United Kingdom), Southern and Eastern (Ireland), the Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest (Belgium) and the Île de France (France). Each of these regions, together with the other Irish region (Border, Midland and Western), Northern Ireland (the United Kingdom), and three largely urban regions from the United Kingdom (West Midlands, Greater Manchester and West Yorkshire) recorded crude birth rates of at least 14.0 births per thousand inhabitants in 2012 (as shown by the darkest shade in **Map 1.5**); note that the data for the United Kingdom relate to 2010 and that for Ireland to 2011.

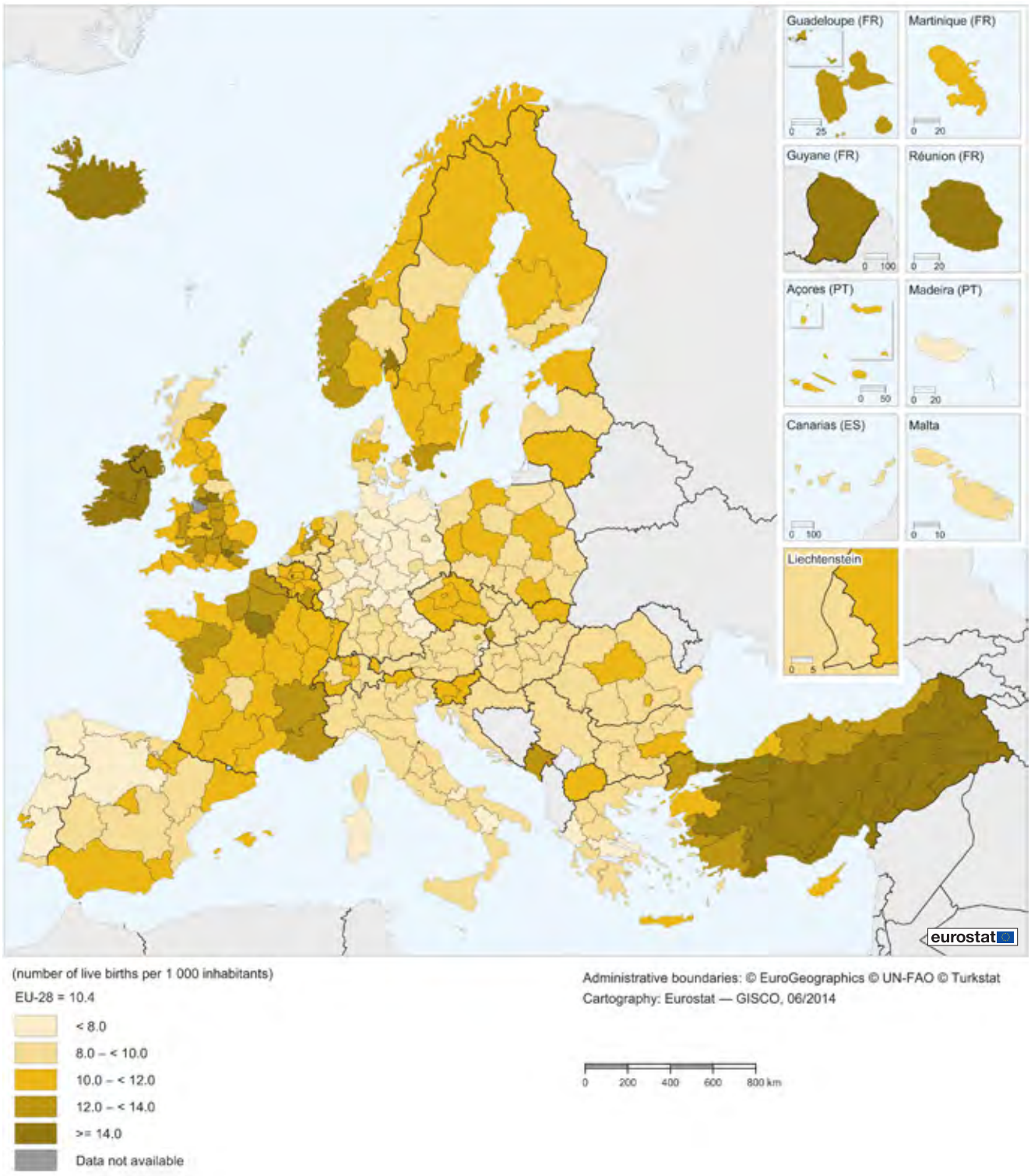
The lowest crude birth rates (less than 8.0 births per thousand inhabitants in 2012) are shown on the same map in the lightest shade; they were concentrated in Germany (19 regions), while the remainder were located in Italy and Portugal (four regions each), Spain (three regions), Greece (two regions), and the eastern Austrian region of Burgenland. The lowest crude birth rate was recorded in the western German region of Saarland (6.8 births per thousand inhabitants).

### *Fertility rates fell after the financial and economic crisis*

The total fertility rate of the EU-28 reached an historic low of 1.45 live births per woman in 2002; it subsequently saw a slight recovery, climbing to 1.61 in 2008, before declining again after the onset of the financial and economic crisis to 1.58 by 2012. In developed parts of the world, a total of around 2.1 live births per woman is considered to be the natural replacement rate — in other words, the level at which the size of the population would remain stationary, in the long-run, if there were no inward or outward migration.

The highest fertility rates across the EU Member States in 2012 were recorded in Ireland and France (both 2.01 live births per woman), followed by the United Kingdom (1.92) and Sweden (1.91). Fertility rates were often higher in those Member States where the family as a unit was relatively weak (a low proportion of people being married and a high proportion of births outside marriage), couple instability relatively common (relatively high divorce rates), and women's labour market participation was high. Fertility rates were lower than 1.50 live births per woman in 13 Member States; the lowest rate being recorded in Portugal — one of the countries most severely hit by the financial and economic crisis — at 1.28 live births per woman.

**Map 1.5:** Crude birth rate, by NUTS 2 regions, 2012 (1)
(number of live births per 1 000 inhabitants)




(1) Ireland and Romania: 2011. The United Kingdom: 2010. France, Poland, Romania, the United Kingdom and the former Yugoslav Republic of Macedonia: provisional. Serbia: national level.
*Source:* Eurostat (online data codes: demo_r_gind3 and demo_gind)

Differences in regional fertility may be linked to a range of factors, among others: the socio-economic structure of the population (for example, educational attainment, occupational status, income or age); place of residence (for example, the availability of infrastructure, childcare facilities, or the housing market); or cultural factors (for example, religious beliefs and customs, attitudes to giving birth outside of marriage, or attitudes to contraception). The distribution of fertility rates is shown in **Figure 1.4**: it appears very homogeneous, as most regions within the same Member State rarely displayed rates that were far from their national average in 2012. The exceptions to this rule included the outlying regions of the Ciudad Autónoma de Melilla (Spain) and Guyane, Réunion and Guadeloupe (overseas regions of France); these were the only NUTS 2 regions to record fertility rates above the natural replacement rate in 2012. The latest data available for the United Kingdom pertains to 2010, when there were five regions that reported fertility rates equal to or above the natural replacement rate, namely: Outer London, Dorset and Somerset, the West Midlands, Lincolnshire and Kent.

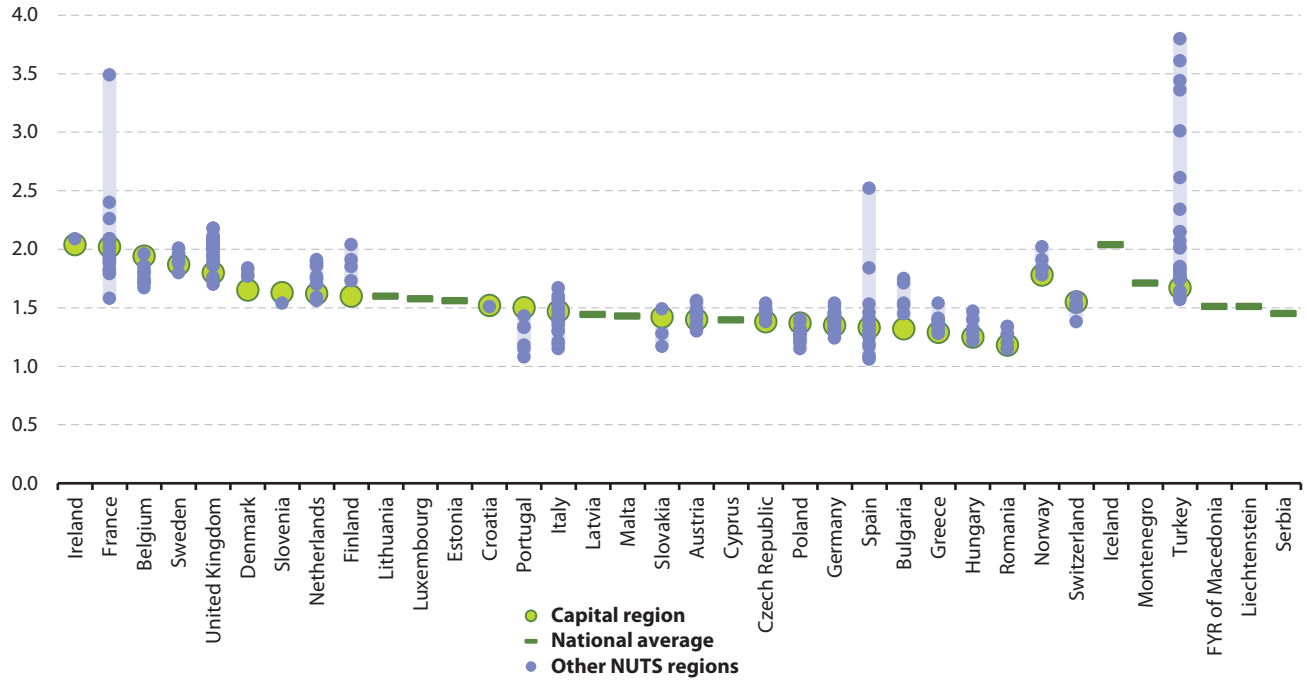
Of the 37 NUTS 2 regions in the EU that had a total fertility rate of 2.00 or above (in 2012, unless otherwise noted), a high proportion were regions in either the United Kingdom (19 regions, data are for 2010) or France (13 regions), while the remainder included both regions from Ireland (data are for 2011) and a single region from each of Spain (the Ciudad Autónoma de Melilla), Finland (Pohjois- ja Itä-Suomi) and Sweden (Småland med öarna). Among the EFTA countries, the fertility rate also rose above this threshold in Iceland (2.04) and the Norwegian region of Agder og Rogaland (2.02).

Among the candidate countries, the highest fertility rates in 2012 were recorded in the eastern Turkish regions of: Şanliurfa, Diyarbakır (3.80); Mardin, Batman, Sirnak, Şiirt (3.61); Van, Muş, Bitlis, Hakkari (3.44); Ağri, Kars, Iğdir, Ardahan (3.36); and Gaziantep, Adiyaman, Kilis (3.01); four additional Turkish regions reported fertility rates above the natural replacement rate. There was a sharp contrast between these relatively high fertility rates recorded in eastern Turkey and those recorded in western Turkish regions, as fertility rates in the latter were generally in the range of 1.6–1.9 live births per woman.

### *The lowest fertility rate in the EU was in the north-west Spanish region of the Principado de Asturias*

Generally, the lowest fertility rates were generally recorded in southern and eastern Europe. There were four NUTS 2 regions in the EU that reported a fertility rate below 1.10 in 2012: three of these were Spanish regions, two from the north-west of the country — the Principado de Asturias (an average of 1.06 live births per woman, the lowest in the EU) and Galicia (1.09) — and the island region of the Canarias (1.07); the Portuguese Região Autónoma da Madeira was the fourth, with a fertility rate of 1.08.

**Figure 1.4:** Total fertility rate, by NUTS 2 regions, 2012 (1)
(average number of live births per woman)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Ireland and Romania: 2011. The United Kingdom: 2010. Serbia: national level.
*Source:* Eurostat (online data code: demo_r_frate2)

## Death and infant mortality rates

There were 5.01 million deaths across the whole of the EU-28 in 2012, which was 2.9 % more than in 2011. The EU-28's crude death rate was 9.9 deaths per thousand inhabitants in 2012, ranging from 15.0 in Bulgaria, 14.3 in Latvia and 13.7 in Lithuania, to less than 8.0 deaths per thousand inhabitants in Luxembourg, Cyprus and Ireland.

**Map 1.6** shows the regional distribution of the crude death rate: the number of deaths generally reflects the population structure (elderly persons are more likely to die) as well as the likelihood of catching/contracting a specific illness/disease; more information on causes of death is provided in the chapter on regional health statistics. Five out of the six Bulgarian regions (Yugozapaden was the exception), Latvia (a single region at this level of analysis) and two Hungarian regions (Észak-Magyarország and Dél-Alföld) recorded the highest death rates across the EU in 2012 (as shown by the darkest shade on the map). The highest crude death rate was in Severozapaden (Bulgaria), the second poorest region in the EU (based on GDP per inhabitant), with 19.9 deaths per thousand inhabitants.

At the other end of the range, many of the regions with the lowest crude death rates were characterised as having relatively young populations. The two lowest crude death rates were recorded for the French overseas regions of Guyane (3.2 deaths per thousand inhabitants) and Réunion (5.0), while the other two French overseas regions (Martinique and Guadeloupe) and four outlying Spanish regions (Illes Balears, Canarias, Ciudad Autónoma de Ceuta and Ciudad Autónoma de Melilla) were also present among the 27 NUTS 2 regions where the crude death rate was less than 8.0 per thousand inhabitants. Otherwise, many of the remaining regions were capital regions, such as Helsinki-Uusimaa, Stockholm, Inner and Outer London, the Comunidad de Madrid, Southern and Eastern (Ireland) and the Île de France; Luxembourg and Cyprus were also present among this group (these two Member States are both covered by a single region at this level of analysis).

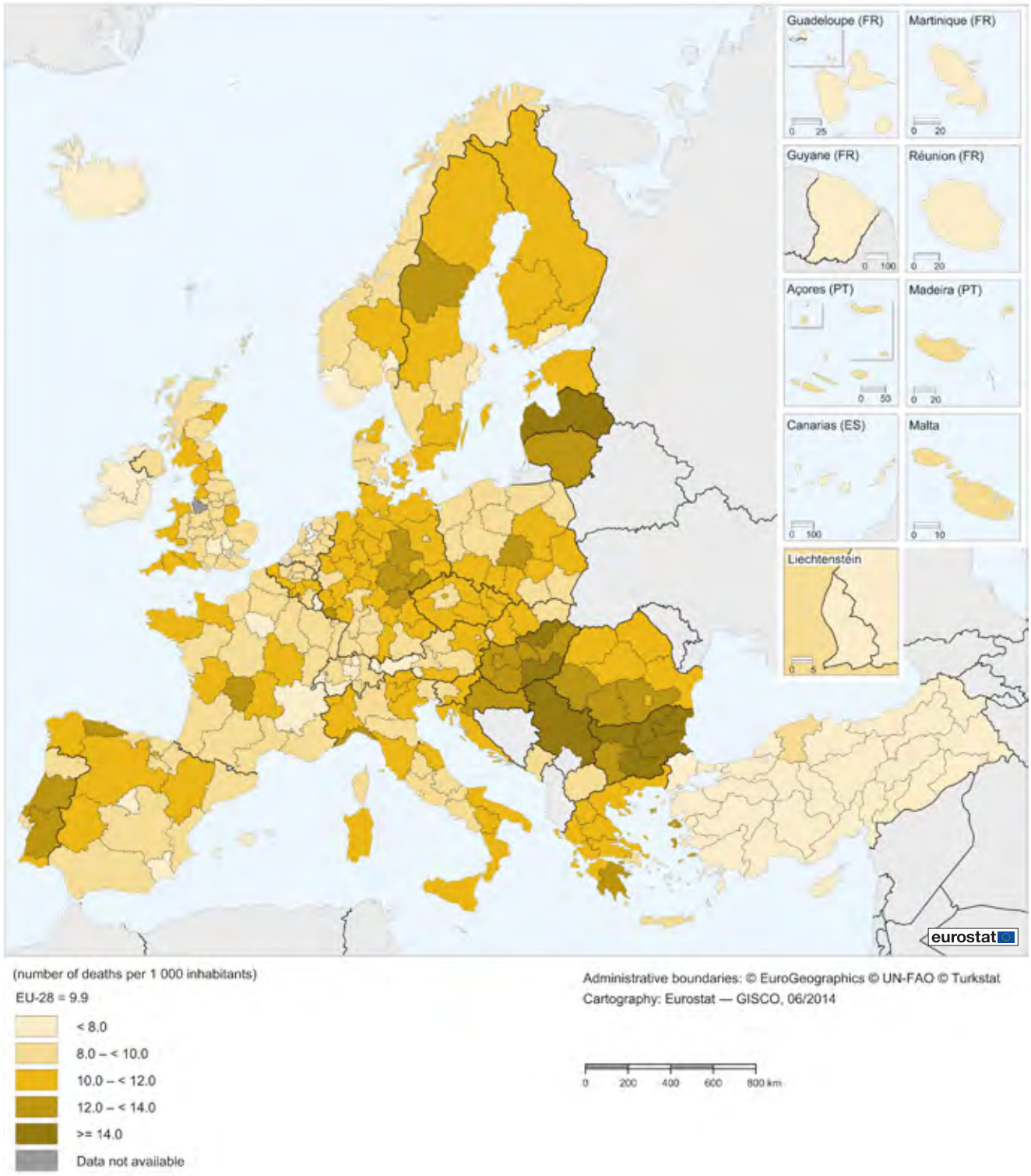
### *Many regions with relatively low living standards had high infant mortality rates*

The infant mortality rate (the number of deaths of children under one year of age compared with the number of live births) in the EU has fallen in recent decades, among others, due to: improvements in (access to) healthcare; an increase in immunisation against diseases; a reduction in child malnutrition; and general improvements in living standards (improved sanitation, access to clean water, or the ability to keep a home warm). Although Europe has some of the lowest infant mortality rates in the world, it is commonplace for statistical systems to collect this information, as this indicator is often used to assess the overall health of a nation. The EU-28 infant mortality rate stood at 3.8 deaths (among children under one year of age) per thousand live births in 2012.

Across the EU Member States, the highest infant mortality rates were registered in Romania (9.0 deaths per thousand live births) and Bulgaria (7.8), while Latvia (6.3), Slovakia (5.8) and Malta (5.3) were the only other Member States to record infant mortality rates in 2012 that were above 5.0 deaths per thousand live births. At the other end of the range, the lowest infant mortality rates were recorded in Slovenia (1.6 deaths per thousand live births), Finland (2.4) and Luxembourg (2.5).

There were four NUTS 2 regions in the EU where infant mortality rates in 2012 were in double figures (see **Figure 1.5**). They included the French overseas region of Guadeloupe, the two Bulgarian regions of Severozapaden and Yugoiztochen, and the Sud-Est region of Romania (where the highest infant mortality rate was recorded, 11.6 deaths per thousand live births); both of these Bulgarian regions and the Sud-Est region of Romania featured among the 10 NUTS 2 regions with the lowest levels of GDP per inhabitant in 2011.

**Map 1.6:** Crude death rate, by NUTS 2 regions, 2012 (1)
(number of deaths per 1 000 inhabitants)




(1) Ireland and Romania: 2011. The United Kingdom: 2010. France, Poland, Romania, the United Kingdom and the former Yugoslav Republic of Macedonia: provisional. Serbia: national level.
*Source:* Eurostat (online data codes: demo_r_gind3 and demo_gind)

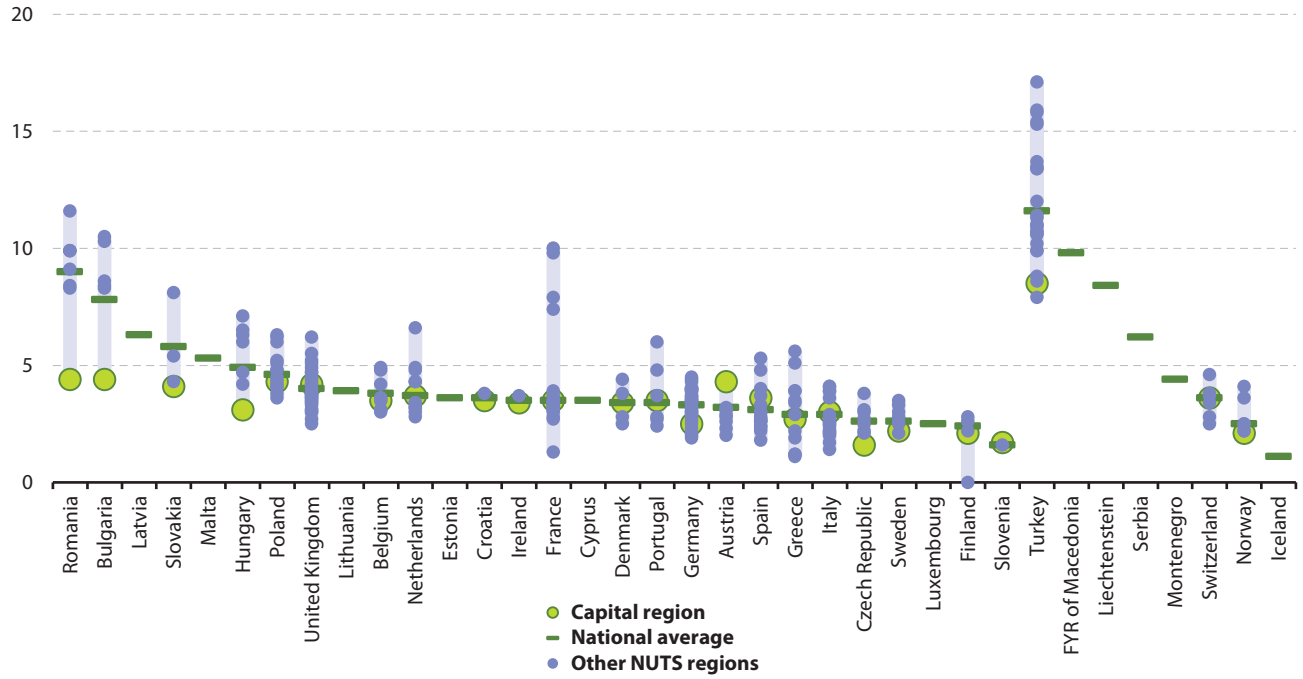
### *No infant mortality in the Åland islands in three out of the last four years*

At the other end of the range, infant mortality fell to zero in the Åland islands (off the south-west coast of Finland) in 2012 — the third time in four years that a rate of zero was recorded for this region. There were 13 NUTS 2 regions across the EU in 2012 that reported infant mortality rates of less than 2.0 deaths per thousand live births. These were spread across eight different countries and included four Greek regions, two regions from Italy, both Slovenian regions, and a single region from each of the Czech Republic, Germany, Spain, France and Finland.

The widest variation in infant mortality rates was recorded across the regions of France, where the four outliers at the top of the distribution were the overseas regions of Guadeloupe, Martinique, Guyane and Réunion. Otherwise, **Figure 1.5** shows that the degree of variation (between regions of the same country) was also relatively wide in those Member States which recorded some of the highest infant mortality rates — Romania, Bulgaria, Slovakia and Hungary — each of these was characterised by their capital region having the lowest infant mortality rate, considerably below their respective national averages.

By contrast, in those Member States with relatively low infant mortality rates, the capital region tended to record a rate that was close to the national average. The main exceptions to this rule were Wien (which was the only Austrian region to record an infant mortality rate above the national average) and Praha (which recorded the lowest infant mortality rate among the Czech regions); the capital regions of Berlin and Stockholm also recorded relatively low infant mortality rates compared with their respective national averages.

**Figure 1.5:** Infant mortality rate, by NUTS 2 regions, 2012 (1)
(per 1 000 live births)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Ireland: 2011. Serbia: national level.
*Source:* Eurostat (online data codes: demo_r_minfind and demo_minfind)

## Life expectancy

Over the last 50 years life expectancy at birth has increased by about 10 years on average across the EU, due in large part to improved socio-economic and environmental conditions and better medical treatment and care. **Map 1.7** presents life expectancy at birth for NUTS 2 regions in 2012: it is important to note that while the map presents information for the total population, there remain considerable differences in life expectancy between men and women — despite evidence showing that this disparity between the sexes has been closing gradually in most EU Member States.

### *On average, a European born in 2012 could expect to live 80.3 years*

**Map 1.7** shows that life expectancy at birth averaged 80.3 years across the EU-28 in 2012; the figure for women was 83.1 years, while that for men was 5.6 years lower. It is interesting to note that while there was a relatively wide gap between the sexes in relation to life expectancy, the difference in terms of the expected number of healthy life years was considerably narrower, as a woman born in the EU-28 in 2012 could expect to live 61.9 years in a healthy condition (in other words, in the absence of limitations in functioning/disability), while the corresponding figure for men was just 0.6 years lower, at 61.3 years.

There were 16 NUTS 2 regions where life expectancy at birth was 83.0 years or more in 2012; these were spread across just three of the EU Member States: with seven Spanish regions, five from France and four from Italy. The majority of these regions spread from the Spanish capital region up to the northern Spanish coast, through southern France (including Corsica) and into north-eastern Italy; exceptions included the French capital region and the French overseas region of Martinique. The highest life expectancy in 2012 (across NUTS 2 regions) was recorded in the Spanish capital region of the Comunidad de Madrid, at 84.2 years.

At the other end of the range, there were 47 NUTS 2 regions predominantly from the eastern European countries of Bulgaria, the Czech Republic, Croatia, Hungary, Poland, Romania and Slovakia. The three Baltic Member States (each being a single region at this level of detail), the two Portuguese regiões autónomas da Madeira and dos Açores, as well as South Western Scotland (the United Kingdom) were the only other regions in the EU-28 to record life expectancy below 78.0 years (as shown by the lightest shade in **Map 1.7**). The lowest life expectancy at birth in 2012 (across NUTS 2 regions) was recorded in the Bulgarian region of Severozapaden, at 72.9 years. As such, the difference in life expectancy between Severozapaden and the Comunidad de Madrid was 11.3 years.

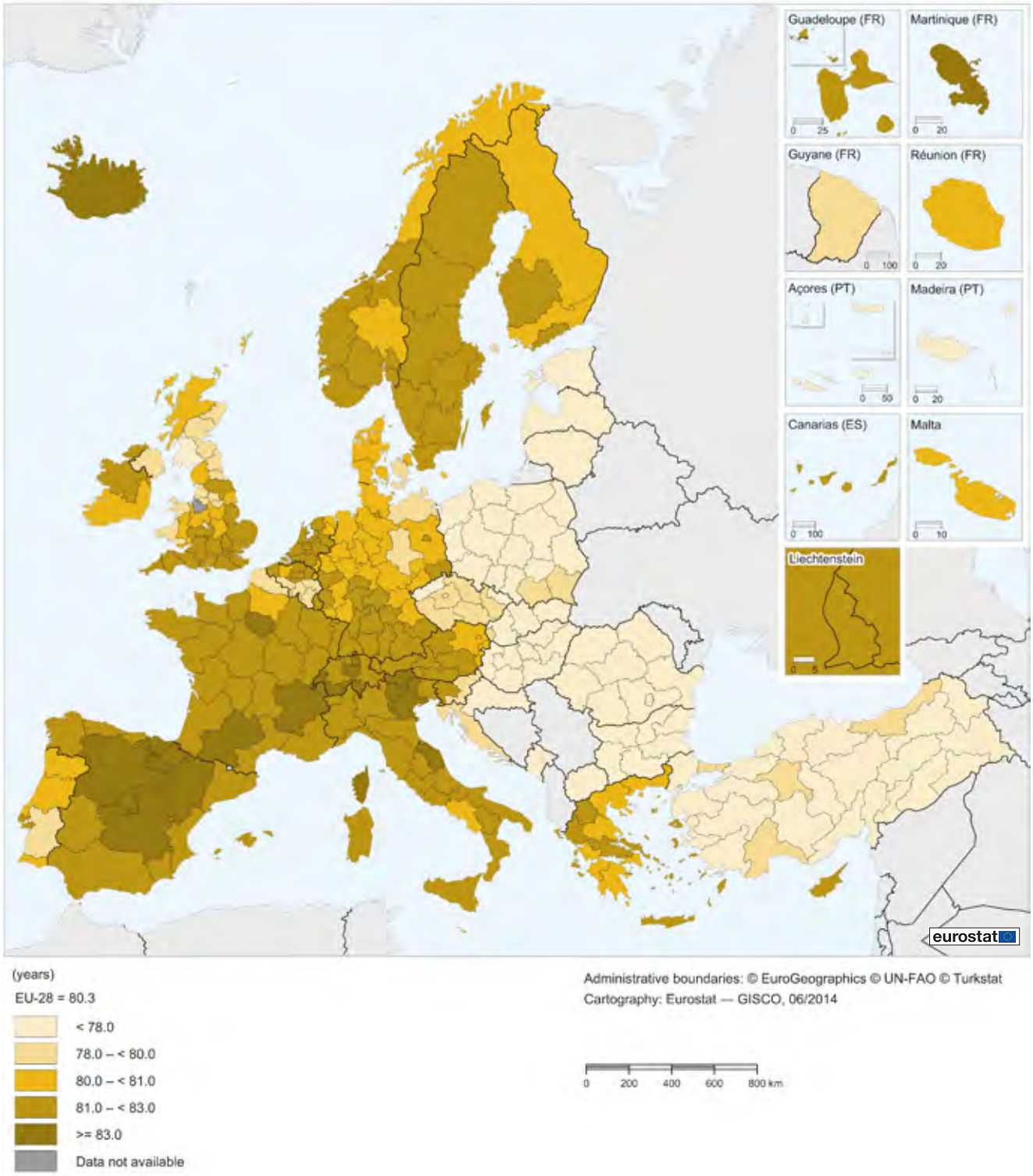
SPOTLIGHT ON THE REGIONS: COMUNIDAD DE MADRID (ES30), SPAIN

**Puerta de Europa, Madrid**

The highest life expectancy (at birth) across NUTS 2 regions in the EU was recorded in the Spanish capital region of the Comunidad de Madrid, at 84.2 years in 2012. The EU-28 average for life expectancy (at birth) was 80.3 years in 2012. Every NUTS 2 region in Spain recorded life expectancy above this rate, while the average for the whole of Spain was 82.5 years — the highest among any of the EU Member States.

*Photo: Luis Garcia*

**Map 1.7:** Life expectancy at birth, by NUTS 2 regions, 2012 (1)
(years)




(1) Sachsen-Anhalt (DEE0), Ireland, Romania and Turkey: 2011. Guadeloupe (FR91) and the United Kingdom: 2010. Serbia: national level.
*Source:* Eurostat (online data codes: demo_r_mlifexp and demo_mlexpec)

# Data sources and availability

Eurostat collects a wide range of demographic data: these include statistics on national and regional populations, as well as data for various demographic events which influence the population's size, structure and specific characteristics. These statistics may be used for a wide range of planning, monitoring and evaluating actions across a number of important policy areas in social and economic fields, for example, to:

- analyse population ageing and its effects on sustainability and welfare;
- evaluate the economic impact of demographic change;
- calculate 'per inhabitant' ratios and indicators — such as regional GDP per inhabitant, which may be used to allocate structural funds to economically less advantaged regions;
- develop and monitor immigration and asylum systems.

## Census results and likely revisions to population data

The population data presented in this chapter are those available as of March 2014. For most of the countries, the population data for the year 2011 and after take into account the results of the latest population census (held in 2011). The time series of populations between the previous census taking place in these countries and 2011 will be revised by end-2014 by some countries, taking into account Eurostat recommendations. The comparison of populations between a pre-census and a post-census year (see breaks in series in the online database) may result in differences partially explained by changes in population structure and partially explained by the lack of revisions to pre-census population data at the time of writing of this publication.

## Indicator definitions

The old-age dependency ratio is the ratio of the number of elderly persons of an age when they are generally economically inactive (65 and over in this publication) to the number of persons of working age (15–64 years old by convention). When analysing dependency ratios it is important to note that within the working-age population there are often considerable numbers of people who choose not to work (for example, students, those bringing-up a family, or those caring for other family members), while — especially in times of recession or depression — there are large numbers of people who are unable to find work and leave the labour force. Furthermore, a growing proportion of elderly persons continue to work beyond what has traditionally been considered the retirement age, while others have made adequate financial provisions for their retirement and could therefore be considered as 'independent' rather than dependent on the working-age population.

Population change is the difference in the size of a population between the end and the beginning of a period (for example, one calendar year). A positive population change is referred to as population growth, while a negative population change is referred to as population decline. Population change consists of two components:

- Natural change which is calculated as the difference between the number of live births and the number of deaths. Positive natural change, also known as natural increase, occurs when live births outnumber deaths. Negative natural change, also known as natural decrease, occurs when live births are less numerous than deaths.
- Net migration including statistical adjustment, which is calculated as the difference between the total change in the population and natural change; the statistics on net migration are therefore affected by all the statistical inaccuracies in the two components of this equation, especially population change. Net migration including statistical adjustment may cover, besides the difference between inward and outward migration, other changes observed in the population figures between 1 January for two consecutive years which cannot be attributed to births, deaths, immigration or emigration.

Crude rates of change are calculated for total population change, natural population change and net migration (including statistical adjustment). In all cases, the level of change during the year is compared with the average population of the area in question in the same year and the resulting ratio is expressed per thousand inhabitants.

Crude rates of vital demographic events (births and deaths) are defined as the ratio of the number of demographic events to the average population of the region in the same year, again expressed per thousand inhabitants.

The total fertility rate is defined as the average number of children that would be born to a woman during her lifetime if she were to pass through her childbearing years conforming to the age-specific fertility rates that have been measured in a given year.

The infant mortality rate is defined as the ratio of the number of deaths of children under one year of age to the number of live births in the reference year, and the resulting ratio is expressed per 1 000 live births.

Life expectancy at birth is the mean number of years that a new born child can expect to live if subjected throughout his or her life to current mortality conditions.

# 2 Health

# Introduction

Health is an issue of paramount importance — quite literally a matter of life and death. This chapter presents recent health statistics for the regions of the European Union (EU). It provides information on some of the most common causes of death, notably diseases of the circulatory and respiratory systems and cancer. It also presents statistics on healthcare services, with an analysis of the number of hospital beds and the number of physicians.

Health is an important priority for Europeans, who expect to be protected against illness and accident and to receive appropriate healthcare services. The competence for the organisation and delivery of healthcare services is largely held by the individual EU Member States. For the EU as a whole, health issues cut across a range of topics — these generally fall under the remit of the European Commission's Directorate-General for Health and Consumers and the Directorate-General for Employment, Social Affairs and Inclusion.

EU actions on health are concentrated on protecting people from health threats and disease (flu or other epidemics), consumer protection (food safety issues), promoting lifestyle choices (fitness and healthy eating), workplace safety, and helping national authorities cooperate. The European Commission works with EU Member States using an open method of coordination for health issues, a voluntary process based on agreeing common objectives and measuring progress towards these goals.

Health determinants include, among others: access to and the availability of healthcare services; an individual's lifestyle, behaviour and genetics; or social, economic and environmental factors. These determinants extend well beyond the boundaries of public healthcare systems, and the focus of health policy is increasingly linked to aspects such as improving education and awareness or environmental protection, which can be linked to a population's well-being and health status.

### MEASURING THE HEALTH STATUS OF AN INDIVIDUAL OR A POPULATION

The health status of an individual can be measured by a physician, who looks for life-threatening illness, risk factors for premature death (for example, the patient is overweight or a heavy smoker), as well as the severity of any disease in order to assess the patient's overall health. An individual's health status can also be assessed by asking them about how they perceive their own health, for example, their emotional well-being or whether or not they suffer from pain or discomfort.

Measures to determine the health status of an entire population are more difficult to determine — this is generally done by aggregating information collected on individuals. In the absence of comprehensive or absolute measures, average life expectancy, morbidity and mortality measures, the prevalence of preventable diseases, and availability of healthcare services are often used as proxies. Judgments regarding the health status of a particular population are usually made by comparing one population to another, or by studying the development of a particular health indicator / ratio over time.

The EU's health strategy is closely aligned with the Europe 2020 strategy, as it aims to foster health as an indispensable condition for smart, sustainable and inclusive growth. Health inequalities may be seen as a waste of potential human capital. Investing in health can potentially reduce these inequalities, thereby keeping a higher proportion of the population active for longer; changes such as these are likely to have a positive impact on productivity and competitiveness, while the gradual ageing of Europe's population means that there will probably be an increasing need for qualified workers to provide the EU's healthcare services.

The first programme for Community action in the field of public health covered the period from 2003–08. On 23 October 2007, the European Commission released a White Paper titled Together for health: a strategic approach for the EU 2008-2013 (COM(2007) 630). This second programme set out a health strategy designed to confront some of the most common healthcare challenges faced by the EU Member States, for example, population ageing, cross-border health threats, or illnesses linked to unhealthy lifestyles. Regulation 282/2014 of the European Parliament and of the Council of 14 March 2014 on the establishment of a third Programme for the Union's action in the field of

health (2014-2020) emphasises the link between health and economic prosperity, as the health of individuals directly influences economic outcomes such as productivity, labour supply and human capital. The programme foresees expenditure of almost EUR 450 million over the seven-year period in the form of grants and public procurement contracts. It will focus on:

- the challenging demographic context that is threatening the sustainability of healthcare systems;
- the increasing health inequalities between EU Member States;
- the prevalence of chronic diseases; and
- the fragile economic recovery that is limiting the resources available for investment in healthcare.

The EU's third health programme aims to:

- make healthcare services more sustainable and encourage innovation in health;
- improve public health, preventing disease and fostering supportive environments for healthy lifestyles;
- protect citizens from cross-border health threats (such as flu epidemics);
- contribute to innovative, efficient and sustainable healthcare systems;
- facilitate access to better and safer healthcare for EU citizens.

This third programme for health in the EU is complemented by research framework programmes (for example, supporting initiatives in areas such as biotechnology), or cohesion funds (for example, supporting investment in healthcare infrastructure, e-health services, or initiatives to promote active ageing).

### HEALTH — COHESION POLICY FUNDING

Policy initiatives in the health domain have recently focused on the relationship between health issues, competitiveness and economic growth. If populations live longer and healthier lives this should benefit not only the individuals concerned but also result in a higher proportion of the population being able to remain active within society for longer, while putting less strain on healthcare systems. As such, health has been recognised as an important asset for regional development and has become eligible for regional co hesion funding.

Indeed, regional funding through the European Regional Development Fund (ERDF) over the period 2007–13 allocated around EUR 5 billion to health infrastructure projects, while the European Social Fund (ESF) provided investment for initiatives linked to active ageing, e-health, health promotion and training. These investments by the ERDF and ESF on health-related expenditure represented approximately 1.5 % of the EU's total cohesion fund budget during the period 2007–13.

***For more information:***

Cohesion policy and health: http://ec.europa.eu/regional_policy/activity/health/index_en.cfm

# Main statistical findings

The life expectancy of women at birth was 83.1 years in the EU-28 in 2012, while that for men was 5.6 years lower at 77.5 years. While life expectancy continues to rise and may, at least in part, explain the demographic shift in the structure of the EU's population, policy attention has increasingly turned to the quality of life. Healthy life years provide a measure of the number of years that a person may be expected to live in a healthy condition (defined by the absence of limitations in functioning / disability). At birth, a woman born in 2012 could be expected to live 61.9 years free from any disability, while the corresponding value for men was only 0.6 years lower.

## Causes of death

A total of 5.0 million people died in the EU-28 in 2012, which equates to a crude death rate of 9.9 deaths per thousand inhabitants. Statistics on causes of death provide information on mortality patterns and provide public health information. As most causes of death vary significantly with people's age and sex, the use of standardised death rates improves comparability over time and between countries, measuring death rates independently of different age structures. At the regional level, standardised death rates are computed in the form of three-year averages; in this publication the latest data cover the period 2008–10. These statistics refer to the underlying disease or injury which initiated the train of morbid events leading directly to death, or the circumstances of an accident or an act of violence which produced a fatal injury; they are classified according to a standardised list of 86 different causes of death.

### *Almost 40 % of deaths in the EU-28 are attributed to diseases of the circulatory system*

The most common cause of death in the EU-28 in 2010 was diseases of the circulatory system (1.9 million deaths, or 39.2 % of the total). There were 1.3 million deaths in the EU-28 caused by cancer (malignant neoplasms) in 2010, which equated to just over one quarter (25.9 %) of the total, while the third most prevalent cause of death was diseases of the respiratory system (373 thousand or 7.6 % of the total).

### *There was an increase of 7.2 % in deaths from cancer over the period 2000–10*

The number of deaths from diseases of the circulatory system in the EU-28 fell by 9.7 % between 2000 and 2010 and as a result their relative share in the total number of deaths fell by 4.5 percentage points from 43.8 % of the total in 2000. During the most recent decade for which data are available there was also a fall in the overall number of deaths from diseases of the respiratory system (down 5.8 %). By contrast, the number of deaths in the EU-28 caused by cancer rose by 7.2 % between 2000 and 2010.

While their weight in the overall number of deaths in the EU-28 was quite small, the most rapid increase in numbers of deaths between 2000 and 2010 was recorded for diseases of the nervous system and the sense organs (+64.3 %) and for mental and behavioural disorders (+51.3 %). The biggest fall was registered for transport accidents, down 41.9 % between 2000 and 2010. Transport accidents also accounted for a relatively low share of the total number of deaths in the EU-28, some 0.7 % of the total in 2010 (or 35.5 thousand deaths).

## Diseases of the circulatory system

Diseases of the circulatory system include cerebrovascular diseases, ischaemic heart diseases and other heart diseases. Diet is thought to play an important role in determining the death rates from diseases of the circulatory system, which tend to be higher in regions where people consume a large amount of saturated fats, dairy products and red meat.

The standardised death rate from diseases of the circulatory system in the EU-28 was 432.3 per 100 000 inhabitants during the period 2008–10, the rate for men (507.7) was just over 35 % higher than that recorded for women (372.2), confirming a pattern of higher mortality rates being recorded for men (compared with those for women) across almost all causes of death.

### *More than two thirds of deaths in Bulgaria are attributed to diseases of the circulatory system*

**Map 2.1** shows that among the EU Member States, the highest standardised death rates from diseases of the circulatory system were often recorded in those Member States that joined the EU in 2004 or later (other than the Mediterranean islands of Cyprus and Malta); this was particularly true for Bulgaria and Romania. Indeed, more than two thirds of the deaths in Bulgaria during the period 2008–10 could be attributed to diseases of the circulatory system, while the corresponding share for Romania was also close to two thirds.

Six NUTS 2 regions from each of Bulgaria and Romania recorded standardised death rates for diseases of the circulatory system in excess of 1 000 per 100 000 inhabitants during the period 2008–10. The highest death rates were recorded in the three Bulgarian regions of Severozapaden (1 311 per 100 000 inhabitants), Yugoiztochen (1 267) and Severen tsentralen (1 220); Severozapaden was the only region where the death rate from diseases of the circulatory system was more than three times as high as the EU-28 average.

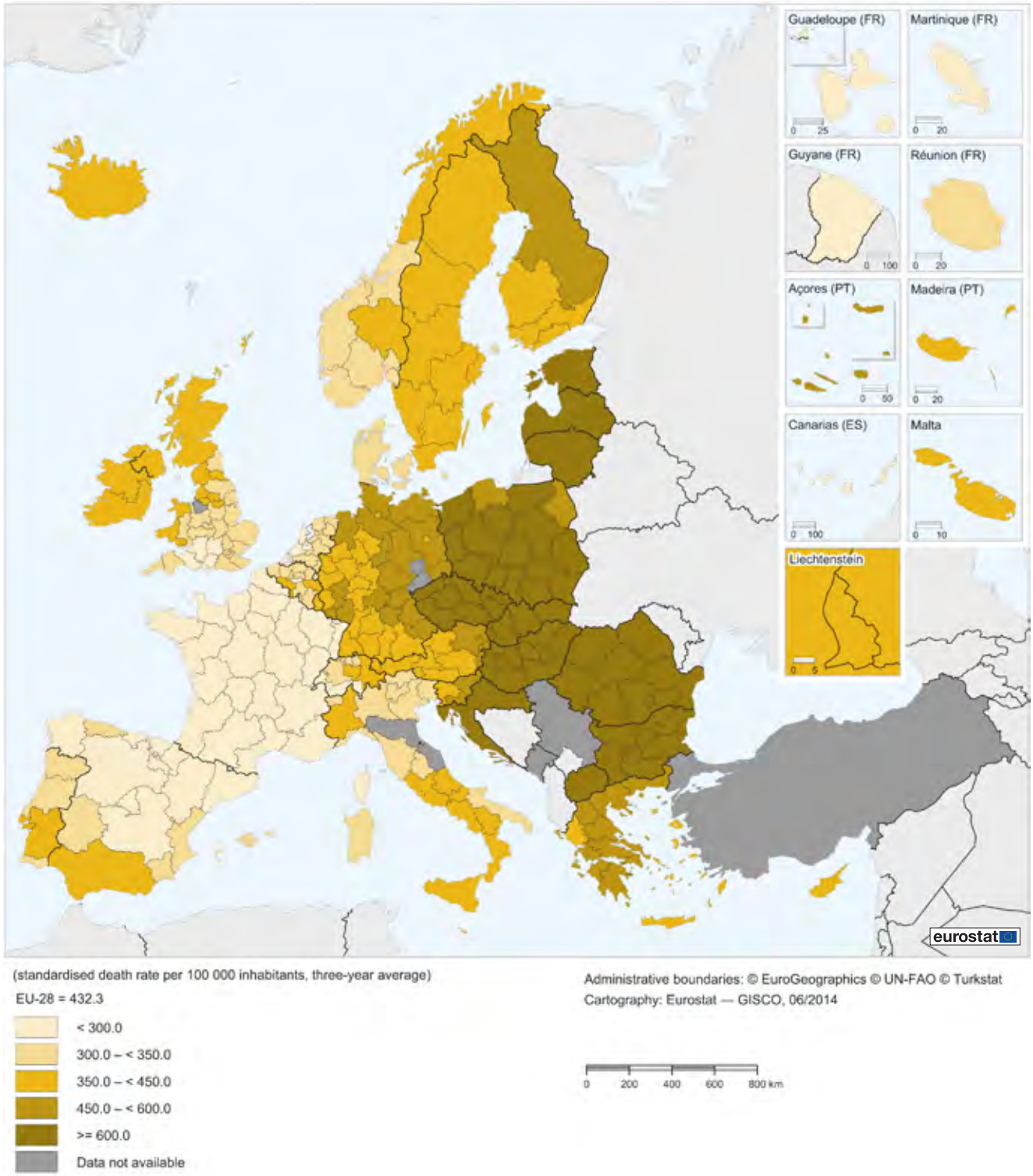
Outside of the Member States that joined the EU in 2004 or more recently, the highest standardised deaths rates from diseases of the circulatory system were recorded for: the Greek regions of Anatoliki Makedonia, Thraki (593 per 100 000 inhabitants), Thessalia (565) and Dytiki Makedonia (552); the eastern German regions of Sachsen-Anhalt (560) and Brandenburg (528); and the Portuguese Região Autónoma dos Açores (556). The former Yugoslav Republic of Macedonia (which is covered by a single region at this level of detail) also recorded a very high standardised death rate from diseases of the circulatory system (1 128).

### *France and Spain recorded the lowest death rates from circulatory diseases*

A range of studies suggest that there may be beneficial effects from a Mediterranean diet (particularly olive oil) and moderate red wine consumption (particularly with meals), and that these two factors could, at least in part, explain the generally low death rates from circulatory diseases in many region in southern Europe.

Around 27 % of all the deaths that occurred in France in 2008–10 resulted from diseases of the circulatory system, while relatively low shares (30–35 %) were also recorded in Portugal, Spain, Belgium, the Netherlands and the United Kingdom. At a regional level, the lowest standardised death rates from diseases of the circulatory system during the period 2008–10 were systematically recorded across France and Spain; indeed, the 34 NUTS 2 regions in the EU-28 with the lowest death rates from circulatory diseases were from these two countries.

**Map 2.1:** Deaths from diseases of the circulatory system, by NUTS 2 regions, 2008–10 (1)
(standardised death rate per 100 000 inhabitants, three-year average)




(1) Liechtenstein: 2010. Denmark and Iceland: 2007–09. Scotland (UKM): by NUTS 1 region. Denmark and Croatia: national level.
*Source:* Eurostat (online data codes: hlth_cd_ysdr1 and hlth_cd_asdr)

SPOTLIGHT ON THE REGIONS:
ÎLE DE FRANCE (FR10), FRANCE

**Pitié-Salpêtrière hospital, Paris**

The capital region of France was the EU-28 region with the lowest death rate from diseases of the circulatory system: 194.4 deaths per 100 000 inhabitants in 2008–10. While death rates from diseases of the circulatory system were systematically lower than the EU-28 average (432.3) across all French regions, an inhabitant of the Nord - Pas-de-Calais was 1.5 times as likely to die from a disease of the circulatory system as someone living in Paris.

*Photo: Magnus Manske*

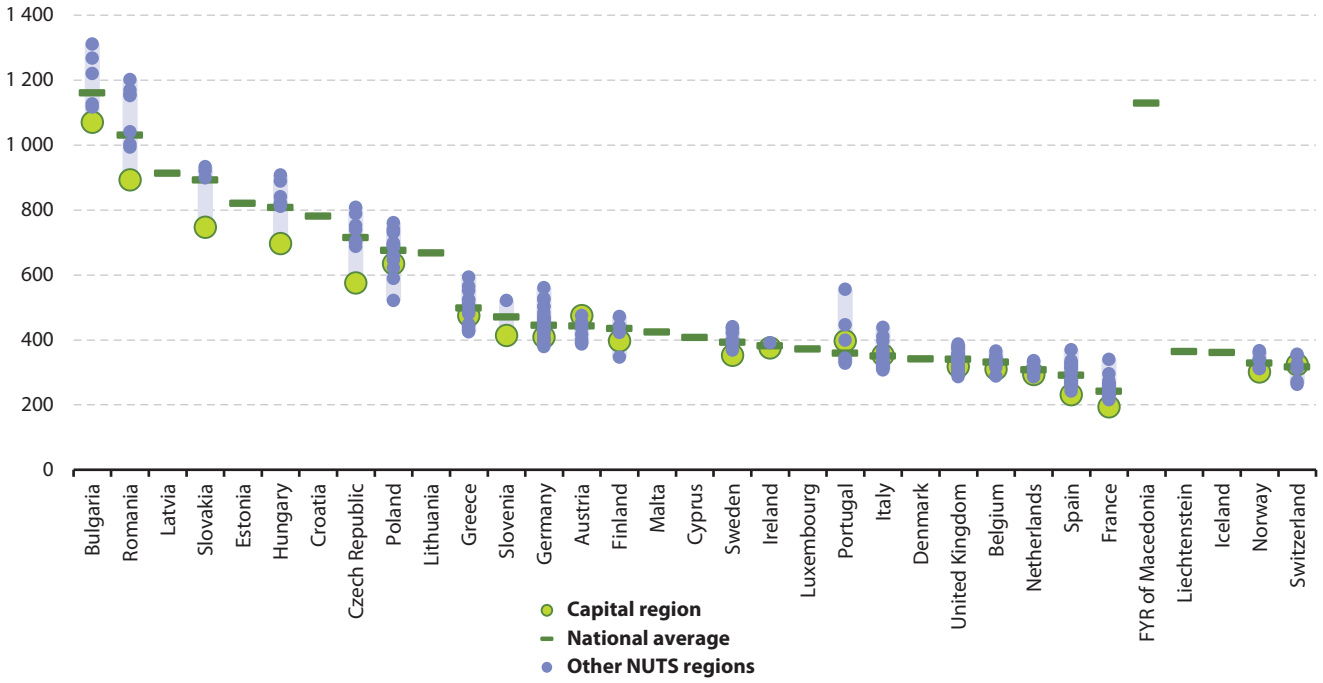
### *Close proximity to a hospital may be a determining factor for surviving a heart attack or stroke*

Another factor that may well explain regional patterns of death rates for diseases of the circulatory system is the speed with which hospital treatment can be made available — in other words, issues linked to access and availability of services for those suffering a heart attack or a stroke. The lowest death rates from diseases of the circulatory system in France and Spain were registered in the two capital regions of Île de France and the Comunidad de Madrid; both of these regions are densely populated, and patients in need of medical assistance could expect to travel relatively short distances to receive medical attention.

This pattern of lower death rates for capital regions could be observed across most of the EU Member States, as shown in **Figure 2.1**. The exceptions were the Austrian and Portuguese capital regions of Wien and Lisboa which were the only capital regions within the EU-28 to record standardised death rates for diseases of the circulatory system that were higher than their respective national averages; a similar situation was observed in Switzerland.

The lowest standardised death rates from diseases of the circulatory system during the period 2008–10 were recorded in the three French regions of Île de France (194.4 per 100 000 inhabitants), Provence-Alpes-Côte d'Azur (which contains Marseille, 216.0) and Rhône-Alpes (which contains Lyon, 223.3).

**Figure 2.1:** Regional disparities in deaths from diseases of the circulatory system, by NUTS 2 regions, 2008–10 (1)
(standardised death rate per 100 000 inhabitants, three-year average)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Liechtenstein: 2010. Denmark and Iceland: 2007–09. Scotland (UKM): by NUTS 1 region. Denmark and Croatia: national level. Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Lancashire (UKD4) and Cheshire (UKD6): not available.

*Source:* Eurostat (online data codes: hlth_cd_ysdr1 and hlth_cd_asdr)

### *Men were more than twice as likely as women to die from diseases of the circulatory system in Lithuania*

Lithuania (one region at this level of detail) was the only NUTS 2 region to record a standardised death rate for diseases of the circulatory system among men that was at least twice as high as that for women (1 048.7 per 100 000 inhabitants compared with 479.4). There were generally wide disparities between the sexes in the other two Baltic Member States, as well as in many regions of Finland and France, where male death rates were generally 1.5–1.7 times as high as those for women.

By contrast, the differences in death rates between the sexes were relatively low in most German, Greek and Portuguese regions, as well as in Croatia (only national data available). Standardised death rates from diseases of the circulatory system were marginally higher for women in just five NUTS 2 regions across the whole of the EU-28 in 2008–10; all of these were located in Greece — Sterea Ellada, Dytiki Ellada, Kriti, Ionia Nisia and Thessalia.

## Diseases of the respiratory system

Respiratory diseases include infectious acute respiratory diseases (such as influenza and pneumonia) and chronic lower respiratory diseases (such as bronchitis and asthma). Diseases of the respiratory system mainly affect older people, as almost 90 % of EU-28 deaths from these diseases occur among those aged 65 and above.

**Map 2.2** shows the standardised death rate for diseases of the respiratory system across Europe; the average death rate from these diseases in the EU-28 was 85.3 deaths per 100 000 inhabitants during the period 2008–10, with the rate for men (121.4) almost double that recorded for women (63.3). Relatively high death rates from diseases of the respiratory system may be linked to a range of factors, including: historical working conditions (especially for men, as the economies of many of the regions with high rates used to be based on coal mining, iron and steel and other heavy industries) or differences in public health campaigns (for example, the proportion of elderly persons who are vaccinated against influenza or the proportion of the population who choose to smoke).

### *Respiratory diseases accounted for a high proportion of deaths in the Portuguese island regions of Madeira and the Azores …*

Of the 13 NUTS 2 regions in the EU-28 that recorded a standardised death rate from diseases of the respiratory system of at least 150 deaths per 100 000 inhabitants in 2008–10 there were two Portuguese regions — the volcanic island chains of the Açores and Madeira — and 11 regions from the former industrial heartlands in the centre and north of the United Kingdom. By far the highest death rate was reported in the Região Autónoma da Madeira (294.6 deaths per 100 000 inhabitants), followed by the Região Autónoma dos Açores (195.8); in both of these regions there were particularly high levels of pneumonia, chronic and acute bronchitis.

### *… while the opposite was true at the other end of the EU in the Baltic Member States and Finland*

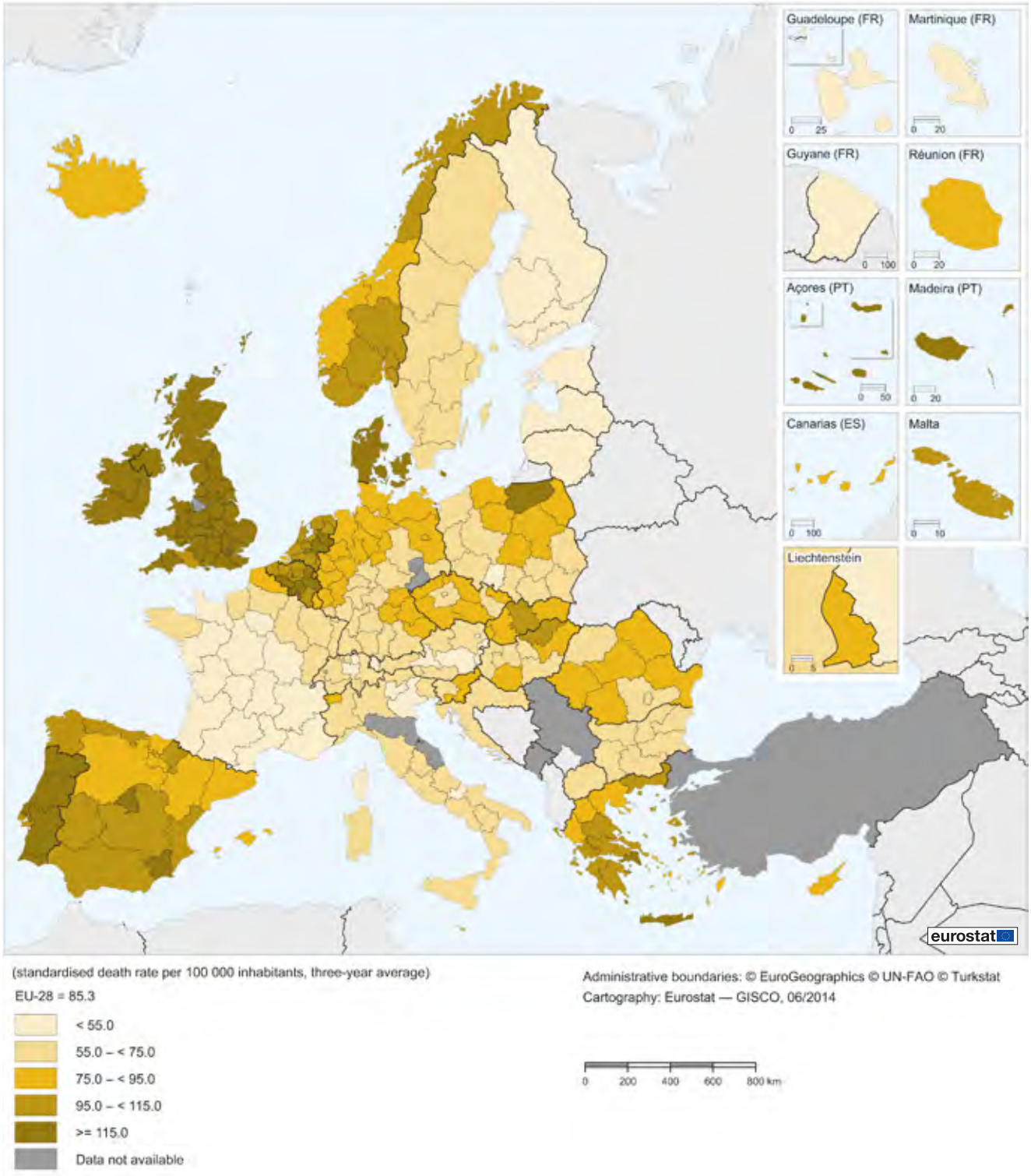
The NUTS 2 regions with the lowest death rates from respiratory diseases included all three of the Baltic Member States (each of which is composed of a single region at this level of analysis) and all but one of the five regions in Finland (the islands of Åland were the exception, although here too the death rate remained below the EU-28 average). French regions (other than those in the north and east of the country) and several Austrian and Italian regions also recorded relatively low standardised death rates for respiratory diseases. The lowest standardised death rate for respiratory diseases across all NUTS 2 regions was recorded in Latvia, at 34.6 deaths per 100 000 inhabitants in 2008–10.

### *Death rates from respiratory diseases were almost twice as high among men as women across the EU-28*

Standardised death rates for men from respiratory diseases were almost twice as high (1.9 times) as those for women within the EU-28 during the period 2008–10. Male death rates from respiratory diseases were systematically higher than those recorded for women across all NUTS 2 regions of the EU. The ratio of death rates among men compared with those for women rose above 2.5 in several Spanish, Italian, Hungarian, Polish and Finnish regions.

The largest absolute differences in death rates from respiratory diseases between the sexes were often recorded in those regions with the highest overall death rates: for example, the Portuguese Regiões Autónomas da Madeira and dos Açores. There were also large differences in a number of Spanish regions (including the southern regions of Andalucía, Extremadura and the Región de Murcia), the central Belgian regions of the Province/Provincie Hainaut and Province/Provincie Namur, and the northerly Polish region of Warminsko-Mazurskie; these latter three regions are characterised by their historical specialisation in the coal mining and iron and steel activities.

**Map 2.2:** Deaths from diseases of the respiratory system, by NUTS 2 regions, 2008–10 ([1])
(standardised death rate per 100 000 inhabitants, three-year average)




([1]) Liechtenstein: 2010. Denmark and Iceland: 2007–09. Scotland (UKM): by NUTS 1 region. Denmark and Croatia: national level.
*Source:* Eurostat (online data codes: hlth_cd_ysdr1 and hlth_cd_asdr)

### *Deaths from respiratory diseases in the Greek, Polish and Spanish capital regions were considerably higher than their respective national averages*

**Figure 2.2** presents the distribution of standardised death rates from respiratory diseases across NUTS 2 regions in 2008–10. There was a relatively narrow range of death rates across the different regions composing each EU Member State, aside from the outlying regions of the Regiões Autónomas da Madeira and dos Açores, Warminsko-Mazurskie and the Ciudad Autónoma de Ceuta (Spain).

Ireland, Portugal, Romania and Slovenia were the only multi-regional EU Member States where the capital region recorded the lowest regional death rate from respiratory diseases. By contrast, in 8 of the 20 multi-regional EU Member States for which data are available, the death rate in the capital region was above the national average; this was notably so in the Greek, Polish and Spanish capital regions of Athens, Warsaw and Madrid, and may in part be attributed to levels of air pollution.

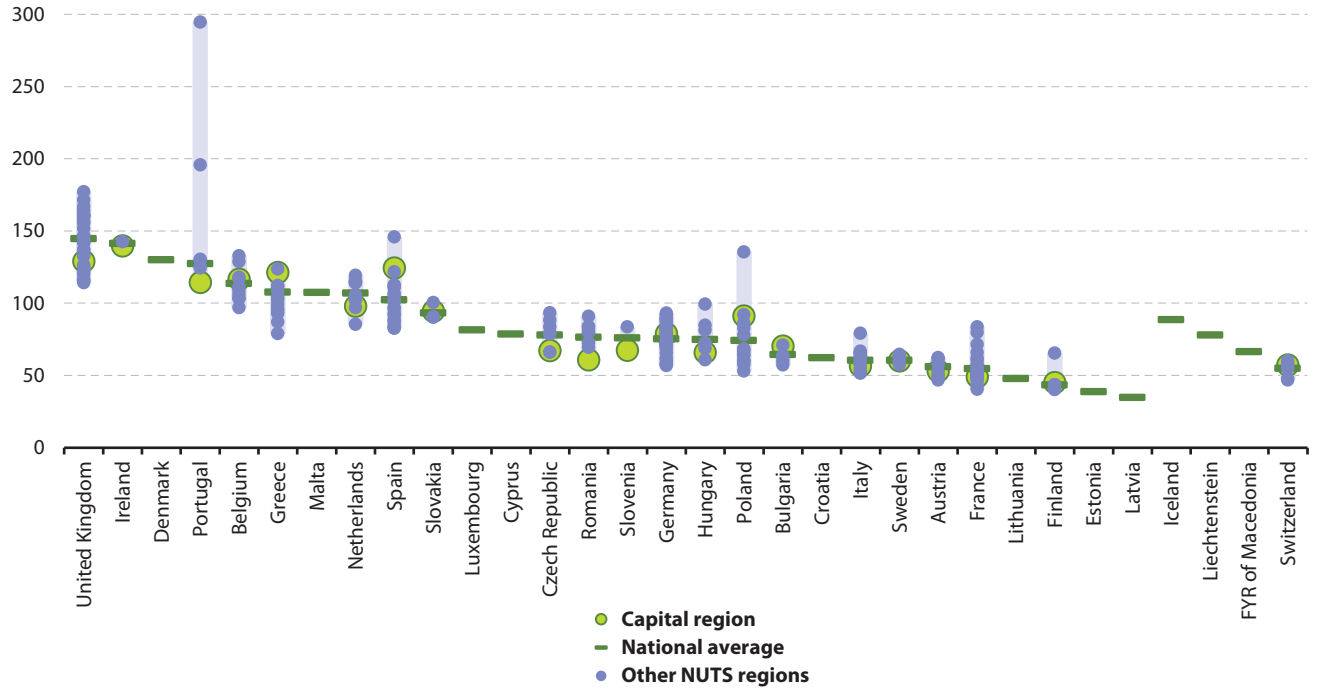
### *Biggest overall decline in death rates from diseases of the circulatory system recorded in the Nord-Vest region of Romania*

**Figure 2.3** shows the development of death rates for both diseases of the circulatory and the respiratory system over the period 2000–10. In each part of the figure, lines are shown for the EU-28 average, the region with the highest and lowest death rate in 2008–10, and the region with the biggest increase and reduction in its death rate over the most recent decade for which data are available (note that six regions are excluded from this analysis as they did not have a complete time series).

For diseases of the circulatory system, the biggest reduction in death rates was recorded for the Nord-Vest region of Romania, where the rate fell from a high of 1 489 per 100 000 inhabitants in 2000–02 to 1 169 in 2008–10. Although this was the biggest absolute decline, in relative terms it amounted to a reduction of 21.5 %, which was slightly below the EU-28 average (-23.2 %).

There was an average reduction of 13.3 % in the EU-28's standardised death rate for respiratory diseases over the period from 2000–10. The biggest decline across NUTS 2 regions was recorded in the Border, Midland and Western region of Ireland where the death rate fell by 40.2 %. In Latvia, where the lowest death rate for respiratory diseases was recorded in 2008–10, there was also a marked reduction in death rates between 2000–10 (-21.4 %).

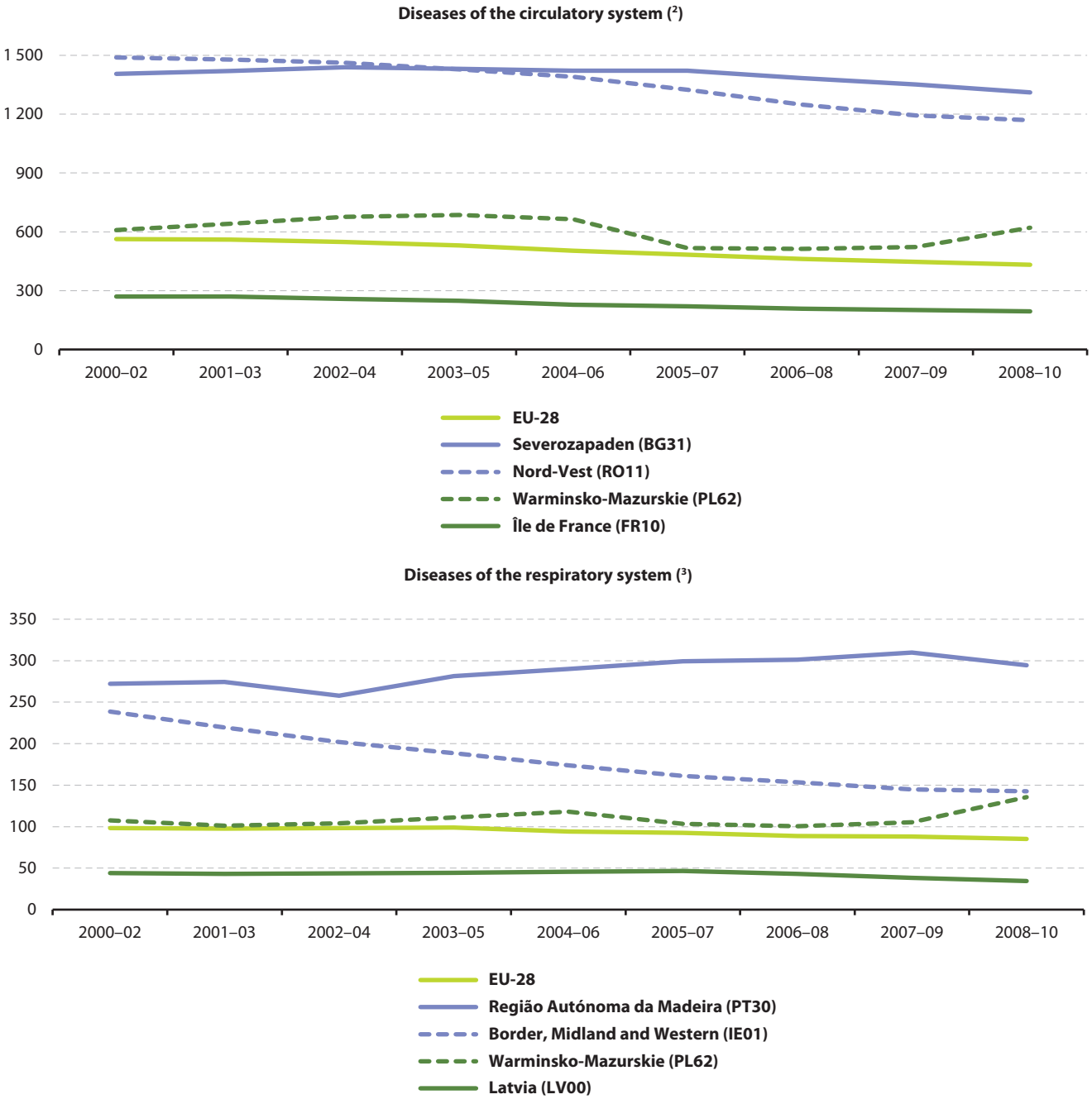
**Figure 2.2:** Regional disparities in deaths from diseases of the respiratory system, by NUTS 2 regions, 2008–10 (1)
(standardised death rate per 100 000 inhabitants, three-year average)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Liechtenstein: 2010. Denmark and Iceland: 2007–09. Scotland (UKM): by NUTS 1 region. Denmark and Croatia: national level. Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Lancashire (UKD4) and Cheshire (UKD6): not available.

*Source:* Eurostat (online data codes: hlth_cd_ysdr1 and hlth_cd_asdr)

**Figure 2.3:** Deaths from diseases of the circulatory system and the respiratory system, selected NUTS 2 regions in the EU-28, 2000–10 (1)
(standardised death rates per 100 000 inhabitants, three-year averages)




(1) Note: the y-axis is different in the two parts of the figure. Scotland (UKM): by NUTS 1 region. Denmark and Croatia: national level. Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Lancashire (UKD4) and Cheshire (UKD6): not available.
(2) The figure shows the EU-28 average, the highest (BG31) and lowest (FR10) regions for 2008–10, the region with biggest increase (PL62) from 2000–10 and the region with biggest reduction (RO11) from 2000–10 (subject to data availability).
(3) The figure shows the EU-28 average, the highest (PT30) and lowest (LV00) regions for 2008–10, the region with biggest increase (PL62) from 2000–10 and the region with biggest reduction (IE01) from 2000–10 (subject to data availability).
*Source:* Eurostat (online data code: hlth_cd_ysdr1)

## Cancer (malignant neoplasms)

There are many different types of cancer (malignant neoplasms) including those of the larynx, trachea, bronchus, lung, colon, breast or prostate, as well as lymphoid or haematopoietic cancers. The EU-28 standardised death rate from cancer was 273.6 per 100 000 inhabitants for the period 2008–10, with the rate for men (370.3) almost 80 % higher than that for women (207.1).

### *Hungarian regions had some of the highest death rates from cancer in the EU …*

Among the NUTS 2 regions of the EU-28 in 2008–10, the standardised death rate from cancer was highest in the north eastern Hungarian region of Észak-Alföld, peaking at 375.4 deaths per 100 000 inhabitants. The lowest death rates from cancer were generally recorded in eastern and southern Europe (in particular across Bulgarian, Greek and Spanish regions, as well as in Cyprus) and the French overseas regions.

**Map 2.3** shows that the remaining regions of Hungary also had some of the highest death rates from cancer (with lung cancer often the most prevalent form of cancer in these regions). All seven Hungarian regions were present among the 10 EU regions with the highest death rates from cancer, alongside Severozápad (in the north west of the Czech Republic) and the two northerly Polish regions of Kujawsko-Pomorskie and Pomorskie (which includes Gdańsk).

### *… while death rates from cancer were also high in the majority of regions in the Czech Republic, the Netherlands, Poland, Slovakia and Slovenia*

There were a total of 49 regions in the EU-28 that reported 300.0 or more deaths from cancer per 100 000 inhabitants during the period 2008–10. Aside from the 10 regions already mentioned, the majority of regions in the Czech Republic, the Netherlands, Poland, Slovakia and Slovenia were present at the top end of the distribution, along with seven regions from the north of the United Kingdom, Croatia, Denmark and Latvia (only national information available for these three countries) and the Irish capital region of Southern and Eastern. The Romanian capital region of București – Ilfov, the most northerly French region of Nord - Pas-de-Calais and the Portuguese island Região Autónoma dos Açores were all atypical, as they were the only regions from these countries to record death rates from cancer that were above 300 deaths per 100 000 inhabitants during the period 2008–10.

### *Men were more than twice as likely to die from cancer as women in all Portuguese and Spanish regions*

An analysis by sex for the period 2008–10 shows that standardised death rates from cancer across EU regions were systematically higher for men than for women. The widest gender gap was recorded in the region with the highest overall death rate for cancer, Észak-Alföld, where the rate for men peaked at 558.7 deaths per 100 000 male inhabitants, some 300 deaths higher than the corresponding rate for women. Male death rates from cancer were more than twice as high as female rates in every Portuguese and Spanish region, as well as in most French and Hungarian regions, and about half of all Greek and Polish regions.

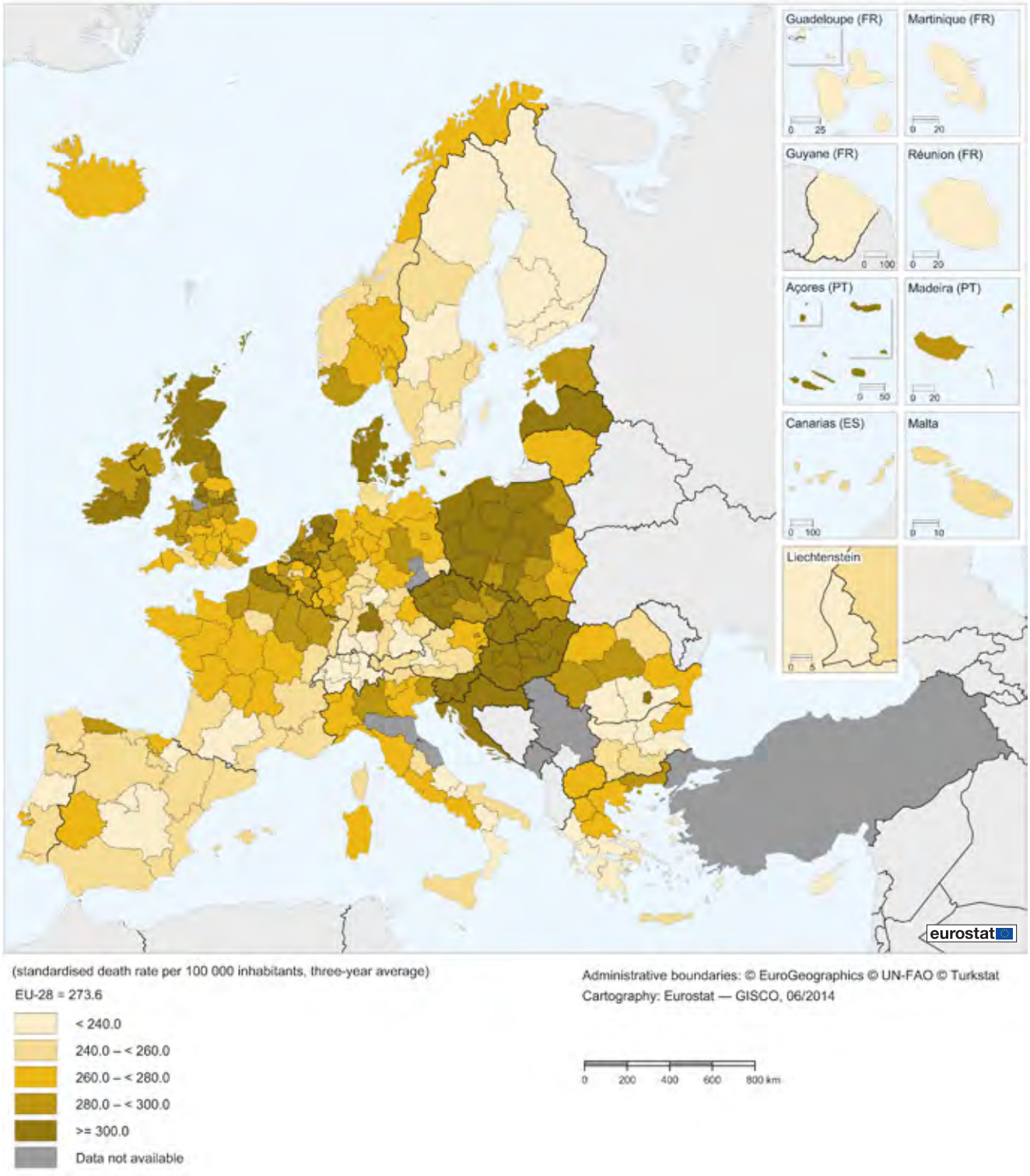
SPOTLIGHT ON THE REGIONS: SEVEROZÁPAD (CZ04), THE CZECH REPUBLIC

**The spa town of Karlovy Vary, Severozápad**

Severozápad was the EU region which recorded the most rapid reduction in death rates from breast cancer among women during the period 2000–10 (-32.7 %); this was 3.5 times as fast as the corresponding reduction for the whole of the EU-28. As a result the death rate from breast cancer in Severozápad fell below the EU-28 average in 2007–09. In the seven other NUTS 2 regions of the Czech Republic, female death rates from breast cancer also fell at a relatively fast pace, with reductions in the range of 22–27 % for six regions. The only exception was the region surrounding the capital Praha, as the death rate fell by 14.3 % in Střední Čechy. Nevertheless, this was also at a faster pace than the EU-28 average (-9.5 %).

*Photo: Juan de Vojníkov*

**Map 2.3:** Deaths from cancer (malignant neoplasms), by NUTS 2 regions, 2008–10 (1)
(standardised death rate per 100 000 inhabitants, three-year average)




(1) Liechtenstein: 2010. Denmark and Iceland: 2007–09. Scotland (UKM): by NUTS 1 region. Denmark and Croatia: national level.
*Source:* Eurostat (online data codes: hlth_cd_ysdr1 and hlth_cd_asdr)

### *Death rates from cancer in the capital regions of Bucharest and Vienna were higher than in any other Romanian or Austrian region*

**Figure 2.4** shows the distribution of standardised death rates from cancer for the period 2008–10. The largest dispersion of rates was recorded across French regions, while there was also a relatively wide variation between the regions of Romania, Spain, Poland, Portugal and Greece. Capital regions were characterised as recording death rates from cancer that were generally close to their respective national averages. This pattern was reproduced across the majority of the EU Member States, with only Bucureşti – Ilfov and Wien displaying an atypical pattern: the capital regions of Romania and Austria recorded the highest regional death rates from cancer in these two countries.

### *In the Czech region of Severozápad, the death rate for breast cancer fell by almost one third over the last decade …*

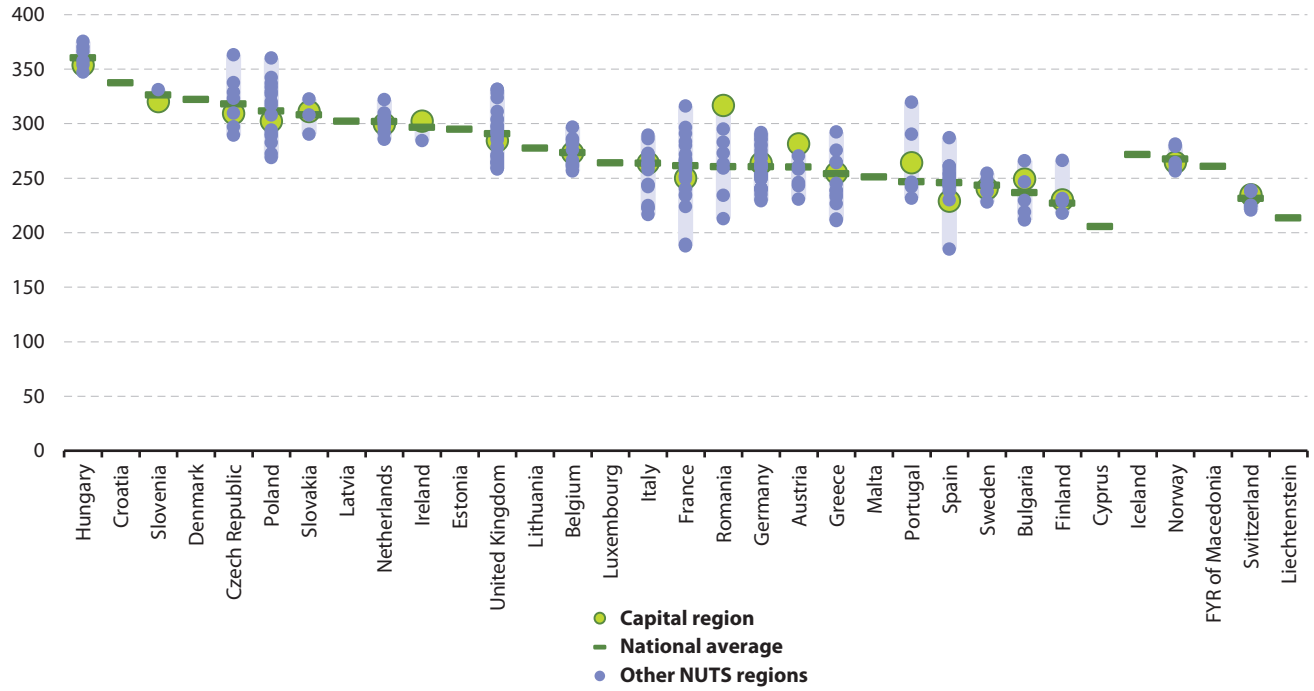
**Figure 2.5** shows the development of death rates for two gender-specific cancers: namely, breast cancer for women and prostate cancer for men. Each part of the figure shows lines for the EU-28 average, the NUTS 2 region with the highest and lowest death rate in 2008–10, and the NUTS 2 region with the biggest increase and reduction in its death rates over the period 2000–10 (note that six regions are excluded from this analysis as they did not have a complete time series).

For breast cancer, there was a 9.5 % reduction in the EU-28 death rate among women during the last decade. The biggest reduction was recorded for the Severozápad region of the Czech Republic, where death rates fell by almost one third (-32.7 %) and dropped below the EU-28 average in 2007–09. The highest death rate for breast cancer was recorded in the northerly Belgian region of the Province/Provincie Oost-Vlaanderen, at 47.7 female deaths per 100 000 female inhabitants in 2008–10, some 1.4 times as high as the EU-28 average. The biggest increase in death rates from breast cancer over the period 2000–10 was a rise of almost one third (32.2 %) in the autonomous island region of Åland (Finland); its death rate for breast cancer rose above the EU-28 average in 2007–09.

### *… while that for prostate cancer fell by nearly 50 % in the Italian region of Bolzano/Bozen*

For prostate cancer, the EU-28 death rate among men fell by 14.1 % over the period 2000–10. Death rates were almost halved (-49.0 %) in the northerly Italian region of the Provincia Autonoma di Bolzano/Bozen; its death rate for prostate cancer fell below the EU-28 average in 2007–09. The highest death rate from prostate cancer was recorded in Åland — the same region that recorded the highest increase in breast cancer — at 97.3 male deaths per 100 000 male inhabitants in 2008–10; this was 2.3 times as high as the EU-28 average. The biggest increase in the death rate for

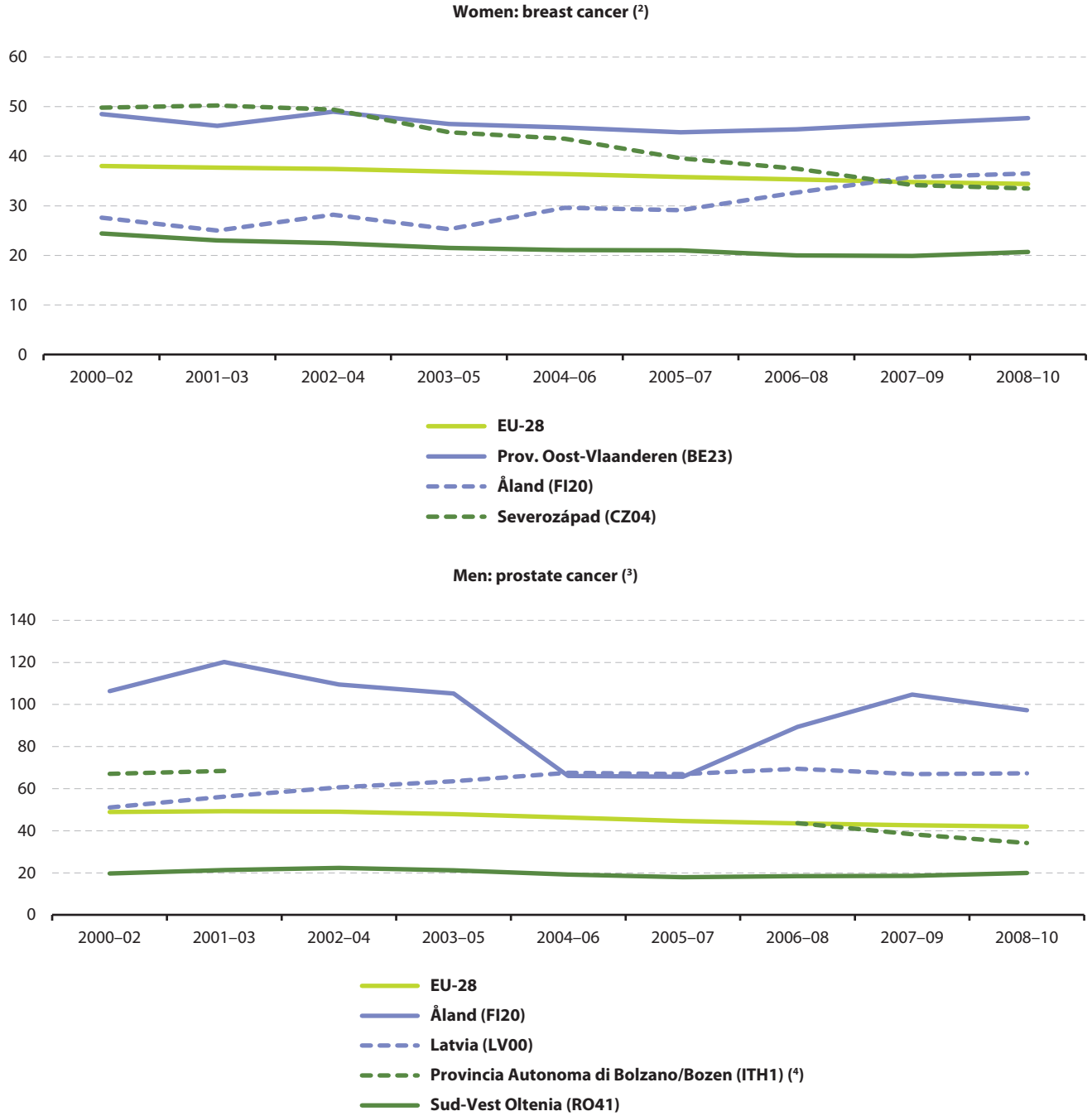
**Figure 2.4:** Regional disparities in deaths from cancer (malignant neoplasms), by NUTS 2 regions, 2008–10 (1)
(standardised death rate per 100 000 inhabitants, three-year average)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Liechtenstein: 2010. Denmark and Iceland: 2007–09. Scotland (UKM): by NUTS 1 region. Denmark and Croatia: national level.
*Source:* Eurostat (online data codes: hlth_cd_ysdr1 and hlth_cd_asdr)

prostate cancer during the period 2000–10 was recorded in Latvia (which is covered by a single region at this level of analysis) with an overall increase of 31.7 %: note that the death rate for prostate cancer peaked in 2006–08, more than one third (35.8 %) higher than it had been in 2000–02.

**Figure 2.5:** Deaths from selected cancers (malignant neoplasms), selected NUTS 2 regions in the EU-28, 2000–10 (1) (standardised death rates per 100 000 inhabitants, three-year averages)




(1) Note: the y-axis is different in the two parts of the figure. Scotland (UKM): by NUTS 1 region. Denmark and Croatia: national level. Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Lancashire (UKD4) and Cheshire (UKD6): not available.
(2) The figure shows the EU-28 average, the highest (BE23) and lowest (FR94) regions for 2008–10, the region with biggest increase (FI20) from 2000–10 and the region with biggest reduction (CZ04) from 2000–10 (subject to data availability).
(3) The figure shows the EU-28 average, the highest (FI20) and lowest (RO41) regions for 2008–10, the region with biggest increase (LV00) from 2000–10 and the region with biggest reduction (ITH1) from 2000–10 (subject to data availability).
(4) 2003–05 to 2005–07: not available.
*Source:* Eurostat (online data code: hlth_cd_ysdr1)

## Healthcare resources

### Hospital beds

For many years, the number of hospital beds across the EU-28 has decreased. During the last decade this pattern continued, as the number of available beds in hospitals fell by an estimated 10.9 % between 2002 and 2012. The total number of available hospital beds in the EU-28 was estimated at 2.70 million in 2012.

In 2011, the highest density of available hospital beds was recorded in the north-eastern German region of Mecklenburg-Vorpommern (1 273 beds per 100 000 inhabitants; information is only available for NUTS 1 regions for Germany), followed by its neighbouring Polish region of Zachodniopomorskie (1 239) and the central German region of Thüringen (1 002); these three regions were the only ones in the EU-28 to record ratios above 1 000 beds per 100 000 inhabitants. There were four additional regions where the availability of hospital beds stood above the level of 900 beds per 100 000 inhabitants, they were: the Romanian capital region of Bucuresti -– Ilfov, two more German regions (Saarland and Schleswig-Holstein), and the Austrian region of Salzburg.

#### *Healthcare resources tend to be concentrated in regions with high population density, especially capital regions*

**Map 2.4** shows the highest ratio of hospital beds to population in 2011 was often recorded in the capital region of each EU Member State; this may be due to capital cities often having specialised hospital services (for the treatment of rare diseases or new types of intervention and care). More generally, regional disparities may result from the distribution of medical facilities in major cities and agglomerations, with these facilities not only being used by the local population but also people from a wider catchment area that extends into neighbouring regions. Berlin (Germany), Helsinki-Uusimaa (Finland) and Stockholm (Sweden) were the three main exceptions to this pattern, as each of these capital regions reported the lowest density of available hospital beds in their respective countries. Stockholm (239 beds) and the Comunidad de Madrid (295 beds) were both present among the 24 regions in the EU which had less than 300 beds per 100 000 inhabitants; while the figure for Madrid was below the national average for Spain, although there were five other Spanish regions with lower ratios.

Among the 24 EU regions where the density of hospital beds per 100 000 inhabitants was below 300 beds (as shown by the lightest shade in **Map 2.4**), seven regions were located in each of Spain and Sweden and three in southern Italy. Note that data for the United Kingdom are only available at the national level, but that the United Kingdom was one of only three EU Member States — along with Ireland and Sweden — to record an average density of hospital beds below 300 per 100 000 inhabitants in 2011.

Among the multi-regional Member States, those regions with the lowest number of hospital beds per 100 000 inhabitants were often characterised as being rural areas with relatively low levels of population density, for example, the central Greek region of Sterea Ellada, Alentejo in Portugal, or Andalucía in southern Spain — each of these featured among the five EU regions with the lowest numbers of hospital beds per 100 000 inhabitants in 2011.

### Healthcare professionals

Regional data on healthcare professionals provides an alternative measure for studying the availability of healthcare resources. **Map 2.5** shows the number of physicians per 100 000 inhabitants in 2011. As with the data presented for hospital beds, the capital region in each Member State generally reported the highest concentration of physicians. In those multi-regional Member States for which data are available the exceptions to this rule included: the provinces of Brabant Wallon and Vlaams-Brabant which had higher ratios than the Belgian capital region; Severozapaden in Bulgaria; Bremen and Hamburg in Germany (data are only available for NUTS 1 regions); the Ciudad Autónoma de Ceuta, the Comunidad Foral de Navarra and the País Vasco in Spain; Provence-Alpes-Côte d'Azur in France; and Groningen and Utrecht in the Netherlands.

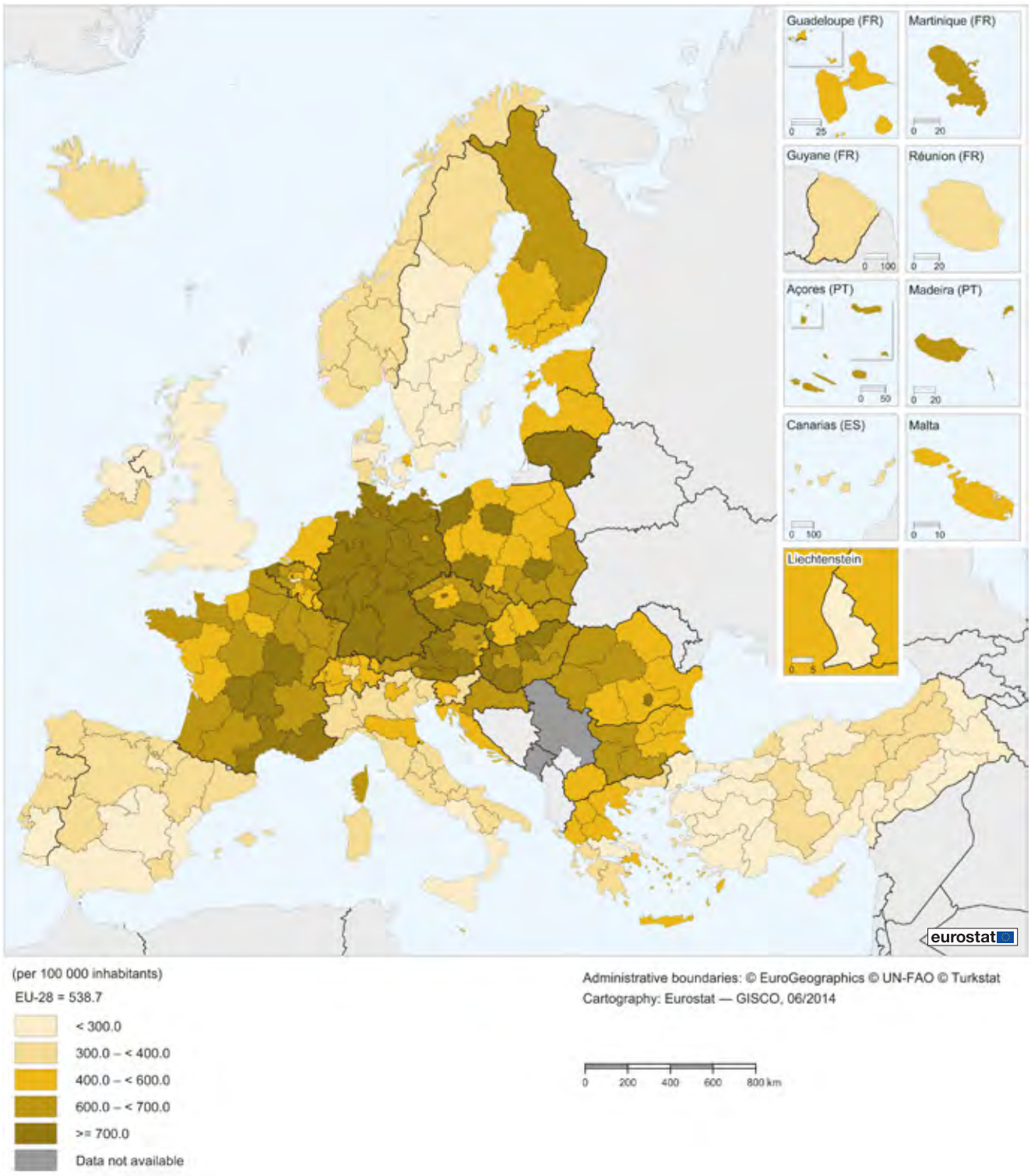
Given there are considerable differences in the definition of physicians that are used in the EU Member States, there is no overall figure for the number of physicians in the EU-28. Data are collected for three different concepts: namely, those of practising physicians, professionally active physicians and licensed physicians. The regional analysis that follows is based exclusively on what is considered to be the most important of these concepts in view of access to healthcare: that of practising physicians who provide services directly to patients.

#### *High density of practising physicians in the capital regions of neighbouring Austria, the Czech Republic and Slovakia*

The highest regional density of practising physicians across NUTS 2 regions in 2011 was recorded for the Spanish overseas region of the Ciudad Autónoma de Ceuta (1 048 practising physicians per 100 000 inhabitants), followed by another Spanish region — the Comunidad Foral de Navarra — and the Czech, Slovakian and Austrian capital regions of Praha, Bratislavský kraj and Wien. These were the only five regions in the EU where upwards of 600 practising physicians existed per 100 000 inhabitants (although in two Greek regions there were more than 600 active physicians per 100 000 inhabitants).

Among the 21 NUTS 2 regions where the number of practising physicians fell below 225 per 100 000 inhabitants in 2011 (shown by the lightest shade in **Map 2.5**), there were 10 out of the 16 regions in Poland, four out of eight Romanian regions, two regions each from Belgium, France (both overseas regions) and Hungary, and a single Slovenian region. The southerly Romanian region of Sud - Muntenia and the central Polish region of Wielkopolskie (which includes the city of Poznań) were the only regions where the number of practising physicians fell below 150 per 100 000 inhabitants.

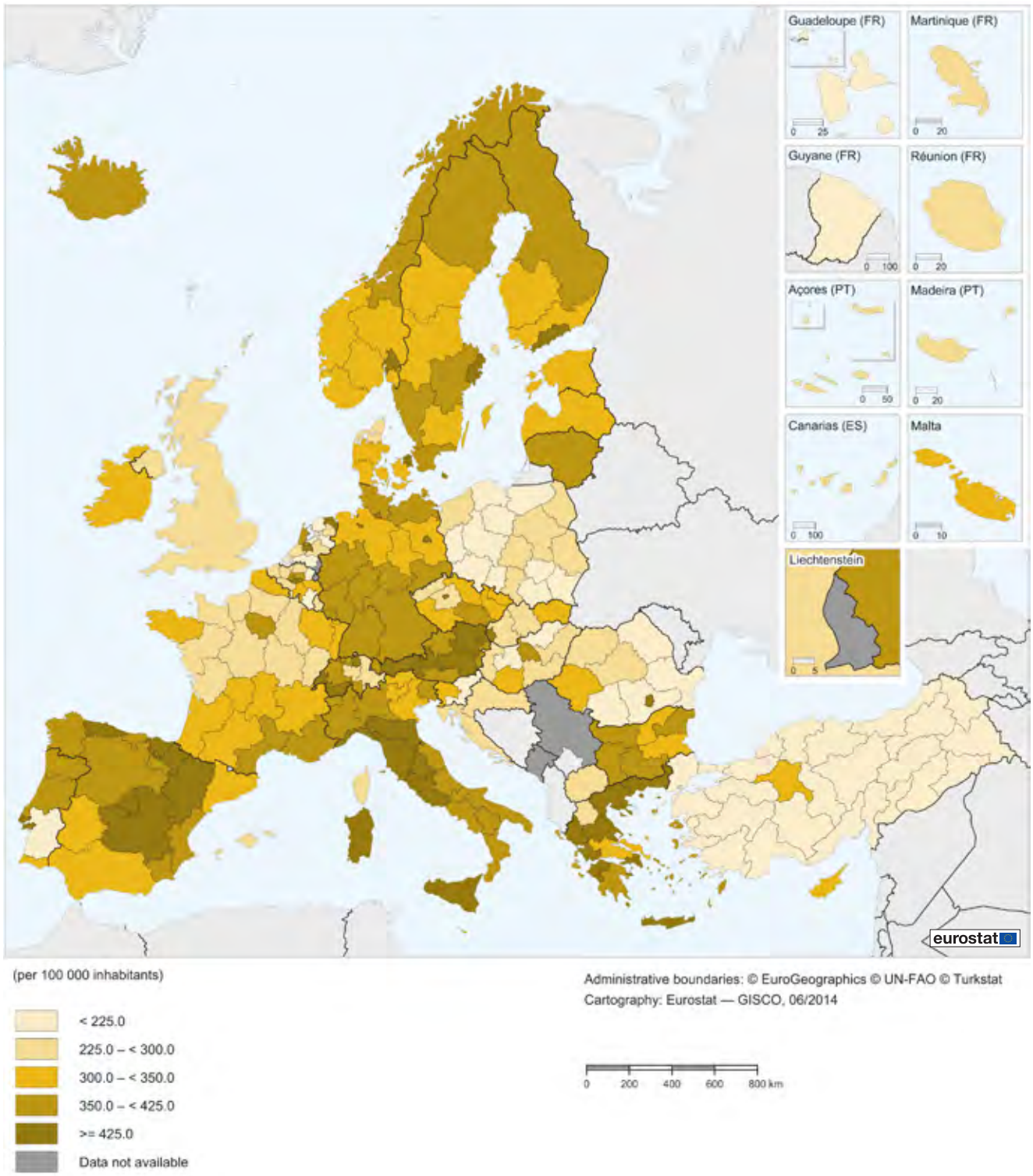
**Map 2.4:** Hospital beds, by NUTS 2 regions, 2011 (1)
(per 100 000 inhabitants)




(1) EU-28, Denmark, Luxembourg and Sweden: 2010. Greece and the Netherlands: 2009. Germany: by NUTS 1 region. The Netherlands and the United Kingdom: national level. Portugal: estimates.

*Source:* Eurostat (online data code: hlth_rs_bdsrg)

**Map 2.5:** Healthcare personnel — number of practising physicians, by NUTS 2 regions, 2011 (1)
(per 100 000 inhabitants)




(1) The Netherlands and Sweden: 2010. Denmark: 2009. Croatia: 2008. Germany: by NUTS 1 region. Ireland and the United Kingdom: national level. Greece, the Netherlands, Slovakia, Finland, the former Yugoslav Republic of Macedonia and Turkey: active physicians. Ireland and Portugal: licensed physicians.

*Source:* Eurostat (online data code: hlth_rs_prsrg)

# Data sources and availability

Eurostat compiles and publishes health statistics for EU regions, the individual EU Member States, as well as the EU-28 aggregate; in addition, a subset of information is available for EFTA and candidate countries. The data presented on causes of death is usually available for NUTS 2 regions, averaged over the three-year period from 2008–10; for Scotland (the United Kingdom) these statistics are only available for a single NUTS 1 region, while for Denmark and Croatia the data are available at the national level. Statistics presented for healthcare resources (hospital beds and the number of physicians) are also generally available for NUTS 2 regions with the exception of Germany (NUTS 1 regions for both indicators), Ireland (national level for the number of physicians), the Netherlands (national level for hospital beds) and the United Kingdom (national level for both indicators).

Health statistics collected during the period up to and including reference year 2010 were submitted by EU Member States to Eurostat on the basis of a gentleman's agreement. Regulation 1338/2008 of the European Parliament and of the Council of 16 December 2008 on Community statistics on public health and health and safety at work provides the legal basis for compiling statistics on: causes of death; healthcare; health status and health determinants; accidents at work; occupational diseases and other work-related health problems. Within the context of this regulation, an implementing regulation on Community statistics on public health and health and safety at work, as regards statistics on causes of death (328/2011) was adopted by the European Parliament and the Council on 5 April 2011; it provides a legal basis for the collection of statistics in each EU Member State from reference year 2011 onwards and will result in a broader range of statistics being collected.

A wide range of comparable statistics, for example, on healthcare systems, health-related behaviour, diseases and causes of death and a common set of EU health indicators, upon which there is EU-wide agreement regarding definitions, data collection and use is in the process of being established within the framework of the open method of coordination for health issues (see the Context section for more details).

## Causes of death

Statistics relating to causes of death provide information about diseases (and other eventualities, such as suicide or transport accidents) that lead directly to death; this information can be used to help plan health services. Many factors determine mortality patterns — intrinsic ones, such as age and sex, as well as extrinsic ones, such as environmental or social factors and living and working conditions — while individual factors, such as lifestyle, smoking, diet, alcohol consumption or driving behaviour, may also play a role.

Statistics on causes of death are based on information from death certificates. These statistics record the underlying cause of death: the definition adopted by the World Health Assembly is 'the disease or injury which initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury'.

In addition to absolute numbers, crude death rates and standardised death rates are calculated for causes of death. Regional data are provided in the form of averages, as one-off events — for example, a flu epidemic or a terrorist attack — may result in particularly high numbers of deaths for a specific cause of death for a single reference period. As such, the average value of the latest three years for which information are available is used to moderate these effects; the latest reference period for such averages is generally 2008–10.

The crude death rate indicates mortality in relation to the total population, in other words, it is calculated as the number of deaths in the population over a given period divided by the number of inhabitants during the same period; it is expressed per 100 000 inhabitants. The crude death rate may be strongly influenced by population structure, as mortality is generally higher among older age groups. As such, a region with a population that is considered to be relatively old will probably experience more deaths than a region that is considered to be relatively young. In order to account for these differences in the structure of populations, the analysis presented is based on standardised death rates, which are weighted averages of age-specific mortality rates; the weighting factor is the age distribution of a standard reference population. Standardised death rates are expressed per 100 000 inhabitants and are calculated for the 0–64 age group (premature death), as well as for persons aged 65 and above, and for persons of all ages.

Deaths are classified to one of the 86 diseases (and other causes) that form part of the European shortlist for causes of death (2012), which is based on the International statistical classification of diseases and related health problems that is developed and maintained by the World Health Organisation (WHO).

Note that the standard reference population used in the compilation of Eurostat's standardised death rates was re-computed during the course of 2013. The new European standard population is the unweighted average of the individual populations of EU and EFTA countries for five-year age bands calculated on the basis of 2010 population projections, averaged over the period 2011–30. This process of recalculation may explain the sometimes considerable differences if comparing the data presented here to data that has been previously published in earlier editions of this publication.

## Healthcare

Non-expenditure healthcare data are mainly based on administrative sources, although a few countries compile this information from surveys; as a consequence, the information collected is not always comparable. Work is ongoing to improve this situation and it is anticipated that this will lead to legislative developments to provide a more coherent and robust set of statistics for healthcare resources in the future.

Regional statistics on healthcare resources concern human, physical and technical resources, including staff (such as physicians, dentists, nursing and caring professionals, pharmacists and physiotherapists) and equipment (such as hospital beds). Data are also available for output-related indicators that focus on hospital patients and their treatment(s), in particular for inpatients (although these statistics are not shown in this publication). As well as figures in absolute numbers, density ratios are provided to help analyse the availability of resources or the frequency of services rendered; generally these rates are expressed per 100 000 inhabitants.

Hospital bed numbers provide information about healthcare capacities; in other words, on the maximum number of patients who can be treated in hospitals. Available hospital beds (occupied or unoccupied) are those which are regularly maintained and staffed and are immediately available for the care of admitted patients. This indicator should ideally cover beds in all hospitals, including general hospitals, mental health and substance abuse hospitals, and other specialised hospitals. This statistic should include public as well as private sector establishments — although some EU Member States only provide data for the public sector.

Data on healthcare staff are provided regardless of whether the personnel are independent, employed by a hospital, or any other healthcare provider. Three main concepts are used for healthcare professionals: practising, professionally active and licensed to practise. Practising physicians provide services directly to patients; professionally active physicians include those who practice as well as those working in administration and research with their medical education being a pre-requisite for the job they carry out; physicians licensed to practice are those entitled to work as physicians plus, for example, those who are retired. To interpret **Map 2.5**, which generally presents data for the number of practising physicians per 100 000 inhabitants, it is necessary to consider that the statistics for Greece, the Netherlands, Slovakia, Finland, the former Yugoslav Republic of Macedonia and Turkey relate to professionally active physicians, while those for Ireland and Portugal relate to licensed physicians. As such, it is likely that the information shown for regions in these countries is somewhat over-estimated (when compared with those regions where the data refer to the number of practising physicians).

# 3

# Education

# Introduction

Education, vocational training and more generally lifelong learning play a vital role in the economic and social strategies of the European Union (EU). This chapter presents a selection of the regional education and training statistics that are available within Eurostat.

Each EU Member State is largely responsible for its own education and training systems and its content of teaching programmes (curricula). The EU supports national actions and helps its Member States to address common challenges through what is known as the open method of coordination: the EU provides a policy forum for discussing topical issues (for example, ageing societies, skills deficits, or global competition), allowing its Member States to exchange best practices and to share the burden of gathering information.

## Education opportunities for all

### *From early childhood …*

In February 2011, the European Commission adopted a communication titled 'Early childhood education and care: providing all our children with the best start for the world of tomorrow' (COM(2011) 66). This noted that early childhood education and care is an essential foundation for successful lifelong learning, social integration, personal development and later employability and that it is particularly beneficial for the disadvantaged and can help to lift children out of poverty and family dysfunction.

### *… through school leavers …*

Around one in seven children leave education or training early and this has the potential to impact on individuals, society and economies. In January 2011, the European Commission adopted a communication titled 'Tackling early school leaving: a key contribution to the Europe 2020 agenda' (COM(2011) 18). This outlined the reasons why pupils decide to leave school early and gave an overview of existing and planned measures to tackle this issue across the EU.

### *… to mature students*

Most Europeans spend significantly longer in education than the legal minimum requirement. This reflects their choice to enrol in higher education, as well as their wider participation in lifelong learning initiatives, such as mature (adult) students returning to education, often in order to retrain or equip themselves for a career change. The opportunities which the EU offers its citizens for living, studying and working in other countries have the potential to make a significant contribution to cross-cultural understanding and personal development, which could in turn help raise the EU's economic performance.

## Education and training 2020 (ET 2020)

A strategic framework for European cooperation in education and training (known as ET 2020) was adopted in May 2009 and set out four strategic objectives for education and training in the EU:

- making lifelong learning and mobility a reality;
- improving the quality and efficiency of education and training;
- promoting equity, social cohesion and active citizenship; and
- enhancing creativity and innovation at all levels of education and training.

To reach these objectives, ET 2020 set a number of benchmarks which are subject to regular statistical monitoring and reporting, including the following targets to be achieved by 2020, namely that:

- at least 95 % of children between the age of four and the age for starting compulsory primary education should participate in early childhood education;
- the share of 15-year-olds with insufficient abilities in reading, mathematics and science should be less than 15 %;
- the share of early leavers from education and training should be less than 10 %;
- the share of 30–34 year-olds with tertiary educational attainment should be at least 40 %;
- an average of at least 15 % of adults aged 25–64 should participate in lifelong learning.

Two additional benchmarks on learning mobility (also to be achieved by 2020) were adopted in November 2011, and a further benchmark on employability was added in May 2012, namely that:

- an average of at least 20 % of higher education graduates should have had a period of higher education-related study or training (including work placements) abroad, representing a minimum of 15 European credit transfer and accumulation system (ECTS) credits or lasting a minimum of three months;
- an average of at least 6 % of 18–34 year-olds with an initial vocational education and training qualification should have had an initial vocational education and training (VET) related study or training period (including work placements) abroad lasting a minimum of two weeks;
- the share of employed graduates (20–34 year-olds) having left education and training no more than three years before the reference year should be at least 82 %.

In 2013, the European Commission's Directorate-General for Education and Culture released an Education and training monitor, 2013 (the second edition of this annual publication). It provides an analysis of the progress being made towards the headline target on early school leaving and tertiary education attainment, as specified within the Europe 2020 strategy. While the report considered that

the first half of the target was achievable, namely, that the share of early school leavers should decrease to below 10 % by 2020, it confirmed that around 5.5 million students in the EU were still leaving school prematurely. Secondly, the report found that the EU was 'making good progress towards the target to increase tertiary attainment to 40 %' (again by 2020). The report also found that the EU's education and training systems faced a challenge as a result of the consolidation of public finances and youth unemployment levels, while underlining the need to link the worlds of work and education more closely.

# Main statistical findings

Figures for the EU-28 for 2011 indicate that there were 93.7 million students enrolled in regular education systems covering all levels of education from primary to postgraduate studies; there were an additional 15.4 million children enrolled in pre-primary education.

Eurostat compiles and publishes education and training statistics for EU regions, the individual EU Member States, as well as the EU-28 aggregate; in addition, a subset of information is available for EFTA and candidate countries. These statistics are generally available for NUTS 2 regions and this chapter presents data relating to educational participation and early leavers from education and training, enrolments and attainment, and adult lifelong learning. Statistics for the participation rates of four year-olds and the number of students in tertiary education are only available at the national level for Croatia, while these indicators are presented for NUTS 1 regions across Germany and the United Kingdom.

## Participation of four year-olds in education

The legal age to start education varies across the EU Member States: in Luxembourg and Northern Ireland (in the United Kingdom) compulsory education starts at age four, while in other EU regions it starts between five and seven years of age; enrolment in pre-primary education is generally voluntary across most EU Member States. The Europe 2020 strategy emphasises raising participation rates of young children in preparation for the start of compulsory education. One of its headline targets is to raise the share of children participating in pre-primary education to at least 95 % by the year 2020.

The proportion of four year-olds who were in pre-primary or primary education across the whole of the EU-28 in 2012 was 91.7 %. Participation rates for four year-olds in pre-primary or primary education were generally high and rose to 95.0 % or more in Germany, Italy, Ireland, Denmark, Belgium, Luxembourg, the United Kingdom, Spain, the Netherlands, France and Malta; they were also over 95.0 % in Iceland and Norway (among the EFTA countries). By contrast, Greece, Croatia, Finland and Poland reported that fewer than 70.0 % of four year-olds were enrolled in pre-primary or primary education in 2012; relatively low rates were also recorded in the EFTA countries of Liechtenstein and Switzerland (both below 60.0 %), while rates were even lower in the candidate countries of the former Yugoslav Republic of Macedonia (24.5 %) and Turkey (19.2 %).

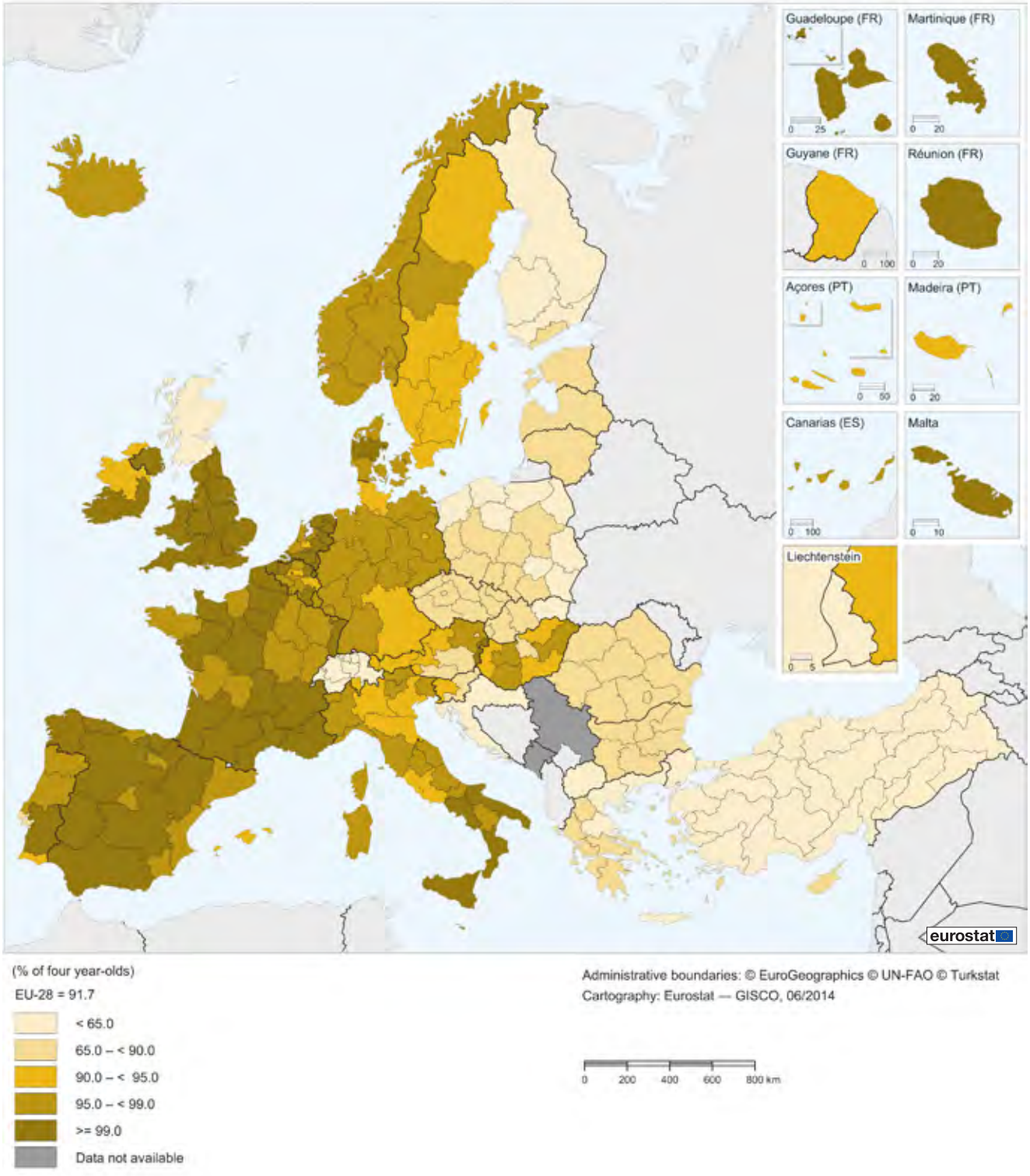
SPOTLIGHT ON THE REGIONS: ATTIKI (EL30), GREECE

**National and Kapodistrian University, Athens**

The latest regional educational indicators for 2012 in the Greek capital region of Attiki showed a divergent pattern. Attiki was the only Greek region where less than half of all four year-olds were in pre-primary and primary education. The participation rate of four year-olds was 30.8 %, which was approximately one third of the EU-28 average (91.7 %). By contrast, the proportion of students in tertiary education (relative to the local population aged 20–24) stood at 121.8 % in Attiki, almost double the EU-28 average (64.1 %).

*Photo: A. Savin*

**Map 3.1:** Participation rates of four year-olds in pre-primary and primary education (ISCED levels 0 and 1), by NUTS 2 regions, 2012 (1)
(% of four year-olds)




(1) Germany and the United Kingdom: by NUTS 1 regions. Croatia: national level.
*Source:* Eurostat (online data code: educ_regind)

### *Practically all four year-olds in many regions of France, Spain, the Netherlands and the United Kingdom participated in pre-primary or primary education*

Across the regions of the EU, **Map 3.1** shows that more than one quarter (26.8 %) of the 224 NUTS 2 regions for which information is available for 2012 reported that at least 99.0 % of their four year-old children attended pre-primary or primary education. Of these 60 regions, more than three quarters were located in just four of the EU Member States, namely: France (16 regions), Spain (11 regions), the United Kingdom (11 NUTS 1 regions) and the Netherlands (eight regions). Belgium (five regions) and Italy (four regions) were the only other Member States where participation rates of at least 99.0 % were recorded for more than one region; Malta also had a rate above 99.0 % (although it is covered by a single region at this level of detail) and the four remaining regions were Burgenland in Austria, the Irish region of Southern and Eastern, Alentejo in Portugal, and Midtjylland in Denmark.

### *Athens had the lowest participation rate for four year-olds in pre-primary or primary education*

There were 19 NUTS 2 regions in the EU-28 where less than 65.0 % of four year-olds participated in pre-primary or primary education in 2012. The lowest participation rate was recorded in the Greek capital region of Attiki (30.8 %), while more generally, Greek, Polish and Finnish regions, as well as Croatia (only national data available) tended to record some of the lowest levels of participation among four year-olds.

It is interesting to note that some capital regions recorded participation rates for four year-olds in pre-primary or primary education that were below their respective national averages. This was particularly clear to see in Greece, Spain and Portugal, and to a lesser degree in Germany, Italy, Hungary and Austria. Contrary to the majority of the United Kingdom, participation rates in Scotland were particularly low; note that the Scottish parliament has autonomy over education policy and its education system is distinctly different to that in the remainder of the United Kingdom.

#### EDUCATION: A CENTRAL PILLAR OF EUROPE 2020

Education is one of five pillars which are central to the Europe 2020 growth strategy. Two indicators presented within this chapter at a regional level are benchmarks used to monitor the EU's progress towards becoming a smart, sustainable and inclusive economy. These benchmarks have been set at an EU level and they foresee that:

- the share of early leavers from education and training should be under 10 % by 2020; and
- that at least 40 % of 30–34 year-olds should have completed a tertiary or equivalent education by 2020.

Note that while both of these objectives have been set across the whole of the EU, they do not specifically apply at a national or a regional level. Indeed, each Europe 2020 benchmark has been translated into national (and sometimes regional) targets, which reflect the different situations and circumstances of each Member State. Concerning the share of early leavers, national targets range from a low of just 4.5 % for Poland to a high of 16 % for Italy.

Youth on the move is one of seven flagship Europe 2020 initiatives. It is a comprehensive package of policy initiatives on education and employment for young people that was launched in 2010. It aims to improve young people's education and employability across the EU, to reduce high youth unemployment and to increase the youth employment rate by:

- making education and training more relevant to young people's needs;
- encouraging more young people to take advantage of EU grants to study or train in another country;
- encouraging EU countries to take measures to simplify the transition from education to work.

***For more information:***

Europe 2020: http://ec.europa.eu/europe2020/index_en.htm

## Early leavers from education and training

Young people between the ages of 15 and 17 are often faced with a choice of remaining in education, going into training, or looking for a job. Full-time compulsory education lasts, on average, 9 or 10 years in most of the EU Member States and is generally completed at the end of lower secondary education. The period is somewhat longer in Latvia, Malta and most parts of the United Kingdom (11 years), Luxembourg, Portugal and Northern Ireland (12 years), Hungary and the Netherlands (13 years).

### *Some 12.7 % of 18–24 year-olds in the EU were not in education or training early in 2012*

The indicator for early leavers from education and training tracks the proportion of individuals aged 18–24 who had finished no more than a lower secondary level of education, and who were not involved in further education or training (prior to the survey from which the data are compiled).

The Europe 2020 strategy has set a target for the proportion of early leavers from education and training to be below 10 % by 2020. In 2012, the proportion of 18–24 year-olds in the EU-28 who were classified as early leavers from education and training was 12.7 %; there was a somewhat higher proportion (14.4 %) of male early leavers compared with female early leavers (10.9 %).

### *Lowest proportions of early leavers from education and training recorded in eastern Europe*

**Map 3.2** shows that the proportion of early leavers from education and training varied significantly across the EU-28 in 2012; note that the coverage of this indicator has been significantly improved over the last year such that information can now be shown for NUTS 2 regions. Praha, the capital region of the Czech Republic, had the lowest proportion of 18–24 year-olds leaving education and training early in 2012, at 2.4 %. There were 13 NUTS 2 regions in the EU-28 where the share of early leavers from education and training was below 5.0 %. Almost all of these were in eastern Europe, with four regions (including Praha) from the Czech Republic, three from Poland, both regions of Croatia, and a single region from each Bulgaria, Slovenia and Slovakia. The only region from outside of eastern Europe with a share below 5.0 % was the Austrian region of Steiermark (which covers the south east of the country and borders Slovenia).

### *Almost two in every five of the EU regions in 2012 had less than 10 % of their population aged 18–24 classified as an early leaver*

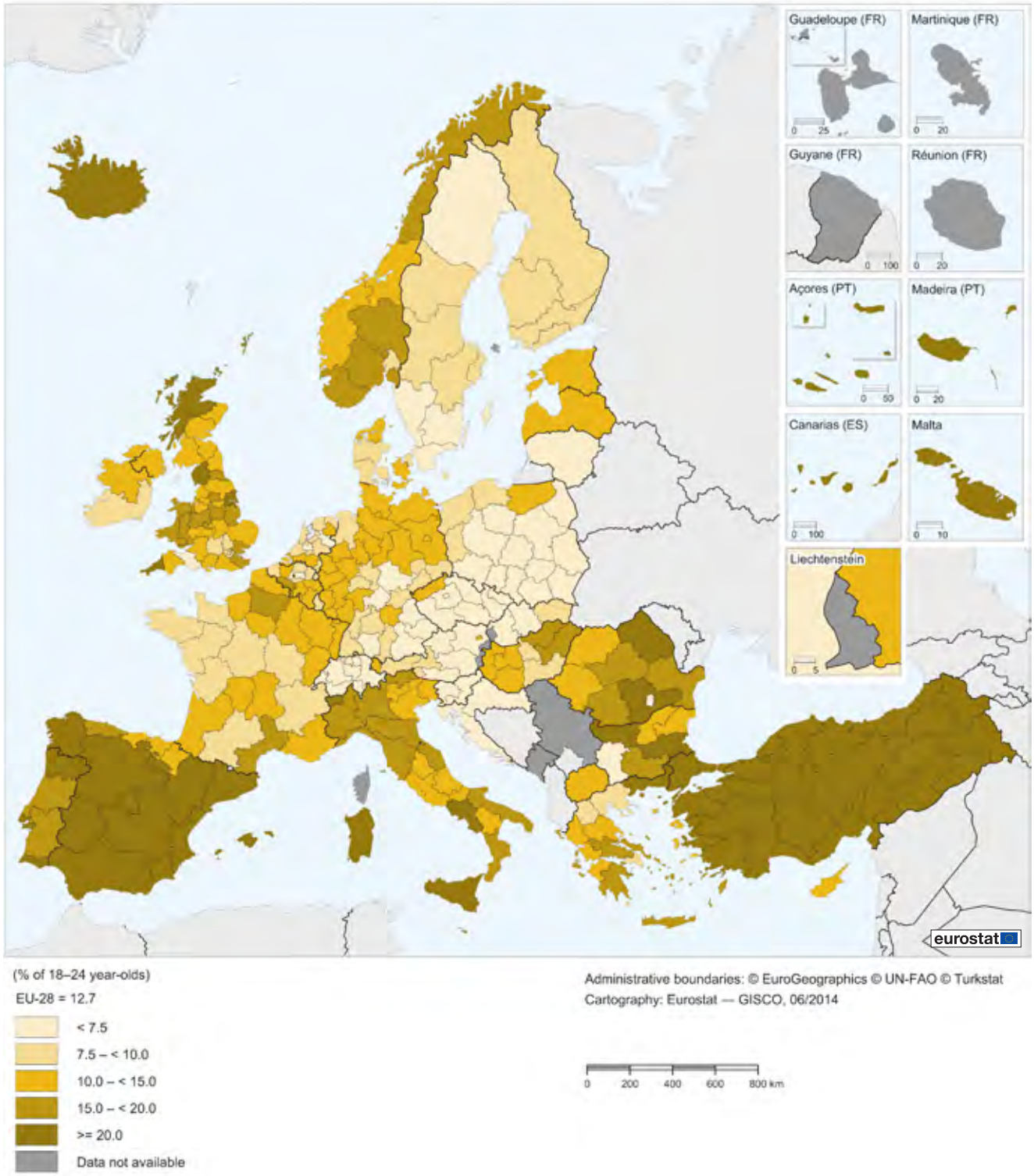
Out of the 264 NUTS 2 regions for which data are available across the EU-28, there were 104 regions in 2012 where less than 10.0 % of the population aged 18–24 was classified as an early leaver from education and training (the first two shades in **Map 3.2**). These regions were relatively widespread across the EU, with the exception of southern Europe, where only three regions recorded rates below 10.0 %, all in Greece. The lowest proportion of early leavers from education and training tended to be concentrated in an area that ran down from Scandinavia through Lithuania and Poland, before splitting in a westward direction to Germany and the Benelux countries, and a southerly direction to the Czech Republic, Slovakia, Hungary, Austria, Slovenia and Croatia.

### *Geographical extremities often report some of the highest proportions of early leavers from education and training*

At the other end of the range, the highest proportions of 18–24 year-olds who, in 2012, were classified as early leavers from education and training were recorded in the autonomous cities and islands of Spain and Portugal. These outlying regions may be characterised, at least in part, as not offering a wide selection of further education and training opportunities, which may result in students having to relocate in order to follow their chosen vocation.

There were 35 NUTS 2 regions across the EU in 2012 where 20 % or more of the population aged 18–24 years-old were classified as early leavers from education and training. They were principally located across southern Europe (26 regions) and were concentrated in Spain and Portugal — all of the regions in these two countries had rates above 20.0 % with the exception of four northerly Spanish regions and two central Portuguese regions. The share of early leavers was also higher than 20.0 % in four regions from the extremities of Italy (including the islands of Sardegna and Sicilia), the far north eastern Greek region of Anatoliki Makedonia, Thraki and the island of Malta (which is covered by a single region at this level of detail). Outside of southern Europe, more than one fifth of the population aged 18–24 was classified as an early leaver in four largely rural, sparsely populated regions in the United Kingdom (two of which were at the outer limits of the territory — Cornwall and Isles of Scilly, and the Highlands and Islands (of Scotland)), as well as in two Bulgarian and two Romanian regions.

**Map 3.2:** Early leavers from education and training, by NUTS 2 regions, 2012 (1)
(% of 18–24 year-olds)




(1) Proportion of those aged 18–24 years having attained at most a lower secondary education and not being involved in further education or training. Voreio Aigaio (EL41), Podlaskie (PL34), Opolskie (PL52), Cumbria (UKD1) and Highlands and Islands (UKM6): 2011. Kärnten (AT21) and Salzburg (AT32): 2010. Data for several regions have low reliability (too numerous to document).

*Source:* Eurostat (online data code: edat_lfse_16)

### *Nationwide, the capital regions of Belgium and Austria recorded the highest proportions of early leavers from education and training*

Perhaps surprisingly, the only other region where 20.0 % or more of persons aged 18–24 were not in education and training early in 2012 was the capital region of Belgium; the région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest registered the highest rate (20.1 %) for early leavers across all of the NUTS 2 regions in Belgium. This was in contrast to the general pattern of capital regions often recording relatively low rates of early leavers from education and training — probably reflecting the wide range of further education opportunities available in most capital cities. Belgium was one of two EU Member States for which data are available where the capital region recorded the highest rate of early leavers from education and training in 2012: the other was Wien in Austria, where the share of early leavers was at 10.9 % (below the EU-28 average).

### *The proportion of early leavers from education and training contracted most rapidly in Portuguese and Spanish regions*

**Map 3.3** shows the change in the proportion of persons aged 18–24 who were early leavers from education and training; the comparison is generally based on the three-year period from 2009 to 2012. The proportion of early leavers in the EU-28 fell during the three consecutive years of this period and was cut in total by 1.5 percentage points to 12.7 % in 2012. This downward path witnessed for the EU-28 as a whole was reproduced in two thirds of the NUTS 2 regions, as there was a reduction in the proportion of early leavers from education and training in 176 out of the 263 regions for which data are available (note there are some divergences from the standard reference period of 2009–12, as shown in the footnote to **Map 3.3**).

The biggest reductions in the proportion of 18–24 year-olds who were early leavers from education and training between 2009 and 2012 were recorded in Portuguese and Spanish regions — where some of the highest rates of early leavers were recorded. The largest decline between 2009 and 2012 was in the Norte region of Portugal, where the proportion of early leavers fell by 14.3 percentage points to stand at 21.3 %.

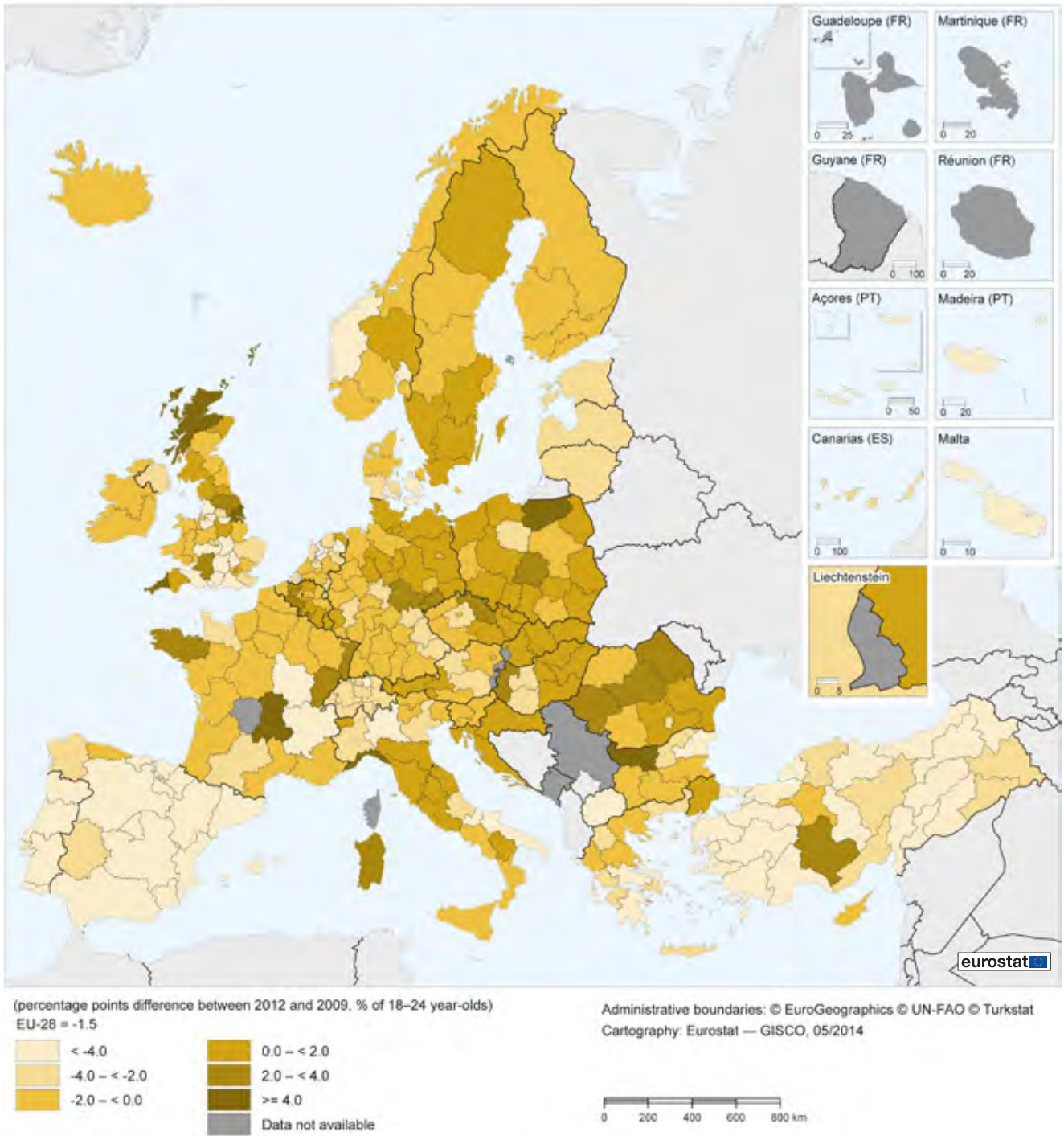
Three other Portuguese regions (the Regiões Autónomas dos Açores and da Madeira and the mainland region of Alentejo) and the Spanish Illes Balears also recorded reductions of at least 10.0 percentage points between 2009 and 2012 in the proportion of early leavers from education and training.

The proportion of early leavers from education and training rose between 2009 and 2012 in almost one third (83 out of the 263) of the NUTS 2 regions for which data are available. These increases were generally modest in nature, as only nine regions saw their respective share of early leavers rise by 4.0 percentage points or more (as shown by the darkest shade in **Map 3.3**). Among these, there were three regions from the United Kingdom, including the only region in the EU to report a double-digit increase in its rate — the Highlands and Islands — where the proportion of 18–24 year-olds who had left education and training increased by 13.7 percentage points between 2008 and 2011. The other two regions from the United Kingdom were Cornwall and Isles of Scilly and East Yorkshire and Northern Lincolnshire, while the remaining six regions were spread across Belgium (the capital Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest), Bulgaria, Spain, France, Italy and Poland.

### *Bulgaria was the only EU Member State where the proportion of male early leavers from education and training was lower than the corresponding rate for women*

Information relating to the proportion of early leavers from education and training may also be analysed with respect to different rates between males and females. The proportion of females aged 18–24 in the EU-28 who were classified as early leavers was, on average, 3.5 percentage points lower than the corresponding rate for men in 2012. The biggest differences between the sexes were recorded in southern Europe, where the rates for men were generally much higher: this was particularly true in Portugal, Malta, Cyprus, Spain and Italy, but was also the case in Latvia and Estonia. By contrast, Bulgaria was the only EU Member State where the male rate for early leavers was lower than the corresponding rate for women (a difference of just 0.9 percentage points in 2012).

**Map 3.3:** Change in proportion of early leavers from education and training, by NUTS 2 regions, 2009–12 (1)
(percentage points difference between 2012 and 2009, % of 18–24 year-olds)




(1) Proportion of those aged 18–24 years having attained at most a lower secondary education and not being involved in further education or training. Luxembourg: break in series, 2009. Trier (DEB2), Auvergne (FR72) and Mellersta Norrland (SE32): 2010–12. Voreio Aigaio (EL41), Podlaskie (PL34), Opolskie (PL52) and Cumbria (UKD1): 2009–11. Highlands and Islands (UKM6): 2008–11. Kärnten (AT21) and Salzburg (AT32): 2008–10. Data for several regions have low reliability (too numerous to document).

*Source:* Eurostat (online data code: edat_lfse_16)

### *Proportion of male early leavers from education and training higher than the corresponding rate for women in 85 % of EU regions*

**Figure 3.1** shows those regions with the most atypical distributions between the sexes: it includes the 10 regions where the difference (in percentage point terms) between male and female rates was highest (left-hand side of the figure) and the 10 regions where the difference between female and male rates was highest (right-hand side of the figure). Only 33 of the 220 NUTS 2 regions, or 15 % of those regions for which data are available, reported that the rate of male early leavers from education and training was lower than the corresponding rate for women in 2012. The largest difference was in the Bulgarian region of Severozapaden, where the male rate was 9.4 percentage points lower than that for women.

### *Highest proportion of male early leavers recorded in Extremadura*

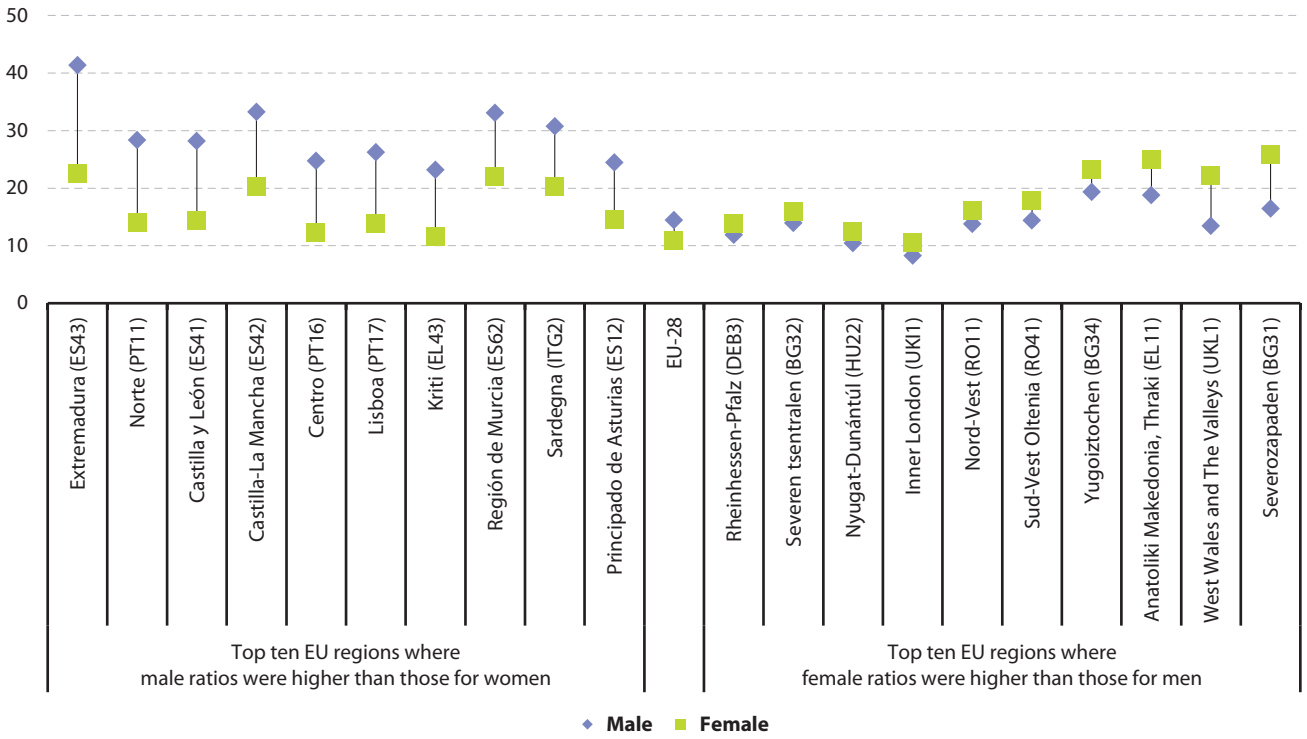
Male early leaver rates were generally higher than corresponding rates for women and this gap between the sexes rose into double-digits for nine NUTS 2 regions in 2012 (as shown on the left-hand side of **Figure 3.1**). These regions were characterised as having some of the highest overall rates of early leavers from education and training and they were exclusively located in southern Europe, principally in Spain and Portugal. The biggest difference in early leaver rates between the sexes was recorded in Extremadura (Spain), where the proportion of male early leavers was 41.3 %, some 18.8 percentage points higher than the female rate; the male rate for early leavers in Extremadura was the highest across any of the NUTS 2 regions.

Other than the two outlying Spanish autonomous cities, the highest female rate for early leavers from education and training was recorded in the Spanish region of the Illes Balears (29.6 %). The overall proportion of early leavers in the Illes Balears fell by 10.7 percentage points between 2009 and 2012 (the third biggest reduction for any of the NUTS 2 regions) — a closer study reveals that the pace of reduction in this region was almost three times as rapid among men as it was among women.

## Students in tertiary education

Tertiary education is the level of education offered by universities, vocational universities, institutes of technology and other institutions that award academic degrees or higher professional certificates. Access to tertiary-level education typically requires successful completion of an upper secondary and/or post-secondary non-tertiary level programme. In 2012 (the 2011/12 academic year), the number of students enrolled in tertiary education in the EU-28 stood at 20.0 million.

**Figure 3.1:** Early leavers from education and training with atypical gender gaps, selected NUTS 2 regions, 2012 (1)
(% of 18–24 year-old males / females)




(1) Proportion of each sex aged 18–24 years having attained at most a lower secondary education and not being involved in further education or training. The figure shows the EU-28 average, the top 10 EU regions where the male ratio was above that for women and the 10 EU regions where the female ratio was above that for men (subject to data availability). Severozapaden (BG31), Severen tsentralen (BG32), Yugoiztochen (BG34), Anatoliki Makedonia, Thraki (EL11), Kriti (EL43), Principado de Asturias (ES12) and Nyugat-Dunántúl (HU22): low reliability.

*Source:* Eurostat (online data code: edat_lfse_16)

**Map 3.4** shows the number of students enrolled in a university or similar (tertiary level) education in each region relative to the number of residents aged 20–24 in the same region: this gives an idea of how attractive each region is to tertiary students. Some regions reported very high values (well above 100 %) as they host large universities or other tertiary education institutions; these reflect the fact that these regions attract considerable numbers of students from other regions (or countries). Furthermore, with the promotion of education and learning across all members of society (including older persons), tertiary level students may increasingly fall outside of the traditional 20–24 years-old age group (used as the denominator for this ratio).

### *In Bratislavský kraj and Praha, the ratio of tertiary students to residents aged 20–24 was above 2:1*

In the 2011/12 academic year there were generally high ratios of tertiary education students in northern Spain, northern Italy, northern Greece, as well as in Lithuania (one region at this level of NUTS) and Finland — as shown by the darkest shade in **Map 3.4**. However, the regions with the highest proportion of tertiary students relative to their number of residents aged 20–24 tended to be capital regions. This was particularly the case in Bratislavský kraj (Slovakia) and Praha (the Czech Republic), where the ratio of tertiary education students peaked at 220.5 % and 214.7 %; these were the only two regions where the number of tertiary students was more than double the number of residents aged 20–24.

### *Capital regions attract tertiary education students*

Of the 18 regions across the EU that reported more students enrolled in tertiary education than residents aged 20–24 in 2012, a majority (11) were capital regions: Bratislavský kraj (Slovakia), Praha (the Czech Republic), Wien (Austria), Bucuresti - Ilfov (Romania), the Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest (Belgium), Attiki (Greece), Zahodna Slovenija (Slovenia), Mazowieckie (Poland), the Comunidad de Madrid (Spain), Közép-Magyarország (Hungary) and Lazio (Italy). Five of the seven remaining regions that reported more tertiary level students than residents aged 20–24 were in Greece (and four of these recorded ratios that were higher than in Attiki); the other two regions were La Rioja (in Spain) and the Province/ Provincie Brabant Wallon (in Belgium).

### *Greece, Germany, the Netherlands and Sweden — the only Member States where the capital region did not record the highest concentration of tertiary education students*

Although their ratios were below 100 %, the capital regions of Bulgaria, Denmark, Ireland, France, Portugal, Finland and the United Kingdom (data are only available for NUTS 1 regions) reported the highest concentration of tertiary students in each of these countries, relative to the population aged 20–24.

As such, along with Greece (see above), the only multi-regional Member States to report that their most dense concentration of tertiary students relative to the population

## EDUCATION AND TRAINING — COHESION POLICY FUNDING

Regional policy initiatives in the education and training domain focus on developing skills and talent, which are considered crucial for ensuring the long-term competitiveness of Europe and its social cohesion. Priority actions within the field of human capital are largely financed through the European Social Fund (ESF), while the European Regional Development Fund (ERDF) supports investment in educational infrastructure.

The ESF finances regional initiatives designed to ensure that young people complete their education and get the skills that make them more employable — reducing school drop-out rates, encouraging young people to stay on at school and ensuring wider access to education (for example, among those from disadvantaged groups and minorities), through improving vocational and tertiary education opportunities. With the proportion of highly skilled jobs in the EU economy expected to grow, there will be an increasing need for people with a tertiary level of education.

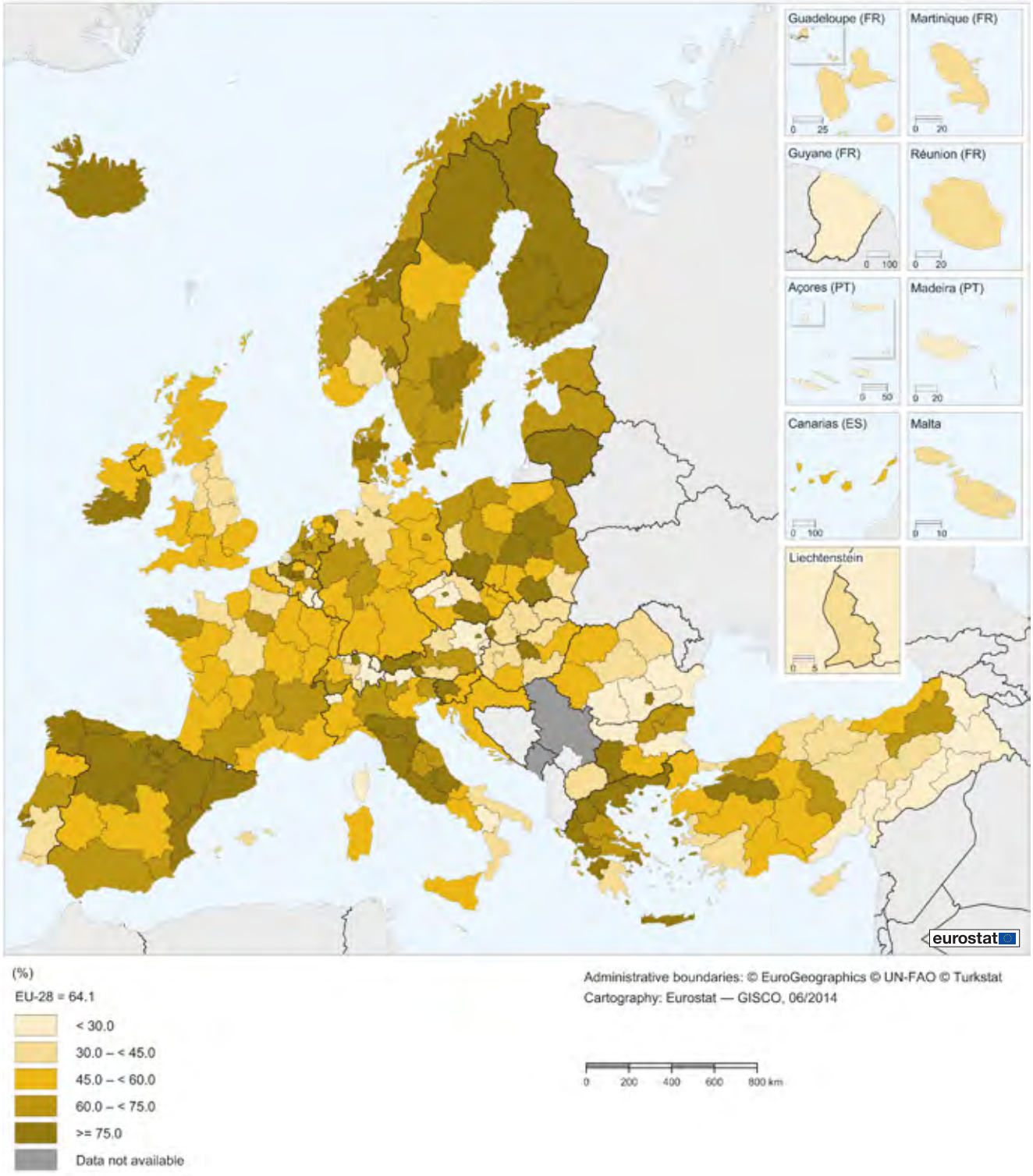
The ESF funds programmes in tertiary education and supports partnerships with industry with the goal of building better links between training providers and business to ensure that the skills that are taught are those that companies require, through the promotion of a training and lifelong learning culture that should benefit both workers and employers, helping people to advance in their careers, prepare themselves for changing jobs, and get back into the workforce if they are not employed.

Education and training are recognised as important assets for regional development and are eligible for cohesion policy funding, principally through the ESF and the ERDF. EU investment through cohesion policy funds allocated to human capital, education and training was valued at EUR 33 383 million during the period 2007–13, which amounted to 9.7 % of the EU's total cohesion budget over this period. The majority of funding was directed at training and education programmes, as these actions were attributed 3.6 times as much funding as developing education infrastructure.

***For more information:***

Cohesion policy for education and training: http://ec.europa.eu/regional_policy/activity/education/index_en.cfm

**Map 3.4:** Total number of students in tertiary education (ISCED levels 5 and 6), as a percentage of the population aged 20–24, by NUTS 2 regions, 2012 (1)
(%)




(1) Total number of tertiary students divided by the resident population of 20–24 year-olds. The data covers enrolments at a regional level in the school year 2011/12. Germany and the United Kingdom: by NUTS 1 regions. Croatia: national level.
*Source:* Eurostat (online data code: educ_regind)

aged 20–24 lay outside of their capital region in 2012 were Germany (data are only available for NUTS 1 regions), the Netherlands and Sweden; note only national data are available for Croatia. In Germany, Hamburg (79.6 %) and Bremen (74.8 %) recorded ratios that were higher than that recorded in Berlin (70.0 %). In the Netherlands, Groningen (89.5 %) and Utrecht (76.2 %) had the highest ratios of tertiary students to residents aged 20–24 and were the only regions to record ratios above that for Noord-Holland (69.9 %). In Sweden, the highest ratios were recorded in Övre Norrland (94.5 %), Östra Mellansverige (75.5 %) and Sydsverige (72.2 %), each of these regions recording a ratio that was above that in Stockholm (69.1 %).

## Tertiary educational attainment

The next two maps in this chapter provide information relating to the proportion of the population that has attained a tertiary level of education — in other words, a university degree or similar qualification. One of the education-related targets adopted by the Europe 2020 strategy is that, by 2020, across the EU at least 40 % of those aged 30–34 should have completed a tertiary level of education.

In 2012, just over one third (35.7 %) of 30–34 year-olds in the EU-28 had completed a tertiary level of education. These latest figures support the premise that a rising proportion of the EU's population is studying to a higher level — in keeping with the Europe 2020 target — as a decade before (in 2002) the corresponding share was 12.2 percentage points lower, at 23.5 %.

### *Agglomerations attract highly qualified staff*

Given that most persons aged 30–34 will have completed their tertiary education prior to the age of 30, this indicator may be used to assess the attractiveness (or pull effect) of regions with respect to the employment opportunities they may offer graduates. Capital cities are often chosen by large companies as the location for their headquarters, either as a matter of prestige or to benefit from the economies of scale which may be present in some of Europe's largest cities. Given a high number and a wide range of graduate jobs are generally on offer in capital cities, it is therefore not surprising that many European capital regions reported a high proportion of their population aged 30–34 years-old having attained a tertiary level of education.

### *Almost three quarters of those aged 30–34 living in Inner London had attained a tertiary level of education*

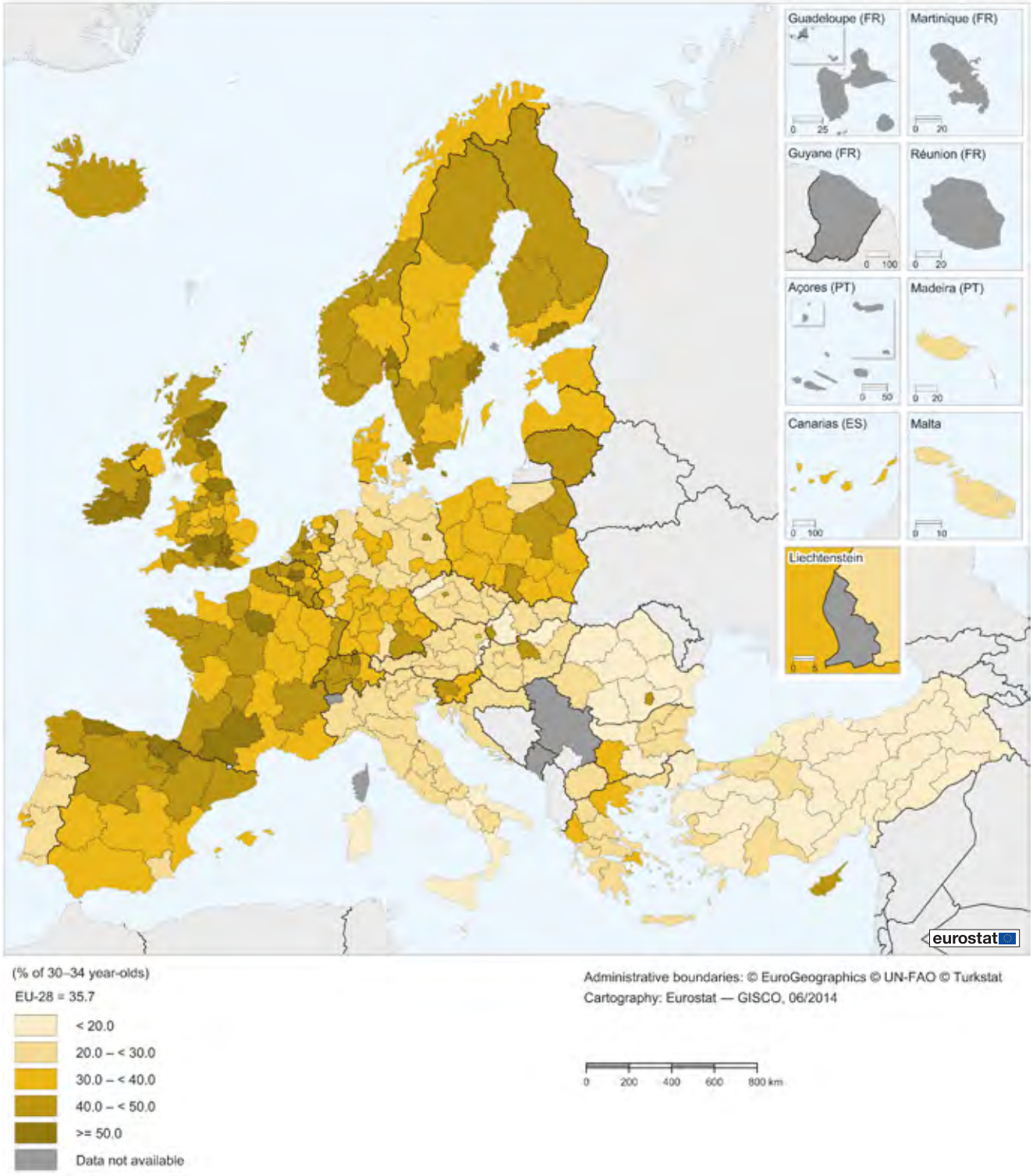
There were 21 NUTS 2 regions in the EU where more than half of the population aged 30–34 had attained a tertiary level of education in 2012 (see **Map 3.5**). There was a high concentration of graduates in nine of the regions within the United Kingdom, these were mostly located in the south of England (around London) and in eastern Scotland. The share of 30–34 year-olds with a tertiary education peaked at almost three out of every four persons (73.1 %) in Inner London, well above the second placed region — the País Vasco (in Spain) — where the corresponding ratio was 61.7 %.

### *Clusters of economic activity may also attract highly qualified staff*

Of the remaining 12 regions where more than half of the population aged 30–34 in 2012 had completed tertiary education, three regions were located in northern Spain, including the País Vasco. There were two Belgian provinces (that surrounded the capital region) and two French regions (the capital region of the Île de France and the Midi-Pyrénées). Four of the other five regions contained capital cities — those of the Nordic Member States and that of Ireland — while the final region was Utrecht in the Netherlands, which is considered the most competitive region in the EU according to a study conducted by the European Commission (see Chapter 15).

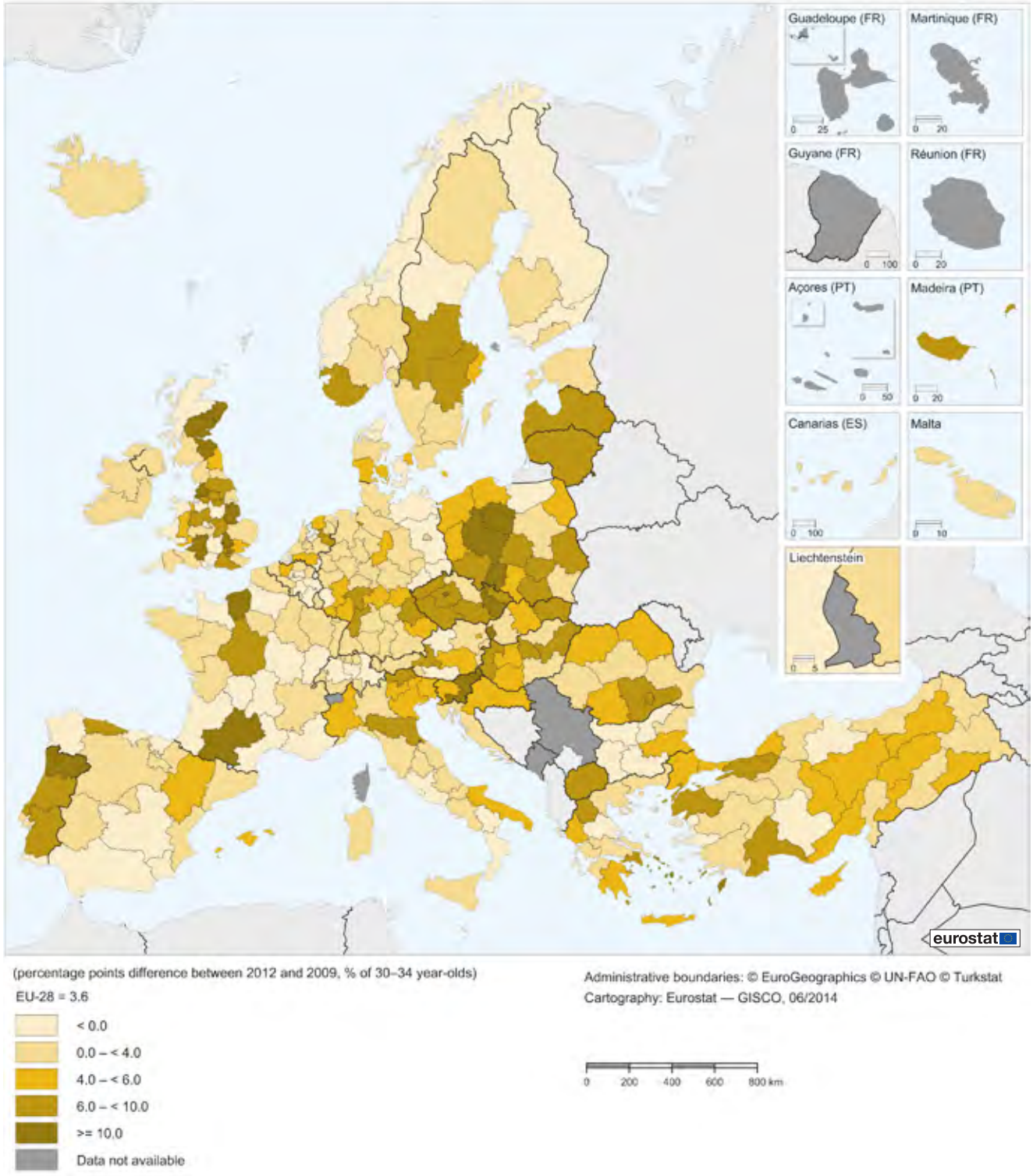
Enterprises from related economic activities often cluster together in order to feed off the synergies and proximity of clients and competitors alike. This phenomenon can reinforce specialisations and draw qualified staff to a region. Examples include research-intensive clusters specialising in biotechnology, medical research, information and communication technologies, aerospace or car manufacturing. The pull of specific clusters may not always be apparent given the relatively large size of NUTS 2 regions, however, a cluster of aerospace enterprises situated around Toulouse in the Midi-Pyrénées region of France and a cluster of enterprises linked to oil-related activities in North Eastern Scotland will have, at least in part, contributed to these regions featuring among the 21 regions in the EU where at least half of the population aged 30–34 had completed tertiary education.

**Map 3.5:** Persons aged 30–34 with tertiary education (ISCED levels 5 and 6) attainment, by NUTS 2 regions, 2012 (1)
(% of 30–34 year-olds)




(1) Ciudad Autónoma de Ceuta (ES63): 2010. Data for several regions have low reliability (too numerous to document).
*Source:* Eurostat (online data code: edat_lfse_12)

**Map 3.6:** Change in proportion of persons aged 30–34 with tertiary education (ISCED levels 5 and 6) attainment, by NUTS 2 regions, 2009–12 (1)
(percentage points difference between 2012 and 2009, % of 30–34 year-olds)




(1) Luxembourg: break in series, 2009. Data for several regions have low reliability (too numerous to document).
*Source:* Eurostat (online data code: edat_lfse_12)

### *Graduate mobility in eastern and southern Europe?*

With the exception of Spain, none of the multi-regional EU Member States from eastern and southern Europe reported that one half or more of their population aged 30–34 had attained a tertiary level of education in 2012. This might be considered as somewhat surprising given that many regions in these areas are characterised as having more students enrolled in tertiary education than residents aged 20–24 (as shown in **Map 3.3**). This apparent dichotomy could be explained by a number of factors:

- education systems could be relatively centralised, resulting in residents from one region carrying out studies in the capital region before returning to their original place of residence to look for work following graduation;
- these regions could be characterised by a high degree of mobility among young graduates, with qualified people seeking work in other countries — this pattern could be particularly prevalent in regions experiencing high unemployment or regions where average wages are comparatively low;
- a recent increase in the uptake of tertiary education.

Aside from southern and eastern regions of Europe, the regions of Germany and Austria also reported a relatively low proportion of their respective populations aged 30–34 in 2012 having attained a tertiary level of education. This may, at least in part, be attributed to the particular emphasis placed on apprenticeships in these two countries, whereby many jobs do not require a degree, per se, but rather a professional qualification. The highest proportion of the population aged 30–34 with a tertiary level of education in Germany was recorded in Oberbayern (43.6 %), while the highest rate in Austria was recorded in the capital region of Wien (37.8 %).

### *In 19 regions in the EU less than one in five of the population aged 30–34 possessed a tertiary level of education*

Many of the regions where tertiary educational attainment among those aged 30–34 was relatively low were characterised as being areas where primary activities or heavy industries (for example, agriculture, mining, or iron and steel) have traditionally played an important role in the economic fabric of a region. There were 19 NUTS 2 regions across the EU where less than one in five persons aged 30–34 had attained a tertiary level of education in 2012. Six of these were located in Romania, five in (southern) Italy, two each in Bulgaria and Greece and a single region each from the Czech Republic, Slovakia, Hungary and Austria. They were mainly categorised as being economically underdeveloped, insofar as 15 of them had an average level of GDP per inhabitant that was less than 75 % of the EU-28 average in 2011; each of the remaining four regions had a ratio of GDP per inhabitant that was also below the EU-28 average.

### *Almost four out of five regions in the EU reported that the share of their population aged 30–34 with a tertiary level of educational attainment increased between 2009 and 2012*

**Map 3.6** presents information on the change in tertiary educational attainment among the same age group (those aged 30–34), based upon an analysis of differences between 2009 and 2012. Across the whole of the EU-28, the proportion of 30–34 year-olds with a tertiary level of education rose by 3.6 percentage points to reach 35.7 %; if this rate of change is maintained the Europe 2020 target of having at least 40 % of EU residents aged 30–34 attaining a tertiary level of education will be reached before 2020.

The overwhelming majority of regions in the EU followed a similar pattern, as the proportion of the population aged 30–34 with a tertiary level of education rose in 205 out of the 263 NUTS 2 regions for which data are available. The most rapid increase in the proportion of residents aged 30–34 with a tertiary level of education was in the Greek island region of Notio Aigaio, where the share rose by 17.1 percentage points between 2009 and 2012. Aside from Notio Aigaio, there were 17 other regions in the EU where double-digit percentage point increases were recorded, including seven regions from the United Kingdom, three regions from Poland, two regions each from the Czech Republic and France, and a single region each from Portugal, Slovakia and Slovenia. Most of the regions with rapid growth for tertiary educational attainment in the United Kingdom were characterised as already having high levels of educational attainment. Outside of the United Kingdom, tertiary educational attainment was more closely distributed around the EU-28 average in most of the other regions where rapid increases were reported.

### ERASMUS+: AN EU PROGRAMME FOR EDUCATION, TRAINING, YOUTH AND SPORT TO THE END OF THIS DECADE

Erasmus+ is an EU programme which is designed to boost skills and employability, as well as modernising education, training, and youth work; the programme also supports sport (both grassroots projects and cross-border challenges, such as match-fixing or racism). It is designed to provide a new approach for developing a modern and dynamic education sector, which promotes collaboration between formal, informal and non-formal learning, as well as partnerships between education and the world of work. The Erasmus+ programme will run over seven years (2014–20) with a budget of EUR 14.7 billion. This will be shared between the following programmes:

- education and training (77.5 %);
- youth (10 %);
- student loan facilities (3.5 %);
- national agencies (3.4 %);
- administrative costs (1.9 %);
- Jean Monnet (1.9 %) — a programme which aims to stimulate teaching, research and reflection in the field of European integration studies in higher education institutions;
- sport (1.8 %).

The Erasmus+ programme is closely linked to the policy objectives outlined within the ET 2020 and the Europe 2020 initiatives. It should offer opportunities to more than four million Europeans and around 125 000 different educational institutions to participate, resulting in:

- two million higher education students studying and training abroad;
- 650 000 vocational students spending part of their education and training abroad;
- 500 000 young people being able to volunteer abroad and take part in youth exchanges;
- 200 000 master's students benefitting from a new loan guarantee scheme and more than 25 000 scholarships for joint master's degrees;
- 800 000 lecturers, teachers, trainers, education staff and youth workers being able to teach or train abroad.

***The share of the population aged 30–34 with a tertiary level of education fell in predominantly rural regions or former industrial heartlands***

By contrast, there were 57 NUTS 2 regions where the proportion of residents aged 30–34 having attained a tertiary level education declined during the period 2009–12 (there was no change reported in Hannover, Germany). These reductions may result from young graduates moving to another region (perhaps in search of work), or from young people not returning to their region of origin after graduation (instead choosing to establish themselves in another region), or simply from lower graduation rates. Many of the regions that experienced a decline in their proportion of 30–34 year-olds with a tertiary level of education were predominantly rural areas or areas that historically specialised in a range of traditional, heavy industries. The decline in tertiary educational attainment was greatest in the rural French regions of Basse-Normandie and the Auvergne, the provincial region of Zeeland in the Netherlands, and the largely metropolitan region of Merseyside in the United Kingdom; these were the only regions in the EU where the proportion of those aged 30–34 with a tertiary level of education fell by more than 10.0 percentage points between 2009 and 2012.

## Lifelong learning

The strategic framework for European cooperation in education and training aims to support EU Member States in developing their education and training systems, including the provision of lifelong learning initiatives which provide the means for all members of society to achieve their potential. This framework sets a benchmark, namely that by 2020 an average of at least 15 % of adults aged 25–64 should participate in lifelong learning.

### *9.0 % of the EU's population aged 25–64 participated in education or training in 2012*

In contrast to the analysis of tertiary educational attainment levels, where the regions with the highest shares were often characterised as being capital regions or other densely populated regions, participation in education and training was distributed fairly evenly within individual EU Member States, suggesting that this indicator is closely tied to national policies, employee and employer attitudes.

**Map 3.7** presents regional information on the proportion of those aged 25–64 that had participated in education and training in 2012; these statistics refer to persons who reported that, during a four-week period preceding the survey from which the data are compiled, they had received some form of education or training. The information collected relates to all education and training regardless of whether it is relevant to the respondent's current or possible future job. In 2012, the overall share of the EU-28 population aged 25–64 who had received some form of education or training was 9.0 %.

### *Danish regions reported the highest participation rates in education and training*

There were 18 NUTS 2 regions in the EU (out of a total of 266 regions for which data are available) where 20.0 % or more of the population aged 25–64 had participated in education or training in 2012. Four out of the five Danish NUTS 2 regions occupied the top of the ranking, while the fifth region had the eighth highest participation rate. The proportion of the persons aged 25–64 participating in education or training in the Danish regions ranged from 27.8 % to 35.4 %, with the highest participation rate recorded in the capital region of Hovedstaden. Alongside Danish regions, there was also a high propensity to participate in education and training in the neighbouring Nordic Member States of Finland and Sweden, which accounted for the 13 other regions where at least one fifth of the population aged 25–64 had participated in education or training in 2012. The next highest participation rates — just below the level of 20 % — were principally located in the Netherlands and the United Kingdom (although rates were lower in Northern Ireland), as well as in Wien (Austria) and Zahodna Slovenija (Slovenia).

SPOTLIGHT ON THE REGIONS: HOVEDSTADEN (DK01), DENMARK

**IT University of Copenhagen**

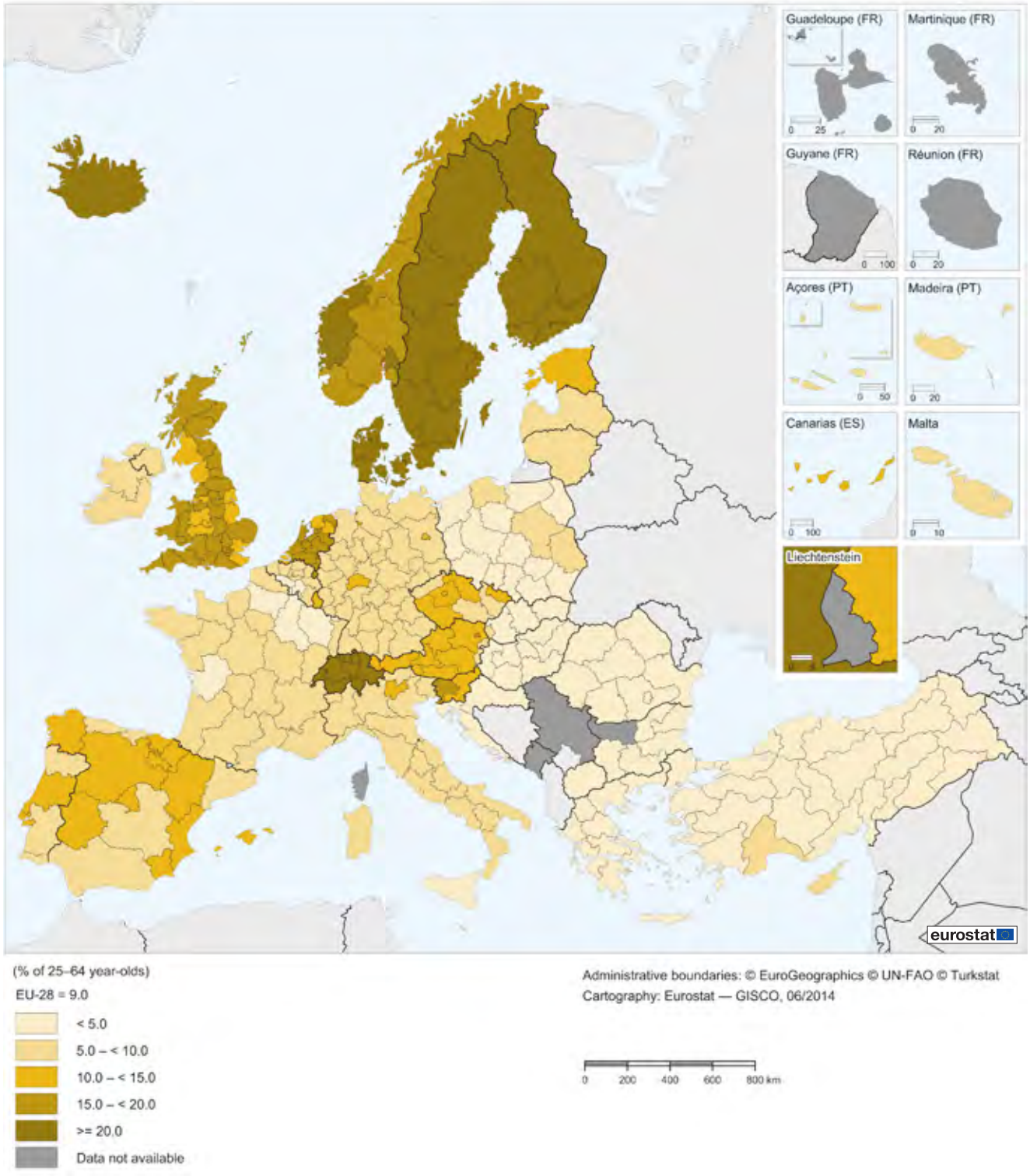
The capital region of Denmark was the EU-28 region with the highest proportion of its population (aged 25–64) participating in education and training (35.4 % in 2012); the proportion was almost four times as high as the EU-28 average (9.0 %).

The four remaining NUTS 2 regions in Denmark also had very high levels of lifelong learning, as they featured among the top 10 regions in the EU for this indicator.

*Photo: IT University of Copenhagen*

There were 58 regions across the EU-28 where fewer than 5.0 % of the population aged 25–64 participated in education and training in 2012. These were concentrated in Bulgaria, Greece, Croatia, Hungary and Romania — all of the regions in these countries had rates below 5.0 % — each of the regions in Slovakia apart from the capital region of Bratislavský kraj and all but three of the Polish regions also reported that fewer than 5.0 % of all 25–64 year olds participated in education or training. The lowest level of participation (0.9 %) was recorded in the Bulgarian region of Severen tsentralen.

**Map 3.7:** Participation of adults aged 25–64 in education and training, by NUTS 2 regions, 2012 (1)
(% of 25–64 year-olds)




(1) Voreio Aigaio (EL41): 2010. The Netherlands: provisional. Data for several regions have low reliability (too numerous to document).
*Source:* Eurostat (online data code: trng_lfse_04)

# Data sources and availability

As the structure of education systems varies from one country to another, a framework for assembling, compiling and presenting regional, national and international education statistics and indicators is a prerequisite for the comparability of data. The International Standard Classification of Education (ISCED) provides the basis for collecting data on education. It classifies all educational programmes by field of education and educational level and presents standard concepts and definitions. ISCED-97 is the version introduced in 1997 and used for the statistics presented in this article. A full description is available on the United Nations Educational, Scientific, and Cultural Organisation (UNESCO) Institute of Statistics (UIS) website. ISCED-97 distinguishes seven levels of education:

- pre-primary education (level 0);
- primary education (level 1);
- lower secondary education (level 2) and upper secondary education (level 3);
- post-secondary non-tertiary education (level 4);
- tertiary education (first stage) (level 5) and tertiary education (second stage) (level 6).

A review of ISCED began in 2009 and the revised classification (ISCED 2011) was adopted by a UNESCO General Conference in November 2011. The first statistics to be based on ISCED 2011 are expected to be published in 2015.

A significant share of European education statistics is collected as part of a jointly administered exercise that includes the UNESCO Institute for Statistics (UNESCO-UIS), the Organisation for Economic Cooperation and Development (the OECD) and Eurostat; this is often referred to as the UOE data collection exercise.

Administrative data are collected on an annual basis and refer to academic years — for example, the data for the period 2012 covers the academic year of 2011/12.

Statistics on early leavers from education and training and on tertiary educational attainment are collected through the EU's Labour Force Survey which is another major source for European education statistics.

## Indicator definitions

Statistics on the proportion of four year-olds who are enrolled in pre-primary and primary education institutions cover those institutions which provide education-oriented care to young children. These must have staff with specialised qualifications in education. As such, day nurseries, playgroups and day care centres, where the staff are not required to hold a qualification in education, are excluded.

The indicator on early leavers from education and training tracks the proportion of individuals aged 18–24 who have finished no more than a lower secondary education (ISCED levels 0, 1, 2 or 3c short), and who are not engaged in further education and training.

Statistics on enrolments in tertiary education refer to those persons who participate in ISCED level 5 or 6 educational programmes. Tertiary programmes at ISCED level 5 may be of an academic orientation (largely theoretical) or an occupational orientation (the latter are typically shorter programmes directly aimed at preparing students for the labour market). Second stage tertiary programmes (ISECD level 6) relate to tertiary studies that lead to an advanced research qualification (a Ph.D. or doctorate). Note that **Map 3.4** combines two distinct concepts, namely a numerator based on a count of students who are recorded according to the educational institution where they are inscribed and a denominator that is based on population statistics which are recorded according to residence. As a result, the region of study does not always match the region of residence. Furthermore, student numbers may also include persons who are not registered in the population register (for example, temporary foreign students). It is therefore possible that a region reports ratios of students attending a tertiary education establishment that are in excess of 100 % of the population (of a particular age group), especially when there are high rates of student mobility.

Education attainment is defined as the proportion of people of a given age group having attained a given education level. The age range of 30–34 year-olds is used for tertiary educational attainment as this generally refers to the first five-year span where the vast majority of students have already completed their studies.

Lifelong learning covers the pursuit of knowledge for personal or professional reasons, with the overall aim of improving knowledge, skills and competences. Lifelong learning statistics refer to persons aged 25–64 who report that they have received education or training in the four weeks preceding the LFS survey; these figures are divided by the total population of the same age group. The information collected relates to all education or training regardless of whether it is relevant to the respondent's current or possible future job.

# 4

# Labour market

# Introduction

This chapter analyses the situation in European Union (EU) labour markets, providing an overview of regional employment and unemployment, with particular emphasis on two principal concerns of policymakers — youth unemployment and long-term (structural) unemployment.

In the wake of the financial and economic crisis, the EU's labour market displayed falling employment and rising unemployment through to 2012. Against a background of GDP developments turning positive and increased economic and consumer sentiment (in some Member States), the first signs of labour market stabilisation occurred towards the end of 2013. Nevertheless, considerable labour market disparities persisted across EU Member States and between regions within the same Member State.

Since the Luxembourg jobs summit of November 1997, the EU has sought to monitor, analyse and develop an employment strategy. Indeed, generating employment and providing jobs is generally considered a key factor in combating social exclusion and the most effective way of giving people their independence, financial security and a sense of belonging. The EU seeks to promote the integration of all people within society, in particular those on the margins. Nevertheless, labour markets continue to be subject to discrimination as various groups are under-represented or excluded, for example, due to a disability or health problem, because they are migrants, live in a deprived area, or have no formal education or a low level of skills.

## Europe 2020

A skilled workforce is considered by many as an essential asset to develop a competitive, sustainable and innovative economy. In times of budgetary constraints and unprecedented global competitive pressures, EU employment and skills policies that help shape this transition of European labour markets are often cited as a priority.

Employment issues are integrated into the Europe 2020 strategy as one of five headline targets, namely that 75 % of the 20–64 year-olds in the EU-28 should be employed by 2020. Individual agreements exist with each EU Member State and national targets range from employment rates of 80 % or more in Denmark and Sweden down to 70 % or less in Ireland, Greece, Italy, Malta and Romania; there is no target for the United Kingdom. Progress towards this

### EUROPE 2020 FLAGSHIP INITIATIVES LINKED TO LABOUR MARKETS

While almost all of the Europe 2020 flagship initiatives have some relevance for labour markets, two are directly aimed at improving the employability of the workforce.

***An agenda for new skills and jobs***

This Europe 2020 flagship initiative sets out, in 13 key actions with accompanying and preparatory measures, to promote a substantial increase in employment rates, particularly those for women, young and older workers, through action in four priority areas:

- improving the flexibility and functioning of labour markets (flexicurity) to reduce chronically high structural unemployment;
- equipping people with the right skills for the jobs available in the labour market, in particular by ensuring the labour force can benefit from technological changes and adapt to new patterns of work organisation, while ensuring that skills mismatches are eliminated, for example, by promoting intra-EU mobility and non-member migrant inflows;
- increasing the quality of jobs and ensuring better working conditions, in an attempt to promote labour productivity gains and higher employment participation;
- promoting policies which encourage job creation, in particular, among those enterprises which require high skills and R & D-intensive business models.

***Youth on the move***

This flagship initiative aims to help young people gain the knowledge, skills and experience they need to make their first job a reality. The initiative proposes 28 actions aimed at making education and training more relevant, increasing young people's employability and access to the labour market, as well as ensuring that young people will have the right skills for the jobs of tomorrow.

***For more information:***

An agenda for new skills and jobs:
http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1397740842290&uri=CELEX:52010DC0682

overall 75 % target rate is analysed through the EU's annual growth survey (AGS), which promotes close coordination by national governments of their economic and fiscal policies and leads, among others, to a set of common employment guidelines in the form of a joint employment report. In 2013, the latest of these reports pointed out that, although there were some encouraging signs of an upturn in some European labour markets, there was a need to improve the resilience of labour markets and to promote job creation in fast-growing sectors. On the basis of the joint employment report, national governments submit national reform programmes and the European Commission releases a set of country-specific recommendations designed to improve the labour market situation.

In April 2012, the European Commission released a Communication titled Towards a job-rich recovery (COM(2012) 173). This focused on the potential for structural, labour market reforms promoting job creation through to 2020 and detailed some of the challenges which will need to be faced in order to maintain Europe's competitiveness, for example: addressing demographic ageing and migrant population flows; moving towards a low-carbon and resource-efficient economy; embracing rapid technological change; and competing with emerging economies. The communication concluded that if European competitiveness was to rise on the back of these developments, then a dynamic and inclusive labour market, where people possess the right skills, was essential.

## Employment package

In response to the high level of unemployment in the EU, in April 2012 the European Commission launched a set of measures to boost jobs, the so-called employment package, which builds on the Europe 2020 agenda for new skills and jobs. It is a set of policy documents that analyse how EU employment policies interact with other policy areas in support of smart, sustainable and inclusive growth. The package identifies areas where there is a high potential for future job creation and details how the EU Member States might create more jobs, through: supporting job creation; harnessing the potential of job-rich sectors; mobilising EU funds for job creation; reforming labour markets; investing in skills and matching jobs and job-seekers across borders (through a Europe-wide jobs portal, EURES).

### LABOUR MARKET — COHESION POLICY FUNDING

Through cohesion policy funding (in particular, the European Social Fund), the EU promotes access to employment for various minority groups, including: younger and older workers; migrants and ethnic minorities (such as the Roma); as well as helping women to get (back) into work, reducing gender-based segregation of the labour market and better reconciling working and private lives.

Indeed, the EU finances thousands of projects which aim to increase diversity in the workplace and combat discrimination through the promotion of equal opportunities among disadvantaged groups, for example: the long-term unemployed are assisted with new skills and encouraged to regain their motivation; existing employees in declining industries are retrained with skills for growing sectors such as those forming part of the low-carbon economy; parents are helped to return to work through access to childcare facilities and flexible working arrangements; women are encouraged to take-up technical jobs, while men are trained in the caring and teaching professions.

During the period 2007–13 the EU allocated a total of EUR 42 292 million to employment and social inclusion projects, equivalent to 12.3 % of its total cohesion budget. The three most prominent objectives were: implementing active and preventive measures within the labour market; developing pathways for integration and re-entry into employment for disadvantaged people; and providing support for self-employment and business start-ups.

***For more information:***

Cohesion policy, employment and social inclusion:
http://ec.europa.eu/regional_policy/activity/employment/index_en.cfm

# Main statistical findings

Eurostat compiles and publishes labour market statistics for EU regions, the individual EU Member States, as well as the EU-28 aggregate; in addition, data are also available for a subset of EFTA and candidate countries. This includes, among others, information relating to employment rates and unemployment rates. Regional statistics are generally available at the NUTS 2 level.

## Employment rates

The EU-28's economically active population (also called the labour force) was composed of 242.2 million persons aged 15–74 in 2012, among which 216.9 million were employed and 25.3 million were unemployed (in search of work and available to work).

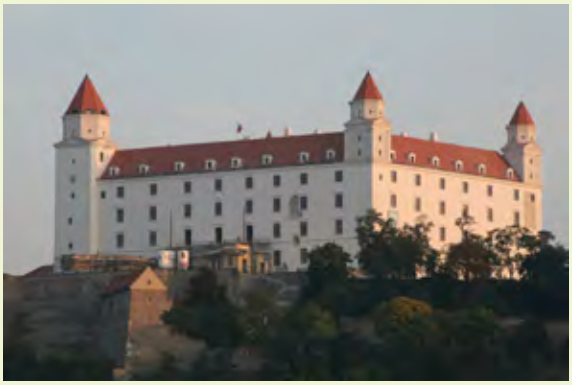
### *To meet the Europe 2020 employment rate target an average increase of 0.8 points per annum will be needed*

The indicator employment rate is based on the ratio of employed persons to the population of a specific age group. Having peaked at 70.3 % in 2008, the effects of the financial and economic crisis resulted in the EU-28's employment rate (for those aged 20–64) falling to 68.3 % by 2012. As such, to achieve the Europe 2020 employment rate target of 75 % by 2020, the EU-28 employment rate will need to grow, on average, by 0.8 percentage points per annum.

Low fertility rates and an ageing population (see Chapter 1 for more details) will probably result in the EU-28's working-age population shrinking in the coming years, notwithstanding a net inflow of migrants. The falling number of persons of working-age may help the EU's employment rate move towards the 75 % target.

**Map 4.1** presents the distribution of employment rates for the 20–64 age group for NUTS 2 regions, with the two darkest shades indicating those regions that already exceeded the overall Europe 2020 target of 75 %. In 2012, a total of 76 out of the 272 NUTS 2 regions in the EU for which data are available reported an employment rate that was 75.0 % or higher. At the other end of the range, there were 80 regions where employment rates were at least 10.0 percentage points lower than the 75 % Europe 2020 target; among these were 20 regions where the employment rate was at least 20.0 percentage points lower.

SPOTLIGHT ON THE REGIONS: BRATISLAVSKÝ KRAJ (SK01), SLOVAKIA



**Bratislava castle**

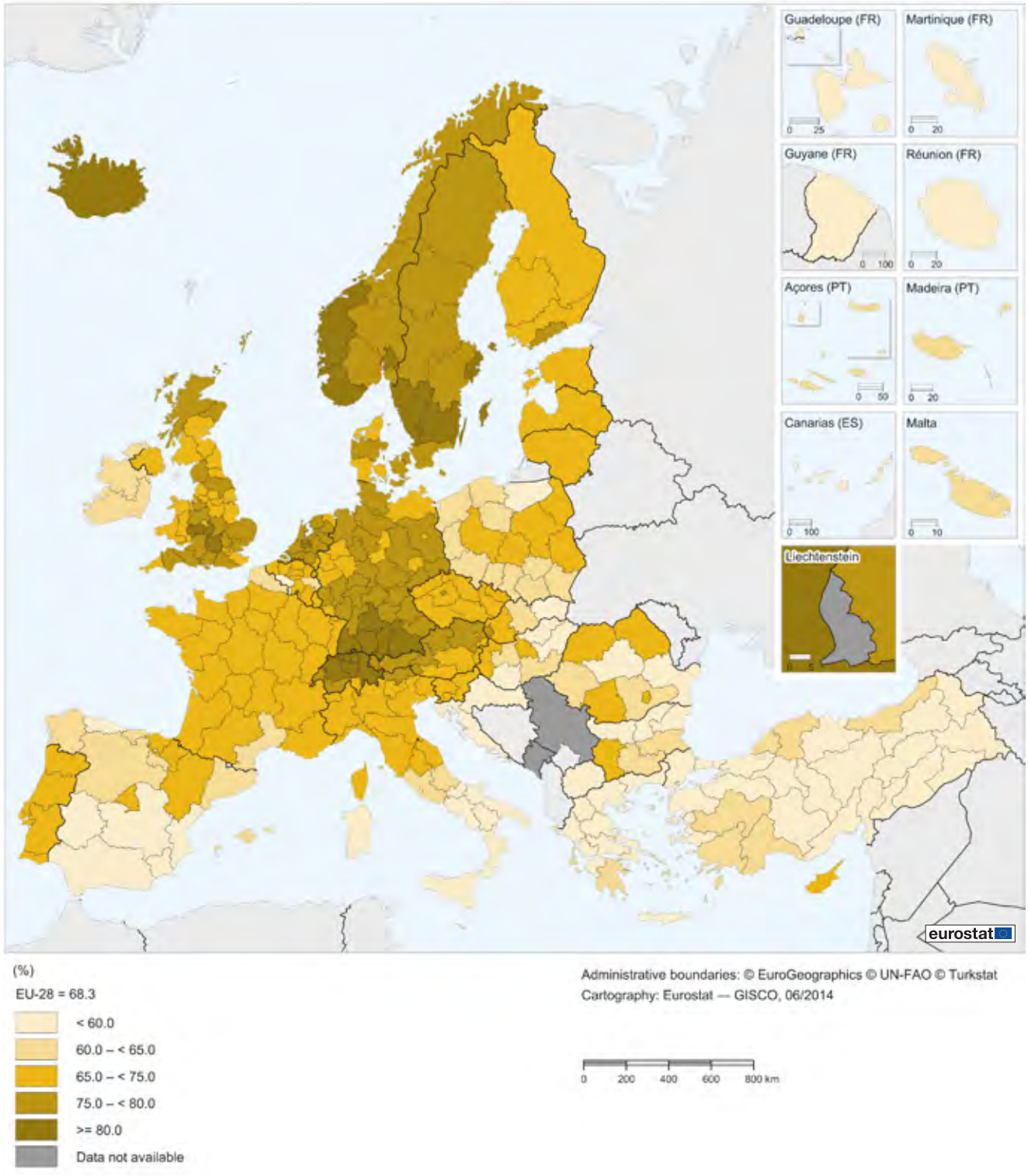
The capital region of Slovakia had an employment rate of 76.3 %, which — together with Praha (the capital region of the Czech Republic) — was the highest rate recorded in any of the regions from those Member States that joined the EU in 2004 or later. The employment rate in Bratislavský kraj was considerably higher than in any of the three other Slovakian regions, where rates ranged from 59.7 % up to 67.0 %, which was below the EU-28 average (68.3 %).

*Photo: Peter Zelizňák*

### *Highest regional employment rates predominantly recorded in north-western and central Europe …*

The highest regional employment rates in the EU-28 were predominantly recorded in north-western and central Europe, particularly in Germany, the Netherlands, Austria, Sweden and the United Kingdom, and to a lesser degree in Denmark and Finland, while the capital regions of the Czech Republic and Slovakia also reported employment rates of more than 75.0 %, as did the autonomous region of Provincia Autonoma di Bolzano/Bozen in the north of Italy. The highest regional employment rate in 2012 was registered in Åland (a Swedish-speaking island region of Finland), at 86.4 %, while there were eleven other regions that had employment rates of at least 80.0 % (as shown by the darkest shade in **Map 4.1**): five of these were in southern Germany (Freiburg, Oberbayern, Tübingen Schwaben and Stuttgart); three were in Sweden (Stockholm, Småland med öarna and Västsverige); two were in the United Kingdom (Herefordshire, Worcestershire and Warwickshire, and Berkshire, Buckinghamshire and Oxfordshire); and one was in the Netherlands (Utrecht).

**Map 4.1:** Employment rate, persons aged 20–64, by NUTS 2 regions, 2012
(%)




*Source:* Eurostat (online data code: lfst_r_lfe2emprt)

### … while the lowest rates were observed around the Mediterranean

The lowest regional employment rates in 2012 were generally found in southern regions of Spain and Italy, as well as various regions spread across Greece, Croatia, Hungary and the French overseas regions. There were four regions in southern Italy where less than half of the population aged 20–64 was in employment, namely, Puglia, Calabria, Sicilia and Campania; the lowest employment rate among any of the EU's regions was registered in the latter, at 43.7 %. Employment rates were also lower than 50.0 % in the outlying Spanish autonomous cities (Ceuta and Melilla), as well as the French overseas region of Réunion and the northerly Greek region of Dytiki Makedonia.

Employment rates in the EFTA regions were relatively high, as all but one of the level 2 regions for which data are available in 2012 reported a rate that was above 75.0 %; the exception was the Ticino region of Switzerland (74.2 %). The highest employment rate across the EFTA regions was recorded in Zentralschweiz (84.3 %). This was in stark contrast to the candidate countries, where every region had an employment rate that was below 65.0 %, with four Turkish regions and the former Yugoslav Republic of Macedonia reporting that less than half of those aged 20–64 were in employment. By far the lowest employment rates (among those regions displayed in **Map 4.1**) were recorded in the two eastern Turkish regions of Mardin, Batman, Sırnak, Siirt (33.5 %) and Sanlıurfa, Diyarbakır (31.8 %).

## Changes in employment rates from 2008 to 2012

Labour markets generally lag economic activity and the negative effects of the financial and economic crisis were not apparent on the EU-28 employment rate until 2009. **Map 4.2** provides an analysis of the change in employment rates from their most recent highs of 2008 compared with the latest situation for which data are available, namely in 2012. While some regions may have consistently recorded increases or decreases in their employment rate during this period, many regions saw their rates move in contrasting directions; this analysis shows the net impact of these movements. The EU-28 employment rate for those aged 20–64 recorded a net decline of 1.9 percentage points during the period 2008–12.

### Largest contractions in employment rates between 2008 and 2012 were recorded in Greece and Spain

Just over two thirds of the 272 NUTS 2 regions for which data are available reported a contraction in employment rates between 2008 and 2012. The biggest reductions — of at least 10.0 percentage points — were recorded in Greece (seven regions) and Spain (four regions), while the only other region in the EU to report a contraction of this magnitude was Border, Midland and Western (Ireland).

### Berlin registered the largest gain in its employment rate over the same period and led a pattern of gains recorded across all German regions

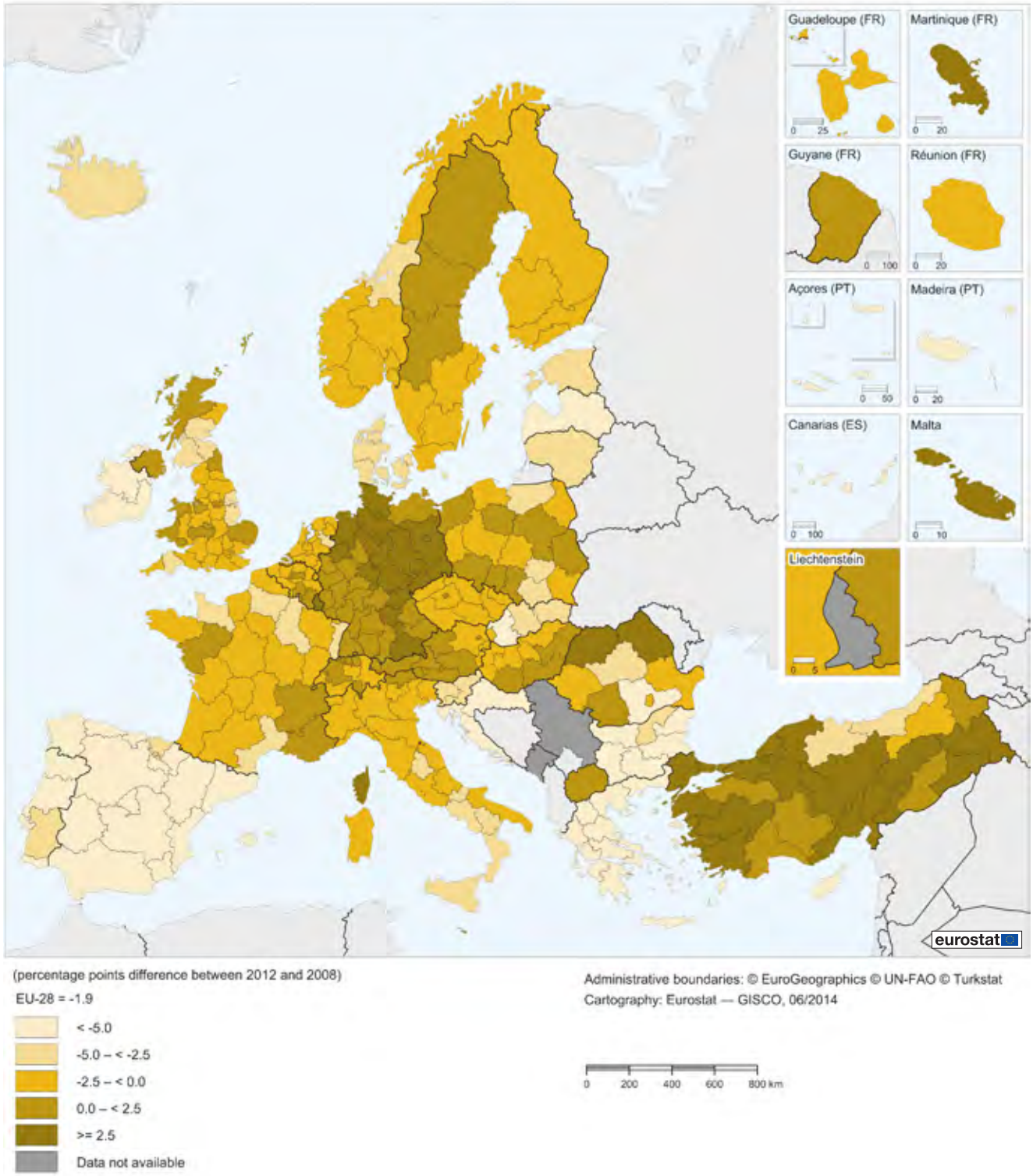
Regional employment rates were higher in 2012 than in 2008 in 83 NUTS 2 regions, and despite the financial and economic crisis there were considerable gains recorded in some regions. The highest increases were registered in the German capital region of Berlin and on the French island of Corse, where employment rates rose by 5.3 percentage points over the period under consideration. Across the EU, there were 25 regions where employment rates rose by at least 2.5 percentage points (as shown by the darkest shade for **Map 4.2**); the majority of these were spread across Germany (note the data for Chemnitz and for Leipzig cover the period 2009–12). Aside from Corse, the only non-German regions to register an increase of at least 2.5 percentage points were the two Romanian regions of Nord-Vest and Nord-Est, Luxembourg and Malta (both single regions at this level of analysis) and the French overseas region of Martinique.

### Less young persons active in the labour market following the financial and economic crisis

European social cohesion objectives seek to minimise disparities in labour markets. However, the effects of the financial and economic crisis were disproportionately felt by those aged 15–24. **Figure 4.1** shows that in the vast majority of the EU Member States more than 50 % of the population aged 15–24 was inactive. This is mainly due to the fact that, in this age group, many people are still studying (and are therefore not seeking work). Denmark, the Netherlands and Austria were the only EU Member States where more than 50 % of 15–24 year olds were in employment in 2012.

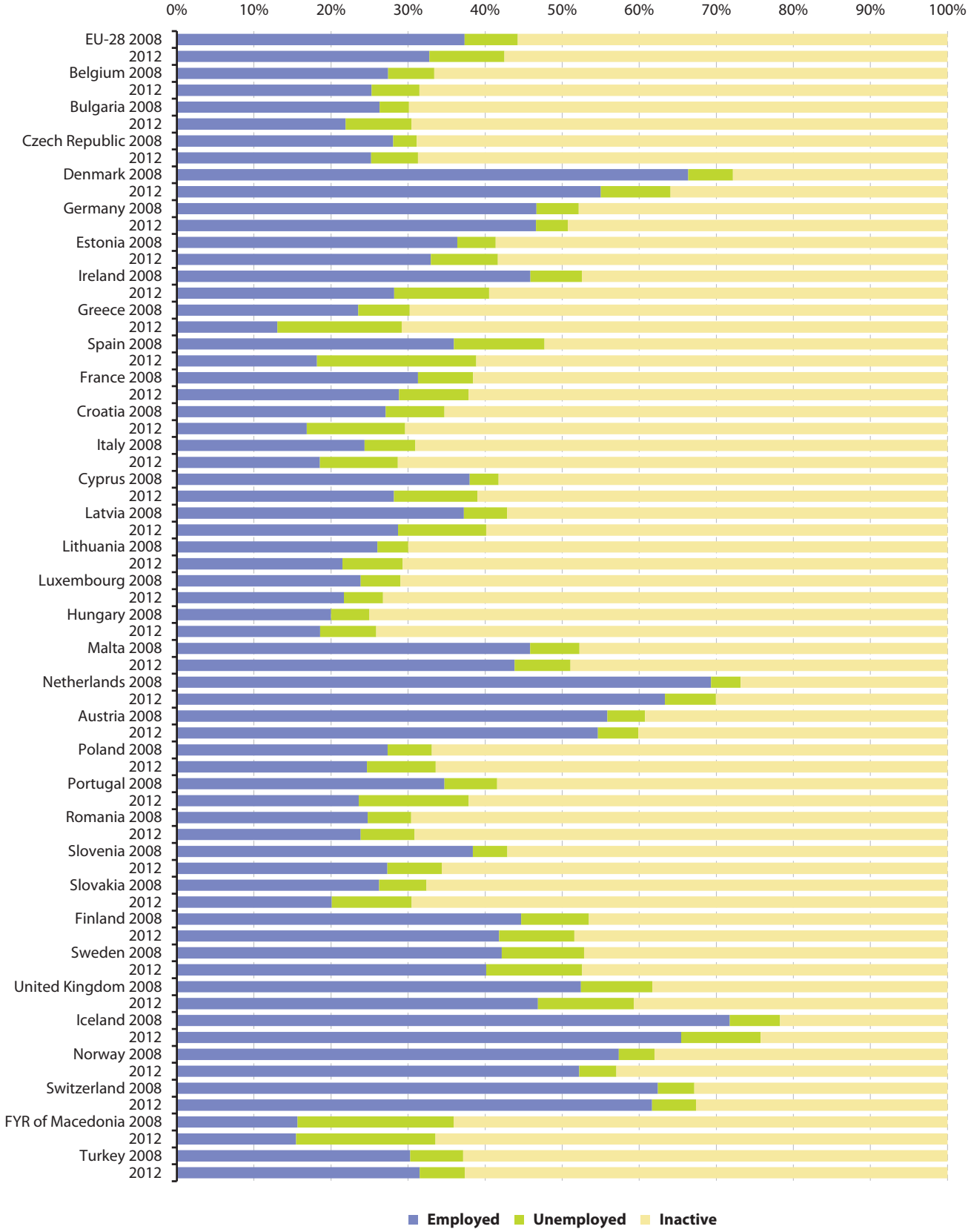
**Figure 4.1** also shows that the share of young people being active (employed or unemployed) fell between 2008 and 2012 in most (22 out of 28) EU Member States. It would therefore appear that, as a response to the financial and economic crisis, more young people decided to remain out of the labour market (for instance by remaining longer in education). As such, while the share of young people who were unemployed increased sharply in many Member States, the share of young people who were employed decreased even more rapidly, causing the active population to shrink.

**Map 4.2:** Change in employment rate, persons aged 20–64, by NUTS 2 regions, 2008–12 (1)
(percentage points difference between 2012 and 2008)




(1) Chemnitz (DED4), Leipzig (DED5), Cheshire (UKD6) and Merseyside (UKD7): 2009–12.
*Source:* Eurostat (online data code: lfst_r_lfe2emprt)

**Figure 4.1:** Change in the share of young people employed, unemployed or inactive, persons aged 15–24, 2008 and 2012
(% of the population aged 15–24)




*Source:* Eurostat (online data code: lfsa_pganws)

## Male and female employment rates

The Europe 2020 strategy does not make a distinction between the sexes with respect to its 75 % employment rate target among those aged 20–64. However, there was a relatively wide gap in employment rates in 2012, as the male employment rate was 12.2 percentage points higher than the corresponding rate for women. Although this gender gap remains quite large, the financial and economic crisis affected male employment rates more than those for women and as a result the gap narrowed somewhat.

### *Close link between female and overall employment rates*

Indeed, there appears to be a relatively strong link between female employment rates and overall employment rates, as those regions with the lowest female employment rates are generally the same as those that have the lowest overall employment rates. Gender differences in employment rates may occur for a number of reasons, although family responsibilities are the most likely cause of higher inactivity among women. There were no NUTS 2 regions in the EU where the female employment rate exceeded the male employment rate in 2012 — see **Map 4.3**.

Female employment rates were relatively close to corresponding male employment rates in most Nordic and Baltic regions, as well as in several regions of Bulgaria, Germany and Portugal. At the other end of the range, the largest differences between male and female employment rates were recorded in Mediterranean regions, in particular, southern Italy, Greece, Spain and Malta; the biggest gender difference in employment rates was recorded in Malta, as the male employment rate was 32.2 percentage points higher than that for women in 2012. The gap between the sexes was even wider in several Turkish regions: the biggest differences — of more than 50.0 percentage points — were recorded in the three south-eastern regions of Mardin, Batman, Sırnak and Siirt, Sanlıurfa and Diyarbakır, and Gaziantep, Adıyaman and Kilis, as well as the central Turkish region of Konya.

## Employment rates for older workers

The EU-28 employment rate for older workers (those aged 55–64) stood at 48.7 % in 2012. This rate for older workers increased by 10.7 percentage points between 2002 and 2012, suggesting that effective retirement ages were gradually increasing. Despite the financial and economic crisis, the employment rate for older workers continued to expand throughout the period 2008–12, although the pace of growth slowed in 2009 and 2010.

### *In Sweden, more older workers tend to remain in the workforce …*

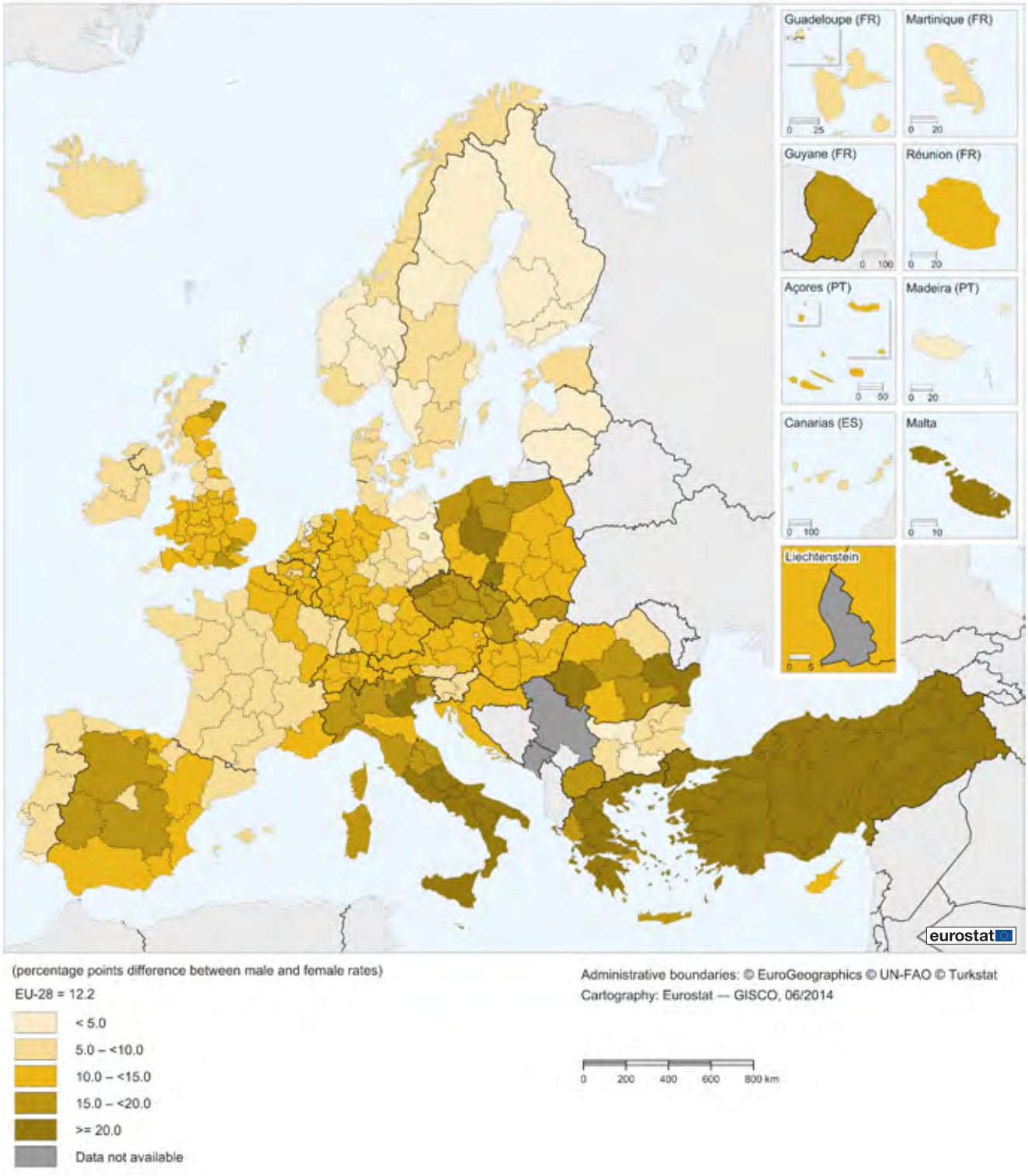
In 2012, there were 123 NUTS 2 regions across the EU that had an employment rate for older workers of at least 50.0 %; among these, 20 regions had a rate of at least 65.0 % (as shown by the darkest shade in **Map 4.4**). By contrast, there were 149 NUTS 2 regions in the EU with an employment rate for older workers below 50.0 %; with 20 regions recording rates less than 35.0 % (as shown by the lightest shade).

Some of the highest regional employment rates for older workers were recorded in Sweden: all eight Swedish regions were present among the top 10 EU-28 regions with the highest employment rates for older workers in 2012. However, the region with the highest employment rate for older workers was Åland (Finland), at 76.4 %, while the Highlands and Islands of Scotland (the United Kingdom) was the other region in the top 10.

### *… whereas more older workers left employment early in the southern Member States and those regions historically dependent upon heavy industry*

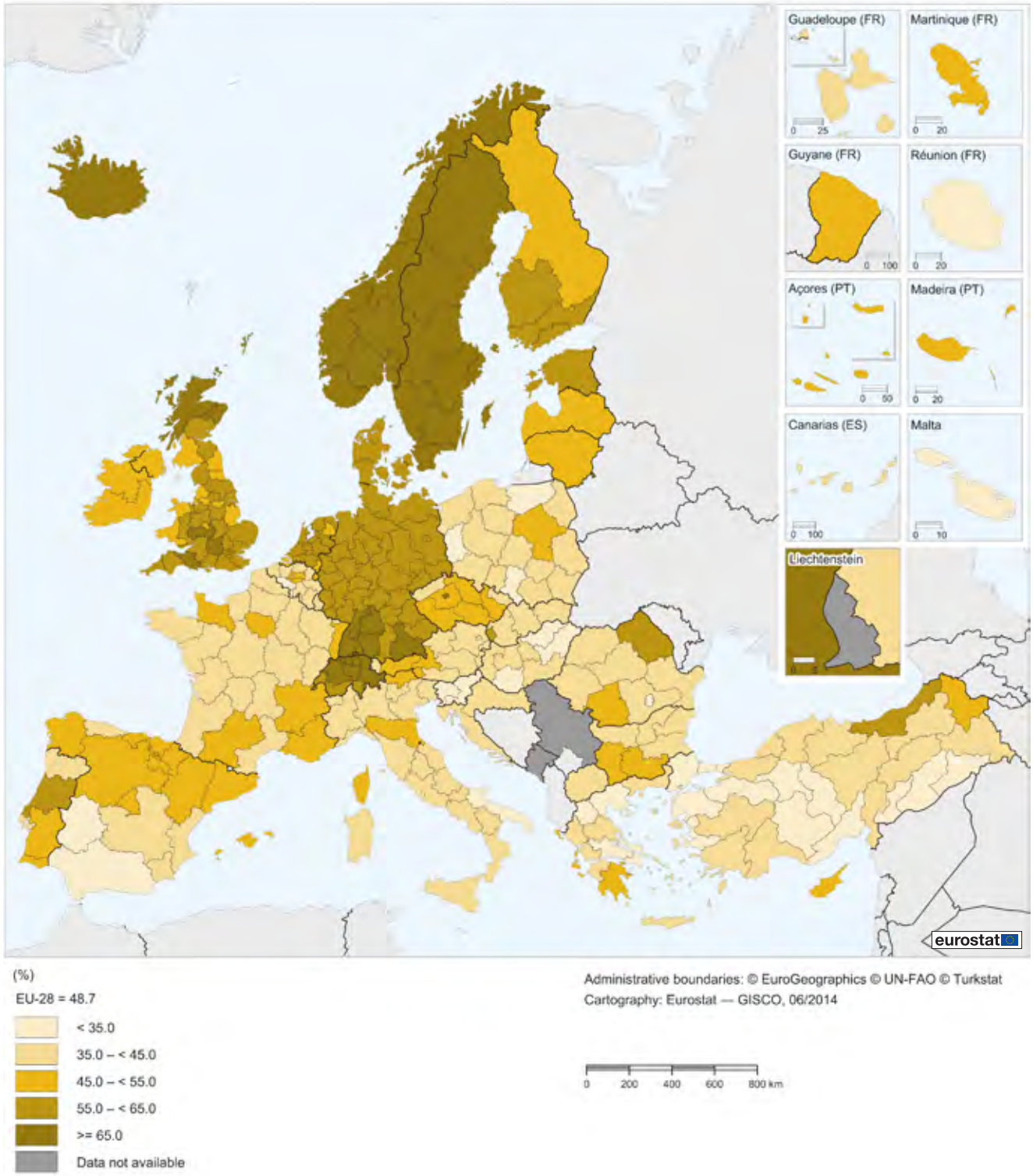
At the other end of the range, the 20 regions with the lowest employment rates for older persons were distributed across a much wider range of EU Member States, including: four Greek regions, three regions each from Spain, Hungary and Poland, both Slovenian regions, as well as a single region from each of Belgium, France, Italy and Romania, and Malta (a single region at this level of analysis). Many of the regions with low employment rates for older workers were historically dependent upon heavy industrial sectors (such as coal mining and steel manufacturing), which have contracted greatly or even ceased to exist in some regions, leading to economic restructuring and associated job losses — especially for older workers whose skills may no longer be applicable to current labour market opportunities. The three regions in the EU with the lowest employment rates for older workers in 2012 were: the Hungarian region of Észak-Magyarország (traditionally active in mining and metallurgy); the Polish region of Slaskie (specialised in the mining of coal and lignite); and the Greek region of Sterea Ellada (where industrial and mining sectors co-exists with agricultural activities and tourism).

**Map 4.3:** Gender gap for the employment rate, persons aged 20–64, by NUTS 2 regions, 2012
(percentage points difference between male and female rates)




*Source:* Eurostat (online data code: lfst_r_lfe2emprt)

**Map 4.4:** Older persons employment rate, persons aged 55–64, by NUTS 2 regions, 2012 (1)
(%)




(1) Ciudad Autónoma de Ceuta (ES63), Ciudad Autónoma de Melilla (ES64) and Åland (FI20): low reliability.
*Source:* Eurostat (online data code: lfst_r_lfe2emprt)

### *Low employment rates in the Greek and Romanian capital regions*

The employment rate of older workers in capital regions was generally higher than the national average in most EU Member States. However, the latest rates for the capital regions of Attiki (Greece) and Bucureşti - Ilfov (Romania) were among the lowest in each of these Member States and both of these regions also featured among the 10 EU regions with the lowest employment rates in 2012.

Relatively high employment rates among older workers were recorded for most regions in the EFTA countries. This was particularly true in Iceland (79.1 %), while there were also a number of Norwegian and Swiss regions that recorded employment rates for older workers above 70.0 %; each of the remaining level 2 regions in Norway and Switzerland had an employment rate for older persons in excess of 60.0 %.

By contrast, much lower employment rates for older workers were generally recorded in the candidate countries. There were only two Turkish regions in 2012 where a majority of older workers were in employment: the north-eastern region of Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane which borders the Black Sea and the eastern region of Ağri, Kars, Iğdir, Ardahan; both of these regions are characterised as having relatively high levels of net emigration, which may reflect economic migration among younger generations. Otherwise, regional employment rates for older workers were generally situated between 30.0 % and 40.0 % in 2012 through much of Turkey as well as in the former Yugoslav Republic of Macedonia (covered by a single region at this level of analysis). The employment rate of older workers fell even lower in some Turkish regions, for example, in some of the largest cities (İstanbul, İzmir and Ankara) and in three regions to the extreme south-east of the country, close to the Syrian border. Among these was Mardin, Batman, Şırnak, Siirt, where the lowest employment rate for older persons was registered (16.2 %).

SPOTLIGHT ON THE REGIONS: SALZBURG (AT32), AUSTRIA

**Old town, Salzburg**

The western Austrian region of Salzburg had the joint lowest unemployment rate in the EU in 2012, at 2.5 %, along with another western Austrian region, namely the Tirol.

Compared with an EU-28 average of 10.5 %, there were only seven NUTS 2 regions where the unemployment rate was below 3.0 % in 2012, four of these were in Germany and three were in Austria.

*Photo: Thomas Pintaric*

## Unemployment rates

At the onset of the financial and economic crisis in 2008 there were 16.7 million unemployed persons in the EU-28. Some four years later this figure had risen to 25.3 million, an overall increase of 51.3 % or 8.6 million persons. Nevertheless, some job vacancies remain unfilled: this may, at least in part, be due to unemployed applicants lacking the required skills for certain posts, or could reflect a lack of mobility, with job vacancies being available in one region, while the unemployed look for work in another.

### *EU-28 unemployment rate rose by 3.5 points between 2008 and 2012 to reach 10.5 %*

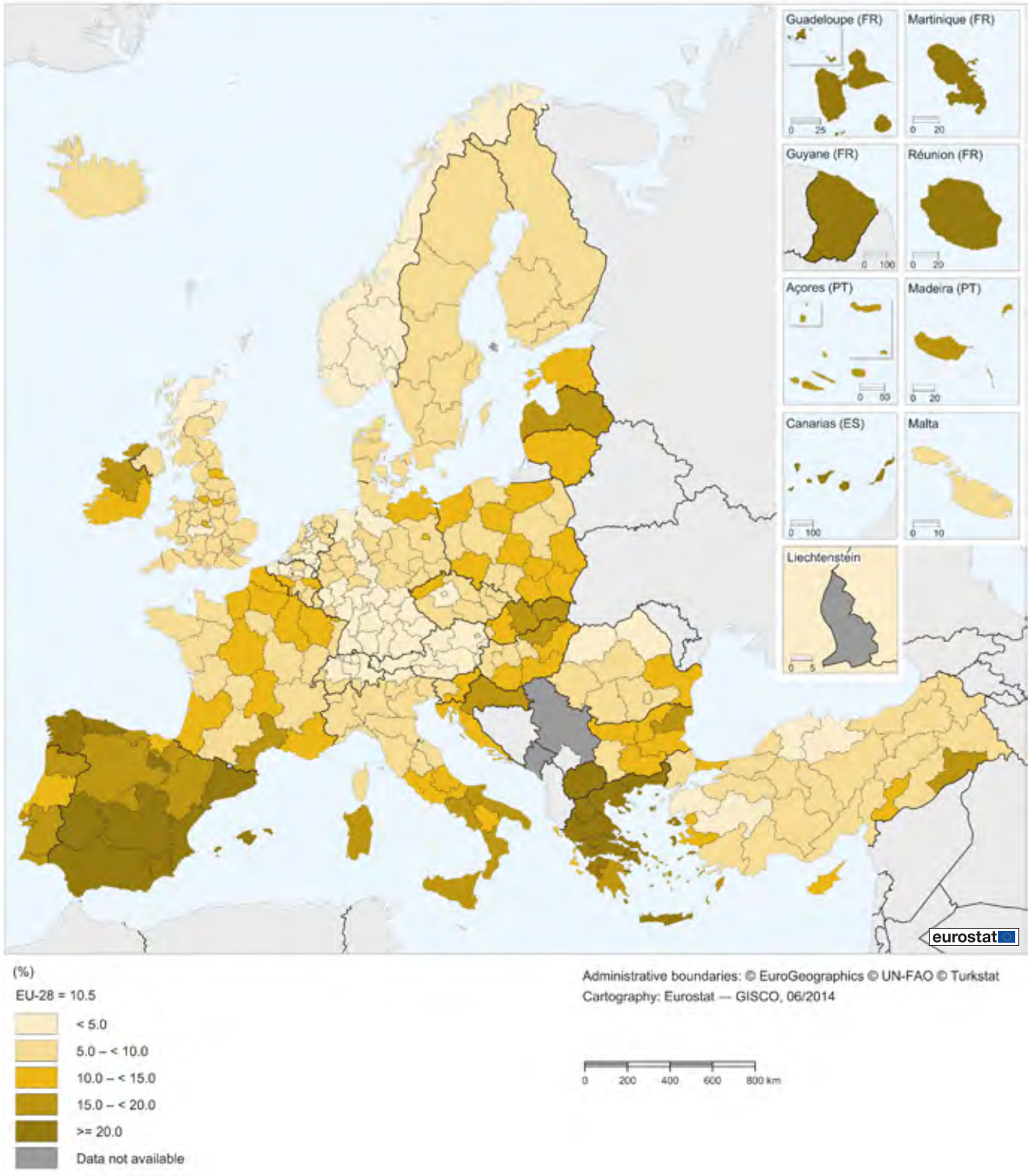
The unemployment rate in the EU-28 was 10.5 % in 2012, some 3.5 percentage points higher than it had been in 2008. **Map 4.5** shows the distribution of unemployment rates by NUTS 2 regions for 2012, with the highest rates distributed across much of Spain and Greece. The darkest shade in **Map 4.5** shows this concentration of high unemployment rates, with 27 NUTS 2 regions posting unemployment rates that were equal to or above 20.0 %. Of these, almost half (13 regions) were regions in Spain, while there were also 10 of the 13 Greek regions (the three exceptions were the Peloponnisos, Notio Aigaio and Ionia Nisia — each recording an unemployment rate above the EU-28 average) and all four French overseas regions (Réunion, Guadeloupe, Guyane and Martinique).

### *Particularly low unemployment rates were recorded in German and Austrian regions*

There were 44 NUTS 2 regions across the EU that recorded an unemployment rate less than 5.0 % in 2012, of which only seven had an unemployment rate that was below 3.0 %: the southern German regions of Freiburg, Tübingen and Oberbayern; the western German region of Trier (which borders onto Luxembourg); and the three northern and western Austrian regions of Oberösterreich, Salzburg and Tirol. The latter two recorded the lowest unemployment rates in the EU-28, at 2.5 %.

Apart from the Région lémanique and Ticino in Switzerland, unemployment rates in Norway and Switzerland were consistently below 5.0 % in 2012, while the rate in Iceland was 6.0 % in 2012. Across the candidate countries, regional

**Map 4.5:** Unemployment rate, persons aged 15–74, by NUTS 2 regions, 2012 (1)
(%)




(1) Corse (FR83) and Åland (FI20): low reliability.
*Source:* Eurostat (online data code: lfst_r_lfu3rt)

unemployment rates reached a high of 31.0 % in the former Yugoslav Republic of Macedonia (a single region at this level of analysis), while there were four Turkish regions that recorded double-digit unemployment rates in 2012 (Mardin, Batman, Şırnak, Siirt; İzmir; İstanbul; and Gaziantep, Adıyaman, Kilis). By contrast, the unemployment rate was less than 5.0 % in 2012 in four Turkish regions (Samsun, Tokat, Çorum, Amasya; Kastamonu, Çankırı, Sinop; Balıkesir, Çanakkale; and Manisa, Afyonkarahisar, Kütahya, Uşak).

## Changes in unemployment rates from 2011 to 2012

The financial and economic crisis continued to have a strong asymmetric impact on regional labour markets in 2012. Declining unemployment rates were generally observed in those regions which were already characterised as having relatively low levels of unemployment, while unemployment rates tended to rise by a higher than average amount in those regions already experiencing high levels of unemployment. As such, large disparities in regional unemployment persisted and were even accentuated; **Map 4.6** provides information on the change in regional unemployment rates between 2011 and 2012.

The EU-28 unemployment rate rose by 0.8 percentage points between 2011 and 2012 to reach 10.5 %. **Map 4.6** shows regional changes in terms of the percentage point difference between unemployment rates for 2012 and those for 2011. Out of the 270 NUTS 2 regions in the EU for which data are available, the unemployment rate increased between 2011 and 2012 in 167 regions, remained unchanged in 11 regions, and fell in the remaining 92 regions.

### *Further deterioration of high unemployment rates in Greece and Spain in 2012*

These most recent developments confirm that Greek and Spanish labour markets continued to be hardest hit by the effects of the financial and economic downturn, although unemployment rates also increased at a relatively rapid pace in several other regions, most notably in southern Italy and Portugal. There were 14 regions across the EU-28 that reported their unemployment rate rising by more than 5.0 percentage points between 2011 and 2012: 10 of these regions were in Greece, three were in Spain, and the last was Calabria (southern Italy).

### *Unemployment rates fell in Germany, the United Kingdom, the Romanian capital region and the Baltic Member States*

At the other end of the range, there were 14 NUTS 2 regions across the EU-28 where the unemployment rate fell by more than 1.0 % between 2011 and 2012. Six of these regions were in Germany, four were in the United Kingdom, one was in Romania, and the remaining three were the Baltic Member States (each of which is covered by a single region at this level of detail). The biggest reductions in unemployment rates between 2011 and 2012 were recorded in Lithuania and Estonia (with reductions of 2.0 and 2.3 percentage points). Unemployment rates in all three of the Baltic Member States increased dramatically during the financial and economic crises to peak in 2010, but subsequently fell at a rapid pace too.

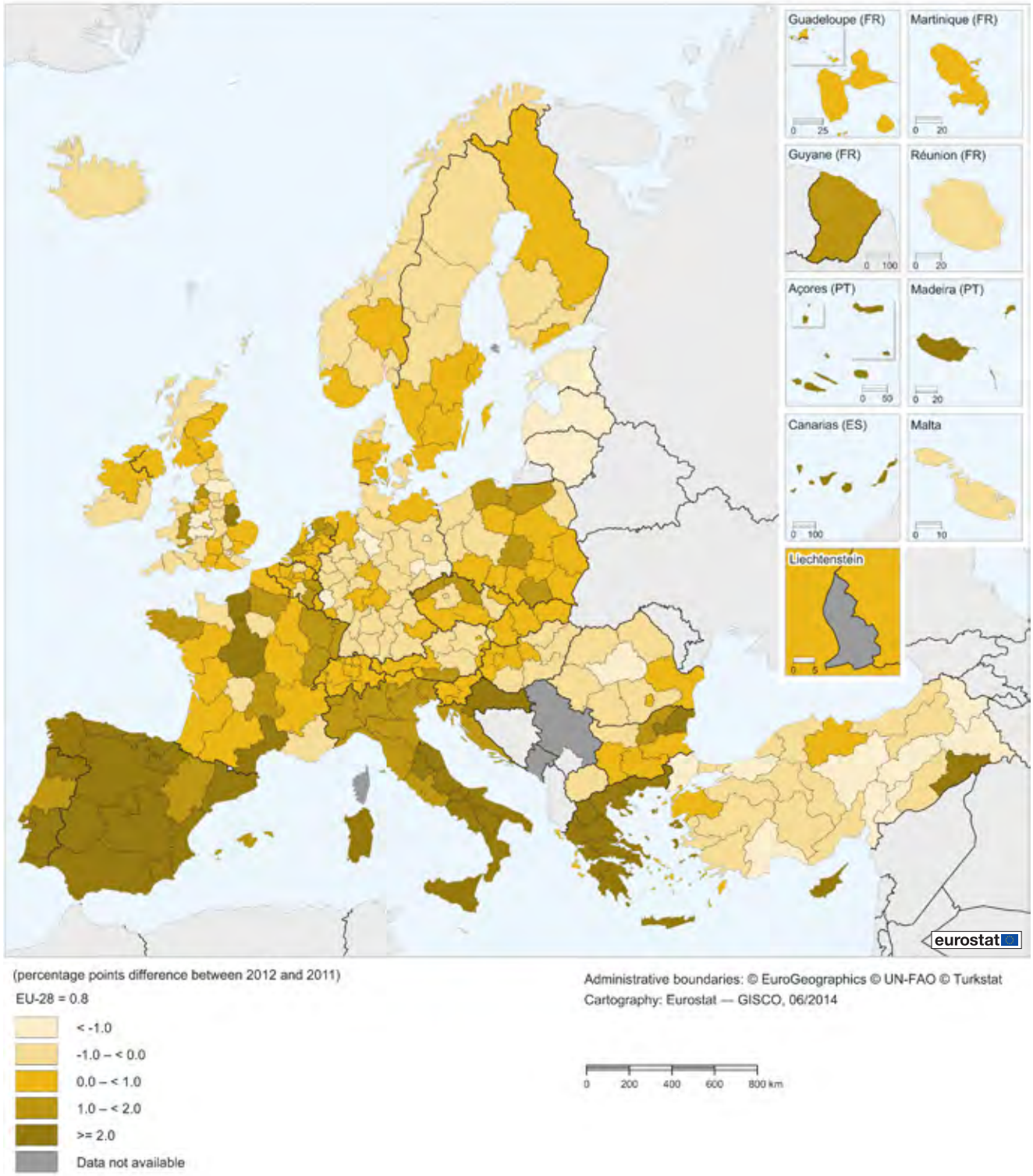
## Youth unemployment

Given that overall unemployment rates rose during the financial and economic crisis — while employment rates for older persons continued to increase — it is apparent that other age groups, and in particular young people aged 15–24, were disproportionately affected by the downturn in economic fortunes and the shrinking labour market. Indeed, the economic and financial crisis made it harder for young Europeans to enter the labour market. During the recession, an increasing proportion of young people remained in education as some extended their on-going studies or returned to studying, in this way postponing their entry into the labour force. As a result, the active population (defined as the sum of those employed and those unemployed) decreased in most of the EU Member States for the 15–24 age group, as shown in **Figure 4.1**.

### *Some 5.6 million youths in the EU-28 were without work in 2012*

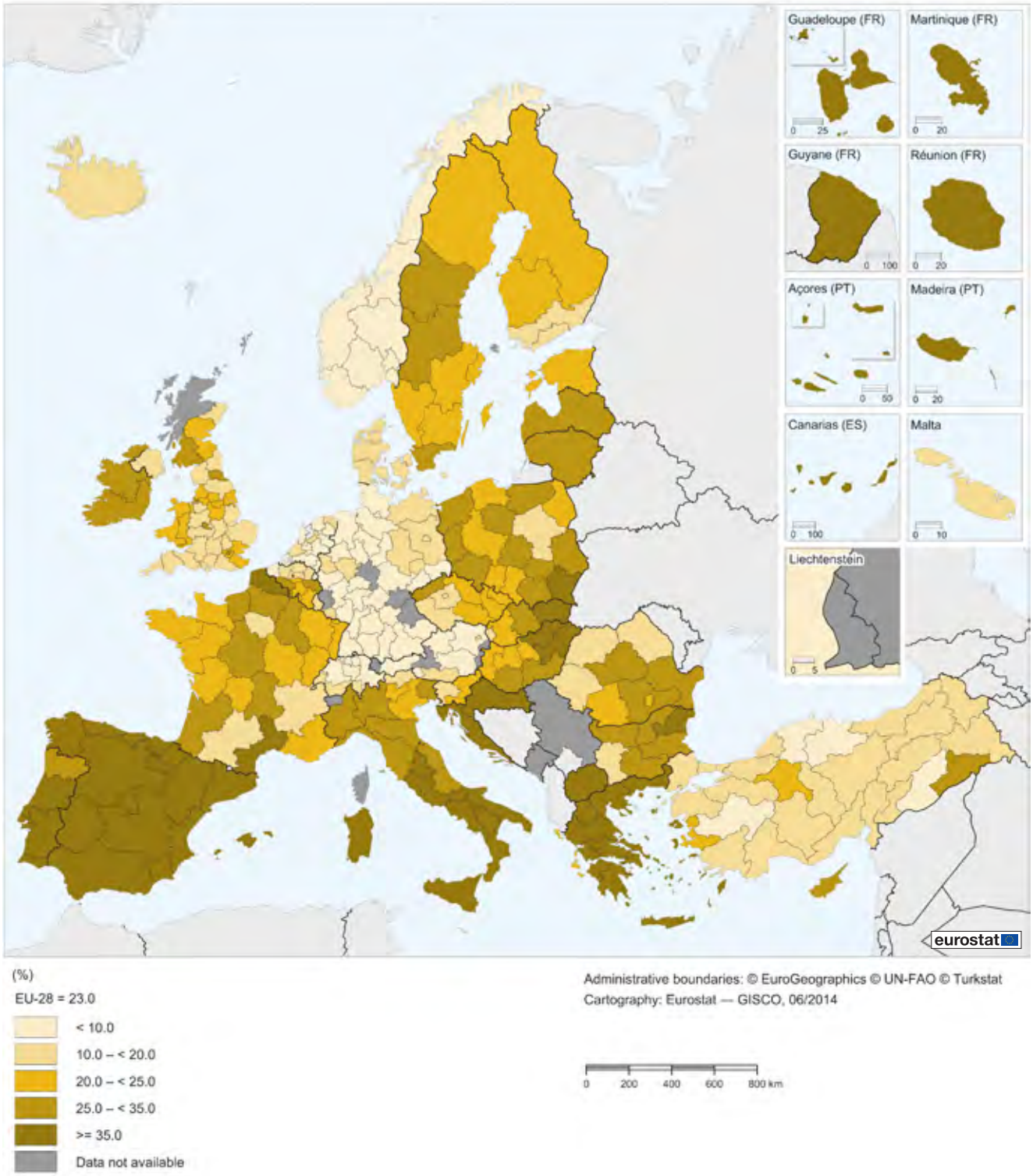
The number of youths (aged 15–24) in the EU-28 who were unemployed rose to 5.6 million in 2012. While rising youth unemployment rates (defined as the number of young unemployed persons aged 15–24 divided by the active population for the same age group) could be attributed, in part, to a higher number of persons being unemployed, it also resulted from a decrease in the number of active persons aged 15–24. These two movements reinforced each other, such that the youth unemployment rate passed from a relative low of 15.5 % in 2007 to reach 23.0 % by 2012, a level that was more than double the overall unemployment rate for those aged 15–74 (10.5 %).

**Map 4.6:** Change in unemployment rate, persons aged 15–74, by NUTS 2 regions, 2011–12 (1)
(percentage points difference between 2012 and 2011)




(1) Corse (FR83), Burgenland (AT11) and Åland (FI20): low reliability.
*Source:* Eurostat (online data code: lfst_r_lfu3rt)

**Map 4.7:** Youth unemployment rate, persons aged 15–24, by NUTS 2 regions, 2012 (1)
(%)




(1) Bremen (DE50), Gießen (DE72), Leipzig (DED5) and Limousin (FR63): 2011. Data for several regions have low reliability (too numerous to document).
*Source:* Eurostat (online data code: lfst_r_lfu3rt)

### *Youth unemployment appears to be concentrated in those regions which experienced relatively high overall levels of unemployment*

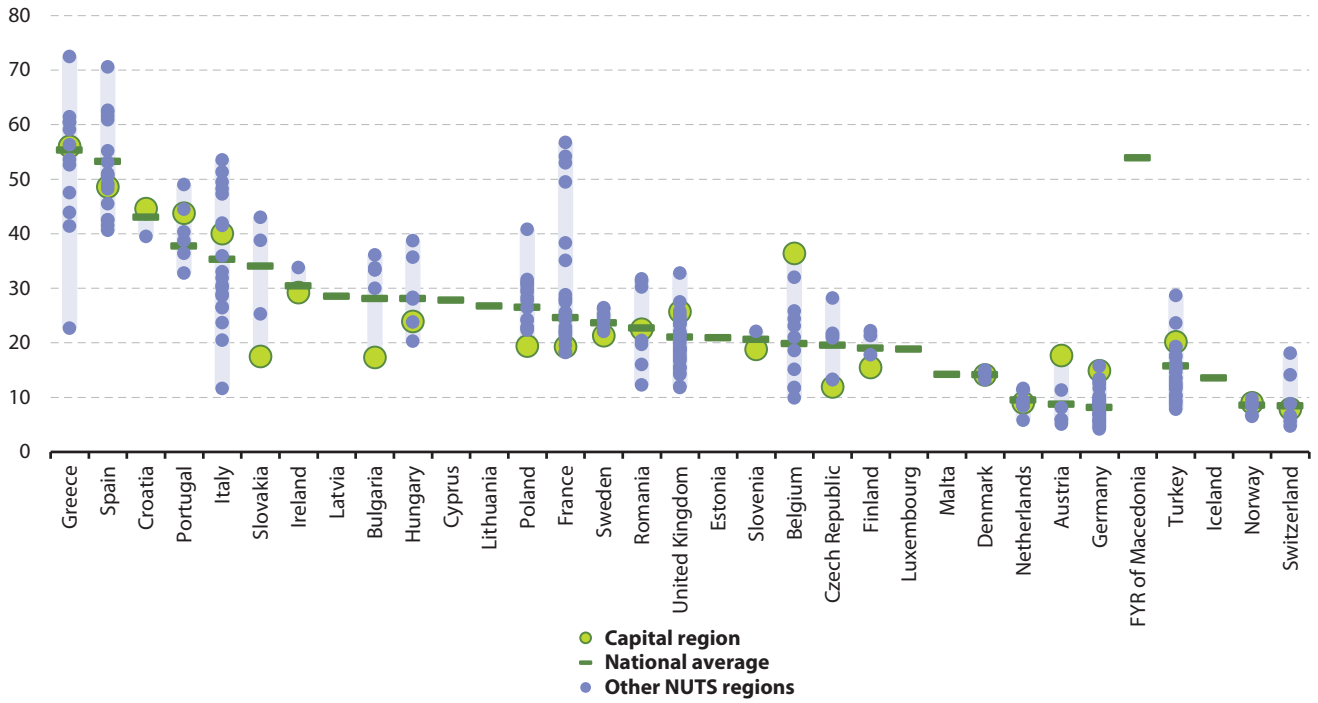
**Map 4.7** presents the regional distribution of the youth unemployment rate for NUTS 2 regions in 2012. There is a clear similarity between youth unemployment rates and total unemployment rates in terms of the pattern of regions with particularly high or particularly low rates. The youth unemployment rate exceeded 50.0 % in 24 regions in 2012 (which was twice as many regions as in 2011). These 24 regions were located across Spain (10 regions), Greece (nine regions), France (three out of the four overseas regions; Guyane had a rate of 49.5 %), and Italy (the neighbouring regions of Calabria and Sicilia). There were 111 regions across the EU that had a youth unemployment rate of 25 % or more — each of these (shaded as the two darkest shades in **Map 4.7**) was eligible for funding under the Youth Employment Initiative (see box for more details).

### *Youth unemployment rate below 10.0 % in much of Germany, the Netherlands and Austria*

At the other end of the range, there were 39 NUTS 2 regions across the EU that reported a youth unemployment rate that was lower than 10.0 % in 2012. The lowest rates were registered in Germany (25 regions), the Netherlands (nine regions), Austria (four regions) and a single region in Belgium. The three lowest regional youth unemployment rates were recorded in the southern German regions of Freiburg (4.8 %), Tübingen (4.5 %) and Oberbayern (4.2 %) and these were the only regions where the youth unemployment rate was below 5.0 % in 2012.

**Figure 4.2** confirms this pattern of low regional youth unemployment rates in Germany, the Netherlands and Austria, and also shows that the variation between regional unemployment rates in these countries was relatively limited. By contrast, there was a much higher degree of variation between regional youth unemployment rates in Greece, Italy, Spain, France, Belgium and Slovakia. For example, the difference between the Greek region with the highest youth unemployment rate, Dytiki Makedonia, and that with the lowest rate, Ionia Nisia, was almost 50.0 percentage points.

**Figure 4.2:** Regional disparities in the youth unemployment rate, persons aged 15–24, by NUTS 2 regions, 2012 (1) (%)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Bremen (DE50), Gießen (DE72), Leipzig (DED5) and Limousin (FR63): 2011. Data for several regions have low reliability (too numerous to document). Oberfranken (DE24), Kassel (DE73), Oberpfalz (DE23), Trier (DEB2), Corse (FR83), Valle d'Aosta/Vallée d'Aoste (ITC2), Burgenland (AT11), Salzburg (AT32), Vorarlberg (AT34), Åland (FI20) and Highlands and Islands (UKM6): not available.

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

## FOCUS ON YOUTH UNEMPLOYMENT

Finding proper work is often a challenge for young job-seekers. Even if young people find work, their jobs tend to be more precarious (for example, based on temporary or short duration contracts, or part-time hours). Early leavers from education and training are the highest risk group and the longer these people remain unemployed the greater the difficulty for them to enter or return to employment.

High youth unemployment rates have led to a raft of new policy initiatives designed to support those most at risk, to do more to encourage young entrepreneurs, and to address legal and administrative obstacles to learning and working mobility. The European Commission itself has stated that 'unless current trends are reversed quickly, today's levels of youth unemployment risk damaging the longer-term employment prospects for young people, with serious implications for future growth and social cohesion'.

The Youth Employment Package was launched in December 2012, with a Youth Guarantee at its core. The EU Member States endorsed this principle of a Youth Guarantee in April 2013 through a Council Recommendation (2013/C 120/01) which aims to ensure all young people under 25 years, whether registered with employment services or not, should get a good-quality offer within four months of them leaving formal education or becoming unemployed; such an offer may relate to a job, an apprenticeship, a traineeship, or continued education.

In February 2013, the European Council agreed on a Youth Employment Initiative with a budget of around EUR 6 billion for the period 2014–20, largely to support young people not in education, employment or training. The youth employment initiative is open to all regions that have a youth unemployment rate over 25 %, with approximately half of its funding from a dedicated budget line, complemented by at least EUR 3 billion from the European Social Fund (ESF).

In a Communication titled Working together for Europe's young people — A call to action on youth unemployment (COM(2013) 447), the European Commission proposed a series of changes to accelerate the implementation of the Youth Guarantee and investment in young people.

***For more information:***

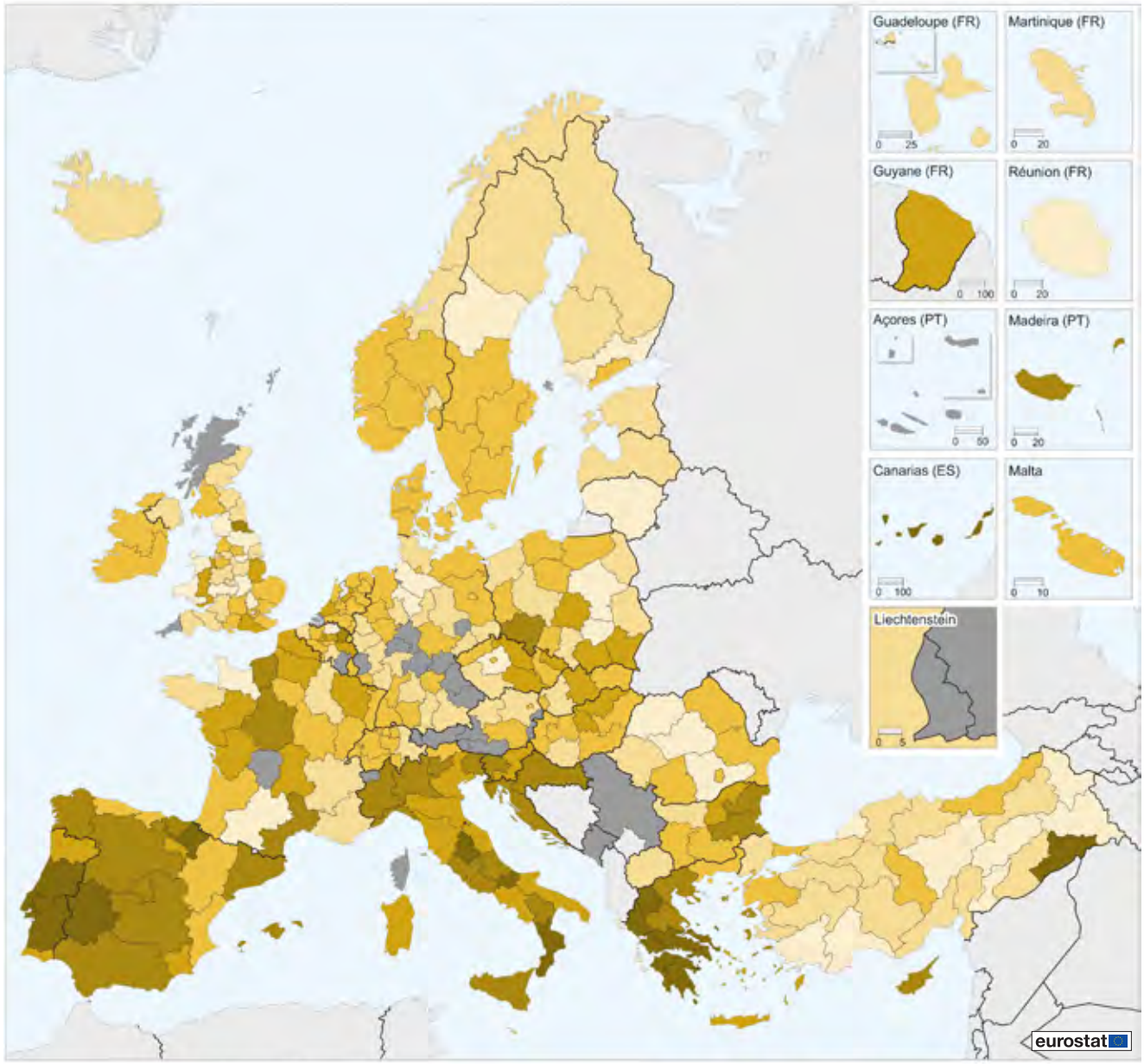
Youth employment: http://ec.europa.eu/social/main.jsp?catId=1036&langId=en

Youth unemployment rates in a majority of capital regions were lower than national averages. Nevertheless, among the five EU Member States with the highest youth unemployment rates in 2012, the Comunidad de Madrid was the only capital region to record a youth unemployment rate that was below its national average. The youth unemployment rate was also higher than the national average in the capital regions of the United Kingdom, Belgium, Austria and Germany, although the national youth unemployment rate in each of these Member States was lower than the EU-28 average.

### *EU-28 youth unemployment continued to rise in 2012 …*

Between 2011 and 2012, the youth unemployment rate for the EU-28 rose by 1.5 percentage points to reach 23.0 %. There were 15 regions across the EU where the youth unemployment rate rose by 10.0 percentage points or more (see **Map 4.8**). The highest increase was recorded in the Greek region of the Peloponnisos where the rate rose by 23.4 percentage points and there were five additional regions in Greece where the youth unemployment rate increased by upwards of 10.0 percentage points, including the capital region of Attiki. The remaining nine regions where the youth unemployment rate increased by upwards of 10.0 percentage points were distributed across southern Europe, with three regions each from Spain, Italy and Portugal, among which the Portuguese capital region of Lisboa.

**Map 4.8:** Change in youth unemployment rate, persons aged 15–24, by NUTS 2 regions, 2011–12 (1)
(percentage points difference between 2012 and 2011)




(1) Data for several regions have low reliability (too numerous to document).
*Source:* Eurostat (online data code: lfst_r_lfu3rt)

### … although some regions in the United Kingdom, France, Romania, Germany and Poland saw their rates decline

There was a reduction in the youth unemployment rate in 2012 in 78 of the 249 NUTS 2 regions for which data are available. Approximately one third of these regions — 25 regions — recorded a reduction that was in excess of 2.5 percentage points. Eight of these 25 regions were from the United Kingdom (including the region with the biggest reduction, Cumbria, where the youth unemployment rate fell by 7.8 percentage points). There were three regions each from France and Romania where the reduction was also in excess of 2.5 percentage points, two regions each from Germany and Poland, and a single region from each of Belgium, the Czech Republic, Greece, Spain, Lithuania, (a single region at this level of detail), Finland and Sweden.

In the previous section on employment rates, **Figure 4.1** presented data on the labour market structure of the youth population, comparing data for 2008 and 2012. The proportion of young persons in the EU-28 who were unemployed rose from 6.9 % to 9.7 % over this period; note this indicator is not the same as the unemployment rate as the denominator reflects the whole sub-population of persons aged 15–24 and not just those in the labour force — in other words in employment or unemployed — as used for the unemployment rate.

The largest increases in the proportion of the youth population that were unemployed were recorded in those EU Member States that were most affected by the financial and economic crisis, with the relative weight of the unemployed increasing in Greece and Spain by 9.5 and 8.9 percentage points. Portugal, Cyprus, Latvia, Ireland and Croatia were the only other EU Member States to record increases of at least 5.0 percentage points. Germany (-1.4 percentage points) and Luxembourg (-0.1 percentage points) were the only EU Member States where the proportion of 15–24 years olds who were unemployed fell between 2008 and 2012.

## Long-term unemployment

Aside from youth unemployment, another major concern of policymakers is long-term (structural) unemployment, in other words, those who remain unemployed for 12 months or more. This is because the longer people remain unemployed, the less attractive they become for employees and, consequently, the higher their risk of remaining even longer outside of employment. In 2012, the long-term unemployment rate (for persons aged 15–74) was 4.7 % in the EU-28; long-term unemployment rates were identical for men and women.

Looking at developments over the previous decade, the EU-28 long-term unemployment rate followed closely the pattern observed for the overall unemployment rate, as it fell to a low of 2.6 % in 2008, before rising after the onset of the financial and economic crisis, increasing each year through to 2012.

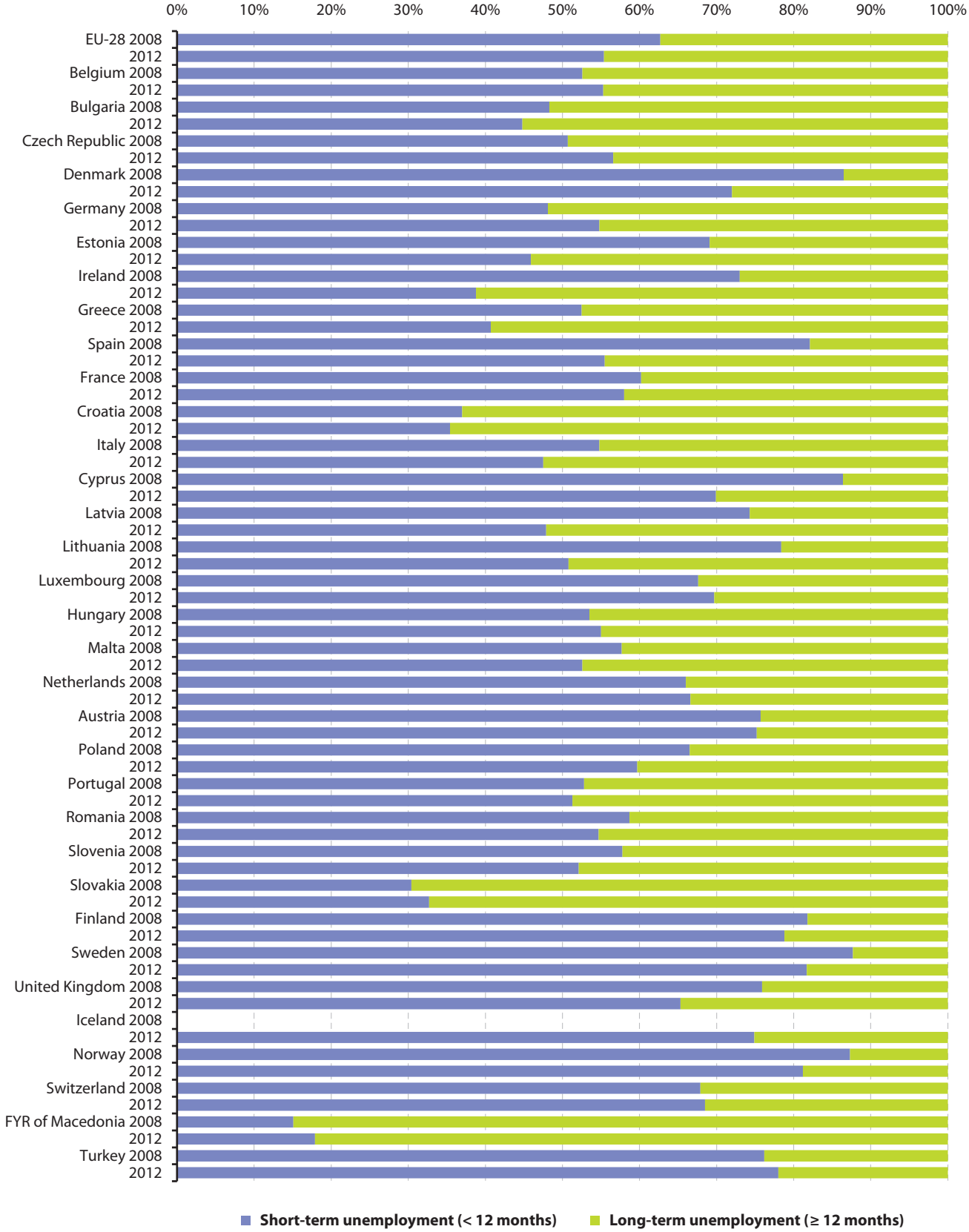
### Highest incidence of long-term unemployment in those EU Member States most affected by the crisis

Among the EU Member States, the highest long-term unemployment rates in 2012 were recorded in those economies most affected by the crisis, namely, Greece (14.4 %) and Spain (11.1 %), while double-digit long-term unemployment rates were also recorded in Croatia (10.3 %). By contrast, rates of less than 3.0 % were recorded in 2012 for Denmark, Germany, Luxembourg, the Netherlands, Austria, Finland, Sweden and the United Kingdom; this was also the case in the EFTA countries of Iceland, Norway and Switzerland.

Long-term unemployed as a share of total unemployment was particularly low in Sweden (18.3 %), Finland (21.2 %), Austria (24.8 %) and Denmark (28.0 %) in 2012. These were the only EU Member States where the long-term unemployed accounted for less than 30.0 % of the total number of persons unemployed; this was also the case in Norway (18.8 %), Turkey (22.0 %) and Iceland (25.1 %). By contrast, slightly more than two out of every three (67.3 %) unemployed persons in Slovakia in 2012 had been unemployed for at least a year, while this share was also above 60.0 % in Croatia and Ireland. In the former Yugoslav Republic of Macedonia in 2012, more than four out of every five (82.1 %) unemployed persons had been unemployed for more than a year.

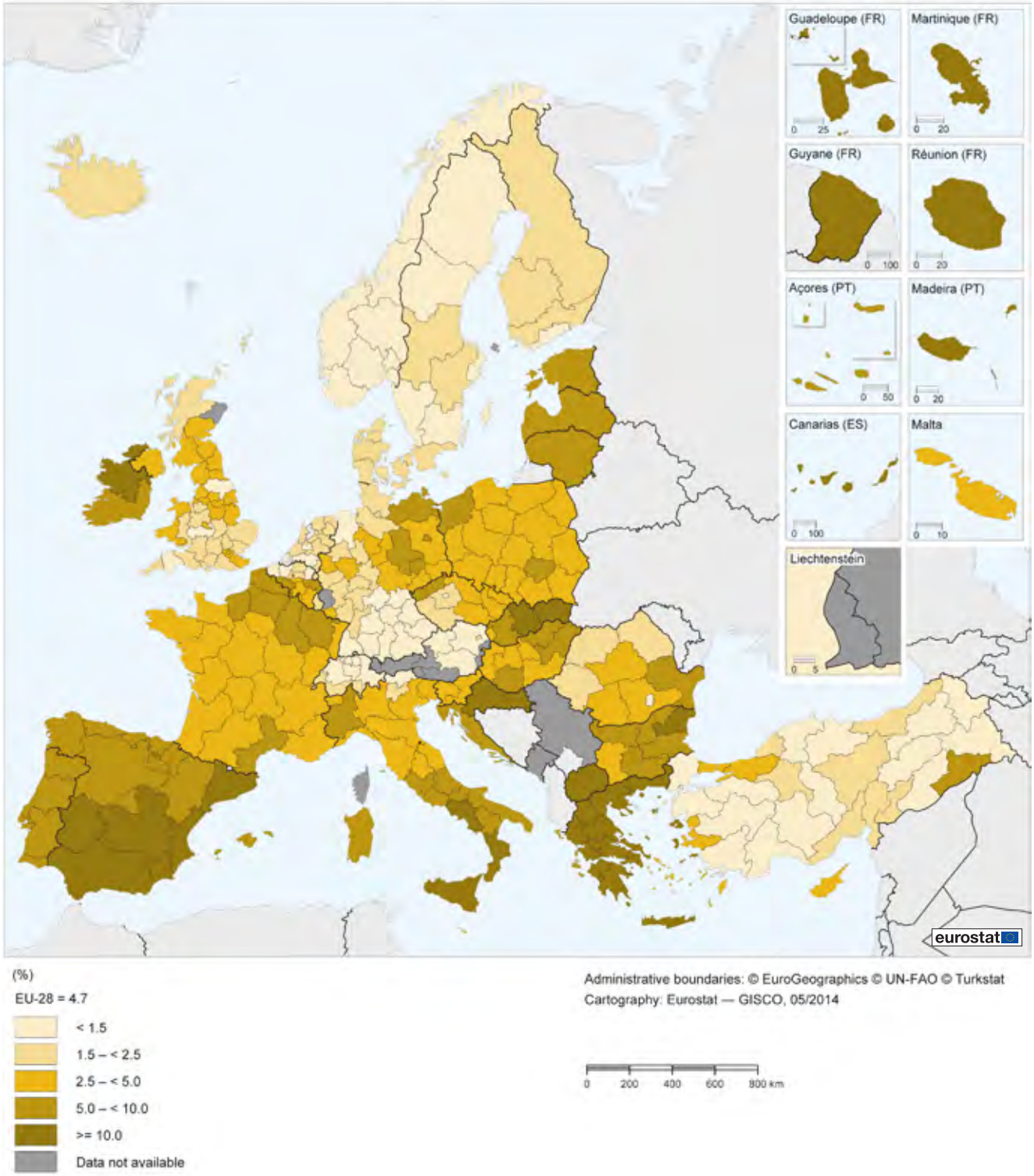
**Figure 4.3** presents information relating to the duration of unemployment: in the EU-28 the share of the unemployed who remained without a job for at least one year rose from 37.3 % to 44.6 % between 2008 and 2012. In Bulgaria, Estonia, Ireland, Greece, Croatia, Italy, Latvia and Slovakia, more than half of those without a job in 2012 had been unemployed for at least a year. While long-term unemployment appeared to be of a structural nature in

**Figure 4.3:** Change in the share of the population unemployed, by duration of unemployment, persons aged 15–74, 2008 and 2012 (1)
(% of the unemployed population aged 15–74)




(1) Excluding those whose period of unemployment had not yet started and non-response. Lithuania 2008 and Iceland 2012: low reliability. Iceland: 2008 not available.
*Source:* Eurostat (online data code: lfst_r_lfu2ltu)

**Map 4.9:** Long-term unemployment rate (unemployed ≥ 12 months), persons aged 15–74, by NUTS 2 regions, 2012 (1)
(%)




(1) Highlands and Islands (UKM6): 2011. Data for several regions have low reliability (too numerous to document).
*Source:* Eurostat (online data code: lfst_r_lfu2ltu)

several of these economies, the relative weight of the long-term unemployed rose dramatically between 2008 and 2012 in Ireland and Latvia, as well as in Lithuania and Spain.

There were seven EU Member States where the relative weight of the long-term unemployed declined between 2008 and 2012. The most notable reductions were recorded in the Czech Republic and Germany, where the share of the long-term unemployed in overall unemployment fell by 5.9 and 6.7 percentage points respectively; the three Benelux countries, Hungary and Slovakia were the other five Member States where reductions could be observed.

### *Long-term unemployment was most prevalent in remote regions and those most affected by the crisis*

Those NUTS 2 regions with the highest long-term unemployment rates are shown in **Map 4.9** with the darkest shade; there were 33 regions that reported rates of 10.0 % or more in 2012. Among these, the highest rates were recorded in the outlying regions of France (four overseas regions) and Spain (the two autonomous cities), followed by 11 of the 13 Greek regions, seven additional Spanish regions, three southern Italian regions, two regions in Slovakia, and a single region from each of Bulgaria, Ireland, Croatia and Portugal. The Greek region of Attiki recorded the highest long-term unemployment rate among capital regions (15.1 %), followed by the Croatian capital region of Kontinentalna Hrvatska (10.7 %) and then the Belgian capital of Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest (9.6 %).

### *Very low long-term unemployment rates in Germany, Austria and Sweden*

There were 32 NUTS 2 regions across the EU-28 that recorded long-term unemployment rates that were less than 1.5 % in 2012; they were spread across 10 different EU Member States, with just over one third of these regions located in Germany (11 regions). The remaining regions with very low long-term unemployment rates were situated in Sweden (five regions, including the capital region), northern Belgium, the Netherlands, Austria and the United Kingdom (three regions each), the capital regions of the Czech Republic, Romania and Finland, and the northern Italian region of Provincia Autonoma di Bolzano/Bozen. There were five regions that recorded long-term unemployment rates of less than 1.0 %, Freiburg, Tübingen and Oberbayern in southern Germany and Steiermark and Oberösterreich in Austria; the latter recorded the lowest long-term unemployment rate in the EU, at 0.5 %.

Each of the 32 regions where the long-term unemployment rate was less than 1.5 % had a relatively low total unemployment rate in 2012. The highest total unemployment rate was recorded in the Swedish region of Mellersta Norrland (8.4 %), which was 2.1 percentage points less than the EU-28 average. Each of the Swedish regions with very low long-term unemployment rates and the capital regions of Finland and Romania reported total unemployment rates above 6.0 %. As such, the long-term unemployed accounted for a relatively small share of the total number of unemployed persons in these regions (generally 15–20 %). By contrast, total unemployment rates in the German regions with very low long-term unemployment rates were consistently below 4.5 %. As such, the long-term unemployed generally accounted for around one third of the total number of unemployed persons in these regions.

# Data sources and availability

The regional results in this chapter pertain to annual averages derived from the quarterly labour force survey (LFS). The survey population covers persons aged 15 and over, living in private households (persons living in collective households, such as residential homes, boarding houses, hospitals, religious institutions and workers' hostels, are therefore excluded).

The population comprises all persons living in households surveyed during the reference week and includes persons who are absent for short periods due, for example, to studies, holidays, illness or business trips (but who have maintained a link with the household); persons on compulsory military service are excluded. The survey follows the definitions and recommendations of the International Labour Organisation (ILO). To achieve further harmonisation, EU Member States also adhere to common principles when formulating their questionnaires.

Employment statistics can be used for a number of different analyses, including macroeconomic (in other words, labour as a production factor), productivity or competitiveness studies. They can also be used to study a range of social and behavioural aspects related to an individual's employment situation, such as youth employment, the social integration of minorities, or employment as a source of household income.

The unemployment rate is an important indicator with both social and economic dimensions. Rising unemployment levels result in: a loss of income for affected individuals; increased pressure with respect to government spending on social benefits; and a reduction in tax revenue. From an economic perspective, unemployment may be viewed as unused labour capacity.

## Indicator definitions

The economically active population, also called the labour force, is defined as the sum of the employed population and the unemployed population.

Employed persons are those aged 15 years and over who during the reference week performed work, even for just one hour, for pay, profit or family gain or were not at work but had a job or business from which they were temporarily absent, for example, due to illness, holidays, industrial dispute or education and training. The following exceptions apply to the age range used: in Spain, Sweden (1995–2001) and the United Kingdom the data cover those aged 16 and over; in Denmark, Estonia, Finland, Hungary, Latvia and Sweden (from 2001 onwards) the data cover those aged 15–74; and in Iceland and Norway they cover those aged 16–74.

The employment rate represents employed persons as a percentage of the population. Note that in this publication the focus for employment is on those aged 20–64 (a Europe 2020 target). As such, the employment rate is defined as the number of employed persons aged 20–64 as a percentage of the total population aged 20–64. The old-age employment rate represents employed persons aged 55–64 as a percentage of the total population aged 55–64.

The unemployed are persons aged 15–74 who were without work during the reference week, were currently available for work, and were either actively seeking work in the past four weeks or had already found a job to start within the next three months. The following exceptions apply to the age range used: in Spain, Sweden (for the years 1995–2001), the United Kingdom, Iceland and Norway the data cover those aged 16–74. The unemployment rate represents unemployed persons as a percentage of the economically active population. The youth unemployment rate relates to persons aged 15–24.

For more details on the definitions of labour market indicators, see Statistics Explained

For more details on the measurement of youth unemployment, see Statistics Explained

# 5

# Economy

# Introduction

This chapter presents a regional analysis of economic developments within the European Union (EU). It is principally based upon an analysis of gross domestic product (GDP), which is viewed as being one of the leading measures for studying economic development and growth. It also includes information concerning regional labour productivity and the distribution of income.

Economic accounts provide important information for the regional analysis of an economy. These statistics also serve as the basis for the allocation of expenditure under the EU's cohesion policy (see Cohesion policy — alignment with the Europe 2020 strategy within the introductory chapter for more details). Indeed, every region of the EU is covered by cohesion policy: however, most structural funds are directed to NUTS 2 regions where GDP per inhabitant is less than 75 % of the EU-28 average (the allocation of cohesion funds is based on a decision referring to average GDP per inhabitant during the three-year period from 2007 to 2009).

## Measuring economic development

Economic development is commonly expressed in terms of GDP, which in the regional context may be used to measure macroeconomic activity and growth, as well as providing the basis for comparisons between regions. GDP is also an important indicator from the policy perspective, as it is crucial in determining the extent to which each EU Member State should contribute to the EU's budget and three-year averages of GDP are used to decide which regions should be eligible to receive support from the EU's structural funds.

GDP per inhabitant is often regarded as a proxy indicator for overall living standards. However, as a single source of information it should not be relied upon to inform policy debates, as GDP does not take account of externalities such as environmental sustainability or social inclusion, which are increasingly considered as important drivers for the quality of life.

A number of international initiatives have focused on this issue and in August 2009, the European Commission adopted a communication titled GDP and beyond: measuring progress in a changing world (COM(2009) 433 final), which outlined a range of actions to improve and complement GDP measures. This noted that there was a clear case for complementing GDP with statistics covering other economic, social and environmental issues, on which individuals' well-being critically depends. Recent developments on these complementary indicators are detailed in a staff working paper called Progress on 'GDP and beyond' actions (SWD(2013) 303 final), in which public interest in broader measures of GDP is confirmed, including at regional and local levels.

## Economic policies

As noted in the introductory chapter, the EU's regional policy is designed to foster solidarity and cohesion, such that each region may achieve its full potential, improving competitiveness and employment, and bringing living standards in 'poorer' regions up to the EU average as quickly as possible.

Regional inequalities can be due to many factors, including: geographic remoteness or sparse population, social and economic change, or the legacy of former economic systems. These inequalities may manifest themselves, among others, in the form of social deprivation, poor-quality healthcare or education, higher levels of unemployment, or inadequate infrastructure.

The EU's regional policy aims to support the broader Europe 2020 agenda of promoting sustainable growth and job creation. Indeed, regional funding is investing in all EU regions, in line with the Europe 2020 goals. There is a strong focus on support for a variety of initiatives that are designed to boost economic performance, for example: innovation and research, sustainable development, and creating a friendly environment for small businesses to start-up.

More than one third of the EU's budget is devoted to cohesion policy, which aims to remove economic, social and territorial disparities across the EU, for example, by helping restructure declining industrial areas or diversify rural areas. In doing so, EU regional policy seeks to make regions more competitive, fostering economic growth and creating new jobs. The EU's regional policy is an investment policy supporting job creation, competitiveness, economic growth, improved quality of life and sustainable development. These investments support the delivery of the Europe 2020 strategy, while regional policy is also the expression of the EU's solidarity with less-developed countries and regions, as funds are concentrated on countries, regions and economic sectors where they can make the most difference.

For the period 2014–20, the EU's cohesion policy has been refocused with the objective of having maximum impact on growth and jobs. During the period 2014–20, the EU will invest a total of EUR 351 billion on Europe's regions. Investment will continue across all regions, but policy reforms have been adopted changing the levels of support according to newly-defined regional classifications:

- less developed regions (GDP < 75 % of the EU-27 average);
- transition regions (GDP 75 % – 90 % of the EU-27 average); and,
- more developed regions (GDP > 90 % of EU-27 average).

The EU's regional policy seeks to help every region achieve its full potential, through improving competitiveness and raising the living standards of the poorest regions towards the EU average (convergence). Regional economic policy seeks to stimulate investment in the regions by improving

accessibility, providing quality services and preserving the environment, thereby encouraging innovation and entrepreneurship and the creation of jobs, while overcoming inequalities that may be manifest in social deprivation, poor housing, education and healthcare, higher unemployment or inadequate infrastructure provisions.

# Main statistical findings

Up until the onset of the financial and economic crisis, the economic differences between European regions were being reduced, as 'poorer' regions generally moved closer to 'richer' regions through a process of convergence. However, the financial and economic crisis had a widespread effect on many regions, and the post-crisis period shows evidence of growing disparities, especially in some areas most severely affected by the crisis.

The statistics presented in this chapter for regional economic accounts are generally shown at the NUTS 2 level for the period up to 2011; information is provided at the more detailed NUTS 3 level for GDP per inhabitant. Data for Switzerland are only available at a national level, while statistics for the four French overseas regions are estimated.

## Regional GDP per inhabitant

GDP is a measure of total economic activity, be that of a region, a country or a group of countries; it is widely used to analyse economic performance and cycles (such as recessions, recoveries and booms). GDP is initially calculated in national currencies, and then converted by purchasing power parities (PPPs) which take account of different price levels between EU Member States, allowing for a more meaningful comparison. By using PPPs (rather than market exchange rates) these indicators are converted into an artificial common currency called a purchasing power standard (PPS). The use of a PPS makes it possible to compare purchasing power across the regions of EU Member States that use different currencies and where price levels are different. For more information about the use of PPPs please refer to the data sources and availability section below.

Average GDP per inhabitant fails to provide any indication as to the distribution of wealth between different population groups in the same region, nor does it measure the income ultimately available to private households in a region, as commuter flows may result in employees contributing to the GDP of one region (where they work), and to household income in another region (where they live).

### MEASURING WEALTH AND INCOME BY PLACE OF RESIDENCE OR PLACE OF WORK?

A regional comparison of the level of economic activity can be made by comparing regional GDP with the population of the region in question; this is where the distinction between place of work and place of residence becomes significant. GDP measures economic activity within national or regional boundaries, regardless of whether this was attributable to residents or non-residents. As a result, regional GDP per inhabitant is based upon a numerator that reflects the place of work (the GDP produced in the region) which is divided by a denominator whose value reflects the place of residence (the population living in the same region).

This drawback is particularly relevant when there are significant net commuter flows into or out of a region. Areas that are characterised by a considerable number of inflowing commuters often display regional GDP per inhabitant that is extremely high (when compared with surrounding regions). This is particularly the case for economic centres such as the regions of London (United Kingdom), Wien (Austria), Hamburg (Germany), Praha (Czech Republic) or Luxembourg. Because of this anomaly, high levels of GDP per inhabitant that are recorded for some regions with net commuter inflows do not necessarily translate into correspondingly high levels of income for the people living in the same region.

As such, it is sometimes of more interest to analyse measures which focus on the distribution of household income, in other words, to use a residential approach to study the distribution of wealth. As with the data for GDP per inhabitant, the values shown for income per inhabitant have been adjusted to reflect price level differences between countries; these statistics are presented using the purchasing power consumption standard (PPCS), an artificial currency unit obtained by converting the income of private households using purchasing power standards for final consumption expenditure. Note however, that these figures only present a restricted view of the welfare of a region, insofar as no measure is made of public goods and services that may be free at point of use, or may be part-funded by local or national administrations.

GDP in the EU-28 was valued at EUR 12 712 billion in 2011, which equated to an average level of 25 100 PPS per inhabitant. **Map 5.1** shows GDP per inhabitant in each NUTS 2 region as a percentage of the EU-28 average (EU-28 = 100), with values above this level portrayed as relatively 'rich' regions and those below as relatively 'poor'.

### *GDP per inhabitant was more than 11 times as high in Inner London as it was in the Nord-Est region of Romania in 2011*

Among the NUTS 2 regions in 2011, GDP per inhabitant in PPS terms ranged from a high of 321 % of the EU-28 average in Inner London down to 29 % in the Nord-Est region of Romania. The GDP per inhabitant of Inner London was therefore slightly more than 11 times as high as in the Nord-Est region of Romania (having taken account of differences in price levels). As noted above, care should be taken in interpreting these figures, as GDP per inhabitant can be influenced by commuter flows and in regions such as Inner London, inflows of commuters push up the level of economic activity well beyond that which the resident population could attain.

SPOTLIGHT ON THE REGIONS: LUXEMBOURG (LU00), LUXEMBOURG

**Luxembourg city, Luxembourg**

The capital region of Luxembourg is a single NUTS 2 region. It had one of the highest levels of GDP per inhabitant, some 266 % of the EU-28 average in 2011. This figure should be viewed with care, as although Luxembourg is generally considered as being one of the richest countries in the world (per inhabitant) much of its labour input is provided by commuters from the surrounding countries of Belgium, Germany and France. As such, some of the wealth generated in Luxembourg is repatriated to these countries, where commuters are likely to spend a proportion of their disposable income.

*Photo: Marcin Szala*

### *Among the 10 NUTS 2 regions that recorded the highest levels of GDP per inhabitant there were seven capital regions*

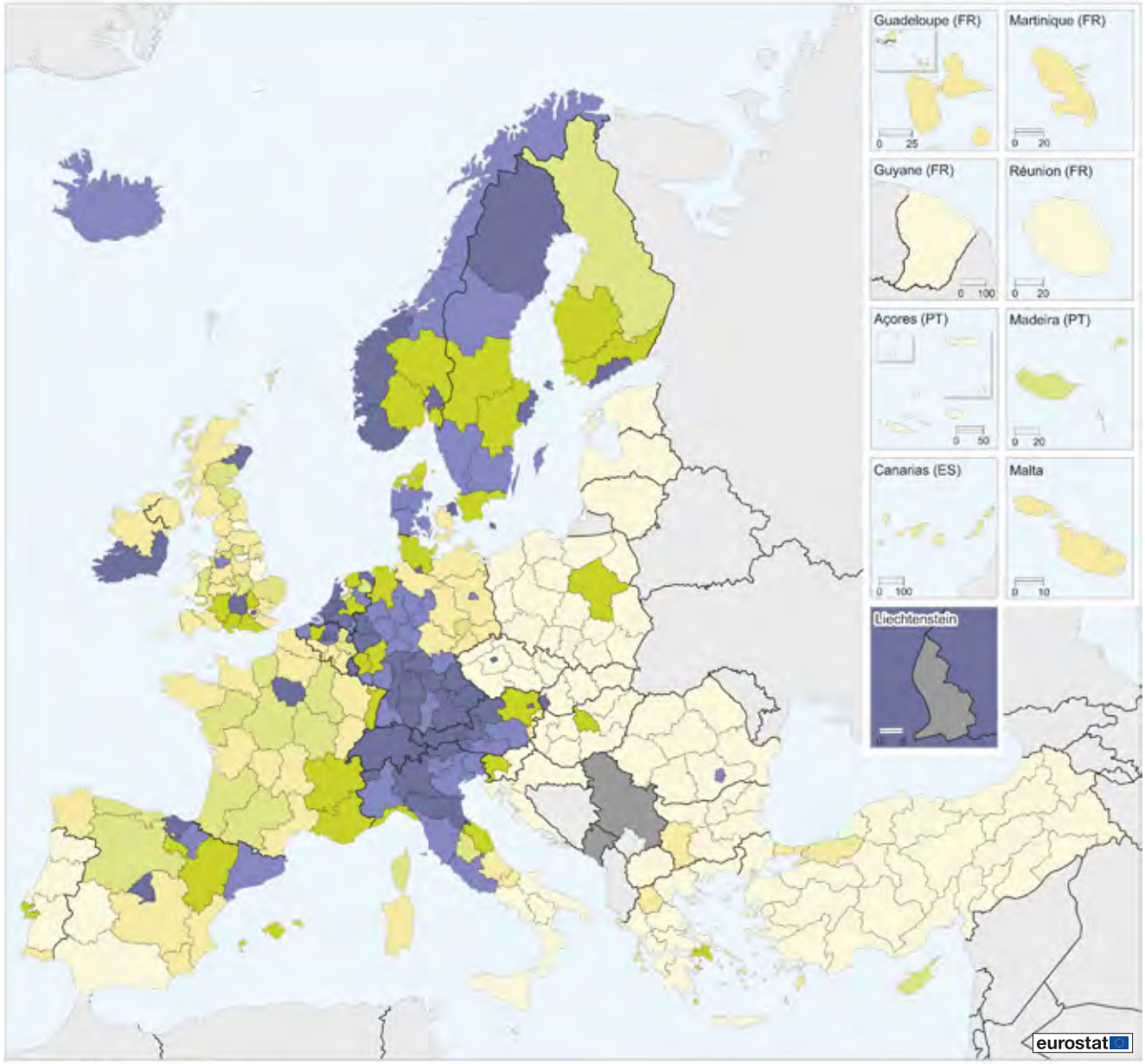
The 10 regions in the EU-28 with the highest levels of GDP per inhabitant included seven capital regions: aside from Inner London, these were Luxembourg (a single region at this level of analysis), and the capital regions of Belgium, Slovakia, France, Sweden and the Czech Republic. Each of these regions is likely to report a level of GDP per inhabitant augmented as a result of net commuter inflows, with for example, headquarters of large enterprises and financial services often clustered in capital regions. Two of the three remaining regions in the top 10 were also characterised as largely urban areas: Hamburg and Oberbayern (which includes the city of Munich) in Germany, while the third was Groningen (a relatively small, university city in north-east of the Netherlands; this region has two relatively large sea ports, off-shore gas fields, and a specialisation in the production of energy and chemicals).

Many of the regions with relatively high average GDP per inhabitant (as shown by the darkest shade in **Map 5.1**) were capital regions or regions that neighboured capital regions. The remaining regions where GDP per inhabitant was at least 25.00 % above the EU-28 average were often located in a band starting in the Benelux countries, running across Germany, down into western Austria and subsequently on to northern Italy, although there were also a few isolated regions that stood alone with relatively high GDP per inhabitant, such as the País Vasco in northern Spain, the island region of Åland in Finland, Övre Norrland in the far north of Sweden and North Eastern Scotland (in the United Kingdom).

### *Between 2010 and 2011, the Austrian capital region fell out of the top 10*

When compared with the regional ranking of GDP per inhabitant in 2010 the only changes concerned Oberbayern moving into the top 10 and the Austrian capital region of Wien falling out of the top 10 (to 11th place). At the other end of the ranking, the region with the lowest GDP per inhabitant in 2010 had been Severozapaden in Bulgaria; it recorded the second lowest level of GDP per inhabitant in 2011, the lowest place being taken by the Nord-Est region of Romania.

**Map 5.1:** Gross domestic product (GDP) per inhabitant, in purchasing power standard (PPS), by NUTS 2 regions, 2011 (1)
(% of the EU-28 average, EU-28 = 100)



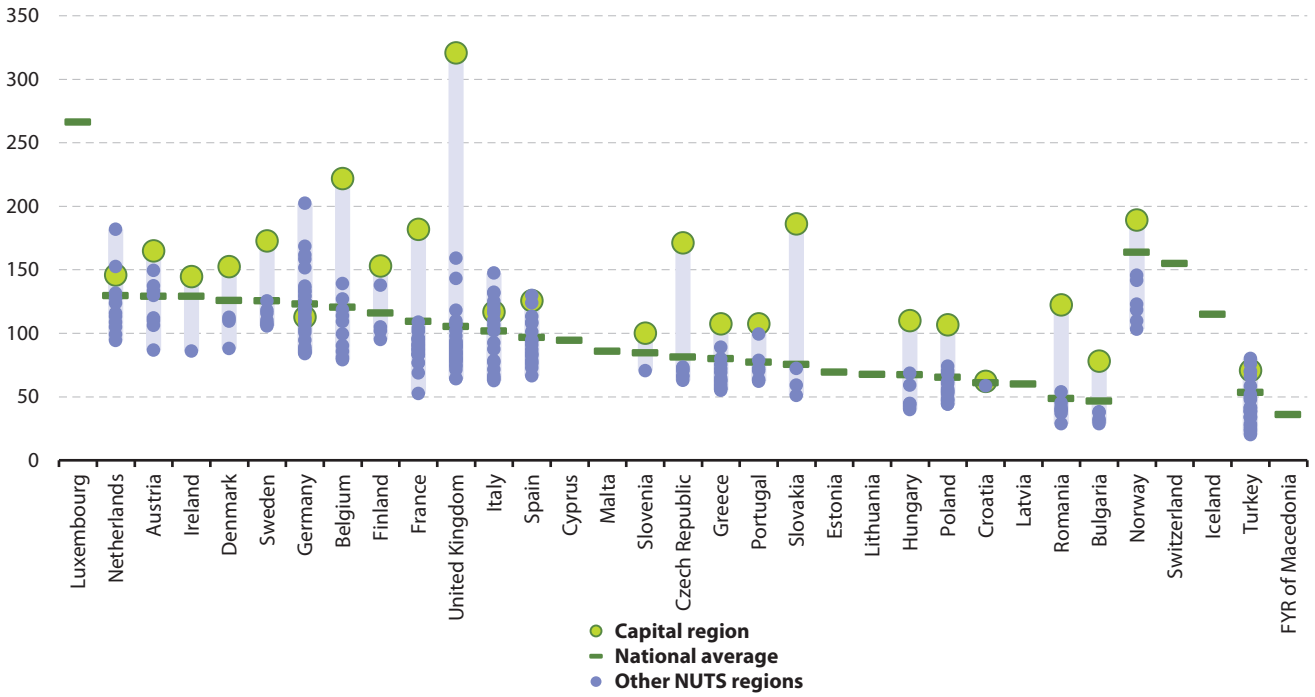

(1) Switzerland: national level. Guadeloupe (FR91), Martinique (FR92), Guyane (FR93) and Réunion (FR94): estimates.
*Source:* Eurostat (online data codes: nama_r_e2gdp and nama_r_e3popgdp)

### *The main beneficiaries of cohesion funds are those regions with average GDP per inhabitant less than 75.00 % of the EU average*

Those regions which benefit most from cohesion funds have an average GDP per inhabitant that is less than 75.00 % of the EU-28 average. There were a total of 76 NUTS 2 regions which fell into this category in 2011; it should be noted that the basis of funding for the 2014–20 programming period has been fixed with respect to average GDP per inhabitant during the three-year period from 2007 to 2009. Among these 76 regions, just over a quarter (20 regions) recorded average GDP per inhabitant which was less than 50.00 % of the EU-28 average in 2011. They were located in eastern Europe, spread across four of the EU Member States, with six regions in Romania, five regions in each of Bulgaria and Poland, and four regions in Hungary.

In the EFTA countries (only national data for Switzerland and no information for Liechtenstein), regional GDP per inhabitant was systematically above the EU-28 average, ranging from 103 % of the EU-28 average in Hedmark og Oppland to 189 % in Oslo og Akershus (both Norway). There were two other Norwegian regions with GDP per inhabitant more than 25.00 % above the EU-28 average (Agder og Rogaland and Vestlandet), while the national average for Swiss GDP per inhabitant was equivalent to 155 % of the EU-28 average. GDP per inhabitant was generally much lower in the candidate countries (no information for Montenegro or for Serbia) at 36 % of the EU-28 average in the former Yugoslav Republic of Macedonia, while in Turkey the range was from a low of 20 % in the south-eastern region of Van, Muş, Bitlis, Hakkari to a high of 80 % in İstanbul.

**Figure 5.1:** Regional disparities in gross domestic product (GDP) per inhabitant, in purchasing power standard (PPS), by NUTS 2 regions, 2011 (1)
(% of the EU-28 average, EU-28 = 100)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Switzerland: national level. Guadeloupe (FR91), Martinique (FR92), Guyane (FR93) and Réunion (FR94): estimates.
*Source:* Eurostat (online data code: nama_r_e2gdp)

### *The German region of Berlin was the only capital region to record a level of GDP per inhabitant below its national average*

**Figure 5.1** presents the distribution of GDP per inhabitant in 2011. It shows that in the majority of the multi-regional EU Member States, capital regions were generally those with the highest average GDP per inhabitant; the only exceptions to this rule were Germany, Spain, Italy and the Netherlands. Of these, Berlin was the only capital region that recorded a level of GDP per inhabitant that was below its national average. In Spain, only the País Vasco had a higher level of average GDP per inhabitant than the Comunidad de Madrid. In Italy, the capital region of Lazio had the seventh highest level of GDP per inhabitant among Italian NUTS 2 regions. In the Netherlands, both Groningen and Utrecht recorded average GDP per inhabitant that was above that recorded for the capital region of Noord-Holland.

By contrast, the capital regions of the Czech Republic, Ireland, Greece, Hungary, Poland, Portugal, Romania, Slovenia and Slovakia were the only regions from these EU Member States where GDP per inhabitant rose above the EU-28 average in 2011; in Bulgaria every region, including the capital region, recorded an average level of GDP per inhabitant that was below the EU-28 average.

### *Sweden was the only multi-regional Member State to report that all of its regions had GDP per inhabitant above EU-28 average*

Sweden was the only multi-regional EU Member State to report that each of its NUTS 2 regions had an average level of GDP per inhabitant that was above the EU-28 average in 2011; the same was true for level 2 regions in Norway. In Denmark, Ireland (where there are only two regions at the NUTS 2 level), Austria and Finland, there was only a single region where average GDP per inhabitant fell below the EU-28 average.

The majority of regions in both France and the United Kingdom recorded average levels of GDP per inhabitant that were below the EU-28 average in 2011, although their national averages were pulled up by the relatively high values in each capital region. For example, the average level of GDP per inhabitant in Inner London was 2.2 times as high as in Berkshire, Buckinghamshire and Oxfordshire (the region with the second highest level of GDP per inhabitant in the United Kingdom). Such differences between capital regions and the region with the second highest level of GDP per inhabitant were even greater (in relative terms) in Slovakia and the Czech Republic, as Bratislavský kraj had an average that was 2.6 times as high as in Západné Slovensko, while that in Praha was 2.3 times as high as in Jihovýchod.

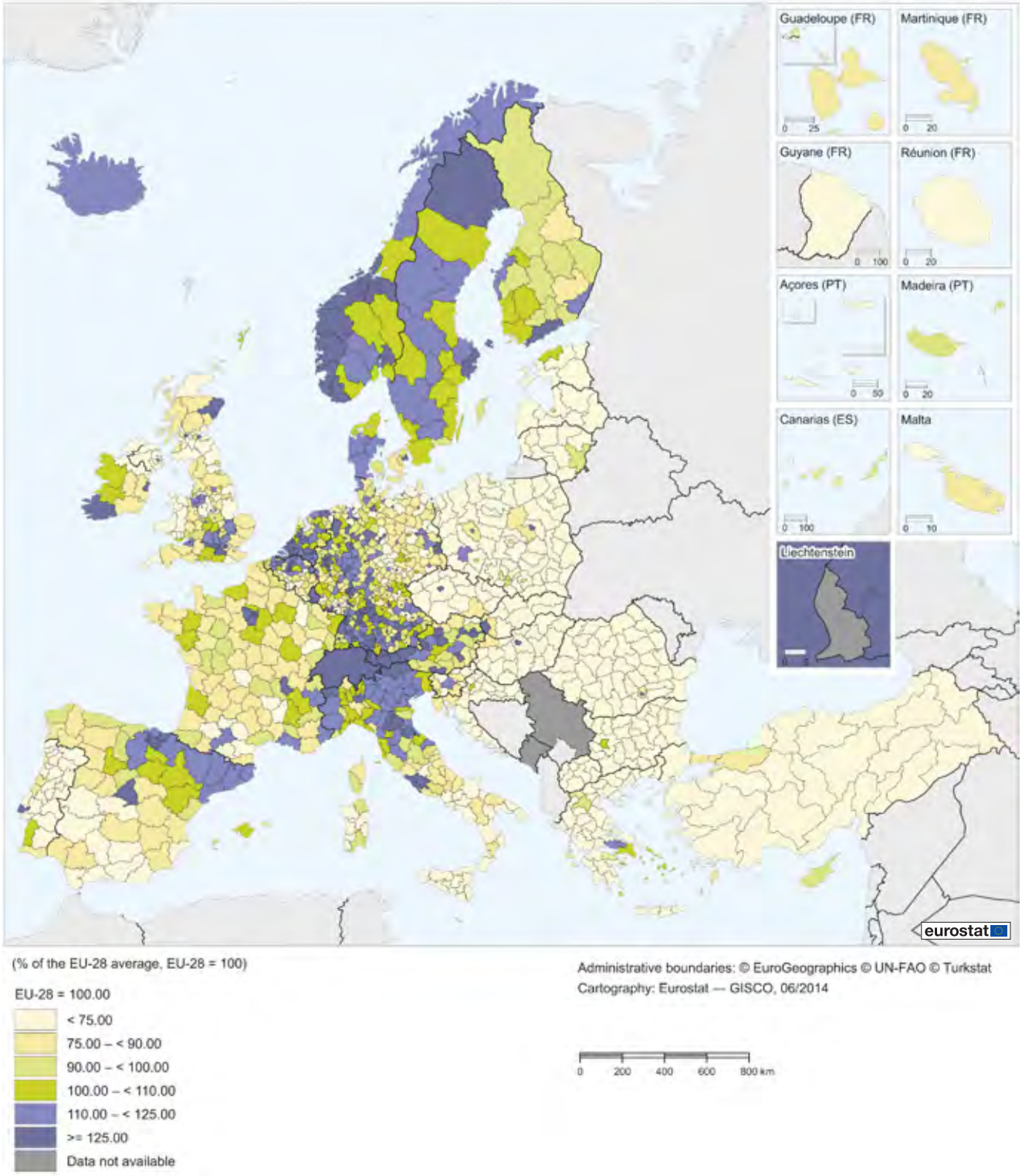
## A more detailed regional analysis: GDP per inhabitant for NUTS 3 regions

### *Wealth of capital regions is even more pronounced at finer level of detail*

**Map 5.2** presents information on GDP per inhabitant for 2011 at the more detailed NUTS 3 level; understandably the overall patterns are similar to those shown for NUTS 2 regions in **Map 5.1**. Nevertheless, there were a number of NUTS 3 regions where GDP per inhabitant displayed an atypical pattern in relation to the higher level (NUTS 2) regions to which they belong. These differences often result from commuting inflows from surrounding areas into central NUTS 3 regions, characterised by a concentration of economic activity in the most built-up areas. For example, in the NUTS 2 Polish capital region of Mazowieckie, the city of Warsaw (Miasto Warszawa, NUTS 3) recorded average GDP per inhabitant (in PPS) that was almost double the EU-28 average, while none of the remaining NUTS 3 regions within this NUTS 2 region registered a level above the EU-28 average.

Across NUTS 3 regions, GDP per inhabitant ranged from 612 % of the EU-28 average in Inner London - West (the United Kingdom) to 21 % of the EU-28 average in Vaslui (Romania); as such, between the two ends of this range there was a factor of nearly 30 to 1 in 2011 (which was slightly higher than a year before in 2010, as GDP per inhabitant rose at a faster pace in Inner London - West).

**Map 5.2:** Gross domestic product (GDP) per inhabitant, in purchasing power standard (PPS), by NUTS 3 regions, 2011 (1)
(% of the EU-28 average, EU-28 = 100)




(1) Turkey: by NUTS 2 regions. Iceland and Switzerland: national level. Guadeloupe (FR91), Martinique (FR92), Guyane (FR93) and Réunion (FR94): estimates.
*Source:* Eurostat (online data codes: nama_r_e3gdp and nama_r_e3popgdp)

### *German regions dominated a ranking of GDP per inhabitant at the NUTS 3 level*

There were 28 NUTS 3 regions which recorded average GDP per inhabitant that was at least double the EU-28 average in 2011. They were headed by Inner London - West (which had an average level of GDP per inhabitant that was 3.5 times as high as Inner London - East), followed by Wolfsburg, Kreisfreie Stadt (home to the headquarters of the Volkswagen group) where average GDP per inhabitant was more than four times as high as the EU-28 average. The 28 regions where GDP per inhabitant was at least double the EU-28 average were principally located in Germany, 21 of the 28 regions, while the list also included the capital regions of Belgium, France, Luxembourg (a single region at this level of analysis), the Netherlands and the United Kingdom, as well as the French region of Hauts-de-Seine (which neighbours Paris) and the Dutch region of Overig Groningen.

At the other extreme, GDP per inhabitant was less than 30 % of the EU-28 average in 24 NUTS 3 regions. Aside from the Nógrád region of northern Hungary, all of these were located in Bulgaria (15 regions) or Romania (8 regions).

## Changes in GDP per inhabitant, 2008–11

During the financial and economic crisis, GDP per inhabitant in the EU-28 dropped from a high of 25 000 PPS in 2008 to 23 500 PPS in 2009 before partially recovering to 24 400 PPS in 2010 and then moving on to a level that was slightly above its pre-crisis peak, with an average of 25 100 PPS in 2011. Those regions that expanded relatively fast, whose GDP per inhabitant increased by more than 5.0 percentage points compared with the EU-28 average, are shown in the darkest shade in **Map 5.3** which shows the extent to which GDP per inhabitant changed between 2008 and 2011 (expressed in relation to the EU-28 average).

### *National economic fortunes appear to play a significant role in determining regional economic performance*

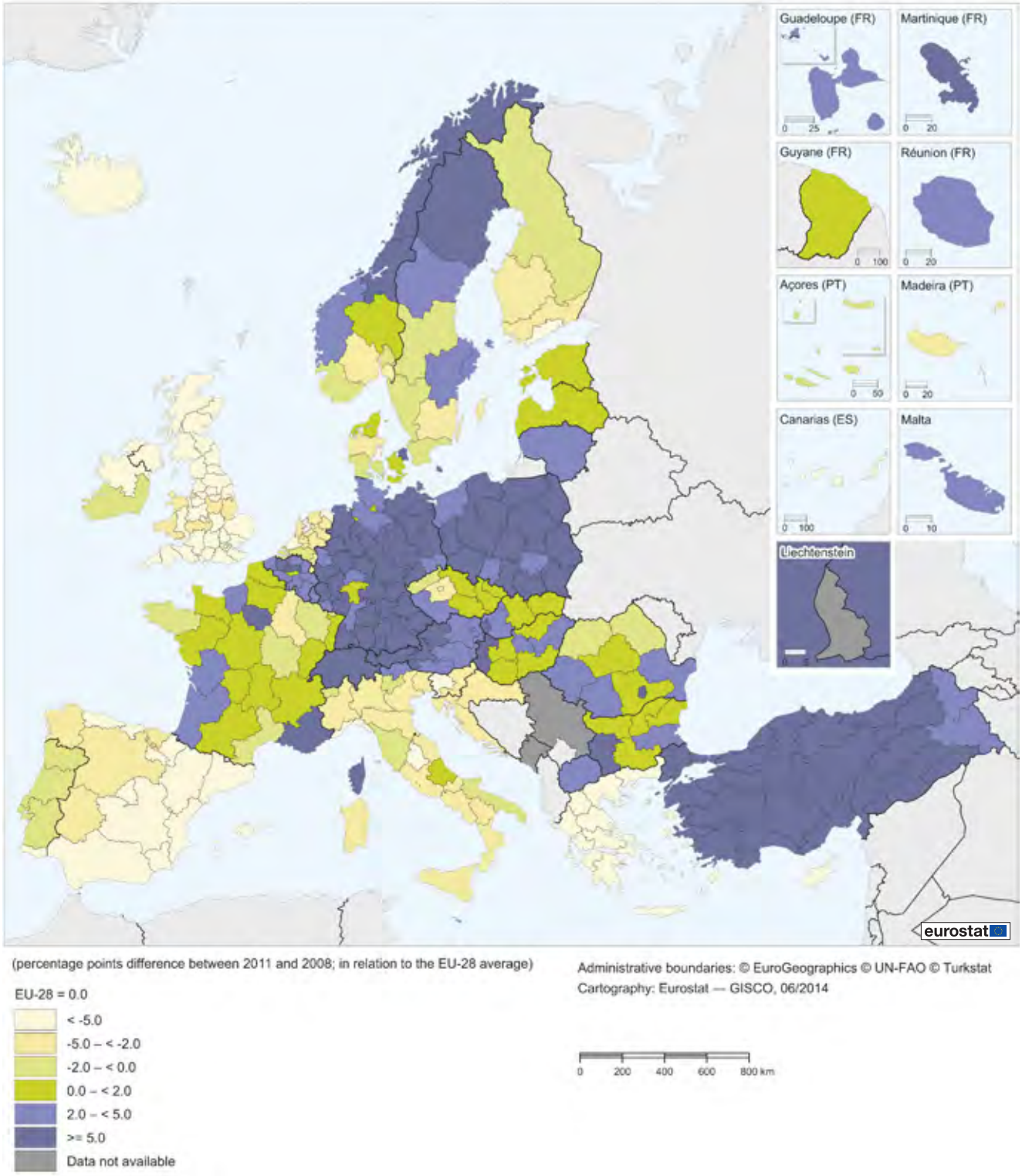
It is interesting to note that despite wide variations in average levels of GDP per inhabitant between the regions of some EU Member States, there was a relatively uniform pattern to changes in economic activity over the period from 2008 to 2011. Among the multi-regional EU Member States, GDP per inhabitant grew at a faster pace than the EU-28 average in every region of Belgium, Bulgaria, Germany, Hungary, Austria, Poland and Slovakia (aside from one region where GDP per inhabitant grew at the same rate as in the EU); the majority of regions in France also saw their GDP per inhabitant rise (when compared with the EU-28 average). By contrast, there were systematic declines in GDP per inhabitant (in relation to the EU-28 average) across each region of Ireland, Greece, Spain, Croatia, the Netherlands, Portugal, Slovenia and the United Kingdom; aside from Abruzzo and the Provincia Autonoma di Bolzano/Bozen each of the Italian regions also recorded a reduction in their level of GDP per inhabitant (relative to the EU-28 average).

### *Fastest regional economic growth in the Slovakian and Polish capitals and south-west Germany*

The highest growth rates for GDP per inhabitant between 2008 and 2011, relative to the EU-28 average, were recorded in the capital regions of Slovakia and Poland, as Bratislavský kraj and Mazowieckie posted increases of 18.9 and 17.3 percentage points. There were nine other regions where GDP per inhabitant grew by at least 10.0 percentage points more than the EU-28 average: eight of these were located in Germany (the majority from the southern region of Bayern), while the remaining region was also from Poland, Dolnośląskie, which lies in the south-west of the country and has Wroclaw as its largest city.

At the other end of the range, a total of 69 regions recorded a fall of at least 5.0 percentage points in their GDP per inhabitant between 2008 and 2011 (relative to the EU-28 average). Among these, there were 20 regions that posted reductions of at least 10.0 percentage points: they were principally situated across Greece (10 regions) and the United Kingdom (8 regions), although there were also sizeable contractions in activity in the Illes Balears (Spain) and Groningen (the Netherlands).

**Map 5.3:** Change of gross domestic product (GDP) per inhabitant, in purchasing power standard (PPS), by NUTS 2 regions, 2008–11 (1)
(percentage points difference between 2011 and 2008; in relation to the EU-28 average)




(1) Turkey: 2009–11. Switzerland: national level. Guadeloupe (FR91), Martinique (FR92), Guyane (FR93) and Réunion (FR94): estimates.
*Source:* Eurostat (online data code: nama_r_e2gdp)

## Labour productivity

Within regional accounts, labour productivity is defined as gross value added in euros at basic prices per person employed; **Map 5.4** presents this indicator for NUTS 2 regions in 2011 with the results shown in relation to the EU-28 average. If there are significant flows of commuters between regions, it is likely that those regions characterised as having net inflows of commuters will display lower levels of gross value added per person employed than their corresponding ratios for GDP per inhabitant — in other words, the gap between regions is likely to be narrowed when analysing labour productivity. Regional labour productivity measures would ideally take account of the total number of hours worked (rather than a simple count of persons employed), however, this measure is currently incomplete for a number of EU Member States.

### *Financial hubs record some of the highest labour productivity*

The highest level of gross value added per person employed in 2011 was recorded in Inner London (the same region that had the highest level of GDP per inhabitant). Relatively high levels of labour productivity may be linked to the efficient use of labour (without using more inputs), or may result from the mix of activities that make-up a particular economy (as some activities have higher levels of productivity than others). For example, the financial services sector plays a particularly important role in the economy of London and this activity is characterised as having particularly high levels of productivity. Luxembourg (one region at this level of analysis) and Southern and Eastern Ireland (which includes Dublin) — both of which specialise in financial services — were also present among the top 10 regions for labour productivity. The remainder of the top 10 was constituted by four Dutch regions (which included the capital region of Noord-Holland and the most competitive region in the EU — Utrecht — alongside Groningen and Zeeland), as well as the capital regions of Île de France, Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest and Stockholm.

### *Labour productivity lower in those Member States that joined the EU in 2004 or later*

There was not a single region from the Member States that joined the EU in 2004 or later that had a level of gross value added per person employed above the EU-28 average. Cyprus (one region at this level of analysis) and the two capital regions of Bratislavský kraj and Praha recorded the highest levels of gross value added per person employed among the NUTS 2 regions from these 13 Member States, at approximately 80 % of the EU-28 average in 2011.

There were 45 NUTS 2 regions where gross value added per person employed was less than half the EU-28 average in 2011. These were principally spread across eastern and northern Europe, with the exception of the Centro region of Portugal. Every Bulgarian and Hungarian region, the three Baltic Member States (each a single region at this level of analysis), all Polish and Romanian regions except for the capital regions of Mazowieckie and Bucureşti - Ilfov, four regions from the Czech Republic and two regions from Slovakia recorded labour productivity that was less than 50 % of the EU-28 average (as shown by the lightest shade in **Map 5.4**).

## Primary household income

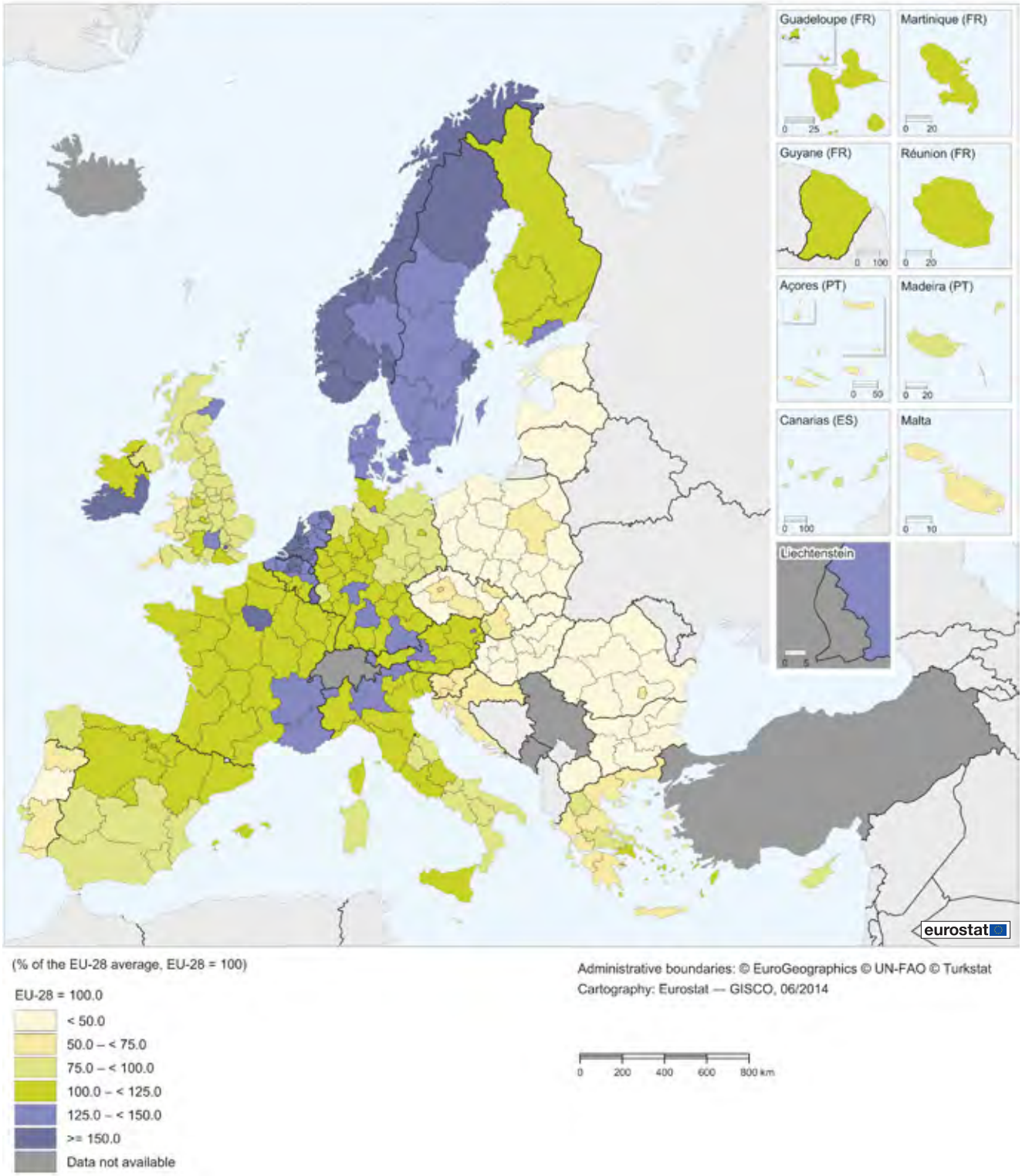
In recent years there has been growing discussion over the quality of life in Europe, with many people of the opinion that their overall standard of living has deteriorated since the onset of the financial and economic crisis, in particular as a result of falling real wages, increased unemployment, additional burdens of taxes or social charges, lower levels of benefits, or rapidly rising prices (for example, for energy-related products).

**Map 5.5** provides an overview of primary income per inhabitant in NUTS 2 regions for 26 of the EU Member States; there are no data available for Croatia or Malta. In 2011, primary income ranged from a high of 32 600 PPCS per inhabitant in Inner London (the United Kingdom) down to 3 200 PPCS in the Nord-Est region of Romania, a factor of 10.2 to 1; as such, the highest and lowest values were recorded in the same regions that reported the highest and lowest levels of GDP per inhabitant.

### *High levels of primary income in southern Germany and more generally in and around capital cities*

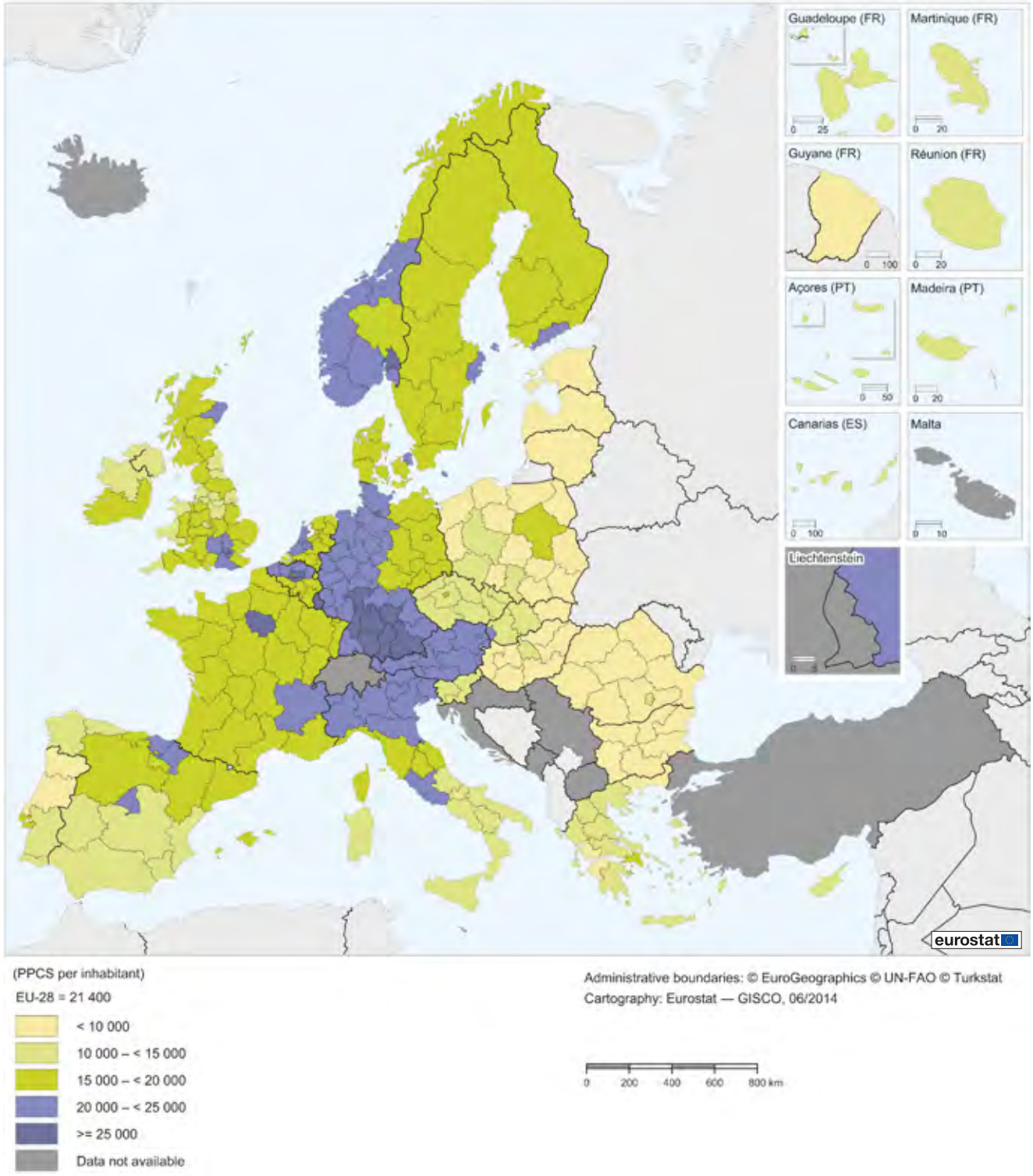
There were 13 regions which recorded primary income per inhabitant that was at least 25 000 PPCS in 2011. The majority (eight) of these 13 regions were located in Germany, including the second highest figure which was recorded in Oberbayern (the only other region to report primary income per inhabitant above 30 000 PPCS). The seven other German regions were principally located in the south of the country, with the exception of Hamburg. Aside from Inner London, the four remaining non-German regions to record primary income per inhabitant of at least 25 000 PPCS were the two regions which surround the Belgian capital (Prov. Vlaams-Brabant and Prov. Brabant Wallon), and the capital regions of Île de France (which had the third highest level of primary income per inhabitant) and Luxembourg (a single region at this level of detail). As with the information already shown for GDP per inhabitant, one of the most striking features of **Map 5.5** is the relatively high level of primary income per inhabitant that is registered in regions either containing or surrounding capital cities.

**Map 5.4:** Gross value added (GVA) at basic prices, per person employed, by NUTS 2 regions, 2011 (1)
(% of the EU-28 average, EU-28 = 100)




(1) Norway and the former Yugoslav Republic of Macedonia: 2010. Switzerland: national level. Guadeloupe (FR91), Martinique (FR92), Guyane (FR93) and Réunion (FR94): estimates.
*Source:* Eurostat (online data codes: nama_r_e3vab95r2, nama_gdp_c, nama_r_e3em95r2 and nama_r_e2em95hr2)

**Map 5.5:** Primary income of private households, in purchasing power consumption standard (PPCS), by NUTS 2 regions, 2011 (1)
(PPCS per inhabitant)




(1) Guadeloupe (FR91), Martinique (FR92), Guyane (FR93), Réunion (FR94) and Cyprus: 2009. Italy and Norway: forecasts.
*Source:* Eurostat (online data codes: nama_r_ehh2inc and nama_inc_c)

At the other end of the range, there were 40 NUTS 2 regions that reported primary income per inhabitant that was less than 10 000 PPCS (the latest data for the French overseas region of Guyane are for 2009). Bulgarian and Romanian regions accounted for 9 out of the 10 regions with the lowest levels of primary income per inhabitant across the EU in 2011; the other region was Latvia (a single region at this level of analysis). The remaining 30 regions with primary income per inhabitant below 10 000 PPCS included the other two Baltic Member States (also single regions), further regions from Bulgaria and Romania, as well as several regions from Hungary and Poland and a single region from Slovakia. There were also two regions from each of Greece and Portugal, as the effects of the financial and economic crisis lowered incomes in these countries by a considerable amount.

## Disposable income

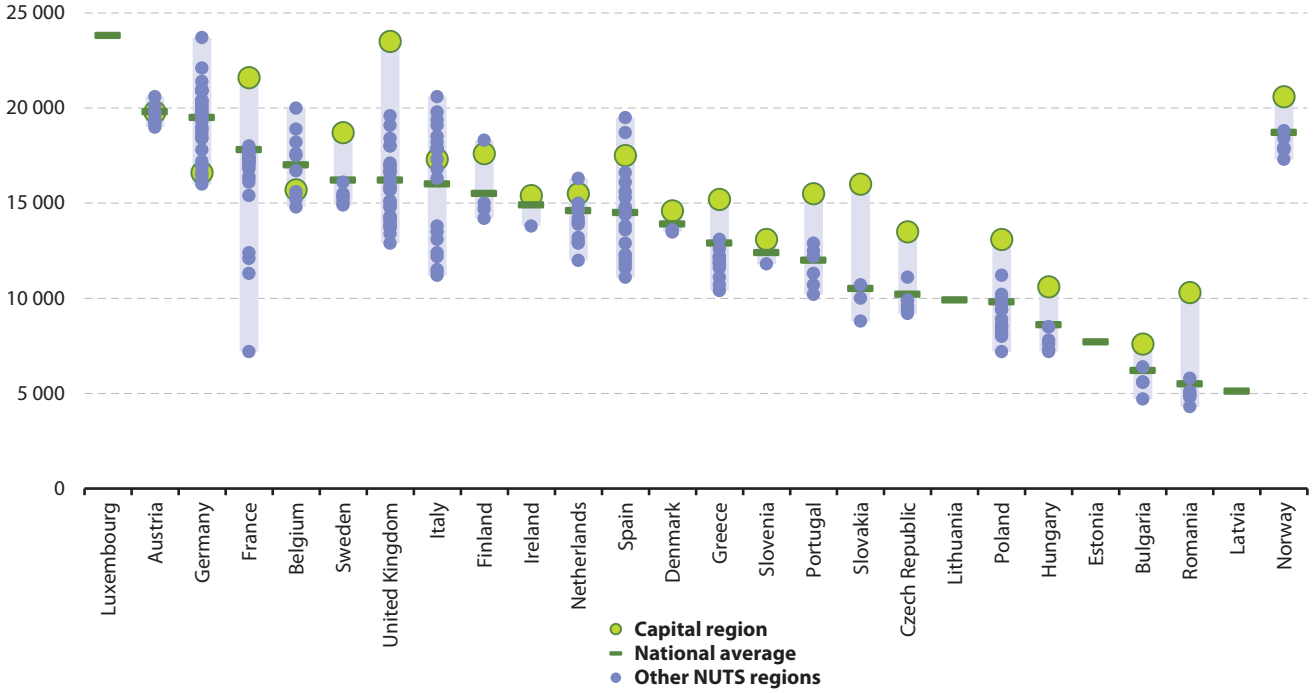
**Figure 5.2** presents information on disposable incomes of private households, in other words, 'in-pocket' income that people can spend or save (once they have paid their taxes and social security contributions and after they have received their social benefits). The highest disposable income per inhabitant in 2011 was recorded in Luxembourg (a single region at this level of analysis), at 23 800 PPCS. This was just above the levels recorded in Oberbayern (Germany) and Inner London (the United Kingdom); these three regions were the only ones across the EU to record disposable income per inhabitant in excess of 23 000 PPCS in 2011.

### *Luxembourg recorded the highest level of disposable income in 2011*

The highest level of disposable income per inhabitant in Luxembourg was 5.5 times as high as that in the Nord-Est region of Romania (4 300 PPCS); as such, when compared with the same ratio for primary income, inequalities were almost halved as the difference between the highest and lowest regions for primary income per inhabitant was a ratio of 10.2 to 1. Indeed, the disposable income per inhabitant of most regions is generally lower than the corresponding figure for primary income per inhabitant as a result of state intervention (redistribution). This is particularly true in regions which are characterised as having some of the highest earners (often capital regions), as tax and social security contributions usually increase as a function of income.

**Figure 5.2** shows that capital regions often accounted for the highest levels of disposable income, although this pattern was less apparent among those EU Member States with the highest levels of disposable income. In Belgium and Germany, disposable income per inhabitant for the capital region was below the national average, while in Austria it was at a similar level to the national average. The capital regions of Spain, Italy, the Netherlands and Finland recorded disposable income per inhabitant that was above their respective national averages, although there was at least one other region in each of these countries which recorded a higher level of disposable income per inhabitant.

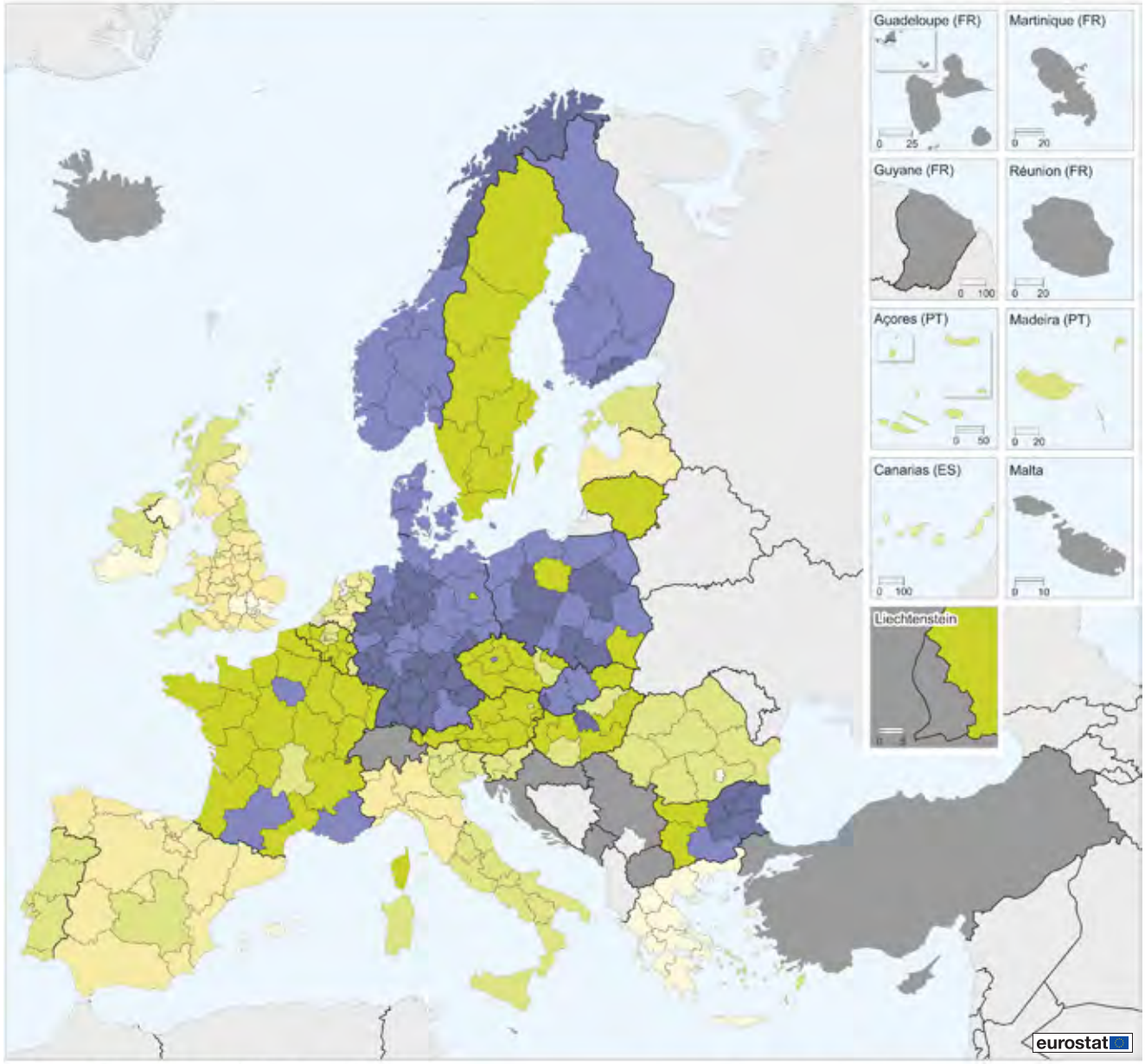
**Figure 5.2:** Disposable income of private households, in purchasing power consumption standard (PPCS), by NUTS 2 regions, 2011 (1)
(PPCS per inhabitant)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Guadeloupe (FR91), Martinique (FR92), Guyane (FR93) and Réunion (FR94): 2009. Italy and Norway: forecasts. Croatia, Cyprus and Malta: not available.

*Source:* Eurostat (online data code: nama_r_ehh2inc)

**Map 5.6:** Change of disposable income of private households, in purchasing power consumption standard (PPCS), by NUTS 2 regions, 2008–11 (1)
(difference between 2011 and 2008 in PPCS per inhabitant)




(1) Italy and Norway: forecasts.
*Source:* Eurostat (online data code: nama_r_ehh2inc)

### *Other than in capital regions, there was a relatively uniform distribution to disposable income across the regions of most EU Member States*

Aside from capital regions, the distribution of disposable income per inhabitant was often within a relatively narrow range across all of the regions from the same EU Member State. This was particularly true in Austria and the Nordic Member States, which displayed quite uniform distributions. By contrast, and again excluding capital regions, the largest variations in disposable income per inhabitant across regions of the same EU Member State were recorded in France and Italy; the former, at least in part, due to relatively low values in its overseas regions and the latter due to a considerable divide in incomes between the north and south of the country.

A comparison between primary income and disposable income shows the levelling influence that state intervention can often play, with the convergence of disposable income per inhabitant between 'rich' and 'poor' regions. For example, in Belgium those inhabitants of the relatively wealthy region of Prov. Vlaams-Brabant in Belgium saw their primary income per inhabitant reduced by PPCS 7 100, while the inhabitants of the Prov. Hainaut (a former industrial heartland that was specialised in coal mining and iron and steel production) saw their primary income reduced, on average, by PPCS 1 900. In a similar manner, there was a transfer of income from the northern regions to southern regions of Italy, and such transfers were also apparent towards predominantly rural areas of central and western Spain, towards former industrial heartlands and remote western regions of the United Kingdom, and towards eastern regions of Germany, Hungary and Poland.

Although most NUTS 2 regions reported that disposable income per inhabitant was lower than primary income per inhabitant, there were 51 regions which benefitted from social benefits and other transfers to such a degree that their disposable income per inhabitant was higher than their primary income. Such a situation occurred in all but one of the 13 Greek regions (Notio Aigaio was the exception), seven regions from the United Kingdom, six from Poland, five each from Bulgaria, Portugal and Romania, four from Hungary, two from Germany, and one each from Ireland, Spain, France, Italy and Slovakia.

### *Highest gains in disposable income were recorded in Germany and Poland*

**Map 5.6** shows the change in disposable income per inhabitant across NUTS 2 regions between 2008 and 2011; note there is no information available for Croatia, Cyprus, Malta and the French overseas regions. The most visible pattern in the map is the relatively high gains made in disposable incomes across Germany and Poland, two of the EU Member States least affected by the financial and economic crisis. The highest increase in disposable income across any of the NUTS 2 regions for which data are available was recorded for the Polish capital region of Mazowieckie.

Aside from German and Polish regions, the only other regions with increases in disposable income of at least PPCS 1 500 per inhabitant between 2008 and 2011 (as shown by the darkest shade) were the Bulgarian region of Yugoiztochen and the capital regions Hungary, Slovakia and Finland.

### *Disposable income fell by more than 1 000 PPCS in all but one Greek region*

There were 29 regions across the EU-28 where disposable income per inhabitant fell by more than 1 000 PPCS between 2008 and 2011 (as shown by the lightest shade on **Map 5.6**). The biggest contractions in disposable income were felt in some of the EU Member States most affected by the financial and economic crisis: almost all Greek regions (Notio Aigaio was again the only exception); otherwise, the biggest reductions were recorded in the United Kingdom (eight regions, including both Inner and Outer London), Spain (four regions) and the capital regions of Ireland and Romania.

SPOTLIGHT ON THE REGIONS: MAZOWIECKIE (PL12), POLAND

**Royal castle square, Warsaw**

The capital region of Poland had the highest growth in disposable income across EU-28 NUTS 2 regions during the period 2008 to 2011. The disposable income of each inhabitant in this region rose, on average, by PPCS 2 600.

Another Polish region, Śląskie, was also present among the three EU regions with the highest increases in disposable income, while income rose by at least PPCS 1 000 in all but two of the 16 Polish NUTS 2 regions.

*Photo: Shalom Alechem*

# Data sources and availability

The European system of national and regional accounts (ESA) provides the methodology for regional accounts in the EU. ESA 95 is fully consistent with worldwide guidelines for national accounts, the 1993 system of national accounts (1993 SNA). Following international agreement on an updated version of the SNA in 2008, the ESA was also revised. These revisions are reflected in a Regulation of the European Parliament and of the Council on the European system of national and regional accounts in the European Union (No 549/2013). Further information on the transition from ESA 95 to ESA 2010 is presented on Eurostat's website.

## Indicator definitions

Gross domestic product (GDP) is the central measure of national accounts, summarising the economic position of a country or region. It can be calculated using different approaches: the output approach; the expenditure approach; and the income approach. However, at the regional level the expenditure approach cannot be used, because it would require the measurement of regional exports and imports; this is not possible in the EU Member States.

The primary income of private households is that generated directly from market transactions. This generally includes income from paid work and self-employment, as well as income received in the form of interest, dividends and rents; interest and rents payable are recorded as negative items.

Disposable income is derived from primary income by adding all social benefits and monetary transfers (from state redistribution) and subtracting taxes on income and wealth as well as social contributions and similar transfers; as such, it reflects 'in-pocket' income.

## Purchasing power parities

Regional GDP is calculated in the local currency of the region (and therefore the country) in question. GDP can be converted into a common currency to make it more easily comparable — for example, converting into euros or dollars.

Exchange rates reflect many factors relating to supply and demand in currency markets, such as international trade, inflation forecasts and interest rate differentials. However, exchange rates do not reflect all the differences in price levels between countries. To compensate for this, GDP can be converted using conversion factors known as purchasing power parities (PPPs) to an artificial common currency, called a purchasing power standard (PPS); this makes it possible to compare the purchasing power of different national currencies. Even within a currency union, such as the euro area, a single currency continues to display different purchasing power across countries, depending on national price levels.

In broad terms, the use of PPS series rather than the euro-based series tends to have a levelling effect, as those 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 central Paris or London is generally higher than the cost of living in rural areas of the EU). Calculations for GDP per inhabitant that are based on PPS series, instead of euro series, can result in considerable differences when ranking regions.

# 6 Structural business statistics

# Introduction

Structural business statistics (SBS) cover industry, construction and non-financial services, collectively referred to as the non-financial business economy. Presented according to the activity classification, NACE, these statistics describe the structure, conduct and performance of businesses across the European Union (EU). Structural business statistics can be analysed at a very detailed sectoral level (several hundred economic activities), by enterprise size class, or by region.

Cohesion policy supports the creation and growth of businesses, in particular small and medium-sized enterprises (SMEs), with the aim of improving regional competitiveness and performance. SMEs often face difficulties in accessing finance, coping with administrative demands, or keeping-up with technological change. The EU aims to tackle these difficulties through a combination of direct investment and supporting measures, such as training and business support services, fostering an innovative environment, providing information on access to finance or technology transfer, supporting access to global markets, or developing support networks and clusters.

Adopted in June 2008, the Small Business Act for Europe (COM(2008) 394) reflects the European Commission's recognition of the central role that SMEs play in the EU economy (SMEs account for 99 % of all European businesses). It put in place a policy framework for SMEs, aiming to promote entrepreneurship, help SMEs tackle problems which hamper their development and implant a 'think small first' principle in policymaking. In February 2011, a review of the Small Business Act (COM(2011) 78) was conducted: this presented an overview of the progress achieved and set out new actions to respond to challenges resulting from the financial and economic crisis.

Alongside these developments, the European Commission adopted an Entrepreneurship 2020 Action Plan (COM(2013) 795) at the start of 2012, designed to stimulate an entrepreneurial spirit across the EU and to remove obstacles so that more entrepreneurs are encouraged to start a business. The plan is built on three main pillars: entrepreneurial education and training; the creation of an environment where entrepreneurs can flourish and grow; and developing role models and reaching out to specific groups whose entrepreneurial potential is not being fully tapped (for example, ethnic minorities). It seeks to: address cultural factors which discourage people from starting a business (such as removing the stigma attached to business failure); reduce administrative requirements (which are often seen as a major factor in deterring entrepreneurs from starting a business); and make it easier for entrepreneurs to attract investors.

During the financial and economic crisis, the EU enacted a temporary framework that simplified the rules governing state aid schemes co-financed by cohesion policy. Schemes were put in place that allowed advances of state aid to help relieve companies from their economic difficulties, provided subsidised loans or additional capital injections.

More generally, cohesion and regional policy financing must respect state aid rules as laid out in Article 107 of the Treaty on the functioning of the EU, aside from exemptions linked to the operation of structural funds, which allow aid to promote the economic development of areas where the standard of living is abnormally low or where there is serious underemployment and aid to facilitate the development of certain economic activities, where this does not adversely affect trading conditions to an extent contrary to the common interest. These exemptions allow EU Member States to grant state aid to companies in less advantaged regions of the EU, supporting investments in new production facilities and the modernisation of existing facilities; a full set of rules are laid out in the regional aid guidelines.

### BUSINESS SUPPORT — COHESION POLICY FUNDING

As noted above, the EU aims to help develop regional economies by providing support for the creation and growth of business, in particular, small and medium-sized enterprises (SMEs). The economic performance of those regions which are lagging behind the EU average may be stimulated through support to (potential) entrepreneurs, attracting investors and enhancing the productive capacity of regions.

More than a million enterprises are created every year in the EU, equivalent to about 10 % of the total business enterprise population, while SMEs account for approximately two-thirds of all private sector jobs in the EU. However, SMEs often face considerable difficulties to access capital, and frequently lack experience, know-how or knowledge.

During the period 2007–13 the EU allocated a total of EUR 69 733 million to business support measures, equivalent to 20.3 % of its total cohesion budget. The three most prominent objectives were: direct support to SMEs, other support to large and smaller businesses, and support to restructure firms and the adaptability of workers. Business support accounted for 33.7 % of the budget allocation for the regional competitiveness and employment objective, and just less than 18 % of the allocation for both the convergence objective and the European territorial cooperation objective.

***For more information:***

Business support under cohesion policy: http://ec.europa.eu/regional_policy/activity/business/index_en.cfm

# Main statistical findings

Eurostat compiles and publishes SBS for EU regions for NACE sections and NACE divisions; the latest information available generally relates to reference year 2011 (although the latest data for Greece and France refer to 2010). Regional SBS are available for most EU Member States at the NUTS 2 level; they are also available for Norway. Data are presented at a national level for Croatia and for Switzerland, while no information is available for Malta.

According to estimates made using national SBS figures, there were approximately 21.7 million enterprises active in the EU-28's non-financial business economy in 2011. Together, they generated EUR 6 142 billion of gross value added and employed some 133.2 million persons.

## Industrial and services specialisation

The main variable used for analysis in this chapter is the number of persons employed (regional SBS are not collected for value added). On this basis, there are significant disparities between EU regions in terms of the importance of different activities within their non-financial business economies. While some activities — such as retail trade and to some extent construction —ubiquitously appear across all regions, many others exhibit a considerable variation in their level of concentration, often with only a few regions having a particularly high degree of specialisation.

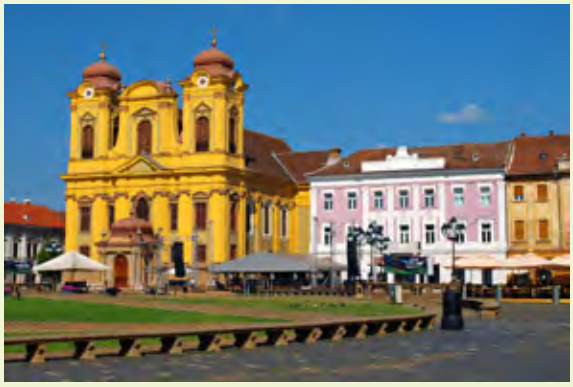
### *Industrial specialisation is often linked to the availability of natural resources*

The reasons for such specialisation are varied and include: the availability of natural resources (for example, for mining and quarrying or forest-based manufacturing); access to skilled employees (for example, for scientific research and development); the level of production costs (for example, wages and other labour costs, or the cost and availability of other inputs); adequate provisions of infrastructure (for example, transport or telecommunications); climatic and topographic conditions (particularly relevant in relation to tourism activities); proximity or access to markets; and legislative constraints. All of these may impact upon the considerable disparities that exist between European regions as regards the importance of different activities within their respective business economies.

### *Industry accounted for almost one quarter of the EU's non-financial business economy workforce*

The share of a specific activity within the business economy gives an idea as to which regions are the most or least specialised, regardless of whether the region or the activity considered are large or small. **Map 6.1** shows that there was a wide range in the relative contribution of industrial activities to non-financial business economy employment in 2011. Across the whole of the EU-28, industrial activities accounted for just less than one quarter (24.7 %) of the total workforce in the non-financial business economy.

SPOTLIGHT ON THE REGIONS: VEST (RO42), ROMANIA



**Union square, Timisoara**

The western Romanian region of Vest is characterised by a relatively high degree of inward investment; it is located close to the Hungarian border. Almost half (47.4 %) of the non-financial business economy workforce in Vest was employed within an industrial activity; the highest share across the whole of the EU-28 in 2011. Of the eight NUTS 2 regions within Romania, five had an industrial employment share above 40 %, while only the capital region of Bucureşti – Ilfov recorded a share that was below the EU-28 average.

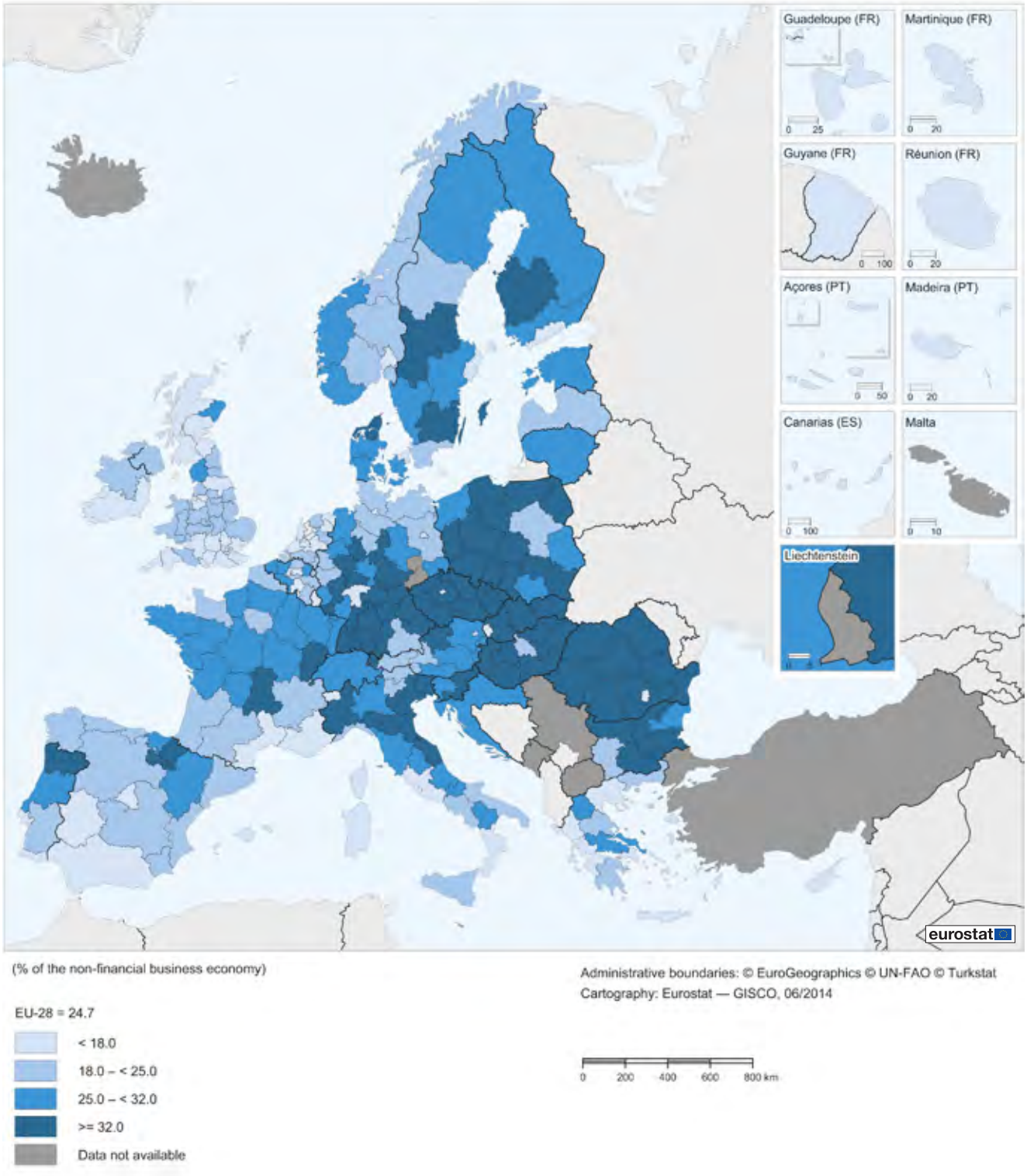
*Photo: Todor Bozhinov*

Among the 268 NUTS 2 regions in the EU for which data are available, just over one quarter (or 73 regions) reported that industrial activities accounted for at least 32.0 % of their non-financial business economy workforce. The highest shares in 2011 — between 45.1 % and 47.4 % — were recorded in the Severovýchod and Střední Morava regions of the Czech Republic, the Közép-Dunántúl region of Hungary, the Vest and Centru regions of Romania, and the Severozapaden and Severen tsentralen regions of Bulgaria. As such, these regions with particularly high degrees of industrial specialisation ran in a band from Liberec, a textile making city in the north of the Czech Republic, down to Ruse, the largest fluvial port in Bulgaria.

### *Weight of the industrial economy tended to be relatively high across eastern Europe …*

More generally, the weight of the industrial economy in the non-financial business economy workforce tended to be relatively high across most eastern European regions in 2011; it was most pronounced in Bulgaria, the Czech Republic, Hungary, Poland and Romania. This relatively high degree of specialisation for industrial activities in eastern Europe may reflect, to some degree, relatively low labour costs, outsourcing and foreign direct investment strategies.

**Map 6.1:** Employment in the industrial economy, by NUTS 2 regions, 2011 (1)
(% of the non-financial business economy)




(1) Industry: NACE Rev. 2 Sections B–E. EU-28 average: calculated on the basis of available data. Greece and France: 2010. Croatia and Switzerland: national level.
*Source:* Eurostat (online data code: sbs_r_nuts06_r2)

### … while there were three southern German regions where industrial activities accounted for at least 40 % of the non-financial business economy workforce

The southern German regions of Tübingen, Oberfranken and Oberpfalz were the only regions from EU-15 Member States to report that industrial activities accounted for at least 40.0 % of their non-financial business economy workforce. Otherwise, there were 30 other regions across the EU-15 Member States where the industrial workforce accounted for at least 32 % of those working in the non-financial business economy (as shown by the darkest shade in **Map 6.1**). Almost half of these were in Germany (14 regions), while the remaining pockets of concentrated industrial activity were located across Italy (five regions), France, Spain, Austria and Sweden (two regions each), and Denmark, Portugal and Finland (a single region each). Among these the highest shares of industrial employment were registered by: Marche in Italy (39.3 %); Småland med öarna in Sweden (37.3 %); the Comunidad Foral de Navarra in Spain (36.7 %); Franche-Comté in France (36.6 %, data are for 2010); and Länsi-Suomi in Finland (36.0 %).

In Luxembourg (one region at this level of analysis), Ireland, the Netherlands and the United Kingdom there were particularly low employment shares for industrial activities across all regions. In Luxembourg the industrial workforce accounted for 15.1 % of those working in the non-financial business economy in 2011, while this share rose to a high of 19.3 % among Dutch regions in Overijssel, 22.8 % among Irish regions in Border, Midland and Western, and to 25.8 % among the regions of the United Kingdom in North Eastern Scotland.

### Industrial activity was relatively low in most capital regions and remote areas on the periphery of the EU

There were 72 regions in the EU where less than 18.0 % of the non-financial business economy workforce was active in an industrial activity; this was often the case in capital regions and relatively remote regions on the periphery of the EU, for example island regions (oil and gas exploration off the north-east coast Scotland was an exception to this rule).

In 12 of these 72 regions, the industrial economy accounted for less than 1 in 10 persons within the non-financial business economy workforce; note that data are confidential for 8 of the 72 regions identified and as such, there may be additional regions where the relative weight of industrial employment was below 1 in 10 persons. These 12 regions were spread across seven different EU Member States — with the lowest share recorded in the Ciudad Autónoma de Melilla (Spain), at just 1.8 %. There were three other Spanish regions where the share of industry in the non-financial business economy workforce was less than 10.0 %, the Ciudad Autónoma de Ceuta, and two renowned tourist destinations, namely the islands of the Canarias and the Illes Balears. Other tourist destinations characterised as having relatively low shares of employment within the industrial economy included the Greek island region of Notio Aigaio in the Aegean Sea and the French island of Corse (data are for 2010 for both of these regions), and the Algarve in southern Portugal. The remaining regions included the capital regions of Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest, Noord-Holland, Inner and Outer London (two regions), as well as Utrecht (the Netherlands).

### Slightly fewer than 1 in 10 of the EU's non-financial business economy workforce was employed in the construction sector

The regional analysis presented in **Map 6.1** may be contrasted with that presented in **Maps 6.2** and **6.3**, which provide information on the relative contribution of construction and non-financial services to non-financial business economy employment. Given that construction accounted for a relatively low share of the EU-28's non-financial business economy in 2011, just under one in ten (9.7 %) of the total number of persons, the patterns shown in **Map 6.1** are, to some degree, mirrored in **Map 6.3**, with those regions characterised as having relatively low shares of industrial employment expected to report relatively high shares of their workforce within non-financial services.

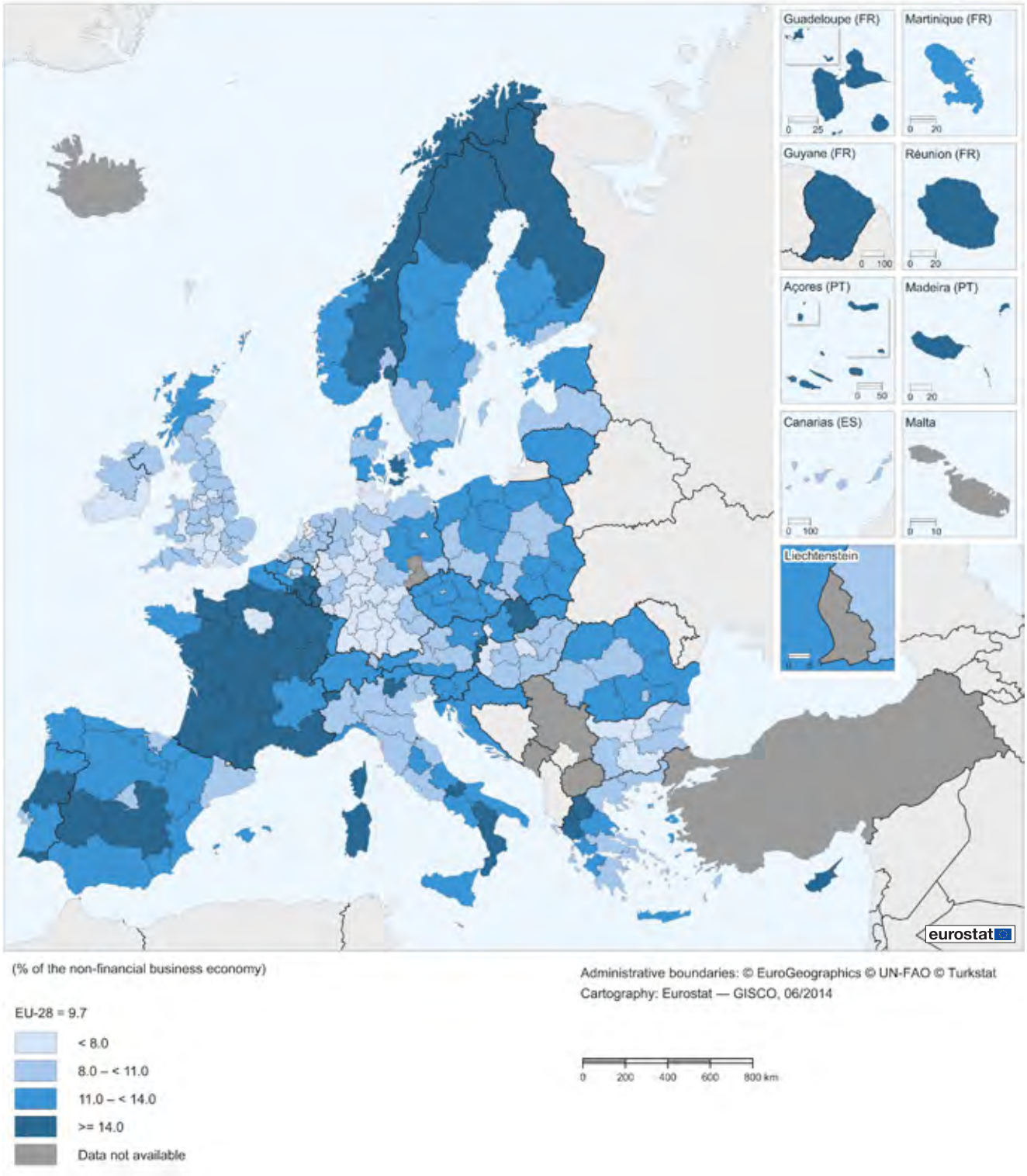
**Map 6.2** shows the employment share of construction activities in 2011. The construction sector experienced a considerable contraction in some of the EU Member States during the financial and economic crisis, for example, prior to the crisis the construction sectors of Ireland, Spain or Cyprus were flourishing. There were 50 regions across the EU where the construction sector accounted for fewer than 8.0 % of the non-financial business economy workforce — as shown by the lightest shaded regions in **Map 6.2**. The vast majority of these were located in either Germany (24 regions) or the United Kingdom (13 regions), while there were also regions from Belgium, Bulgaria, Ireland Hungary and the Netherlands, as well as the capital regions of France and Slovakia.

### Low level of construction activity in many capital regions

The low share of employment in construction activities within capital regions may be linked to construction enterprises having their offices, vehicle parks and yards for stocking construction materials and equipment outside of capital regions, given the premium on land prices or rental prices in capital cities and major conurbations, or alternatively could be linked to a lack of available sites for certain cities. The lowest regional share of persons working in the construction sector — 3.6 % of the non-financial business economy workforce in 2011 — was recorded in the capital region of Inner London.

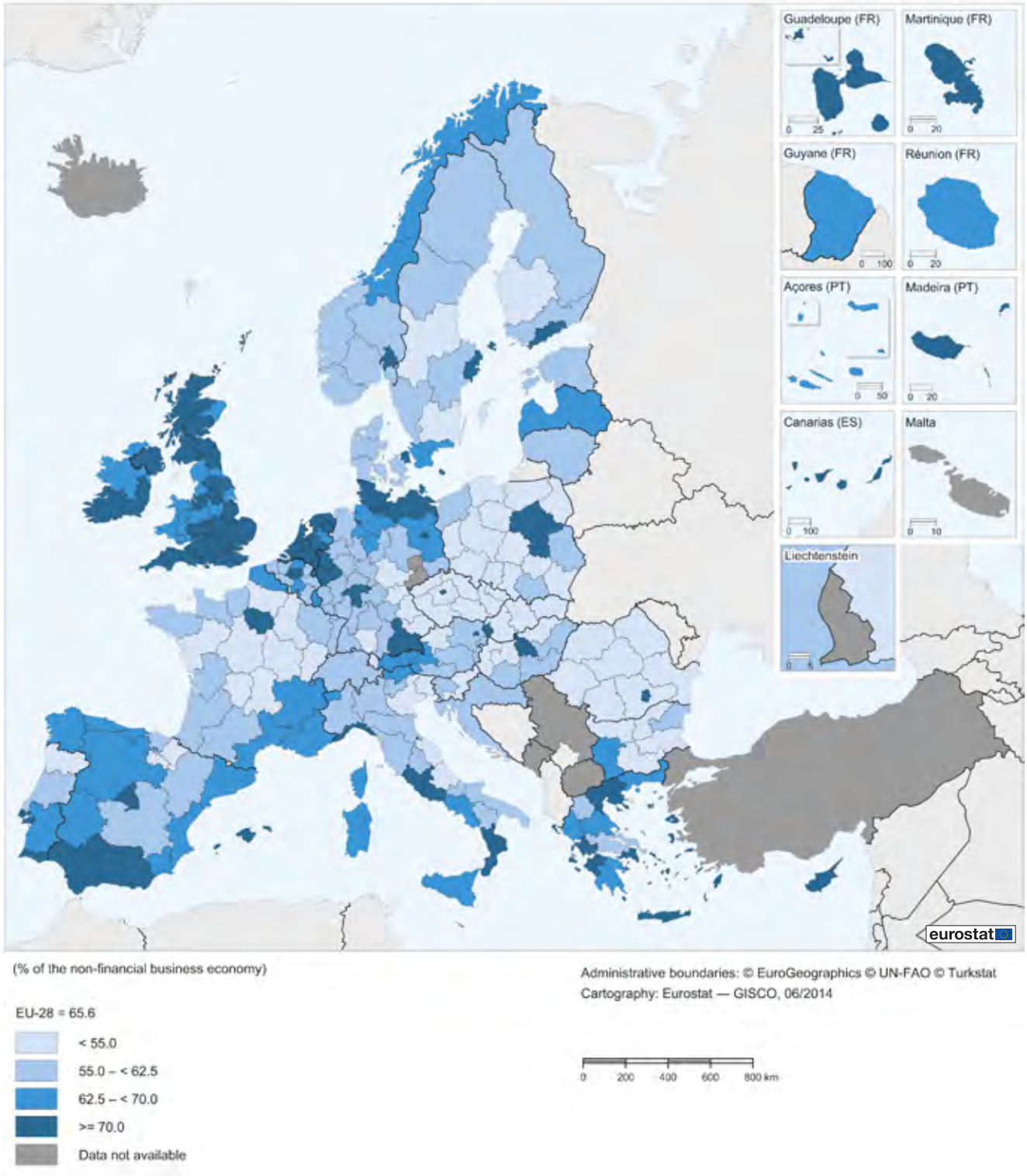
Five, largely urban German regions — Hamburg, Bremen, Köln, Darmstadt and Mittelfranken — and the Southern and Eastern capital region of Ireland also recorded employment shares construction of less than 5.0 %. By contrast, the other Irish region — Border, Midland and

**Map 6.2:** Employment in construction, by NUTS 2 regions, 2011 (1)
(% of the non-financial business economy)




(1) Construction: NACE Rev. 2 Section F. EU-28 average: calculated on the basis of available data. Greece and France: 2010. Croatia and Switzerland: national level.
*Source:* Eurostat (online data code: sbs_r_nuts06_r2)

**Map 6.3:** Employment in the non-financial services economy, by NUTS 2 regions, 2011 (1)
(% of the non-financial business economy)




(1) Non-financial services: NACE Rev. 2 Sections G–N (excluding Section K) and Division 95. EU-28 average: calculated on the basis of available data. Greece and France: 2010. Croatia and Switzerland: national level.
*Source:* Eurostat (online data code: sbs_r_nuts06_r2)

Western — moved from featuring among the 10 EU regions with the lowest shares of employment in construction in 2010 to a position where its employment share (9.0 %) was almost as high as the EU-28 average in 2011; this remained in stark contrast to the prominence of the Irish construction sector pre-crisis, despite indicating a recovery.

### *In Corse, almost one quarter of the non-financial business economy workforce was employed in the construction sector*

There were 45 regions in the EU where construction activities accounted for at least 14.0 % of the non-financial business economy workforce in 2011. These were located across a range of Member States: with almost half (20) of the regions in France (all data are for 2010), six in Italy, four in Portugal, three each in Belgium and Spain, two in Greece (2010 data) and a single region from each of Denmark, Austria, Slovakia, Finland, Sweden, Cyprus and Luxembourg (the latter two are single regions at this level of analysis). The highest share of construction activities in the non-financial business economy workforce was recorded in the French island region of Corse (24.5 %), while the southern French region of Languedoc-Roussillon was the only other region to report that more than one in five of its non-financial business economy workforce was employed by the construction sector.

Despite the dramatic slowdown in construction activity in Spain, there remained three regions where at least 14.0 % of the non-financial business economy workforce continued to be employed in the construction sector in 2011. Two of these were central regions characterised by relatively low levels of population density, Extremadura and Castilla-La Mancha, while the third was the overseas autonomous city of Ciudad Autónoma de Ceuta.

### *Non-financial services accounted for almost two out of three persons working in the EU's non-financial business economy*

Non-financial services accounted for almost two thirds (65.6 %) of the EU-28's non-financial business economy workforce in 2011. **Map 6.3** shows the distribution of regional workforces within the non-financial services sector, with a high propensity for the most service-oriented workforces to be located in major urban areas and especially in capital regions.

### *Relative importance of the non-financial services workforce was highest in Inner London*

Non-financial services accounted for 70.0 % or more of the non-financial business economy workforce in 85 NUTS 2 regions across the EU in 2011 (as shown by the darkest shade in **Map 6.3**; note that data are confidential for six of these regions). In 16 of the remaining 79 regions the relative weight of non-financial services rose to 80 % or more, with the highest share recorded for Inner London (93.8 %). There were five more capital regions — all of which were located in EU-15 Member States — where the share of non-financial services employment was at least 80 %. They included the Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest, Noord-Holland, Berlin, Southern and Eastern (Ireland) and the Comunidad de Madrid. A share of more than 80 % was also recorded for the Norwegian capital region of Oslo og Akershus (81.0 %).

Relatively high shares of employment within non-financial services were also recorded in several regions associated with tourism, particularly island regions, for example, Notio Aigaio in Greece or the Canarias in Spain, while the Algarve in Portugal also registered a high share.

Among those Member States that joined the EU since 2004, the capital regions of Bratislavský kraj (Slovakia, 77.6 %), Közép-Magyarország (Hungary, 74.3 %), Bucureşti – Ilfov (Romania, 72.1 %), Mazowieckie (Poland, 71.1 %), Praha (the Czech Republic, value cannot be disclosed as it is confidential) and Cyprus (a single region at this level of analysis, 70.1 %) were the only regions where at least 70.0 % of the non-financial business economy workforce was employed within non-financial services.

There were 62 regions in the EU where the non-financial services share of employment was less than 55.0 % (the lightest shade in **Map 6.3**). Among these, there were 28 regions where the share of employment attributed to non-financial services was 50.0 % or less. These were often regions that recorded a relatively high degree of specialisation in industrial activities with most of these regions located in Bulgaria, the Czech Republic, Hungary, Poland and Romania. There were only two regions from the EU-15 Member States which recorded employment shares of less than 50.0 % for non-financial services: both of these were located in France, namely, the Auvergne and Franche-Comté.

## Detailed specialisation within the non-financial business economy

**Table 6.1** presents a much more detailed activity analysis, for NACE sections and divisions. For each activity the table indicates the median and mean share of that activity in the non-financial business economy workforce across all regions. The final two columns in the table show for each activity which region was the most specialised, providing the employment share of that activity in relation to the non-financial business economy workforce in that region; note that some of this information is confidential although the names of the regions with the highest shares (not their values) are presented in the table.

### *Śląskie and North Eastern Scotland were specialised in mining and quarrying*

Mining and quarrying activities of energy-producing and metallic minerals tend to be very concentrated as a consequence of the geographical location of deposits, and therefore only a small number of regions were highly specialised in these activities; these characteristics mean that a handful of regions can account for a relatively high share of sectoral employment in some of these activities. The most notable examples include the mining of coal and lignite in Śląskie (Poland) or mining support services in North Eastern Scotland (the United Kingdom) and Agder og Rogaland (Norway), providing support for the offshore extraction of crude petroleum and natural gas in the North Sea.

### *Primary manufacturing activities often located in rural areas*

Manufacturing activities that involve the primary processing stages of agricultural, fishing or forestry products tend to be concentrated in areas close to the source of their raw materials. The regions most specialised in food manufacturing (NACE Division 10) were often located in rural areas or close to agricultural production centres: for example, Bretagne (in north-west France), Podlaskie (eastern Poland), Dél-Alföld (Hungary), Alentejo (Portugal), Severen tsentralen (Bulgaria) or Lincolnshire (the United Kingdom). Heavily forested Nordic and Baltic regions and mountainous, central Slovakian regions were among the most specialised for the manufacture of wood and wood products (NACE Division 16) and for the related manufacturing of paper and paper products (NACE Division 17). Latvia (a single region at this level of analysis) was the most specialised region for the manufacture of wood and wood products and Norra Mellansverige (Sweden) was the most specialised for manufacturing pulp and paper products. Some manufacturing activities that involve processing or consuming minerals may be located close to mineral deposits. Swietokrzyskie (Poland) was specialised in other mining and quarrying, as well as other non-metallic mineral products manufacturing.

### *Production of chemicals and pharmaceuticals specialised in Germany and Belgium*

Several German and Belgian regions were relatively specialised in the production of chemicals and pharmaceuticals, with Rheinhessen-Pfalz the most specialised region for chemicals manufacturing and the Prov. Brabant Wallon for pharmaceuticals. The highest regional specialisation for the manufacture of rubber and plastics was in the French region of the Auvergne, centred on Clermont-Ferrand. Several German regions were highly specialised in electrical engineering, machinery and motor vehicle manufacturing, with the highest regional specialisation for these activities recorded in Oberpfalz, Tübingen and Braunschweig.

### *Retail trade*

The retail trade sector is ubiquitous across all regions of the EU, although there are relatively large differences between countries as regards the structure of retailing, for example, the propensity for specialist food and non-food retailers, supermarkets and hypermarkets, department stores, shopping centres and out-of-town retail outlets. The highest number of persons employed within retailing activities (NACE Division 47) in 2012 was in Lombardia (almost 307 000). This equated to 9.7 % of the non-financial business economy workforce, one of only a handful of regions where less than one in ten of the workforce was employed within retailing. The retail trade sector generally accounted for a relatively low share of employment in the non-financial business economy in most capital regions: this was particularly the case in Hovedstaden, Île de France (data are for 2010), Luxembourg, Helsinki-Uusimaa and Stockholm.

By contrast, some 28.9 % of the non-financial business economy workforce in the French region of Nord - Pas-de-Calais (data are for 2010) was employed in the retail trade sector (almost 235 000 persons). Retail trade accounted for around one in five of the non-financial business economy workforce in a number of relatively rural French regions, western regions of Germany, most Greek regions, southern regions of Italy and western regions of the United Kingdom.

### *Island and capital regions are often the most specialised in transport services*

Transport services are influenced by location, with water transport (NACE Division 50) naturally being important for coastal regions and islands, while air transport (NACE Division 51) is generally important in those regions which are close to major cities, but also for island regions (especially those focused on tourism). The small island region of Åland (Finland) is a centre for ferry services between Sweden and Finland and other Baltic Sea traffic — it was very highly specialised in water transport, which accounted for 32.6 % of the total number of persons employed in this region's non-financial business economy

in 2011. Outer London was the region most specialised in air transport; while other regions with a high share of their non-financial business economy workforce in air transport included Noord-Holland (the Dutch capital region), Köln in Germany and Niederösterreich in Austria. The German region of Köln (which includes the city of Bonn, home to Deutsche Post DHL) was particularly specialised in postal and courier activities, which accounted for more than 1 in 10 jobs within this region's non-financial business economy workforce.

**Table 6.1:** Average share of non-financial business economy employment and most specialised regions by activity (NACE sections and divisions) and by NUTS 2 regions, 2011 (1)

| Activity (NACE code) | Average share across EU regions | | Most specialised region | |
|---|---|---|---|---|
| | Median | Mean | Region name (NUTS level 2) | Share in regional non-financial business economy employment (%) |
| | (% of non-financial business economy employment) | | | |
| **Mining & quarrying (B)** | 0.3 | 0.6 | Agder og Rogaland (NO04) | 13.1 |
| Mining of coal & lignite (05) | 0.0 | 0.2 | Śląskie (PL22) | 9.1 |
| Extraction of crude petroleum & natural gas (06) | 0.0 | 0.1 | Vestlandet (NO05) | 6.7 |
| Mining of metal ores (07) | 0.0 | 0.0 | Övre Norrland (SE33) | c |
| Other mining & quarrying (08) | 0.2 | 0.2 | Świętokrzyskie (PL33) | 1.7 |
| Mining support service activities (09) | 0.0 | 0.1 | Agder og Rogaland (NO04) | 9.7 |
| **Manufacturing (C)** | 21.5 | 22.7 | Severovýchod (CZ05) | 44.6 |
| Food (10) | 3.1 | 3.3 | Bretagne (FR52) | 13.9 |
| Beverages (11) | 0.3 | 0.4 | La Rioja (ES23) | 3.4 |
| Tobacco products (12) | 0.0 | 0.0 | Trier (DEB2) | c |
| Textiles (13) | 0.3 | 0.4 | Prov. West-Vlaanderen (BE25) | 3.6 |
| Wearing apparel (14) | 0.2 | 0.8 | Severozapaden (BG31) | 10.4 |
| Leather & leather products (15) | 0.1 | 0.3 | Marche (ITI3) | 6.3 |
| Wood & wood products (16) | 0.7 | 1.0 | Latvija (LV00) | 4.2 |
| Paper & paper products (17) | 0.4 | 0.5 | Norra Mellansverige (SE31) | 3.8 |
| Printing & reproduction of recorded media (18) | 0.5 | 0.6 | Limousin (FR63) | 1.5 |
| Coke & refined petroleum products (19) | 0.0 | 0.1 | Opolskie (PL52) | c |
| Chemicals & chemical products (20) | 0.6 | 0.8 | Rheinhessen-Pfalz (DEB3) | 8.3 |
| Pharmaceutical products & preparations (21) | 0.2 | 0.4 | Prov. Brabant Wallon (BE31) | c |
| Rubber & plastic products (22) | 1.1 | 1.3 | Auvergne (FR72) | 11.4 |
| Other non-metallic mineralproducts (23) | 0.9 | 1.1 | Świętokrzyskie (PL33) | 4.6 |
| Basic metals (24) | 0.5 | 0.9 | Norra Mellansverige (SE31) | 10.1 |
| Fabricated metal products (25) | 2.5 | 2.8 | Vorarlberg (AT34) | 8.2 |
| Computer, electronic & optical products (26) | 0.6 | 0.8 | Észak-Magyarország (HU31) | 6.0 |
| Electrical equipment (27) | 0.8 | 1.1 | Oberpfalz (DE23) | 8.3 |
| Other machinery & equipment (28) | 1.6 | 2.1 | Tübingen (DE14) | 11.6 |
| Motor vehicles, trailers & semi-trailers (29) | 0.8 | 1.6 | Braunschweig (DE91) | c |
| Other transport equipment (30) | 0.3 | 0.5 | Midi-Pyrénées (FR62) | 5.7 |
| Furniture (31) | 0.5 | 0.8 | Warmińsko-Mazurskie (PL62) | 7.6 |
| Other manufacturing (32) | 0.5 | 0.6 | Border, Midland and Western (IE01) | 5.1 |
| Repair & installation of machinery (33) | 0.9 | 0.9 | Mittelfranken (DE25) | 3.5 |
| Electricity, gas, steam, & air con. supply (D) | 0.7 | 0.9 | Dytiki Makedonia (EL13) | 14.1 |
| **Water supply, sewerage, waste management (E)** | 0.9 | 1.1 | Sud-Est (RO22) | 3.3 |
| Water supply (36) | 0.2 | 0.3 | Severozapaden (BG31) | 1.8 |
| Sewerage (37) | 0.1 | 0.1 | Trier (DEB2) | c |
| Waste management (38) | 0.6 | 0.7 | Sicilia (ITG1) | 1.9 |
| Remediation (39) | 0.0 | 0.0 | Valle d'Aosta/Vallée d'Aoste (ITC2) | c |
| **Construction (F)** | 10.8 | 11.0 | Corse (FR83) | 24.5 |
| Construction of buildings (41) | 2.7 | 3.1 | Região Autónoma dos Açores (PT20) | 11.0 |
| Civil engineering (42) | 1.2 | 1.3 | Região Autónoma da Madeira (PT30) | 4.4 |
| Specialised construction activities (43) | 5.7 | 6.6 | Corse (FR83) | 21.1 |

(1) EU-28 averages: calculated on the basis of available data. Greece and France: 2010. Chemnitz (DED4), Leipzig (DED5), Croatia and Malta: not available.
*Source:* Eurostat (online data code: sbs_r_nuts06_r2)

### *Southern Member States are some of the most specialised for accommodation services*

Regions traditionally associated with tourism, for example, many regions in Greece, Italy, Portugal and Spain, were the most specialised in accommodation services (NACE Division 55) and food and beverage service activities (NACE Division 56). The relative importance of tourism to many of these regions has been all the more important in recent years, given the effects of the financial and economic crisis. The south Aegean region of Greece (Notio Aigaio —

**Table 6.1** (continued): Average share of non-financial business economy employment and most specialised regions by activity (NACE sections and divisions) and by NUTS 2 regions, 2011 (1)

| Activity (NACE code) | Average share across EU regions | | Most specialised region | |
|---|---|---|---|---|
| | Median | Mean | Region name (NUTS level 2) | Share in regional non-financial business economy employment (%) |
| | (% of non-financial business economy employment) | | | |
| **Distributive trades (G)** | 25.6 | 25.8 | Dytiki Ellada (EL23) | 41.0 |
| Motor trades & repair (45) | 3.0 | 3.1 | Prov. Luxembourg (BE) (BE34) | 5.4 |
| Wholesale trade (46) | 7.3 | 7.4 | Kentriki Makedonia (EL12) | 15.2 |
| Retail trade (47) | 14.5 | 14.7 | Nord - Pas-de-Calais (FR30) | 28.9 |
| **Transport & storage (H)** | 7.3 | 7.8 | Åland (FI20) | 39.7 |
| Land transport & pipelines (49) | 4.3 | 4.3 | Lietuva (LT00) | c |
| Water transport (50) | 0.0 | 0.3 | Åland (FI20) | 32.6 |
| Air transport (51) | 0.0 | 0.2 | Outer London (UKI2) | 2.9 |
| Supporting transport activities (52) | 1.6 | 1.8 | Bremen (DE50) | 11.5 |
| Postal & courier activities (53) | 1.1 | 1.2 | Köln (DEA2) | 11.6 |
| **Accommodation & food service activities (I)** | 7.5 | 8.4 | Notio Aigaio (EL42) | 32.2 |
| Accommodation (55) | 1.5 | 2.1 | Notio Aigaio (EL42) | 15.9 |
| Food & beverage service activities (56) | 5.7 | 5.8 | Notio Aigaio (EL42) | 16.3 |
| **Information & communication (J)** | 2.6 | 3.4 | Inner London (UKI1) | 14.5 |
| Publishing activities (58) | 0.4 | 0.6 | Detmold (DEA4) | 3.4 |
| Multimedia publishing (59) | 0.1 | 0.2 | Inner London (UKI1) | 3.1 |
| Programming & broadcasting (60) | 0.1 | 0.1 | Bucureşti - Ilfov (RO32) | 0.9 |
| Telecommunications (61) | 0.4 | 0.6 | Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest (BE10) | 3.9 |
| Computer activities (62) | 1.2 | 1.6 | Berkshire, Buckinghamshire and Oxfordshire (UKJ1) | 7.8 |
| Information service activities (63) | 0.2 | 0.3 | Wien (AT13) | 1.6 |
| **Real estate activities (L)** | 1.9 | 1.9 | Latvija (LV00) | 5.4 |
| **Professional, scientific & technical activities (M)** | 6.9 | 7.6 | Inner London (UKI1) | 25.7 |
| Legal & accounting activities (69) | 2.2 | 2.3 | Inner London (UKI1) | 9.6 |
| Activities of head offices (70) | 1.1 | 1.4 | Inner London (UKI1) | 7.0 |
| Architectural & engineering activities (71) | 1.9 | 2.1 | North Eastern Scotland (UKM5) | 11.3 |
| Scientific research & development (72) | 0.2 | 0.3 | Trøndelag (NO06) | 2.0 |
| Advertising & market research (73) | 0.5 | 0.7 | Inner London (UKI1) | 2.8 |
| Other professional, scientific & technical activities (74) | 0.6 | 0.7 | Inner London (UKI1) | 1.9 |
| Veterinary activities (75) | 0.1 | 0.2 | North Yorkshire (UKE2) | 0.9 |
| **Administrative & support service activities (N)** | 8.2 | 8.7 | Lisboa (PT17) | 20.5 |
| Rental & leasing activities (77) | 0.4 | 0.5 | Notio Aigaio (EL42) | 2.2 |
| Employment activities (78) | 2.1 | 2.9 | Groningen (NL11) | 14.0 |
| Travel agency & related activities (79) | 0.3 | 0.3 | Ionia Nisia (EL22) | 1.9 |
| Security & investigation (80) | 0.8 | 1.0 | Bucureşti - Ilfov (RO32) | 5.3 |
| Service to buildings & landscape activities (81) | 2.8 | 2.9 | Ciudad Autónoma de Melilla (ES64) | 14.3 |
| Other administrative & business activities (82) | 1.2 | 1.4 | Lisboa (PT17) | 8.0 |
| **Repair of computers & personal & household goods (95)** | 0.3 | 0.3 | Limousin (FR63) | 1.4 |

(1) EU-28 averages: calculated on the basis of available data. Greece and France: 2010. Chemnitz (DED4), Leipzig (DED5), Croatia and Malta: not available.
*Source:* Eurostat (online data code: sbs_r_nuts06_r2)

which includes, among others, the islands of Kos, Mykonos and Rhodes) recorded the highest share of non-financial business economy employment in accommodation and food and beverage service activities. These services also accounted for a relatively high share of the non-financial business economy workforce in the Alpine regions of the Provincia Autonoma Bolzano/Bozen (Italy) and Tirol (Austria), the island regions of Illes Balears (Spain) and the Região Autónoma da Madeira (Portugal), as well as in the Algarve (Portugal), the Scottish Highlands and Islands (the United Kingdom) and the German coastal region of Mecklenburg-Vorpommern.

### *Capital regions and their surrounding areas are specialised in business services*

Specialisation in information and communication activities (NACE Divisions 58 to 63), real estate activities (NACE Section L), professional scientific and technical activities (NACE Divisions 69 to 75) and administrative and support service activities (NACE Divisions 77 to 82) is sometimes based on access to a critical mass of clients (enterprises or households) or access to a specific knowledge base (external researchers and/or qualified staff). Inner London in the United Kingdom was the most specialised region for multimedia publishing (NACE Division 59), while Berkshire, Buckinghamshire and Oxfordshire (also in the United Kingdom) had the highest proportion of its regional non-financial business economy workforce employed within computer activities (NACE Division 62). The Belgian capital region of Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest and Köln in Germany were the most specialised in telecommunications (NACE Division 61). Latvia was the most specialised region for real estate activities, while British regions were the most specialised in nearly all of the professional, scientific and technical activities: Inner London for legal and accounting activities (NACE Division 69), activities of head offices (NACE Division 70), advertising and market research (NACE Division 73), and other professional, scientific and technical activities (NACE Division 74); North Eastern Scotland for architectural and engineering activities (NACE Division 71) — which (among other services) provides services for North Sea oil and gas platforms; and North Yorkshire for veterinary activities. Although the Norwegian region of Trøndelag recorded the highest degree of specialisation for scientific research and development (NACE Division 72), the region of East Anglia (which includes Cambridge) also had a high level of specialisation for these activities.

SPOTLIGHT ON THE REGIONS: LATVIA (LV00), LATVIA

**Rīga cathedral and Vanšu bridge, Latvia**

Latvia is a single NUTS 2 region. Along with the other Baltic Member States, Finland and Sweden, it is characterised by its natural endowment of forests and woodland. Latvia was the most specialised region in the EU for the manufacture of wood and wood products, as this activity provided work to 4.2 % of its non-financial business economy workforce in 2011.

*Photo: David Holt*

The Portuguese capital region of Lisboa was most specialised in administrative and support service activities (NACE Section N), with 20.5 % of its non-financial business economy workforce employed in these activities. At a more detailed level, Groningen (the Netherlands) was particularly specialised in employment activities (NACE Division 78) and the Romanian capital region of Bucuresti - Ilfov had the highest proportion of its non-financial business economy workforce engaged in security and investigation services (NACE Division 80).

## Range of specialisation

**Figure 6.1** provides an overview of the relative importance of economic activities at the NACE section level in the non-financial business economy workforce. For each activity, the horizontal lines indicate the spread from the region with the lowest share of that activity in its non-financial business economy workforce to the region with the highest share; the region with the highest share is also named in the figure. The extremes of the highest and lowest shares can be influenced by a single region, and the coloured box shows a narrower range, defined to cover half of the regions (the inter-quartile range), with one quarter of all regions having

a higher employment share in that activity and one quarter of the regions having a lower share. The central bar within the coloured box shows the value of the median region. The activities are ranked from the largest employer (distributive trades) to the smallest (mining and quarrying).

The situation in manufacturing (NACE Section C) is particular in several ways. The range between the least and most specialised region is very wide for manufacturing as is the breadth of the coloured box, indicating the varying degrees of importance for manufacturing across EU regions. By contrast, the employment spread for large, basic activities, like construction and distributive trades, which tend to serve more local clients, was much narrower, both in terms of the spread of the extreme values (shown by the horizontal lines) and in terms of the breadth of the inter-quartile range (the coloured box containing half of the regions).

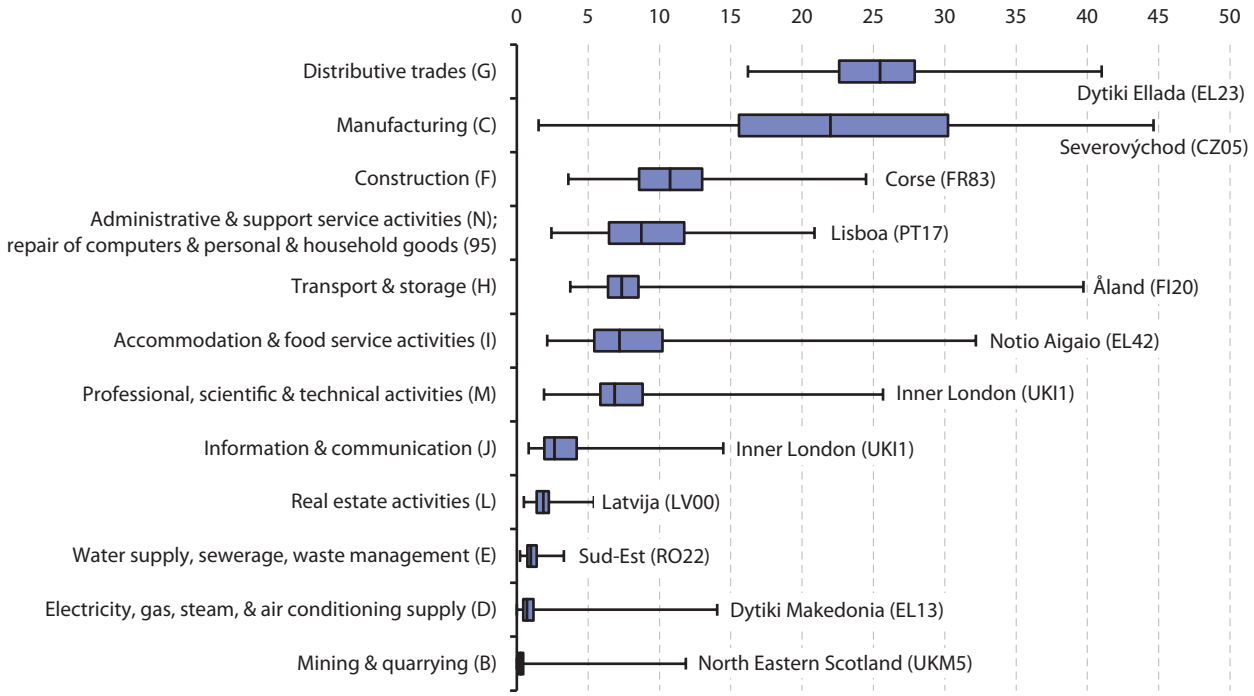
### *The share of manufacturing in the non-financial business economy workforce peaked at 44.6 % in the Czech region of Severovýchod …*

Manufacturing accounted for shares in the total number of persons employed in the non-financial business economy between 1.5 % and 44.6 % — the latter was recorded for Severovýchod (the Czech Republic). Transport and storage (NACE Section H) and mining and quarrying (NACE Section B) are also activities where a few regions tend to be very highly specialised. The highest specialisation for transport and storage was in the small Finnish island region of Åland, where almost two fifths of the workforce (39.7 %) was employed in this sector; the specialisation in Åland is due almost exclusively to the importance of water transport. Natural endowments play an important role in mining and quarrying and, as such, many regions record little or no such activity, with a few regions being highly specialised on account of deposits of metallic ores, coal, oil or gas. Mining and quarrying accounted for 11.9 % of the non-financial business economy workforce in North Eastern Scotland (the United Kingdom), while the median share across all EU regions was 0.3 %.

### *… while that for distributive trades rose to 41.0 % in Greek region of Dytiki Ellada*

By contrast, the spread of employment was much narrower for distributive trades (NACE Section G), which was the activity displaying the highest median employment share, as these activities were present on a relatively large scale in all regions. Employment shares for distributive trades ranged from a low of 16.2 % to just over two fifths (41.0 %) of the non-financial business economy workforce in Dytiki Ellada (western Greece).

**Figure 6.1:** Regional specialisation by activity, by NUTS 2 regions, EU, 2011 (1)
(% of regional non-financial business economy employment)




(1) Minimum and maximum share (vertical lines at the extremes); inter-quartile range (box); median share (vertical line within the box); the figure is ranked on the median share; the name of the region with the highest value is also included. Greece and France: 2010. Chemnitz (DED4), Leipzig (DED5), Croatia and Malta: not available.
*Source:* Eurostat (online data code: sbs_r_nuts06_r2)

## Business concentration

While an analysis of specialisation shows the relative importance of an individual activity in a particular region, regardless of the size of the region or the activity, **Figure 6.2** shows the extent to which a particular activity is widely spread across most regions or whether it is concentrated in a small number of regions.

### *Employment highly concentrated in mining and quarrying …*

Four of the five mining and quarrying NACE divisions topped this ranking in 2011, with a very high share of employment concentrated in relatively few regions. The most concentrated activity was the mining of coal and lignite (NACE Division 05), where the entire EU workforce was concentrated across no more than 50 regions. For the mining of metal ores (NACE Division 07), the top 10 regions with the highest contributions to sectoral employment accounted for 83.9 % of the total workforce. These were the only two activities where more than three quarters of the workforce was concentrated in just 10 NUTS 2 regions across the whole of the EU.

The mining of coal and lignite, the extraction of crude petroleum and natural gas, mining support service activities, air transport services and the manufacture of leather and leather products each reported a relatively high degree of concentration, as more than half of the workforce in each of these activities was working within no more than 10 NUTS 2 regions in 2011. In the case of air transport, the dominance of the top 10 regions was due to a concentration within large metropolitan regions where main airports tend to be situated: chief among these were the regions that contained (Outer) London, Paris, Köln, Amsterdam and Madrid. Leather and leather products manufacturing, on the other hand, is a relatively small activity that was heavily concentrated in Italian, Portuguese and Romanian regions.

### *… but widespread for construction and distribution*

There were 11 NACE Divisions where more than half of the workforce was employed outside of the 50 regions with the highest shares of persons employed. These relatively high shares were often due to the widespread availability and ubiquitous nature of raw materials, such as food products, construction products, or the need for local provision (for example, motor and retail trade). The NACE divisions with the lowest levels of concentration in 2011 included motor trades and repair (NACE Division 45), the manufacture of food (NACE Division 10), retail trade (NACE Division 47), specialised construction activities (NACE Division 43) and veterinary services (NACE Division 75).

**Map 6.4** presents a different aspect of concentration, namely the extent to which a region is dependent on a small number of large activities, or, alternatively, whether it displays the characteristics of being more diversified. The map shows an indicator that is based on the cumulative share of the five largest activities (NACE divisions) in the non-financial business economy workforce: the five largest activities are selected independently for each region, although there are several activities, such as retail trade, that are present among the five main employers in nearly all of the regions.

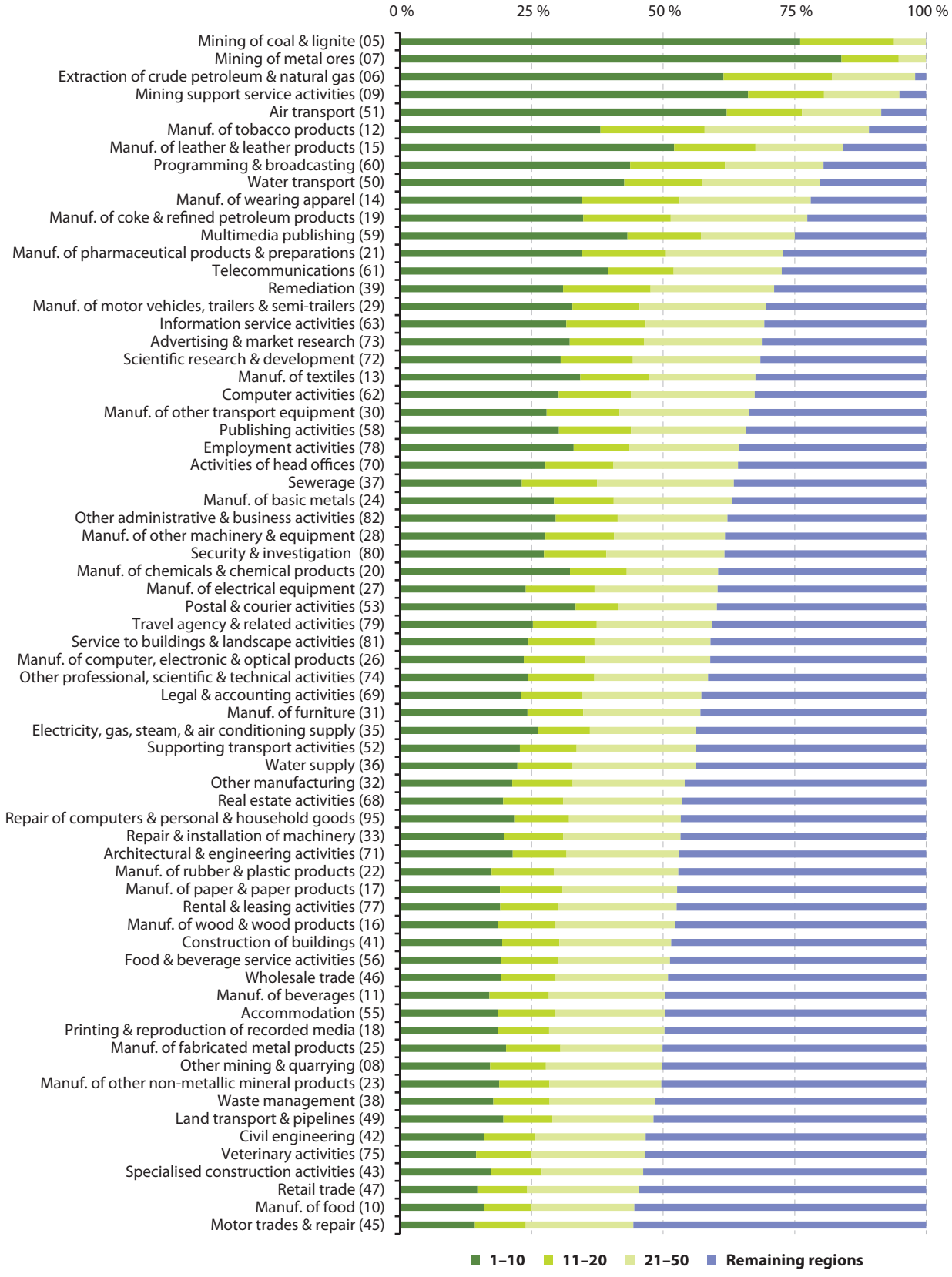
### *Employment concentrated among relatively few activities in tourist destinations*

High levels of employment concentration tend to be recorded in those regions where construction, distributive trades or other services dominate the non-financial business economy. Those regions where employment was most concentrated among five activities were often associated with tourism, in particular specific regions in Greece, Spain, France, Italy and Portugal, underlining the importance of construction, distributive trades, transport, and accommodation and food service activities in these regions.

There were 89 NUTS 2 regions that reported in excess of 45.0 % of their non-financial employment concentrated in their five largest activities; note that data are confidential for three of these regions. Among these 89 regions, there were only six where 60.0 % or more of the regional workforce was employed in the five activities employing the highest numbers of persons. The highest share was recorded in the Greek holiday destination of Notio Aigaio where 71.9 % of the workforce was employed in just five activities.

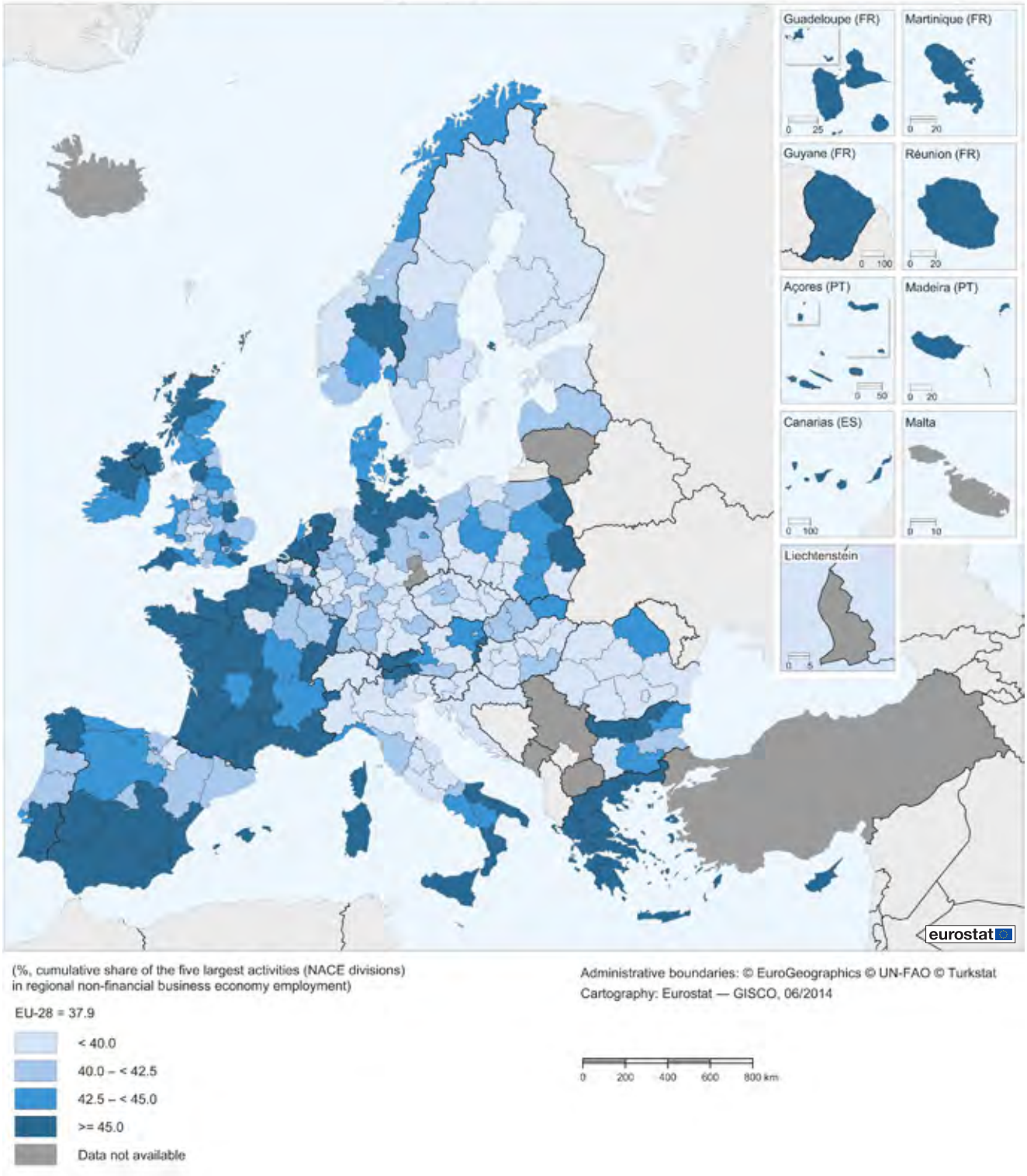
By contrast, the lowest concentrations were mainly recorded in regions with a relatively small services sector and a relatively large manufacturing activity; this was often the case in eastern Europe, in particular in the Czech Republic, Estonia, Hungary, Slovenia and Romania, but also in several regions of Germany, Italy, Finland and Sweden. The five largest employers accounted for less than 35 % of non-financial business economy employment in five Czech regions (Moravskoslezsko, Jihovýchod, Jihozápad, Severozápad and Severovýchod), the Hungarian regions of Közép-Dunántúl and Közép-Magyarország, both Slovenian regions, the French capital region of Île de France, Dolnośląskie (Poland), Centru (Romania) and Länsi-Suomi (Finland), as well as Estonia (one region at this level of analysis).

**Figure 6.2:** Concentration of activities (NACE divisions), by NUTS 2 regions, EU, 2011 (1)
(%, cumulative share of top X regions in sectoral employment)




(1) Greece and France: 2010. Chemnitz (DED4), Leipzig (DED5), Croatia and Malta: not available.
*Source:* Eurostat (online data code: sbs_r_nuts06_r2)

**Map 6.4:** Regional business concentration, by NUTS 2 regions, 2011 (1)
(%, cumulative share of the five largest activities (NACE divisions) in regional non-financial business economy employment)




(1) EU-28 average: calculated on the basis of available data. Greece and France: 2010. Croatia and Switzerland: national level.
*Source:* Eurostat (online data code: sbs_r_nuts06_r2)

# Data sources and availability

Regional SBS provide users with information about the structure, performance and development of regional business economies. This detailed and harmonised data source provides for each activity statistics in relation to the number of workplaces, persons employed, wage and salaries, and investments.

Regional SBS are collected under a regulation of the European Parliament and of the Council, using the definitions and analysis (breakdowns) specified in European Commission implementing regulations. The regional SBS data presented in this chapter are restricted to the non-financial business economy, which includes NACE Sections B (mining and quarrying), C (manufacturing), D (electricity, gas, steam and air conditioning supply), E (water supply, sewerage and waste management), F (construction), G (distributive trades), H (transport and storage), I (accommodation and food service activities), J (information and communication), L (real estate activities), M (professional, scientific and technical activities) and N (administrative and support service activities), as well as NACE Division 95 (repair of computers and personal and household goods). The aggregate for the non-financial business economy therefore excludes agricultural, forestry and fishing activities and public administration and other services (such as defence, education and health), which are not covered by SBS, and also excludes financial services (NACE Section K).

The type of statistical unit used for regional SBS data is normally the local unit, which is an enterprise or part of an enterprise situated in a geographically identified place. Local units are classified into sectors (by NACE) normally according to their main activity, but in some EU Member States the activity code is assigned on the basis of the principal activity of the enterprise to which the local unit belongs. As such, it is possible for the principal activity of a local unit to differ from that of the enterprise to which it belongs. Hence, national SBS data, based on the enterprise as a statistical unit, are not directly comparable with national aggregates compiled from regional SBS.

The nature of detailed regional SBS is such that some data cells are not disclosed for reasons of statistical confidentiality, following common principles and guidelines. In these cases data are flagged as being confidential and values are not published. Given that the choropleth maps in this chapter are compiled using a range of values for each colour shade, it has been possible to assign confidential cells to a specific class while respecting procedures for non-disclosure.

## Indicator definitions

The main variable used for analysis in this chapter is the number of persons employed. For SBS, this is defined as the total number of persons who work (paid or unpaid) in the observation unit, as well as persons who work outside the unit but who belong to it and are paid by it. The number of persons employed includes working proprietors, unpaid family workers, part-time workers and seasonal workers.

# 7 Research and innovation

# Introduction

One of the key aims of the Europe 2020 strategy is to foster research, development and innovation. This chapter presents statistical information analysing regional developments for a range of science and technology indicators within the European Union (EU), including the following domains: research and development (R & D), the number of researchers, human resources in science and technology (HRST), employment in high technology sectors and patent applications.

Europe has a long tradition of excellence in the fields of R & D and innovation. An innovative society may help businesses to maintain a competitive advantage, develop products with higher added value, stimulate economic activity and thereby safeguard or create jobs. In order to pool talent and achieve a necessary scale, policymakers seek to encourage transnational cooperation within the EU's research area.

Aside from ensuring a lasting economic development and job creation, investment in research and innovation has the purpose of helping tackle some of the most important global challenges, for example, in relation to health, energy or the environment. Indeed, the influence of new research and innovation extends well beyond the economic sphere, as it can lead to scientific or innovative solutions that impact on the daily lives of the population, for example, ensuring safer food, developing new medicines to fight illness and disease, or alleviating environmental pressures.

## Europe 2020

The Europe 2020 strategy is the EU's growth and jobs strategy launched in 2010. It aims to create the conditions for smart, sustainable and inclusive growth. The strategy includes five headline targets that are due to be achieved by the end of 2020; one of these covers research and development, namely, that expenditure on R & D should be equivalent to 3 % or more of the EU's GDP. The five headline targets are supported by seven flagship initiatives, identified as engines for growth and jobs, which are designed to provide a framework through which the EU and national authorities mutually reinforce their efforts.

The innovation union is supplemented by a Communication from the European Commission on 'Regional Policy contributing to smart growth in Europe 2020' (COM(2010) 553 final) which explores ways in which regional policy can be used to unlock the growth potential of the EU. The communication calls for the development of smart specialisation strategies across the EU's regions in order to identify those activities that offer the best chance of strengthening a region's competitiveness, while encouraging interaction between businesses, research centres and universities on the one hand and local, regional and national administrations on the other. Such strategies are designed to ensure a more effective use of public funds, helping regions to concentrate their resources on a few key priorities that exploit regional diversity, stimulate cooperation across national and regional borders and open up new opportunities.

### INNOVATION UNION — A FLAGSHIP EUROPE 2020 INITIATIVE

In 2010, the European Commission adopted a communication launching a flagship initiative titled 'Innovation union' (COM(2010) 546); this sets out a strategic approach to a range of challenges like climate change, energy and food security, health and an ageing population. It is hoped that the promotion of innovation in these areas will lead to innovative ideas being transformed into new economic activities and products, which in turn will generate jobs, green growth and social progress.

The innovation union seeks to use public sector intervention to stimulate the private sector, removing bottlenecks which may prevent ideas from reaching market, such as access to finance, a lack of venture capital, fragmented research systems, the under-use of public procurement for innovation, and speeding-up harmonised standards and technical specifications. The innovation union also seeks to promote coherence between European and national research policies, cutting red tape and removing obstacles to researchers' mobility, for example. Measures are being taken in the fields of patent protection, standardisation, public procurement and smart regulation to create a single European market for innovation.

To achieve these goals more than 30 separate actions have been identified, including a range of European innovation partnerships (EIPs), designed to act as a framework to address major societal challenges; for example, the EIP on active and healthy ageing aims to add an average of two years of healthy life for people in Europe.

***For more information:***

Innovation union — a Europe 2020 initiative: http://ec.europa.eu/research/innovation-union/index_en.cfm

### RESEARCH AND INNOVATION — COHESION POLICY FUNDING

Almost one quarter of the cohesion policy budget between 2007 and 2013, some EUR 86.4 billion, was allocated to innovation. This commitment was further strengthened for the 2014–20 programming period, with 30 % of cohesion policy allocations destined for innovation.

The Europe 2020 strategy is founded on the belief that sustainable growth is increasingly related to the capacity of regional economies to innovate and transform, adapting to an ever-changing and more competitive, global economy. As such, policymakers are increasingly of the opinion that the key drivers of research and innovation are most effectively addressed at a regional level.

Reducing the innovation divide between European regions is therefore a key task for cohesion policy. In this context, there are four thematic priorities for investment during the 2014–20 cohesion policy programming period: innovation and research; the digital agenda; support for small and medium sized businesses (SMEs); and the low-carbon economy. Investment will largely be made through the European Regional Development Fund (ERDF) which will be used to support the implementation of smart specialisation strategies.

***For more information:***

Cohesion policy and research and innovation: http://ec.europa.eu/regional_policy/activity/research/index_en.cfm

The European Commission assisted EU Member States to make use of remaining structural funds from the 2007–13 programme for research and innovation projects. To avoid an innovation divide between regions, smart specialisation strategies are employed so that the EU's structural funds and innovation and research programmes are used efficiently. Regional innovation strategies are increasingly characterised by accelerated implementation, optimising the impact of assistance, re-orienting activities towards areas which give regions the best chance of developing a competitive advantage, and maximising synergies between the different sources of Community funding for innovation, while continuing to focus on ensuring that every region across the EU may benefit from the potential of innovation.

### INNOVATION SCOREBOARDS — BENCHMARKING INNOVATION DEVELOPMENTS ACROSS THE EU

The innovation union flagship initiative is monitored through an innovation union scoreboard, which provides an assessment of the research and innovation performance of the EU Member States and the relative strengths and weaknesses of their research and innovation systems. The innovation union scoreboard identifies 25 key indicators for measuring the progress of the innovation union; it is released on an annual basis.

The innovation union scoreboard is accompanied, every two years, by a regional innovation scoreboard. Regional performance in innovation is thought to depend not only on the performance of local enterprises and research institutes, but also on interactions between regional and national policymakers, different stakeholders, enterprises, higher education institutes and research organisations.

The 2014 report identifies 27 separate regions across the EU as innovation leaders. These were located in just eight of the EU Member States: Denmark, Germany, Ireland, France, the Netherlands, Finland, Sweden and the United Kingdom. As such, innovation excellence was concentrated in relatively few regions across Europe.

***For more information:***

Innovation union scoreboard: http://ec.europa.eu/enterprise/policies/innovation/files/ius/ius-2014_en.pdf
Regional innovation scoreboard: http://ec.europa.eu/enterprise/policies/innovation/files/ris/ris-2014_en.pdf

## Framework programmes

Since their launch in 1984, the EU's framework programmes for research have played a leading role in multidisciplinary research activities. The seventh framework programme for research and technological development (FP7) was the EU's main instrument for funding research during the period from 2007 to 2013; it had a budget of EUR 50.5 billion, with an additional amount of up to EUR 5.25 billion for nuclear research and training activities to be carried out under the Euratom Treaty.

At the end of 2013, Regulation (EU) No 1291/2013 of the European Parliament and of the Council was adopted establishing Horizon 2020 — the Framework Programme for Research and Innovation (2014–2020). By coupling research and innovation, the goal of Horizon 2020 is to ensure Europe produces world-class science, removes barriers to innovation, bridges the gap between research and the market so technological breakthroughs are transformed into viable products, and makes it easier for the public and private sectors to work together. Horizon 2020 has a budget of almost EUR 80 billion, in addition to the private investment that it is expected this funding will attract; it is a financial instrument designed to implement the innovation union flagship initiative.

A Communication from the European Commission on 'Public-private partnerships in Horizon 2020' (COM(2013) 494 final) outlines a number of Joint-Technology Initiatives (JTI) that it believes can help deliver growth and societal benefits. In particular, it puts forward objectives regarding innovative medicines, fuel cells as energy converters, hydrogen as an energy carrier, clean sky proposals to reduce the environmental impact of the next generation of aircraft, bio-based industries, and electronic components and systems. It also sets out other areas for consultation: factories of the future; energy-efficient buildings; green vehicles; future internet; sustainable process industry; robotics; photonics; and, high performance computing.

## European research area

Europe's research efforts have often been described as being fragmented along national and institutional lines. The European research area (ERA) was launched at the Lisbon European Council in March 2000 and aims to ensure open and transparent trade in scientific and technical skills, ideas and know-how; it sets out to create a unified research area that is open to the world that promotes the free movement of researchers, knowledge and technology.

In May 2008, the ERA was re-launched as part of what has become known as the Ljubljana process, which included specific initiatives for five different areas: researchers' careers and mobility; research infrastructures; knowledge sharing; research programmes; and international science and technology cooperation. A European Commission communication titled 'A reinforced European research area partnership for excellence and growth' (COM(2012) 392 final) is designed to ensure the completion of the ERA by 2014, focusing on five key priority areas for reform:

- more effective national research systems;
- optimal transnational cooperation and competition;
- an open labour market for researchers;
- gender equality and gender mainstreaming in research, and;
- optimal circulation and transfer of scientific knowledge.

As part of the monitoring process, annual surveys and reports are released showing the progress made towards the completion of the ERA. Some of the key findings of the ERA 2013 progress report included that approximately three quarters of the EU Member States had defined a strategy for research, development and innovation and that 80 % of internationally mobile researchers believed mobility within the EU had increased the advancement of their research skills. While significant progress has been made in some areas, the report also highlighted a number of areas where further efforts may well be required in order to complete the ERA by 2014. For example, 40 % of researchers associated with European Higher Education Institutes considered that research job vacancies were not advertised well enough.

# Main statistical findings

Regional research, knowledge and innovative capacity depends on a range of factors — business culture, workforce skills, education and training institutions, innovation support services, technology transfer mechanisms, regional infrastructure, the mobility of researchers, sources of finance and creative potential. Education, training and lifelong learning are considered vital to developing a region's capacity to innovate, with universities across the EU increasingly implicated in the commercialisation of research, collaboration with regional businesses, and developing the entrepreneurial mind-set of students.

While EU funding seeks to target all regions, the innovation divide across Europe's regions reflects a pattern whereby the majority of EU regions are low absorbers of Framework Programme funding and structural funds designed to raise their modest levels of research and innovation. There appears to be a regional innovation paradox, whereby those regions characterised by established innovative activity maintain their position as innovative leaders, while those that trail behind fail to catch-up, despite efforts to specifically target funding and policy prescriptions to these regions.

## Research and development intensity

***The average research and development spend in the EU-28 was EUR 526 per inhabitant in 2012***

Intramural R & D expenditure (GERD) was estimated to be EUR 266.9 billion across the EU-28 in 2012; this equated to an average of EUR 526 of research and development expenditure per inhabitant. A decade earlier, in 2002, R & D expenditure per inhabitant had stood at EUR 382 per inhabitant; note that these figures are in current prices and therefore include the effects of price inflation.

There was a steady increase in R & D expenditure per inhabitant during the last decade, aside from a minor contraction of 1.4 % in 2009 (compared with the year before); as such, the reduction in economic activity experienced during the financial and economic crisis was considerably greater than the corresponding decline in research and development expenditure per inhabitant.

***R & D intensity was 2.06 % in 2012, compared with a Europe 2020 target of 3.00 %***

One of the five key Europe 2020 targets is for the ratio of R & D expenditure to GDP to be at least 3.00 % by 2020. This overall target is divided into a range of national targets, reflecting the position of each EU Member State and commitments agreed between the European Commission and national administrations through a series of reform programmes. These national targets for R & D expenditure vary considerably between EU Member States and ranged from less than 1.00 % of GDP in Greece, Cyprus and Malta up to 4.00 % of GDP for the traditionally R & D-intensive Member States of Finland and Sweden. Belgium, Denmark, Germany, Estonia, Spain, France and Slovenia have agreed to a 3.00 % target, the target for Italy has been set at 1.53 %, while no target has been established for the Czech Republic, Ireland and the United Kingdom.

R & D intensity is a derived indicator which measures the ratio of R & D expenditure to GDP. In the period between 2000 and 2007 there was little change in the EU-28's R & D intensity, as its level lay within a relatively restricted range from a low of 1.82 % to a high of 1.87 %. There followed successive increases, as R & D intensity rose from 1.84 % in 2007 to 1.91 % in 2008 and by a further 0.10 percentage points in 2009 (to reach 2.01 %); note that the increases in 2008 and 2009 reflect the contraction in economic activity during the financial and economic crisis rather than an expansion in the level of R & D expenditure. The EU-28's R & D intensity was almost unchanged in 2010 at 2.00 %, after which there were further increases in this ratio in 2011 (2.04 %) and again in 2012, when the EU-28's R & D intensity was estimated to be 2.06 %. In order to achieve the 3.00 % target that has been set for 2020, the EU-28's R & D intensity would need to grow, on average, by 0.12 percentage points each year.

SPOTLIGHT ON THE REGIONS: ZAHODNA SLOVENIJA (SI02), SLOVENIA

**Ljubljana, Slovenia**

The western Slovenian region of Zahodna Slovenija, which includes the cities of Ljubljana and Kranj, was the only NUTS 2 region from among the Member States that joined the EU in 2004 or later to record a research and development intensity of at least 3.00 %.

Research and development expenditure in Zahodna Slovenija was equivalent to 3.10 % of its GDP in 2011, which was almost twice as high as the corresponding share recorded in the other Slovenian region of Vzhodna Slovenija (1.68 %).

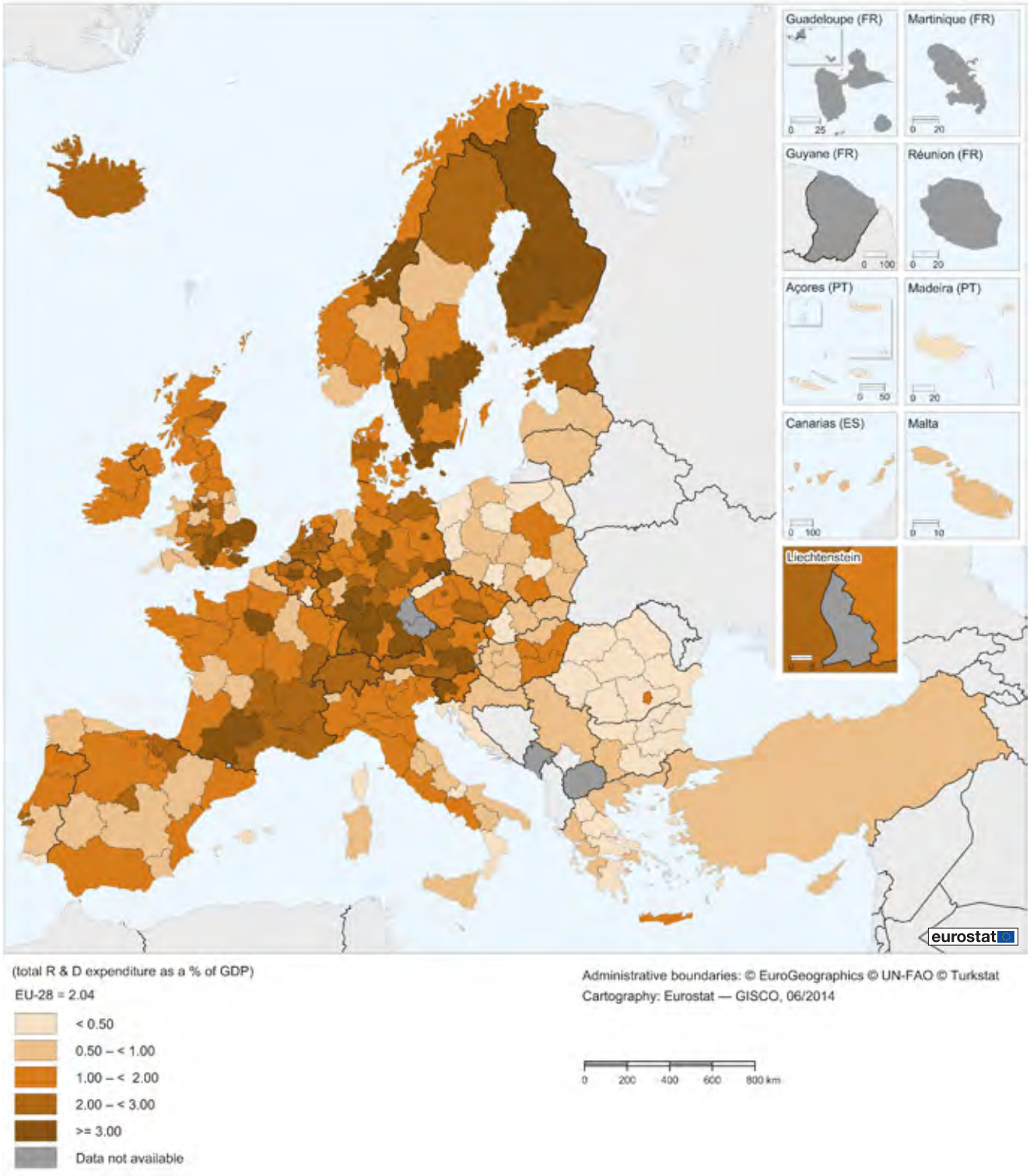
*Photo: Petar Milošević*

***Research and development intensity concentrated in Germany, the United Kingdom and the Nordic Member States***

**Map 7.1** shows that 32 of the 266 NUTS 2 regions in EU-28 for which data are available had R & D intensities of 3.00 % or more in 2011; regional R & D expenditure is often available for 2012, however, regional economic accounts — used as the denominator in the ratio of R & D intensity — are only available through to 2011. Among these 32 regions, approximately one third (11 regions) were in Germany, six in the United Kingdom, four in Sweden, three in Finland, and two each in Belgium, France and Austria, while there was a single region from each of Denmark and Slovenia.

The nature of research and development is such that there are clusters of activity, in other words, specific geographical areas where R & D activity appears to be concentrated. These regions are often developed around academic institutions or specific high-technology industrial activities and knowledge-based services, which foster a favourable environment, thereby attracting new start-ups and highly qualified personnel such that the competitive advantage of these regions is further intensified. The concentration of research and development expenditure may be demonstrated

**Map 7.1:** R & D intensity, by NUTS 2 regions, 2011 (1)
(total R & D expenditure as a % of GDP)




(1) Luxembourg: 2010. Switzerland: 2008. Switzerland and Turkey: national level. EU-28, Ireland and the Netherlands: estimates.
*Source:* Eurostat (online data code: rd_e_gerdreg)

by the fact that the top 32 regions with R & D intensities of at least 3.00 % accounted for 44.1 % of the EU-28's total R & D expenditure in 2011.

**Figure 7.1** summarises the information on the concentration of R & D activities. National R & D intensities (shown by the size of the bubbles) were highest among the Nordic Member States and these countries also reported a relatively high share of their total number of regions had R & D intensities of 3.00 % or more.

### *Research-intensive clusters apparent in southern Germany*

The 11 German regions with R & D intensities of at least 3.00 % included clusters in both south-west and south-east Germany, as well as the specific, isolated regions of Braunschweig (the most R & D-intensive region in Germany, 7.77 %), Berlin and Dresden; together, these 11 German regions contributed 19.1 % of the total R & D expenditure in the EU-28.

In France, the highest R & D intensity in 2011 was recorded in the Midi-Pyrénées region (5.05 %); this area includes a cluster of R & D-intensive enterprises related to aerospace manufacturing, centred on Toulouse. The second highest level of R & D intensity was recorded in the capital region of Île de France (3.02 %). The overall level of R & D expenditure in these two regions was high, particularly in the Île de France, which recorded by far the highest level of R & D expenditure among any of the NUTS 2 regions across the EU (EUR 18.39 billion); it alone contributed 7.1 % of the EU-28's total R & D expenditure in 2011.

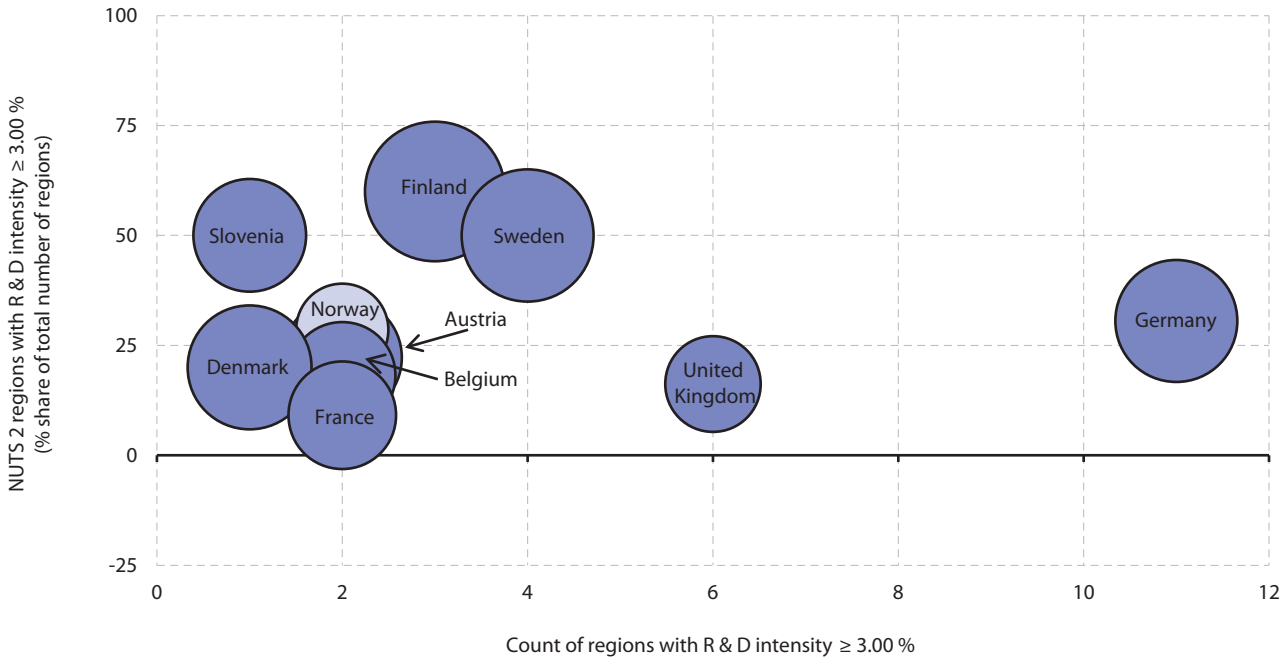
The most R & D-intensive regions of the United Kingdom in 2011 were Cheshire (6.28 %) and East Anglia (5.00 %); the former has much of its R & D spend accounted for by pharmaceuticals, while the latter includes the area around Cambridge, which has a science park that benefits from close ties with the nearby university.

Eight of the regions where R & D intensity was over 3.00 % were located in the Nordic Member States, where the highest R & D intensity was 5.08 % in the Danish capital region of Hovedstaden. These eight regions collectively contributed 8.7 % to R & D expenditure in the EU-28 in 2011.

The two Belgian regions with relatively high R & D intensity in 2011 were the Prov. du Brabant Wallon, which was the most R & D-intensive region in the EU (8.92 % of GDP), and the neighbouring Prov. Vlaams-Brabant (3.76 %). As well as a large industrial area around the Belgian capital, these regions include the university towns of Louvain-la-Neuve (which has various science parks) and Leuven, and is a global centre for research into vaccines.

**Figure 7.2** summarises the spread of R & D intensities across the regions of each EU Member State, ranked on national averages. Finland and Sweden were the only EU Member States to record R & D intensities of more than 3.00 % in 2011, although Denmark was only marginally below this rate, at 2.98 %. Capital regions recorded the highest level of R & D intensity in 11 of the 22 multi-regional EU Member States for which data are available. When this was not the case, the capital region generally recorded an R & D intensity that was above the national average; the only exceptions to this rule were Belgium and the United Kingdom, where regions

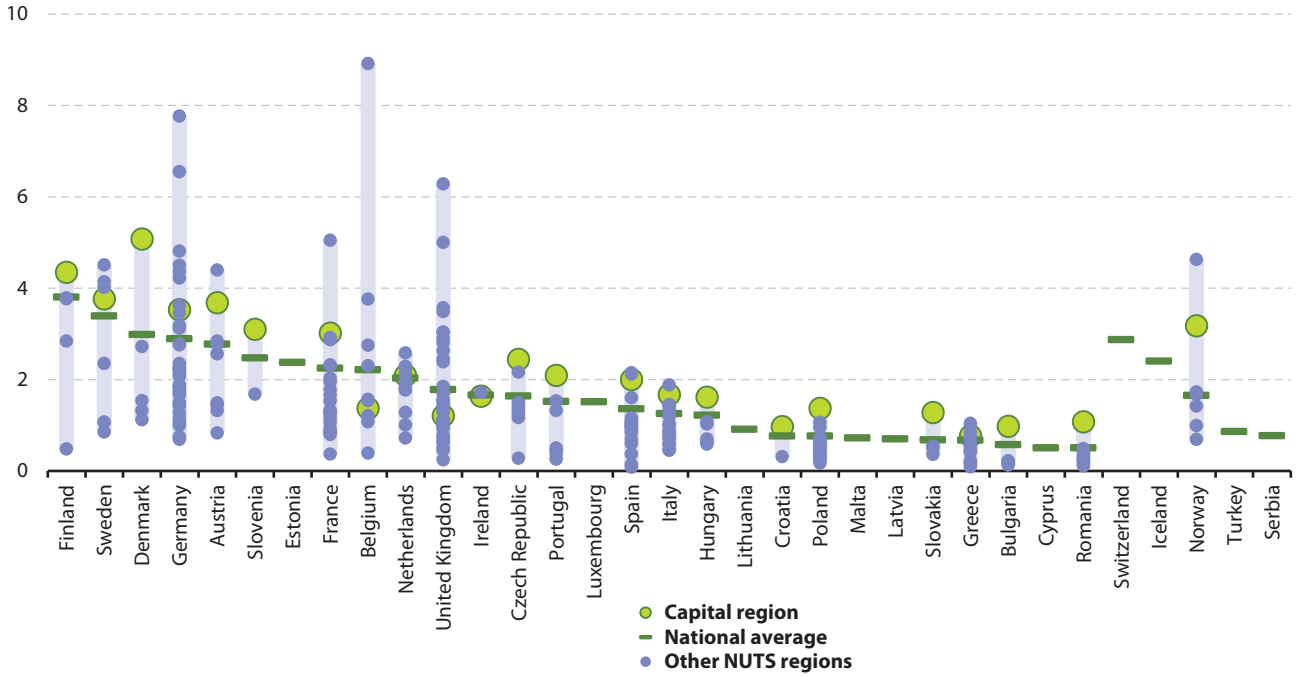
**Figure 7.1:** Regions with R & D intensity greater than or equal to 3.00 %, by NUTS 2 regions, 2011 (1)




(1) The size of the bubble reflects national R & D intenstity. Countries that are not shown do not have any regions with R & D intensity greater than 3.00 %. Luxembourg: 2010. Guadeloupe (FR91), Martinique (FR92), Guyane (FR93), Réunion (FR94), Liechtenstein, Switzerland, Montenegro, the former Yugoslav Republic of Macedonia and Turkey: not available. Ireland and the Netherlands: estimates. Niederbayern (DE22) and Oberpfalz (DE23): confidential.

*Source:* Eurostat (online data code: rd_e_gerdreg)

**Figure 7.2:** Regional disparities in R & D intensity, by NUTS 2 regions, 2011 (1)
(total R & D expenditure as a % of GDP)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Luxembourg: 2010. Switzerland: 2008. Ireland and the Netherlands: estimates.
*Source:* Eurostat (online data code: rd_e_gerdreg)

surrounding the capital region recorded some of the highest R & D intensities, and Ireland. Those multi-regional EU Member States with relatively low national R & D intensities tended to display a narrow range of intensities across their regions; this was particularly true for Bulgaria, Ireland, Greece, Croatia, Hungary, Romania and Slovakia.

## Researchers

### *There were 2.55 million researchers active across the EU in 2011*

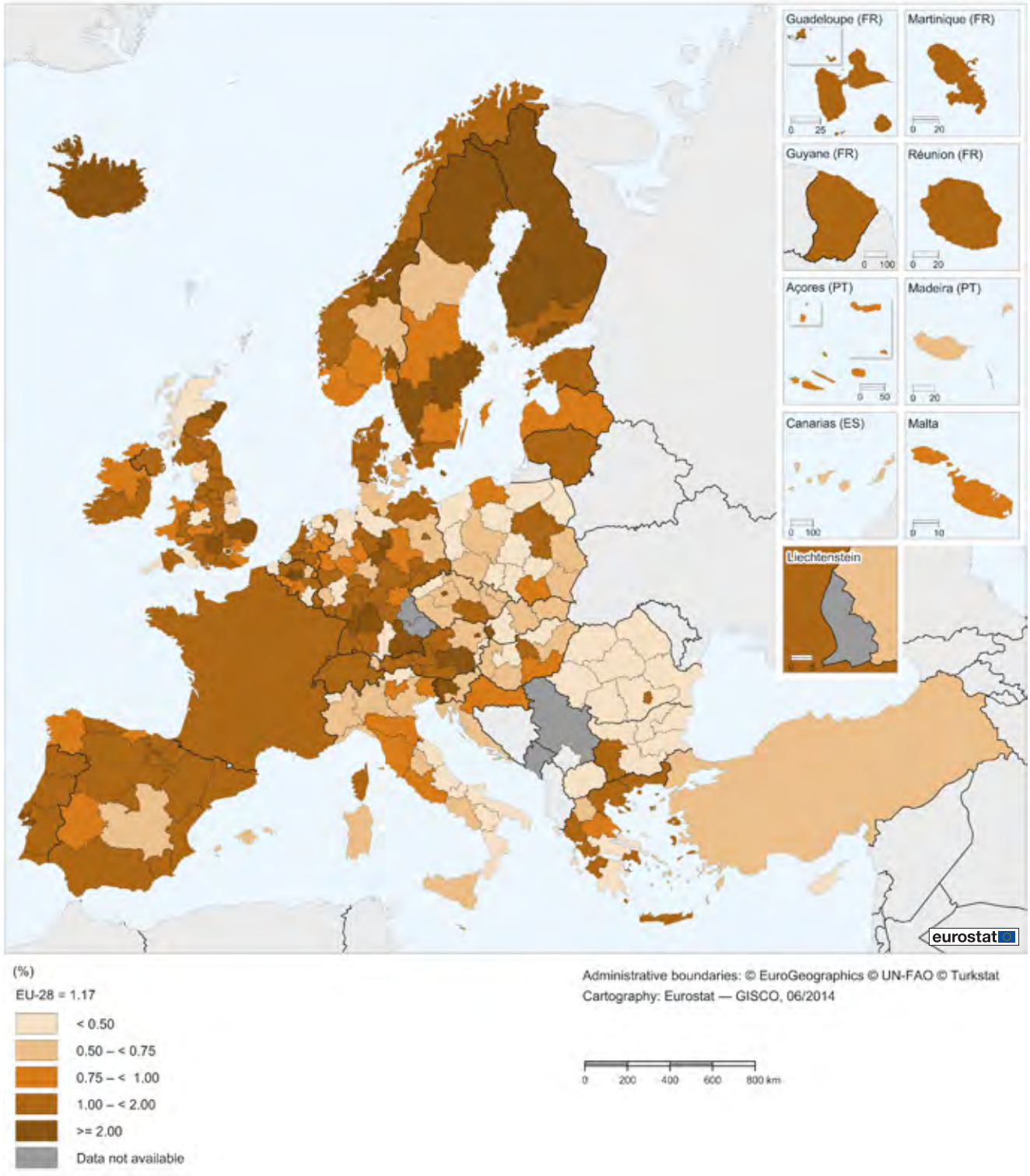
Researchers are directly employed within R & D activities and are defined as 'professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and in the management of the projects concerned'. There were an estimated 2.55 million researchers active across the EU-28 in 2011. Their number has grown at a steady pace in recent years, rising from 1.80 million in 2003, with an average rate of growth equal to 4.45 % per annum between 2003 and 2011. An alternative unit of measure for labour input adjusts the number of researchers to take account of different working hours and working patterns. Based on this measure, there were 1.63 million full-time equivalent researchers in the EU-28 in 2011.

**Map 7.2** provides an overview of the regional distribution of the share of researchers in total employment (measured as a headcount). The EU-28 average was estimated to be 1.17 % in 2011, an increase of 0.1 percentage points when compared with 2009. The regional information for this indicator is generally provided for 2011, although there are a number of exceptions to this rule (see the footnote to the map).

### *Distribution of researchers was also clustered — particularly in capital regions*

The distribution of researchers was relatively concentrated in a few clusters of regions where research and development intensity was high. As a result, there was a skewed distribution as only 88 of the 245 regions for which data are available (note that data for France are only available at the national level) reported a share of researchers in total employment that was above the EU-28 mean of 1.17 %, while the median share across all NUTS 2 regions was 0.91 %. The main difference between the patterns displayed in **Map 7.1** and **Map 7.2** was that the distribution of researchers tended to be somewhat lower in those regions characterised as having a high degree of research intensity in the business sector, while the relative importance of researchers was more concentrated in those regions characterised as having higher education establishments and research institutes; this was often the case in capital regions. This pattern of concentrated clusters was repeated across most of the EU Member States, with a small number of regions recording a relatively high share of researchers in total employment — often, far above national averages.

**Map 7.2:** Share of researchers in total persons employed, by NUTS 2 regions, 2011 (1)
(%)




(1) Molise (ITF2) and Basilicata (ITF5): 2010. Luxembourg, Zachodniopomorskie (PL42), Lubuskie (PL43), Kujawsko-Pomorskie (PL61), Warmińsko-Mazurskie (PL62) and the former Yugoslav Republic of Macedonia: 2009. Switzerland: 2008. France, Switzerland and Turkey: national level. EU-28, Ireland and the United Kingdom: estimates.
*Source:* Eurostat (online data code: rd_p_persreg)

There were 26 NUTS 2 regions in the EU where the share of researchers in total employment was 2.0 % or more in 2011 (as shown by the darkest shade in **Map 7.2**). The highest share was recorded in Inner London (4.06 %), while there were two regions that shared second place in the ranking, namely, the Danish and Slovakian capital regions of Hovedstaden and Bratislavský kraj (3.81 %). The capital regions of Lisboa, Wien, Helsinki-Uusimaa, Praha and the Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest were also present among the 10 regions with the highest proportion of researchers in total employment. As such, the only non-capital regions in the top 10 were the highly research-intensive region of the Prov. Brabant Wallon and the East Anglia region of the United Kingdom.

At the other end of the range, researchers accounted for less than 0.5 % of total employment in 56 NUTS 2 regions across the EU (as shown by the lightest shade in **Map 7.2**). These regions were often on the geographic periphery in relatively sparsely-populated areas, for example, the Åland islands (which displayed a totally different pattern to the other regions of Finland) or two regions at the extremities of the United Kingdom — the Highlands and Islands (of Scotland) and Cornwall and Isles of Scilly (in south-west England); otherwise, the majority of the regions with relatively low shares of researchers were located in southern Italy and in eastern Europe.

## Human resources in science and technology

One way to measure the concentration of highly qualified people is to look at human resources in science and technology (HRST). The stock of HRST can be used as an indicator to determine how developed the knowledge-based economy is. HRST includes persons who have completed tertiary education (HRSTE) — for example, university degrees — and/or are employed in a science and technology occupation (HRSTO). Those persons who are classified as one or other type form the aggregate stock of total HRST, while the subgroup of persons who meet both of these criteria are referred to as core HRST (HRSTC).

### *Human resources in science and technology: almost one third of the EU-28's population*

There were 115.1 million persons in the EU-28 considered as HRST in 2012, of which 45.8 million were categorised as core HRST. As such, some 30.3 % of the EU-28's population (aged 15–74) was categorised as HRST in 2012.

### *Majority of the population in Inner London, Helsinki-Uusimaa and Stockholm classified as HRST*

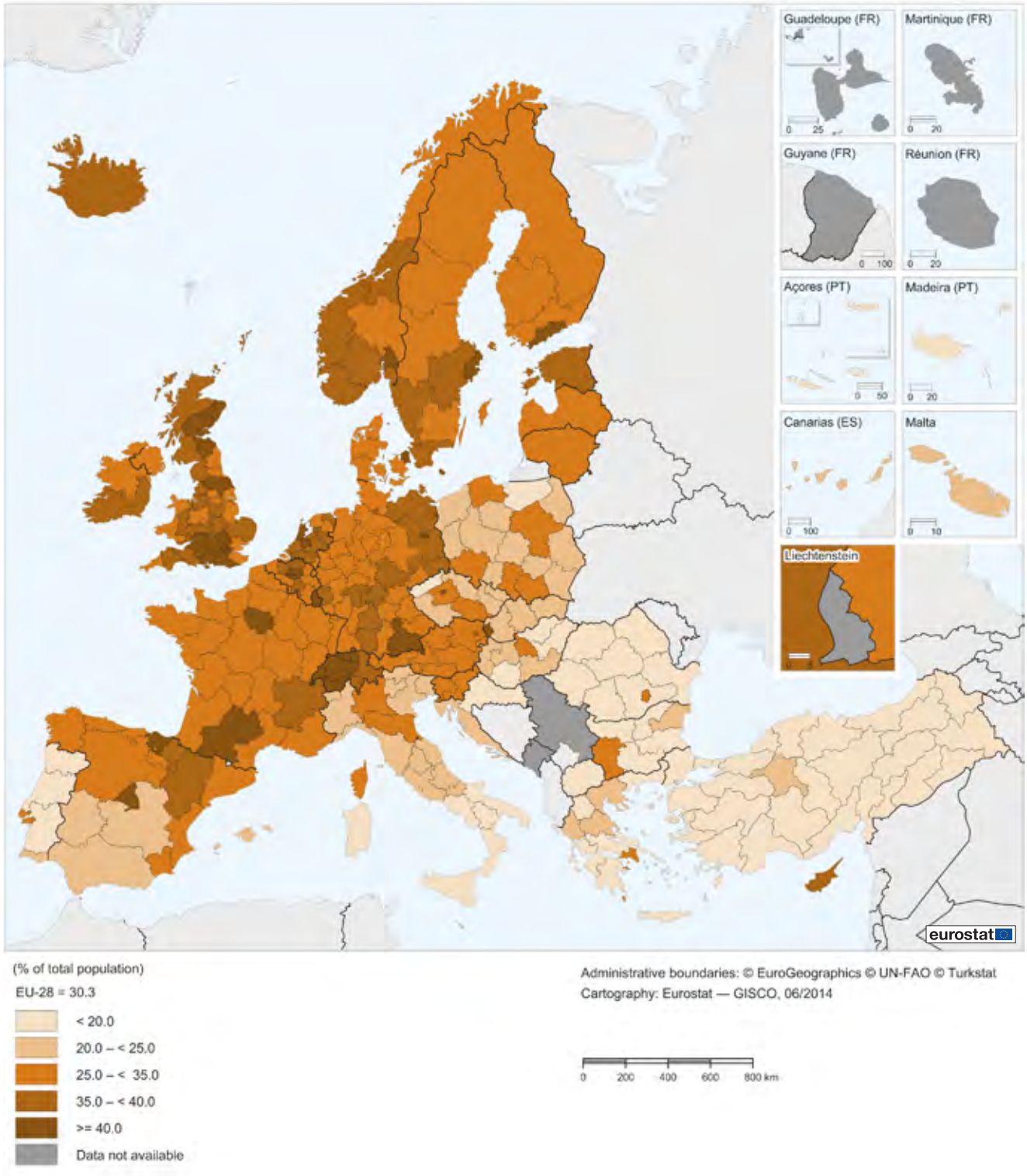
There were 26 NUTS 2 regions across the EU-28 where at least 40 % of the total population were classified as HRST in 2012 (as shown by the darkest shade in **Map 7.3**). Of these 26 regions there were just three where the majority of the population was categorised as HRST: each of these was a capital region from one of the most research-intensive EU Member States, namely Inner London (59.4 %), which recorded, by some distance, the highest share, and the Nordic capital regions of Helsinki-Uusimaa (50.9 %) and Stockholm (50.0 %).

Beyond a concentration in most capital regions, there were also relatively high shares of HRST in the total population in a number of regions close to capital cities — for example: the Prov. Brabant Wallon and the Prov. Vlaams-Brabant around the Belgian capital; Utrecht in the Netherlands; and Outer London, Berkshire, Buckinghamshire and Oxfordshire, Bedfordshire and Hertfordshire, and Surrey, East and West Sussex in the United Kingdom. Some of the remaining regions that displayed relatively high shares of HRST were characterised as being largely urbanised, industrial areas — for example, Oberbayern in Germany or the País Vasco in Spain, while others were characterised by their specialisation in a particular industrial activity — for example, the aerospace sector in the Midi-Pyrénées region of France or activities linked to oil and natural gas exploration off the coast of North Eastern and Eastern Scotland.

There were several clusters of regions with relatively high shares of HRST in the total population. These included one running from southern Germany into Switzerland, one that stretched across much of the Benelux countries, and one that ran from south-west France into north-east Spain. More generally, a majority of the regions in the Nordic Member States reported a high proportion of HRST — this was particularly true in Norway, southern Sweden, southern Finland and the Danish capital region.

There were 37 NUTS 2 regions where the share of HRST in the population was less than 20 % in 2012 (as shown by the lightest shade in **Map 7.3**). These were widely distributed across southern and eastern Europe, from Portugal, through southern Spain into most of Italy and much of south-eastern Europe (aside from capital regions).

**Map 7.3:** Human resources in science and technology (HRST), by NUTS 2 regions, 2012 ([1])
(% of total population)




([1]) Corse (FR83): low reliability.
*Source:* Eurostat (online data code: hrst_st_rcat)

### *Core HRST accounted for almost four tenths of the active population in Inner London*

**Figure 7.3** shows the distribution of core HRST as a share of the economically active population in 2012, ranked by national averages; note that this indicator uses a different denominator to that employed for **Map 7.3**. The skewed nature of the distribution is clearly apparent with a higher number of regions below their respective national average, while capital regions tended to record much higher shares. This pattern was particularly apparent in the United Kingdom, where core HRST accounted for 39.7 % of the economically active population in Inner London — the highest figure across any of the NUTS 2 regions for which data are available, followed by Luxembourg (a single region) where a share of 35.6 % was recorded.

Among the multi-regional EU Member States, the capital region generally recorded the highest share of core HRST in the economically active population. Indeed, the highest shares of core HRST in Finland, Denmark, Sweden, Ireland, Slovenia, Hungary, Bulgaria, the Czech Republic, Portugal, Austria and Slovakia were recorded in their respective capital regions, while none of the remaining regions in any of these Member States recorded a share of core HRST that was above the national average. Those capital regions which did not follow this pattern generally maintained a share of core HRST that was above their respective national averages. The only exception was Croatia (where the difference between the national average and that for the capital region was just 0.4 percentage points). Among the non-member countries, Switzerland was also an exception to this general rule.

## Employment in high-tech sectors

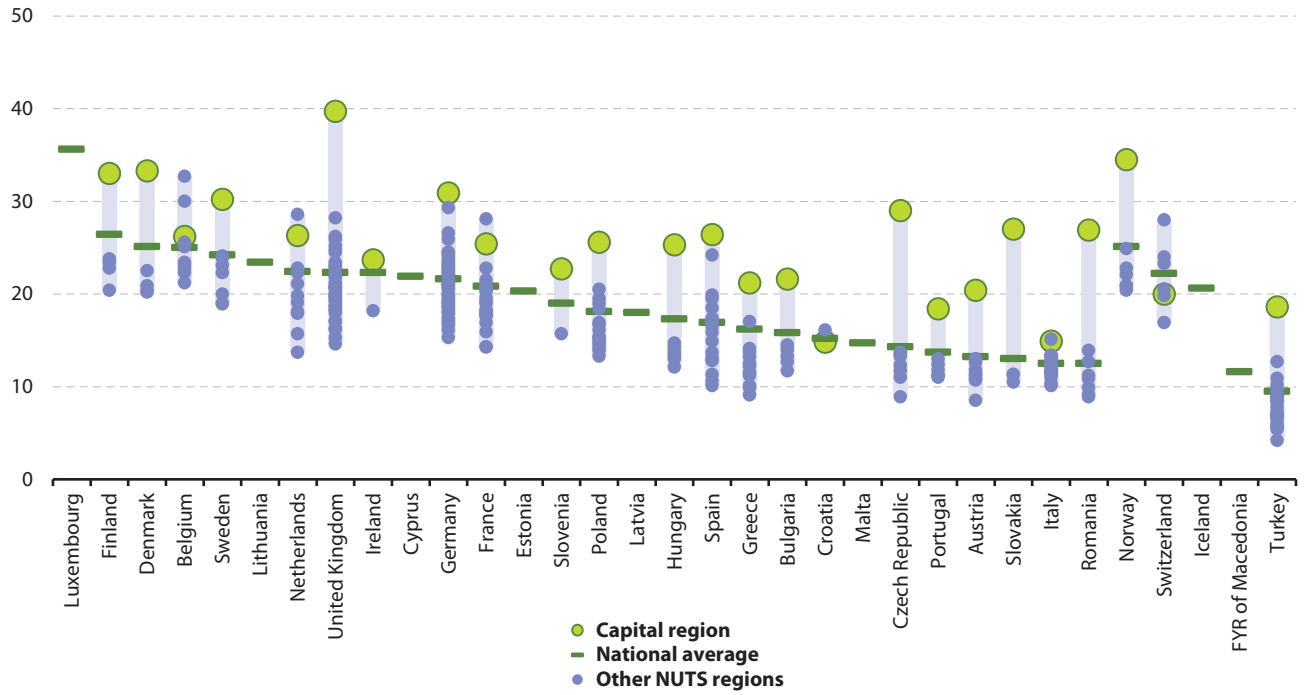
High-tech sectors include high-tech manufacturing and high-tech knowledge-intensive services, which are defined on the basis of the activity classification, NACE. The distinction between manufacturing and services is made due to the existence of two different methodologies. While R & D intensities are used to distinguish between high, medium-high, medium-low and low technology manufacturing industries, for services the proportion of the workforce that has followed a tertiary education is used to distinguish between knowledge-intensive services and less knowledge-intensive services.

### *Some 8.5 million persons in the EU-28 worked in high-tech sectors in 2012*

There were an estimated 8.5 million persons employed across the EU-28 within high-tech sectors in 2012 (the estimate includes data for the United Kingdom for 2011), equating to 3.9 % of total employment. **Map 7.4** presents information for regional employment shares of those working in high-tech sectors.

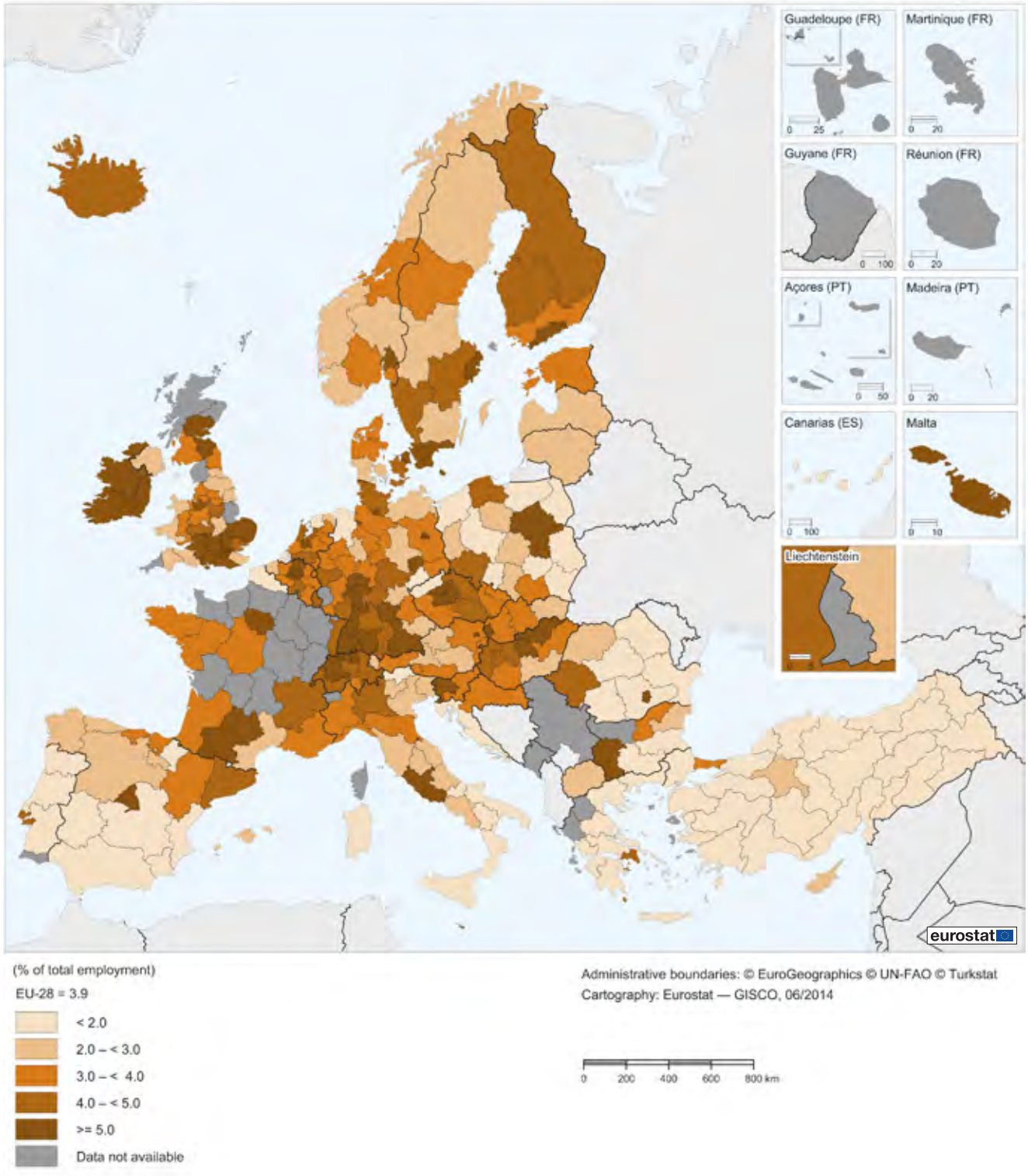
Urban regions, especially capital regions or regions situated close to capitals, often exhibited the highest shares of employment in high-tech sectors; this was particularly true in the Nordic Member States, Ireland and Slovakia. In those EU Member States where the capital region did not record the highest share of employment in high-tech sectors, it did nevertheless record a share above the national average, except in the Netherlands. Generally, the distribution of

**Figure 7.3:** Human resources in science and technology core (HRSTC), by NUTS 2 regions, 2012 (1)
(% of the economically active population)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Corse (FR83) and the French overseas regions (FR9): not available.
*Source:* Eurostat (online data code: hrst_st_rcat)

**Map 7.4:** Employment in high-tech sectors, by NUTS 2 regions, 2012 (1)
(% of total employment)




(1) Severen tsentralen (BG32), Yugoiztochen (BG34), Anatoliki Makedonia, Thraki (EL11), Notio Aigaio (EL42), Alentejo (PT18) and Tees Valley and Durham (UKC1): 2011. Peloponnisos (EL25) and Molise (ITF2): 2010. Data for several regions have low reliability (too numerous to document).
*Source:* Eurostat (online data code: htec_emp_reg2)

SPOTLIGHT ON THE REGIONS:
PROV. BRABANT WALLON (BE31), BELGIUM

**Louvain-la-Neuve, Prov. Brabant Wallon**

Some 9.2 % of employment in the Prov. Brabant Wallon (located to the south of the Belgian capital) was in high-tech sectors in 2012; this was more than twice as high as the EU-28 average.

There were also relatively high shares of employment in high-tech sectors in the neighbouring Belgian regions of the Prov. Vlaams-Brabant and the capital Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest.

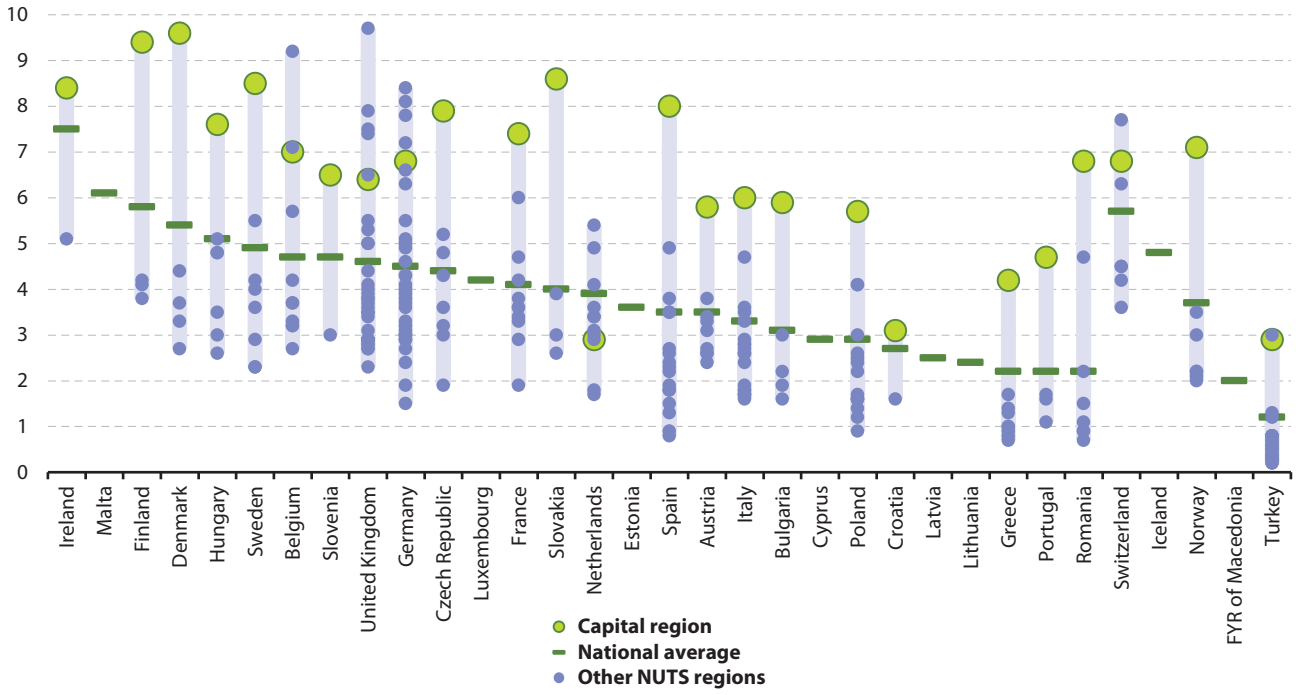
*Photo: Jonathan Nélis*

employment shares was often skewed, with the vast majority of regions reporting shares below the national average. The pattern in Germany and the United Kingdom was somewhat different, as both of these EU Member States recorded a relatively high number of regions with employment shares in high-tech sectors that were above 5 % (see **Figure 7.4**).

### *Employment in high-tech sectors reached almost 10 % in Berkshire, Buckinghamshire and Oxfordshire, Hovedstaden, Helsinki-Uusimaa and the Prov. Brabant Wallon*

**Map 7.4** shows the regional disparities in the share of high-tech sectors in total employment in 2012. There were 47 regions where this share was at least 5.0 % (as shown by the darkest shade). Among these, 10 regions recorded shares of at least 8.0 %. The highest regional share was registered in the United Kingdom in Berkshire, Buckinghamshire and Oxfordshire (9.7 %), where there is a high propensity for enterprises engaged in information and communications technology and life sciences to locate in the infrastructure-rich area to the west of London. The Danish and Finnish capital regions of Hovedstaden (9.6 %) and Helsinki-Uusimaa (9.4 %) and the Prov. Brabant Wallon (9.2 %) were the only other regions to record shares of at least 9.0 %.

**Figure 7.4:** Regional disparities in employment in high-tech sectors, by NUTS 2 regions, 2012 (1)
(% of total employment)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Severen tsentralen (BG32), Yugoiztochen (BG34), Anatoliki Makedonia, Thraki (EL11), Notio Aigaio (EL42), Alentejo (PT18) and Tees Valley and Durham (UKC1): 2011. Peloponnisos (EL25) and Molise (ITF2): 2010. Data for several regions have low reliability (too numerous to document).
*Source:* Eurostat (online data code: htec_emp_reg2)

There were 47 regions in the EU where less than 2.0 % of employment was in high-tech sectors in 2012 (as shown by the lightest shade in **Map 7.4**); note the information for some of these regions relates to previous reference periods. Nine of these 47 regions reported that high-tech sectors accounted for less than 1.0 % of their total employment: three of these were located in each of Greece (Anatoliki Makedonia, Thraki (2011 data); Peloponnisos (2010 data); Thessalia) and Romania (Sud-Est; Sud - Muntenia; Sud-Vest Oltenia), while there were two regions from Spain (Extremadura and the Canarias) and a single region from Poland (Swietokrzyskie). There were only four regions in Turkey where the share of employment in high-tech sectors reached 1.0 % or higher, while 22 regions recorded shares below this level.

## Patents

Patent counts can provide a measure of invention and innovation. However, care should be taken interpreting this data as not all inventions are patented and patent propensities vary across activities and enterprises. Furthermore, patented inventions vary in technical and economic value. As with the other indicators analysed in this chapter, patent applications tend to be clustered geographically in a limited number of regions and this is especially true for high-tech patents.

Regional statistics for patent applications to the European Patent Office (EPO) build on information from the addresses of inventors, which is not always the place (region) of invention as inventors do not necessarily live in the same region as the one in which they work. This discrepancy is likely to be higher when smaller geographical units are used.

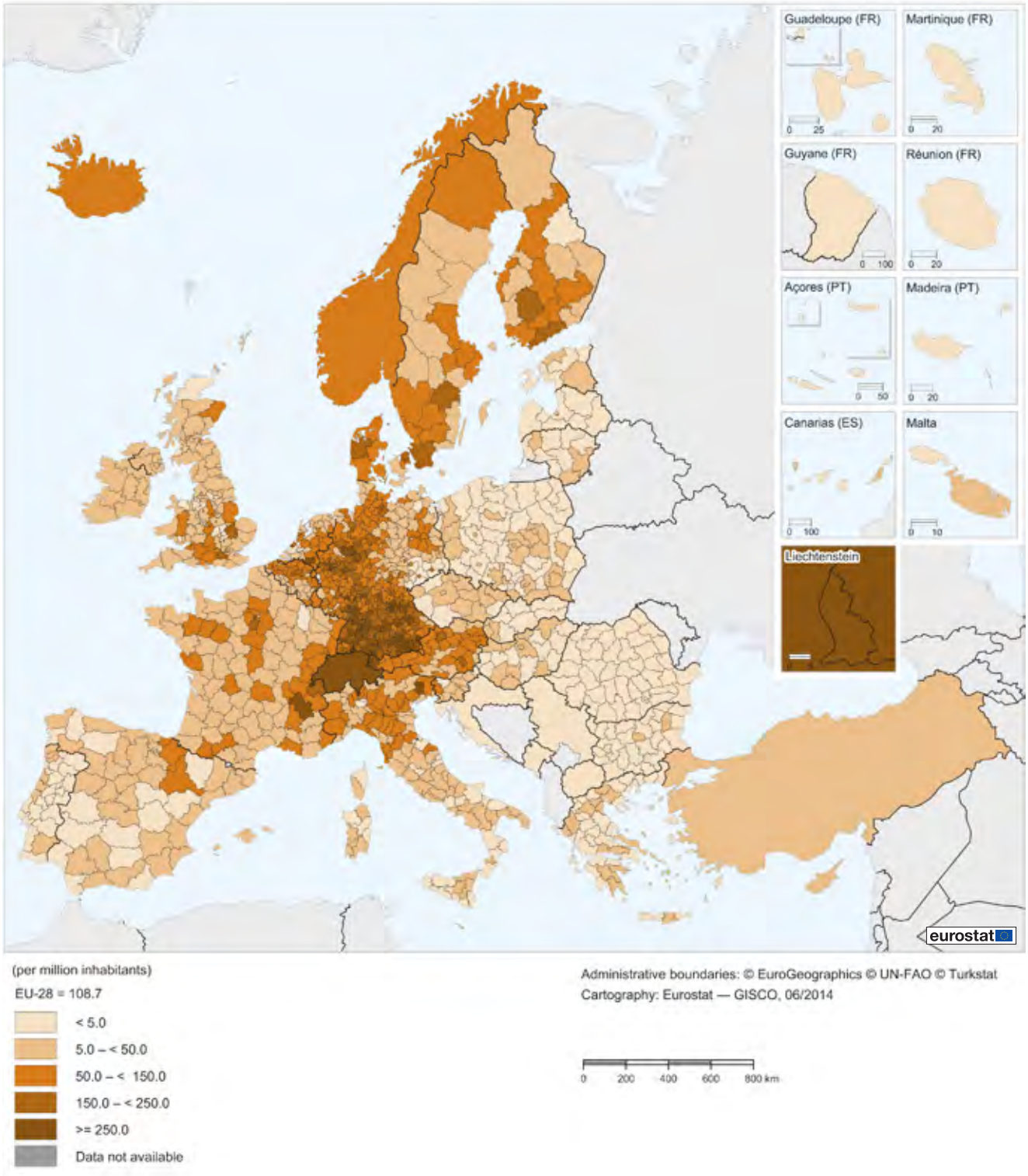
### *Patent applications in the EU were highly concentrated in (southern) Germany*

Across the EU-28, there were almost 55 thousand patent applications made to the EPO in 2010, equivalent to an average of 108.7 applications per million inhabitants. **Map 7.5** shows that technological activity in the form of patent applications was very much concentrated in the centre of the EU. There were 76 NUTS 3 regions in the EU (out of a total of 1 295 regions with data available) that had more than 250.0 patent applications per million inhabitants in 2010 (as shown by the darkest shade); of these, seven regions had more than 500.0 patent applications per million inhabitants.

Among the top 76 regions with the highest propensity for patent applications there were 70 German regions, as well as two regions from each of the Netherlands and Austria, and a single region from each of France and Italy. The high degree of innovative activity in (southern) Germany had a considerable impact on the EU-28 average. The highest number of patent applications per million inhabitants was recorded in the German region of Erlangen, Kreisfreie Stadt (1 177.9), while the third highest number (1 228.9) was registered in the neighbouring Bavarian region of Erlangen-Höchstadt. Erlangen is home to a number of research institutes, a university and various offices of the Siemens engineering group. The second highest number of patent applications (relative to population size) in 2010 was recorded in another Bavarian region, namely that of Regensburg, Kreisfreie Stadt, while the region of Regensburg, Landkreis recorded the fifth highest ratio. Regensburg is the location of a BMW manufacturing plant, while Siemens, Continental, Infineon and Toshiba also have plants in the region, and there is also a university and a range of high-tech biotechnology enterprises.

By contrast, the distribution of regions was heavily skewed in favour of those with a relatively low propensity to make patent applications, as witnessed by the median value of 37.1 patent applications per million inhabitants across all NUTS 3 regions in the EU, far below the EU-28 mean of 108.7. There were 301 NUTS 3 regions in the EU reporting less than 5.0 patent application per million inhabitants in 2010 (the lightest shade on **Map 7.5**; note that some of the information relates to earlier reference periods). These regions were principally spread across eastern Europe, the Baltic Member States, southern Italy and a number of regions in Spain and Portugal.

**Map 7.5:** Patent applications to the EPO, by NUTS 3 regions, 2010 (1)
(per million inhabitants)




(1) EU-28: estimate. All regional values for 2010: provisional. For several regions the latest data is for 2008 or 2009. Iceland: 2009. Croatia, Iceland, Liechtenstein, Norway, Switzerland and Turkey: national level and estimates.
*Source:* Eurostat (online data codes: pat_ep_rtot and pat_ep_ntot)

# Data sources and availability

Eurostat collects statistics on research and development (R & D) under the legal requirements of Commission Regulation (EC) No 753/2004, which determines datasets, analysis (breakdowns), frequency and transmission delays. In 2012, Commission Regulation 995/2012 concerning the production and development of Community statistics on science and technology was adopted; this will apply to all R & D statistics from reference year 2012 onwards. The methodology for national R & D statistics is laid down in the 'Frascati manual: proposed standard practice for surveys on research and experimental development' (OECD, 2002), which is also used by many non-member countries.

Statistics on human resources in science and technology (HRST) are compiled annually, based on microdata extracted from the EU labour force survey (EU LFS). The basic methodology for these statistics is laid down in the Canberra manual (OECD, 1995), which lists all HRST concepts.

Data on high-technology manufacturing industries and knowledge-intensive services are compiled annually, based on data collected from a number of official sources (such as the EU LFS and structural business statistics (SBS)). The technology level of manufacturing activities is defined in terms of their R & D intensity (the ratio of R & D expenditure relative to value added).

For manufacturing, four groups are identified, depending on the level of R & D intensity: high, medium-high, medium-low and low-technology manufacturing sectors. High-technology manufacturing covers the manufacture of: basic pharmaceutical products and pharmaceutical preparations; computer, electronic and optical products; and air and spacecraft and related machinery.

For services, the activities are classified into knowledge-intensive services (KIS) and less knowledge-intensive services (LKIS). The former is then divided into high-tech knowledge-intensive services, knowledge-intensive financial services, knowledge-intensive market services (other than high-tech and financial services), and other knowledge-intensive services. High-tech knowledge-intensive services include motion picture, video and television programme production, sound recording and music publishing activities, programming and broadcasting, telecommunications, computer programming, consultancy and related activities, information service activities, and research and development.

Data on patent applications to the European Patent Office (EPO) are compiled on the basis of microdata from the EPO. The patent data reported include patent applications filed at the EPO during the reference year, classified by the inventor's residence and in accordance with the international patents classification of applications (IPC). Patent data are regionalised using procedures linking postcodes and/or place names to NUTS 2 and NUTS 3 regions. Patent statistics published by Eurostat are almost exclusively based on the EPO worldwide statistical patent database, Patstat.

# 8

# Information society

# Introduction

This chapter emphasises the geographic aspects of the digital divide by presenting a range of regional statistical data on ICTs within the European Union (EU).

The diffusion of ICTs across the EU is considered by many as fundamental for improving both productivity levels and the competitiveness of regions. ICTs are credited with delivering greater flexibility in the working environment (for example, working from home or other remote locations). These developments have created new dimensions of not only economic, but also social or political participation for individuals and groups. Indeed, the universal presence and reach of ICTs has had a profound effect on transforming society, allowing completely new ways of working, socialising and sharing information, irrespective of geographical location. A fast connection to the internet (coupled with knowledge and relevant skills) makes it easy to carry out a range of activities online: for example, obtaining information about almost any topic; communicating via messenger, chat or video services; accessing work files; consuming media; buying or selling goods and services. These activities can be carried out through a growing range of devices (such as a smart phones, tablets and computers), while technological development continues apace, for example, in the development of wearable connected devices.

## DIGITAL AGENDA FOR EUROPE — A FLAGSHIP EUROPE 2020 INITIATIVE

In 2010, the European Commission adopted a communication concerning 'A Digital Agenda for Europe' (COM(2010) 245 final/2), which presented a strategy to promote a thriving digital economy in the EU by 2020. Specific importance has been given to bridging the digital divide so that all EU inhabitants would be offered equal access to ICTs. The digital agenda for Europe is one of seven flagship initiatives under the Europe 2020 strategy for smart, sustainable and inclusive growth.

The digital agenda contains 101 specific policy actions: 78 to be taken by the European Commission (including 31 legal proposals) and 23 for EU Member States. These actions are grouped into the following areas:

- creating a digital single market;
- providing greater interoperability;
- boosting internet trust and security;
- providing much faster internet access;
- encouraging investment in research and development;
- enhancing digital literacy skills and inclusion; and,
- applying ICTs to address challenges facing society like climate change and the ageing population.

The European Commission reviewed the digital agenda in 2012, by when close to half (45 %) of the 101 policy actions had been completed. While the full implementation of the original 101 actions remains a priority, seven areas for new initiatives linked to the digital economy were also identified for their potential to deliver an economic stimulus (the review estimated that gross domestic product (GDP) in the EU could grow by an additional 5 % by 2020 and that employment would be boosted by an additional 3.8 million jobs in the long term if these seven new areas were supported). The seven initiatives resulting from the review foresee:

- creating a new and stable broadband regulatory environment;
- developing public digital service infrastructures (through the Connecting Europe facility);
- launching a grand coalition on digital skills and jobs;
- proposing an EU cyber-security strategy and Directive;
- updating the EU's copyright framework;
- accelerating the development of cloud computing through public sector buying power;
- launching an electronics industrial strategy.

***For more information:***

Digital Agenda for Europe — a Europe 2020 initiative: http://ec.europa.eu/digital-agenda/

# Main statistical findings

Regional statistics on ICT are generally available for NUTS 2 regions. However, the latest information for Germany, Greece, France, Poland and the United Kingdom is only provided for NUTS 1 regions; only national data is available for Slovenia. ICT statistics are also shown for Iceland, Norway, the former Yugoslav Republic of Macedonia and Turkey; of these, only Norway and Turkey provide a regional breakdown. All of the information on individuals refers to people aged 16–74 (unless otherwise noted).

## People who have never used a computer

At the start of the digital revolution access to the internet was restricted to those who worked with or owned a computer. Thereafter, a number of technological developments resulted, such that a wider range of devices could be used to access the internet — meaning that the use of a computer was no longer essential for internet use. Nevertheless, despite the opportunities to use alternative devices for accessing the internet (especially when on the move), many Europeans continue to rely on computers to carry out a wide range of tasks both at work and at home.

### *There were 26 regions in the EU where at least 35 % of the population had never used a computer*

**Map 8.1** shows that, as of 2013, 19 % of the population (aged 16–74) across the whole of the EU-28 had never used a computer. Of the 187 regions in the EU-28 for which data are available, Sud – Muntenia (in southern Romania) was the only region where a majority of the population had never used a computer (51 %). There were 25 regions where the proportion of individuals who had never used a computer stood between 35 % and 50 %: among these were nine Italian regions (principally in southern Italy, but also including Piemonte and Umbria), six of the remaining seven NUTS 2 regions from Romania (the capital region of Bucureşti – Ilfov was the only exception), five NUTS 2 regions in Bulgaria (the capital region of Yugozapaden was the only exception), three of the four NUTS 1 regions from Greece (the capital region of Attiki was the only exception) and a single region from each of Spain (Ciudad Autónoma de Melilla) and Poland (Region Wschodni).

### *There were 62 regions in the EU where at least 90 % of the population had used a computer*

At the other end of the range, the use of computers was commonplace in 62 of the EU-28 regions, where the share of the population who had used a computer was equal to or above 90 %. Of these, there were 25 regions located in northern and western Europe where the proportion of individuals who had used a computer was above 95 %: this included all of the regions in Denmark, Sweden and Luxembourg (one region at this level of detail); seven regions from the Netherlands, three regions from the south of the United Kingdom (NUTS 1), and one region from Finland. The highest proportion of people having used a computer (99 %) was recorded in the Dutch region of Flevoland, while there were 12 different regions spread across Denmark, the Netherlands, Finland, Sweden and the United Kingdom, including the Danish and Finish capital regions of Hovedstaden and Helsinki-Uusimaa, where 98 % of the population had used a computer; the same rate was also registered for Iceland (one region at this level of detail).

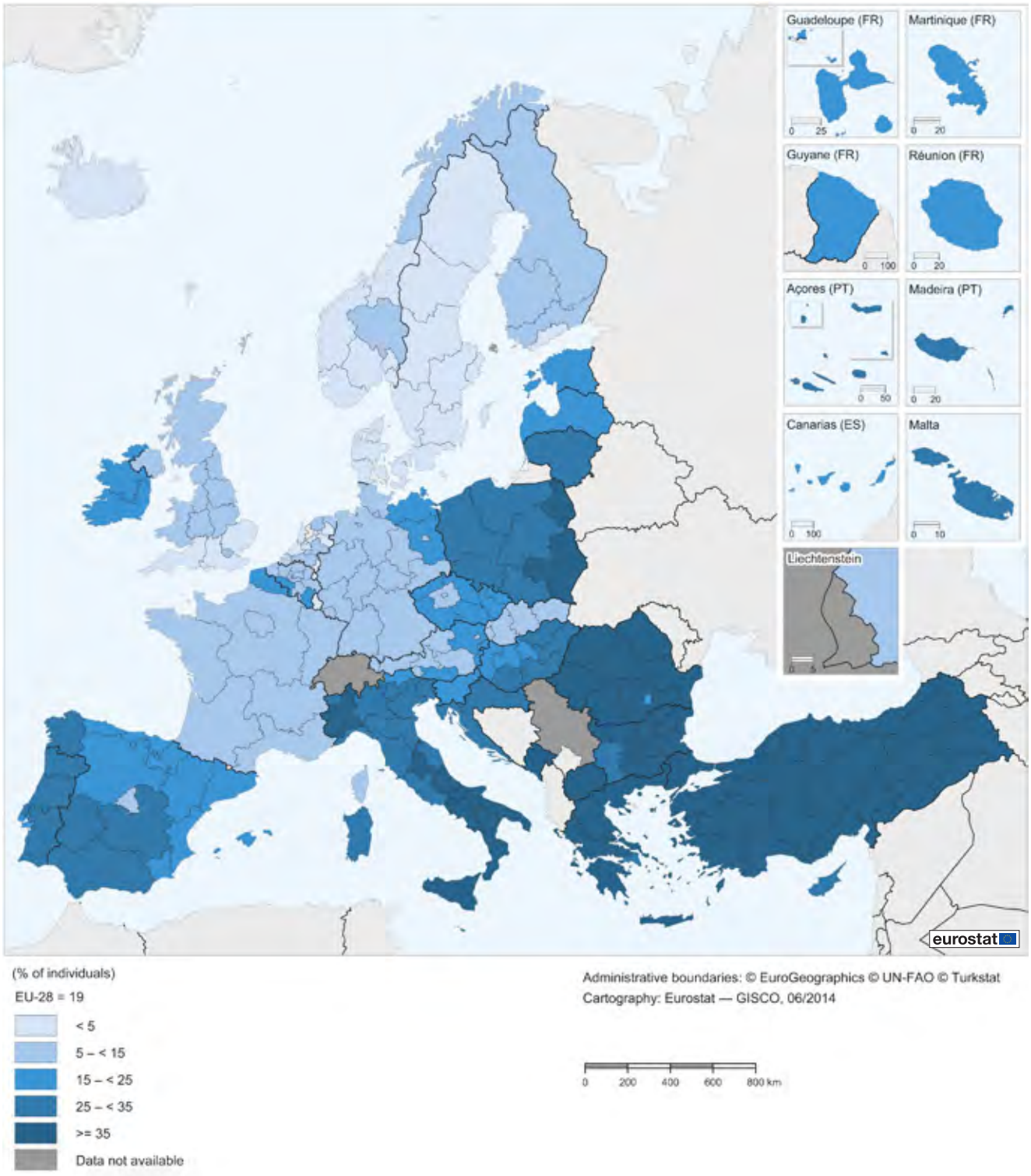
## Broadband connections

The digital agenda for Europe foresaw the entire EU being covered by broadband by 2013. It is important to note that this benchmark is defined in relation to the technological possibilities of accessing broadband and not in terms of the take-up of broadband connections by households (as shown in **Map 8.2**). In its digital agenda scoreboard (2013), the European Commission's Directorate General for Communications Networks, Content & Technology estimated that almost all European homes had the possibility to access at least a basic broadband service at the start of 2013 if they had chosen to do so (figures cover all technologies — fixed, fixed-wireless, mobile and satellite broadband). Standard fixed broadband coverage was estimated to cover 95.5 % of homes within the EU, although its share in rural areas was lower at 83.2 %.

The digital agenda foresees that the entire EU will be covered by broadband operating at speeds in excess of 30 Mbps by 2020. Next generation technologies capable of providing download speeds of at least 30 Mbps were estimated to be covering more than half (53.8 %) of all households in the EU-28 by the start of 2013 — principally through cable technologies (39.4%), but also using very-high-bit-rate digital subscriber lines (VDSL) and fibre to the premises (FTTP).

Policymakers have made efforts to expand both the geographic reach and the speed of broadband internet. In 2013, just over three quarters (76 %) of all households (with at least one member being aged 16–74) in the EU-28 had a broadband connection; this was 9 percentage points higher than in 2011 (67 %). The rate of growth for the take-up of broadband connections by EU households slowed from 2007 onwards, as connections approached saturation in some regions.

**Map 8.1:** Individuals who never used a computer, by NUTS 2 regions, 2013 (1)
(% of individuals)




(1) The former Yugoslav Republic of Macedonia: 2012. Montenegro: 2011. Germany, Greece, France, Poland and the United Kingdom: by NUTS 1 regions. Slovenia: national data. Mellersta Norrland (SE32): low reliability.
*Source:* Eurostat (online data codes: isoc_r_cux_i and isoc_ci_eu_i)

### THE DIGITAL AGENDA SCOREBOARD — BENCHMARKING ICT DEVELOPMENTS ACROSS THE EU

The digital agenda scoreboard identifies 13 key performance targets for measuring the progress of the digital agenda initiative. A scoreboard with these key indicators — supported by a wide range of additional indicators — is released on an annual basis. The 13 key performance targets set by policymakers to measure the success of the digital agenda foresee:

- the entire EU to be covered by broadband by 2013;
- the entire EU to be covered by broadband above 30 Mbps by 2020;
- at least 50 % of the EU to subscribe to broadband above100 Mbps by 2020;
- at least 50 % of the population to buy online by 2015;
- at least 20 % of the population to buy online and cross-border by 2015;
- at least 33 % of small and medium-sized enterprises to make online sales by 2015;
- the difference between roaming and national tariffs to approach zero by 2015;
- an increase in regular internet usage from 60 % to 75 % by 2015, and from 41 % to 60 % among disadvantaged people;
- the proportion of the population that has never used the internet to halve from 30 % to 15 % by 2015;
- at least 50 % of the EU's population using eGovernment services by 2015, with more than half of these returning completed forms;
- key cross-border public services to be available online by 2015;
- a doubling of public investment in ICT research and development to EUR 11 billion by 2020;
- a reduction in the energy use of lighting by 20 % by 2020.

***For more information:***

Digital Agenda for Europe — scoreboard: http://ec.europa.eu/digital-agenda/en/scoreboard

### *Highest share of households with broadband connectivity recorded in London*

**Map 8.2** shows the proportion of households with broadband internet access in 2013. There was a particularly high level of broadband access across northern and western Europe, in particular within the Nordic Member States, Germany, the Netherlands and the United Kingdom. There were nine regions in the EU-28 which recorded a broadband connection rate of at least 90 % in 2013. The highest proportion (94 %) was registered for London (a NUTS 1 region), while there were two other NUTS 1 regions from the south of the United Kingdom, three regions from the Netherlands, and a single region from each of Denmark, Germany (a NUTS 1 region) and Finland present among those regions with rates of at least 90 %. Among the EFTA countries, Iceland (one region at this level of detail) and three Norwegian regions reported that at least 90 % of their households had a broadband connection in 2013.

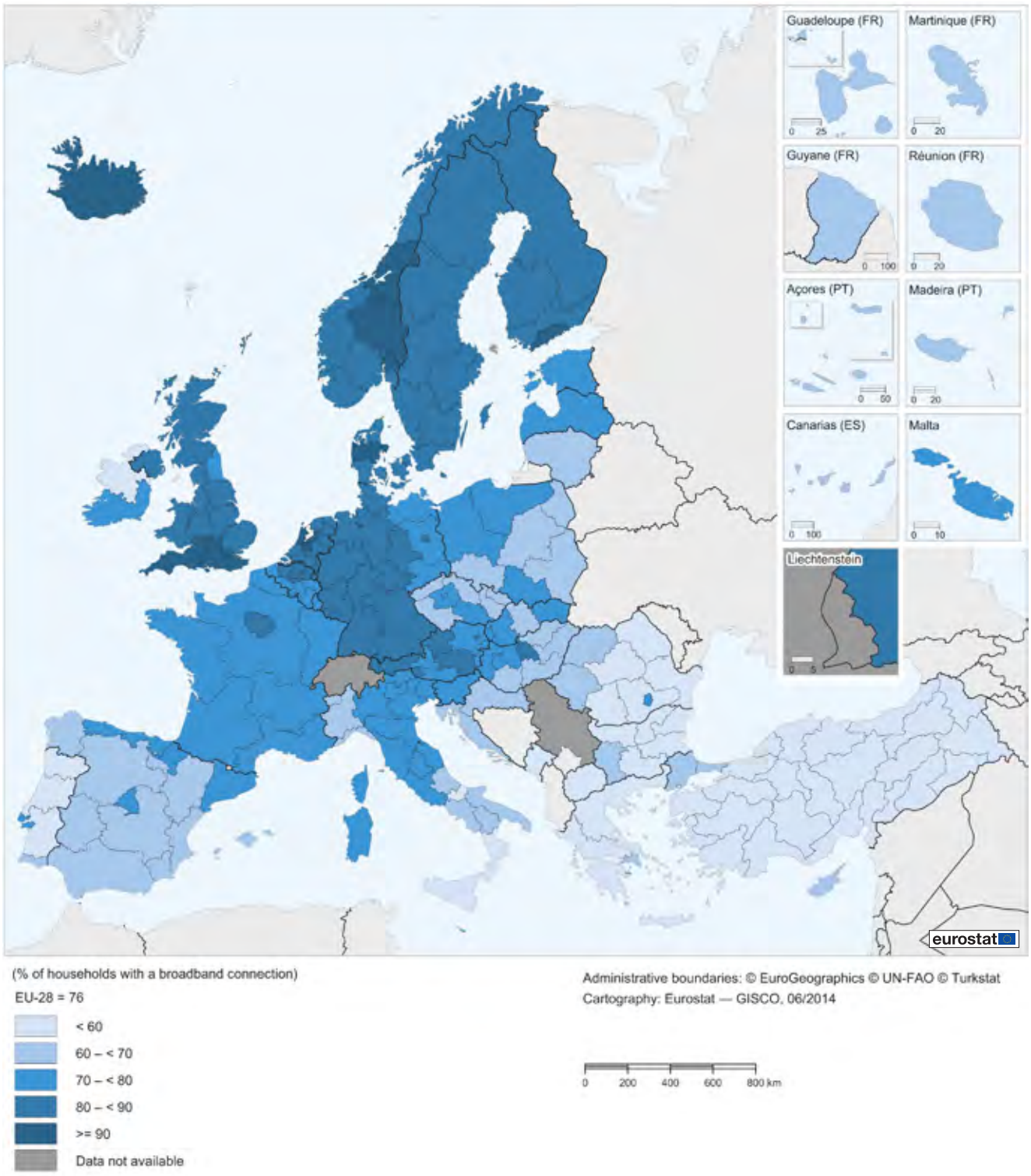
### SPOTLIGHT ON THE REGIONS: LONDON (UKI), THE UNITED KINGDOM

**Post office tower, London**

London was the EU-28 region with the highest broadband connectivity rate: 94 % of households had such a connection in 2013. Broadband connectivity in the United Kingdom was 90 % or higher in two other regions — the South East (UKJ) and the South West (UKK). The lowest rate of connectivity was recorded for the North East (UKC) of England, where 77 % of households had a broadband connection — one percentage point above the EU-28 average.

*Photo: Dunc(an)*

**Map 8.2:** Broadband connections in households, by NUTS 2 regions, 2013 (1)
(% of households with a broadband connection)




(1) Sweden and the former Yugoslav Republic of Macedonia: 2012. Montenegro: 2011. Germany, Greece, France, Poland and the United Kingdom: by NUTS 1 regions. Slovenia: national data.
*Source:* Eurostat (online data codes: isoc_r_broad_h and isoc_ci_eu_h)

### *Less than half of all households in three Bulgarian, two Greek and one Romanian region had a broadband connection*

Broadband connectivity rates were particularly low in some parts of eastern and southern Europe. This was especially the case for five regions in each of Bulgaria and Romania, three of the four NUTS 1 regions in Greece, three regions each in Portugal and Italy and a single Irish region, where the proportion of households with broadband access was below 60 %; these 20 regions are shown with the lightest shade in **Map 8.2**. The lowest broadband connectivity rates were recorded in the three Bulgarian regions of Severen tsentralen, Yugoiztochen and Severozapaden, two NUTS 1 Greek regions of Kentriki Ellada (central Greece) and Nisia Aigaiou, Kriti (the Aegean islands and Crete) and the Romanian region of Nord-Est; in all of these regions less than half of all households had a broadband connection in 2013, with the lowest share in Kentriki Ellada (40 %).

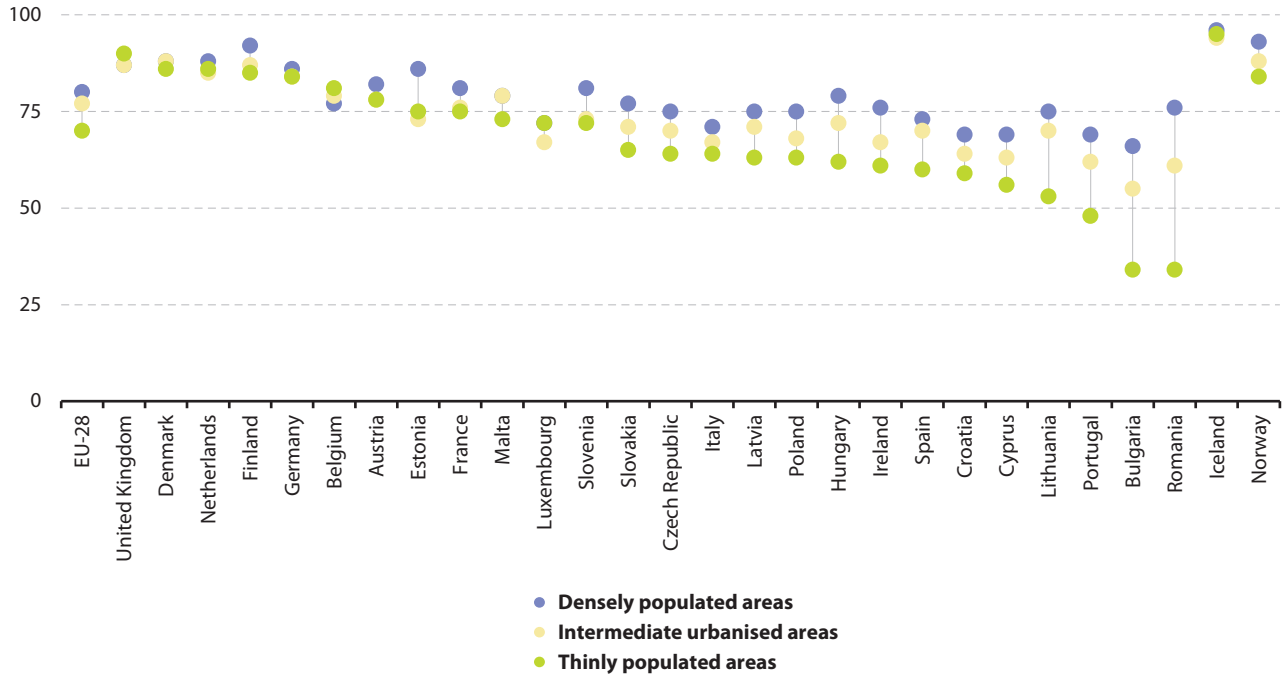
### *Broadband connection rates were generally higher in urban areas*

The availability of a fast internet connection depends, to a large degree, upon cable upgrades and is therefore frequently restricted to urban areas before these services are rolled out to other areas — this may explain some of the differences in broadband connectivity rates according to their degree of urbanisation.

**Figure 8.1** shows that most countries recorded higher broadband connectivity rates in densely populated areas (as compared with intermediate or thinly populated regions). Within the EU-28, 80 % of households in densely populated areas had a broadband connection in 2013, compared with 77 % in intermediate areas and 70 % of households in thinly populated areas. This pattern was repeated across most of the EU Member States, with exceptions tending to be found in relatively small and/or densely populated countries (where broadband connections were already extensively available across the whole territory).

The widest gaps between urban and rural broadband connection rates (with rural areas lagging) were recorded in Romania, Bulgaria, Lithuania and Portugal — these were the same four Member States that had the lowest levels of broadband connectivity for thinly populated areas. By contrast, once national broadband connectivity rates rose above 75 % there was little difference in connectivity rates according to the degree of urbanisation.

**Figure 8.1:** Broadband connections in households, by degree of urbanisation, 2013 (1)
(% of households with a broadband connection)




(1) Ranked on thinly populated areas. Greece and Sweden: not available.
*Source:* Eurostat (online data code: isoc_ci_it_h)

## Regular use of the internet

Another target within the digital agenda for Europe is to increase the regular use of the internet by individuals to 75 % by 2015. **Map 8.3** presents regional data for 2013, when almost three quarters (72 %) of the EU-28's population used the internet on a regular basis (in other words, at least once a week). While the proportion of people using the internet on a regular basis continued to rise, its pace of growth slowed considerably from 2010 onwards. The Directorate General for Communications Networks, Content & Technology estimated in its digital agenda scoreboard (2013) that it is likely that the target for regular internet use of 75 % will be met one year early.

Some 86 out of 187 regions for which data are available in 2013 reported that at least three quarters of their inhabitants made regular use of the internet in 2013; each of these regions therefore recorded a level of internet use that was equal to or above the benchmark figure set by the digital agenda for Europe for 2015.

### *Particularly high proportions of internet use across the Nordic Member States, Luxembourg, the Netherlands and the United Kingdom*

The 26 EU regions where the proportion of the population making regular use of the internet was equal to or above 90 % in 2013 (as shown by the darkest shade in **Map 8.3**): 11 of the 26 regions were in the Netherlands; seven were in Sweden; three were in Denmark; three NUTS 1 regions were in the south of the United Kingdom; the other two regions were the capital region of Helsinki-Uusimaa (Finland) and Luxembourg (one region at this level of detail). In the remaining Danish, Dutch and Swedish regions, the proportion of individuals making regular use of the internet was only slightly lower (within the range of 87–89 %).

The proportion of individuals that made regular use of the internet ranged, in 2013, from a high of 97 % in Utrecht (the Netherlands) to a low of 39 % in Sud – Muntenia (Romania); in other words, regular use of the internet was almost two and a half times as high in Utrecht as in Sud – Muntenia.

A very high share of the population in Iceland and the regions of Norway made regular use of the internet in 2013: in Iceland (one region at this level of detail) the share was 95 %, while in the Norwegian capital region of Oslo og Akershus and in the region of Vestlandet this proportion rose to 96 %; among the seven regions in Norway the lowest share of the population making regular use of the internet was in Hedmark og Oppland (89 %).

### *The capital region of Bucureşti – Ilfov was the only Romanian region where more than half the population used the internet on a regular basis*

By contrast, there were 18 regions across the EU where less than half of all individuals were regular users of the internet in 2013. Among these were seven of the eight regions that compose Romania (the only exception being the capital region of Bucureşti – Ilfov (67 %)), five regions each in Bulgaria and in southern Italy, and the NUTS 1 region of Kentriki Ellada (Greece). The proportion of the population making regular use of the internet was also relatively low (from 50 % to less than 65 %) in two of the four NUTS 1 Greek regions, Cyprus (covered by one region at this level of detail), as well as in many of the regions of Spain, Croatia, Italy, Poland and Portugal.

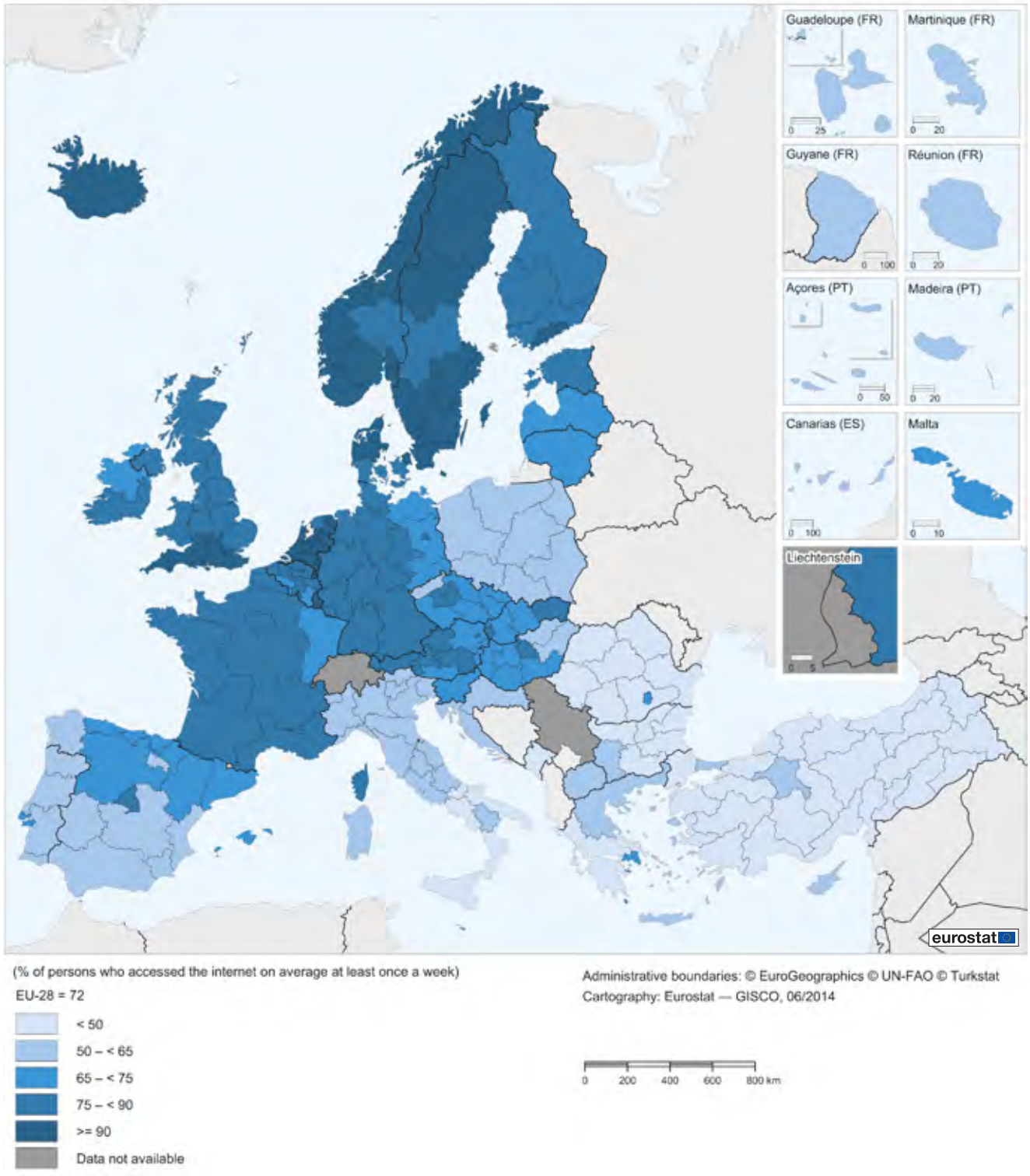
The incidence of regular internet use in the two candidate countries for which data are available was below the EU-28 average: just over half (54 %) of the population in the former Yugoslav Republic of Macedonia made regular use of the internet (note the latest data available covers 2012), while the shares in Turkish regions ranged, in 2013, from a low of 16 % in the eastern region of Van, Muş, Bitlis, Hakkari to a high of 55 % in the capital region of Ankara.

### *Capital regions recorded the highest shares of regular internet users in most EU Member States*

**Figure 8.2** shows that there was a relatively wide disparity in the use of the internet between the regions of Romania, France, Greece, Spain and Italy, as well as Turkey. Capital regions in these countries registered the highest levels of regular internet use in 2013 (except in Italy) and often recorded shares that were considerably above those in other regions. For example, the proportion of individuals that made regular use of the internet in the Romanian capital region of Bucureşti – Ilfov was 19 percentage points higher than in the Vest region which had the second highest rate in Romania. The relatively wide range recorded between French regions resulted from a much lower proportion of regular internet users in the Départements d'outre-mer when compared with the metropolitan regions of France.

Belgium, Germany, Italy, the Netherlands, Austria and Poland were the only multi-region EU Member States where the capital region did not record the highest proportion of regular internet users in 2013. Among these, the Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest (Belgium) was the only capital region with a slightly lower share of its population making regular use of the internet than the national average (78 % compared with 80 %). The proportion of regular internet users peaked in Belgium in the two provinces surrounding the Belgian capital, namely, the Vlaams-Brabant and the Brabant Wallon (both 85 %), while regular use of the internet was also higher than in the capital region in the four remaining Flemish regions.

**Map 8.3:** Regular use of the internet, by NUTS 2 regions, 2013 (1)
(% of persons who accessed the internet on average at least once a week)




(1) The former Yugoslav Republic of Macedonia: 2012. Montenegro: 2011. Germany, Greece, France, Poland and the United Kingdom: by NUTS 1 regions. Slovenia: national data. Mellersta Norrland (SE32): low reliability.

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

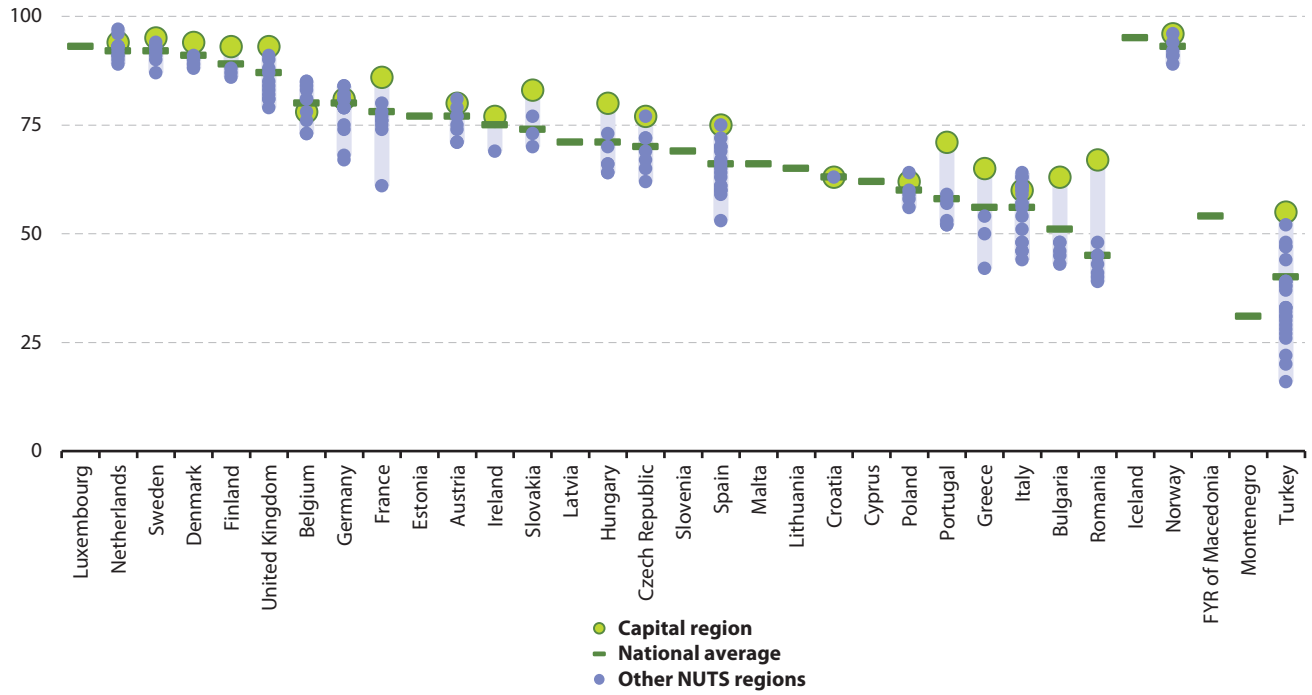
### *Regular use of the internet rises with increasing household income*

Evidence has already been presented relating to the digital divide between urban (and in particular capital regions) and rural regions in terms of broadband connectivity and the use of computers or the internet. **Figure 8.3** extends this analysis and looks at the relationship between household income and regular use of the internet.

Just under half (49 %) of all EU-28 individuals living in households in the bottom income quartile (the lowest 25 % of earners) made regular use of the internet in 2013. As income levels rose there was a corresponding increase in the proportion of individuals making regular use of the internet, such that 85 % of those living in households in the top income quartile (the top 25 % of earners) regularly used the internet. As such, regular use of the internet for those in the top income quartile was 1.7 times as high as for those in the bottom income quartile.

Among the 25 EU Member States for which data are available (no information for Croatia, Ireland or the United Kingdom), a higher proportion of individuals living in households in the top income quartile made regular use of the internet than in the other quartiles (in Estonia the share for those in the upper quartile was identical to that for the third quartile; this was also the case in Iceland and Norway). For 15 of these 25 Member States, the share of the population making regular use of the internet was at least twice as high among those living in households with income in the top quartile when compared with those in the bottom quartile. Such differences by income were even greater in Lithuania and Romania, as those households in the top quartile were 3.2 times as likely to use the internet regularly as those in the bottom quartile. However, the largest differences in internet use broken down by income were reported in Bulgaria, where this ratio peaked at 4.8.

**Figure 8.2:** Regional disparities in the regular use of the internet, by NUTS 2 regions, 2013 (1)
(% of persons who accessed the internet on average at least once a week)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. The former Yugoslav Republic of Macedonia: 2012. Montenegro: 2011. Germany, Greece, France, Poland and the United Kingdom: by NUTS 1 regions. Slovenia: national data. Mellersta Norrland (SE32): low reliability.

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

## E-commerce

### *Almost half of the EU's population made online purchases in 2013*

In 2013, 47 % of individuals in the EU-28 reported that they had made online purchases (at least once within the 12 months prior to the survey date); this figure had grown from 30 % in 2007 and from 40 % in 2010. As such, the proportion of people ordering goods or services over the internet in 2013 was close to the target set by the digital agenda for Europe — half the population by 2015.

### *Online purchases: homogeneous across regions within the same country …*

**Map 8.4** shows that the highest proportions of regional populations making use of e-commerce by purchasing over the internet tended to be reported across northern and western Europe. This was particularly the case in Denmark (all five regions), the United Kingdom (all NUTS 1 regions other than the North East of England) and Luxembourg (one region at this level of detail), where rates of 70 % and above were recorded; the same was also true in several regions in Germany (NUTS 1), the Netherlands and Sweden, as well as in the capital regions of Île de France (NUTS 1) and Helsinki-Uusimaa.

### SPOTLIGHT ON THE REGIONS: BREMEN (DE5), GERMANY

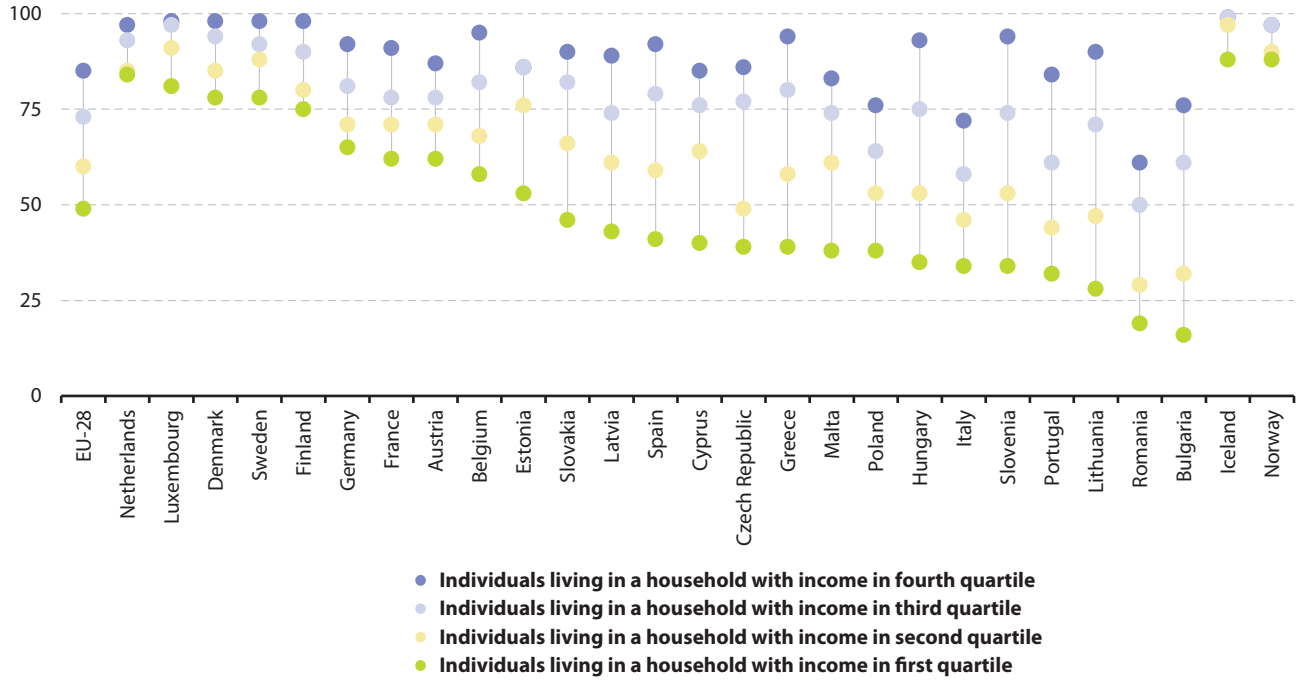
**The town hall, Bremen**

In the northerly German region of Bremen (DE5) just over 90 % of households had a broadband connection in 2013. While this was the highest share in Germany, all but two of the NUTS 1 regions in Germany recorded connectivity rates that were above the EU-28 average; the exceptions were Brandenburg and Mecklenburg-Vorpommern.

A majority of the population in each of the NUTS 1 regions of Germany reported that they made online purchases in 2013. This share peaked at 76 % in Rheinland-Pfalz.

*Photo: Jürgen Howaldt*

**Figure 8.3:** Regular use of the internet, by level of income, 2013 (1)
(% of persons who accessed the internet on average at least once a week)




(1) Ranked on individuals living in a household with income in first quartile. Ireland, Croatia and the United Kingdom: not available.
*Source:* Eurostat (online data code: isoc_bde15cua)

### INFORMATION SOCIETY — COHESION POLICY FUNDING

EU structural funds — and in particular the European regional development fund and the fund for rural development — may be used to encourage the uptake of ICTs by enterprises and households, promoting the development of ICT products and services in both the public and private sector, with the goal of delivering Europe-wide infrastructures and content that provides for affordable and inclusive access to the digital society, especially in remote and rural areas. During the period 2007–13, over EUR 15 billion of structural funds were allocated to developing ICTs in Europe; this was equivalent to 4.4 % of the EU's total budget for cohesion policy. There was a shift during this period from infrastructure-related funding towards provisions for content development.

For the latest programming period (2014–20), the system of allocating structural funds has been redesigned. ICTs have been identified as one of 11 thematic objectives eligible for funding under the regional development fund and as one of four key objectives (together with encouraging research and development, improving the competitiveness of small and medium-sized enterprises, and promoting a low carbon economy). The European Commission has proposed that EU Member States and regions should provide a digital growth strategy and a next generation access plan before proposing structural funds programmes supporting ICT projects. To foster and leverage private investment, the Connecting Europe Facility will be used to support the development of sustainable and efficient networks across the EU in the fields of transport, energy and digital services — around EUR 1.0 billion of funding has been earmarked for the telecommunications sector. Connecting Europe will be used to facilitate the mobility of citizens and businesses, for example, aiming to provide seamless cross-border public services such as eProcurement or eHealth. Initiatives such as these could result in a business in one EU Member State being able to send a procurement bid to an administration in another, or a doctor being able to retrieve a patient's medical records when treating an individual who has fallen sick while abroad. It is hoped that the Connecting Europe Facility will overcome national fragmentation and language barriers that may currently deter cross-border cooperation or competition.

***For more information:***

Cohesion policy and ICTs: http://ec.europa.eu/regional_policy/activity/information/index_en.cfm
Connecting Europe Facility: http://ec.europa.eu/digital-agenda/en/connecting-europe-facility

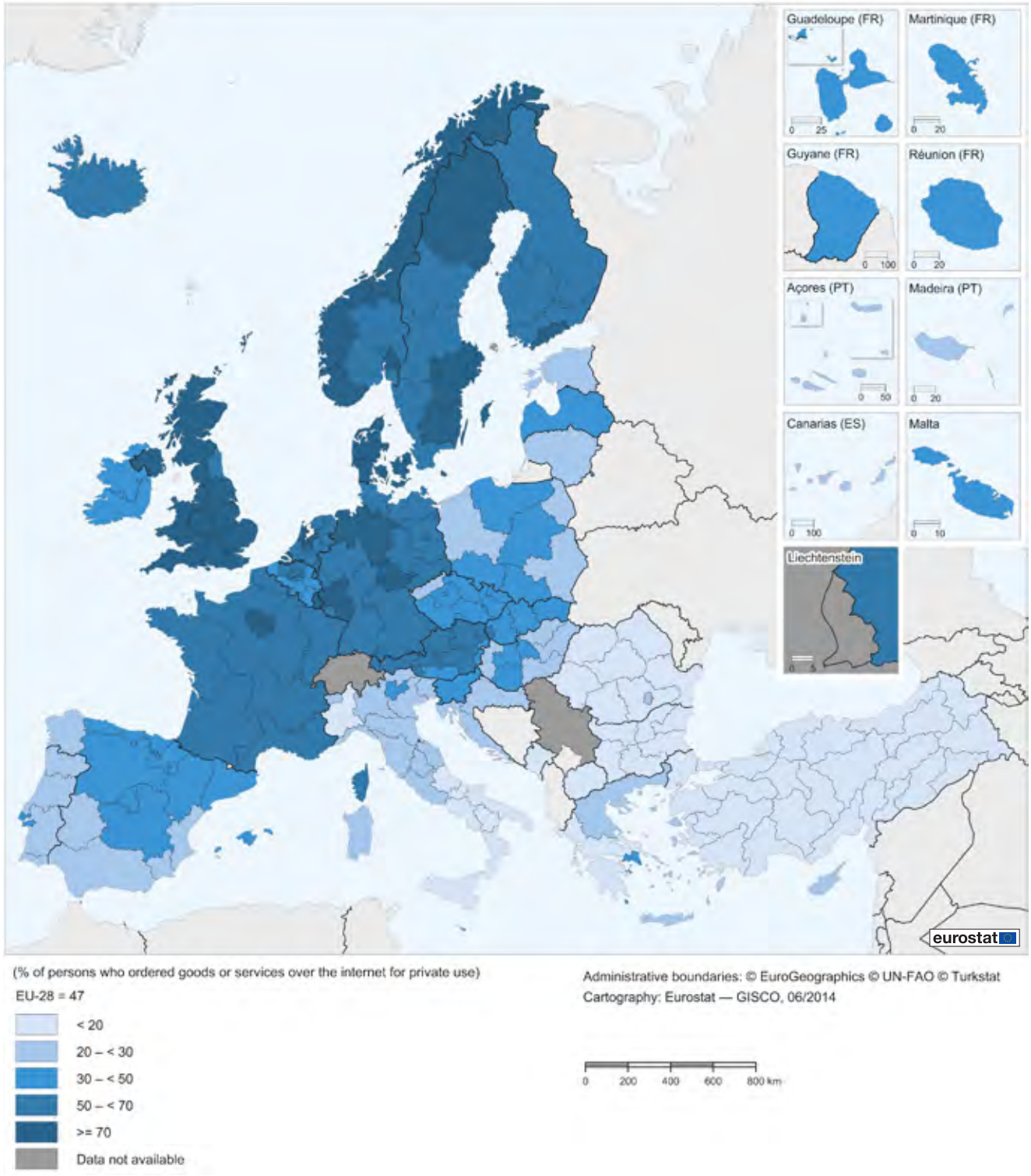
All of the regions for which data are available in Denmark, Germany (NUTS 1), metropolitan France (NUTS 1), Luxembourg, the Netherlands, Finland, Sweden and the United Kingdom (NUTS 1) reported a majority of their populations making online purchases in 2013; as such they had all exceeded the digital agenda target for 2015.

An analysis of results by EU Member State shows that there was generally very little variation across the regions within the same country, other than the fact that capital regions tend to report somewhat higher shares of their populations making use of e-commerce.

### *… but heterogeneous across all EU regions*

In 2013, the proportion of individuals making online purchases ranged from a high of 83 % in the Danish capital region of Hovedstaden and the two southern regions of the United Kingdom (South East and South West) down to 4 % in the Sud-Est region of Romania; as such, the inhabitants of Hovedstaden were 21 times as likely to have made online purchases. The difference between the regions with the highest and the region with the lowest propensity to make online purchases was far greater than for any of the other ICT indicators covered within this chapter.

**Map 8.4:** Online purchases, by NUTS 2 regions, 2013 (1)
(% of persons who ordered goods or services over the internet for private use)




(1) The former Yugoslav Republic of Macedonia: 2012. Montenegro: 2011. Germany, Greece, France, Poland and the United Kingdom: by NUTS 1 regions. Slovenia: national data. Mellersta Norrland (SE32): low reliability.

*Source:* Eurostat (online data codes: isoc_r_blt12_i and isoc_ec_ibuy)

## Rankings of selected ICT indicators

### *ICT access and usage rates particularly high in Utrecht, Stockholm and London*

**Table 8.1** provides a summary of the main indicators for each of the indi cators covered so far in this chapter, detailing those regions at the top of each ranking. Regions from the Netherlands, the United Kingdom and the Nordic Member States dominated the rankings for broadband connectivity, regular use of the internet and online purchases by individuals: the Dutch region of Utrecht, Stockholm in Sweden and London in the United Kingdom figured among the top 10 ranking for all three of these indicators. Outside of these countries, only the northern German regions of Bremen and Niedersachsen featured in relation to broadband connectivity and Luxembourg in relation to regular internet use.

That broadband connectivity was reaching saturation was clear from the data for the 14 EU regions with the highest levels of connectivity, as growth in these regions was systematically below the EU-28 average during the period 2010–13. In a similar vein, growth in the proportion of

**Table 8.1:** Top EU-28 regions for selected information society indicators, by NUTS 2 regions, 2010–13 (1)

| | 2010 | 2011 | 2012 | 2013 | Average rate of change, 2010–13 (% per year) | Value for 2013 compared with national average (national average = 100) |
|---|---|---|---|---|---|---|
| **Largest shares of population to have never used a computer (% of individuals)** | | | | | | |
| **EU-28** | 23 | 22 | 20 | 19 | -6.2 | - |
| Sud - Muntenia (RO31) | 58 | 55 | 49 | 51 | -4.2 | 121.4 |
| Campania (ITF3) | 51 | 49 | 52 | 48 | -2.0 | 141.2 |
| Severozapaden (BG31) | 53 | 53 | 55 | 47 | -3.9 | 117.5 |
| Kentriki Ellada (EL2) | 53 | 51 | 56 | 47 | -3.9 | 134.3 |
| Sud-Est (RO22) | 57 | 55 | 46 | 47 | -6.2 | 111.9 |
| Nord-Vest (RO11) | 48 | 52 | 45 | 45 | -2.1 | 107.1 |
| Sud-Vest Oltenia (RO41) | 55 | 55 | 48 | 45 | -6.5 | 107.1 |
| Severoiztochen (BG33) | 54 | 54 | 46 | 44 | -6.6 | 110.0 |
| Yuzhen tsentralen (BG42) | 55 | 50 | 42 | 44 | -7.2 | 110.0 |
| Calabria (ITF6) | 45 | 47 | 46 | 44 | -0.7 | 129.4 |
| **Highest broadband connectivity rates (% of households with a broadband connection)** | | | | | | |
| **EU-28** | 61 | 67 | 72 | 76 | 7.6 | - |
| London (UKI) (2) | : | 84 | 91 | 94 | 5.8 | 108.0 |
| South West (UKK) (2) | : | 85 | 92 | 93 | 4.6 | 106.9 |
| Flevoland (NL23) | 84 | 88 | 92 | 92 | 3.1 | 105.7 |
| Utrecht (NL31) | 84 | 83 | 79 | 92 | 3.1 | 105.7 |
| Helsinki-Uusimaa (FI1B) | : | : | 90 | 92 | : | 104.5 |
| Bremen (DE5) (2) | : | 87 | 78 | 91 | 2.3 | 107.1 |
| Midtjylland (DK04) | 79 | 85 | 87 | 90 | 4.4 | 103.4 |
| Noord-Holland (NL32) | 85 | 87 | 85 | 90 | 1.9 | 103.4 |
| South East (UKJ) (2) | : | 84 | 89 | 90 | 3.5 | 103.4 |
| Nordjylland (DK05) | 77 | 86 | 85 | 89 | 4.9 | 102.3 |
| Niedersachsen (DE9) | 81 | 80 | 87 | 89 | 3.2 | 104.7 |
| Stockholm (SE11) (3) | 87 | 91 | 89 | : | 1.1 | 102.3 |
| East Midlands (UKF) (2) | : | 83 | 87 | 89 | 3.6 | 102.3 |
| East of England (UKH) (2) | : | 82 | 89 | 89 | 4.2 | 102.3 |

(1) Based on the top 10 regions for each indicator — if there is more than one region in equal tenth place then each of these regions is shown. Germany, Greece, France, Poland and the United Kingdom: by NUTS 1 regions. Slovenia: national level. Mellersta Norrland (SE32): low reliability in 2013.
(2) Average rate of change: 2011–13.
(3) Average rate of change: 2010–12. Value for 2012 compared with national average of 2012.
*Source:* Eurostat (online data codes: isoc_r_cux_i, isoc_ci_eu_i, isoc_r_broad_h, isoc_ci_eu_h, isoc_r_iuse_i, isoc_ci_eu_i, isoc_r_blt12_i and isoc_ec_ibuy)

individuals making regular use of the internet was also generally lower (than the EU-28 average) for those regions that already had the highest proportion of individuals using the internet on a regular basis; the only exceptions were the two Dutch border regions of Groningen (in the north) and Limburg (in the south). The central Swedish region of Östra Mellansverige, the capital region of London (NUTS 1) and the central Jutland region of Midtjylland (Denmark) were the only regions in the top 10 ranking for the proportion of persons making online purchases to record growth above the EU-28 average during the period 2010–13.

Among the 10 regions with the highest shares of their populations to have never used a computer in 2013, the uptake for starting to use a computer was often below the EU-28 average over the period 2010–13, indicating that the digital divide for this indicator was generally growing wider; this was especially the case for both southern Italian regions (Campania and Calabria). By contrast, there were two Bulgarian and two Romanian regions where growth in the proportion of the population using a computer was equal to or above the EU-28 average.

**Table 8.1** (continued): Top EU-28 regions for selected information society indicators, by NUTS 2 regions, 2010–13 (1)

| | 2010 | 2011 | 2012 | 2013 | Average rate of change, 2010–13 (% per year) | Value for 2013 compared with national average (national average = 100) |
|---|---|---|---|---|---|---|
| **Highest shares of regular internet use (% of persons who accessed the internet on average at least once a week)** | | | | | | |
| **EU-28** | 65 | 67 | 70 | 72 | 3.5 | - |
| Utrecht (NL31) | 91 | 91 | 92 | 97 | 2.2 | 105.4 |
| Drenthe (NL13) | 89 | 93 | 93 | 96 | 2.6 | 104.3 |
| Stockholm (SE11) | 92 | 94 | 92 | 95 | 1.1 | 103.3 |
| Hovedstaden (DK01) | 90 | 90 | 92 | 94 | 1.5 | 103.3 |
| Noord-Holland (NL32) | 92 | 92 | 93 | 94 | 0.7 | 102.2 |
| Östra Mellansverige (SE12) | 89 | 91 | 91 | 94 | 1.8 | 102.2 |
| Luxembourg (LU00) | 86 | 86 | 90 | 93 | 2.6 | - |
| Groningen (NL11) | 80 | 91 | 88 | 93 | 5.1 | 101.1 |
| Flevoland (NL23) | 94 | 91 | 96 | 93 | -0.4 | 101.1 |
| Zeeland (NL34) | 84 | 85 | 92 | 93 | 3.5 | 101.1 |
| Limburg (NL42) | 83 | 90 | 92 | 93 | 3.9 | 101.1 |
| Helsinki-Uusimaa (FI1B) | : | : | 93 | 93 | : | 104.5 |
| Mellersta Norrland (SE32) | 85 | 87 | 88 | 93 | 3.0 | 101.1 |
| Övre Norrland (SE33) | 84 | 91 | 95 | 93 | 3.5 | 101.1 |
| London (UKI) | 86 | 85 | 88 | 93 | 2.6 | 106.9 |
| **Highest shares of online purchases (% of persons who ordered goods or services over the internet for private use)** | | | | | | |
| **EU-28** | 40 | 42 | 44 | 47 | 5.5 | - |
| Hovedstaden (DK01) | 75 | 73 | 78 | 83 | 3.4 | 107.8 |
| South East (UKJ) | 73 | 75 | 77 | 83 | 4.4 | 107.8 |
| South West (UKK) | 71 | 82 | 77 | 83 | 5.3 | 107.8 |
| East of England (UKH) | 75 | 73 | 75 | 82 | 3.0 | 106.5 |
| London (UKI) | 68 | 75 | 72 | 82 | 6.4 | 106.5 |
| Utrecht (NL31) | 74 | 72 | 69 | 80 | 2.6 | 115.9 |
| Östra Mellansverige (SE12) | 65 | 73 | 73 | 79 | 6.7 | 108.2 |
| East Midlands (UKF) | 72 | 70 | 78 | 79 | 3.1 | 102.6 |
| Midtjylland (DK04) | 66 | 72 | 75 | 78 | 5.7 | 101.3 |
| Stockholm (SE11) | 70 | 79 | 76 | 77 | 3.2 | 105.5 |

(1) Based on the top 10 regions for each indicator — if there is more than one region in equal tenth place then each of these regions is shown. Germany, Greece, France, Poland and the United Kingdom: by NUTS 1 regions. Slovenia: national level. Mellersta Norrland (SE32): low reliability in 2013.
(2) Average rate of change: 2011–13.
(3) Average rate of change: 2010–12. Value for 2012 compared with national average of 2012.
*Source:* Eurostat (online data codes: isoc_r_cux_i, isoc_ci_eu_i, isoc_r_broad_h, isoc_ci_eu_h, isoc_r_iuse_i, isoc_ci_eu_i, isoc_r_blt12_i and isoc_ec_ibuy)

# Data sources and availability

EU statistics on the use of ICT are based on Regulation (EC) No 808/2004 concerning Community statistics on the information society. The regulation concerns statistics on the use of ICT in enterprises and statistics on ICT use in households and by individuals — only the latter are presented in this chapter. Since 2005, European Commission implementing Regulations have been passed annually: by specifying particular areas of interest for data collection each year, policymakers can trace this rapidly changing area and the statistics collected can be adapted to measure new technologies and services. The majority of the data shown in this chapter is based on implementing Regulation (EU) No 1083/2012.

European ICT surveys aim to provide timely statistics on individuals and households relating to their use of ICTs. A large proportion of Eurostat's ICT statistics are used in the benchmarking framework for digital Europe and are associated with Europe's digital agenda. Selected ICT data are also used for monitoring other EU policies, for example, on cohesion or consumer conditions.

ICT surveys seek to collect information on the following list of subjects:

- access to and use of ICTs by individuals and/or in households;
- use of the internet and other electronic networks for different purposes by individuals and/or in households;
- ICT security and trust;
- ICT competence and skills;
- barriers to the use of ICTs and the internet;
- perceived effects of ICT usage on individuals and/or on households;
- use of ICT by individuals to exchange information and services with governments and public administrations (e-government);
- access to and use of technologies enabling connections to the internet or other networks from anywhere at any time (ubiquitous connectivity).

Regional ICT data are collected for a limited list of indicators (households with access to the internet at home, households with a broadband connection, individuals who have never used a computer, individuals regularly using the internet, and individuals who ordered goods or services over the internet for private use). These indicators have been available for NUTS 1 regions since 2006 as a voluntary contribution by the EU Member States, and since 2008 on a mandatory basis. Many of the EU Member States, as well as Norway and Turkey provide regional data for level 2 regions on a voluntary basis.

The statistical unit for regional data on ICTs is either the household or the individual. The population of households consists of all households having at least one member in the age group 16–74 years. The population of individuals consists of all individuals aged 16–74. Questions on access to ICTs are addressed to households, while questions on the use of ICTs are answered by individuals within the household. As well as a core part of the questionnaire (which is repeated each year), the questionnaire includes a special focus which changes each year. Questions may be adapted to ensure that all developments concerning the use of ICTs are captured. As a result, some indicators have relatively short time series. In general, the data were collected in the second quarter of the survey year.

EU-28 aggregates are compiled when the information available at the country level represents at least 60 % of the EU's population and at least 55 % of the 28 countries that make-up the EU total. If additional national data become available, these are included in the aggregates or used to construct aggregates which were previously not available (due to poor coverage). As such, ICT statistics are revised on a regular basis to reflect the supply of additional information.

## Indicator definitions

Broadband refers to telecommunications in which a wide band of frequencies is available to send data. Broadband telecommunication lines or connections are defined as those transporting data at high speeds, with a speed of data transfer for uploading and downloading data (also called capacity) equal to or higher than 144 kbit/s (kilobits per second). The technologies most widely used for broadband access to the internet include digital subscriber lines (DSL) and cable modems.

An internet user, in the context of ICT statistics, is defined as a person making use of the internet in whatever way: whether at home, at work or from anywhere else; whether for private or professional purposes; regardless of the device or type of connection used. Regular internet users are those who have used the internet at least once a week within a three-month reference period.

E-commerce can be defined generally as the sale or purchase of goods or services, whether between businesses, households, individuals or private organisations, through electronic transactions conducted via the internet or other computer-mediated (online communication) networks. For the survey on ICT usage in households and by individuals it is defined more specifically as the placing of orders for goods or services via the internet (delivery or payment by electronic means is not a requirement for an e-commerce transaction). This may include, among others: buying financial investments like stocks and shares; confirming reservations for accommodation and travel; buying lottery tickets; subscribing to paid information services from the internet; buying via online auctions. Orders via manually typed e-mails are excluded.

# 9

# Tourism

# Introduction

This chapter presents regional patterns of tourism across the European Union (EU); its main focus is tourism occupancy within tourist accommodation establishments, while it also presents figures on the capacity of tourist accommodation.

The statistical definition of tourism is broader than the common definition employed on an everyday basis, as it encompasses not only private trips but also business trips. This is primarily because tourism is viewed from an economic perspective, whereby private visitors on holiday and visitors making business trips have broadly similar consumption patterns (transport, accommodation and restaurant / catering services). As such, it may be of secondary interest to providers of tourism services whether their customers are private tourists on holiday or visitors on a business trip.

Tourism cuts across many activities: services to tourists include the provision of accommodation, gastronomy (for example, restaurants or cafés), transport, and a wide range of cultural and recreational facilities (for example, theatres, museums, leisure parks or swimming pools). In many regions focused on tourism, retail and other service sectors also benefit considerably from the additional demand generated by tourists, as can the construction sector (for more information refer to the chapter on Structural business statistics).

Tourism has the potential to play a significant role in the development of European regions, contributing to employment and wealth creation, sustainable development, enhanced cultural heritage, and the overall shaping of European identity. Infrastructure created for tourism purposes may contribute more generally to local economic development, while jobs that are created (or maintained) can help counteract industrial or rural decline.

Tourism can be particularly significant in remote, peripheral regions, where tourism-related services are often one of the main sources of income for the local population; this especially applies in many of Europe's island states and regions, as well as in coastal and Alpine regions. The main beneficiaries of increased demand for tourism-related services in remote regions tend to be small and medium-sized enterprises (SMEs).

## Policies

The Lisbon Treaty acknowledged the importance of tourism, outlining a specific competence for the EU in this field to support, coordinate and complement Member States' actions and encourage the creation of a favourable environment for undertakings in the sector, while tourism is covered by a range of regional, national and EU policies. Tourism impacts on a wide range of policy areas, including regional policy, the diversification of rural economies, maritime policy, sustainability and competitiveness, social policy and inclusion (tourism for all).

A European Commission communication titled 'Europe, the world's No. 1 tourist destination — a new political framework for tourism in Europe' (COM(2010) 352) was adopted in June 2010. It encourages a coordinated approach for initiatives linked to tourism and defined a new framework for action to increase the competitiveness of tourism and its capacity for sustainable growth. Four priorities for action were identified, to: stimulate competitiveness; promote sustainable and responsible tourism; consolidate Europe's image as a collection of sustainable, high-quality destinations; and maximise the potential of EU policies and financial instruments for developing tourism.

The competitiveness of the EU's tourism sector is closely linked to its sustainability, as the quality of tourist destinations is strongly influenced by their natural and cultural environment and their integration into the local community. Sustainable tourism involves the preservation and enhancement of cultural and natural heritage, including the arts, local gastronomy or the preservation of biodiversity. Major challenges for sustainable tourism include: preserving natural and cultural resources; limiting negative impacts at tourist destinations, including the use of natural resources and waste production; promoting the well-being of the local community; reducing the seasonality of demand; limiting the environmental impact of tourism-related transport; and making tourism accessible to all. An important number of sustainable transnational thematic tourism products and services have been developed with potential to contribute to tourism growth (such as cultural routes crossing several countries, cycling paths, eco-tourism products, eno-gastronomic tourism, protected natural sites, or tourism capitalising on industrial heritage).

Coastal and maritime tourism is the largest maritime activity in Europe and closely linked to other parts of the economy; it employs almost 3.2 million people, while almost half of all nights spent in EU accommodation establishments are in coastal localities. In a communication on maritime and coastal tourism titled 'A European strategy for more growth and jobs in coastal and maritime tourism' (COM(2014) 86), the European Commission reflected on the diversity of the EU's coastal regions and their capacity to generate wealth and jobs, in line with the EU's 'Blue growth strategy' (COM(2012) 494). To help small and medium-sized enterprises face a variety of challenges, to address cross-border challenges within the EU, and to promote cooperation and sharing of best practices, the aforementioned Communication proposes a joint European framework with a range of different initiatives, such as: stimulating performance and competitiveness; promoting skills and innovation; strengthening sustainability; or maximising available EU funding.

The continued globalisation of tourism opens up new opportunities, with tourists from new markets able to afford high-value vacations: the European Commission has focused on encouraging the diversification of the European tourism offer by, amongst others, the development and promotion of transnational thematic tourism products, as well as by developing and enhancing the visibility of European cultural routes and of small, non-traditional tourism destinations that are committed to social, cultural and environmental sustainability, through the European destinations of excellence (EDEN) initiative. Furthermore, in order to maintain and strengthen Europe's position as a top world tourist destination, in an increasingly competitive world, the European Commission deployed a wide range of communication and promotion activities and is closely cooperating with the European Travel Commission (ETC) — an organisation representing the national tourism organisations from 33 European countries — to promote Europe in key long-haul markets.

### TOURISM — COHESION POLICY FUNDING

Structural and cohesion funds provide essential support to improve the competitiveness and quality of tourism at regional and local levels, viewing tourism as an important tool for integrating less developed regions.

The EU's cohesion policy for 2007–13 aimed to mobilise tourism for sustainable regional development and job creation. Over this period, targeted EU support for tourism under the cohesion policy was planned to exceed EUR 6 billion, representing 1.8 % of the total cohesion policy budget. Of this, EUR 3.8 billion was allocated for the improvement of tourist services, EUR 1.4 billion for the protection and development of natural heritage, and EUR 1.1 billion for the promotion of natural assets.

***For more information:***

Cohesion policy and tourism: http://ec.europa.eu/regional_policy/activity/tourism/index_en.cfm
Guidance for tourism-related investments 2014–20 under the European Structural and Investment Funds and, in particular, the European Regional Development Fund (ERDF):
http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/guidance_tourism.pdf

# Main statistical findings

Over the past six decades, despite occasional shocks, tourism has experienced almost uninterrupted expansion and diversification, becoming one of the largest and fastest-growing economic sectors in the world. This pattern continued in recent years, despite the global financial and economic crisis, with tourism having the potential to be one of the main engines of recovery in the EU.

According to the United Nations World Tourism Organisation, in 2012 — for the first time in history — there were in excess of one billion international tourist arrivals. Europe remained the most frequently visited region in the world, accounting for over half of all international tourist arrivals in 2012. The wealth of European cultures, the variety of its landscapes and the quality of its tourist infrastructure are likely to be amongst the reasons why tourists choose to take their holidays in Europe.

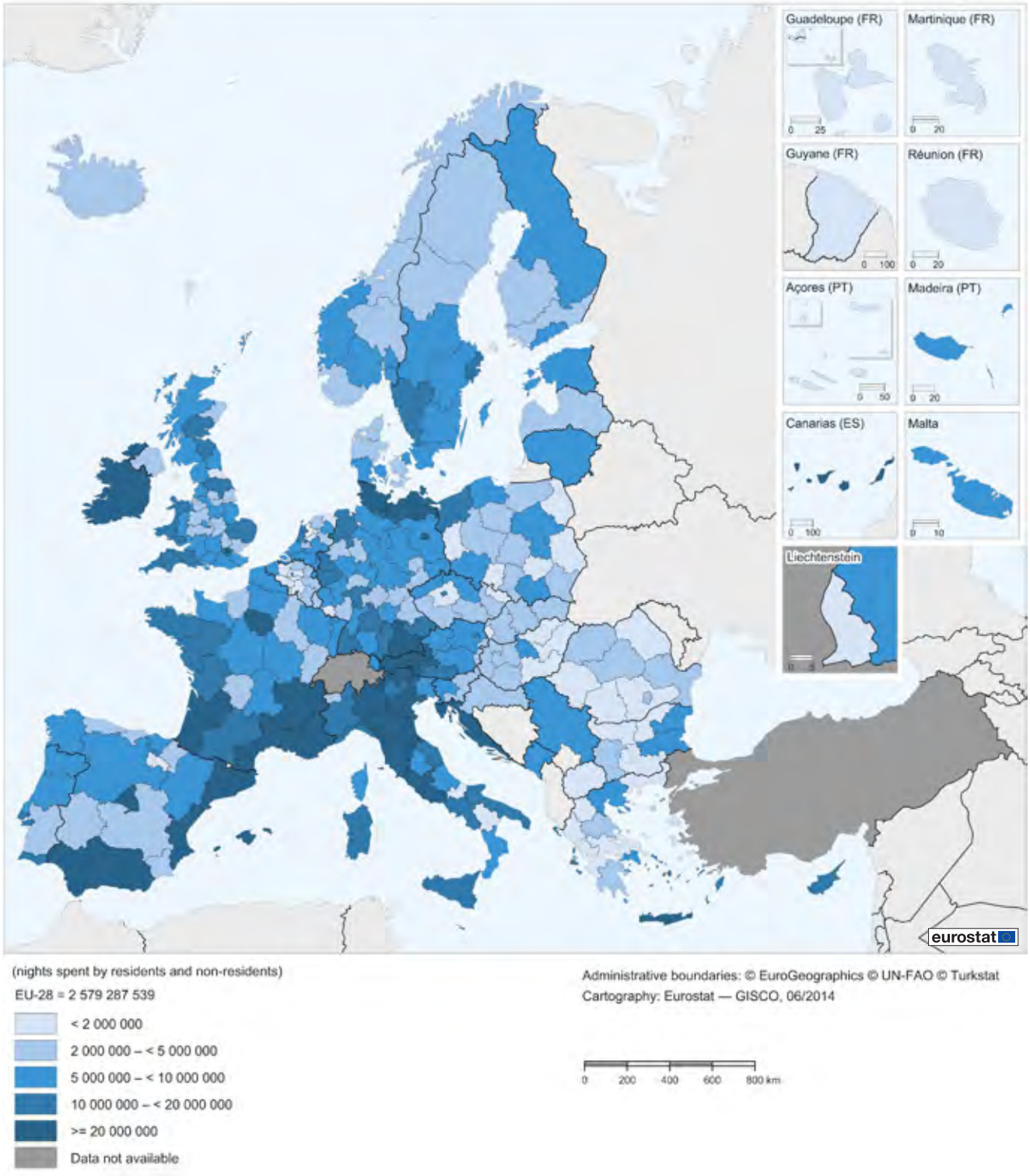
## Number of overnight stays

The number of overnight stays, which reflects both the length of stay and the number of visitors, is considered a key indicator within tourism accommodation statistics. There were 2.58 billion nights spent in tourist accommodation establishments (made up of hotels and similar accommodation (NACE Group 55.1), holiday and other short-stay accommodation (NACE Group 55.2), and camping grounds, recreational vehicle parks and trailer parks (NACE Group 55.3)) across the EU-28 in 2012.

Domestic EU tourists spent 1.45 billion nights in tourist accommodation establishments in 2012; this equated to 56.1 % of the total, with the number of overnight stays by non-residents reaching 1.13 billion.

**Map 9.1** provides a regional breakdown of the total number of overnight stays (residents and non-residents combined) in tourist accommodation establishments in 2012. The map shows that tourism in the EU is often concentrated in coastal regions, although the Alpine regions and some cities also experienced high demand.

**Map 9.1:** Total nights spent in tourist accommodation establishments, by NUTS 2 regions, 2012 (1)
(nights spent by residents and non-residents)




(1) Steiermark (AT22) and the former Yugoslav Republic of Macedonia: 2011. Ireland: national level. Ireland: estimate.
*Source:* Eurostat (online data code: tour_occ_nin2)

A total of 27 regions in the EU (including Ireland for which no regional analysis is available) recorded more than 20 million nights spent in tourist accommodation establishments (as shown by the darkest shade in **Map 9.1**). This list included six regions in each of Spain and Italy, five in France, four in Germany, two in Austria and one each in Greece, Croatia and the United Kingdom; note that Ireland as a whole recorded 28.9 million overnight stays.

### *Number of popular tourist destinations among non-residents was relatively limited …*

The results presented in **Map 9.1** may be contrasted with those shown for **Map 9.2**, where the analysis focuses on the relative share of non-residents in the total number of overnight stays in tourist accommodation establishments; the average across the whole of the EU-28 for this indicator was 43.9 % in 2012. There were only 65 NUTS 2 regions where the share of non-residents was above the EU-28 average, suggesting that foreign tourists had a relatively restricted range of destinations, while other regions may principally be destinations for national travellers. The highest share for non-residents in the total number of tourist nights spent was recorded in the Mediterranean island of Malta (a single region at this level of analysis); non-residents accounted for 95.7 % of the total nights spent in this region in 2012. There were eight other regions where the share of non-residents was at least 90.0 %, including the island destinations of Kriti and Notio Aigaio (Greece), Jadranska Hrvatska (Croatia), Cyprus (also one region at the level of detail) and the Illes Balears (Spain). The remaining three regions included Luxembourg (a single region at this level of analysis), Praha (the capital region of the Czech Republic) and Tirol (in the Austrian Alps). Note that residents of Malta, Cyprus and Luxembourg may be less likely to spend their holidays in the domestic market given the relative size of these countries.

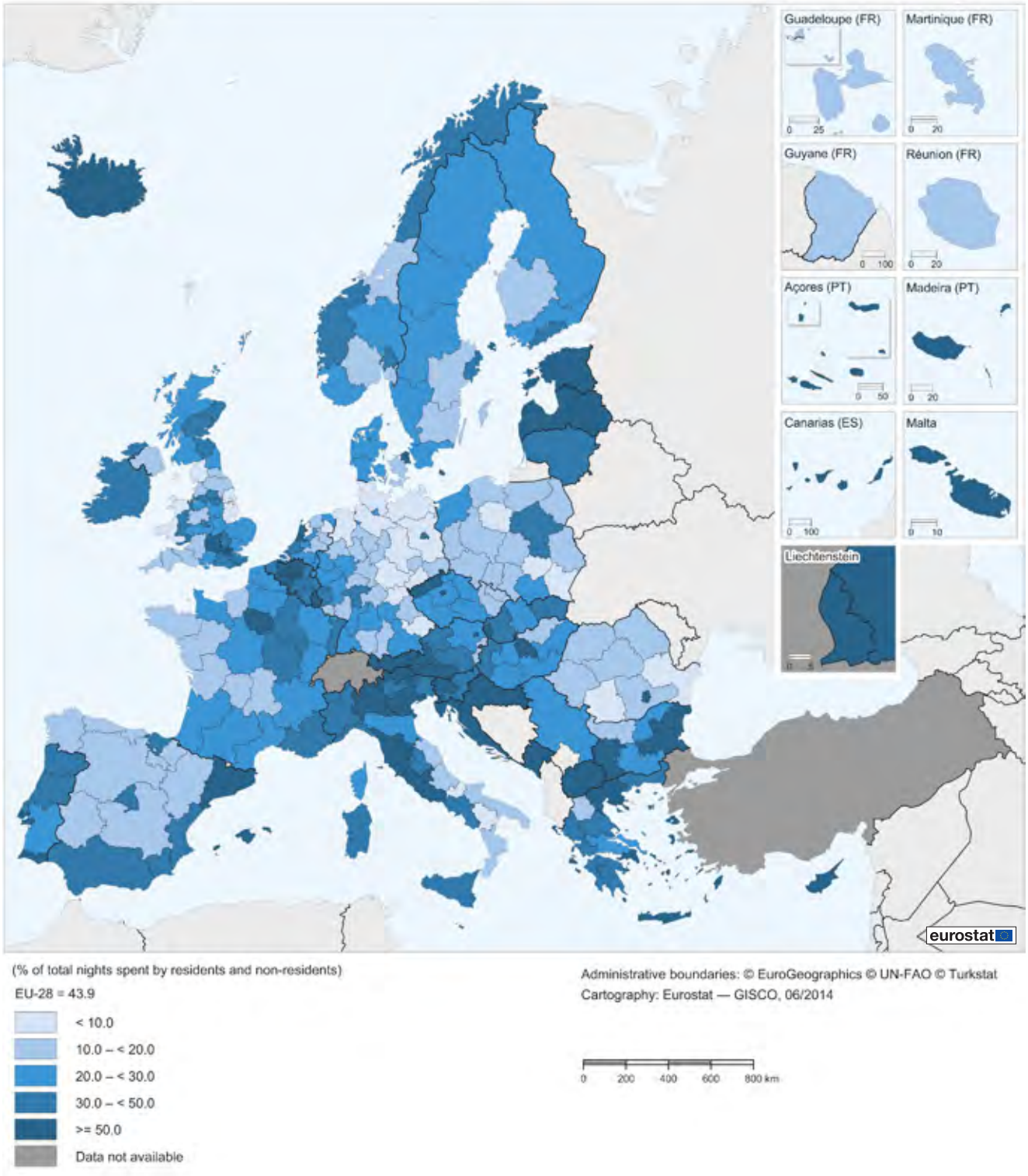
### *… although foreign visitors often visited capital regions more than domestic tourists*

Among the multi-regional EU Member States, overnight stays by foreign visitors in capital regions generally accounted for a majority of the total nights spent in tourist accommodation establishments — the only exceptions in 2012 were in the capital regions of Germany, Spain, Poland, Finland and Sweden; a regional breakdown is not available for Ireland.

### *Mecklenburg-Vorpommern and Cumbria were examples of popular tourist regions which principally appealed to the domestic market*

At the other end of the range, there were 22 NUTS 2 regions where fewer than 10 % of the total nights spent in tourist accommodation establishments were taken by non-nationals (as shown by the lightest shade in **Map 9.2**). Among these regions with relatively low levels of 'international appeal' there were 10 regions from Germany, four from the United Kingdom, three from Poland, two each from Italy and Romania and a single region from the Netherlands. Note that the information presented refers to the relative share of total nights spent and does not provide any indication as to the total number of nights spent; generally though the total nights spent in these regions were relatively low. However, there were a few regions which are characterised as having high 'domestic appeal' — for example, the sparsely populated Baltic coastal region of Mecklenburg-Vorpommern in Germany or Cumbria which includes the Lake District in the United Kingdom. A total of 24.8 million nights were spent in tourist accommodation establishments in Mecklenburg-Vorpommern in 2012 which was the 22nd highest value across the EU, just behind the whole of Ireland: non-nationals accounted for just 3.7 % of the Mecklenburg-Vorpommern total.

**Map 9.2:** Non-resident nights spent in tourist accommodation establishments, by NUTS 2 regions, 2012 ([1])
(% of total nights spent by residents and non-residents)




([1]) Steiermark (AT22) and the former Yugoslav Republic of Macedonia: 2011. Ireland: national level. Ireland: estimate.
*Source:* Eurostat (online data code: tour_occ_nin2)

## Most popular tourist regions

The top 20 tourist regions (in terms of nights spent by residents and non-residents) are shown in **Figure 9.1**; the analysis presents an analysis according to type of accommodation. These 20 regions together accounted for more than one third (37.4 %) of the total number of nights spent in the EU-28 in 2012.

### *Spanish islands of the Canarias had the highest number of overnight stays in 2012*

The Spanish island region of the Canarias (87.5 million nights) had the highest number of overnight stays among any of the NUTS 2 regions in the EU in 2012, while two further Spanish regions also featured among the top five destinations — Cataluña (69.7 million nights) and the Illes Balears (64.7 million nights). The top five destinations were completed by the French capital region of Île de France (78.1 million nights) and the Italian region of Veneto (62.4 million nights), where the cities of Padua, Venice and Verona are located.

Aside from regions situated in the large holiday destinations of Spain, France and Italy, the top 20 regions also featured Jadranska Hrvatska (Croatia; 6th place), Inner London (the United Kingdom; 10th place), Tirol (Austria; 14th place) and Oberbayern (Germany; 17th place). The total number of nights spent on the Croatian Adriatic coast and islands of Jadranska Hrvatska reached 59.9 million in 2012. This marked the most successful year ever for Croatia as a tourist destination and coincided with preparations for Croatia's accession to the EU.

### SPOTLIGHT ON THE REGIONS: JADRANSKA HRVATSKA (HR03), CROATIA

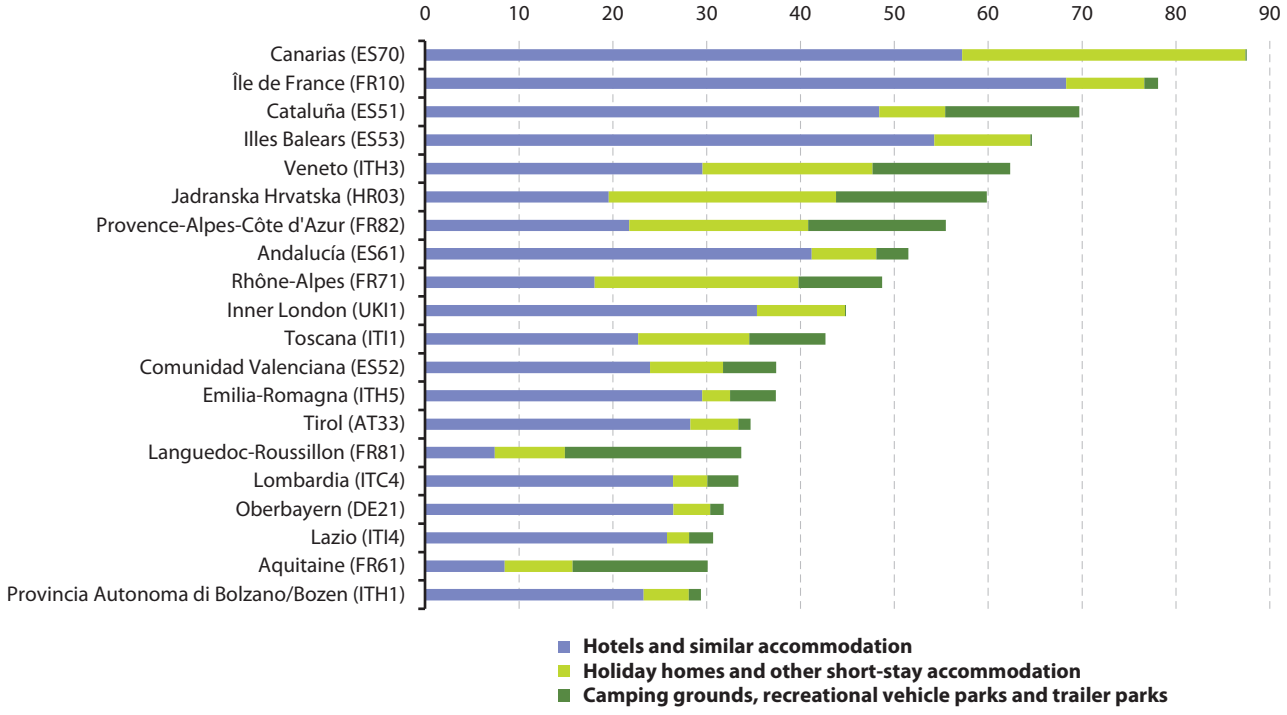
**Dubrovnik, Croatia**

Dubrovnik is a city in the south of Croatia on the Adriatic coast; it is part of the Jadranska Hrvatska region which also includes, among others, the popular tourist destinations of Split and Zadar on the mainland, as well as the islands of Hvar and Korčula.

Jadranska Hrvatska was the sixth most popular tourist destination in the EU in 2012 with 59.9 million nights spent.

*Photo: Edward Wexler*

**Figure 9.1:** Top 20 EU tourist regions, number of nights spent in tourist accommodation establishments, by NUTS 2 regions, 2012 (1)
(million nights spent by residents and non-residents)




(1) Ireland, Região Autónoma dos Açores (PT20) and Região Autónoma da Madeira (PT30): not available.
*Source:* Eurostat (online data code: tour_occ_nin2)

### *Hotels accounted for the highest share of nights spent in the majority of popular tourist destinations …*

Hotels and similar accommodation accounted for more than half of the total number of nights spent in tourist accommodation establishments in 14 of the 20 most popular tourist regions of the EU in 2012. The French capital region of Île de France and the four Spanish regions of the Canarias, the Illes Balears, Cataluña and Andalucía, were the only regions to record in excess of 40 million overnight stays in hotels and similar accommodation in 2012. Hotels and similar accommodation were also the most popular form of accommodation in Veneto and the French region of Provence-Alpes-Côte d'Azur, although their share in the total number of overnight stays was below 50 % in both of these regions.

The French capital region recorded the highest proportion of nights spent in hotels and similar accommodation (87.4 % of all overnight stays). This could be contrasted with another French region, Languedoc-Roussillon (which borders onto the Mediterranean Sea), where the relative share of hotels and similar accommodation was just 22.1 %, which was the lowest share across the top 20 regions.

### *… although in Aquitaine and Languedoc-Roussillon the highest number of nights spent by tourists were in campsites*

By contrast, Languedoc-Roussillon was the only region among the top 20 to report that more than half of its total number of overnight stays were spent in camping grounds, recreational vehicle parks and trailer parks (hereafter referred to as campsites); the only other NUTS 2 regions where campsites accounted for a majority of overnight stays were Midtjylland, Syddanmark (both Denmark), Lincolnshire and East Yorkshire and Northern Lincolnshire (both in the United Kingdom).

Aquitaine (another French region on the Atlantic coast) was the only other region among the top 20 to record its highest number (but not a majority) of overnight stays in campsites. In absolute terms, Aquitaine and Languedoc-Roussillon were also among the most popular destinations for camping, as they formed part of a group of six regions, together with Jadranska Hrvatska, Veneto, Provence-Alpes-Côte d'Azur and Cataluña, where the total number of overnight stays in campsites was above 14 million. Together these six regions accounted for 25.9 % of all nights spent in campsites across the EU-28 in 2012.

### *Holiday homes and other short-stay accommodation was popular in Rhône-Alpes and Jadranska Hrvatska*

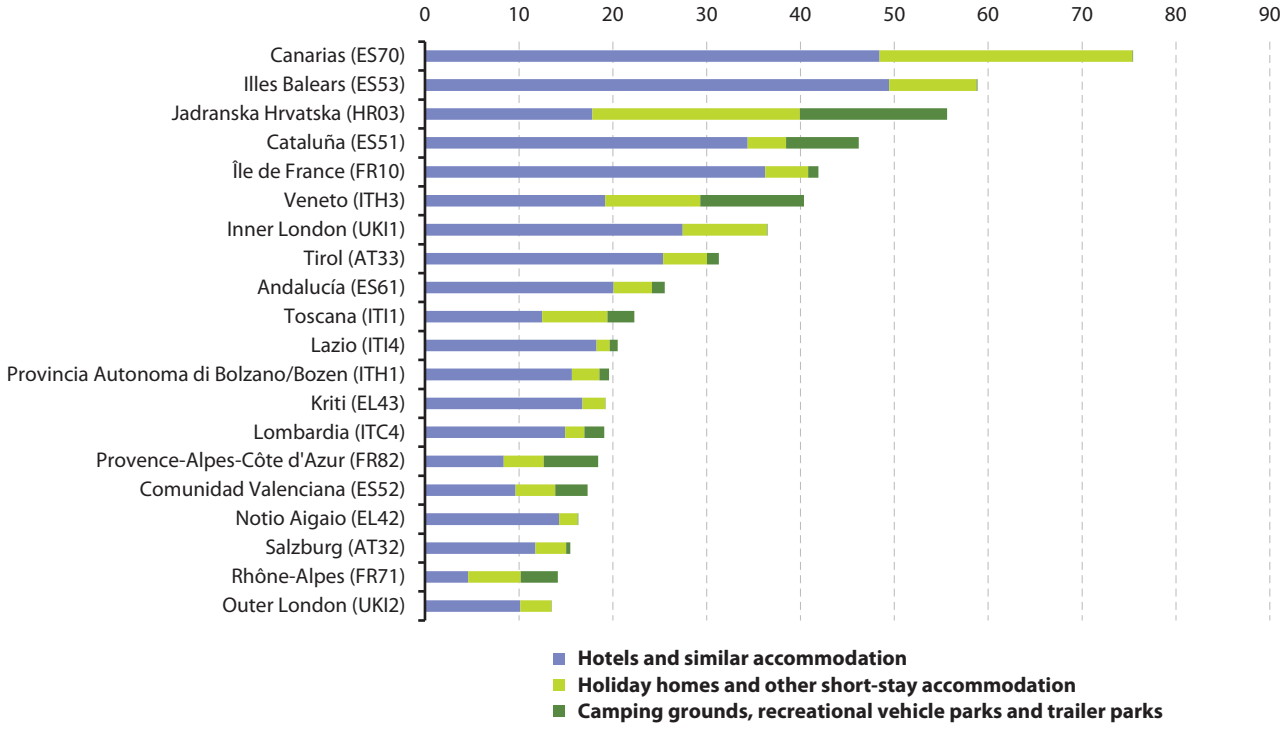
The most popular regions for holiday homes and other short-stay accommodation (among those in the top 20 tourist destinations) were the Canarias (30.2 million nights spent), Jadranska Hrvatska (24.2 million) and the south-eastern French region of Rhône-Alpes (21.7 million). The relatively high figure for the latter may, at least in part, be explained by short-stay rental vacations during the winter skiing season and summer hiking seasons. The 21.7 million nights spent in holiday homes and other short-stay accommodation in Rhône-Alpes equated to 44.5 % of the total number of overnight stays in this region in any form of tourist accommodation establishment, the highest share among the 20 most popular tourist destinations in the EU. The Croatian region of Jadranska Hrvatska was the only other region in the top 20 to report that holiday homes and other short-stay accommodation was its most popular form of accommodation (40.4 % of total nights spent).

**Figure 9.2** shows similar information to that presented in **Figure 9.1**, but in this case the data refer only to overnight stays by foreign (non-resident) tourists; note these figures include people travelling from one EU Member State to another. The top 20 tourist regions for non-resident tourists in 2012 accounted for more than half (53.7 %) of all overnight stays by non-residents across the whole of the EU-28. The list of the most visited regions by foreign tourists includes regions in seven different EU Member States: Spain, Italy, France, Greece, Austria, the United Kingdom and Croatia: half of the 20 regions were either Spanish or Italian (five regions each).

### *Foreign tourists attracted by the beaches and coastal towns of Spain*

The most popular destinations for foreign tourists included the three Spanish regions of the Canarias, the Illes Balears and Cataluña, along with Jadranska Hrvatska, the Île de France and Veneto. These were the only regions to report in excess of 40 million nights spent by foreign tourists in 2012 (whatever the type of accommodation). Together they accounted for 28.1 % of the overnight stays made by foreign tourists in the EU-28.

**Figure 9.2:** Top 20 EU tourist regions for non-residents, number of nights spent in tourist accommodation establishments, by NUTS 2 regions, 2012 (1)
(million nights spent by non-residents)




(1) Ireland, Região Autónoma dos Açores (PT20) and Região Autónoma da Madeira (PT30): not available.
*Source:* Eurostat (online data code: tour_occ_nin2)

### *Foreign tourists had a higher propensity to choose hotels as their preferred form of tourist accommodation*

A majority of the overnight stays in 16 of the top 20 destinations for foreign visitors were spent in hotels and similar accommodation; this type of accommodation accounted for at least 80 % of the nights spent by foreign visitors in Lazio (which includes the Italian capital of Rome), the Greek island regions of Notio Aigaio and Kriti, the Île de France, the Illes Balears and Tirol.

Almost one third (31.6 %) of overnight stays by foreign visitors in 2012 in Provence-Alpes-Côte d'Azur were spent in campsites; this was the highest relative share of nights spent by foreign visitors in campsites among the 20 most popular tourist destinations. As such, foreign visitors appeared to have a lower propensity to make use of campsites than domestic tourists.

**Table 9.1** shows by country, separately for residents and non-residents, which regions had the most number of overnight stays in tourist accommodation establishments in 2012. As already seen, many tourists have a preference for visiting regions with a coastline. This is, by definition, the case for the 10 EU Member States which are characterised by all of their NUTS 2 regions having a coastline. By contrast, there are five EU Member States that are completely landlocked.

### *Foreign visitors principally attracted to coastal destination in southern Europe and capital regions in more northerly Member States*

Of the remaining 13 EU Member States (that were neither landlocked nor completely coastal) the most visited region was generally different for residents and for non-residents, the only exceptions being the Black Sea coastal region of Yugoiztochen (Bulgaria), the Adriatic coastline and islands of Jadranska Hrvatska, and the north-western coastal region of Zachodniopomorskie (Poland). Among residents, the most popular region had a coastline in 11 of the 13 remaining Member States, the exceptions being in the Netherlands and Slovenia. Among non-residents, the situation was slightly more balanced, as the capital regions of Belgium, Germany, France, Romania and the United Kingdom attracted more foreign visitors than any other region (including those with a coastline); however, in the southern Member States the most popular regions for foreign visitors were also coastal areas.

Among the 10 EU Member States where all NUTS 2 regions have a coastline, there were only five countries with more than one region (and among these, there is no regional breakdown available for Ireland). Within the remaining four countries there was again a north-south divide, insofar as foreign visitors were most likely to visit the capital regions of Denmark, Finland and Sweden, while in Portugal the most popular destination for non-residents was the Algarve.

Among the four landlocked EU Member States with more than one region (therefore excluding Luxembourg), the most popular regions for foreign visitors were also capital regions in the Czech Republic, Hungary and Slovakia, whereas foreigners spent a higher number of nights in the Tirol compared with the Austrian capital region of Wien; this may, at least in part, be due to winter skiing or summer hiking holidays often lasting a week or more, whereas tourist trips to cities are often shorter (for business meetings or for a weekend).

**Table 9.1:** Most popular tourist regions, number of nights spent in tourist accommodation establishments, by NUTS 2 regions, 2012 (1)

| | Residents | | | Non-residents | | |
|---|---|---|---|---|---|---|
| | Total nights spent in country (million nights) | Most popular region | Share of most popular region in national total (%) | Total nights spent in country (million nights) | Most popular region | Share of most popular region in national total (%) |
| **Countries where all regions are coastal** | | | | | | |
| Denmark | 18.4 | Syddanmark (DK03) | 30.7 | 9.6 | Hovedstaden (DK01) | 48.9 |
| Estonia | 1.7 | | - | 3.8 | | - |
| Ireland | *17.0* | | - | *11.8* | | *:* |
| Cyprus | 1.1 | | - | 13.5 | | - |
| Latvia | 1.1 | | - | 2.4 | | - |
| Lithuania | 2.6 | | - | 2.6 | | - |
| Malta | 0.3 | | - | 7.5 | | - |
| Portugal | 17.7 | Algarve (PT15) | 24.7 | 29.0 | Algarve (PT15) | 40.1 |
| Finland | 14.5 | Pohjois- ja Itä-Suomi (FI1D) | 37.1 | 5.8 | Helsinki-Uusimaa (FI1B) | 41.2 |
| Sweden | 37.3 | Västsverige (SE23) | 21.4 | 11.3 | Stockholm (SE11) | 31.2 |
| Iceland | 0.8 | | - | 2.9 | | - |
| Montenegro | 1.0 | | - | 8.1 | | - |
| **Countries with coastal and non-coastal regions** | | | | | | |
| Belgium | 14.8 | Province/Provincie West-Vlaanderen (BE25) | 30.3 | 16.6 | Région de Bruxelles-Capitale/ Brussels Hoofdstedelijk Gewest (BE10) | 28.9 |
| Bulgaria | 6.8 | Yugoiztochen (BG34) | 24.5 | 13.5 | Yugoiztochen (BG34) | 45.5 |
| Germany | 282.2 | Mecklenburg-Vorpommern (DE80) | 8.5 | 68.2 | Berlin (DE30) | 15.5 |
| Greece | 17.4 | Kentriki Makedonia (EL12) | 17.0 | 60.8 | Kriti (EL43) | 31.6 |
| Spain | 139.3 | Andalucía (ES61) | 18.6 | 243.4 | Canarias (ES70) | 31.0 |
| France | 275.5 | Provence-Alpes-Côte d'Azur (FR82) | 13.4 | 125.0 | Île de France (FR10) | 33.5 |
| Croatia | 5.1 | Jadranska Hrvatska (HR03) | 83.2 | 57.1 | Jadranska Hrvatska (HR03) | 97.4 |
| Italy | 200.1 | Emilia-Romagna (ITH5) | 13.9 | 180.6 | Veneto (ITH3) | 22.4 |
| Netherlands | 56.2 | Gelderland (NL22) | 14.5 | 27.8 | Noord-Holland (NL32) | 44.4 |
| Poland | 50.1 | Zachodniopomorskie (PL42) | 16.8 | 11.9 | Zachodniopomorskie (PL42) | 21.2 |
| Romania | 15.8 | Sud-Est (RO22) | 26.2 | 3.3 | Bucureşti - Ilfov (RO32) | 37.2 |
| Slovenia | 3.7 | Vzhodna Slovenija (SI01) | 58.2 | 5.7 | Zahodna Slovenija (SI02) | 66.4 |
| United Kingdom | 198.1 | West Wales & The Valleys (UKL1) | 8.1 | 105.5 | Inner London (UKI1) | 34.6 |
| Norway | 22.0 | Sør-Østlandet (NO03) | 19.9 | 7.9 | Vestlandet (NO05) | 24.8 |
| **Landlocked countries** | | | | | | |
| Czech Republic | 19.0 | Severovýchod (CZ05) | 25.9 | 20.5 | Praha (CZ01) | 59.9 |
| Luxembourg | 0.2 | | - | 2.2 | | - |
| Hungary | 11.8 | Nyugat-Dunántúl (HU22) | 21.0 | 11.4 | Közép-Magyarország (HU10) | 59.2 |
| Austria | 32.4 | Steiermark (AT22) | 18.6 | 77.2 | Tirol (AT33) | 40.6 |
| Slovakia | 6.7 | Stredné Slovensko (SK03) | 37.1 | 4.0 | Bratislavský kraj (SK01) | 26.5 |
| Liechtenstein | 0.0 | | - | 0.1 | | - |
| FYR of Macedonia | 0.7 | | - | 0.7 | | - |
| Serbia | 4.6 | | - | 1.8 | | - |

(1) Steiermark (AT22) and the former Yugoslav Republic of Macedonia: 2011.
*Source:* Eurostat (online data code: tour_occ_nin2)

## Tourism pressures

In a broad sense, uncontrolled tourism poses a number of threats to both natural areas and cities. Increasing numbers of tourists in urban areas can result in added congestion, higher pollution levels and potential damage to historical buildings, while in rural and coastal areas increasing numbers of tourists may lead to soil erosion, increased waste, discharges into the sea, the loss of natural habitats and pressure on endangered species. Tourism pressures may be measured using a range of indicators: tourism intensity is defined as the number of overnight stays in relation to the resident population. This also provides a more nuanced guide to the economic significance of tourism in a region than the absolute number of overnight stays and in this context may be used to analyse the sustainability of tourism.

### *Tourism intensity in the Illes Balears, Notio Aigaio and the Provincia Autonoma di Bolzano/Bozen was more than 10 times the EU average*

Across the whole of the EU-28 in 2012, there was an average of 5 074 nights spent by tourists in tourist accommodation establishments per thousand inhabitants. Tourism intensity peaked in the Spanish region of Illes Balears (59 082 overnight stays per thousand inhabitants), the Greek region of Notio Aigaio (58 087 overnight stays per thousand inhabitants) and the Italian Provincia Autonoma di Bolzano/Bozen (57 448 overnight stays per thousand inhabitants); tourism intensity in each of these three regions was more than 10 times the EU average. **Map 9.3** shows the regional distribution of tourism intensity in 2012: there were 34 NUTS 2 regions with intensities of at least 10 000 nights spent per thousand inhabitants (as shown by the darkest shade in the map); each of these regions had a tourism intensity that was at least twice as high as the EU-28 average.

The highest tourism intensity rates were concentrated principally in popular coastal regions (often around the Mediterranean). Otherwise, a number of Alpine regions (for example, the Provincia Autonoma di Bolzano/Bozen, Tirol and Salzburg) also reported relatively high tourism intensity, which is perhaps not surprising given that some of these regions are characterised as having relatively low levels of population density. This pattern was also reproduced in more northerly regions, such as the majority of the regions in the Nordic Member States and the Highlands and Islands of Scotland, where population density was also particularly low; which was also the case in Iceland.

### *Regional tourism density peaked in Inner London*

An alternative means of analysing tourism pressures is by studying the relationship between the total number of overnight stays and the area available to accommodate tourists, by means of a ratio per square kilometre (km²). **Map 9.4** presents regional tourism density which was concentrated across urban regions (which generally consist of a much smaller total area). There were 53 regions across the EU where tourism density was above 1 750 nights spent by tourists (residents and non-residents) per km²; these are shown as the darkest shade on the map. On the basis of this measure of tourism density, Inner London recorded by far the highest concentration of tourists in the EU-28 in 2012, with 136 705 nights spent by tourists per km² (see **Figure 9.3**); this was almost four times as high as the second ranked region, the Belgian capital of the Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest (37 133 nights spent by tourists per km²). There were 10 NUTS 2 regions across the EU-28 which recorded tourism density of at least 10 000 nights spent by tourists per km² in 2012. Aside from the two regions already mentioned, these included three additional capital regions — those for Austria, Germany and the Czech Republic — the urban regions of Hamburg and Outer London, and the popular island destinations of Malta, the Illes Balears and the Canarias.

SPOTLIGHT ON THE REGIONS: VENETO (ITH3), ITALY

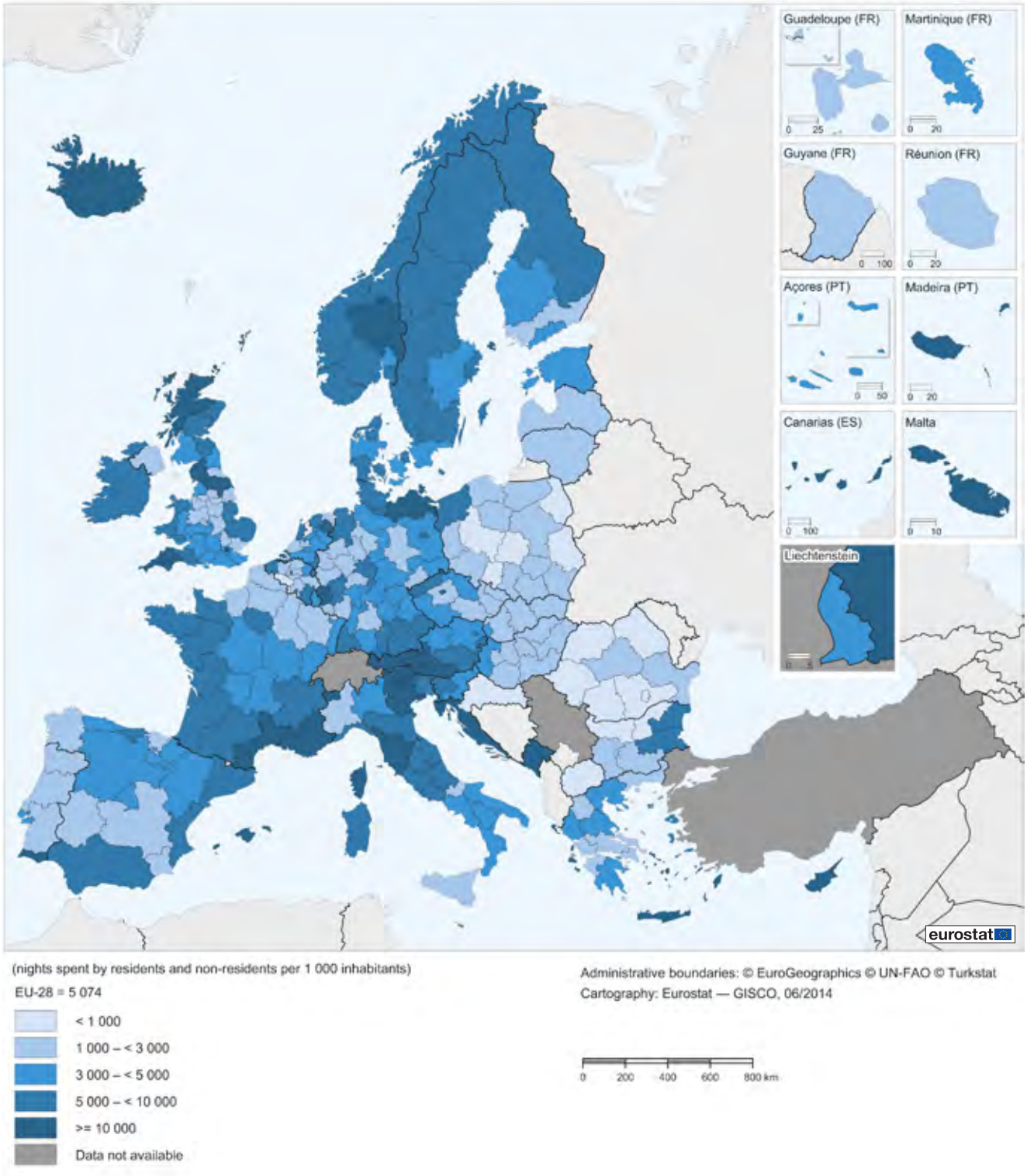
**Grand canal, Venice**

Venice and its lagoon are a UNESCO world heritage site that forms part of the Veneto NUTS 2 region in Italy. The popularity of Veneto as a tourist destination extends beyond Venice and includes the cities of Padua and Verona, the eastern shores of Lake Garda and a number of coastal resorts (for example, Lido di Jesolo and Caorle).

Veneto was one of the five most popular tourist regions in the EU in 2012 with 62.4 million nights spent in tourist accommodation establishments by resident Italians and non-residents. It was joined in the top 20 tourist destinations by five other Italian regions, namely: Toscana, Emilia-Romagna, Lombardia, Lazio and the Provincia Autonoma di Bolzano/Bozen.

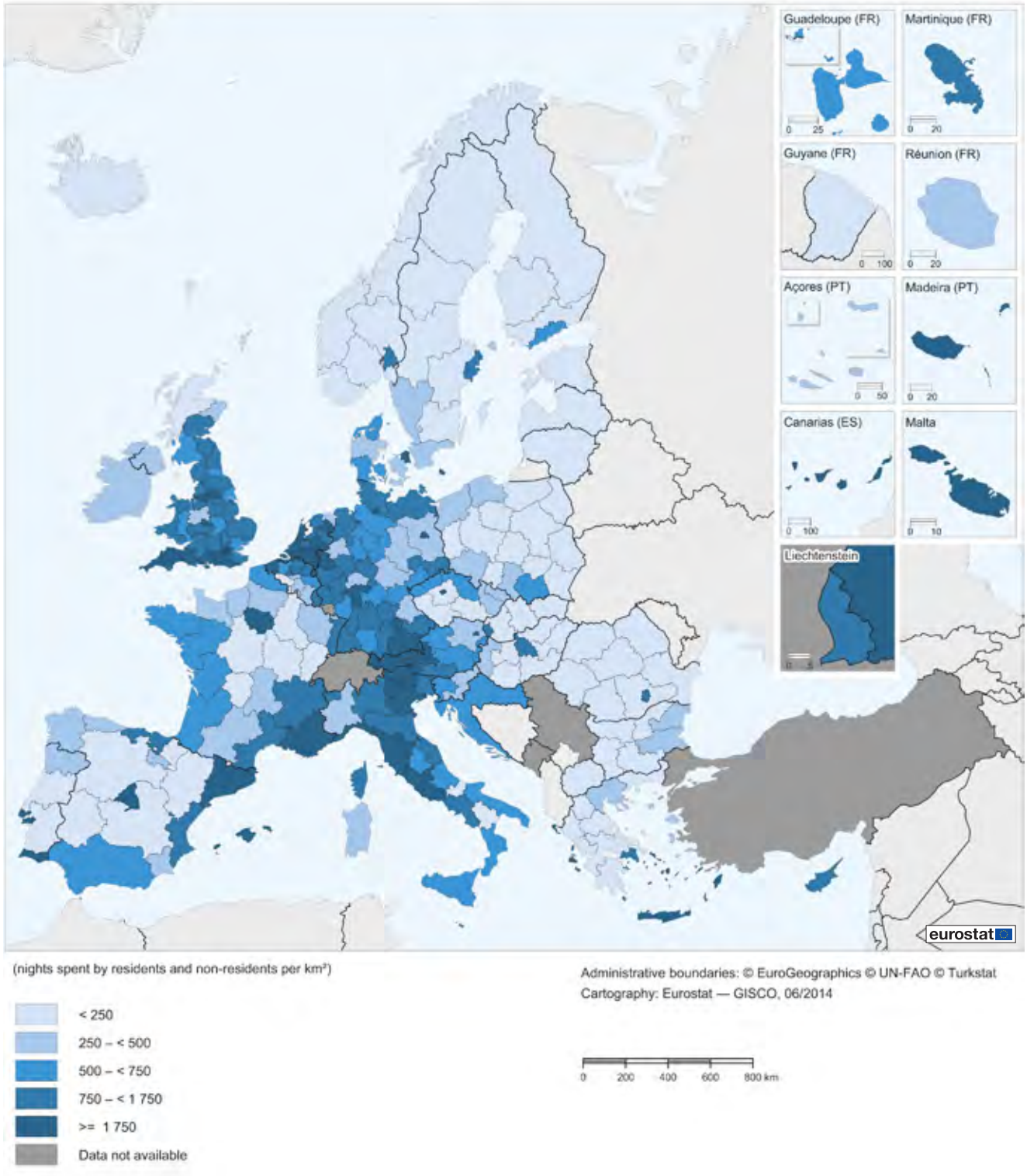
*Photo: Hans Peter Schaefer*

**Map 9.3:** Nights spent in tourist accommodation establishments, by NUTS 2 regions, 2012 (1)
(nights spent by residents and non-residents per 1 000 inhabitants)



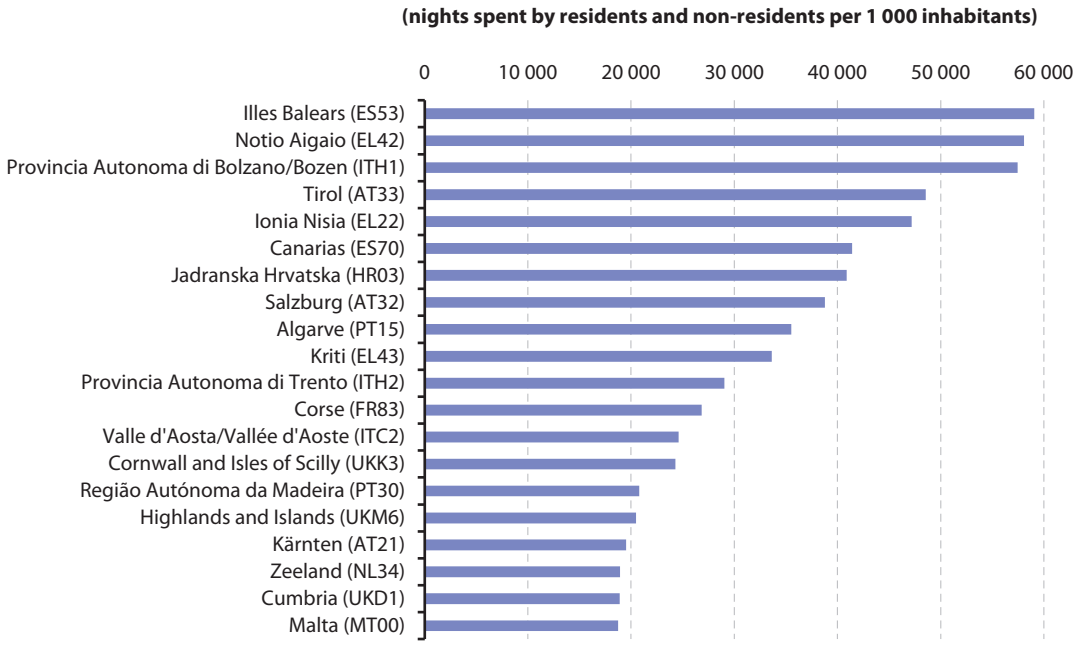

(1) Steiermark (AT22) and the former Yugoslav Republic of Macedonia: 2011. Ireland: national level. Ireland: estimate.
*Source:* Eurostat (online data code: tour_occ_nin2)

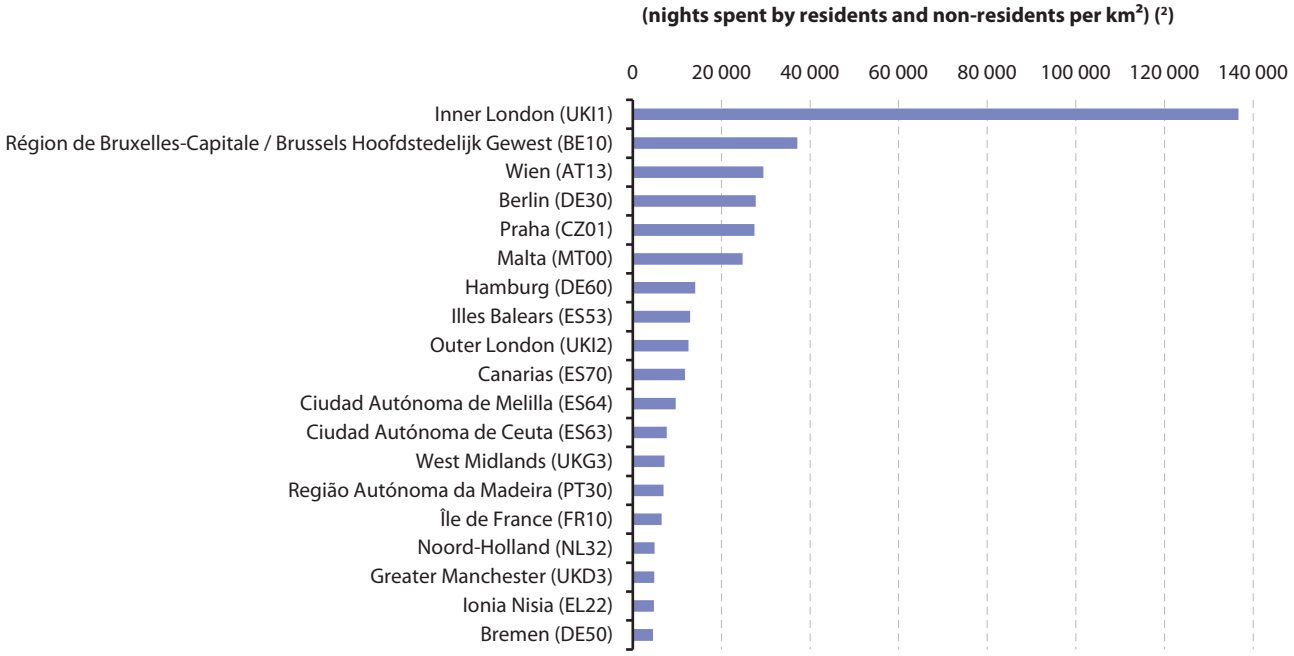
**Map 9.4:** Nights spent in tourist accommodation establishments, by NUTS 2 regions, 2012 ([1])
(nights spent by residents and non-residents per km²)




([1]) Steiermark (AT22) and the former Yugoslav Republic of Macedonia: 2011. Ireland and Croatia: national level. Ireland: estimate.
*Source:* Eurostat (online data code: tour_occ_nin2)

**Figure 9.3:** Top 20 EU tourist regions, number of nights spent in tourist accommodation establishments, by NUTS 2 regions, 2012 (1)




(1) Steiermark (AT22) and the former Yugoslav Republic of Macedonia: 2011. Ireland: national level. Ireland: estimates.
(2) Croatia: national level.
*Source:* Eurostat (online data code: tour_occ_nin2)

## Coastal, rural and urban tourism

With a change in the legal basis for the collection of tourism statistics (see Data sources and availability for more details), a new set of information has become available for statistics covering the reference year 2012 onwards. **Maps 9.5–9.7** present regional tourism statistics analysed according to whether or not tourist accommodation establishments are in coastal localities, densely or thinly populated areas; for each map the denominator is the total nights spent by residents and non-residents in the regions' tourist accommodation establishments.

Approximately 40 % of the EU's population lives within 50 km of the sea. Many coastal regions in Europe are characterised by considerable building activity as more of the population chooses to live near the sea and mass-market tourism continues to expand. Coastal regions are characterised by a range of economic activities, covering among others: shipping and ports, fisheries, energy and coastal tourism. Such activity can potentially have serious implications in relation to sustainable development: for example, natural habitats may be destroyed, species may be threatened, and pollution and erosion could increase. One particular aspect of climate change which makes coastal regions particularly vulnerable is the likelihood that sea levels will rise in the coming years.

### *Pull of coastal localities as tourist destinations*

**Map 9.5** shows, for NUTS 2 regions with a coastline, the proportion of total nights spent in tourist accommodation establishments in coastal localities. There were 16 regions across the EU-28 where coastal localities accounted for each and every night spent in tourist accommodation establishments. These covered a range of different regions: from largely urban regions such as Bremen or Hamburg in Germany, through traditional tourist destinations such as the islands of the Canarias and the Illes Balears, or Cyprus and Malta (single regions at this level of analysis), to less popular tourist destinations, Åland (in Finland) or East Yorkshire and Northern Lincolnshire (in the United Kingdom).

The pull of coastal localities can be seen by the skewed nature of the distribution of nights spent. Among the 119 NUTS 2 regions across the EU for which data are available in 2012 (no information for Ireland or Greece), almost four out of every five regions reported that coastal localities accounted for a majority of the nights that were spent in tourist accommodation establishments. At the other end of the range, there were 15 regions where coastal localities accounted for less than 35 % of the nights spent in tourist accommodation establishments (as shown by the lightest shade in **Map 9.5**). These were often regions that had relatively short coastlines and major inland cities, for example, Picardie in the north of France, the Noord Brabant region of the Netherlands, Warmińsko-Mazurskie in Poland, or Cheshire in the United Kingdom.

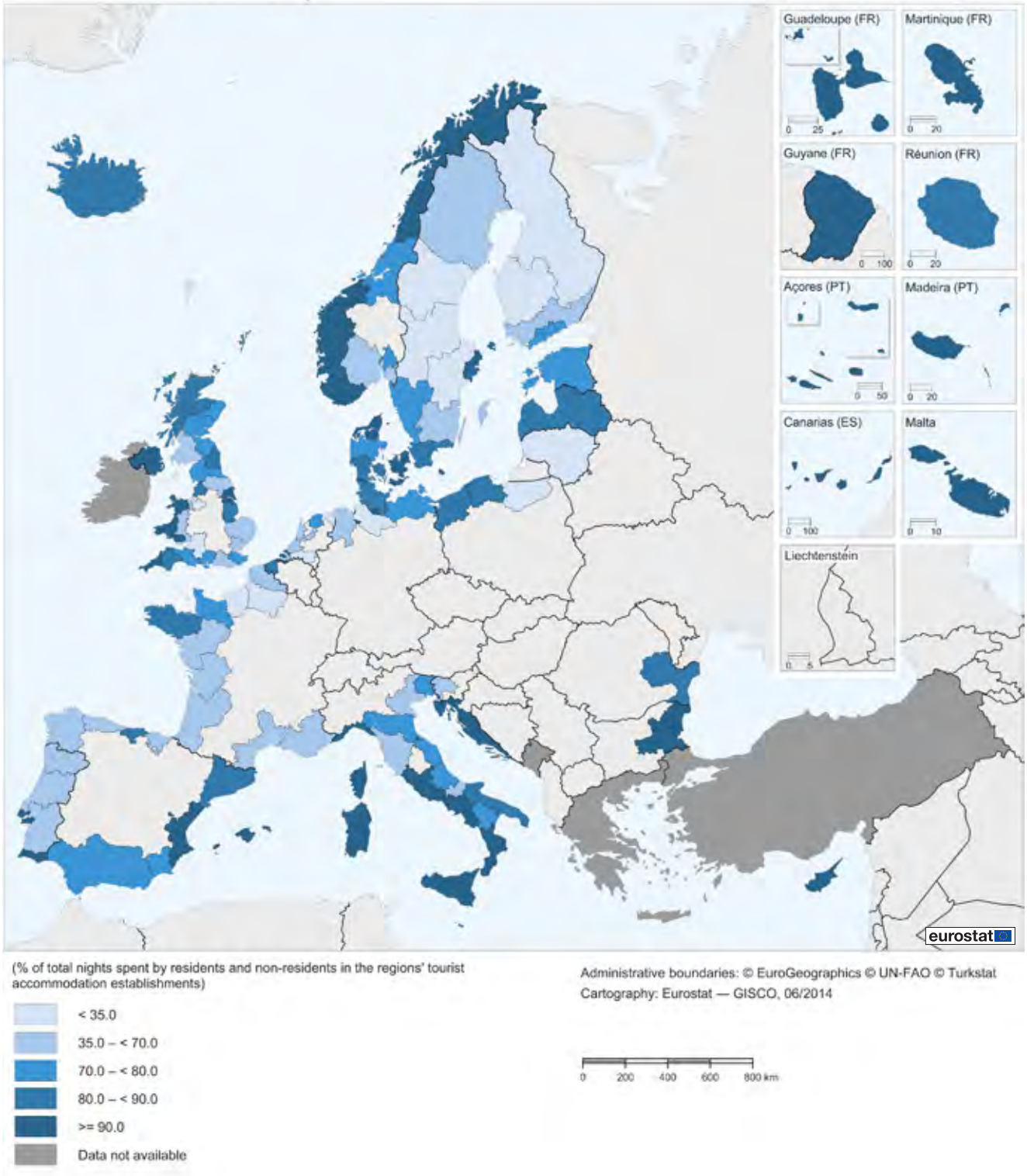
### *Unsurprisingly, all of the nights spent in tourist accommodation in the Belgian, Czech, German and British capital regions were spent in densely populated areas*

A similar type of analysis is presented in **Map 9.6**, which focuses on the share of urban tourism in the proportion of nights spent in tourist accommodation establishments. As may be expected the most popular destinations for urban tourism include capital regions and regions characterised by relatively large cities. There were 14 regions across the EU where densely populated areas accounted for all of the nights spent in tourist accommodation establishments in 2012, simply because all areas within the region are classified as densely populated; these included the capital regions of Belgium, the Czech Republic, Germany and the United Kingdom. By contrast, there were 13 regions across the EU-28 where urban tourism failed to account for any of the nights spent in tourist accommodation establishments.

### *Rural tourism dominates nights spent in Cumbria, Zeeland, the Highlands and Islands and Prov. Luxembourg*

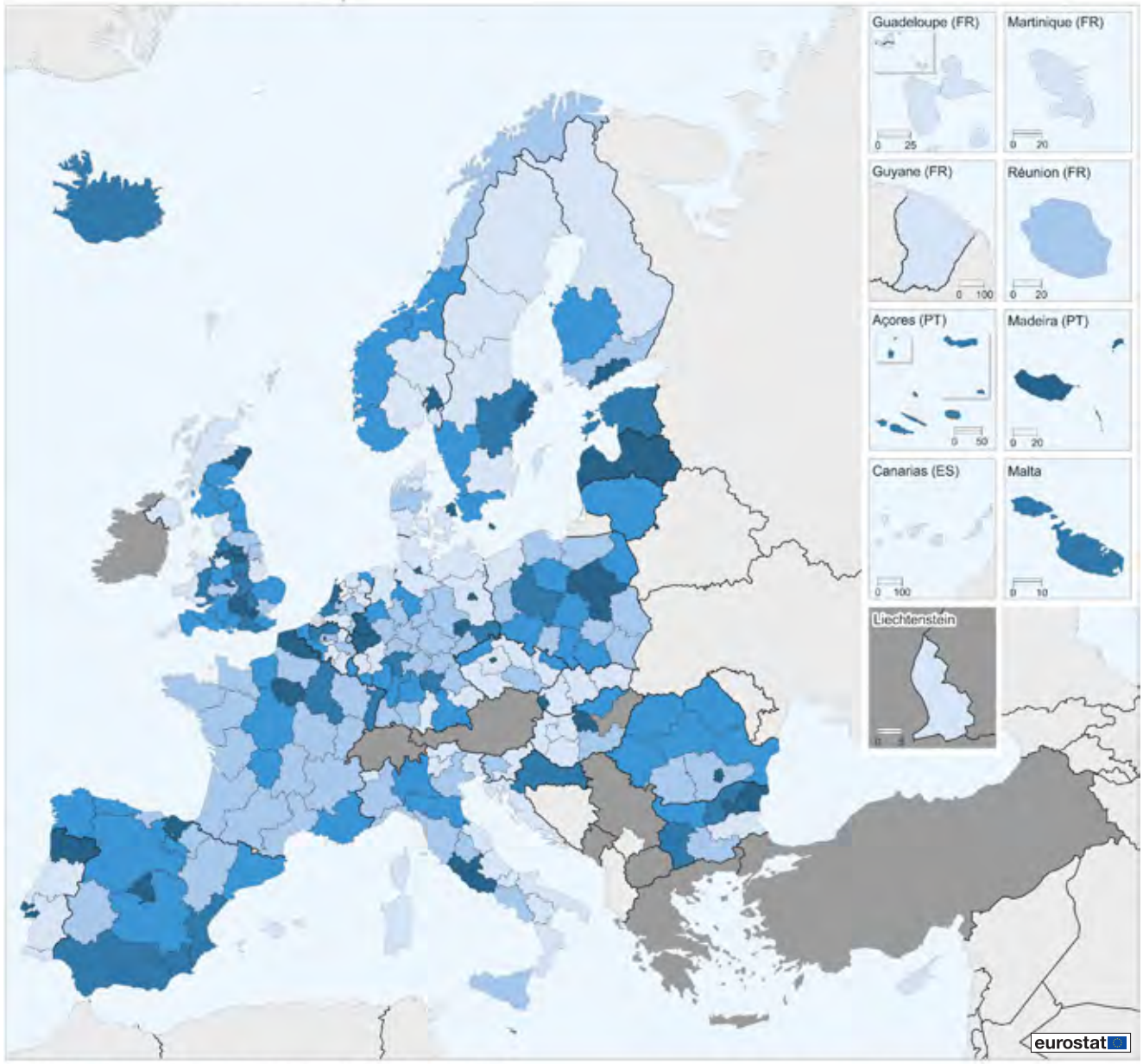
**Map 9.7** provides further information on the regional distribution of the proportion of nights spent in thinly populated areas. In Cumbria (the United Kingdom) thinly populated areas accounted for a 96.9 % share of the total nights spent in the regions' tourist accommodation establishments. There were three other regions where this share was above 90 %, namely, in Zeeland (the Netherlands), the Highlands and Islands (of Scotland) and in the southern Belgian region of the Prov. Luxembourg.

**Map 9.5:** Nights spent in tourist accommodation establishments in coastal localities, by NUTS 2 regions, 2012
(% of total nights spent by residents and non-residents in the regions' tourist accommodation establishments)



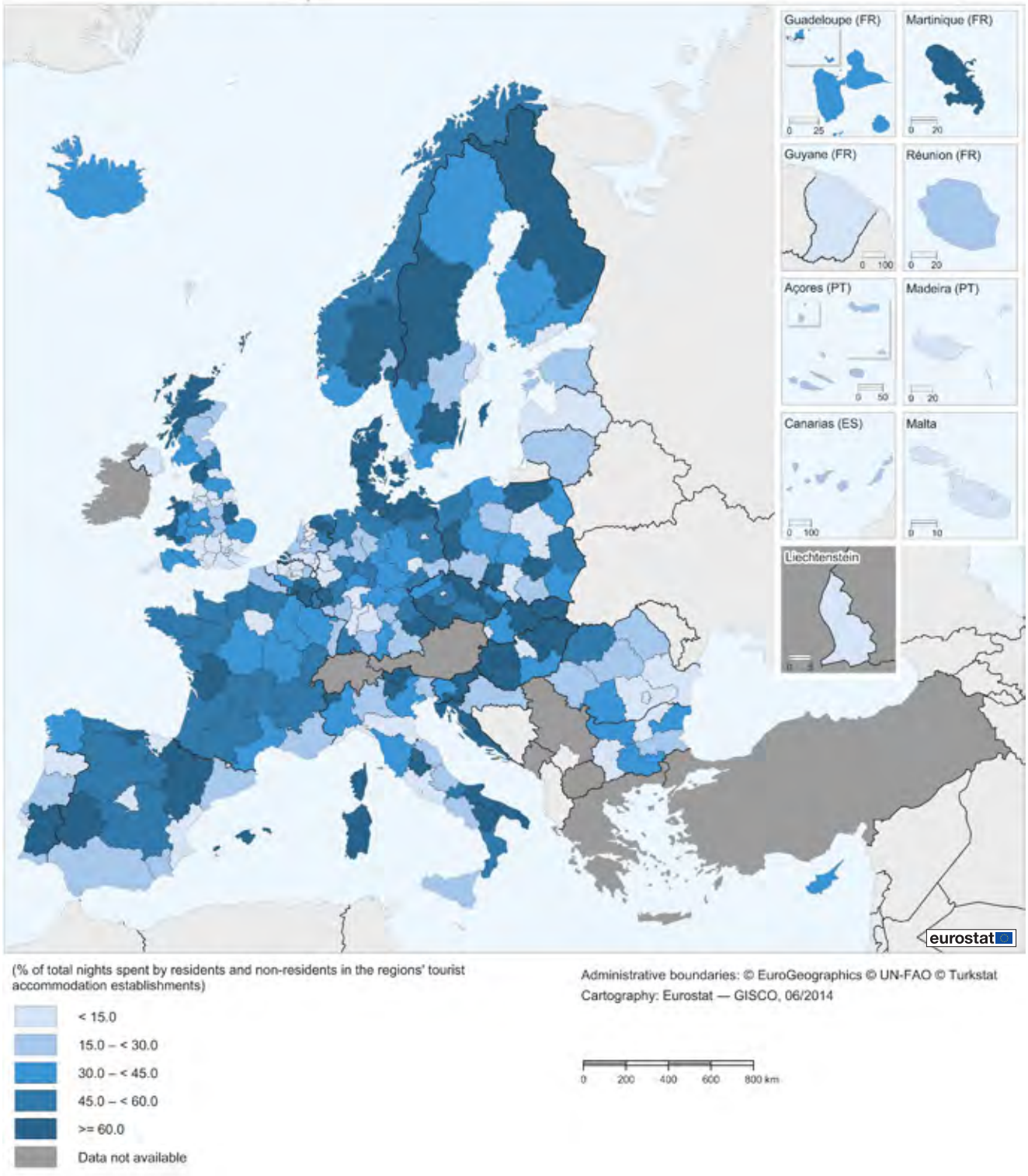

*Source:* Eurostat (online data code: tour_occ_nin2c)

**Map 9.6:** Urban tourism — nights spent in tourist accommodation establishments in densely populated areas, by NUTS 2 regions, 2012
(% of total nights spent by residents and non-residents in the regions' tourist accommodation establishments)




*Source:* Eurostat (online data code: tour_occ_nin2d)

**Map 9.7:** Rural tourism — nights spent in tourist accommodation establishments in thinly populated areas, by NUTS 2 regions, 2012
(% of total nights spent by residents and non-residents in the regions' tourist accommodation establishments)




*Source:* Eurostat (online data code: tour_occ_nin2d)

## Accommodation capacity

There were an estimated 544 700 tourist accommodation establishments in the EU-28 in 2012 offering a total of almost 30 million bed places. Just over one third (36.8 %) of the total number of tourist accommodation establishments in the EU were hotels and similar establishments and they provided a total of 6.4 million bedrooms and 13.1 million bed places, equivalent to an average of 32 bedrooms and 65 bed places per hotel.

**Map 9.8** provides a regional analysis of the total number of bed places in hotels and similar establishments. The darkest shade on the map covers those regions with at least 70 000 bed places; together these 47 NUTS 2 regions accounted for slightly more than half of the total number of bed places that were available in the EU-28 in 2012. Those regions with a high number of bed places were, unsurprisingly, often the same regions that recorded a high number of overnight stays and were mainly concentrated in coastal, mountainous and capital regions.

### *Illes Balears, Cataluña and Andalucía had highest supply of bed places*

The highest number of bed places was recorded in the Illes Balears, followed by two other Spanish regions, Cataluña and Andalucía. With the addition of the Île de France and the Italian region of Emilia-Romagna (which has Adriatic resorts such as Rimini, the Apennine mountains and urban centres such as Bologna and Modena), these were the only five regions in the EU to record more than 300 000 bed places.

While a count of the total number of bed places is of interest in relation to the capacity of different regions to respond to tourism demand, those working within tourism are more likely to be interested in net occupancy rates, which go a step further and detail the take-up of bedrooms over the course of a year. Occupancy rates may be measured in relation to the number of rooms or the number of bed places; room rates are often considered the preferred measure insofar as the turnover of a double room is often the same irrespective of whether the room is occupied by one or two persons.

The occupancy of hotels and similar establishments may vary according to the characteristics of each region. Urban regions are more likely to be characterised by large numbers of visitors who tend to stay for a relatively short period of time, with tourist trips to cities often spread throughout the year. Visitors to these regions may also be travelling for professional reasons, in which case demand for rooms will probably be spread throughout the working week, supplemented by private trips during weekends and holiday periods. By contrast, the average length of stays is substantially longer in more traditional holiday regions which are visited chiefly for recreational purposes. Nevertheless, tourism demand for trips to these regions is often concentrated in the summer months (especially for those regions with coastlines), while there is a secondary peak in demand during the winter months, most apparent in Alpine regions.

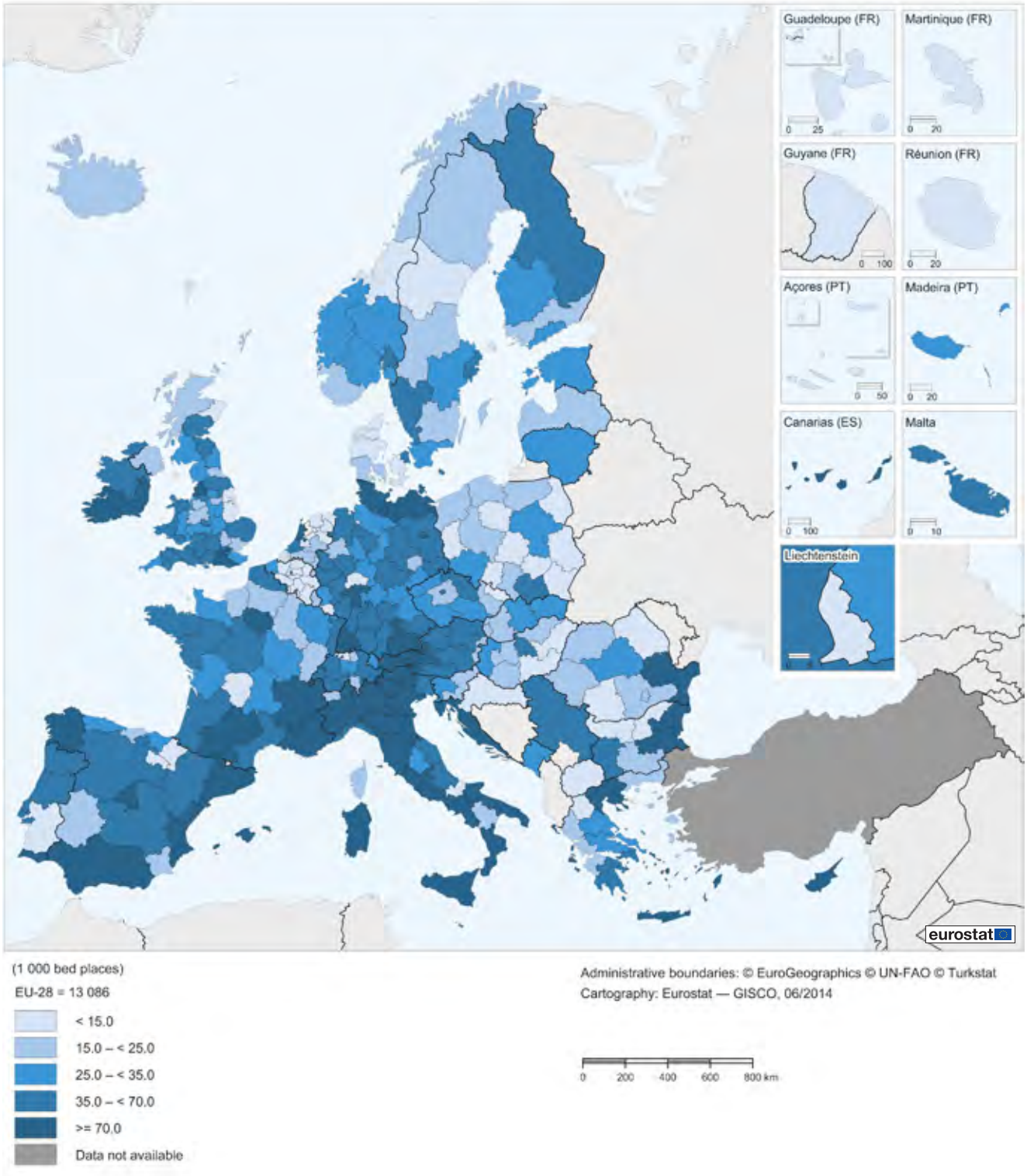
### *Bedroom occupancy rates highest in London*

**Map 9.9** provides a regional analysis of the occupancy rates for bedrooms in hotels and similar establishments in 2012; note that data for Ireland and the Netherlands are only available at the national level, while there is no information available for Croatia or Austria. The highest net occupancy rate was recorded in London, where 80.1 % of bedrooms were occupied during the course of 2012; note that the data available for the United Kingdom are only presented for NUTS 1 regions.

There were four other NUTS 2 regions with occupancy rates above 70 %: two of these were the capital regions of Île de France and Berlin, while the others were the Illes Balears and the Canarias; note that some hotels in these destinations may close during the off-season, while others seek to keep their occupancy rates high through special offers which may, for example, encourage pensioners (typically from northern Europe) to spend longer periods on vacation during the winter months.

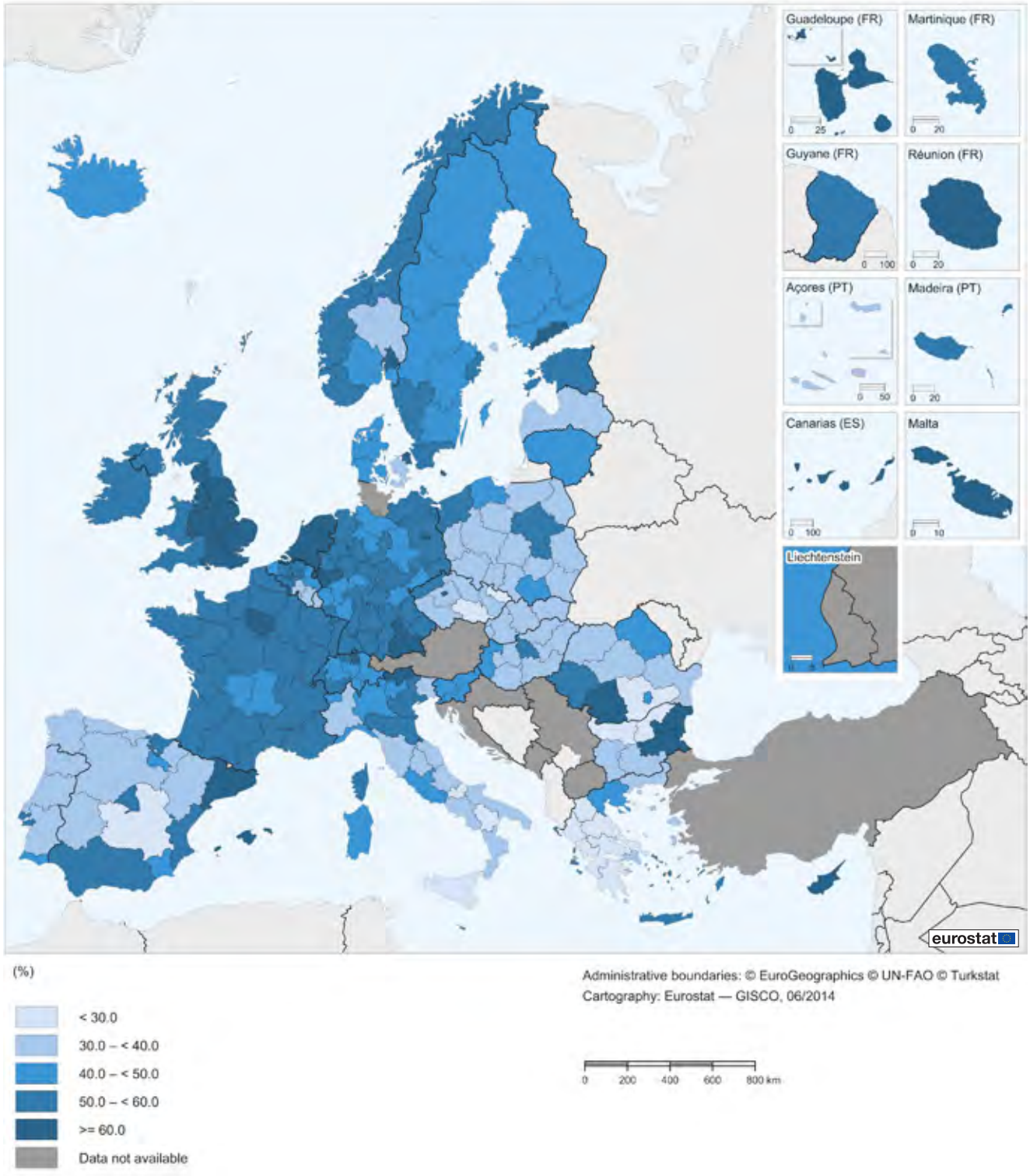
There were 22 additional regions that recorded occupancy rates for bedrooms in hotels and similar establishments of at least 60.0 % in 2012 (as shown by the darkest shade in **Map 9.9**). These regions were often characterised as urban areas. Relatively few of them were among the most popular tourist destinations in the EU — the main exceptions being the Provincia Autonoma di Bolzano/Bozen, Cataluña, Cyprus, Malta and Oberbayern.

**Map 9.8:** Number of bed places in hotels and similar establishments, by NUTS 2 regions, 2012 (1)
(1 000 bed places)



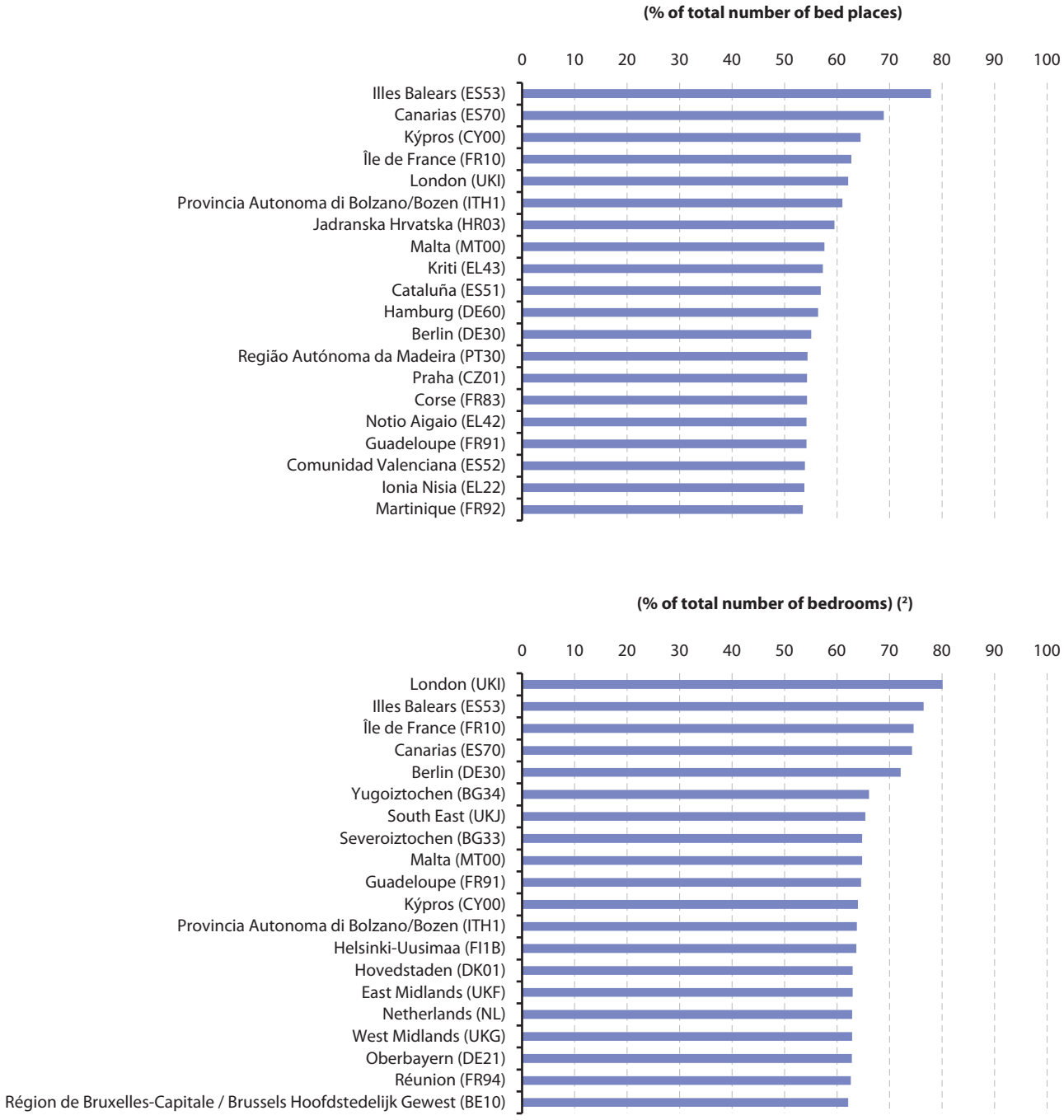

(1) The former Yugoslav Republic of Macedonia: 2011. Lazio (ITI4): estimate.
*Source:* Eurostat (online data code: tour_cap_nuts2)

**Map 9.9:** Net occupancy rates for bedrooms in hotels and similar establishments, by NUTS 2 regions, 2012 (1) (%)




(1) The United Kingdom: by NUTS 1 regions. Ireland and the Netherlands: national level. Ireland: estimate.
*Source:* Eurostat (online data code: tour_occ_anor2)

**Figure 9.4:** Top 20 EU tourist regions, by occupancy rates in hotels and similar establishments, by NUTS 2 regions, 2012 (1)




(1) The United Kingdom: by NUTS 1 regions. Ireland: national level. Ireland: estimates.
(2) The Netherlands: national level. Hamburg (DE60), Schleswig-Holstein (DEF0), Croatia and Austria: not available.
*Source:* Eurostat (online data code: tour_occ_anor2)

### *More than half of the regions in the EU had occupancy rates of less than 50.0 %*

More than half of all the NUTS 2 regions reported occupancy rates of less than 50.0 % in 2012; this was the case for 118 out of the 222 regions for which data are available. At the bottom of the range, there were 15 NUTS 2 regions in the EU where bedroom occupancy rates in 2012 were below 30.0 % (the lightest shade in **Map 9.9**). Six of these regions were located in Greece — where it is likely that the continuing effects of the financial and economic crisis impacted upon both business and leisure demand — while there were regions from the south of Italy (including the popular holiday destination of Sicily), two regions each from Bulgaria and the Czech Republic and a single region each from Spain and Romania.

### *In the Illes Balears, occupancy rates for bed places peaked at 77.9 %*

**Figure 9.4** summarises the top 20 regions in the EU with the highest occupancy rates in hotels and similar establishments in 2012; information is shown in relation to bed places and bedrooms. Across the two parts of **Figure 9.4** there were nine regions which appeared in both rankings: the capital regions of Berlin, Île de France and London (NUTS 1), the coastal regions of the Canarias, Guadeloupe, the Illes Balears, Cyprus and Malta (the latter two are both single regions at this level of analysis) and the Alpine region of Provincia Autonoma di Bolzano/Bozen.

# Data sources and availability

## Legal basis

There has been a major change in methodology with respect to regional tourism statistics. As of reference year 2012, the legal basis for the collection of regional tourism statistics is a Regulation of the European Parliament and of the Council concerning European statistics on tourism ((EU) 692/2011) and a European Commission implementing regulation ((EU) 1051/2011), which covers the transmission of data and the structure of accompanying quality reports. This legal basis requires EU Member States to provide a regular set of comparable tourism statistics: data are collected from all of the EU Member States, as well as from EFTA and candidate countries. European aggregates (for example, for the EU-28) are calculated / estimated when data of sufficient quality are available.

Regional tourism statistics are only available for the supply side; they are collected via surveys filled in by accommodation establishments. The information collected at a regional level covers accommodation capacity (establishments, room and bed places) and occupancy (number of arrivals and overnight stays).

## Regional and sub-national breakdowns

Regulation (EU) 692/2011 foresees the collection of regional tourism statistics at the NUTS 2 level; tourism statistics are therefore no longer collected for regions at the NUTS 3 level (from 2012 onwards). The regulation also introduced two new analyses for sub-national statistics relating to accommodation statistics, namely, by degree of urbanisation (thinly populated areas, intermediate density areas, densely populated areas) and by coastal or non-coastal locality.

Coastal areas are defined on the basis of local area units or municipalities. They consist of municipalities that are bordering the sea or close to the sea. Coastal areas and non-coastal areas are classified according to the distance of the municipality to the sea: if a municipality borders the sea, it is by default coastal (and part of a coastal region); if a municipality is not bordering the sea but has 50 % of its surface within a distance of 10 km from the sea, it is also considered coastal; all other municipalities are non-coastal. Statistical units and activity classification

A tourist accommodation establishment is a local kind-of-activity unit: this is irrespective of whether the accommodation of tourists is the main or a secondary activity. As such, for tourism statistics all establishments providing accommodation are classified in the accommodation sector, even if a major part of their turnover comes from restaurant / catering services or other services.

Tourist accommodation establishments are defined according to the activity classification, NACE. They are units providing, as a paid service, short-term or short-stay accommodation services. Tourism accommodation establishments are classified, as:

- NACE Group 55.1, hotels and similar accommodation (this includes accommodation provided by: hotels, resort hotels, suite / apartment hotels, motels);
- NACE Group 55.2, holiday and other short-stay accommodation (this includes children and other holiday homes, visitor flats and bungalows, cottages and cabins without housekeeping services, youth hostels and mountain refuges);
- NACE Group 55.3, camping grounds, recreational vehicle parks and trailer parks — otherwise referred to as campsites (this includes provision of accommodation in campgrounds, trailer parks, recreational camps and fishing and hunting camps for short stay visitors, provision of space and facilities for recreational vehicles, protective shelters or plain bivouac facilities for placing tents and/or sleeping bags).

Tourism accommodation establishments are sometimes referred to as rented accommodation. By contrast, non-rented accommodation is that provided without charge (for example, by family or friends) and accommodation in owner-occupied vacation homes, including timeshare properties.

Given that there are differences in the definitions of statistical units for tourist accommodation establishments between reference periods 2011 and 2012, there is the possibility of a break in series. As such, the regional information presented in this chapter is restricted to the latest reference period, 2012, and there is no time series analysis.

## Residents and non-residents

Domestic tourism comprises the activities of residents of a given country travelling to and staying in their own country, but outside their usual environment; this information may be contrasted with similar information on foreign tourists (often referred to as non-residents).

A person is considered to be a resident in a country (place) if that person: has lived for most of the past year or 12 months in that country (place), or has lived in that country (place) for a shorter period and intends to return within 12 months to live in that country (place). Non-resident or international tourists are classified according to their country of residence, not their citizenship. Citizens residing abroad who return to their country of citizenship on a temporary visit are included with non-resident visitors.

## Indicator definitions

A night spent (or overnight stay) is each night a guest / tourist actually spends (sleeps or stays) in a tourist accommodation establishment or in non-rented accommodation. Nights spent can be analysed according to the country of residence of the guest. Normally the date of arrival is different from the date of departure, although persons arriving after midnight and leaving on the same day are included in overnight stays.

A bedroom is the unit formed by one room or group of rooms constituting an indivisible rental in an accommodation establishment or dwelling. Rooms may be single, double or multiple, depending on whether they are equipped permanently to accommodate one, two or several people. The number of existing rooms is the number the establishment habitually has available to accommodate guests, excluding rooms used by the employees working for the establishment; bathrooms and toilets do not count as a room. An apartment is a special type of room: it consists of one or more rooms and has a kitchen unit and its own bathroom and toilet; apartments may be with hotel services (in apartment hotels) or without hotel services.

The number of bed places in an establishment or dwelling is determined by the number of persons who can stay overnight in the beds set up in the establishment or dwelling, ignoring any extra beds that may be set up at the customer's request. The term bed place applies to a single bed, while a double bed is counted as two bed places; this unit serves to measure the capacity of any type of accommodation. If the actual number of bed places is not known for a camping pitch, then the number of bed places is set to four.

The net occupancy rate of bedrooms is obtained by dividing the total number of bedrooms used during the reference period (in other words, the sum of the bedrooms in use per day) by the total number of bedrooms available for the reference period (in other words, the sum of bedrooms available per day). The occupancy rate of bed places is obtained by dividing the total number of overnight stays by the number of the bed places on offer (excluding extra beds) for those days when bed places are actually available for use (in other words, net of seasonal closures or other temporary closures, for example, to decorate). The results for occupancy rates are multiplied by 100 to be expressed as rates in percentage terms.

# 10

# Transport

# Introduction

Transport policy is at the heart of efforts to reduce regional inequality and improve cohesion within the European Union (EU). The EU's transport policy endeavours to foster clean, safe and efficient travel throughout Europe, underpinning the right of citizens to travel freely throughout the EU (for both work and pleasure) and the internal market for goods (transferring them between their place of production and consumption). An efficient and well-functioning passenger and freight transport system is considered vital for the population at large and for the competitiveness of enterprises.

Regional transport statistics aim to quantify the flows of passengers and freight between, within and through regions; differences between regions are often closely related to levels of economic activity. This chapter focuses on passenger transport statistics; the focus of the next edition of Eurostat's regional yearbook will alternate to cover freight transport. This chapter is divided into two main sections covering road passenger transport (including subsections on the stock of vehicles and equipment rates and on road safety) and other forms of passenger transport (with subsections on air, rail, inland waterway and maritime transport).

## Transport policy in the EU

The European Commission's Directorate-General for Mobility and Transport is responsible for developing transport policy within the EU. Its remit is to ensure mobility in a single European transport area, integrating the needs of the population and the economy at large, while minimising adverse environmental effects. It aims to do so by:

- completing the European internal market: so as to ensure the seamless integration of all modes of transport into a single, competitive transport system, while protecting safety and security, and improving the rights of passengers;
- developing an agenda for innovation: promoting the development of a new generation of sustainable transport technologies, in particular for integrated traffic management systems, intelligent transport systems and low-carbon vehicles;
- building trans-European networks that will form the backbone of a multimodal, sustainable transport system capable of delivering fast, affordable and reliable transport solutions;
- projecting these mobility and transport objectives and defending EU political and industrial interests on the world stage, within international organisations, and with strategic partners (for example, by highlighting a list of airlines that are banned from flying within the EU).

In March 2011, the European Commission adopted a White paper titled 'Roadmap to a single European transport area — Towards a competitive and resource efficient transport system' (COM(2011) 144 final). This comprehensive strategy contained 40 specific initiatives for the next decade, designed to build a competitive transport system that endeavours to increase mobility, remove major barriers in key areas and fuel growth and employment. The proposals also seek to reduce dramatically Europe's dependence on imported oil and to cut carbon emissions, with a set of goals to be achieved for 2050, including:

- no more conventionally-fuelled cars in cities;
- 40 % of the fuel being used in the aviation sector to come from sustainable low-carbon fuels;
- a reduction of at least 40 % in shipping emissions;
- a 50 % shift in medium-distance inter-city passenger and freight journeys away from roads to either rail or waterborne transport;
- all of which should contribute to a 60 % cut in transport emissions by the middle of the century.

## Trans-European Transport Networks (TEN-T)

At the beginning of the 1990s, the EU agreed to set up an infrastructure policy at Community level in order to support the functioning of the internal market through continuous and efficient networks in the fields of transport, energy and telecommunications. Trans-European networks (TENs) aim to interconnect national infrastructure networks and ensure their interoperability, linking European regions with each other and connecting Europe with other parts of the world.

In the transport sector, the first guidelines were adopted by the European Parliament and the Council in 1996. Successive enlargements of the EU resulted in a reassessment of priorities.

A substantial policy review was launched in 2009 and this led to a new legislative framework that came into force in January 2014 when the EU agreed on a new transport infrastructure policy which aims to close the gaps between transport networks of the individual EU Member States, removing bottlenecks, and overcoming technical barriers (for example, incompatible standards for railway traffic).

This new policy framework is based on a set of Union guidelines for the development of the trans-European transport network (Regulation (EU) No 1315/2013) which set out objectives, priorities and measures for establishing and developing networks, so as to create a framework for identifying projects of common interest. It seeks to create a core network which will connect 94 main European ports with rail and road links, 38 key airports with rail connections into major cities, upgrade 15 000 km of railway line to high speed track, and establish 35 cross-border projects.

Work is foreseen over nine implementing corridors on the core network, two north–south corridors (the North Sea–Mediterranean and Scandinavian–Mediterranean corridors) and seven with an east–west dimension (the Baltic–Adriatic, North Sea–Baltic, Mediterranean, Orient/East–Med, Rhine–Alpine, Atlantic, and Rhine–Danube corridors). The core network is due to be completed by 2030, with a comprehensive regional and national network feeding into it. The aim is to ensure that progressively, and by 2050, the vast majority of Europeans will be no more than 30 minutes travel time from this network.

A European Parliament and Council Regulation establishes the Connecting Europe Facility (CEF) ((EU) No 1316/2013) which governs EU funding in the transport, energy and telecommunications sectors during the period 2014–20; this provides funding of just over EUR 26 billion for the period 2014–20. The CEF provides the EU with an infrastructure fund to support projects of common interest, which are prepared and implemented following the subsidiarity principle. It sets out the rules for awarding EU financial support, priority projects and the maximum limits of EU co-financing per type of project and also includes a list of projects where most CEF investments will be placed. Aside from the CEF, the cohesion fund and the European Regional Development Fund (ERDF) may also be used as funding instruments for supporting the development of regional transport infrastructure projects.

### TRANSPORT — COHESION POLICY FUNDING

Transport infrastructure is one of the most visible examples of what can be achieved at a regional level with aid from structural and cohesion funds: regional investment initiatives cover transport strategies that aim to strike a balance between road, rail and sustainable transport modes, while promoting clean transport in urban areas. Such investment is generally designed to enhance accessibility, which is seen as a key determinant for strengthening the competitiveness of regional economies.

During the programming period 2007–13, total cohesion policy funding of almost EUR 82 billion was programmed for regional transport initiatives; this equated to almost one quarter (23.8 %) of the total cohesion policy budget. The vast majority of this investment came from the cohesion fund and the European Regional Development Fund (ERDF) and was concentrated in convergence regions. One of the main priorities for regional transport initiatives is trans-European transport networks (TEN-T); these accounted for almost 11 % of total cohesion policy investments in the period 2007–13.

Analysing cohesion policy funding for transport by the various modes of transport, more than half of the budget foreseen for the period 2007–13 was allocated to road infrastructure (including TEN-T), while rail infrastructure accounted for slightly more than a quarter of the total, urban transport for nearly 10 %, ports and inland waterways for approximately 5 %, multimodal transport and intelligent transport systems for about 4 % and airports for just over 2 %.

***For more information:***

Cohesion policy and transport: http://ec.europa.eu/regional_policy/activity/transport/index_en.cfm

## Road safety

Whatever technical measures are in place, the effectiveness of a road safety policy depends, to some degree, upon the behaviour of road users. Road safety systems should ideally take into account human error and inappropriate behaviour and correct it as much as possible (for example, by making components in vehicles as forgiving as possible, so they limit the consequences of driving errors).

In a Communication titled Towards a European road safety area: policy orientations on road safety 2011–20 (COM(2010 389 final), the European Commission set out a framework for road safety policy orientations to 2020. It considered three priority actions: the establishment of a structured and coherent cooperation framework as a necessary condition to implement, in an effective manner, road safety policy orientations for 2011–20; developing a strategy for injuries and first aid to address the need to reduce the number of road injuries; improving the safety of vulnerable road users, in particular, motorcyclists. With the goal of creating a common road safety area, the European Commission proposed a target of halving the overall number of road deaths in the EU by 2020 (starting from a base year of 2010). Among the objectives identified in the communication, there were calls to: improve the education and training of road users; develop safer road infrastructures (for example, improving the quality of tunnels); promote safer vehicles and the use of modern technology to increase road safety.

### ROAD TRANSPORT SAFETY

Safety and security are of primary concern for any transport system. Transport security is a sensitive issue that affects the whole world: although extremely scarce, the risk of terrorist attack remains, and exposes the vulnerabilities of entire transport supply chains.

Road transport is the most widely used means of travel: it is perhaps therefore not surprising that it is also the primary cause of transport accidents. There are a range of actions that many drivers could take to make Europe's roads safer, such as keeping their attention focused on driving, avoiding tiredness and speeding, or wearing a seat belt. The European Commission has been active in promoting rules, technical standards, and awareness campaigns to decrease the number of fatalities on Europe's roads. For example, since 2006, wearing seatbelts is compulsory in all vehicles throughout the EU.

In the 2011 White paper on transport, the EU proposed setting a target for reducing serious traffic injuries alongside its goal of halving fatalities by 2020. The first step towards this target was taken in 2013 when EU Member States agreed on a new definition for serious injuries to be used in EU road safety statistics; this is based on a scale commonly used by medical professionals.

To produce comparable statistics, each EU Member State has been advised to do one of the following: collate the relevant information from both police and hospital records; use only hospital records; use police records, but correct the figures to allow for probable under-reporting. In 2014, Member States started collecting data using the new definition and it is expected that the first data sets will be released during 2015.

***For more information:***

Directorate-General for Mobility and Transport: http://ec.europa.eu/transport/road_safety/index_en.htm

# Main statistical findings

## Road passenger transport

The road network generally provides a flexible means of moving between two points, linking all regions in the EU to each other and to Europe's other principal transport networks for passenger and goods traffic. The EU's objective is to create the conditions whereby road transport can operate efficiently, safely and with a minimum impact on the environment.

The 2011 White paper on transport defined some of the challenges facing the road transport sector. It highlighted a range of goals for European policy, including: increasing mobility on an ever-congested road network; reducing road fatalities, lowering carbon and other emissions to lessen the impact of climate change; and decreasing fossil fuel consumption.

### Motorisation rate for passenger cars

The number of passenger cars per inhabitant (also known as the motorisation rate) was estimated at 484 passenger cars per thousand inhabitants across the EU-28 (excluding information for Denmark and Portugal) in 2012. The latest data, generally available for 2012, shows that an east-west divide in motorisation rates remains in the EU, with more passenger cars per inhabitant generally registered in western European regions — see **Map 10.1**.

#### *Motorisation rate in Valle d'Aosta/Vallée d'Aoste was almost 2.5 times as high as the EU-28 average*

The highest regional motorisation rate within the EU-28 was in the Valle d'Aosta/Vallée d'Aoste region of northern Italy, at 1 205 passenger cars per thousand inhabitants in 2012; note this figure is influenced by a specific tax arrangement and therefore does not necessarily reflect the actual number of passenger cars per inhabitant in the region. The motorisation rate in Valle d'Aosta/Vallée d'Aoste was more than eight times as high as in the Nord-Est region of Romania (148 passenger cars per thousand inhabitants; data are for 2011), where the lowest regional motorisation rate was recorded.

The second highest motorisation rate in the EU-28 in 2012 was recorded in the Dutch region of Flevoland (816 passenger cars per thousand inhabitants), which was followed by Åland in Finland (733) and another northern Italian region, namely, the Provincia Autonoma di Trento (711); these were the only regions to record motorisation rates of more than 700.

#### *High reliance on passenger cars across much of Italy, Austria, Germany and Luxembourg …*

The highest regional motorisation rates in the EU were systematically registered across regions from the EU-15 Member States: there was a relatively high concentration of passenger cars per inhabitant across much of Italy and Austria, several regions from the south and the west of Germany, as well as in Luxembourg (a single region at this level of analysis).

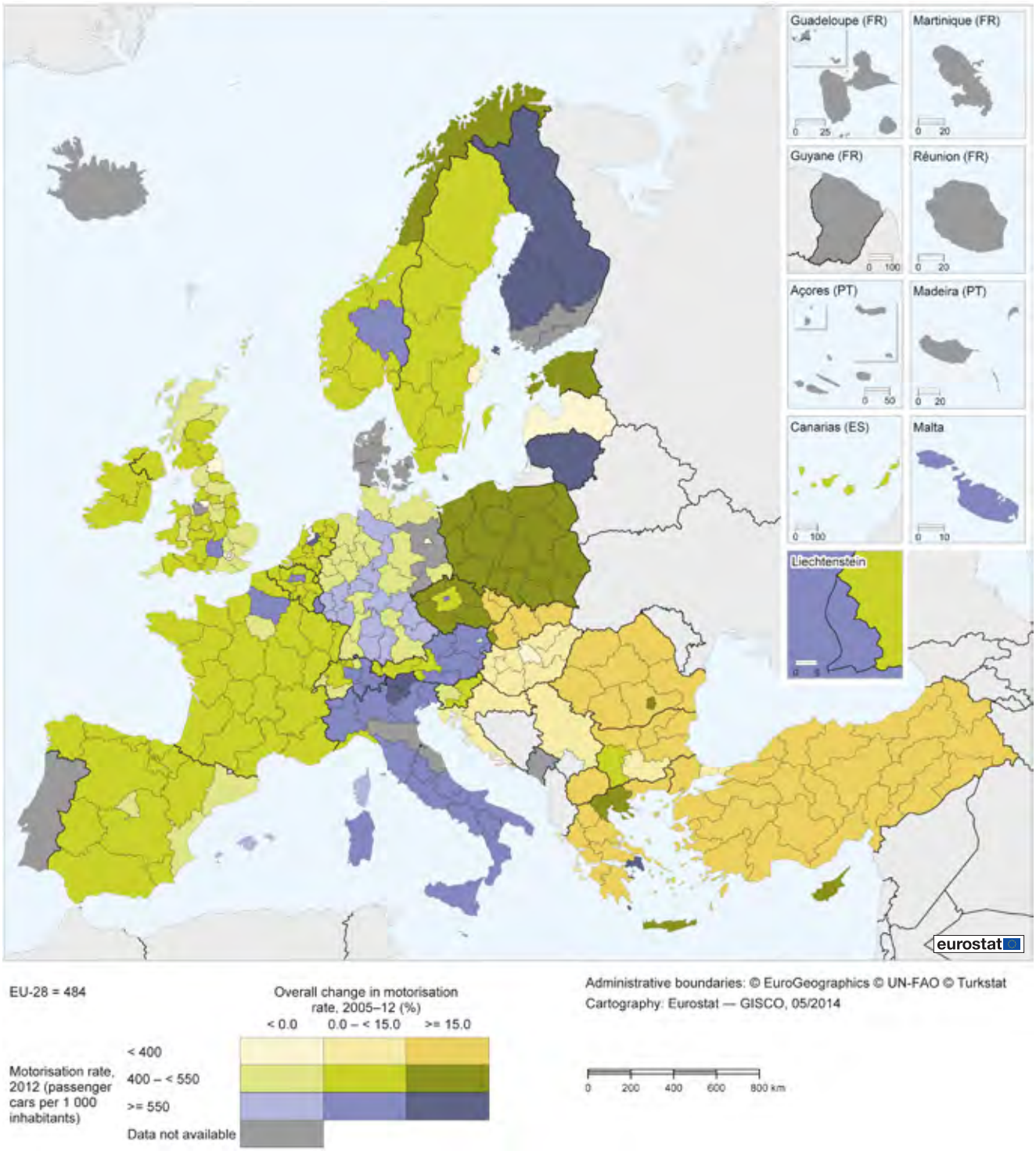
#### *… and in island regions (where there may be few alternative modes of transport)*

Several island regions reported relatively high motorisation rates, including Åland in Finland (which had the third highest regional motorisation rate across NUTS 2 regions), Sicilia and Sardegna in Italy, Corse in France, the Illes Balears in Spain, and Malta (a single region at this level of analysis). These relatively high figures for islands may, in part, be explained by a lack of alternative modes of transport for inland travel; for example, most of these islands had relatively underdeveloped rail infrastructures or no rail services at all. Malta recorded the 30th highest motorisation rate across all NUTS 2 regions, which was highest rate among any region from one of the Member States that joined the EU in 2004 or more recently. The motorisation rate for Malta was 592 passenger cars per thousand inhabitants in 2012, which was slightly higher than the ratio recorded for Lithuania (also a single region at this level of detail; 32nd place), while the next highest ratios for any region from one of the Member States that joined the EU more recently were recorded for the capital region of the Czech Republic (Praha; 51st place) and another island, namely, Cyprus (55th place; also a single region at this level of detail).

#### *Western European capital regions often characterised by low motorisation rates …*

Within individual EU Member States, several capital regions registered lower than average motorisation rates; this pattern is probably linked to congestion, with people living in some of Europe's largest cities choosing not to own a car and instead to rely on public transport. The only capital regions which appeared among the 20 regions with the highest motorisation rates (see **Figure 10.1**) were those of Lazio (Italy), Attiki (Greece; data are for 2010) and Luxembourg, with averages in the range of 650–700 passenger cars per thousand inhabitants in 2012. The case of Attiki was particularly interesting insofar as the Greek capital region recorded a much higher motorisation rate than any other Greek region, in contrast to the pattern observed in many of the other capital regions.

**Map 10.1:** Motorisation rates, by NUTS 2 regions, 2005–12 (1)
(number of passenger cars per 1 000 inhabitants in 2012, % overall change in motorisation rate from 2005–12)




(1) EU-28: estimate based on latest available national information (excluding Denmark and Portugal). The overall growth rate for the motorisation rate of the EU from 2005–12 was 6.1 %. Serbia: national level. Közép-Magyarország (HU31), Åland (FI20) and Turkey: 2006–12. Slovenia: 2007–12. Romania, Sweden and the United Kingdom: 2005–11. The former Yugoslav Republic of Macedonia: 2008–11. Greece: 2005–10. Serbia: 2008–10. France: 2005–09 (other than Île de France (FR10), 2006–08). Greece: provisional. Valle d'Aosta/Vallée d'Aoste (ITC2) is influenced by a specific tax arrangement and therefore does not necessarily reflect the actual number of passenger cars per inhabitant in the region.

*Source:* Eurostat (online data codes: tran_r_vehst and road_eqs_carhab)

Along with Inner London (which had the 7th lowest motorisation rate across NUTS 2 regions), the capital regions of most of the other EU-15 Member States in western and northern Europe also had relatively low motorisation rates: Berlin (Germany), Hovedstaden (Denmark), Stockholm (Sweden), Wien (Austria), Noord-Holland (the Netherlands), Île de France (France), Southern and Eastern (Ireland) and the Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest (Belgium) each recorded ratios of passenger cars per inhabitant that were below the EU-28 average.

### … although commuting patterns led to many regions bordering capital regions having high motorisation rates

However, in regions that were adjacent to those containing capital or large cities it was quite common to find relatively high motorisation rates. This suggests that these regions were characterised by large numbers of people commuting to work (in neighbouring regions). Examples include: Flevoland in the Netherlands; Niederösterreich in Austria; Berkshire, Buckinghamshire and Oxfordshire in the United Kingdom (data are for 2011); and Trier in Germany (from where many commuters cross the border to work in Luxembourg).

### Car use was particularly prevalent across Italy

**Figure 10.1** provides an alternative presentation of the highest motorisation rates across EU regions. It shows that 14 of the top 20 regions were located in Italy. Every Italian NUTS 2 region (including those which do not appear in **Figure 10.1**) recorded a motorisation rate that was above the EU-28 average. The highest motorisation rates in Italian regions were spread along the length of the country from Valle d'Aosta/Vallée d'Aoste and the Provincia Autonoma di Trento in the north, through Umbria and Lazio in the centre, down to Sicilia and Calabria in the south.

By contrast at the other end of the ranking, seven out of eight NUTS 2 Romanian regions were present among the 20 regions in the EU with the lowest motorisation rates (the capital region of Bucureşti - Ilfov was the only exception; all Romanian data are for 2011). They were joined by five out of seven Hungarian regions, four Greek regions (data are for 2010), two Slovakian regions, Latvia (a single region at this level of analysis) and Inner London (data are for 2011).

### Gap in motorisation rates between east and west Europe was closing rapidly

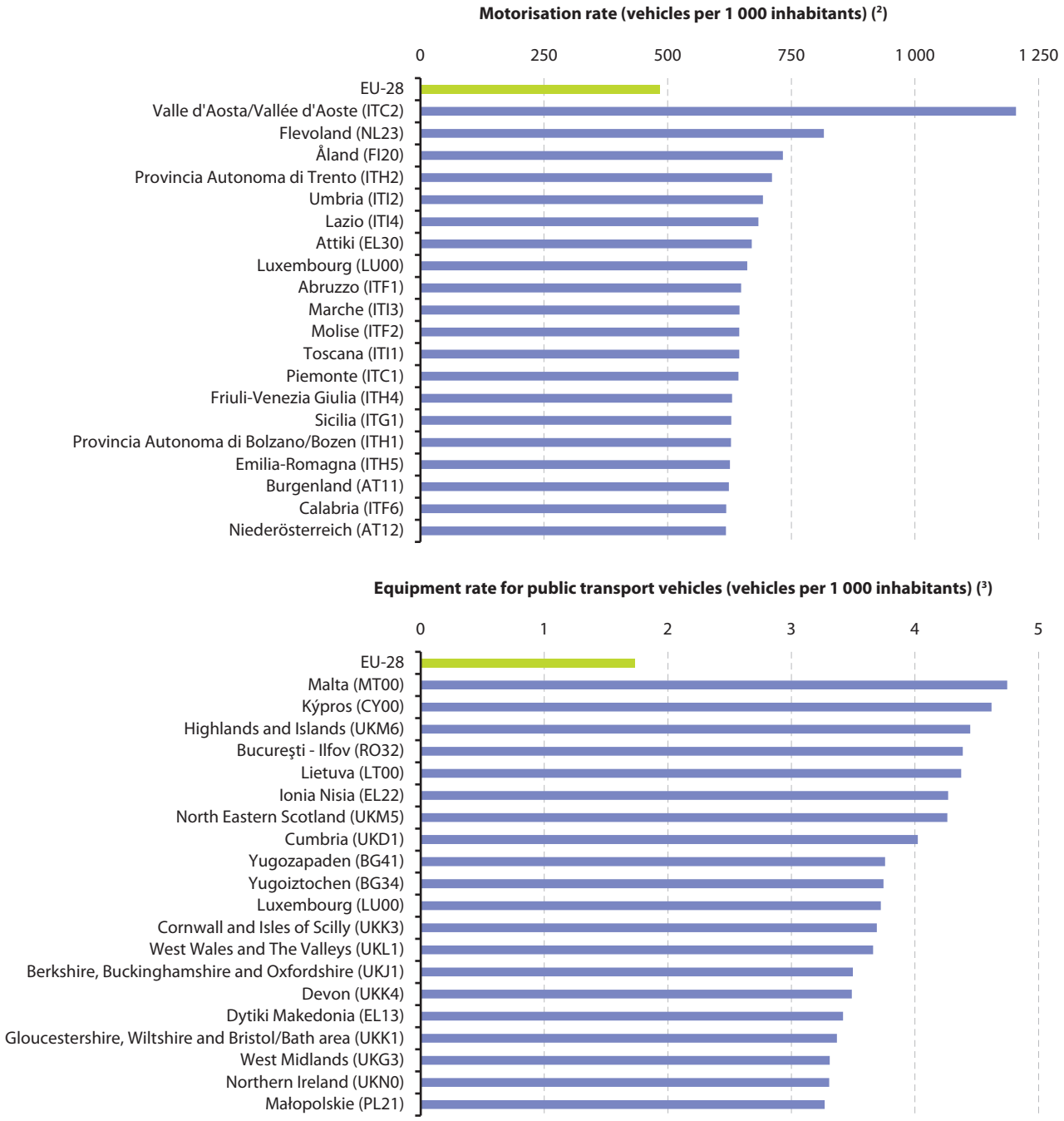
East-west differences in motorisation rates have narrowed, as illustrated by **Map 10.1** which also presents information as to the change in motorisation rates between 2005 and 2012. All 16 NUTS 2 regions across Poland saw their respective motorisation rates increase by more than 40 % during this relatively short seven-year period under consideration, while in Slovakia gains of more than 30 % were recorded for each region. High growth was also apparent in Romania, nowhere more so than in the Nord-Est region, as its motorisation rate increased by 57.4 % during the period 2005–11. Otherwise, among the remaining eastern European countries, double-digit growth rates were recorded in: all of the Czech regions (the lowest increase being recorded for the capital region of Praha); for all but one of the Bulgarian regions (the exception being the capital region of Yugozapaden); and for two Hungarian regions (Közép-Dunántúl and Nyugat-Dunántúl). Estonia and Lithuania (both single regions at this level of analysis) also recorded double-digit growth rates. This pattern of low but rapidly increasing motorisation rates was replicated across the candidate countries, for example, a majority of the regions in Turkey recorded growth rates in excess of 40 % during the period 2006–12.

The fastest growth in motorisation rates during the period 2005–12 among EU-15 Member States was often recorded in Italian or Greek regions, the former consolidating their position among those regions with the highest motorisation rates in the EU. While motorisation rates were relatively high across most of the level 2 EFTA regions, they also continued to rise during the period 2005–12; the only falls were recorded in the two Swiss regions of Région lémanique and Zürich.

### Declining motorisation rates in Germany and the United Kingdom

By contrast, although motorisation rates were relatively high in most German regions, these rates declined systematically across all German regions (for which data are available) during the period 2005–12. This pattern may, in part, be linked to an ageing society, whereby a higher proportion of the population is reaching an age when they no longer drive. Among the 66 NUTS 2 regions which recorded a reduction in motorisation rates, the vast majority (53 regions) were either from Germany or the United Kingdom (where the comparison covers the period 2005–11). Some of the largest declines were recorded in large cities and conurbations, such as Hamburg, Inner London, Greater Manchester, Berlin and Köln. The 13 other regions that registered a fall in their motorisation rates included: the capital regions of Belgium, France, Hungary, Sweden, Spain, Austria and Slovenia; Latvia (a single region at this level of analysis); four other Spanish regions (including the Comunidad Valenciana and Cataluña); and the French island of Corse (data are available for 2005–09).

**Figure 10.1:** Transport equipment rates, selected NUTS 2 regions, 31 December 2012 (1)
(vehicles per 1 000 inhabitants)




(1) The figure shows the 20 EU regions with the highest rates for each of the indicators. Départements d'outre mer (FR9), Cheshire (UKD6) and Merseyside (UKD7): not available.
(2) EU-28: estimates based on latest available information (excluding Denmark and Portugal). Romania, Sweden and the United Kingdom: 2011. Greece: 2010. France: 2009 (other than Île de France (FR10), 2008; départements d'outre mer (FR9), not available). Valle d'Aosta/Vallée d'Aoste (ITC2) is influenced by a specific tax arrangement and therefore does not necessarily reflect the actual number of passenger cars per inhabitant in the region. Greece: provisional.
(3) EU-28: estimates based on latest available information. Population data for 1 January of the year following the reference year for the vehicle stock data. Ireland and Portugal: national level. Romania, Sweden and the United Kingdom: 31 December 2011. Greece: 31 December 2010. France: 31 December 2009. Greece: provisional. Denmark: also not available.
*Source:* Eurostat (online data codes: tran_r_vehst and demo_r_d2jan)

## Equipment rate for public transport passenger vehicles

### *Public service provisions in remote and rural regions*

To some extent the information shown in **Map 10.2** for public transport passenger vehicles (such as motor coaches, buses and trolleybuses) mirrors that shown in **Map 10.1** for passenger cars; in those regions where car ownership is relatively low there is likely to be a higher demand for public transport as a means of ensuring mobility. Note that the figures presented only concern public transport services on the roads and therefore will be influenced, to some degree, by the availability of alternative means of public transport (principally the provision of rail, metro and ferry services).

There are a range of barriers to improving and developing public transportation systems in remote and rural areas, as these regions are characterised by dwellings being distributed over large areas, with the number of potential passengers limited and a level of demand that is often unpredictable. This may result in limited services, as the provision of frequent and widespread commercial services may be financially unviable. As a result, some governments and regional/local authorities choose to subsidise public transport services in remote and rural areas, or alternatively to bundle minimal service provisions on such routes with the operation of more lucrative services.

In particularly remote and rural areas, the provision of public transport services is considered to be of even greater importance for some groups (such as the young, the elderly, low-income families, or the disabled), as a well-organised public transport can stimulate economic growth and social inclusion through improving accessibility and mobility.

### *Highest equipment rates for public transport passenger vehicles in Malta, Cyprus and Lithuania, as well as in three remote regions of the United Kingdom*

**Map 10.2** presents the equipment rate for public transport passenger vehicles, which provides a measure of the number of vehicles on the road in each region in relation to the number of inhabitants. For the EU-28 as a whole, there was an average of 1.7 public transport passenger vehicles on the road for each thousand inhabitants at the end of 2012.

Eight NUTS 2 regions reported equipment rates for public transport passenger vehicles of at least 4.0 per thousand inhabitants (as shown by the darkest shade in **Map 10.2**). The highest rates were recorded in Malta (4.7 public transport passenger vehicles per thousand inhabitants), Cyprus and Lithuania (all three of these are single regions at this level of analysis); note there are no rail services on either Malta or Cyprus. The other five regions with rates of at least 4.0 public transport passenger vehicles per thousand inhabitants included the capital region of București – Ilfov (data are for 2011), the Greek island region of Ionia Nisia (data are for 2010), and three relatively remote regions of the United Kingdom (the Highlands and Islands; North Eastern Scotland; Cumbria; data for all three regions relate to 2011).

Among the candidate countries, public transport equipment rates were particularly high across Turkey in 2012, as each of the 26 level 2 Turkish regions recorded an equipment rate that was higher than in Malta (which had the highest ratio among EU-28 regions). Turkish equipment rates ranged from 4.8 up to 14.1 vehicles per thousand inhabitants, the highest ratio being recorded in the Black Sea region of Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane.

Of the 46 regions in the EU-28 with fewer than 1.0 public transport vehicles per thousand inhabitants at the end of 2012 (as shown by the lightest shade), all except two were located within EU-15 Member States; the exceptions were Podkarpackie in south-east Poland and Vzhodna Slovenija (eastern Slovenia). The lowest concentration of public transport services ran in a band from the Netherlands, through Germany and into Austria, while low rates were also recorded in several Spanish regions.

SPOTLIGHT ON THE REGIONS: MALTA (MT00), MALTA

**Valetta, Malta**

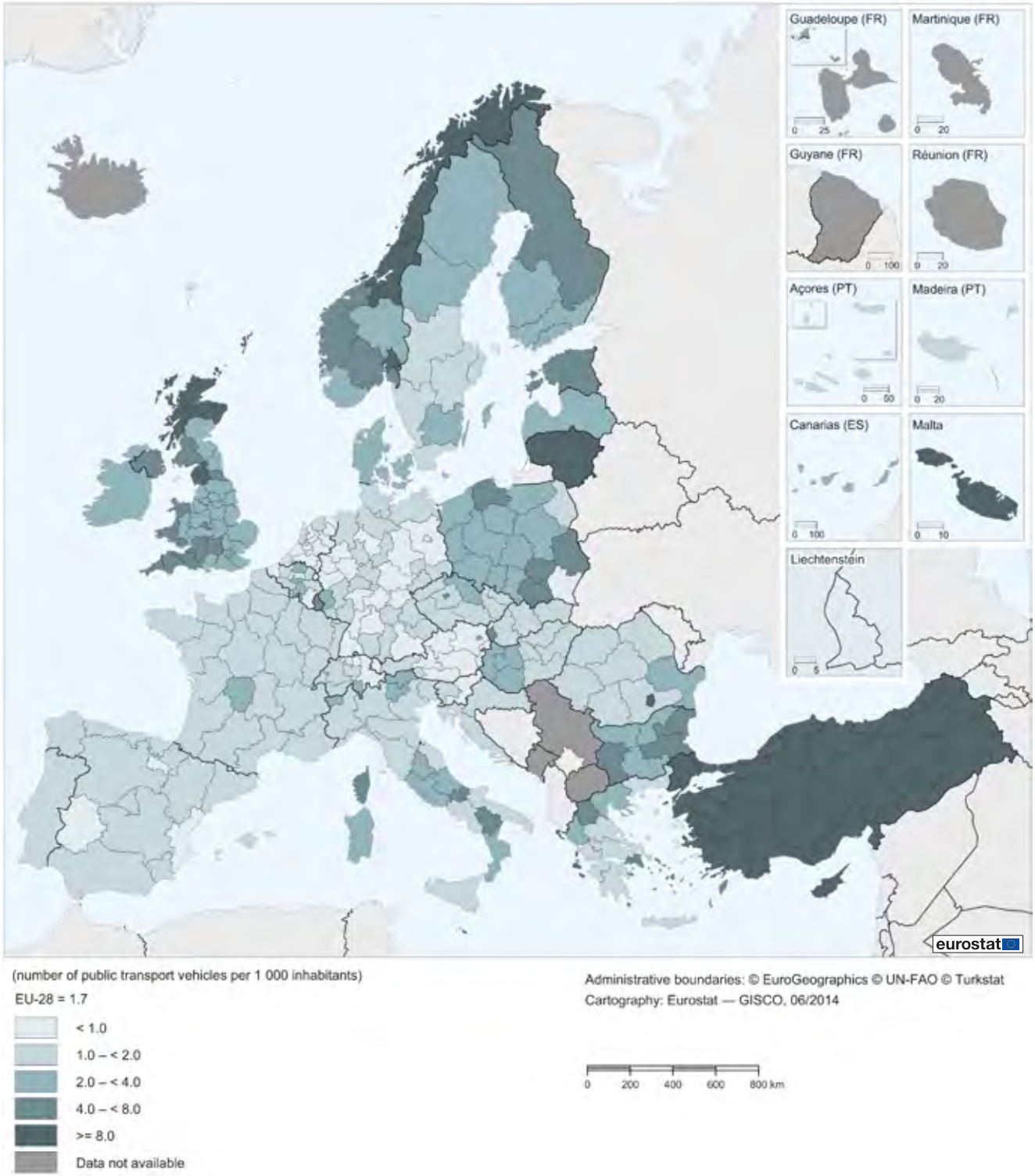
Inland passenger transport in Malta is highly dependent on its roads, as there is no railway network on the island.

Malta recorded the highest equipment rate for public transport vehicles among any of the NUTS 2 regions in the EU, averaging 4.7 per thousand inhabitants in 2012.

Malta recorded the 30th highest motorisation rate in the EU, and the highest rate among any of the NUTS 2 regions from one of the Member States that joined the EU in 2004 or more recently; the motorisation rate in Malta was 592 passenger cars per thousand inhabitants in 2012.

*Photo: Väsk*

**Map 10.2:** Equipment rate for public transport vehicles (motor coaches, buses and trolleybuses), by NUTS 2 regions, 31 December 2012 (1)
(number of public transport vehicles per 1 000 inhabitants)




(1) EU-28: estimate based on latest available information. Denmark, Ireland and Portugal: national level. Romania, Sweden and the United Kingdom: 31 December 2011. Greece: 31 December 2010. France: 31 December 2009. Denmark: 31 December 2008. Population data for 1 January of the year following the reference year for the vehicle stock data. Greece: provisional.
*Source:* Eurostat (online data codes: tran_r_vehst and demo_r_d2jan)

## Road safety

The likelihood of a road accident can be linked to a number of factors, such as the extent of vehicle ownership (motorisation rate), the number of kilometres driven, the extent and quality of the road infrastructure, the characteristics of the vehicle stock (such as the average age and engine size, as well as the presence/absence of safety features), climatic and geographic conditions, population density, and national regulations that apply to vehicles and drivers. Driver behaviour can also be linked to the number of road accidents, for example, inadequate training or experience, a lack of concentration, speeding or drink-driving.

### *Almost 30 thousand deaths on the EU's roads in 2012*

The total death toll on the EU-28's roads has more than halved over the last two decades and stood at an estimated 29.2 thousand fatalities in 2012. In the same year there were an estimated 1.4 million persons injured across the EU in road accidents.

**Map 10.3** presents information on the number of persons injured in road accidents relative to population size, by NUTS 2 region. The highest ratio (19.2 persons per thousand inhabitants) was recorded in La Rioja (Spain), where the chance of being injured in a road accident was 2.6 times as high as in any other region of the EU. There were 17 NUTS 2 regions where at least 6.0 persons per thousand inhabitants were injured in road accidents in 2012 (as shown by the darkest shade in **Map 10.3**); these included all but two of the Austrian regions (the exceptions were the capital region of Wien and the relatively flat easternmost region of Burgenland). The other regions with relatively high incidences of persons injured in road accidents were generally spread across Belgium, Germany and Italy.

### *Low incidence of persons injured in road accidents in the Netherlands*

By contrast, there were 33 regions in the EU where less than 1.0 person was injured in road accidents per thousand inhabitants; note that the latest data available for Dutch and Danish regions refers to 2008, while the latest information for Greek regions is for 2010 and that for French regions is for 2011. All 12 of the regions in the Netherlands recorded a ratio of persons injured in road accidents per thousand inhabitants of less than 1.0. The incidence of injuries from road accidents was also relatively low in many rural regions of France, across most of Denmark and in several Polish regions. Furthermore, the third lowest ratio of persons injured in road accidents per thousand inhabitants was recorded in the northerly Spanish region of the País Vasco (0.4 persons injured per thousand inhabitants), which borders La Rioja (which had the highest incidence of injuries from road accidents across all regions of the EU).

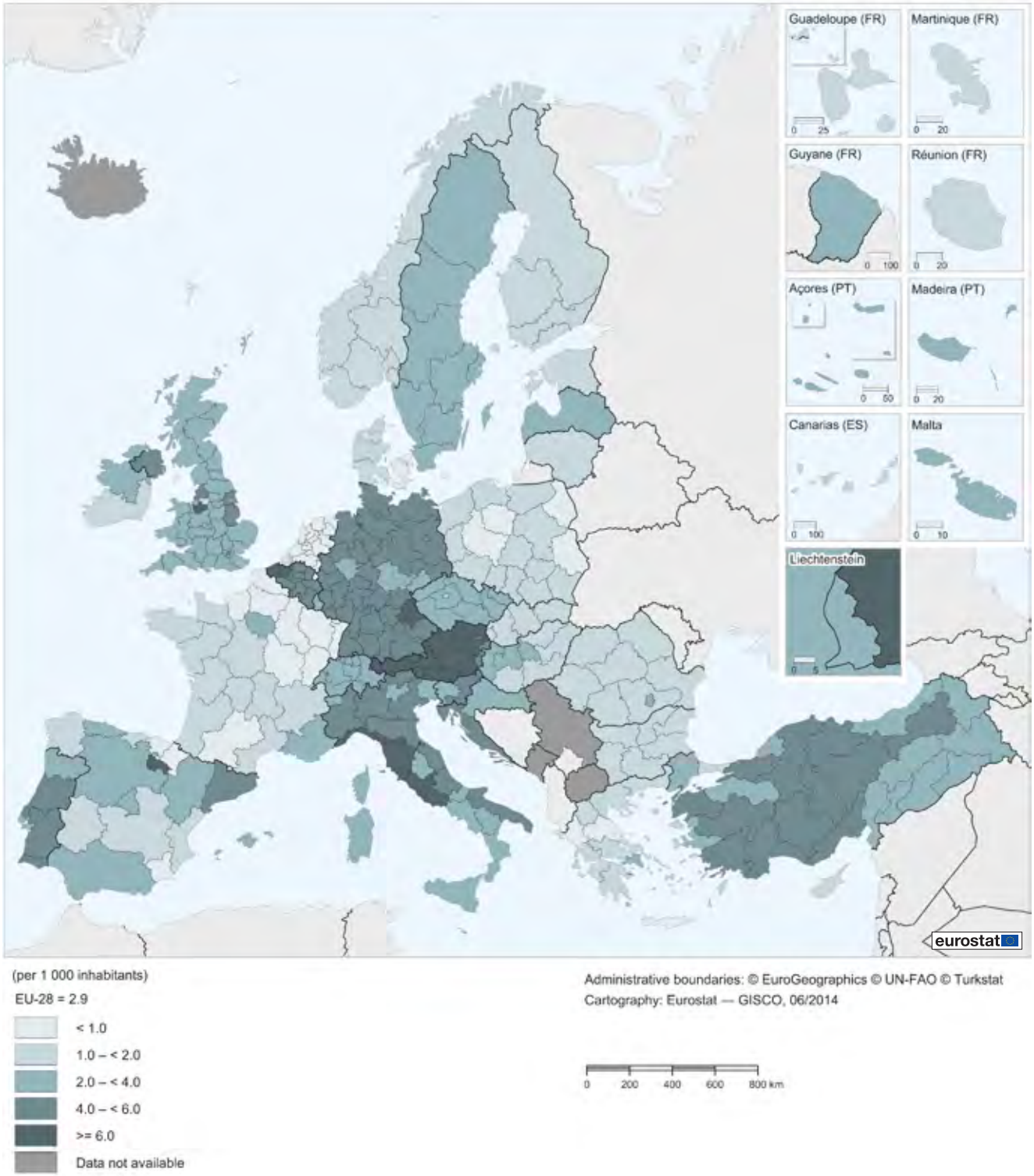
An alternative analysis of road fatalities and persons injured in road accidents is presented in **Table 10.1**; the ranking employed for each part the table is based on the absolute number of fatalities or persons injured and is therefore influenced by the size of each region. The remainder of the table seeks to 'normalise' these absolute values by adjusting the data to take account of the size of the population, the number of passenger cars and the area of each region. Nevertheless, the results should be interpreted with care as, for example, road accidents may involve non-residents travelling through a region or staying in a region on holiday, or vehicles which are in transit through a region. As such, and other things being equal, regions that have transit corridors or regions with high numbers of tourists may well experience a higher frequency of injuries and fatalities.

### *Highest absolute number of road fatalities in the Polish capital region*

Almost one quarter of the total number of deaths from road accidents in the EU in 2012 resulted from an accident that took place in one of the 20 regions shown in the top half of **Table 10.1**. The highest number of road fatalities in 2012 was recorded in the Polish capital region of Mazowieckie where 587 people were killed. Three other Polish regions were among the 20 regions with the highest absolute number of road fatalities, which also featured six Italian regions, three regions from each of France and Romania, and one region from each of Greece, Spain and Lithuania (a single region at this level of detail). The vast majority of these regions had high population densities and they were often capital regions or regions that contained significant urban areas, for example, those regions including Rome, Milan, Paris, Marseille, Athens or Barcelona.

Adjusting these absolute figures to take account of population size, the regions with the highest number of road fatalities per million inhabitants tended to be located in eastern Europe; the same regions also tended to record the highest number of fatalities per million passenger cars. This was notable in the three Romanian regions (Nord-Est, Sud - Muntenia and Sud-Est) and in the central Polish regions of Lódzkie and Mazowieckie (the capital region that contains Warsaw). Although the absolute number of deaths from road accidents was high in Lombardia, the Île de France, Cataluña and Andalucía, the relative likelihood — in terms of the number of fatal road accidents relative to the population size — of being involved in a fatal car accident in one of these regions was below the EU-28 average (57.7 fatalities per million inhabitants).

**Map 10.3:** Persons injured in road accidents, by NUTS 2 regions, 2012 (1)
(per 1 000 inhabitants)




(1) EU-28: estimate based on latest available information. France (other than the départements d'outre mer (FR9)): 2011. Greece and the départements d'outre mer (FR9): 2010. Denmark and the Netherlands: 2008. Greece: provisional.

*Source:* Eurostat (online data codes: tran_r_acci and demo_r_d2jan)

**Table 10.1:** EU regions with highest number of victims in road accidents, selected NUTS 2 regions, 2012 (1)

| Fatal accidents — deaths | (number) | (per million inhabitants) | (per million passenger cars) | (per 1 000 km² of total area) |
|---|---|---|---|---|
| **EU-28** | 29 199 | 57.7 | 119.6 | 6.5 |
| Mazowieckie (PL12) | 587 | 111.1 | 206.8 | 16.5 |
| Lombardia (ITC4) | 540 | 55.7 | 91.9 | 22.6 |
| Emilia-Romagna (ITH5) | 376 | 86.6 | : | 16.8 |
| Lazio (ITI4) | 376 | 68.4 | 96.8 | 21.8 |
| Veneto (ITH3) | 367 | 75.6 | 123.6 | 19.9 |
| Île de France (FR10) | 366 | 30.9 | 75.1 | 30.5 |
| Rhône-Alpes (FR71) | 366 | 58.3 | 112.7 | 8.4 |
| Provence-Alpes-Côte d'Azur (FR82) | 363 | 73.8 | 136.4 | 11.6 |
| Cataluña (ES51) | 336 | 44.7 | 100.0 | 10.5 |
| Slaskie (PL22) | 336 | 72.6 | 152.2 | 27.2 |
| Nord-Est (RO21) | 332 | 100.8 | 645.9 | 9.0 |
| Sud - Muntenia (RO31) | 325 | 103.9 | 576.2 | 9.4 |
| Wielkopolskie (PL41) | 315 | 91.2 | 166.6 | 10.6 |
| Sud-Est (RO22) | 314 | 123.7 | 629.3 | 8.8 |
| Attiki (EL30) | 313 | 76.2 | 113.6 | 82.2 |
| Lietuva (LT00) | 302 | 100.5 | 172.3 | 4.6 |
| Lódzkie (PL11) | 296 | 116.8 | 239.5 | 16.2 |
| Andalucía (ES61) | 295 | 35.2 | 78.3 | 3.4 |
| Piemonte (ITC1) | 284 | 65.2 | 101.2 | 11.2 |
| Puglia (ITF4) | 264 | 65.2 | 115.4 | 13.6 |
| **Accidents — persons injured** | **(number)** | **(per 1 000 inhabitants)** | **(per 1 000 passenger cars)** | **(per km² of total area)** |
| **EU-28** | 1 447 590 | 2.9 | 5.9 | 0.3 |
| Lombardia (ITC4) | 48 759 | 5.0 | 8.3 | 2.0 |
| Lazio (ITI4) | 32 903 | 6.0 | 8.5 | 1.9 |
| Cataluña (ES51) | 31 568 | 4.2 | 9.4 | 1.0 |
| Emilia-Romagna (ITH5) | 24 823 | 5.7 | : | 1.1 |
| Oberbayern (DE21) | 24 525 | 5.5 | 10.0 | 1.4 |
| Île de France (FR10) | 23 525 | 2.0 | 4.8 | 2.0 |
| Toscana (ITI1) | 22 780 | 6.2 | 9.4 | 1.0 |
| Düsseldorf (DEA1) | 21 658 | 4.2 | 8.4 | 4.1 |
| Köln (DEA2) | 20 585 | 4.7 | 9.2 | 2.8 |
| Veneto (ITH3) | 19 524 | 4.0 | 6.6 | 1.1 |
| Darmstadt (DE71) | 18 010 | 4.7 | 8.5 | 2.4 |
| Comunidad de Madrid (ES30) | 17 955 | 2.8 | 5.5 | 2.2 |
| Sicilia (ITG1) | 17 633 | 3.5 | 5.6 | 0.7 |
| Piemonte (ITC1) | 17 560 | 4.0 | 6.3 | 0.7 |
| Andalucía (ES61) | 17 495 | 2.1 | 4.6 | 0.2 |
| Berlin (DE30) | 16 853 | 4.8 | 14.8 | 18.9 |
| Puglia (ITF4) | 16 453 | 4.1 | 7.2 | 0.8 |
| Stuttgart (DE11) | 16 335 | 4.1 | 7.3 | 1.5 |
| Outer London (UKI2) | 14 944 | 4.3 | 8.1 | 11.8 |
| Schleswig-Holstein (DEF0) | 14 931 | 5.3 | 10.0 | 0.9 |

(1) EU-28: estimate based on latest available information. France (other than the départements d'outre mer (FR9)): 2011. Greece and the départements d'outre mer (FR9): 2010. Denmark and the Netherlands: 2008. Greece: provisional.

*Source:* Eurostat (online data codes: tran_r_acci and demo_r_d2jan)

Almost one third of those injured in road accidents in the EU had an accident that took place in one of the 20 regions shown in the bottom half of **Table 10.1**. In absolute terms, the highest numbers of injuries from road accidents often took place in those regions which recorded the highest number of fatal accidents; these were principally located across Italy and Germany. When adjusted to take account of population size, the relative likelihood of being injured in a road accident remained high in the Italian regions of Toscana, Lazio, Emilia-Romagna and Lombardia, as well as in Oberbayern and Schleswig-Holstein in Germany. By contrast, despite a high overall number of injuries in the Île de France, Andalucía and the Comunidad de Madrid, the ratios of injuries from road accidents compared with population size or vehicle stock in these regions were below the EU-28 averages (2.9 victims per thousand inhabitants and 5.9 victims per thousand passenger cars).

## Passenger transport other than by road

### Air transport

The rapid growth of air transport has been one of the most significant developments in transport services in recent years, both in the EU and around the rest of the world. There were three successive packages of liberalisation measures adopted at EU level covering air carrier licensing, market access and fares, designed to open-up the air transport market. Their effects have been most apparent in the growth of low-cost airlines and the expansion of several smaller regional airports which are generally less congested and charge lower landing fees than the main international airports.

As air traffic continues to increase so do concerns about safety and security. Airspace congestion and the strain on airport capacity have been addressed through the Single European Sky (SES) initiative and its subsequent revisions, while the EU has prioritised work on effective aviation safety standards and publishes a list of airlines banned from EU skies.

#### *There were almost 832 million air passengers in the EU-28 in 2012*

While many airports experienced a sharp decline in passenger and freight transport in 2009, reflecting the global financial and economic crisis, these reductions were relatively short-lived and by 2012 the number of air passengers carried (including passengers on domestic flights as well as international flights) in the EU-28 had reached 831.9 million passengers, some 3.6 % above its pre-crisis peak from 2008.

#### *Air passenger transport was concentrated in western Europe*

**Map 10.4** shows the absolute number of air passengers and the average number of air passengers per inhabitant in 2012; note earlier reference periods are used for some regions. The top-ranking regions in terms of the number of air passengers tended to be capital regions in western Europe; in other words, those regions in which Europe's largest airports were located. These relatively large airports often serve as hubs for intercontinental air traffic and this is especially true for Heathrow, Paris-Charles de Gaulle, Frankfurt airport and Schiphol Amsterdam airport.

The regional ranking of air passenger numbers in 2012 was headed by the French capital region of Île-de-France, with a total of 88.6 million passengers for Paris-Charles de Gaulle and Paris-Orly airports, followed by Outer London (Heathrow) with 70.0 million passengers, Darmstadt (Frankfurt) with 57.2 million passengers, Noord-Holland (Schiphol) with 51.0 million passengers and the Comunidad de Madrid (Madrid-Barajas airport) with 45.1 million passengers. Other than Madrid-Barajas airport, the number of passengers rose for each of these airports in 2012.

The 24 regions which reported at least 15 million air passengers in 2012 (as shown by the largest circles on **Map 10.4**) were located exclusively in EU-15 Member States. Five of these regions were in Spain — reflecting both popular holiday destinations as well as a relatively developed national market for regional air travel — and there were also four regions from each of Germany and the United Kingdom, two regions from each of France and Italy, and a single region from each of Belgium, Denmark, Ireland, the Netherlands, Austria, Portugal and Sweden.

## MOST POPULAR FLIGHT ROUTES

Sub-national statistics are also available for the air transport sector in relation to the most popular flight routes for air passengers: these show the volume of passenger traffic between specific pairs of airports. An analysis for the five regions with the highest numbers of air passengers provides an insight into the relative specialisations of each airport.

Heathrow is an international hub and Europe's largest airport. This was confirmed as the most popular flight route was between Heathrow and John F. Kennedy International (New York), a journey that was taken by 2.84 million passengers in 2012. The second most popular airport served by Heathrow was Dubai International with almost two million passengers carried in 2012. There were eight airports outside of the EU served by Heathrow which each accounted for upwards of one million passengers in 2012: these were in the United States and south-east Asia. The most popular route within the EU served by Heathrow was in the Irish capital, with 1.58 million passengers carried between Heathrow and Dublin in 2012.

Within the French capital region of Île-de-France there are two major airports. The most popular route served from one of these was that between Paris-Orly and Toulouse-Blagnac (2.33 million passengers carried in 2012), while the second most popular route was also a domestic flight, that between Paris-Orly and Nice-Côte d'Azur (2.17 million). More than one million passengers were carried between Paris-Orly and Guadeloupe (one of the French overseas regions in the Caribbean). Paris-Charles de Gaulle generally offers more business and long-haul destinations and its most popular route in 2012 was to and from John F. Kennedy International (1.36 million), followed by some of Europe's main cities. Montréal-Pierre Elliott Trudeau International Airport (Canada) was the only other non-EU destination served by Paris-Charles de Gaulle which accounted for more than one million passengers.

The three most popular routes from Madrid-Barajas airport in 2012 were all domestic. This reflected the distance between Spain's two largest cities as 2.55 million passengers were carried between Madrid-Barajas and Barcelona El Prat airport, and the comparative comfort of using a plane to reach some of Spain's most popular tourist destinations: 1.44 million passengers carried to and from Palma de Mallorca airport and 1.30 million to and from Gran Canaria). The 10 most popular routes from Madrid-Barajas airport — each of which accounted for upwards of one million passengers in 2012 — connected to airports within the EU, with London Heathrow recording the highest number of passengers (1.20 million passengers) among those destinations outside of Spain. The most popular route connecting Madrid-Barajas to an airport outside of the EU was to the Argentinian capital, as almost 782 thousand passengers were carried to and from Ezeiza Ministro Pistarini in Buenos Aires.

There were six routes from Frankfurt airport which accounted for at least one million passengers in 2012. The most popular of these was the domestic flight connecting to Berlin-Tegel airport (1.81 million passengers carried), while there were two other domestic destinations — Hamburg and München airports — which also accounted for upwards of one million passengers each. The three other destinations were all within the EU and concerned flights between Frankfurt and the capitals of the United Kingdom (Heathrow), Austria (Wien-Schwechat) and France (Paris-Charles de Gaulle). Concerning non-EU destinations, the most popular flight was between Frankfurt and Istanbul Atatürk airport, with 801 thousand passengers carried in 2012.

There were four routes from Schiphol Amsterdam airport which accounted for at least one million passengers in 2012; these were all within the EU — connecting Schipol with Heathrow (1.43 million passengers carried), Barcelona El Prat (1.25 million), Paris-Charles de Gaulle (1.12 million) and Madrid-Barajas (1.00 million). The most popular route outside of the EU from Schiphol Amsterdam was Antalya airport (701 thousand passengers carried), a popular holiday destination on the Turkish Riviera.

***For more information:***

Eurostat (online data code: avia_par)

### *High number of air passengers could lead to environmental pressures, particularly in popular holiday destinations*

The regions with the highest average number of air passengers per inhabitant were often characterised as being popular tourist destinations or alternatively regions which contained some of the main airport hubs within the EU. These regions face a range of environmental pressures associated with their relatively high number of flights and volume of air passengers. There were 22 regions in the EU which recorded an average density of at least 8.5 air passengers per inhabitant in 2012 (as shown by the darkest shade in **Map 10.4**). This ratio peaked in the island destinations of Illes Balears (Spain) and Notio Aigaio (Greece), with 27.3 and 20.9 air passengers per inhabitant, which was 17 and 13 times as high as the EU-28 average. The third and fourth highest average numbers of air passengers per inhabitant were recorded in Noord-Holland and Prov. Vlaams-Brabant (18.8 and 17.1 air passengers per inhabitant); these two regions host the principal airports of the Netherlands and Belgium, countries with high population densities, therefore increasing the likelihood that their catchment areas contain a large number of inhabitants. The list of regions with the highest number of air passengers per inhabitant also included the island regions of Ionia Nisia and Kriti (both Greece), the Canarias (Spain), Corse (France), the Região Autónoma da Madeira (Portugal), as well as Cyprus and Malta (both single regions at this level of analysis), where the considerable influx of tourists (which is often highly seasonal) is likely to put pressure on the environment.

## Rail transport

Over the last 20 years the EU has sought to restructure the European rail transport market and to strengthen the relative position of railways as a transport mode. Efforts have concentrated on three major areas: opening-up the rail transport market to competition; improving the interoperability and safety of national networks; and developing rail transport infrastructure.

### *Railway networks are concentrated in some of the most densely populated regions*

The density of railway lines — as measured by the length of railway lines per thousand square kilometres of total area — is generally highest in capital regions and other built-up areas, as these are generally characterised as having a relatively high number of railway lines converging on city centres, while their high population density means that they tend to be relatively small regions. **Map 10.5** shows that Europe's rail network was concentrated on those areas with some of the highest population densities, in particular, in a band running from the Benelux countries into Germany, before splitting to run south into Switzerland and east into Poland, Hungary, the Czech Republic and Slovakia. Rail network density was considerably lower in the peripheral areas of the EU.

In total, there were 36 regions (of which eight were capital regions) in the EU with more than 100 km of railway lines per thousand km² of total area; note that German data are only available for NUTS 1 regions. The highest network densities were recorded in the capital regions of Germany, Belgium and the Czech Republic, followed by the city-state regions of Hamburg and Bremen. While these cities have traditionally had an extensive railway infrastructure due to their roles as capital cities or ports, the strikingly high values are to a large extent due to the small size of these regions within the NUTS classification combined with the fact that the density of urban infrastructure tends to be much higher than the density of inter-urban networks. The regions with the next densest rail networks were Severozápad in the north-west of the Czech Republic — which is at a major rail junction between the Berlin–Vienna and the Berlin–Sofia lines — and the former industrial heartlands of the Prov. Hainaut in Belgium and Slaskie in Poland (where rail freight still plays an important role).

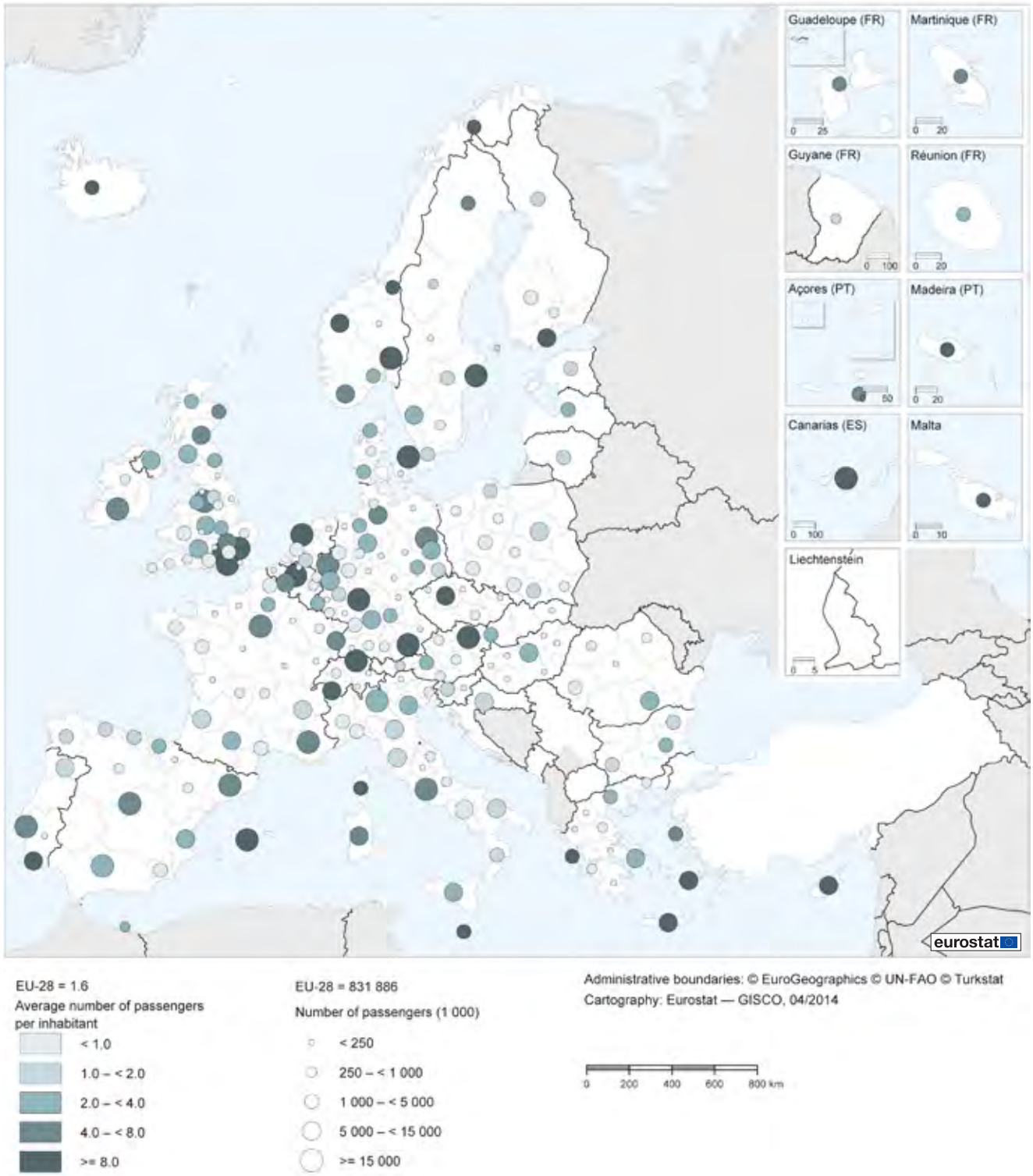
## Inland waterways

More than 46 000 kilometres of inland waterways connect hundreds of cities and industrial regions across the EU. There are 20 EU Member States that have inland waterways, 12 of which have an interconnected waterway network. Inland waterway transport plays an important role for the transport of goods in Europe, but its use for passenger transport services is generally restricted to leisure activities, rather than as a substitute for road, air or rail services.

Compared with other modes of transport, which are often confronted with congestion and capacity problems, inland waterway transport is characterised by its reliability, its relatively low environmental impact and its potential for increased use. The European Commission aims to promote and strengthen the competitive position of the inland waterway transport system, and to facilitate its integration into inter-modal transport solutions, for more details see the 2011 White paper detailing a 'Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system' (COM(2011) 144 final).

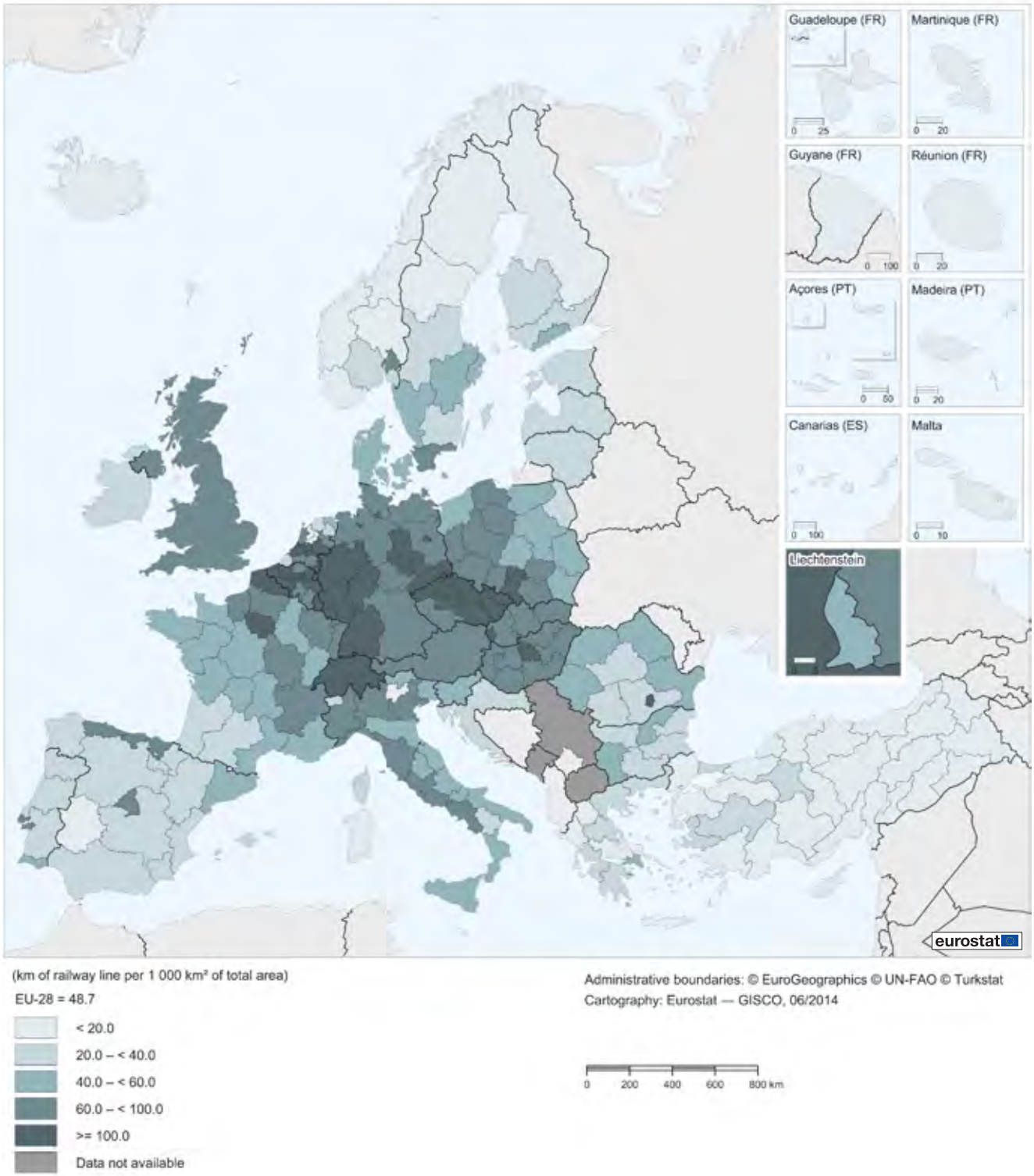
The information presented in **Table 10.2** shows information on those EU regions with the largest inland waterway networks in 2012; note that the data refer to NUTS 1 regions and that care should be taken when interpreting these results, as some of the statistics are likely to be subject to double-counting, especially when waterways act as natural divisions to demarcate regional or national borders (in these cases it is common for the length of the waterway to be counted for both regions/countries).

**Map 10.4:** Number of air passengers, by NUTS 2 regions, 2012 (1)
(average number of passengers per inhabitant and total number of passengers)




(1) Croatia: national level. Haute-Normandie (FR23), Basse-Normandie (FR25) and Bourgogne (FR26): 2011. Freiburg (DE13), Niederbayern (DE22), Oberfranken (DE24), Kassel (DE73), Braunschweig (DE91), Weser-Ems (DE94), Trier (DEB2), Sachsen-Anhalt (DEE0) and Franche-Comté (FR43): 2010. Cornwall and Isles of Scilly (UKK3) and Hedmark og Oppland (NO02): 2008.
*Source:* Eurostat (online data codes: tran_r_avpa_nm and demo_r_d3avg)

**Map 10.5:** Density of rail networks, by NUTS 2 regions, 2012 (1)
(km of railway line per 1 000 km² of total area)




(1) This density measure is based on the total area of each region (not the land area). EU-28: estimate based on latest available information. Germany: by NUTS 1 regions. Denmark, Ireland, Austria, Slovenia, the United Kingdom and Switzerland: national level. France (other than Île de France (FR10)), Provincia Autonoma di Trento (ITH2) and the United Kingdom: 2011. Greece and Switzerland: 2010. Île de France (FR10): 2009. Belgium and Denmark: 2008.

*Source:* Eurostat (online data codes: tran_r_net and demo_r_d3area)

### *Mainland Finland had the greatest length of navigable rivers …*

The relative importance of navigable inland waterways is often seen to be at its highest in those regions through which the Danube and Rhine (as well as their tributaries) run. As such, the highest propensity to use navigable rivers is generally concentrated in a band that runs from south-east Europe up to the North Sea ports of the Netherlands. However, Manner-Suomi (mainland Finland) had by far the highest length of navigable rivers among NUTS 1 regions in 2012, with almost 8 000 km of navigable river, which equated to approximately a quarter of the EU-28 total. Poland (data are only available at a national level) and Croatia (which is covered by a single region at this level of analysis) were the only other regions to record in excess of a thousand kilometres of navigable river.

### *… while France had the greatest length of navigable canals*

Navigable canals are principally located in western Europe, in particular across the regions of France (which has the longest network of inland waterways in the EU), the Netherlands (which has the densest network of inland waterways in the EU), Belgium and Germany. The longest length of navigable canals was recorded in the French region of the Bassin Parisien (which covers a large part of northern France). Together, the four Dutch NUTS 1 regions accounted for almost one third of the total length of navigable canals in the EU-28 (almost 5 000 km).

## Maritime passengers

Maritime transport has been a catalyst of economic development and prosperity in Europe for centuries. It facilitates trade and contacts between all of the European nations and ensures the security of supply of energy, food and commodities from all over the world, while providing European exporters with a means of reaching international markets; indeed, almost 90 % of the EU's international freight trade is transported by sea.

The quality of life on many European islands and in peripheral maritime regions depends, to a large extent, upon the provision of maritime transport services. The total number of maritime passengers that embarked or disembarked in EU-28 ports in 2012 was just over 398 million, marking a reduction of almost 10 % when compared with the pre-financial and economic crisis peak of 438.9 million in 2008.

### *Highest number of maritime passengers pass through the Greek capital region*

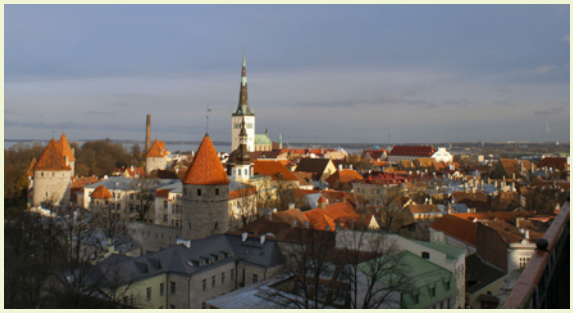
**Map 10.6** identifies the regions within the EU-28 with the highest number of maritime passengers (those regions with the largest circles in **Map 10.6**); there were 19 NUTS 2 regions which had at least 5 million passengers in 2012. By far the highest number (25.2 million) passed through the Greek capital region of Attiki, which includes the port of Piraeus near Athens (often a starting point for visiting the Greek islands) as well as the ports of Paloukia and Perama which connect the island of Salamína to the mainland near Athens. The volume of passengers passing through Attiki was approximately twice as high as in the region with the second highest number of maritime passengers, namely the Croatian region of Jadranska Hrvatska which had 13.1 million maritime passengers in 2012. The main ports in this coastal Croatian region include Dubrovnik, Split and Zadar, which act in a similar fashion to Piraeus, as hubs for reaching the Croatian islands.

There were eleven NUTS 2 regions which reported between 10.0 and 13.0 million passengers: these included the Channel port regions of Kent (the United Kingdom) and the Nord - Pas-de-Calais (France); and the Baltic sea ports contained within the capital regions of three northern Member States, Sjælland (Denmark), Sydsverige (southern Sweden) and Estonia (a single region at this level of detail). Otherwise, there were five Italian regions that figured among the 19 NUTS 2 regions with the highest numbers of maritime passengers (as shown by the largest circles in **Map 10.6**); these included the islands of Sicilia and Sardegna.

### *Åland islands had by far the highest ratio of maritime passengers per inhabitant*

The average number of maritime passengers per inhabitant provides an indication of the pressures faced in EU regions which have a high dependence on maritime services. Many

SPOTLIGHT ON THE REGIONS: ESTONIA (EE00), ESTONIA



**Tallinn, Estonia**

The port of Tallinn is one of the most important ports in the Baltic Sea, with regular departures to Finland, Sweden, Germany and Russia; it is also an important cruise destination.

Estonia is considered as a single region at the NUTS 2 level. It received 10.6 million maritime passengers in 2012, which was an average of 8.0 passengers per inhabitant.

*Photo: Gunnar Bach Pedersen*

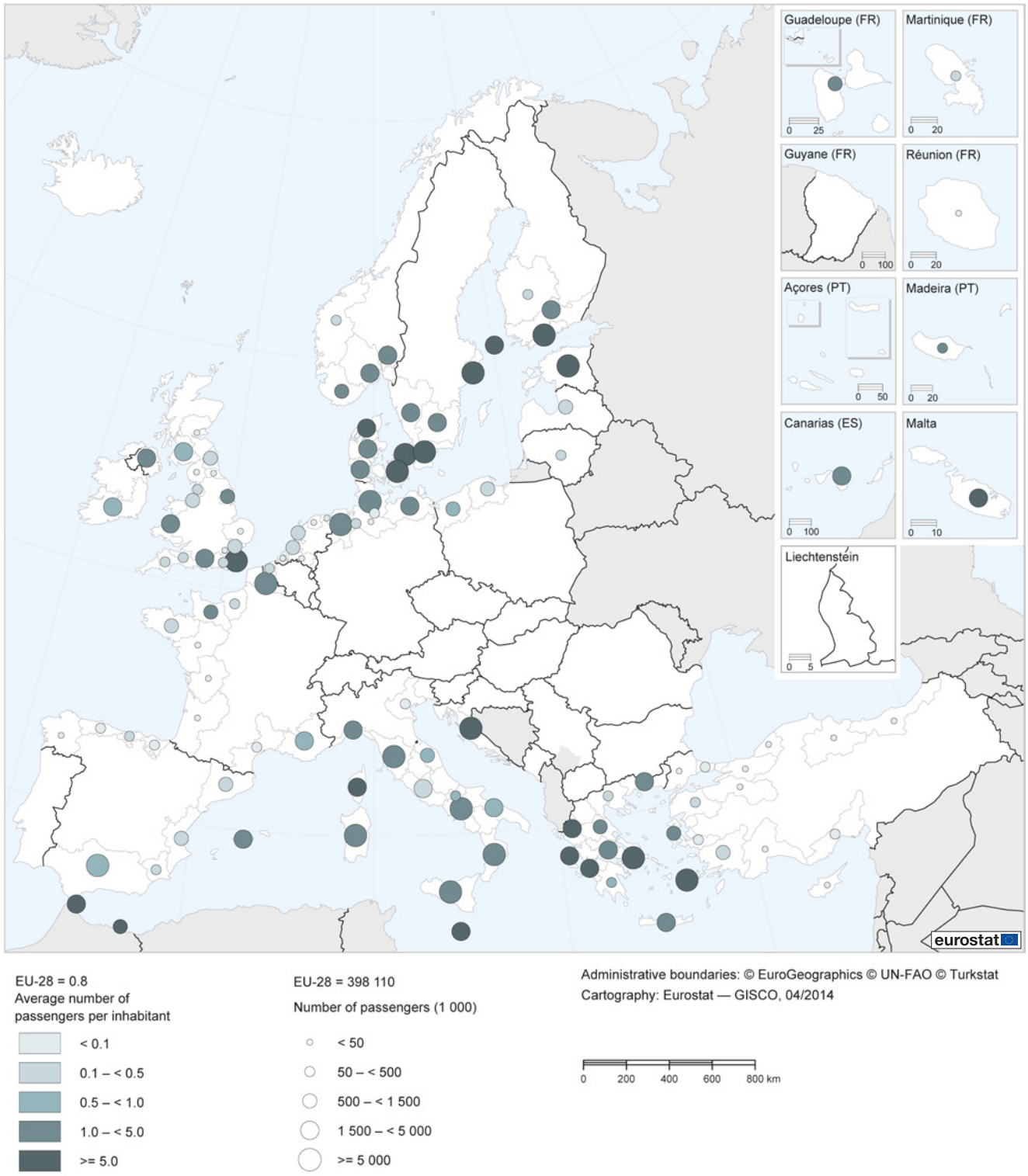
of the regions with the highest absolute number of maritime passenger transport also recorded some of the highest densities of passenger numbers in relation to inhabitants; this may reflect relatively short maritime journeys (such as the 15 minute crossing between Paloukia and Perama) or alternatively maritime journeys where there is little or no competition from other modes of transport, for example between many of the Croatian islands. Otherwise, maritime services may appeal to travellers as they often allow a car to be taken on-board, thereby allowing travellers to make

**Table 10.2:** EU regions with largest inland waterway networks, selected NUTS 1 regions, 2012 (1)

| Navigable rivers (2) | (length, km) | (km per million inhabitants) | (km per 1 000 km² of total area) | (per 1 000 km² of total area) |
|---|---|---|---|---|
| **EU-28** | 31 311 | 62.3 | 7.0 | 6.5 |
| Manner-Suomi (FI1) | 7 889 | 1 468.3 | 23.4 | 16.5 |
| Poland | 3 315 | 86.0 | 10.6 | 22.6 |
| Hrvatska (HR0) | 1 017 | 237.8 | 11.6 | 16.8 |
| Mecklenburg-Vorpommern (DE8) | 943 | 576.9 | 40.7 | 21.8 |
| Niedersachsen (DE9) | 940 | 118.8 | 19.7 | 19.9 |
| Ouest (FR5) | 877 | 102.0 | 10.3 | 30.5 |
| Dunántúl (HU2) | 782 | 261.1 | 21.4 | 8.4 |
| Brandenburg (DE4) | 719 | 288.1 | 24.4 | 11.6 |
| Rheinland-Pfalz (DEB) | 716 | 179.0 | 36.1 | 10.5 |
| Macroregiunea doi (RO2) | 716 | 122.7 | 9.9 | 27.2 |
| Alföld és Észak (HU3) | 700 | 175.2 | 14.1 | 9.0 |
| Belgium | 641 | 60.1 | 21.0 | 9.4 |
| Ceská republika (CZ0) | 637 | 60.6 | 8.1 | 10.6 |
| Oost-Nederland (NL2) | 619 | 174.7 | 56.4 | 8.8 |
| Italy | 612 | 10.3 | 2.0 | 82.2 |
| Södra Sverige (SE2) | 577 | 140.3 | 7.2 | 4.6 |
| Macroregiunea trei (RO3) | 521 | 96.3 | 14.4 | 16.2 |
| Sud-Ouest (FR6) | 514 | 74.5 | 5.0 | 3.4 |
| Östra Sverige (SE1) | 513 | 139.8 | 10.7 | 11.2 |
| Bayern (DE2) | 507 | 40.3 | 7.2 | 13.6 |
| **Navigable canals (3)** | **(length, km)** | **(km per million inhabitants)** | **(km per 1 000 km² of total area)** | **(per km² of total area)** |
| **EU-28** | 15 325 | 30.4 | 3.4 | 0.3 |
| Bassin Parisien (FR2) | 2 246 | 208.6 | 15.4 | 2.0 |
| West-Nederland (NL3) | 2 091 | 265.3 | 175.8 | 1.9 |
| Noord-Nederland (NL1) | 1 334 | 776.1 | 117.1 | 1.0 |
| Est (FR4) | 1 146 | 213.2 | 23.9 | 1.1 |
| Italy | 950 | 16.0 | 3.2 | 1.4 |
| Belgium | 875 | 82.0 | 28.7 | 2.0 |
| Oost-Nederland (NL2) | 782 | 220.7 | 71.3 | 1.0 |
| Zuid-Nederland (NL4) | 629 | 175.4 | 86.3 | 4.1 |
| Île de France (FR1) | 612 | 51.6 | 50.9 | 2.8 |
| Niedersachsen (DE9) | 539 | 68.1 | 11.3 | 1.1 |
| Nord - Pas-de-Calais (FR3) | 478 | 118.3 | 38.5 | 2.4 |
| Nordrhein-Westfalen (DEA) | 476 | 26.7 | 14.0 | 2.2 |
| Méditerranée (FR8) | 428 | 54.2 | 6.3 | 0.7 |
| Schleswig-Holstein (DEF) | 390 | 137.4 | 24.7 | 0.7 |
| Brandenburg (DE4) | 341 | 136.6 | 11.6 | 0.2 |
| Sud-Ouest (FR6) | 316 | 45.8 | 3.1 | 18.9 |
| Ouest (FR5) | 313 | 36.4 | 3.7 | 0.8 |
| Bayern (DE2) | 171 | 13.6 | 2.4 | 1.5 |
| Manner-Suomi (FI1) | 125 | 23.3 | 0.4 | 11.8 |
| Berlin (DE3) | 121 | 34.6 | 135.7 | 0.9 |

(1) This density measure is based on the total area of each region (not the land area). The table shows the 20 EU regions with the highest length of naviagble rivers and canals. EU-28: estimates based on latest available information (excluding Slovenia). Belgium, Italy and Poland: national level. Slovenia: not available.
(2) France, Lithuania, Austria and the United Kingdom: 2011. Belgium: 2008.
(3) France, Croatia, Lithuania, Romania, Sweden and the United Kingdom: 2011. Greece: 2010. Belgium: 2008.
*Source:* Eurostat (online data codes: tran_r_net and demo_r_d3area)

**Map 10.6:** Number of maritime passengers, by NUTS 2 regions, 2012 (1)
(average number of passengers per inhabitant and total number of passengers)




(1) Total number of passengers embarked and disembarked. Poitou-Charentes (FR43) and Aquitaine (FR61): 2011. Bremen (DE50) and Cumbria (UKD1): 2009. Lüneburg (DE93): 2008.
*Source:* Eurostat (online data codes: tran_r_mapa_nm and demo_r_d3avg)

use of their own vehicle to and from the coast. The region with by far the highest number of maritime passengers per inhabitant was the Åland islands (Finland) which are situated between Finland and Sweden; they had an average of almost 144 passengers per inhabitant in 2012. A number of other island regions also recorded relatively high numbers of maritime passengers per inhabitant, for example, Corse, reflecting a large-scale influx of tourists during the summer months, and Malta, reflecting not just tourist arrivals and departures by sea but also transport within the Maltese islands, principally between Malta and Gozo.

# Data sources and availability

## Legal basis

Regional data on road and railway infrastructure, inland waterways, vehicle stocks and road accidents are currently collected by EU Member States, EFTA and candidate countries on a voluntary basis. Data for air, rail and maritime transport are derived directly from statistics collected under legal acts.

### Air statistics

Regional air transport statistics show passenger and freight movements by NUTS 2 region, measured in relation to the number of passengers and the quantity of freight in tonnes. Passenger data are divided into passengers embarking, disembarking and in transit. The data are collected according to Regulation (EC) No 437/2003 on statistical returns in respect of the carriage of passengers, freight and mail by air and its implementing legislation that is currently in force, such as European Commission Regulation (EC) No 158/2007 as regards a list of Community airports; these data are aggregated to NUTS 2 regions. Regional air transport data cover main airports, in other words those registering more than 150 000 passenger units (per year) where a passenger unit is either a passenger or 100 kilogrammes of freight and mail.

### Rail statistics

In a similar vein, regional rail transport statistics also provide information on passenger and freight movements by NUTS 2 region. The collection of data for rail transport is based on Regulation (EC) No 91/2003 on rail transport statistics and its implementing legislation that is currently in force, for example, European Commission Regulation (EC) No 1192/2003 on rail transport statistics, which foresees the collection (every five years) of passenger data in relation to national, transit and international passengers.

### Maritime statistics

The collection of maritime transport statistics is based on Directive 2009/42/EC on statistical returns in respect of carriage of goods and passengers by sea, an amending Regulation ((EU) No 1090/2010) and a Commission Delegated Decision (2012/186). The information is collected for a list of the most important sea ports in the EU and then aggregated to NUTS 2 regions. A main port is a statistical port which has annual movements of no less than 200 000 passengers or records more than one million tonnes of cargo.

## Indicator definitions

### Road transport

A road is defined as a line of communication (travelled way) open to public traffic, primarily for the use of road motor vehicles, using a stabilised base other than rails or air strips. Included are paved roads and other roads with a stabilised base, for example, gravel roads. Roads also cover streets, bridges, tunnels, supporting structures, junctions, crossings and interchanges. Toll roads are also included. Excluded are dedicated cycle lanes.

Passenger cars are road motor vehicles, other than mopeds or motorcycles, intended for the carriage of passengers and designed to seat no more than nine persons (including the driver). Included are: passenger cars, vans designed and used primarily for the transportation of passengers, taxis, hire cars, ambulances and motor homes. Excluded are light goods road vehicles, as well as motor coaches and buses, and minibuses/mini-coaches. The number of passenger cars per inhabitant (sometimes referred to as the motorisation rate or equipment rate) is calculated on the basis of the stock of vehicles as of 31 December and population figures as of 1 January of the following year.

A minibus/mini-coach is a passenger road motor vehicle designed to carry 10–23 seated or standing persons (including the driver); it may carry seated passengers or both seated and standing passengers. A bus is a passenger road motor vehicle designed to carry more than 24 persons (including the driver); it may be constructed with areas for standing passengers, to allow frequent passenger movement, or designed to allow the carriage of standing passengers in the gangway. A motor coach is a passenger road motor vehicle designed to seat 24 or more persons (including the driver) and constructed exclusively for the carriage of seated passengers.

A trolleybus is a passenger road vehicle designed to seat more than nine persons (including the driver), which is connected to electric conductors and which is not rail-borne; this term covers vehicles which may be used either as trolleybuses or as buses, if they have a motor independent of the main electric power supply.

The equipment rate for public transport vehicles is calculated in the same manner as for passenger cars, based on the stock of vehicles as of 31 December and population figures as of 1 January of the following year.

## Road safety

An injury accident is any road accident involving at least one road vehicle in motion on a public road or private road to which the public has right of access, resulting in at least one injured or killed person. A suicide or an attempted suicide is not an accident but an incident caused by a deliberate act to injure oneself fatally. However, if a suicide or an attempted suicide causes injury to another road user, then the incident is regarded as an injury accident. Included are: collisions between road vehicles; between road vehicles and pedestrians; between road vehicles and animals or fixed obstacles and with one road vehicle alone; collisions between road and rail vehicles. Multi-vehicle collisions are counted as only one accident provided that any successive collisions happen within a very short time period. Injury accidents exclude accidents incurring only material damage.

An injured person is any person who, as result of an injury accident, was not killed immediately and did not die within 30 days, but sustained an injury, normally needing medical treatment, excluding attempted suicides. Persons with lesser wounds, such as minor cuts and bruises are not normally recorded as injured.

Persons killed in accidents include any person killed immediately or dying within 30 days as a result of an injury accident, excluding suicides. The number includes drivers and passengers, in motorised vehicles and on bicycles, as well as pedestrians involved in road accidents. For countries that do not apply the threshold of 30 days, conversion coefficients are estimated so that comparisons on the basis of the 30 day-definition can be made.

## Air

An airport is a defined area of land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

## Rail

A railway is a line of communication between two or more geographic locations consisting, usually, of one or more railway lines constructed from two parallel steel rails that is for the exclusive use of railway vehicles. Railway lines are one or more adjacent running tracks forming a route between two points. Where a section of network comprises two or more lines running alongside one another, there are as many lines as routes to which tracks are allotted exclusively. A running track is a track providing end-to-end line continuity designed for trains between stations or places indicated in tariffs as independent points of departure or arrival for the conveyance of passengers or goods. A distinction is often made between electrified and non-electrified railway lines and for high-speed railway lines.

## Inland waterways

Inland waterways are rivers, canals, lakes or other stretches of water that are not part of the sea, which through natural or man-made features are suitable for navigation. This term includes both navigable rivers and lakes and navigable canals. A waterway forming a common frontier between two countries is reported by both states. Waterways also include river estuaries, the boundary with the sea being that point nearest the sea where the width of the river is both less than three kilometres at low water and less than five kilometres at high water. A navigable inland waterway is a waterway on which vessels with a carrying capacity of not less than 50 tonnes can navigate when normally loaded. The length of rivers and canals is measured in mid-channel. The length of lakes and lagoons is measured along the shortest navigable route between the two most distant points that perform transport operations.

# 11 Agriculture

# Introduction

Although the economic significance of agriculture within the economy has been in almost perpetual decline over the last 50 years, it remains a vital sector within the European Union (EU). Agricultural products form a major part of Europe's regional 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: food and drink for human consumption; animal feed; and inputs used in a variety of non-food manufacturing processes.

This chapter presents regional agricultural statistics from across the EU. It provides a selection of Eurostat's statistics within this domain, including data on the structure of farming, agricultural accounts, livestock numbers, as well as agricultural products.

The links between the richness of the natural environment and farming practices are complex. Many valuable habitats in Europe are maintained by extensive farming, and a wide range of wild species rely on this for their survival. By contrast, inappropriate agricultural practices and land use can also have an adverse impact on natural resources, for example, soil, water and air pollution, the fragmentation of natural habitats and the loss of wildlife. The sustainable development of rural areas is one of the key objectives of the EU's common agricultural policy (CAP).

## Common agricultural policy (CAP)

Significant reforms of the CAP have taken place in recent years, most notably in 2003, 2008 and 2013. These have sought to make the EU's agricultural sector more market-oriented, ensure that safe and affordable food continues to be produced, while respecting environmental and sustainability concerns.

The reforms of 2003 introduced a new system of direct payments — income support farmers receive through the CAP — known as the single payment scheme. This aimed to guarantee farmers more stable incomes. In 2008 further changes were made, such that aid to the agricultural sector was decoupled from production by 2012.

In December 2013, the latest reform of the CAP was formally adopted by the European Parliament and the Council. It is based on four new legislative instruments that aim to simplify the rules of the CAP and which cover:

- support for rural development, Regulation No 1305/2013;
- financing, management and monitoring of the CAP, Regulation No 1306/2013;
- direct payments, Regulation 1307/2013;
- measures linked to agricultural products, Regulation 1308/2013.

The main elements of the CAP post-2013 concern: a fairer distribution of direct payments (with targeted support and convergence goals); strengthening the position of farmers within the food production chain (such as through: the promotion of professional and inter-professional organisations; changes to the organisation of the sugar and wine sectors; revisions to public intervention and private storage aid; and new crisis management tools); and continued support for rural development, safeguarding the environment and biodiversity.

The CAP is financed by two funds: on the one hand, the European Agricultural Guarantee Fund (EAGF) finances direct payments to farmers, as well as measures to respond to market disturbances; on the other, the European Agricultural Fund for Rural Development (EAFRD) finances the rural development programme (see below for more details).

Almost one third (30 %) of direct payments in the post-2013 CAP are linked to sustainable and environmentally-friendly practices, such as crop diversification, the maintenance of permanent grassland, or the protection of ecological areas on farms; there is also specific aid for organic farming. The CAP also helps farmers by aiming to stimulate employment, entrepreneurship and the diversification of farms beyond food production. Specific schemes are in place, for example, providing support to young farmers during their first five years in the sector.

## Europe 2020

All of the above changes are designed to ensure that the CAP is more effective in delivering a competitive and sustainable agriculture sector, responding to the challenges of food safety, climate change, growth and jobs in rural areas. These reforms are made in relation to the goals of developing intelligent, sustainable and inclusive growth, in line with the Europe 2020 strategy, while taking account of the wealth and diversity of the agricultural sector across European regions.

The Europe 2020 strategy has introduced seven flagship initiatives to act as new engines to boost growth and jobs. One of these initiatives is the innovation union, which includes a set of European innovation partnerships (EIPs). EIPs act across the whole research and innovation chain, bringing together all relevant actors at EU, national and regional levels.

The agricultural EIP (EIP-AGRI) was launched in February 2012 by a European Commission communication, titled European innovation partnership on agricultural sustainability and productivity (COM(2012) 79 final). The main aim of the agricultural EIP is to speed up the transfer of R & D from the laboratory, focusing on partnerships to link farmers, researchers, advisors, businesses, non-governmental organisations, and other actors in operational groups.

## Rural development

The European Agricultural Fund for Rural Development (EAFRD) was allocated a budget of EUR 96.3 billion for the period 2007–13, which equated to approximately one fifth of the total funds set aside for the CAP. Three long-term strategic objectives have been identified by the European Commission in relation to EU rural development policy during the period 2014–20, in line with Europe 2020 and CAP objectives: improving the competitiveness of agriculture; safeguarding the sustainable management of natural resources and climate action; and ensuring that the territorial development of rural areas is balanced.

As noted above, a new regulation for rural development policy post-2013 is the latest in a series of policy developments aimed at developing Europe's rural areas. This regulation provides the legal basis for rural development programmes from 2014 onwards and is designed to help: foster the competitiveness of agriculture, ensure the sustainable management of natural resources; support action over the climate; and achieve a balanced territorial development of rural economies and communities, including the creation and maintenance of employment. Policy will be implemented through national and/or regional rural development programmes (RDPs), which should be constructed so as to: strengthen the content of rural development measures; simplify rules and/or reduce related administrative burdens; and link rural development policy more closely to other funds.

### RURAL DEVELOPMENT — COHESION POLICY FUNDING

The diversification of rural economic activity and improvements to the quality of life in rural areas is a mission shared by the EU's rural development policy and its cohesion policy. The European Regional Development Fund (ERDF) and the European Social Fund (ESF) work to complement, under a strategic common framework, the European Agricultural Fund for Rural Development (EAFRD).

Structural funds operate simultaneously in rural and urban areas, so it is difficult to determine exactly what proportion of total expenditure goes to rural development. Nevertheless, an estimate for the distribution of cohesion policy funds during the period 2007–13 suggests that almost EUR 54 billion was programmed on expenditure for rural areas, which equates to some 16 % of the total funding available for cohesion policy.

***For more information:***

Cohesion policy and rural development: http://ec.europa.eu/regional_policy/activity/rural/index_en.cfm

# Main statistical findings

Eurostat compiles and publishes agricultural statistics for EU regions, the individual EU Member States, as well as the EU-28 aggregate. Regional data are generally presented at the NUTS 2 level, although regional statistics on orchards are only available at the NUTS 1 level. Note that for the majority of the maps shown, the data for Germany are only available at the NUTS 1 level; this is also sometimes the case for the United Kingdom. While agriculture statistics are collected from the EFTA and candidate countries, this is rarely available for analysis at a regional level.

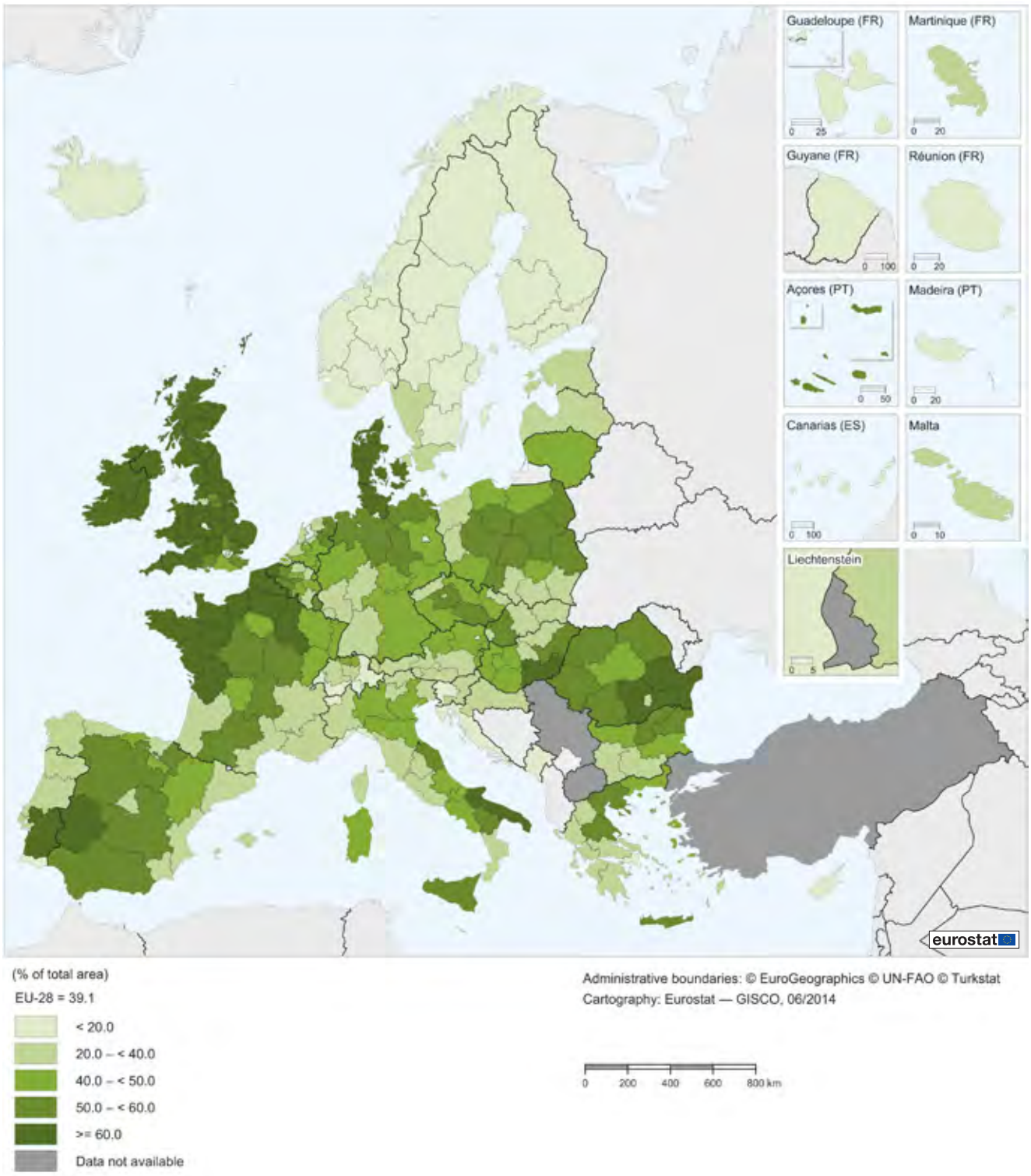
## Structure of agricultural holdings

There were 12.2 million farms across the EU-28 in 2010, working 175.8 million hectares of land, otherwise referred to as the utilised agricultural area (UAA). This equated to almost two fifths (39.1 %) of the total area of the EU-28 and resulted in an average size for each agricultural holding of 14.4 hectares.

### Utilised agricultural area

Climate and geography have a major influence on the agricultural use of the land. As a result, the choice of animal and plant production across Europe naturally varies from region to region. Some regions have terrain and land cover that permit almost all their land area to be used for agriculture, whereas in others only a fraction of the land can be used in this way, due to, for example, a harsh climate, dense forest cover, or altitude.

**Map 11.1:** Utilised agricultural area, by NUTS 2 regions, 2010 (1)
(% of total area)




(1) Germany: by NUTS 1 regions. Croatia: share of total land area instead of share of total area.
*Source:* Eurostat (online data codes: ef_kvaareg and demo_r_d3area)

### *A high proportion of Denmark, northern France, Ireland and most of the United Kingdom was given over to agricultural use …*

**Map 11.1** shows the utilised agricultural area as a proportion of the total area in 2010, with the relative importance of agriculture particularly high in Denmark, northern France, Ireland and most of the United Kingdom. There were 48 NUTS 2 regions where at least 60.0 % of the total area was given over to agricultural use. The highest share (81.0 %) in the EU was recorded for North Yorkshire (the United Kingdom), which was the only region to report that its agricultural area accounted for more than four fifths of its total area. It was followed by three other regions from the United Kingdom, namely, East Wales (78.3 %), Cumbria (77.3 %) and Lincolnshire (76.5 %). Note that the statistics presented do not relate to the intensity of farming, but instead to the type of land use. Indeed, several of the regions at the top of the ranking could be characterised as upland areas where heathlands and moorlands are probably given over to relatively extensive animal grazing practices.

More than half (26) of the 48 regions which reported that their utilised agricultural area accounted for at least 60.0 % of their total area were from the United Kingdom. Both of the Irish regions reported that their utilised agricultural area accounted for upwards of 60.0 % of their total area, and this was also the case for all but one of five Danish regions (the capital region of Hovedstaden being the exception). The eight French regions that recorded shares of at least 60.0 % formed a ring around Paris, starting in the easterly region of Champagne-Ardenne, moving north to include all the regions along the coast of the English Channel, before descending into the Pays de la Loire and Poitou-Charentes.

### *… while this was also true in some southerly regions specialising in olive and wine production*

There were also pockets of relatively high shares of utilised agricultural area in the neighbouring Portuguese and Spanish regions of Alentejo and Extremadura, where agricultural production is often based on olives or wine; this is also the case in the southern Italian region of Puglia. The only other regions where the share of utilised agricultural area was at least 60.0 % were the Belgian region of the Prov. West-Vlaanderen (which borders onto northern France), the Hungarian region of Dél-Alföld (where lots of cereals are grown on the plains) and two regions in Romania (Sud – Muntenia and Sud-Est); note that a relatively high proportion of agricultural land in Romania is not in use.

SPOTLIGHT ON THE REGIONS: SOUTHERN AND EASTERN (IE02), IRELAND

**Plains of South Kildare, Ireland**

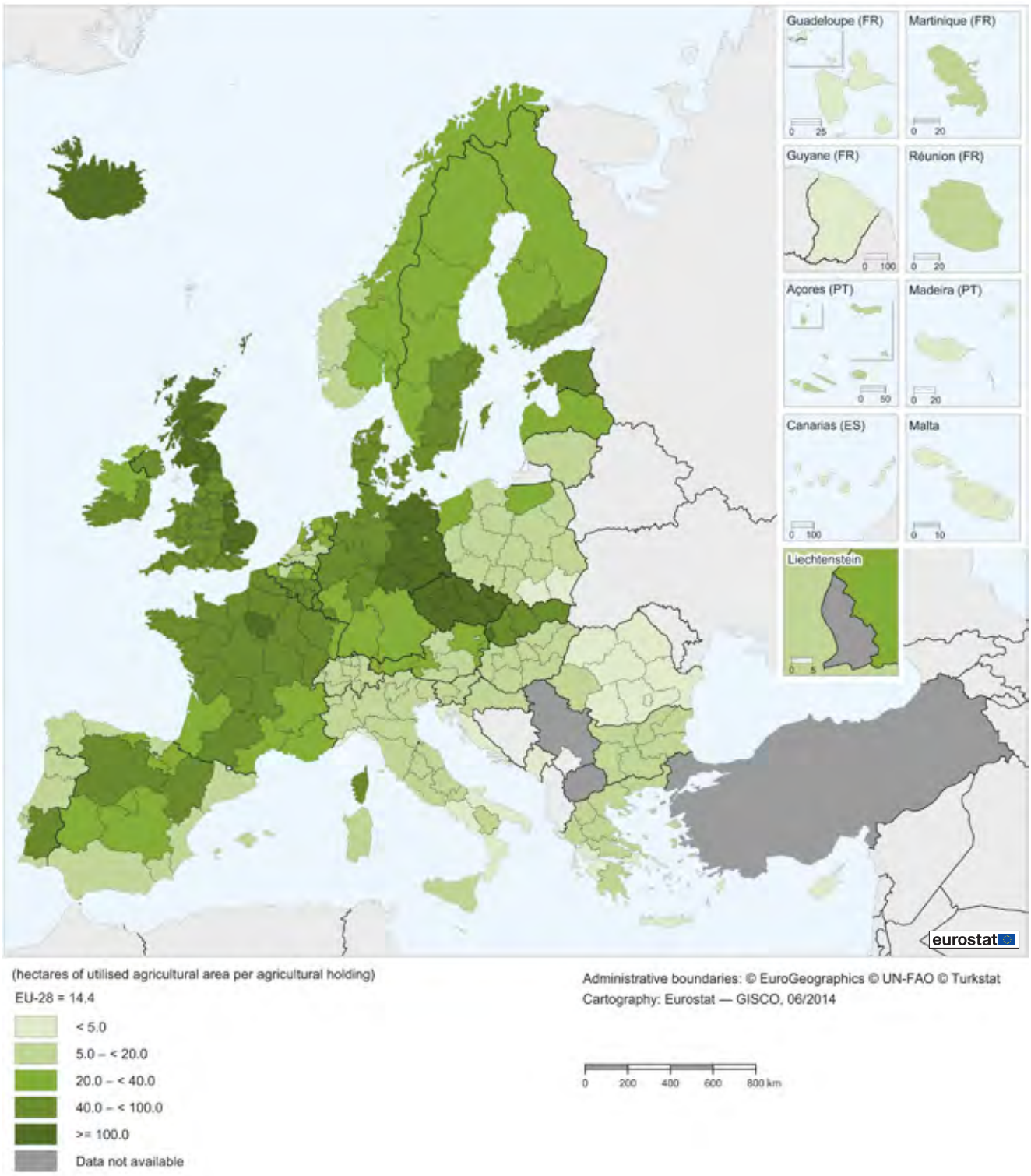
Much of Ireland is relatively sparsely populated, lowland. It is ideally suited to agriculture and in the Southern and Eastern region of Ireland, the utilised agricultural area accounted for almost three quarters (73.7 %) of the total area in 2010.

The relative importance of agricultural land was also high in the only other NUTS 2 region in Ireland, namely, the Border, Midland and Western region, where 69.1 % of the total area was accounted for by farming.

*Photo: Sarah777*

At the other end of the range, there were 33 regions which reported that their utilised agricultural area accounted for less than 20.0 % of their total area in 2010 (as shown by the lightest shade on **Map 11.1**). These regions can be split into two different groups. The first covers densely populated areas, such as capital regions, where it is clearly difficult for agriculture to compete as a land use. The second group is characterised as being sparsely populated, remote regions, for example, Alpine and Nordic regions or arid islands in the Mediterranean; in these regions the local terrain and climatic conditions limit the possibilities to use the land for agricultural purposes.

**Map 11.2:** Average size of farms, by NUTS 2 regions, 2010 (1)
(hectares of utilised agricultural area per agricultural holding)




(1) Germany: by NUTS 1 regions.
*Source:* Eurostat (online data code: ef_kvaareg)

### Average size of farms

Farm size can be measured in various ways: the most common are physical measures (such as the agricultural area per farm) or economic measures (such as the standard output per farm). Both of these indicators have increased in the EU during the last decade.

#### *The average size of farms in the EU has gradually increased*

As the number of farms in the EU-28 has steadily declined and there has been little change in the overall area that is used for agriculture, the average size of farms across the EU has become larger and stood at 14.4 hectares of utilised agricultural area per agricultural holding in 2010. The largest farms — by this measure — were concentrated in eastern Germany, the Czech Republic and Slovakia (as shown by the darkest shade on **Map 11.2**).

#### *The largest average size of farms was in the northern German region of Mecklenburg-Vorpommern*

The north-eastern German region of Mecklenburg-Vorpommern on the Baltic coast had the largest average size of farms in the EU, as each agricultural holding averaged 285.6 hectares of utilised agricultural area in 2010 (note that the German data are presented for NUTS 1 regions). As such, the average farm in this region was 20 times as large as the average for the EU as a whole. The three regions that followed in the ranking were also from eastern Germany, namely, Sachsen-Anhalt (278.0 hectares), Brandenburg (237.6 hectares) and Thüringen (215.0 hectares). The only other region to record farm size averaging at least 200.0 hectares was the Highlands and Islands in the north of the United Kingdom. Aside from those regions already mentioned, the average size of farms was relatively high — at least 40.0 hectares of utilised agricultural area per agricultural holding — across most of Denmark, France and the United Kingdom. Compared with any of the EU Member States, the average size of farms in Iceland was exceptionally high (616 hectares per agricultural holding); this may be due to Iceland having vast areas of land with very low yields.

#### *Farms in southern and eastern Europe were generally much smaller*

Average farm sizes have generally remained much smaller in some of the Member States that joined the EU in 2004 or later and across many southern regions of the EU. The smallest average farm sizes were concentrated across Romania, southern Poland, and coastal Croatia, as well as in parts of Greece, the south of Italy, and the islands of Cyprus and Malta (the latter two are each covered by a single region at this level of analysis). Average farm size was also low in the French overseas regions, the Spanish autonomous cities and the Portuguese autonomous islands.

## Economic accounts for agriculture

There has been a gradual decline in the relative importance of the agricultural sector in the EU. An EU-28 time series is only available for a relatively short period (2000–12) including also the activities of forestry and fisheries: this shows that the relative weight of agriculture, forestry and fisheries in total economic activity fell from 2.2 % to 1.7 % over this period.

#### *Agriculture accounted for 1.4 % of total economic activity in the EU-28 …*

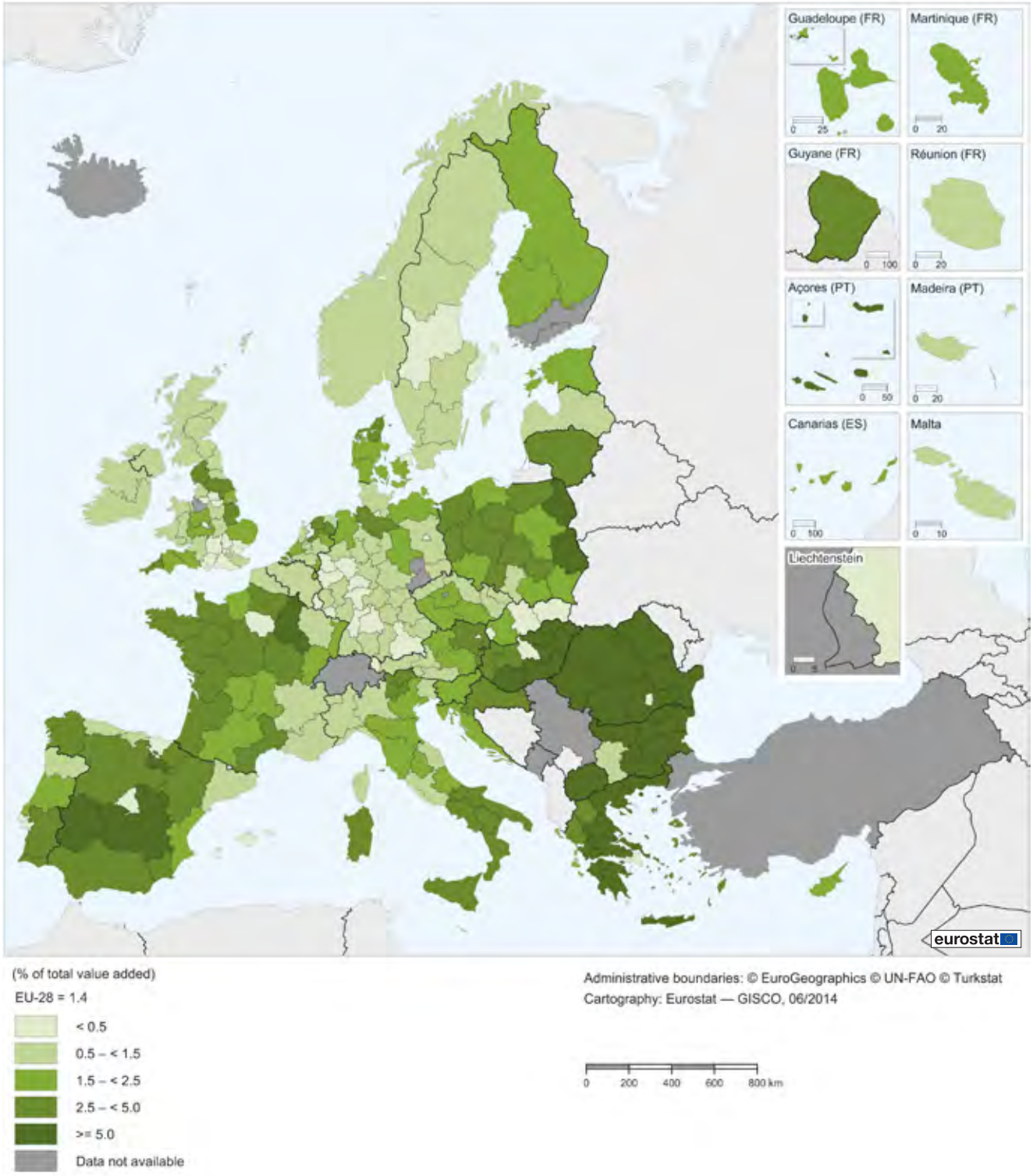
Economic accounts for agriculture (EAA) provide a wide range of statistics and information on agricultural activity and the income generated by it. In 2011, the EU-28's agricultural industry generated EUR 157.4 billion of value added, equivalent to 1.4 % of total economic activity. The relative weight of agriculture is generally much higher in eastern and southern regions of Europe, especially in rural areas where the economy has not diversified. By contrast, the weight of agriculture in overall economic activity is much lower in western Germany and the south of the United Kingdom, as well as a number of capital regions, where regional economies are concentrated on other (non-farming) activities.

#### *… but its share rose to at least 5.0 % in 30 regions across the EU*

Agriculture's contribution to regional economic activity was at least 5.0 % in 30 regions across the EU (as shown by the darkest shade in **Map 11.3**). These included every region in Bulgaria and Romania (other than the capital regions), seven regions in Greece, four in Hungary, three in central Spain, two in eastern Poland, and one each from France and Portugal; agriculture also contributed at least 5.0 % to the total value added in the former Yugoslav Republic of Macedonia (one region at this level of analysis).

The relative importance of agriculture peaked at almost one fifth (18.8 %) of total value added in the Bulgarian region of Severozapaden in 2011. There were only six other EU regions where the relative share of agriculture in the regional economy was in double-digits: four of these were located in Romania, along with a single region from each of France (Champagne-Ardenne) and Hungary (Dél-Alföld). The French region of Champagne-Ardenne was of interest insofar as the weight of its agricultural sector was almost 2.5 times as high as in any other French region (the next highest share being recorded in Poitou-Charentes).

**Map 11.3:** Share of agriculture in the economy, gross value added at basic prices, by NUTS 2 regions, 2011 (1)
(% of total value added)




(1) The former Yugoslav Republic of Macedonia: 2010. Poland: 2009. Belgium, Slovenia and Norway: national level. Guadeloupe (FR91), Martinique (FR92), Guyane (FR93) and Réunion (FR94): estimates. Portugal: provisional.

*Source:* Eurostat (online data codes: agr_r_accts, aact_eaa01, nama_r_e3vab95r2 and nama_gdp_c)

### *Agriculture accounted for less than 0.5 % of economic activity in many of the largely urban regions of Germany and the United Kingdom*

There were 43 regions in 2011 where agriculture accounted for less than 0.5 % of total value added; these included 13 capital regions. Among the other regions where agriculture accounted for a low share of total value added there were: 11 regions from Germany (principally located across the urban centres of Nordrhein-Westfallen, Baden-Württemberg and Bayern, as well as Bremen and Hamburg) and 10 regions from the United Kingdom (principally around the major conurbations of London, Birmingham, Manchester and West Yorkshire).

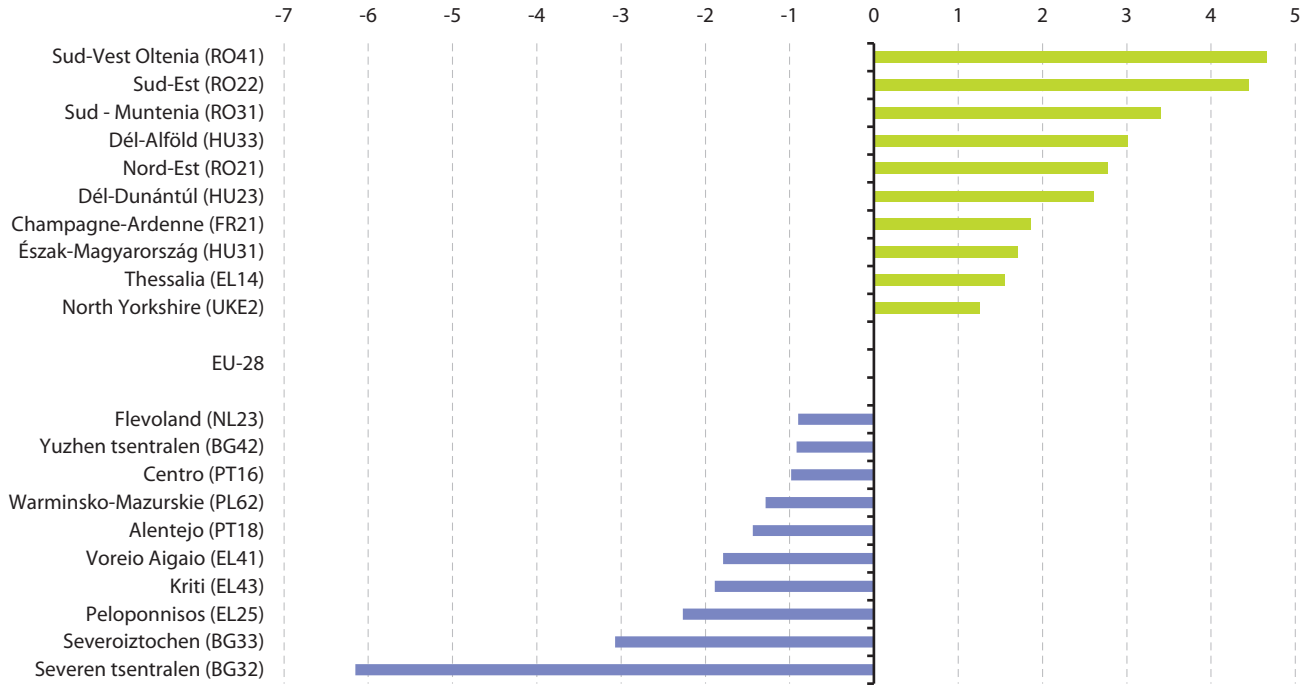
### *The relative weight of agriculture in total economic activity rose in several Romanian regions …*

The Sud-Vest Oltenia region of Romania saw its share of agriculture in total value added increase from 6.8 % in 2007 to 11.5 % by 2011, the largest percentage point rise among the 235 regions for which data are available (see **Figure 11.1**). Three other Romanian regions, Sud-Est, Sud – Muntenia and Nord-Est, also saw relatively large percentage point increases, despite already having shares of 6.4 % or higher in 2007. A similar pattern was observed in two of the three Hungarian regions shown in the figure, as the relative growth of the agricultural sector in Dél-Alföld and Dél-Dunántúl was also from a relatively high initial starting point.

### *… which could be contrasted with falling shares in Bulgaria, Greece and Portugal*

The list of regions where the relative weight of agriculture in the whole economy fell at its most rapid pace — in percentage point terms — was principally divided between Bulgaria, Greece and Portugal. The biggest contraction was recorded for the Bulgarian regions of Severen tsentralen and Severoiztochen. Most of the regions where the relative share of agriculture fell by a considerable amount were characterised by agriculture accounting for a relatively high share of the regional economy. For example, agriculture had accounted for 15.0 % of the regional economy in Severen tsentralen in 2006, before declining by 6.2 percentage points to 8.9 % in 2011.

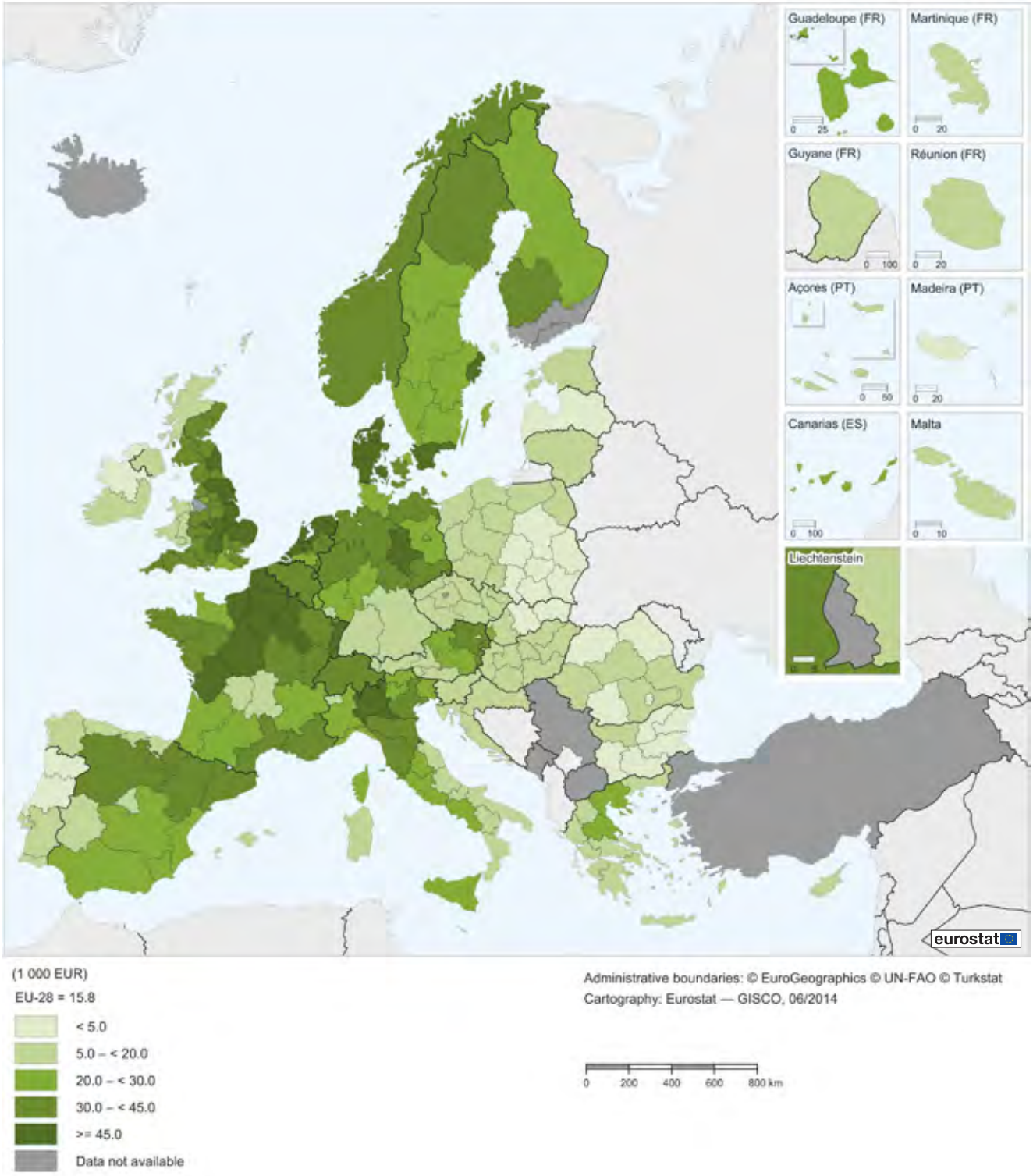
**Figure 11.1:** Top and bottom 10 EU-28 regions, change in the share of agriculture in the economy, gross value added at basic prices, by NUTS 2 regions, 2006–11 (1)
(percentage points difference between 2011 and 2006, based on % of total value added)




(1) There was no change in the share of agriculture in total value added between 2006 and 2011 in the EU-28. Denmark and Romania: 2007–11. Poland: 2006–09. Belgium and Slovenia: national level. Guadeloupe (FR91), Martinique (FR92), Guyane (FR93) and Réunion (FR94): estimates. Portugal: provisional. Praha (CZ01), Chemnitz (DED4), Leipzig (DED5), Spain, Helsinki-Uusimaa (FI1B), Etelä-Suomi (FI1C), Cheshire (UKD6) and Merseyside (UKD7): not available.

*Source:* Eurostat (online data codes: agr_r_accts, aact_eaa01, nama_r_e3vab95r2 and nama_gdp_c)

**Map 11.4:** Gross value added at basic prices in agriculture, per annual work unit, by NUTS 2 regions, 2011 ([1]) (1 000 EUR)




([1]) Labour force data for all regions: 2010. Poland: value added, 2009. Germany: by NUTS 1 regions. Belgium, Slovenia, Norway and Switzerland: national level.
*Source:* Eurostat (online data codes: agr_r_accts, aact_eaa01, ef_olfreg and aact_ali01)

## Agricultural labour productivity

Given there is little space to expand Europe's agricultural production area, the CAP seeks to encourage productivity growth through research and new technology, through funding that enables farms to modernise and become more efficient.

One measure that can be used to analyse productivity is the ratio of gross value added in agriculture per annual work unit (AWU). To take account of part-time and seasonal work, both of which are widespread in agriculture, the measure of labour input is presented in AWUs: one such unit corresponds to the input, measured in working time, of one person engaged in agricultural activities on a full-time basis over an entire year. The structure of production may influence the comparability of productivity figures: for example, the production of fruit and vegetables requires more labour than the production of arable crops, while capital costs are generally lower. Agricultural labour productivity can be influenced by factors such as average farm sizes, the level of mechanisation, and the share of production for on-farm consumption. As such, it is important to note that this measure of labour productivity is only a partial productivity indicator, as it does not take account of all production factors.

### *East–west divide in relation to agricultural productivity*

**Map 11.4** shows that agricultural gross value added per annual work unit in the EU-28 was estimated at EUR 15 800 in 2011. There was a stark contrast between regions in western and eastern parts of the EU in terms of their productivity ratios by NUTS 2 regions, with higher ratios in the west of Europe. The main exceptions to this pattern were the Centro and Norte regions of Portugal, as well as the Border, Midland and Western region of Ireland; each of these three regions recorded relatively low levels of labour productivity.

### *Highest labour productivity was recorded in the Netherlands and across those regions of France and the United Kingdom that specialised in arable farming*

There were 31 regions spread across the EU where gross value added per annual work unit was above EUR 45 000 in 2011 (as shown by the darkest shade in **Map 11.4**); note that the German regions are shown at the NUTS 1 level and that the data for Belgium, Slovenia, Norway and Switzerland are presented at a national level. The highest levels of productivity were recorded in the Dutch regions of Friesland, Zuid-Holland and Flevoland, the French region of Champagne-Ardenne, and the East Anglia region of the United Kingdom; each of these registered labour productivity ratios for the agricultural sector that were above EUR 70 000 per annual work unit.

By contrast, 25 regions within the EU recorded agricultural labour productivity of EUR 5 000 or less in 2011 (as shown by the lightest shade in **Map 11.4**). These regions were principally in south-east Poland (seven regions), Bulgaria (five regions), Romania (four regions), Portugal (three regions), Slovakia (two regions) and a single region from each of Ireland, Greece and Finland; Latvia also recorded a level of labour productivity below EUR 5 000 per AWU (although this Member State is covered by a single region at this level of detail).

# Animals and animal products

## Cows' milk production

The production of cows' milk on farms reflects, at least to some degree, the availability of large areas of grassland; these are often most prevalent in regions which have temperate weather, with a relatively high degree of rainfall. Although milk production takes place in every EU Member State, it was especially high (as measured by production per km²) in the Benelux countries, Denmark, Germany, Ireland, northern and western France, central Poland and the west of the United Kingdom. On the other hand, in those regions where grassland is rarer (for example, the far north of Europe or around the Mediterranean) cows' milk production tends to be relatively low. In Mediterranean regions with less favourable climatic conditions for grassland and relatively arid landscapes, cows' milk production may be substituted by milk produced from sheep (ewes) and/or goats.

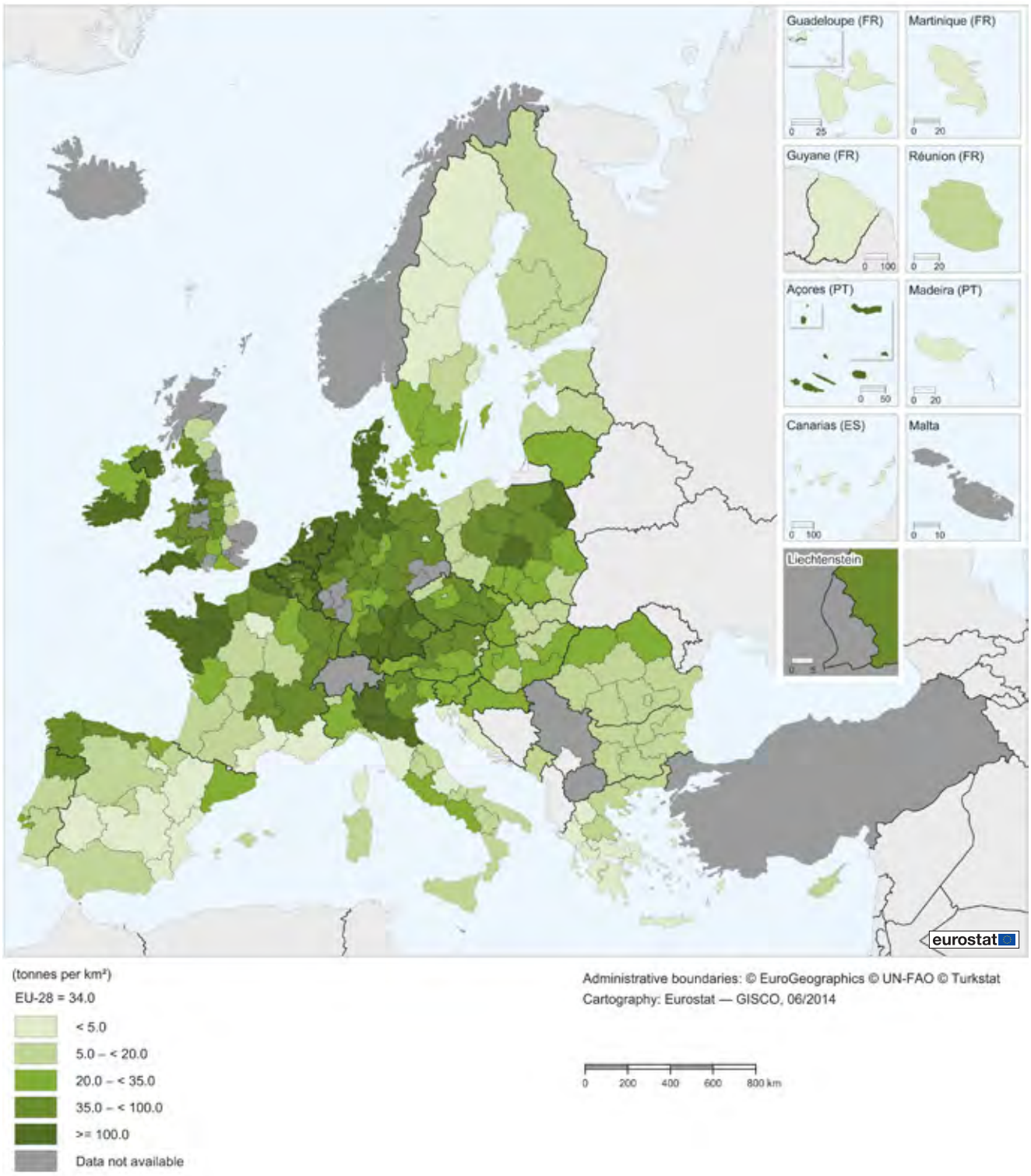
### *The Netherlands had the highest intensity of cows' milk production*

Cows' milk production in the EU-28 was estimated at 152.3 million tonnes in 2012. Regional statistics on the production of cows' milk on farms are presented at the NUTS 2 level in **Map 11.5**. There were 48 regions in the EU with the highest intensity of production (as shown by the darkest shade in the map). Five out of the top seven production regions, according to this intensity indicator, were in the Netherlands, while the other two were Łódzkie (in central Poland) and Cheshire (in the north-west of England). The map confirms a high concentration of dairy farming activities in the Netherlands.

## Pigs

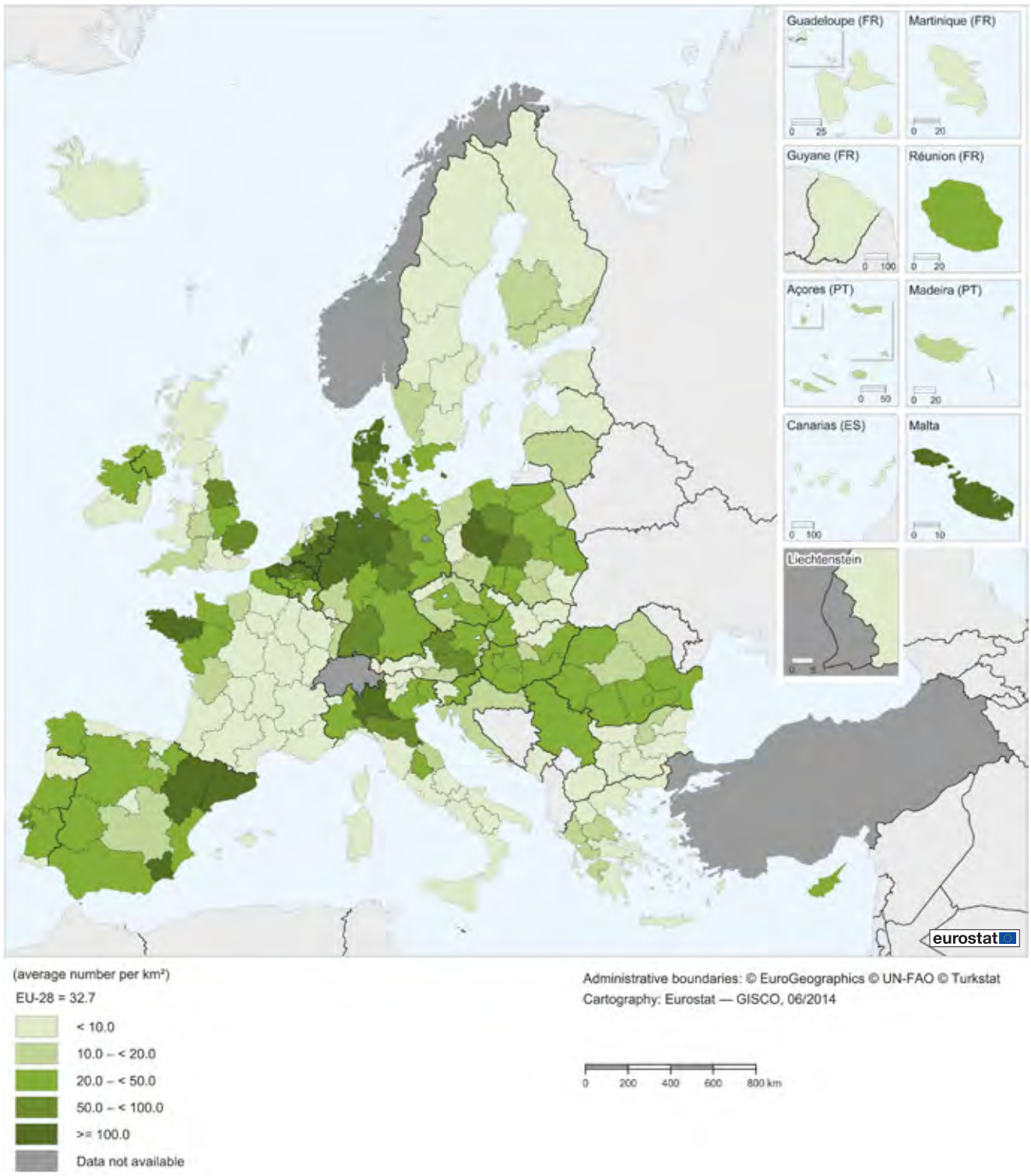
There were 147.0 million pigs in the EU-28 in December 2012. Regional data on livestock numbers provide information as to where the most concentrated regions for pig farming are located across the EU. The most important zone for pig production extends from Denmark through northern Germany and into the Netherlands and Belgium.

**Map 11.5:** Production of cows' milk on farms, by NUTS 2 regions, 2012 (1)
(tonnes per km²)




(1) EU-28: based on the latest available data for each Member State (excluding Malta). Croatia: share of total land area instead of share of total area.
*Source:* Eurostat (online data codes: agr_r_milkpr and demo_r_d3area)

**Map 11.6:** Pigs (live swine, domestic species) on farms, by NUTS 2 regions, 2013 (1)
(average number per km²)




(1) EU-28, Belgium, Greece, Croatia, Észak-Magyarország (HU31), Gelderland (NL22), Noord-Brabant (NL41), Niederösterreich (AT12), Steiermark (AT21), Oberösterreich (AT31), Sweden, the United Kingdom, Montenegro and the former Yugoslav Republic of Macedonia: 2012. Germany and the United Kingdom: by NUTS 1 regions. Croatia and Serbia: national level. Bulgaria, Estonia, Île de France (FR10), Nord - Pas-de-Calais (FR30), Latvia, Lithuania, Poland, Portugal, Romania, Slovenia and Serbia: provisional.

*Source:* Eurostat (online data codes: agr_r_animal and demo_r_d3area)

There were also other regional pockets where the density of pigs was relatively high: these included Cataluña, Aragón and Región de Murcia in Spain, Bretagne in north-west France, Lombardia in northern Italy, and Wielkopolskie in central Poland. There was also a high density of pigs in Malta (which is considered as a single region at this level of analysis).

### *Regional concentration of pig farming*

**Map 11.6** shows there were 21 regions across the EU-28 with the highest density of pigs (as shown by the darkest shade on the map). Pig farming was particularly concentrated — using this density measure — in the Danish capital region of Hovedstaden. Two other regions in Denmark, Midtjylland and Nordjylland, also had a high density of pigs, illustrating Denmark's position as one of the world's leading producers (and exporters) of pig meat. A particularly high concentration of pigs per km² could also be observed in the Dutch region of Noord-Brabant and the Belgian region of Prov. West-Vlaanderen.

The location of pig farming is, to some degree, reliant upon easy access to animal feed and, in particular, cereals. Some areas with a high concentration of pig farming are close to sea ports, which may be used to import feed. Otherwise, the distribution of pig farms across the EU can be linked to consumer preferences for different types of meat and to the complementary nature of different types of pig farming (breeders, fatteners, etc.). These are some of the varied factors which may explain why pig farming is particularly prevalent in the Benelux countries, northern Germany, Denmark and Poland.

By contrast, pig farming was relatively uncommon in the Nordic and Baltic Member States, the north of the United Kingdom, as well as much of the Czech Republic, Greece, France, Italy and Romania, and most capital regions.

## Agricultural products

### Cereals

Cereals are used primarily for human consumption and animal feed; they are also used to produce drinks and for industrial products (for example, starch). Cereals are the largest group of crops in the world and are also one of the most important outputs of the EU's agricultural sector.

In 2012, the EU-28 produced 284.8 million tonnes of cereals (including rice); this was a reduction of 3.4 % compared with the year before. **Map 11.7** shows harvested production of cereals across the EU regions, standardised by dividing production by the region's total area, to take account of the different size of regions and the availability of data at different levels of NUTS. It should be noted that this information is not equivalent to that for cereal yields, which are based on the weight of production divided by the cultivation area for a particular crop. Data for Germany and the United Kingdom are presented for NUTS 1 regions, while the information for Croatia, Norway and Switzerland is at a national level.

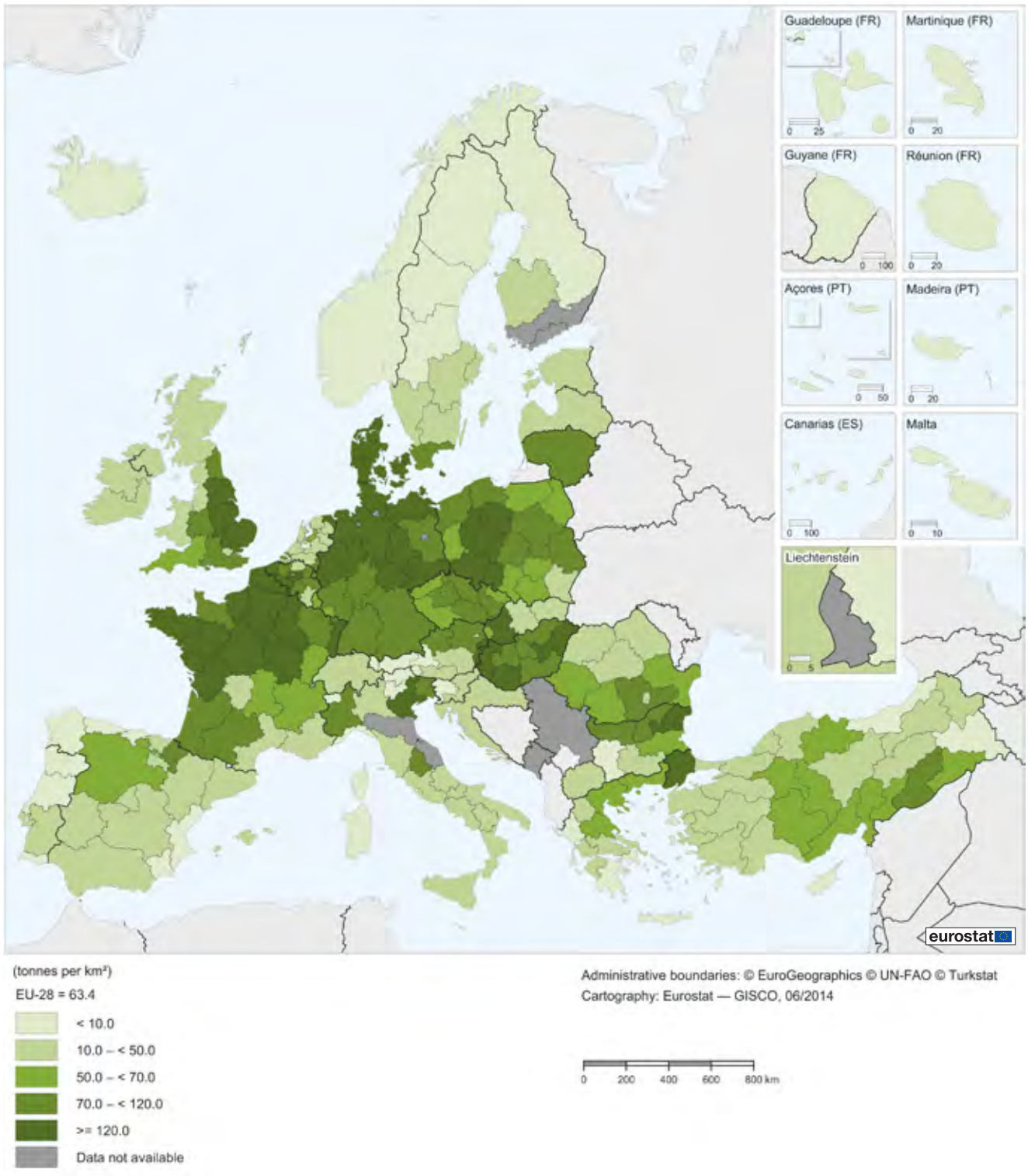
In 2012, an average of 63.4 tonnes of cereals was harvested per km² across the EU. Cereals production in Europe thrives in lowland regions that are characterised by large plains, with a temperate climate and relatively modest levels of rainfall. The most concentrated areas of cereals production included northern France, eastern England, Denmark, northern Germany, most of Hungary and south-west Poland — as shown by the darkest shade in **Map 11.7**. There were 42 regions across the EU which had a level of cereals production that was at least 120.0 tonnes per km².

### *Several regions across northern France and three Danish regions reported a high intensity of cereals production*

Cereals production (relative to a region's area) peaked in Sjælland (Denmark), with an average of 312.3 tonnes per km²; this was almost five times as high as the EU average. Two other regions in Denmark, Syddanmark and Midtjylland, also recorded relatively high level of cereals production (above 200.0 tonnes per km²). Aside from these three Danish regions, there were 11 other regions in the EU where harvested production of cereals was above 200.0 tonnes per km². Eight of these were in northern France, where relatively large grain farms plant large swathes of land with cereals. The French regions with the highest production per km² included Picardie, Alsace, the capital region of Île de France, and the Nord - Pas-de-Calais. The three remaining regions included the East of England (a NUTS 1 region), the Belgian region of the Prov. Brabant Wallon, and the southern Polish region of Opolskie.

By contrast, the lightest shade in **Map 11.7** shows those regions where the harvested production of cereals fell below 10.0 tonnes per km²; this was the case in 43 different regions across the EU. Many of these were coastal regions (including several overseas regions and autonomous cities and islands), while production levels were also relatively low in mountainous regions and the remote regions of the extreme north, including Iceland.

**Map 11.7:** Harvested production of cereals (including rice), by NUTS 2 regions, 2012 (1) (tonnes per km²)




(1) Germany and the United Kingdom: by NUTS 1 regions. Croatia, Norway and Switzerland: national level. Helsinki-Uusimaa (FI1B) and Etelä-Suomi (FI1C): information for these regions has been aggregated.

*Source:* Eurostat (online data codes: agr_r_crops, apro_cpp_crop and demo_r_d3area)

## Rape, turnip rape and sunflower seeds

Rape, turnip rape and sunflower seeds are harvested mainly for animal feed and for their oil which is used for food, feed, industrial purposes and as biofuel. **Map 11.8** provides a similar analysis to that for cereals, but instead the information presented is for the harvested production of rape, turnip rape and sunflower seeds. As for cereals production, the data presented have been related to the total area, which adjusts to some extent for the use of different NUTS levels.

Production of rape, turnip rape and sunflower seeds was concentrated in a relatively small number of regions, many of which also had a relatively high level of production for cereals. This is perhaps not surprising given that arable farming tends to thrive in those regions where the summers are warm and relatively dry and the land is low, flat and fertile.

In 2012, EU-28 harvested production of rape, turnip rape and sunflower seeds was 26.3 million tonnes, which was equivalent to 5.9 tonnes per km². There was a zone of rape, turnip rape and sunflower seed production running from the south-west of France, up into the south-east of the United Kingdom, across parts of Germany (note that the data published for Germany excludes sunflower seeds, but this has only a minor impact) and Poland, before descending through the Czech Republic and Hungary and finishing in Bulgaria.

SPOTLIGHT ON THE REGIONS: SEVEREN TSENTRALEN (BG32), BULGARIA

**A field of sunflowers, north-east Bulgaria**

Agriculture accounts for a relatively large share of total economic activity in most Bulgarian regions. The main crops grown in Bulgaria tend to be cereals, with the highest levels of production recorded for wheat, maize and sunflower seeds.

Agriculture accounted for 8.9 % of total economic activity in the Severen tsentralen region in 2011. The average farm size in this region was 18.6 hectares of utilised agricultural area, which was the highest value among the six NUTS 2 regions in Bulgaria. This could be linked, at least in part, to a relative specialisation in arable farming within this region.

*Photo: Svetoslav Nikolov*

### *Rape, turnip rape and sunflower seed production was concentrated in northern France and Germany, the east of the United Kingdom and the north-east of Bulgaria*

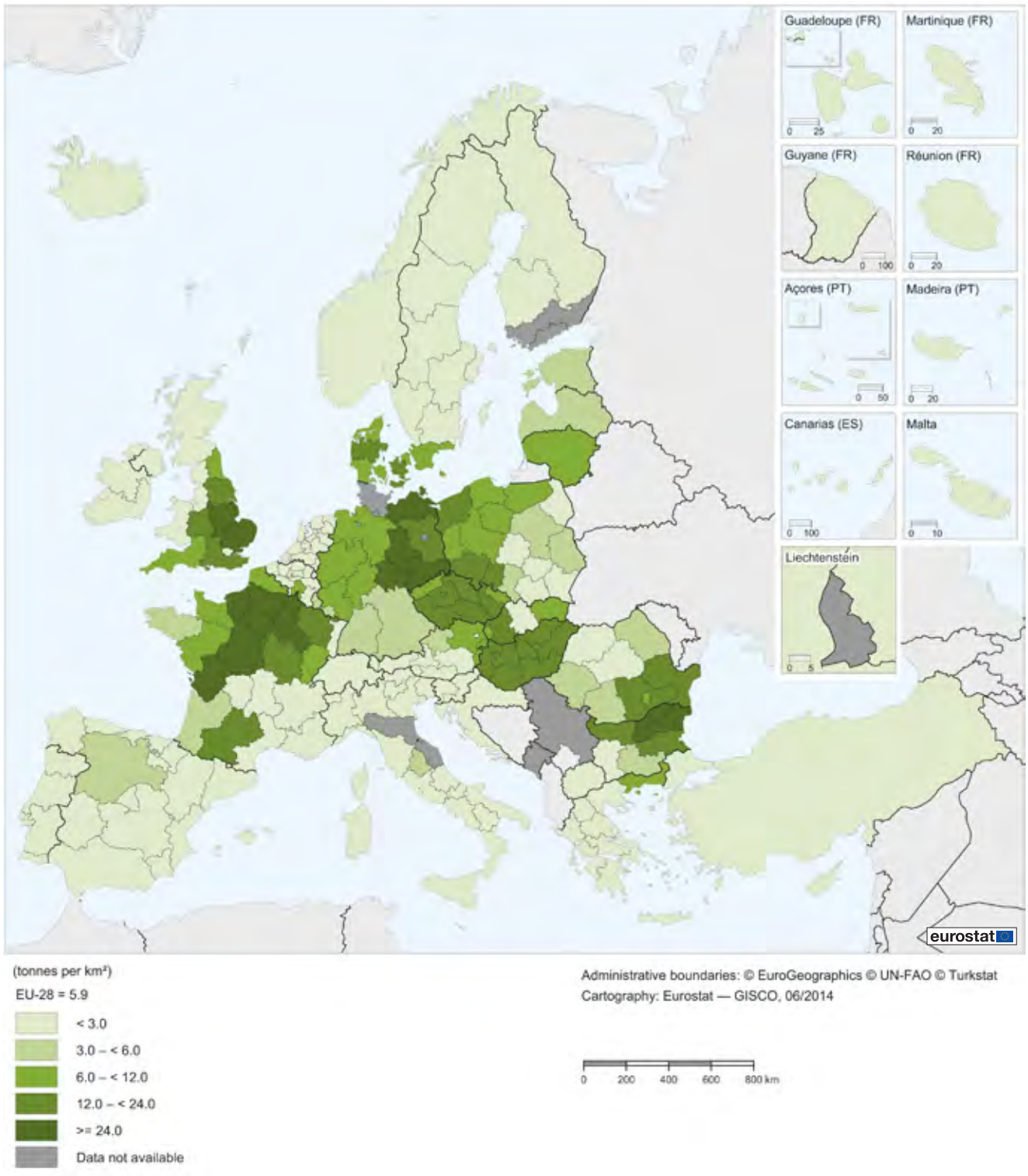
There were 14 regions in the EU where harvested production rose to at least 24.0 tonnes per km² — in other words, more than six times as high as the EU-28 average — these are shown as the darkest shade in **Map 11.8**. The highest level of production was recorded in the East Midlands region of the United Kingdom (38.9 tonnes per km²; note that the regions for the United Kingdom are presented at the NUTS 1 level), while the neighbouring region of the East of England was also present among the top 14 regions. However, the biggest concentrations of regions with high levels of oilseed production were in France (six regions in the top 14) and Germany (four regions in the top 14; data for Germany are also presented at the NUTS 1 level). The highest level of production in Germany was in Sachsen-Anhalt (which lies between Berlin, Leipzig and Hanover), at 34.8 tonnes per km², while that for France was recorded in the Centre (34.6 tonnes per km²). The two remaining regions that recorded harvested production of at least 24.0 tonnes per km² were in the north-east of Bulgaria, Severen tsentralen and Severoiztochen; both of these regions had a level of harvested production that was close to 29.0 tonnes per km².

The production of rape, turnip rape and sunflower seeds was very low in both northern and southern regions of Europe, with the vast majority of production running in a band between these two extremes. There were, however, exceptions in this central zone, as none of the regions in Belgium and the Netherlands reported any significant level of production. The production of rape, turnip rape and sunflower seeds was also non-existent in mountainous regions, for example, in the Alpine regions of western Austria. **Map 11.8** shows that almost 60 % of the regions within the EU (125 out of the 214 regions for which data are available) had a production level of less than 3.0 tonnes of rape, turnip rape and sunflower seeds per km². Of these, there were 59 regions where there was no significant production. They included both regions in Ireland, most of Greece, parts of Spain, the French overseas regions, most of Italy and the Netherlands, western Austria, most of Portugal and northern Sweden. There was also no significant production in Cyprus or Malta (both of these EU Member States are treated as a single region at this level of analysis), and this was also true for Iceland and Norway.

## Fruit and berry plantations

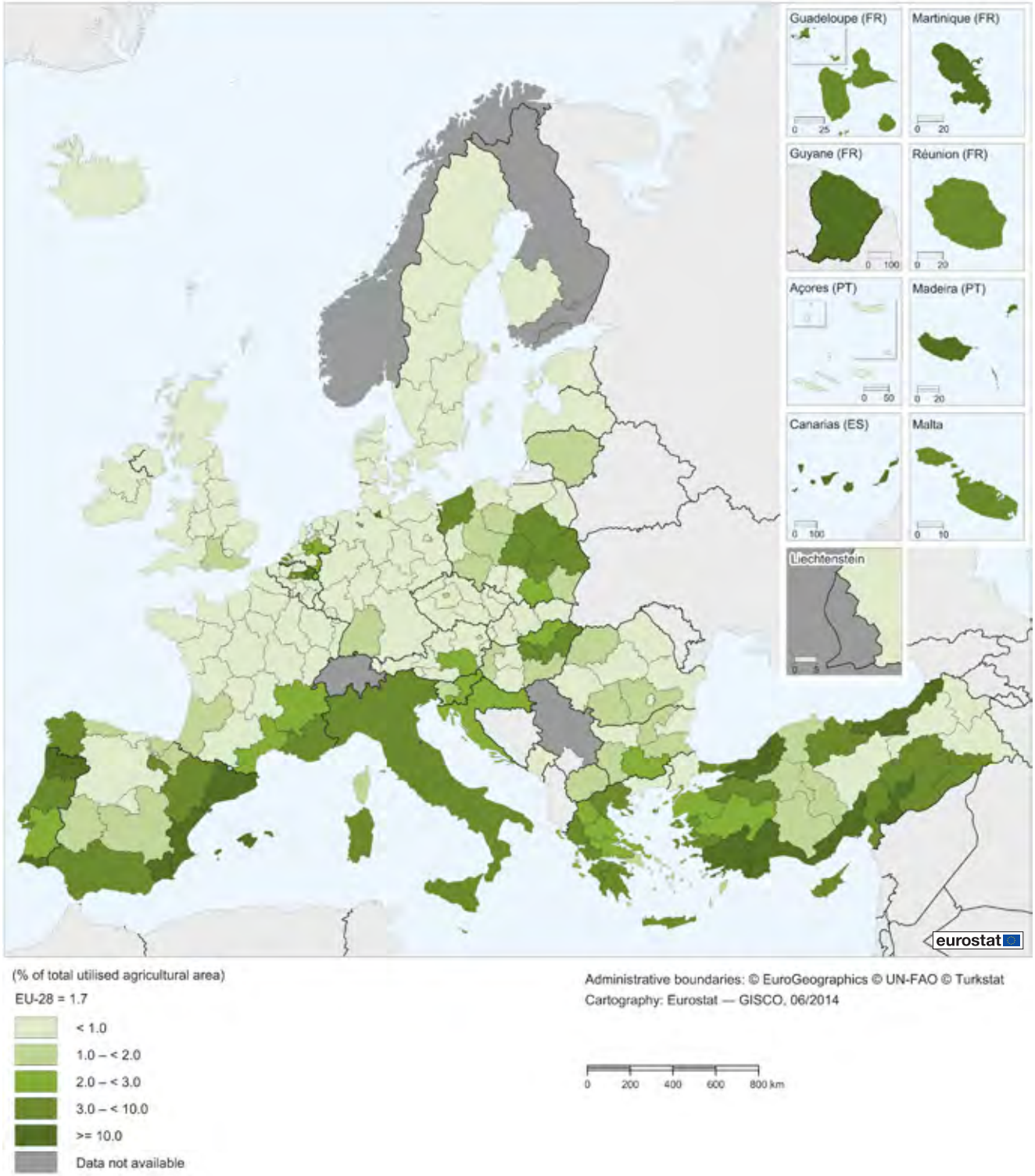
There is a wide variety of fruit grown across the EU: as with many agricultural products, the distribution of production areas for fruit and berry plantations is closely linked to climatic conditions. Europe is a net importer of fruit: it imports, for example, tropical fruits which do not grow in most European regions year-round, and various types of fruit from the southern hemisphere when they are out of season in the EU.

**Map 11.8:** Harvested production of rape, turnip rape and sunflower seeds, by NUTS 2 regions, 2012 (1) (tonnes per km²)




(1) Germany: excluding sunflower seeds. Germany and the United Kingdom: by NUTS 1 regions. Croatia, Norway, Switzerland and Turkey: national level.
*Source:* Eurostat (online data codes: agr_r_crops, apro_cpp_crop and demo_r_d3area)

**Map 11.9:** Production area for fruit and berry plantations, by NUTS 2 regions, 2012 (1)
(% of total utilised agricultural area)




(1) The United Kingdom and Iceland: 2011. Italy: 2010. Germany and the United Kingdom: by NUTS 1 regions. Croatia and Italy: national level. Italy: estimate based on subtracting the production area for olives and for vineyards from the total for all permanent crops. Turkey: methodological differences may apply. EU-28: estimate.

*Source:* Eurostat (online data codes: agr_r_landuse and ef_pofruit)

Fruit plantations cover, among others, trees bearing the following fruits: apples, oranges, other citrus varieties, pears, plums, peaches and nectarines, apricots, cherries and nuts. Berry plantations cover, among others: blueberries, currants (red and black), raspberries, blackberries and gooseberries; note that strawberries are excluded from these statistics, as are grapes and olives.

### *Almost one third of the EU's fruit and berry plantations were located in Spain*

The total area covered by fruit and berry plantations in the EU-28 was an estimated 3.11 million hectares in 2012. More than one third (37.9 %) of the total area of fruit and berry plantations was located in Spain, while Italy (13.6 %, 2010 data from the farm structure survey (FSS) note that these figures are likely to under-report the area of fruit and berry plantations in Italy for methodological reasons) and Poland (11.7 %) were the only other EU Member States to record double-digit shares.

The regional distribution of fruit and berry plantations across the EU was highly concentrated in southern and eastern regions. The main areas for production were located in southern and eastern Spain along the Mediterranean coast, running from west to east they were: Andalucía, the Región de Murcia, the Comunidad Valenciana and Cataluña. The biggest production area, by far, was the Comunidad Valenciana (320 607 hectares in 2012), followed by Andalucía (284 224 hectares). Production areas in the other regions were much smaller: the Región de Murcia and Cataluña, together with another Spanish region, Aragón, and the Polish capital region of Mazowieckie were the only other regions across the EU to report a production area of at least 100 000 hectares of fruit and berry plantations (each of these four regions had a production area within the range of 105 000–139 000 hectares in 2012). Note that there is no regional information available for Italy, but that in 2010 the total area of fruit and berry plantations was 424 300 hectares.

While the Spanish regions were particularly specialised in the production of citrus fruits and early seasonal products, the Polish region of Mazowieckie mainly produced apples (as did several other Polish regions). The production areas used for berry plantations were generally much smaller than those for apples or oranges, with some of the largest production areas for blueberries, currants (red and black), raspberries and gooseberries located across Poland and Germany; there was also a relatively large area of blackberry production in Hungary.

The information shown in **Map 11.9** refers to the production area for fruit and berry plantations in 2012 and is presented in relation to the total utilised agricultural area. As such, the map shows the extent to which fruit and berry plantations cover the total agricultural area. The darkest shade shows the 12 regions in the EU where the production area for fruit and berry plantations accounted for at least one tenth of the total utilised agricultural area in 2012. Note that the data for Germany and the United Kingdom are shown at the NUTS 1 level, while those for Croatia and Italy are at the national level.

### *Fruit and berry plantations accounted for almost half of the utilised agricultural area in the Comunidad Valenciana*

The Comunidad Valenciana was the region where fruit and berry plantations accounted for the highest share of utilised agricultural area in 2012 (45.9 %). There were five other regions where the production area for fruit and berry plantations accounted for more than one fifth of the area used for farming: two of these were Spanish regions (the Región de Murcia and the Canarias), two were Portuguese (the Algarve and the Região Autónoma da Madeira) and one was a French overseas region (Martinique). It should be noted that the information presented does not necessarily indicate that these regions are large fruit and berry producers as, for example, the total agricultural area on the islands mentioned above was relatively small.

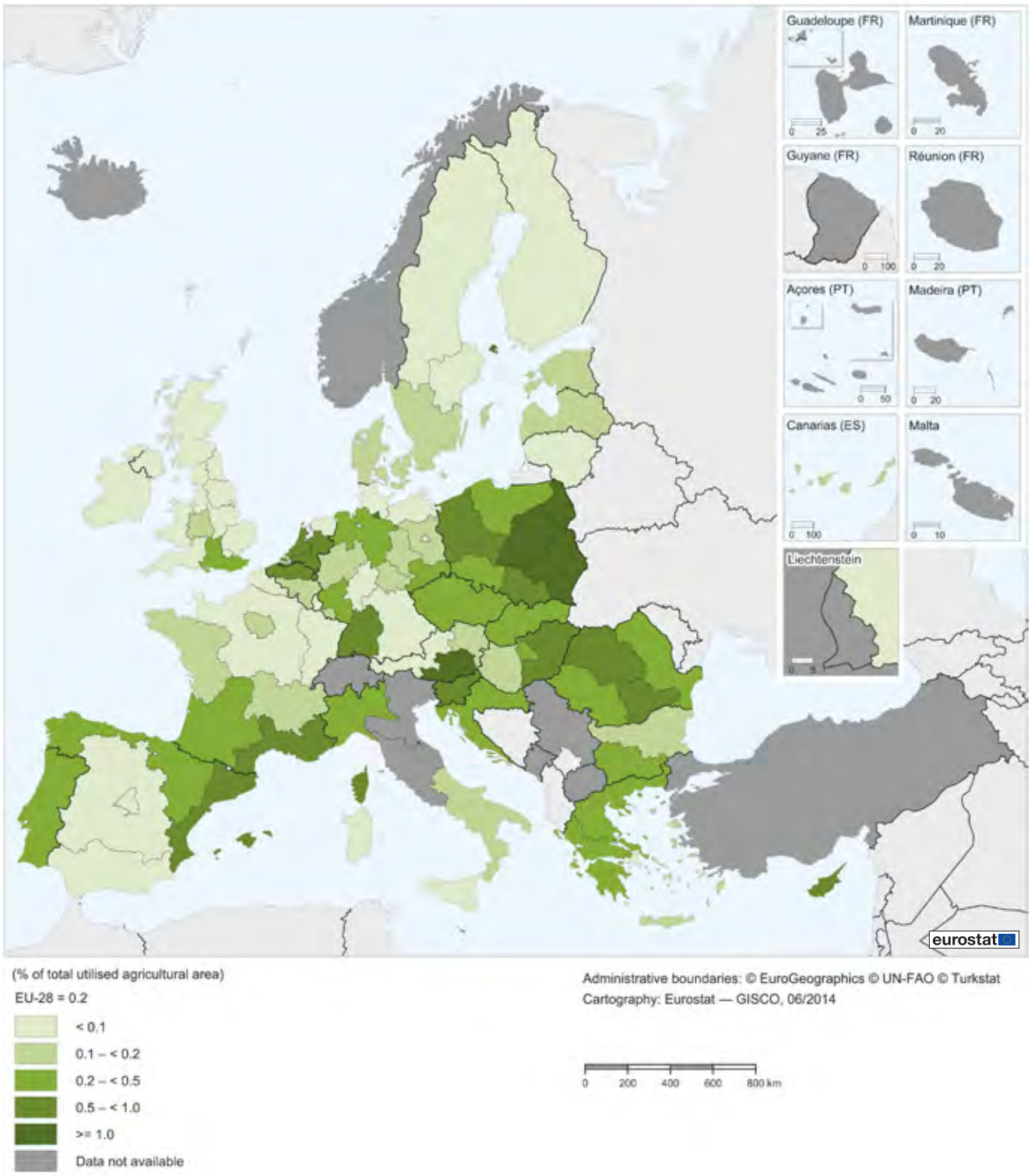
## Apple orchards

Across the EU-28, there were an estimated 439 511 hectares covered by dessert apples in 2012. Poland was the leading producer of dessert apples in the EU, and accounted for almost one third (32.6 %) of the total area devoted to their production in the EU. Italy (11.9 %) and Romania (11.7 %) were the only other EU Member States to account for more than one tenth of the total production area.

### *Region Centralny (Poland) was Europe's leading region for the production of dessert apples*

In absolute terms, the largest production area (at the NUTS 1 level) for dessert apples was in the Polish region of Region Centralny (78 132 hectares or nearly one fifth of the EU-28 total). The next largest areas were the Nord-Est region of Italy (39 830 hectares) and another Polish region, namely, the Region Wschodni (34 772 hectares). **Map 11.10** presents the production area for dessert apples in relation to the total utilised agricultural area. It confirms that the Polish regions of the Region Centralny and the Region Wschodni were highly specialised in the production of dessert apples, as both of these regions were among a group of five that reported that at least 1.0 % of their utilised agricultural area was given over to the production of these fruit. The highest proportion (7.6 %) was recorded in the German region of Hamburg: however, the production area for dessert apples in the Region Centralny was around 70 times higher than that for Hamburg. The two other regions where the production area for dessert apples accounted for at least 1.0 % of the total land area for farming were Südösterreich (Austria) and Åland (Finland). The production area for dessert apples in Südösterreich was relatively large (6 225 hectares), while that in Åland was even smaller than in Hamburg, at just 270 hectares.

**Map 11.10:** Production area for dessert apples, by NUTS 1 regions, 2012 (1)
(% of total utilised agricultural area)




(1) EU-28: includes data for Estonia for 2007 and excludes Malta. Estonia: 2007.
*Source:* Eurostat (online data codes: orch_apples1 and agr_r_landuse)

# Data sources and availability

For variables such as livestock numbers and the harvested production of cereals, Eurostat traditionally relies on additive variables showing absolute values. For illustration purposes in this publication, some indicators have been normalised, dividing the regional values by the region's area (in km²) or its utilised agricultural area. For animals and animal products this method was used for **Map 11.5** concerning the production of cows' milk (in tonnes per km²) and for **Map 11.6** which shows the number of pigs (in heads per km²). For crop production the resulting indicators (see **Map 11.7** and **Map 11.8**) should not be confused with crop yields, which are based not on the region's total area but the harvested area used for each crop. The information presented in **Map 11.9** and **Map 11.10** pertains to the production area for fruit and berries and for apples, which is shown in relation to the total utilised agricultural area. This normalisation by surface size only shows rough spatial distributions across the regions of Europe. For further analyses, it is recommended to make use of the indicators available on Eurostat's website.

## Farm structure survey

The farm structure survey (FSS) is a major source of agricultural statistics. A comprehensive survey is carried out by EU Member States every 10 years and is referred to as the agricultural census. This is complemented by intermediate sample surveys which are carried out three times between each census.

Under the guidance of the Food and Agriculture Organisation (FAO) the ninth round of the world agricultural census took place in 2010. Eurostat has followed the FAO's recommendation on the worldwide decennial agricultural census since the 1970 round. The census collects information about all agricultural holdings in order to present an updated picture of the structure of agricultural activities, from an economic, social and environmental point of view. The information covers: land use; livestock numbers; rural development (for example, activities other than agriculture); irrigable and irrigated areas; farm management and farm labour input.

A new legal basis was developed for the FSS in relation to the 2010 data collection exercise, namely a regulation of the European Parliament and of the Council on farm structure surveys and the survey on agricultural production methods ((EC) No 1166/2008).

The basic statistical unit underlying the FSS is the agricultural holding. Until 2007 the FSS covered all agricultural holdings with a utilised agricultural area (UAA) of at least one hectare and those holdings with a UAA of less than one hectare if their market production exceeded certain thresholds. For the FSS in 2010, the minimum threshold for agricultural holdings changed from one hectare of UAA to five hectares of UAA. This threshold of five hectares was adopted in the Czech Republic (moving from one hectare in 2007 to five hectares in 2010), Germany (from two hectares to five hectares), Sweden (from two hectares of arable land to two hectares of arable land or five hectares of UAA) and the United Kingdom (from active farms to five hectares), while the threshold in Denmark remained unchanged when compared with 2007 at five hectares. The threshold in Luxembourg was changed from one hectare to three hectares, that in Poland from 0.1 hectares to one hectare, and that in Slovakia from 0.5 hectares to one hectare. More information in relation to changes in the thresholds employed for the FSS may be found on Statistics Explained.

Common land (shared area mainly for grazing) is excluded from the FSS data in Greece and the United Kingdom. This has an impact on the data in the sense that the UAA per holding does not take common land into account. As such, derived indicators which use the UAA as a denominator may be overestimated. More background information in relation to common land may be found on Statistics Explained.

FSS data are used to collect information on agricultural holdings at different geographic levels and over different periods; they provide a basis for decision-making in the common agricultural policy (CAP). Although not shown in this chapter, sub-national FSS data are available at a more disaggregated level, namely for NUTS 3 regions and for districts.

## Economic accounts for agriculture

Economic accounts for agriculture (EAA) provide data at a regional level for the value of output, intermediate consumption and income. The EAA are a satellite account of the European System of Accounts (ESA95).

Eurostat has been collecting, processing and publishing data on the EAA in the form of a regional analysis for more than 15 years. The legal basis for EAA is a regulation on economic accounts for agriculture in the Community (EC) No 138/2004, which has been subsequently amended on five separate occasions, the last of which was Regulation (EU) No 1350/2013 in December 2013.

The purpose of EAA is to analyse the production process of the agricultural industry and the primary income generated by this production. Information pertaining to the agricultural industry in the EAA corresponds to NACE Rev. 2 Division 01: crop and animal production, hunting and related service activities.

Regional agricultural accounts for output items are often used as building blocks for results at the national level, while regional data for intermediate consumption (direct input of goods and services in production) are often compiled by analysis of national figures using other information (a top-down approach). Regional EAA may, therefore, be less accurate than data presented at the national level. The compilation of regional accounts generally takes place at the NUTS 2 level. Data are only collected in current prices, and there is no regional analysis for labour input data or unit values.

## Livestock

### Milk statistics

Animal production statistics are based on legislation and related gentlemen's agreements. Milk and milk product statistics are collected under Decision 97/80/EC implementing Directive 96/16/EC on statistical surveys of milk and milk products. Regional milk statistics are compiled for NUTS 1 and NUTS 2 regions.

The data presented in this chapter cover the farm production of milk from cows. A distinction is made between milk collected by dairies and milk production on the farm: milk collection is only a part of the total use of milk production on the farm, the remainder generally includes own consumption, direct sale and cattle feed. Eurostat also collects milk and milk product statistics relating to milk from sheep, goats and buffaloes, the utilisation of milk (products obtained), as well as the collection and production activities of dairies.

### Statistics on pigs

The purpose of Regulation (EC) No 1165/2008 concerning livestock and meat statistics is to establish a common legal framework for the systematic production of Community statistics on livestock and meat production in the EU Member States, in particular: statistics on the numbers of animals, slaughtering statistics in relation to the production of various types of meat, and production forecasts for these meat markets.

Pigs are defined as domestic animals of the species Sus scrofa domestica. The information shown in this chapter concentrates on livestock numbers, namely the number of pigs on farms. Eurostat collects data that allow a more profound analysis of these totals, as the information may be analysed, among others, for piglets, by weight, for fattening pigs, breeding pigs, boars and sows. The minimal coverage for livestock surveys is of at least 95 % of the national population with reference to the last survey on the structure of agricultural holdings (FSS).

Regional pig livestock statistics are produced in November/December of each year. They are available for NUTS 1 and NUTS 2 regions, although Germany and the United Kingdom have an exception to provide regional data at the NUTS 1 level.

## Agricultural products

The legal basis for the collection of crop statistics is provided by Regulation (EC) No 543/2009; it refers to cereals, other field crops, fruits and vegetables and land use statistics. Since 2010, this legal basis has provided annual statistics for a wide range of crops; prior to this date some statistics, for example those relating to fresh fruit and vegetables, were collected on the basis of informal agreements.

Agricultural production of crops is synonymous with harvested production and includes marketed quantities, as well as quantities consumed directly on the farm, losses and waste on the holding, as well as losses during transport, storage and packaging. Crop statistics refer to the following types of annual data: area, production harvested, yield and agricultural land use. The statistics provide, for a given product, the area, the yield and the production harvested during the crop year. For some products regional figures (NUTS 1 or NUTS 2) are also available.

The main cereals harvested within the EU include wheat, barley, grain maize, rye and maslin; in this chapter the production of cereals also includes rice. The data are obtained from sample surveys supplemented by estimates based on expert observations and administrative data.

## Orchards

Eurostat collects data in relation to orchards through surveys conducted in the EU Member States relating to the production areas under certain species of fruit trees (for example, trees bearing apples, pears, peaches, apricots, oranges, lemons, and other citrus fruits).

Commission Decision (EC) No 38/2002 provides information in relation to survey parameters for the data to be collected when surveying plantations of certain species of fruit trees. It provides information in relation to the production areas to be surveyed, as well as the statistical classes to be used for the age of the trees planted, species and varieties, net area planted, number of trees and the density of plantations. These surveys are carried out every five years, with the aim of determining the production potential by species. The information presented for dessert apples is only available for NUTS 1 regions.

# Focus on the environment 12

# Introduction

This chapter presents a selection of Eurostat's regional environment statistics, focusing on water and municipal waste statistics.

Water is a limited resource that is essential for life and economic activities. In many areas the European Union's (EU's) water policy has contributed to significant improvements in water quality over the past 30 years, whether relating to coastal waters, rivers and lakes or to the safety of tap water.

Concerning waste management, the EU's approach is based on three principles: waste prevention, recycling and reuse; final disposal and monitoring should be improved as well.

Human well-being — especially for future generations — is linked to the sustainable use of natural resources and the maintenance of ecosystems. Sustainable development strategies are based on ensuring that economic growth and a better quality of life go hand in hand with environmental protection.

In recent decades the EU has put in place a broad range of environmental legislation, which has contributed to various forms of air, water and soil pollution being significantly reduced. At the same time, the EU seeks to protect natural habitats, with almost one fifth of the EU's territory designated as protected areas for nature.

## Seventh Environment Action Programme

Environment action programmes have guided the development of EU environment policy since the early 1970s: this has helped raise awareness of environmental issues and resulted in significant achievements being made during the last 40 years across a wide range of environmental areas.

The seventh Environment Action Programme (7th EAP) to 2020 — 'Living well, within the limits of our planet' (Decision No 1386/2013/EU) was adopted by the Council and European Parliament on 20 November 2013; it provides a vision for EU environment policy through to 2020 and beyond. It aims to: encourage more resource-efficiency; accelerate the transition to a low-carbon economy; stimulate sustainable growth; and create 'green jobs' — all of which are designed to ensure that the EU becomes a better and healthier place to live.

The 7th EAP has nine priority objectives. The first three of these are thematic in nature: protect nature and strengthen ecological resilience; boost sustainable resource-efficient low-carbon growth; effectively address environment-related threats to health. The following four objectives focus on the tools for enabling the programme: promote better implementation of EU environment law; ensure that policies benefit from cutting-edge science; secure the necessary investments in support of environment and climate change policy; improve the way environmental concerns and requirements are reflected in other policies. The final two objectives concern the spatial dimension: enhance the sustainability of the EU's cities; improve the effectiveness of the EU in addressing regional and global challenges.

### THE WATER FRAMEWORK DIRECTIVE AND A BLUEPRINT TO SAFEGUARD EUROPEAN WATER RESOURCES

Introduced in 2000, the Water Framework Directive (2000/60/EC) takes an integrated approach to water policy developed around protecting ecosystems from pollution, over-abstraction and structural changes. It is based on the premise that the best model for water management is a system that focuses on the management of river basins — a natural geographical and hydrological unit. EU Member States are encouraged to identify their river basins and to propose management plans for protecting all of their water bodies (including surface waters and groundwater). An important step in the implementation of this legislation involved the European Commission adopting an assessment of the implementation of the river basin management plans (COM(2012) 670 final).

A blueprint to safeguard European water resources (COM(2012) 673 final) was adopted in November 2012. It provides a strategy to reinforce water management in the EU, integrating the results of a review of the EU's water policy framework and a policy review concerning: the implementation of river basin management programmes; issues related to water scarcity and droughts; a review of the vulnerability of environmental resources to climate change impacts and man-made pressures. It aims to ensure that good quality water is available across Europe in sufficient quantities for all legitimate uses. It focuses on changes required to the EU's water policy framework up to 2020, and is closely related to the Europe 2020 strategy.

***For more information:***

Water Framework Directive: http://ec.europa.eu/environment/water/water-framework/index_en.html
A blueprint to safeguard European water resources: http://ec.europa.eu/environment/water/blueprint/index_en.htm

### A RESOURCE-EFFICIENT EUROPE — A FLAGSHIP EUROPE 2020 INITIATIVE

In 2011, the European Commission adopted a communication launching a flagship initiative titled 'A resource-efficient Europe' (COM(2011) 21); this supports the shift towards a resource-efficient, low-carbon economy as a means for achieving sustainable growth.

Natural resources underpin economic developments and the quality of life enjoyed across Europe. If current consumption patterns continue, then many resources will become depleted or exhausted. As such, increasing resource efficiency is seen as a key initiative for maintaining resources, securing growth and jobs through new economic opportunities that have the potential to lead to productivity gains, lower costs and increased competitiveness.

The flagship initiative for a resource-efficient Europe provides a long-term framework for actions in many policy areas, supporting policy agendas for climate change, energy, transport, industry, raw materials, agriculture, fisheries, biodiversity and regional development.

***For more information:***

A resource-efficient Europe — a Europe 2020 initiative: http://ec.europa.eu/resource-efficient-europe/index_en.htm

## Europe 2020

The EU is seeking to change its patterns of both consumption and production. Indeed, sustainable growth is one of the three main pillars of the Europe 2020 growth strategy to become a 'smart, sustainable and inclusive economy'. The creation of a sustainable economy is focused on moving towards a low-carbon economy, and one of the five key headline targets for Europe 2020 covers climate change and energy sustainability, where the EU seeks: to lower its greenhouse gas emissions by 20 % (or even 30 % if the conditions are right) compared with 1990; to generate 20 % of its energy from renewable sources; and to increase energy efficiency by 20 %.

The environment may have the potential to be a major source of economic growth, by encouraging innovative clean technologies, fostering efficient energy use, building up eco-tourism, or enhancing the attractiveness of natural areas by protecting habitats and biodiversity. In January 2011, the European Commission set out a role for regional policy in contributing to the implementation of the Europe 2020 strategy (COM(2011) 17 final), in particular the flagship initiative of a 'Resource-efficient Europe' (see box for more details). The proposals sought to encourage greater focus for investments in a resource-efficient and low-carbon economy, while improving policy delivery mechanisms. To contribute to the sustainable growth objectives and targets of Europe 2020, three priorities were identified: a low-carbon economy, ecosystem services and biodiversity, and eco-innovation.

In May 2012, the European Commission proposed a European innovation partnership (EIP) on water; this was endorsed by the Council the following month. The objective of the EIP on water is to support and facilitate the development of innovative solutions to deal with the many water-related challenges, as well as to support economic growth by bringing such solutions to the market.

ENVIRONMENT — COHESION POLICY FUNDING

The EU promotes sustainable development whereby economic, social and environmental objectives are integrated. It requires EU Member States to carry out environmental impact assessments when they seek financial support from cohesion policy programmes in areas such as environmentally-friendly technologies, sustainable transport, energy and infrastructure initiatives, as well as measures targeted at the protection of water, air, biodiversity and nature protection. As such, cohesion policy can play an important role in supporting efforts to adapt to future climate change and minimise its negative impacts at a regional level, supporting both adaptation measures for new infrastructure or retro-fitting existing infrastructure.

During the period 2007–13 the EU allocated a total of EUR 104.4 billion to environment-related projects, equivalent to 30.3 % of its total cohesion budget; the majority of this funding was provided under the convergence objective. Almost half of this total was allocated to direct investments (14.5 %), for example, those related to the management of household and industrial waste, the management and distribution of drinking water, (waste) water treatment, air quality, pollution controls, the rehabilitation of industrial sites or the promotion of biodiversity. The other half was provided for indirect investments which have a considerable environmental impact (for example, transport or energy-related projects). Clean transport initiatives — covering all modes of transport — accounted for 8.8 % of the total cohesion policy budget during 2007–13, while other indirect investments accounted for 7.0 % of the total; this latter heading includes assistance to SMEs, renewable energy initiatives and energy efficiency, co-generation and energy management initiatives.

***For more information:***

Cohesion policy and the environment: http://ec.europa.eu/regional_policy/activity/environment/index_en.cfm

# Main statistical findings

## Water

Water resources in the EU, in the form of rivers and lakes (including reservoirs) on the one hand, and groundwater on the other, are used for many essential purposes such as public water supply (hygiene, cleaning, nutrition etc.), cooling in energy production, transportation (inland waterways), and irrigation (watering crops). Water is also the basic constituent of aquatic ecosystems which filter and dilute pollution, contribute to preventing floods, maintain the microclimatic balance and safeguard biodiversity.

The health of Europe's water bodies (any discrete and significant element of water, such as rivers, lakes, seas, wetlands, reservoirs and groundwater) is influenced by the characteristics of each catchment area: for example, climatic conditions, bedrock geology and soil types influence the flow, chemistry and biology of water. Human activities also affect water bodies: while, for example, afforestation helps to protect water resources, urbanisation or the discharge of wastewater are typical anthropogenic pressures.

According to the European Environment Agency (EEA), there have been significant advances over the last 20 years in the treatment of sewage and industrial wastes that are pumped into the EU's river systems. This has led to lower levels of pollutants and a measurable improvement in the quality of the EU's waterways. Nevertheless, nitrate levels remain high: this is mainly caused by intensive farming activities entailing a discharge of surplus fertiliser into water bodies.

### River basin districts

A river basin district is defined in the EU's Water Framework Directive (2000/60/EC) as an 'area of land and sea, made up of one or more neighbouring river basins together with their associated groundwater and coastal waters …'; in other words, '… it is the area of land from which all surface run-off flows through a sequence of streams, rivers (and possibly lakes) into the sea'.

There are 128 river basin districts designated in the EU, of which 49 are international. Water management by river basin district is one of the core aspects of the EU's water policy, based on an all-inclusive catchment area approach from source to sea (including both surface waters and groundwater), rather than on administrative boundaries. **Map 12.1** shows the principal river basin districts in the EU: it also provides a division between international and national river basins (note that **Maps 12.1–12.3** in this chapter do not use the NUTS classification).

#### *Danube, Vistula and Rhine river basins drain just over a quarter of the EU's territory*

Although there are numerous river catchment areas in Europe, they are small (by global standards). The three largest EU river basins are the Danube (817 000 km²), the Vistula (194 000 km²) and the Rhine (170 000 km²), which together drain over one quarter of the EU-28's territory. The Danube is 2 860 km long and the largest river to discharge into the Black Sea: it flows through Germany, Austria, Slovakia, Hungary, Croatia, Serbia, Bulgaria and Romania. Its drainage basin also covers parts of Switzerland, Italy,

the Czech Republic, Poland, Slovenia, Ukraine, Moldova, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Montenegro and Albania. The Vistula is 1 047 km long and one of the main rivers discharging into the Baltic Sea (others include the Oder and the Nemunas); it flows exclusively within Poland, although its drainage basin also covers parts of Belarus, Ukraine and Slovakia. The Rhine is 1 233 km long and flows through Switzerland, Liechtenstein, Austria, Germany, France and the Netherlands to run into the North Sea (along with the Elbe, the Loire and the Douro it is one of the largest river basin districts flowing into the Atlantic and North Sea); its drainage basin also covers parts of Italy, Luxembourg and Belgium. The main river basin districts that flow into the Mediterranean include the Rhône, the Ebro and the Po.

Each river basin district can be divided into smaller, national subunits. For example, as the Rhine passes through Germany, nine separate subunits are defined — in other words, smaller catchment areas that form part of or ultimately flow into the Rhine, namely: Lake Constance/Alpine Rhine, Hochrhein, Oberrhein, Neckar, Main, Moselle-Saar, Middle Rhine, Lower Rhine and the Rhine delta.

## Water abstraction by river basin districts

Water abstraction is the removal of water, permanently or temporarily, from rivers, lakes, canals, reservoirs or from underground strata. Water resources need to be managed carefully to ensure that people have access to affordable and safe drinking water and sanitation, while at the same time safeguarding that abstraction levels are environmentally sustainable. For example, the rapid expansion in groundwater abstraction across parts of Europe during the last 40 years in regions where surface water resources are insufficient has the potential to lead to a lowering of the water table, or a loss of wetland habitats. As such, water authorities across the EU seek to control how much water is abstracted, where and when (seasonal fluctuations). While water abstraction can be a major pressure on water resources, a large part of the water used to supply domestic, industrial or agricultural uses is returned to water bodies (although sometimes as wastewater with impaired quality).

The overall abstraction and use of water resources can be considered to be sustainable in the long-term in most of Europe. However, specific regions may face problems associated with water scarcity; this is especially the case in parts of southern Europe, where it is likely that efficiency gains, for example in relation to agricultural water use, will need to be achieved in order to prevent seasonal water shortages. Regions associated with low rainfall, high population density, or intensive industrial activity may also face sustainability issues in the coming years.

SPOTLIGHT ON THE REGIONS: KÖZÉP-MAGYARORSZÁG (HU10), HUNGARY

**Hungarian parliament and the Danube, Budapest**

The Danube flows through the heart of the Hungarian capital of Budapest. It is the longest river in the EU and has, by far, the largest river basin catchment area. Other capital cities along the Danube include Vienna, Bratislava and Belgrade. The volume of surface water abstracted for public water supply from the Hungarian Danube river basin district was 222.2 million $m^3$ in 2011.

*Photo: Ludovic Lepeltier*

Approximately one fifth of the total freshwater abstracted in Europe supplies public water systems — water that is directed to households, small businesses, hotels, offices, hospitals, schools and some industries. There are considerable differences in the volumes of water that are abstracted across the EU: these reflect the resources available, climate, local abstraction practices, and the economic make-up of each area. **Map 12.2** shows the volume of groundwater abstraction for public water supply, by river basin, it can be contrasted with the information presented in **Map 12.3** which shows similar information on the volume of surface water abstraction.

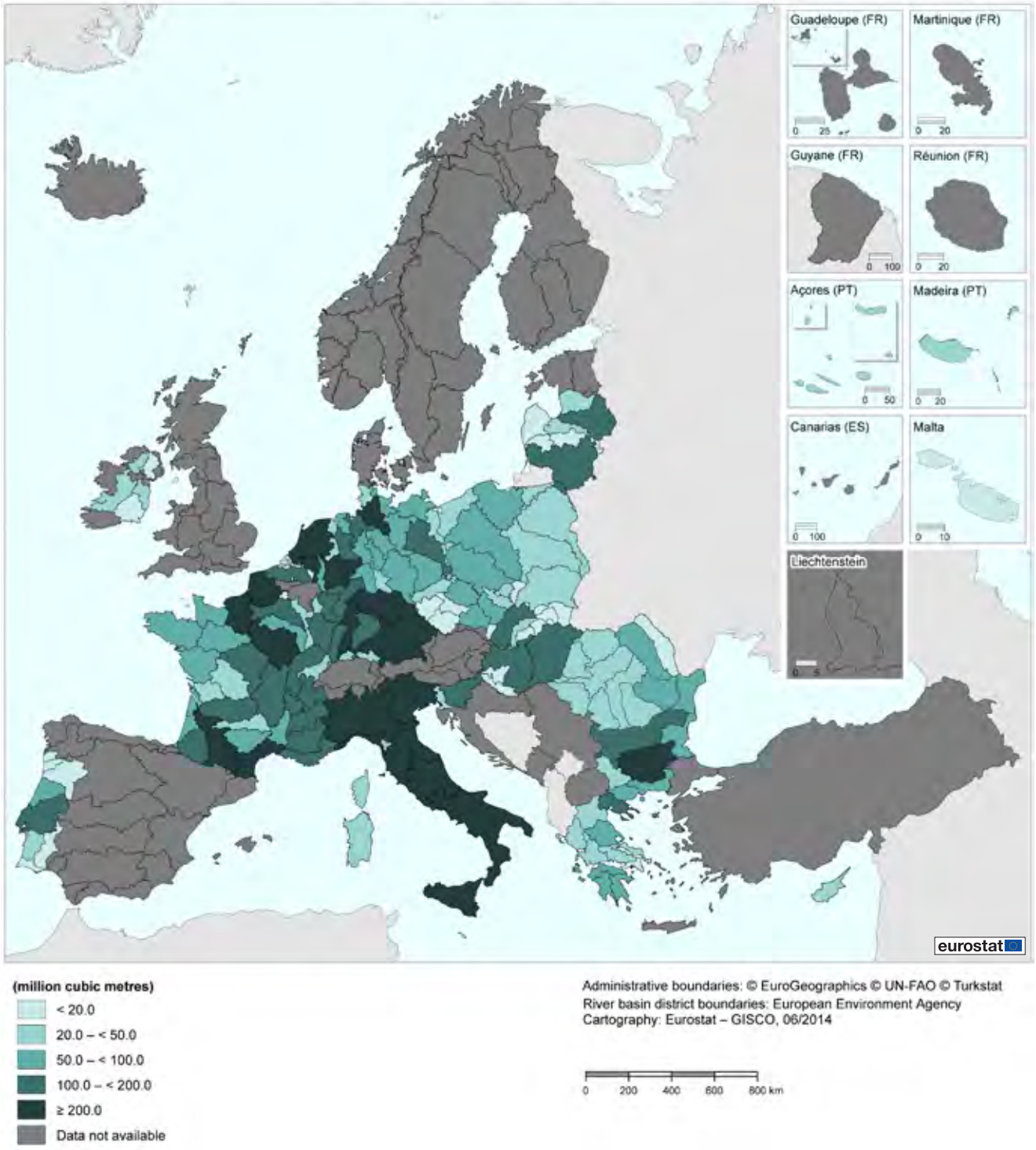
### *The highest level of groundwater abstracted for public water supply was for the Po river basin district (northern Italy)*

Among the river basins for which data are available, the highest volume of groundwater abstracted for public water supply occurred in Italy. The Po river basin — which runs from west to east across the north of Italy — had by far the largest volume of groundwater abstracted for public water supply, some 2.26 billion $m^3$ in 2008. Aside from providing public water supply to major cities such as Torino and Milano, water from the Po river basin district is also used for power generation (and cooling), industrial applications and agriculture in one of the most densely populated and economically developed regions of Italy.

**Map 12.1:** River basins, 2012

*Source:* Directorate-General for the Environment

**Map 12.2:** Groundwater abstraction for public water supply, by river basin, 2011 (1)
(million cubic metres)




(1) Belgium, Germany, France, Latvia and the Netherlands: 2010. Ireland and the United Kingdom: 2009. Italy and Portugal: 2008.
*Source:* Eurostat (online data code: env_watabs_rb)

### *Groundwater abstraction also relatively high for other Italian river basin districts*

The Southern Apennines, Middle Apennines and Eastern Alps — all in Italy — were the only other river basin districts in the EU with groundwater abstraction levels of at least one billion m³. These relatively high figures reflect, to some degree, the geological characteristics of the Italian territory, which often favours the storage of groundwater in aquifers.

Aside from the four Italian river basin districts mentioned above there were 15 additional river basins in the EU where at least 200.0 million m³ of groundwater was abstracted for public water supply (generally in 2010); these are shown by the darkest shade in **Map 12.2**. They were concentrated in western Europe (often subunits of the Danube and Rhine river basin districts), but also included the Seine and Garonne. Five of these 15 river basin districts were from each of Germany and France, two from the Netherlands and two additional river basin districts from Italy, while there was a single district from Bulgaria.

**Map 12.3** shows that the volume of surface water abstracted for public water supply was often lower than the corresponding level of groundwater abstraction. For example, in the Po river basin district, surface water abstraction was relatively high — 229.7 million m³ for public water supply in 2008, the 11th highest volume in the EU — but was approximately one tenth the volume of groundwater abstraction.

### *The Lower Rhine (Germany) had the highest level of surface water abstraction for public water supply*

Across the available basins for which data are available, the highest volume of surface water abstracted for public water supply was recorded for the German river basin district of the Lower Rhine, at 624.7 million m³ in 2010. It was one of 26 river basin districts across the EU to record a level of abstraction of at least 100.0 million m³; these river basins are shown as the darkest shade in **Map 12.3**. The 26 river basin districts with the highest levels of surface water abstraction for public water supply were spread across 12 different EU Member States, although — in keeping with the concentration of groundwater abstraction — a majority were located in France, Germany and Italy.

SPOTLIGHT ON THE REGIONS: LITHUANIA (LT00), LITHUANIA

**Nemunas river, near Liškiava**

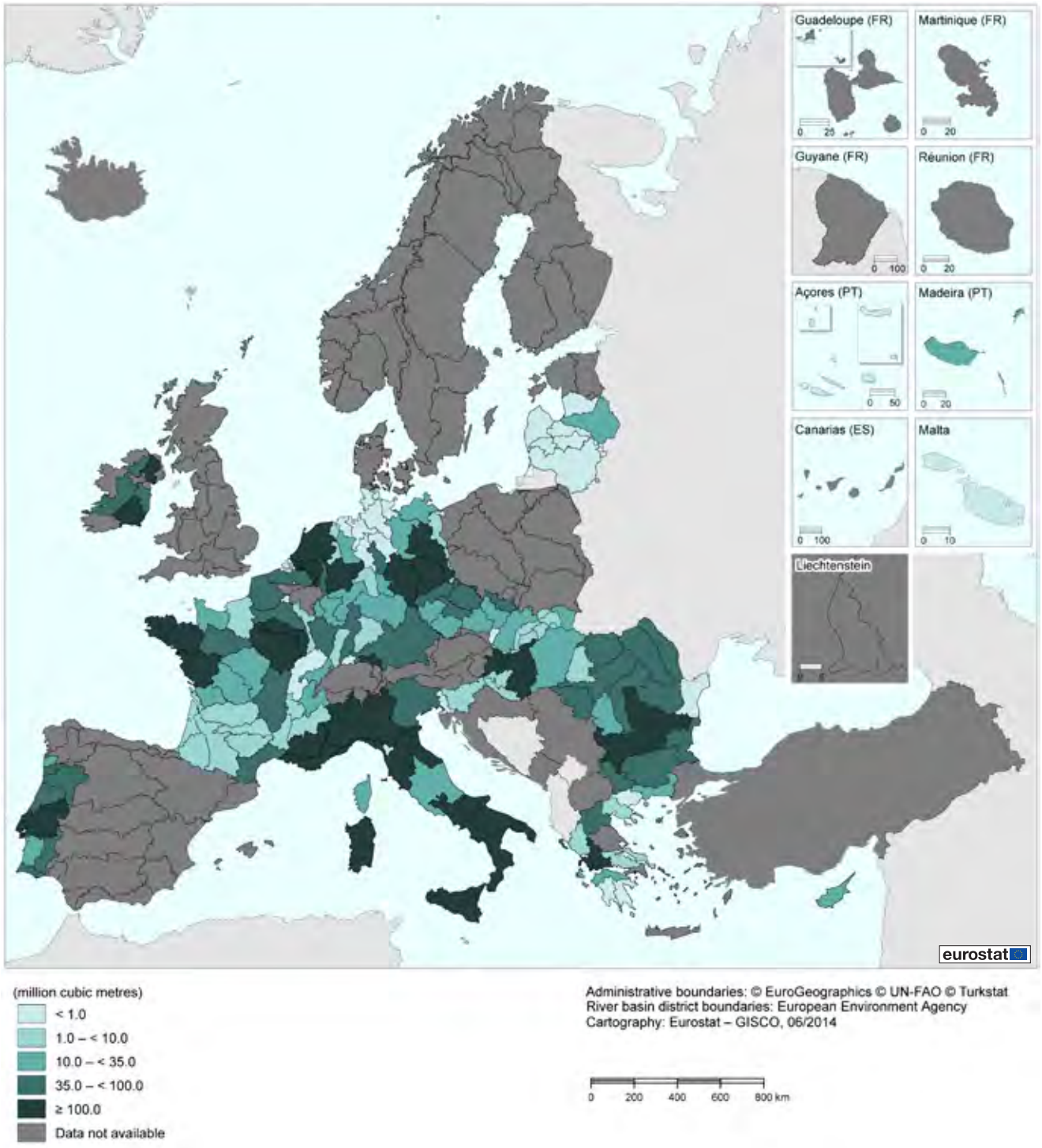
The source of the Nemunas is in Belarus. It is a navigable river for most of its 914 km length (it is one of the 10 longest rivers in the EU). By discharge and length, it is the largest river in Lithuania, flowing through the second city of Kaunas and into a delta next to the Baltic Sea. Its river basin district covers almost 100 000 km². Groundwater abstraction from the Nemunas river basin district was 110.2 million m³ in 2011.

*Photo: Phillip Capper*

## Water abstraction by NUTS regions

**Figures 12.1 and 12.2** show information relating to groundwater and surface water abstraction for public water supply, based on NUTS 2 regions rather than river basins. Groundwater abstraction for public water supply per inhabitant was very high for a number of Italian regions. Indeed, there were no regions from any of the other EU Member States where groundwater abstraction per inhabitant was higher than the average for all Italian regions.

**Map 12.3:** Surface water abstraction for public water supply, by river basin, 2011 (1)
(million cubic metres)



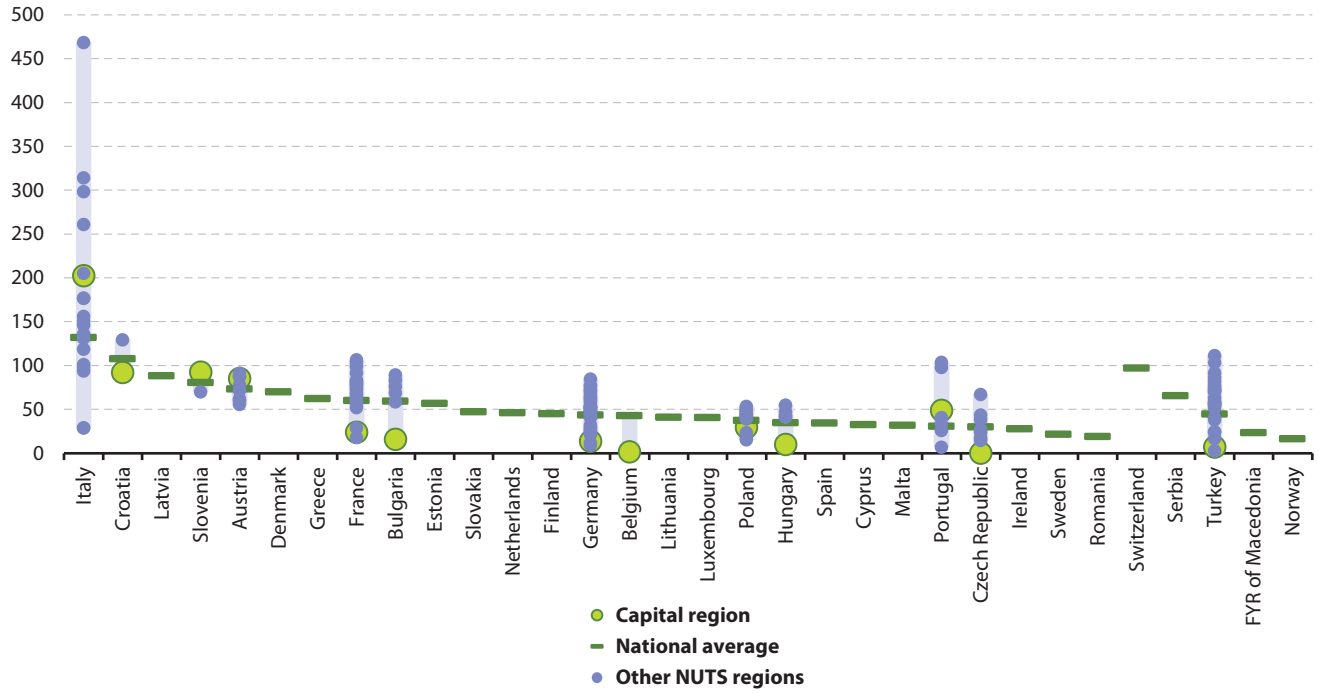

(1) Belgium, Germany, France, Latvia and the Netherlands: 2010. Ireland and the United Kingdom: 2009. Italy and Portugal: 2008.
*Source:* Eurostat (online data code: env_watabs_rb)

### *Groundwater abstraction per inhabitant highest in the southern Italian region of Molise …*

Between Italian regions there was a considerable range as regards the level of groundwater abstracted per inhabitant (see **Figure 12.1**). The highest levels of groundwater abstraction were recorded in populous NUTS 2 regions such as Lombardia, Lazio, Campania and Veneto. However, the peaks of abstraction per inhabitant were registered in the southern regions of Molise, Basilicata and Abruzzo, and the northern regions of Valle d'Aosta/Vallée d'Aoste and Provincia Autonoma di Trento. An average of 468.4 m³ of groundwater for public water supply was abstracted for each inhabitant in Molise in 2008.

Outside of Italian regions, the highest level of groundwater abstraction per inhabitant was recorded for the Croatian region of Jadranska Hrvatska (129.1 m³). Bourgogne and Languedoc-Roussillon (both France) and the Portuguese Região Autónoma dos Açores were the only other NUTS 2 regions (subject to data availability) where the level of groundwater abstraction for public water supply was above 100.0 m³ per inhabitant; this level was also exceeded in two eastern Turkish regions, namely, Agri, Kars, Igdir, Ardahan and Van, Mus, Bitlis, Hakkari.

**Figure 12.1:** Groundwater abstraction for public water supply, by NUTS 2 regions, 2011 (1)
(cubic metres per inhabitant)



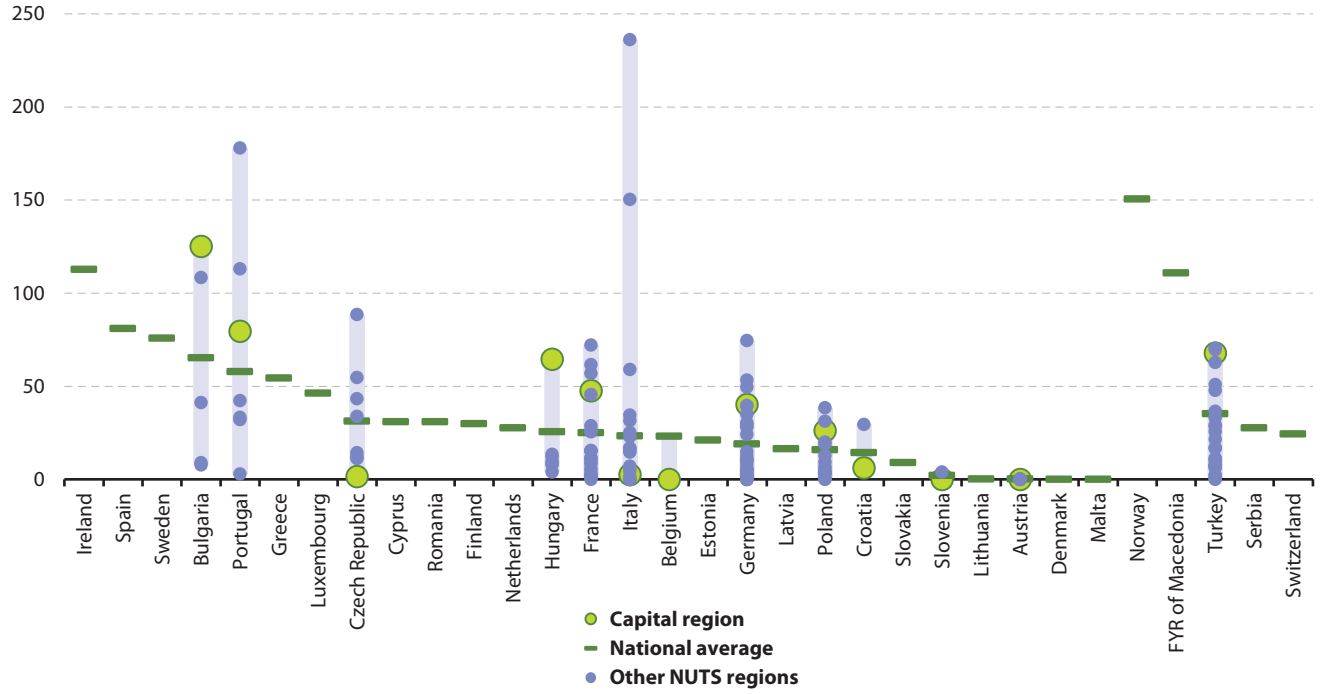

(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. The graph shows all available information (there are missing regions or no regional breakdown for some Member States). Denmark, Germany, Spain, France, Latvia, the Netherlands, Sweden and Turkey: 2010. Belgium and the former Yugoslav Republic of Macedonia: 2009. Italy, Austria and Portugal: 2008. Ireland: 2007. The United Kingdom: not available.

*Source:* Eurostat (online data codes: env_watabs_r2, env_wat_abs and demo_r_d2jan)

### *… while surface water abstraction was highest in the southern Italian region of Basilicata*

**Figure 12.2** shows surface water abstraction for public water supply analysed for NUTS 2 regions. The highest levels of abstraction per inhabitant were recorded in the Italian regions of Basilicata (236.1 m³) and Sardegna (150.2 m³), and in the Portuguese region of the Algarve (178.0 m³). The Bulgarian regions of Yugozapaden and Yugoiztochen — the former being the capital region — and the Portuguese region of the Região Autónoma da Madeira were the only other NUTS 2 regions (subject to data availability) where the level of surface water abstraction for public water supply was above 100.0 m³ per inhabitant. While for groundwater abstraction the capital region often recorded a lower level of abstraction than the national average, the opposite was generally the case for surface water abstraction; this was particularly true in Bulgaria and Hungary.

**Figure 12.2:** Surface water abstraction for public water supply, by NUTS 2 regions, 2011 (1)
(cubic metres per inhabitant)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. The graph shows all available information (there are missing regions or no regional breakdown for some Member States). Germany, France and Turkey: 2010. Latvia: 2009. Italy, Austria and Portugal: 2008. The United Kingdom: not available.

*Source:* Eurostat (online data codes: env_watabs_r2, env_wat_abs and demo_r_d2jan)

## Urban wastewater

The pollution of rivers, lakes and groundwater is affected by human activities as is water quality in general. In efforts to reduce the level and range of pollutants discharged into the environment through wastewater, the EU has implemented legislation on urban wastewater treatment (Directive 1991/271/EC). **Map 12.4** presents information in relation to the proportion of the population that is served by an urban wastewater collection system (a sewer system regardless of the availability of treatment facilities (primary to tertiary treatment) and transport of wastewater by trucks).

### *The entire population of Praha and Malta was connected to an urban wastewater collection system*

It is not surprising to find that the highest connection rates to urban wastewater collection systems were recorded in densely populated regions, and in particular, capital regions. Generally, there was an east–west split of connection rates, with the highest rates generally recorded in western European regions. Nevertheless, the whole of the population (100.0 %) of the Czech capital region of Praha was connected to an urban wastewater collection system in 2011, as was the population of Malta (which is a single region at this level of analysis). There were 52 other regions (subject to data availability) where at least 95.0 % of the population was connected to an urban wastewater collection system, as shown by the darkest shade in **Map 12.4**. Many of these regions were concentrated in Germany and the Netherlands (data are for 2010 for both of these Member States), while Spain (data are only available at the national level and for 2010) and Luxembourg (a single region at this level of analysis) also recorded rates of at least 95.0 %. Connection rates were also quite high across most regions in France (data are for 2008) and Austria (data are for 2010).

There were 19 NUTS 2 regions where the proportion of the population that was served by an urban wastewater collection system was lower than 65.0 % — as shown by the lightest shade in **Map 12.4**. Among these, there were 12 regions where less than half of the population was connected, including: Latvia (a single region at this level of analysis, data are for 2009); the Irish region of Border, Midland and Western; six out of the eight NUTS 2 regions from Romania; and the four French overseas regions (data are for 2008). Note that some of the Member States that joined the EU in 2004 or later have transitional periods to comply with the specifications for implementing the Urban Wastewater Treatment Directive and that low connection rates in some parts of eastern Europe are expected to rise in the coming years, as investment in new plant comes on-stream.

## Municipal waste

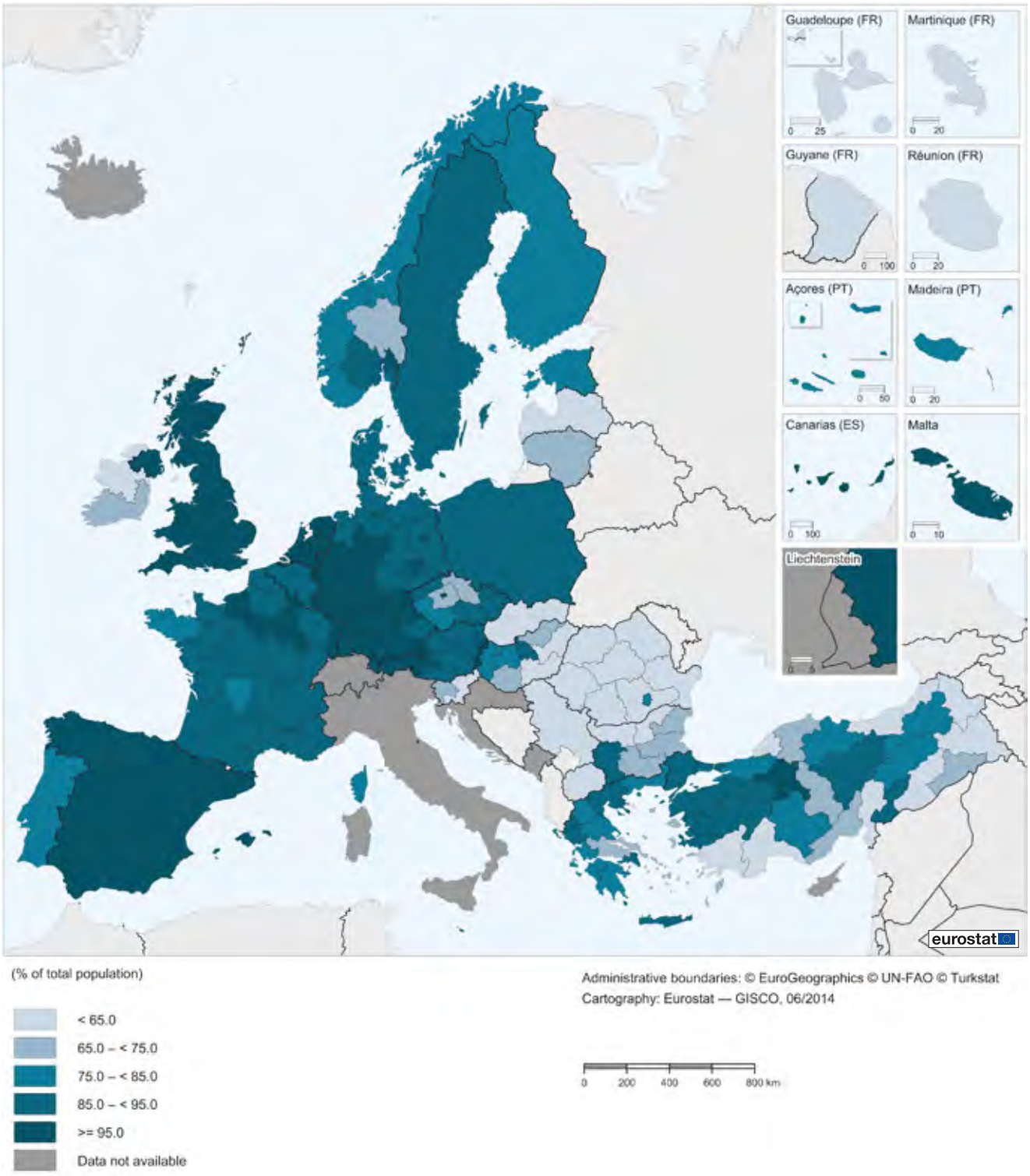
Municipal waste consists to a large extent of waste generated by households, but may also include similar wastes generated by small businesses and public institutions that are collected by municipalities; it excludes waste from sewage treatment, construction and demolition activities.

The overall amount of municipal waste generated in a country is related to the degree of urbanisation, patterns of consumption, household revenue and lifestyles. Increasing affluence is generally associated with rising consumption, which tends to result in higher amounts of municipal waste being generated, a higher proportion of which is composed of plastics and metals. The amount of municipal waste generated per inhabitant provides a measure of the potential environmental and health pressures, for example, from soil and water contamination or poor air quality.

### *Each inhabitant in the Algarve generated an average of 834.8 kg of municipal waste …*

On average, each inhabitant in the EU-28 generated 499.0 kg of municipal waste in 2011. There were 17 regions where this ratio rose to at least 650.0 kg per inhabitant, as shown by the darkest shade in **Map 12.5**. The highest amount of municipal waste generated was in the Algarve (Portugal) — averaging 838.4 kg per inhabitant in 2011; note that this region has a high number of tourists and these temporary visitors may inflate the average amount of waste generated per inhabitant. The next highest level of municipal waste generated per inhabitant among Portuguese regions was recorded in the capital region of Lisboa (542.0 kg). The 16 remaining regions where the level of municipal waste generated was at least 650.0 kg per inhabitant included four regions from the Netherlands, three regions from each of Spain and Austria, two regions from Italy, as well as a single region from the United Kingdom; it also included Denmark (only national data available), Luxembourg and Cyprus (both single regions at this level of analysis).

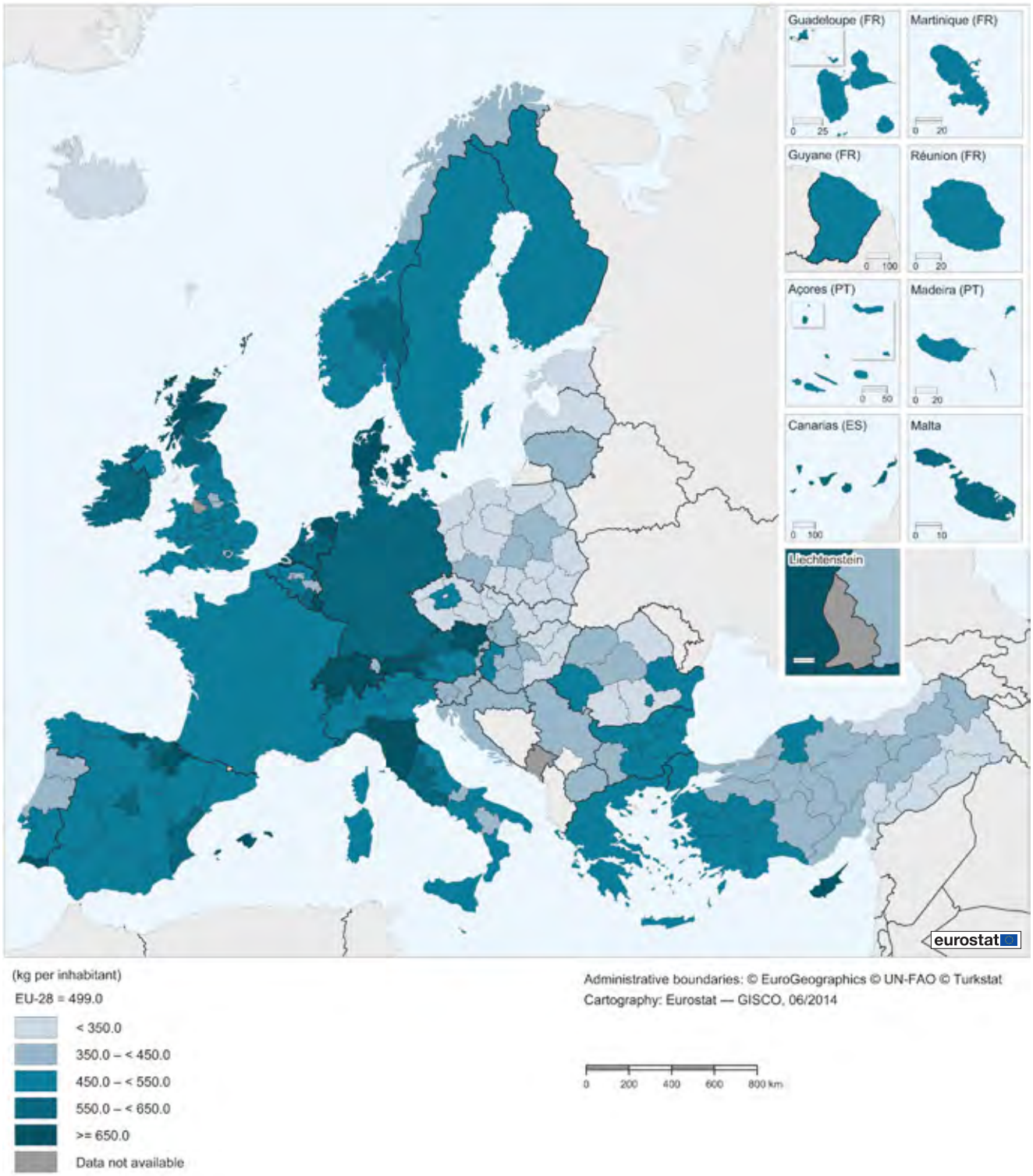
**Map 12.4:** Population connected to urban wastewater collection system, by NUTS 2 regions, 2011 (1)
(% of total population)




(1) Note the definition of the indicator may vary between countries. Denmark, Germany, Spain, the Netherlands, Austria, Sweden, the United Kingdom and Turkey: 2010. Belgium, Greece, Latvia, Portugal and the former Yugoslav Republic of Macedonia: 2009. France: 2008. Belgium, Denmark, Spain, Poland, Portugal, Slovakia, Finland, Sweden, the United Kingdom and Serbia: national level.

*Source:* Eurostat (online data codes: env_wwcon_r2 and env_ww_con)

**Map 12.5:** Municipal waste generated per inhabitant, by NUTS 2 regions, 2011 ([1])
(kg per inhabitant)



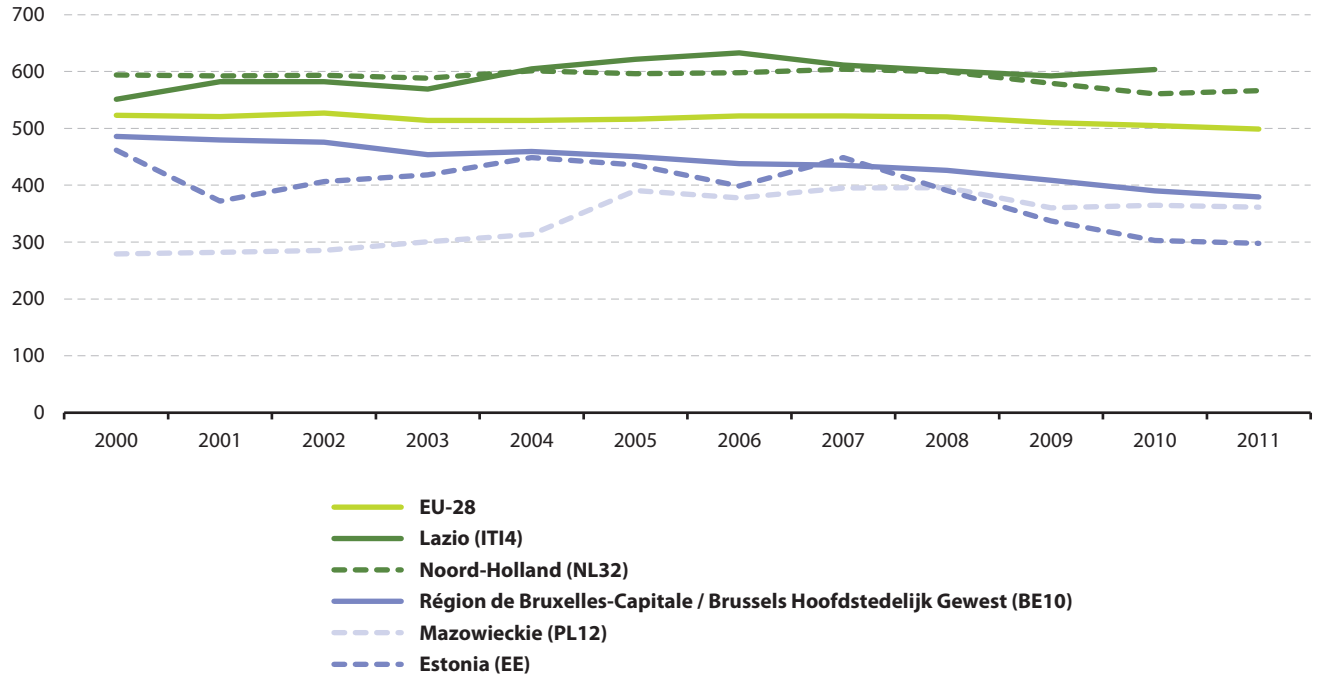

([1]) Ireland, Italy and Turkey: 2010. Spain and Austria: 2009. Bulgaria and Romania: 2008. Denmark, Germany, Greece, France, Croatia, Finland, Sweden, Switzerland and Serbia: national level.
*Source:* Eurostat (online data codes: env_rwas_gen and demo_r_d2jan)

### *… which was almost 4.5 times as much as in the Polish region of Świętokrzyskie*

There was a relatively low intensity of waste generation in 30 regions across the EU — as shown by the lightest shade in **Map 12.5**. They were exclusively located in eastern Europe and the Baltic Member States, covering regions from the Czech Republic, Hungary, Poland, Romania and Slovakia, as well as Estonia and Latvia (both single regions at this level of analysis). The south-eastern Polish region of Świętokrzyskie recorded the lowest level of municipal waste, averaging 188.6 kg per inhabitant in 2011; it was the only NUTS 2 region within the EU to report less than 200.0 kg of municipal waste per inhabitant.

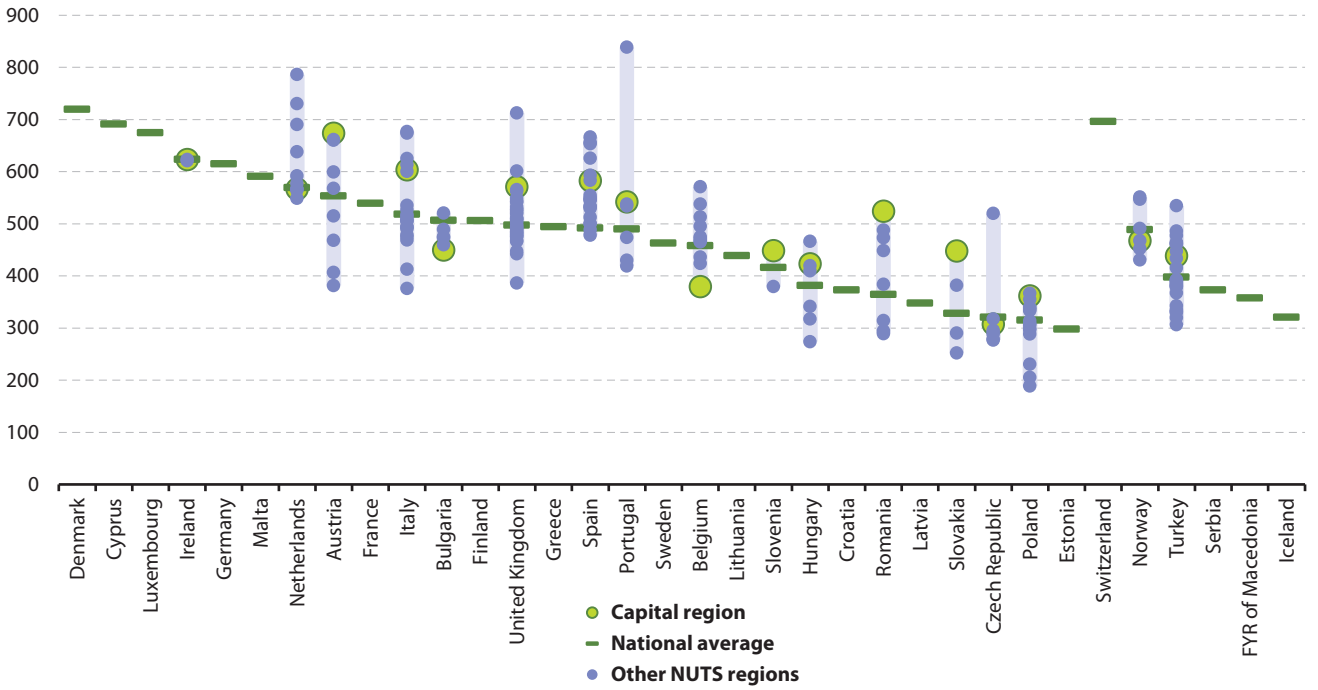
**Figure 12.3** shows the development of the amount of municipal waste generated per inhabitant for the EU-28 average and for five capital regions (selected on the basis of those regions that had a lengthy time series). It shows that the average amount of waste generated per inhabitant in the EU-28 fell by 24 kg between 2000 and 2011. The vast majority of this reduction took place at the end of the period under consideration, as the average volume of municipal waste generated in the EU-28 was 520 kg per inhabitant in 2008. As such, the sizeable reduction in 2009, followed by smaller reductions in 2010 and 2011, are likely to reflect, at least in part, lower levels of consumption as a result of the financial and economic crisis. Among the five capital regions shown in **Figure 12.3**, the biggest reduction in municipal waste per inhabitant over the period 2000–11 was recorded for Estonia (a single region at this level of analysis). By contrast, there were increases in the levels of waste generated per inhabitant in the Italian and Polish capital regions.

**Figure 12.3:** Municipal waste generated per inhabitant, selected capital city NUTS 2 regions, 2000–11 (1)
(kg per inhabitant)




(1) The figure shows the EU-28 average and data for five capital city regions (those with a complete time series from 2000 onwards). Lazio: 2011, not available.
*Source:* Eurostat (online data codes: env_rwas_gen and demo_r_d2jan)

**Figure 12.4:** Municipal waste treatment, by NUTS 2 regions, 2011 (1)
(kg per inhabitant)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. All national averages refer to 2011. Regional data for Ireland, Italy and Turkey: 2010. Regional data for Spain and Austria: 2009. Regional data for Bulgaria and Romania: 2008. Denmark, Germany, Greece, France, Croatia, Finland, Sweden, Switzerland and Serbia: national level.
*Source:* Eurostat (online data codes: env_rwas_gen, env_wasmun and demo_r_d2jan)

The level of municipal waste treatment per inhabitant was higher in most capital regions than for the national average across most of the EU Member States for which data are available, as shown in **Figure 12.4**. This may be linked to the average size of households, with the proportion of people living in one person households being relatively high in capital cities (one person households generally consume more products and packaging per inhabitant than households that are occupied by larger numbers of people). The capital regions of Wien, București – Ilfov, Zahodna Slovenija and Bratislavský kraj recorded the highest levels of municipal waste treated per inhabitant among any of the regions from Austria, Romania, Slovenia and Slovakia respectively. By contrast, the Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest and Yugozapaden recorded the lowest levels of municipal waste treatment among any of the regions in Belgium and Bulgaria, while the waste treated per inhabitant in the Czech and Dutch capital regions was slightly less than their respective national averages. It should be noted that waste is not always treated in the same region as where it was generated.

The amount and composition of municipal waste for final disposal by type of treatment depends on national waste management practices. The EU is committed to reducing the amount of waste that is sent to landfill, while raising the proportion of waste that is recycled or composted. **Figure 12.5** shows the amount of waste for four different waste streams: it presents information for the EU-28 average and the 10 regions with the largest volume of waste treated for each of the four waste streams; note that these rankings are presented subject to data availability.

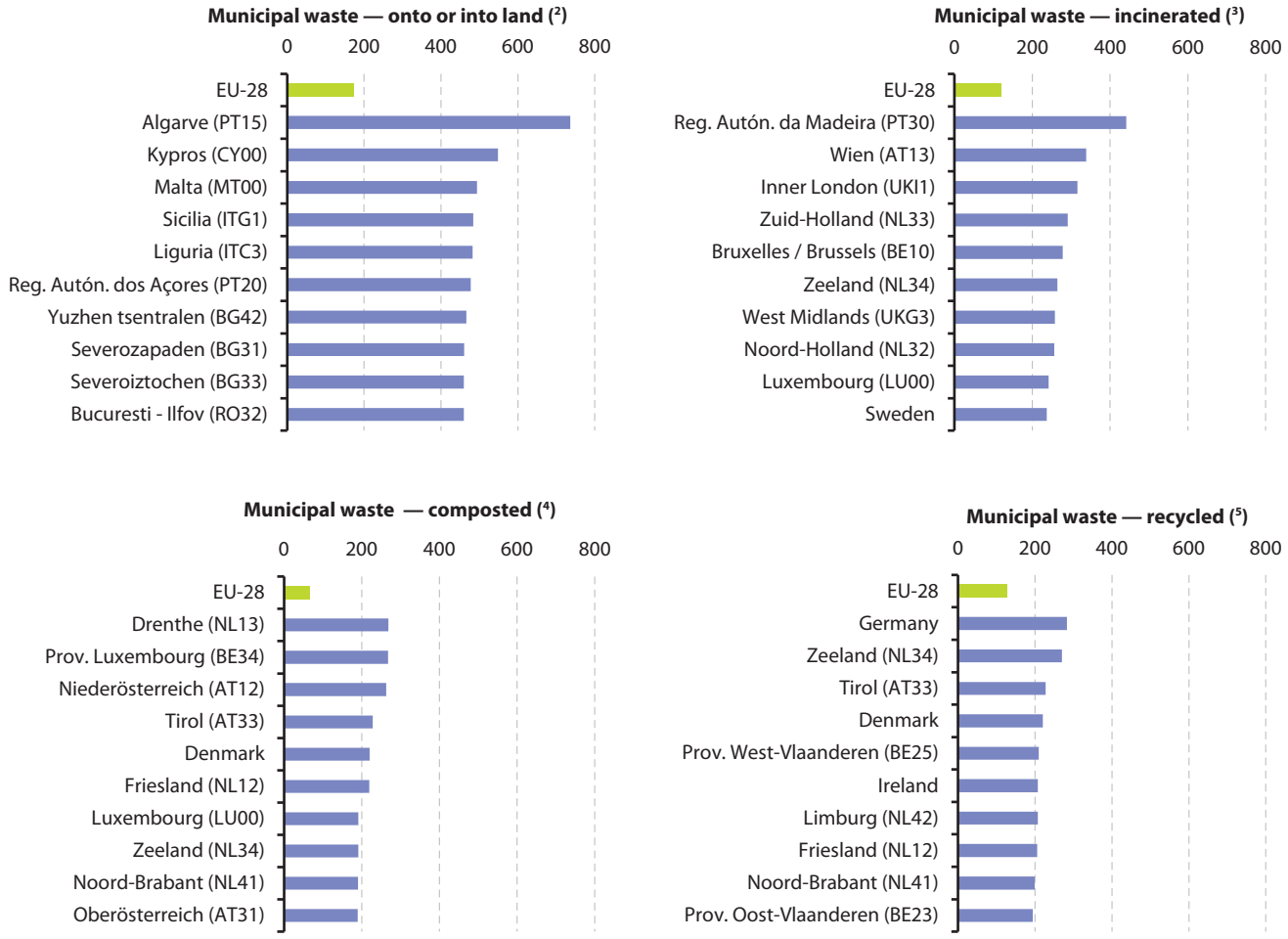
### *The Algarve and several island regions tended to favour landfill for the treatment of their municipal waste …*

The highest amounts of waste deposited onto or into land were consistently recorded in southern and eastern regions. An average of 736.1 kg of waste per inhabitant was treated in this manner in the Algarve in 2011; this was 4.2 times as high as the EU-28 average. Landfilling was also a common form of waste treatment in the islands of Cyprus, Malta, Sicilia (Italy) and the Região Autónoma dos Açores (Portugal).

### *… while incineration was relatively popular in densely populated regions*

A high volume of municipal waste was incinerated on the other autonomous Portuguese islands, the Região Autónoma da Madeira, some 441.7 kg per inhabitant in 2011; this was 3.7 times as high as the EU-28 average. The other regions where relatively high volumes of waste were incinerated were often densely populated regions, where the relatively high price of land may make it prohibitive for municipalities to establish landfill sites; these included the capital regions of Wien, Inner London and Bruxelles / Brussels.

**Figure 12.5:** Top EU regions for municipal waste treatment, selected NUTS 2 regions, 2011 (1) (kg per inhabitant)




(1) Each figure shows the EU-28 average and the 10 EU regions (or countries) with the highest level of waste treatment for each of the waste streams presented. The Czech Republic, Denmark, Germany, Ireland, Greece, Spain, France, Croatia, Finland and Sweden: national level. Cheshire (UKD6) and Merseyside (UKD7): not available.
(2) Italy: 2010. Bulgaria and Romania: 2008.
(3) Bulgaria and Italy: also national level. Austria: 2009.
(4) Bulgaria and Italy: also national level. Belgium and Austria: 2009.
(5) Bulgaria: also national level. Austria: 2009.
*Source:* Eurostat (online data codes: env_rwas_gen and demo_r_d2jan)

### *Belgium, Germany, the Netherlands and Austria relatively specialised in composting and recycling*

In Belgium, Germany, the Netherlands and Austria composting and recycling accounted for the majority of the municipal waste treated. This is reflected in the regions that appear in the final two parts of **Figure 12.5**. The Dutch region of Drenthe composted 268.6 kg of municipal waste per inhabitant in 2011 (which was four times as high as the EU-28 average); it was one of four Dutch regions that featured in the listing of the 10 EU regions with the highest levels of composting. An average of 283.0 kg of municipal waste per inhabitant was recycled in Germany (only national data available); this was 2.2 times as high as the EU-28 average.

# Data sources and availability

## Regional environment questionnaires

Regional environment statistics can be used in the development, implementation, monitoring and evaluation of EU environmental policy, in particular, environment action programmes. This is done by the European Commission's Directorate-General for the Environment in partnership with the European Environment Agency (EEA). The data presented in this chapter have been restricted to information concerning regional water and municipal waste statistics, where availability is generally quite good.

The data presented were collected through a regional environmental questionnaire, coordinated by Eurostat. This data collection exercise was initiated upon the request of the European Commission's Directorate-General for Regional and Urban Policy.

An initial pilot study was conducted in 2010, and this was followed by a more extensive regional environmental questionnaire in the second half of 2012. Replies to this were received from 24 EU Member States, two EFTA and three candidate countries; there are considerable differences in the availability of statistics between countries and across the various topics for which information was collected.

The regional environmental questionnaire treats two types of subnational statistics. On the one hand, data are collected with a regional breakdown, generally provided at the NUTS 2 level (although some EU Member States provided data at the NUTS 1 level). On the other, selected water statistics are collected according to a classification of river basin districts and their accompanying subunits, based on hydrological areas as defined in the EU's Water Framework Directive.

Replies to the questionnaire were provided on the basis of a gentlemen's agreement. Coverage by environmental domain varies considerably and the information presented in this chapter has been selected as a function of the availability per domain. At the NUTS 2 level, data are available for: 73 % of regions for water and 87 % for municipal waste. Among those domains that are not covered in this chapter, data coverage by region was as follows: 52 % for environmental expenditure; 14 % for transport-related indicators; 30 % for energy-related indicators; and 47 % for land use. The coverage of water statistics collected by river basin districts and accompanying subunits was 67 %.

It should be noted that the harmonisation of concepts and definitions for regional environmental statistics is still under development and caution is therefore urged if comparing regional data between countries and when making comparisons of regional data for a particular country with national totals/averages for the same country (definitions for the latter may vary, especially when national data collections have a legal basis).

## Indicator definitions

### Water

River basin districts and their subunits are delineated by EU Member States under the Water Framework Directive; they are used for the management of river basins. Some river basins span more than one country (for example, the Danube) and these are known as international river basin districts; those contained within a single country are national river basin districts. River basin districts are defined as the area of land and sea, made up of one or more neighbouring river basins together with their associated ground waters and coastal waters. Coastal waters are defined as one nautical mile from the coastline and extending, where appropriate, up to the outer limit of transitional waters. Transitional waters are defined as bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows.

Water abstraction is the process of taking water from a source; for statistical purposes in the EU, it is defined as the sum of groundwater and surface water that is collected for use. Groundwater is fresh water found beneath the earth's surface, specifically in cracks and spaces in soil, sand and rock. Fresh surface water flows over, or rests on the surface of a land mass, in the form of natural waterways (rivers, streams, brooks and lakes) or artificial waterways (irrigation, industrial and navigation canals, drainage systems and artificial reservoirs).

Wastewater is water that is of no further immediate value to the purpose for which it was used or in the pursuit of which it was produced because of its quality, quantity or time of occurrence. Wastewater from one user can be a potential supply of water to another user elsewhere.

### Waste

Waste may be defined as any substance or object which the holder discards or intends or is required to discard. Municipal waste consists of waste collected by, or on behalf of, municipal authorities and disposed of through waste management systems. Municipal waste consists mainly of waste generated by households, although it also includes similar waste from sources such as shops, offices and public institutions. In those EU Member States with complete (national) coverage, the total volume of municipal waste generated is equal to total volume of municipal waste collected. For those countries where waste collection schemes do not cover their whole territory, estimates are made for the waste generated in areas that are not covered.

The treatment of municipal waste may be classified as: landfill, incineration, recycling or composting. Landfill is the deposit of waste into or onto land; it includes specifically engineered landfill sites and temporary storage of over one year. Incineration is a method of waste disposal that involves the combustion of waste; incineration with energy recovery refers to incineration processes where the energy created in the combustion process is harnessed for re-use, for example for power generation. Waste recycling is defined as any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes; it includes the reprocessing of organic material but does not include energy recovery. Composting is defined as a biological process that submits biodegradable waste to anaerobic or aerobic decomposition and that results in a product that may be used on land or as part of the manufacturing process for producing enriched growing mediums.

# 13

# Focus on land cover and land use

# Introduction

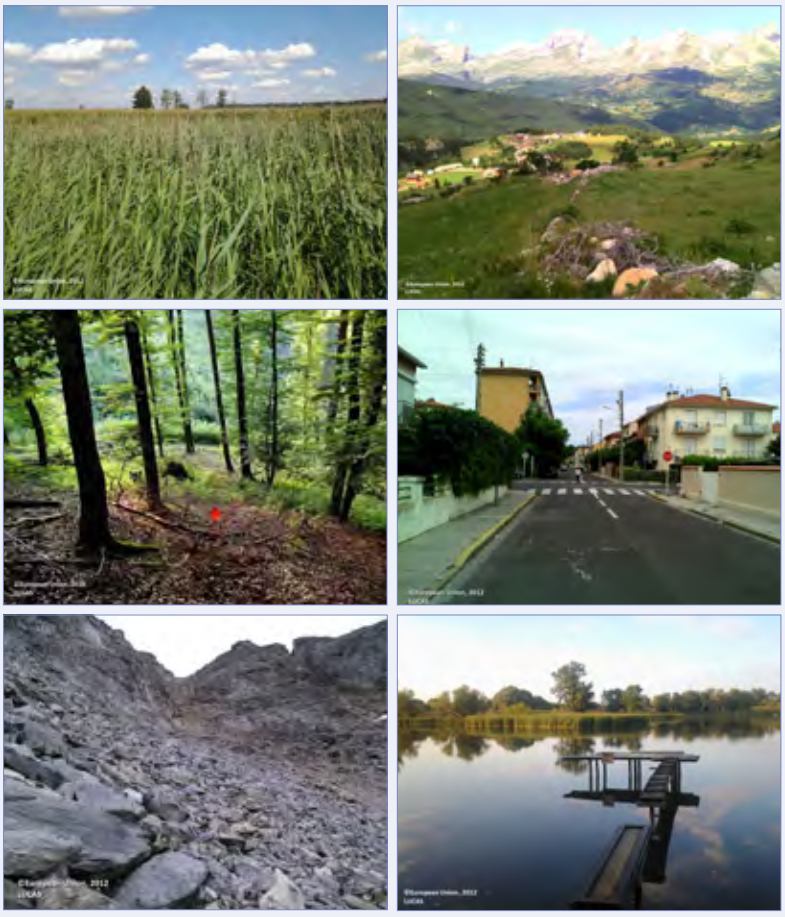
This chapter provides information in relation to Eurostat's land use/cover area frame survey (LUCAS), which provides harmonised and comparable statistics on land cover and land use across the whole of the European Union's (EU's) territory (other than Croatia). Statistics from LUCAS can be used to monitor a range of socio-environmental challenges, among others, the degree of landscape fragmentation, soil degradation or the environmental impact of agriculture.

Most changes to landscapes are not visible on a day-to-day basis and the natural features that form landscapes (for example, valleys, plateaus and plains) are, by and large, the result of geographical processes that have taken place over a very long period of time. Alongside these natural processes, human intervention has increasingly left an imprint on environments where people live and work. Indeed, land has become a natural and economic resource that is 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 onset of the industrial revolution led to a lengthy period during which forested areas across Europe were cleared (deforestation). Nevertheless, this pattern has been reversed during the last couple of decades, in part as a result of international climate change commitments made by the EU and its Member States — and as a result the EU is currently one of only a few regions in the world where forest cover is currently on the increase.

### WHAT IS LAND COVER?

Land cover is the bio-physical coverage of land (for example, crops, forests, buildings or lakes). Land cover in LUCAS is specified according to a classification with as many as 76 subclasses — at its most basic level the main types of land cover are: artificial land; cropland; woodland; shrubland; grassland; bare land and lichens / moss; water areas; wetlands.



***Examples of land cover (top left to bottom right):***

H11: inland marshes;
E20: grassland without tree / shrub cover;
C10: broadleaved woodland;
A11: buildings with one to three floors;
F10: rocks and stones;
G10: inland water bodies.

## WHAT IS LAND USE?

Land use is the socioeconomic use made of land (for example, agriculture, business, residential use or recreation); at any one place, there may be multiple and alternate land uses. Land use in LUCAS is specified according to 33 distinct classes that cover the primary sector (for example, agriculture and forestry); the secondary sector (industry); the tertiary sector (services); and other uses (for example, residential use and abandoned areas).

***Examples of land use (top left to bottom right):***

U111: agriculture (excluding fallow land and kitchen gardens);
U120: forestry;
U140: mining and quarrying;
U340: commerce, finance, business;
U370: residential;
U362: sport.

Historically, there have been a range of different developments that have impacted upon local ecosystems and biodiversity in the EU, including: a decline in agriculture's share of land use; an increase in soil erosion and soil degradation; an increase in (sub)urban sprawl arising from demographic and economic growth; and the continued development of infrastructure (such as new roads, railways and other manifestations of economic development). When combined, these developments have often resulted in increasingly fragmented habitats, potentially impacting upon biodiversity.

Statistics from LUCAS can be used to help analyse and contribute to the development of various EU policy areas, for example: to protect soil, as detailed in the soil thematic strategy; to integrate environmental concerns into the Common Agricultural Policy (CAP) post-2013; to promote biodiversity and conservation, through the EU's biodiversity strategy; to encourage the efficient use of resources for sustainable growth, as in the resource-efficient Europe initiative; to tackle climate change, through monitoring conducted by the European Environment Agency, as well as actions under the European climate change programme; or for land monitoring, spatial planning and resource management, as carried out by the Copernicus earth observation programme.

# Main statistical findings

The total area of the EU-28 was just over 4.3 million square kilometres (km²) in 2012. One of the underlying characteristics of European landscapes is the rapid changes that occur when moving within relatively small areas, for example, from sub-Arctic tundra environments to semi-arid surroundings or from lowlands and plains to relatively high mountain chains such as the Alps, Pyrenees or Carpathians. As such, the EU is home to a diverse range of habitats, flora and fauna. Land cover and land use play an integral role in these varied ecosystems which are indispensable for biodiversity within the EU.

## Landscape diversity

Landscape refers to an area of land whose character and functions are defined by the complex and regionally-specific interaction of natural processes (relief, soil type, water availability, climate, biological diversity) and cultural features (human intervention through agriculture, forestry, rural policies, construction and economic pressures).

While some countries have large continuous areas of the same land cover, others have a mosaic of small areas of different land covers. The presence of grass verges, hedges, dry stone walls, ditches and other semi-natural linear elements is considered to be of fundamental importance to help promote biodiversity, providing ecosystem services such as pollination or pest control. On the other hand, the gradual moulding of landscapes by human activity has modified landscapes, for example, through urbanisation, changes in agricultural practices, or the increased use of transport. The density of man-made linear elements, which have a dissecting nature (such as roads, railways and aerial cables) is closely linked to population and infrastructure developments, and these elements may impede biodiversity — for example, a motorway that cuts through a natural area may restrict the free movement of wild animals.

Eurostat produces a range of indicators that may be used to evaluate the links between landscape patterns and biodiversity. Landscapes can be evaluated as LUCAS surveyors walk along a 250m transect recording land cover transitions and the presence of linear features. The structure of EU landscapes is analysed by taking into account the following elements: richness (the number of different types of land cover), diversity (the relative abundance of land cover types — in other words, whether they recur within the transect) and fragmentation (the presence of structural and dissection elements), to provide information on the spatial organisation, presence and arrangement of landscape features.

From the data collected on the transect, the Shannon evenness index can be calculated, it provides one measure of landscape diversity. For the EU-27 as a whole this index was 0.70 in 2012. The majority of the EU Member States recorded Shannon evenness indices that were distributed around the EU-27 average, within the interval of 0.65–0.75.

### SHANNON EVENNESS INDEX

When the LUCAS surveyors walk a 250m transect, they are requested to register all the land cover changes they observe. The degree of homogeneity or heterogeneity of land cover can be analysed by measuring the number of different land cover types in each transect and their relative abundance (in other words, whether the same type of land cover reoccurs in the transect).

The Shannon evenness index (SEI) can be used to evaluate landscape diversity and takes into consideration both the number of different land cover types observed and their relative abundance; the index is based on values within the range of 0–1, with zero representing a landscape with no diversity (only one land cover type) and a value of one representing the maximum diversity (in other words, featuring all types of land cover in equal amounts). If a landscape is characterised by all different types of land cover being found in equal abundance then the Shannon evenness index will tend towards the value of one; conversely, if there is only one dominant type of land cover then the index will tend towards zero.

$$\text{Shannon evenness index} = -\frac{\sum_{i=1}^{m} P_i \ln(P_i)}{\ln(m)}$$

where the relative abundance of land cover types is denoted by $P_i$ and the different types of land cover are denoted by $m$.

### *Portugal, Slovenia, Austria and Luxembourg had the greatest landscape diversity*

The highest landscape diversity was recorded in those EU Member States which featured mountainous or hilly areas: for example, Portugal, Slovenia, Austria and Luxembourg; each of these had a relatively high degree of variation in their land cover, with a Shannon evenness index of more than 0.75 in 2012. There followed a group of Member States whose landscape diversity was close to the EU-27 average (for example, Germany, France or Poland). Another group of countries were rich in forests: these had relatively homogeneous landscapes and lower degrees of diversity (for example, Estonia or Finland). The final group of countries also recorded low levels of landscape diversity, their landscape was homogeneous (indices of less than 0.65) and one land cover type tended to predominate, often this was grassland, cropland or abandoned farmland (for example, Ireland, Hungary, Romania or the United Kingdom).

The Shannon evenness indices for NUTS 2 regions, as opposed to national averages, are shown in **Map 13.1** covering 261 different regions across the EU-27 Member States. There were 12 regions where the Shannon evenness index was at least 0.80 in 2012 (as shown by the darkest shade in the map). They were spread across eight different EU Member States: the following section focuses on two of these — Portugal and Austria — providing an indication of the changing landscapes that may be encountered within particular regions.

### *The most diverse landscapes were in the Norte and Algarve regions of Portugal*

The highest landscape diversity was recorded in the Norte region of Portugal. The inland areas of this region moving towards the Spanish border are characterised as relatively mountainous (for example, the Parque Nacional Peneda-Gerês and the Parque Natural do Douro) and are relatively dry, even arid in the summer months. These areas are often characterised as being scrubland or forested areas, and when used for agricultural purposes they tend to have permanent crops (such as vineyards). This northerly region of Portugal also has a lengthy Atlantic coastline where population density and economic activity tends to be much more concentrated; this area also has higher levels of rainfall and is characterised by a wider variety of farming practices.

The second highest Shannon evenness index was recorded for a region at the other end of mainland Portugal, namely, the Algarve. Some of the characteristics of this region were similar to those of the Norte, insofar as the Algarve is characterised by built-up (tourist) developments along its southern coast, where there are also some areas of agricultural activity benefitting from the sheltered climatic conditions, before the landscape transforms quite rapidly into a rural, sparsely populated and relatively hilly inland area (for example, the Serra do Caldeirão).

### *The Austrian regions of Burgenland and Oberösterreich also had diverse landscapes …*

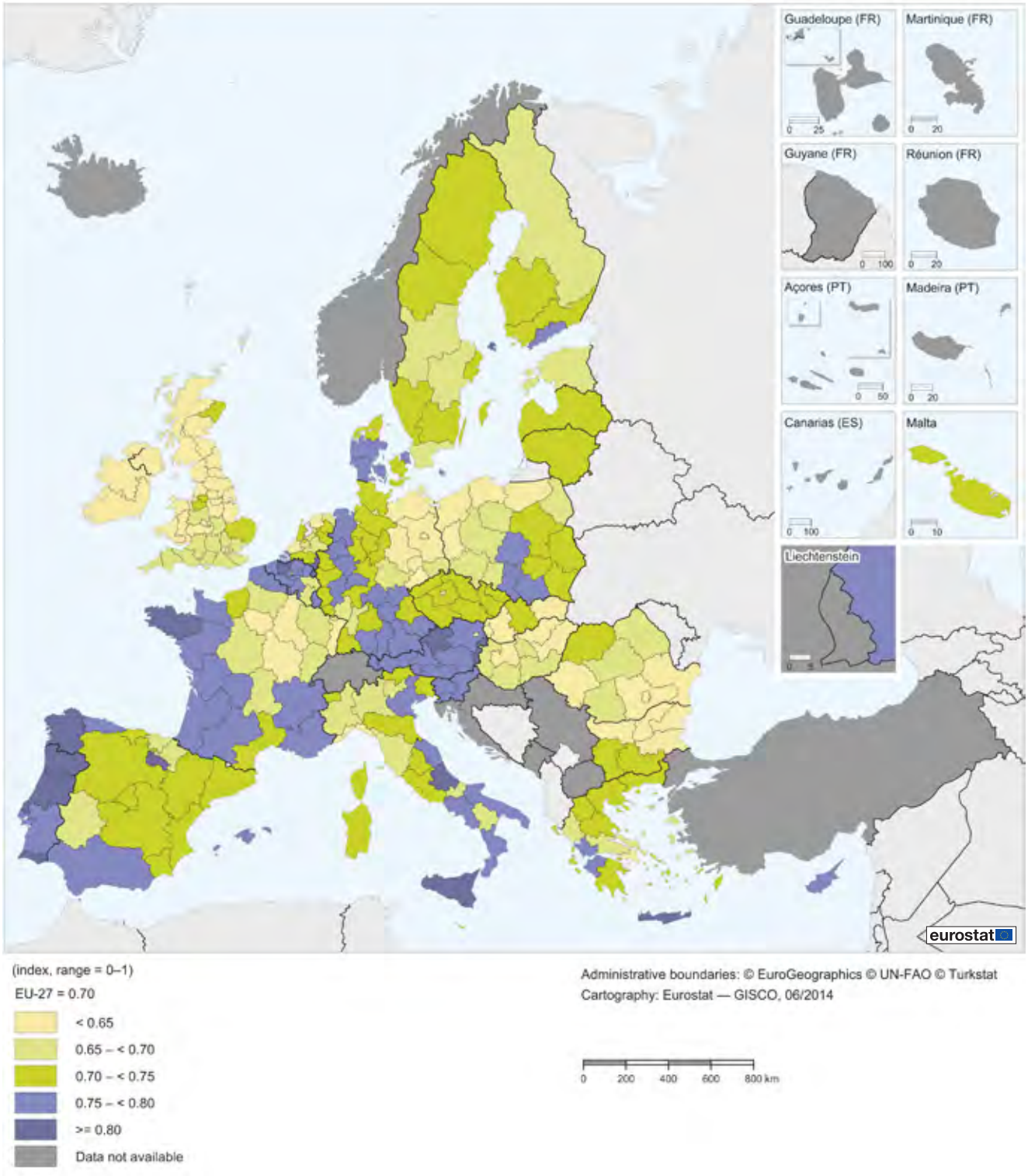
The next highest region in terms of landscape diversity was Burgenland, which is the easternmost and least populous region of Austria. It is a largely lowland region which in the north features plains that run towards Vienna and the Neusiedler See (Austria's largest lake), while the south of the region has more hills, a relatively high proportion of forested areas, and a lower level of population density. Agriculture — including permanent crops (vineyards and orchards), fruit and sunflowers — and tourism are important in Burgenland.

There was another region from Austria that featured among those regions with the highest diversity, namely, Oberösterreich (6th place in the ranking). It is located in northern Austria and borders onto Germany and the Czech Republic. This region is also characterised by a varied number of different landscapes: stretching from the Bohemian forest down to relatively flat meadowland and areas of intensive agriculture that are located around Linz — Austria's third largest city and an industrial centre — before climbing through forested foothills to the higher elevations of the Alps.

### *… as did eight other regions — these were located in southern Italy, northern Spain, France, Belgium, the Netherlands and Finland*

The remaining eight regions where the Shannon evenness index was at least 0.80 included: two regions from southern Italy (the island of Sicilia and the region of Abruzzo which is split between mountainous terrain and lowland coastal regions on the Adriatic Sea); two regions with varied landscapes in northern Spain (Galicia and La Rioja); as well as the largely lowland areas of Bretagne (France), the Prov. Oost-Vlaanderen (Belgium), Limburg (the Netherlands) and the island of Åland (Finland). These final four regions are not characterised by major changes in landscape, rather they have relatively monotonous stretches of flat land. Their high Shannon evenness indices may be attributed, at least in part, to more diverse land use, for example, relatively small patches of land which result in the land cover being fragmented or alternated.

**Map 13.1:** Landscape diversity expressed by the Shannon evenness index, by NUTS 2 regions, 2012
(index, range = 0–1; with a value of zero representing a landscape with no diversity (only one land cover type) and a value of one representing the maximum diversity (in other words, all types of land cover in equal amounts))




*Source:* Eurostat, LUCAS 2012

### *Low levels of landscape diversity across many regions of the United Kingdom*

At the other end of the range, there were 64 NUTS 2 regions where the Shannon evenness index was lower than 0.65 in 2012 (as shown by the lightest shade in **Map 13.1**). More than one third of these were in the United Kingdom (which may in part be explained by the relatively small size of some NUTS 2 regions in this Member State), while there were seven regions from Germany, five each from France and Hungary, and four each from Bulgaria, Poland and Romania; the remaining regions were divided between Slovakia (three regions), Ireland and the Netherlands (two regions each), Belgium, the Czech Republic, Italy and Austria (a single region each).

The relatively low level of landscape diversity across many regions of the United Kingdom may, at least in part, be linked to densely populated urbanised areas and a tendency to find large swathes of cropland (in the east) or grassland/scrubland areas (in the west and the north). A total of 23 out of the 37 regions in the United Kingdom recorded a Shannon evenness index that was below 0.65.

A high proportion of the Irish countryside is also composed of grassland and this may explain why both NUTS 2 regions in Ireland also registered indices that were below 0.65. Indeed, grassland accounted for 67.1 % of the total area of Ireland in 2012 and for 40.1 % of the total in the United Kingdom; these were the two highest shares across all of the EU Member States and considerably higher than the EU-27 average of 19.5 %.

### *Some regions in eastern Europe also recorded relatively uniform landscapes …*

Five out of the seven Hungarian regions reported a Shannon evenness index of less than 0.65. These regions were often characterised by their relatively high proportion of cropland (for example, across the Great plain), as land used for crops accounted for 46.9 % of the total area of Hungary in 2012, almost twice as high as the EU-27 average of 24.7 %. In Bulgaria, four out of the six NUTS 2 regions recorded indices that were below 0.65: these regions could also be characterised as lowland plains and could be contrasted with the results for the south-western regions of Yugozapaden and Yuzhen tsentralen, where landscape diversity was above the EU-27 average and where the topography was much more varied.

### *… as did many capital regions and densely populated urban regions*

Perhaps unsurprisingly, there was a relatively low level of landscape diversity for many of the capital regions. This was most noticeable for Inner London, which recorded the lowest Shannon evenness index (0.39 in 2012) among any of the NUTS 2 regions for which data are available. The next lowest index was for the neighbouring region of Outer London, while six more regions from the United Kingdom — North Yorkshire, Northern Ireland, East Wales, West Midlands, East Yorkshire and Northern Lincolnshire, and Lancashire — recorded indices that were lower than for any other region in the EU-27.

Aside from London, the other capital regions which recorded landscape diversity of less than 0.65 included the Belgian capital region of Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest (0.55), the Irish capital region of Southern and Eastern (0.57), Attiki in Greece (0.58), Wien in Austria (0.59), Bucureşti - Ilfov in Romania (0.60), Berlin in Germany (0.60), Praha in the Czech Republic (0.61), Bratislavský kraj in Slovakia (0.61) and the French capital region of Île de France (0.64).

**Figure 13.1** provides an alternative analysis of these landscape diversity results by NUTS 2 region; it shows the variation between regions within the same EU Member State. The general pattern of relatively low levels of landscape diversity for capital regions is evident, although there were some contradictions to this rule. For example, the capital regions of Bulgaria, Hungary and Finland each recorded landscape diversity ratios that were higher than their respective national averages; indeed, the Shannon evenness indices for Yugozapaden and Közép-Magyarország were the highest recorded among any of the NUTS 2 regions in Bulgaria and Hungary.

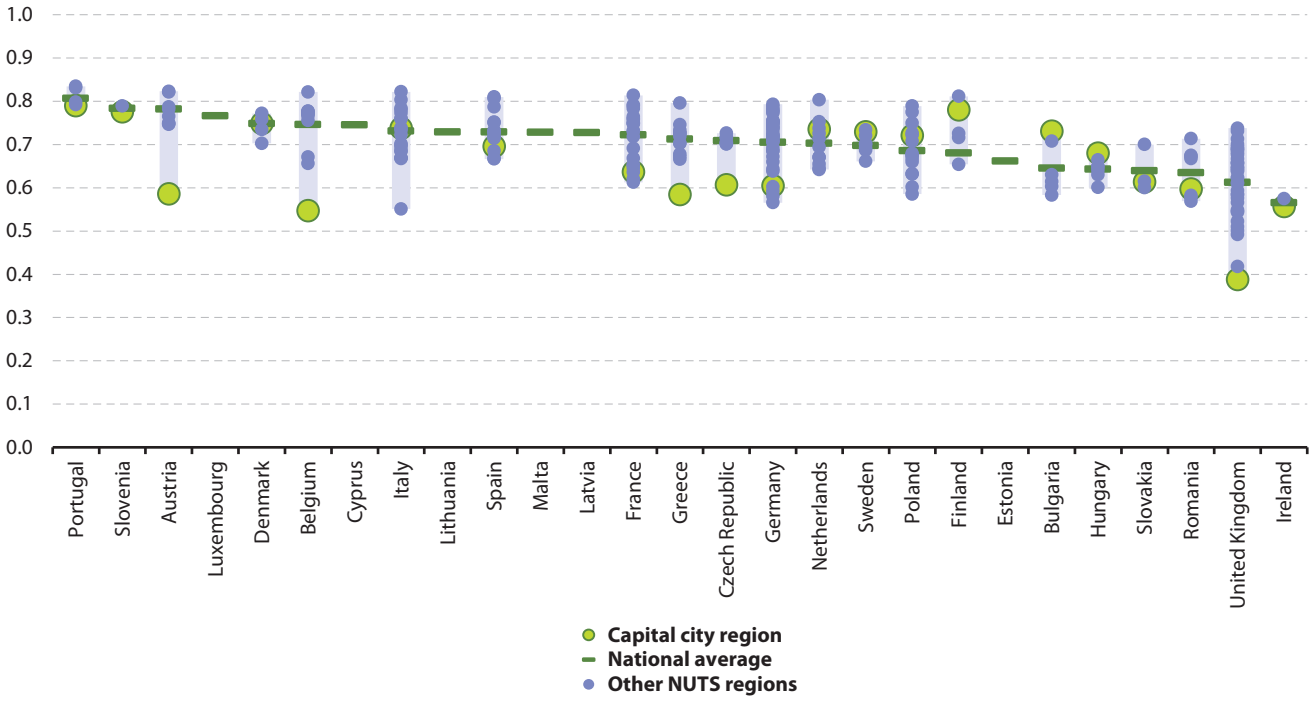
There was a relatively large variation in landscape diversity between the different regions of Belgium, Germany, Greece, France, Italy, Austria, Poland and the United Kingdom. In the case of Belgium, Greece, Austria and the United Kingdom, this range was amplified due to the low level of landscape diversity recorded for the capital region. The considerable differences in landscape diversity across Italian regions was, at least in part, due to a low level of diversity in Liguria — a densely populated, mountainous region in the north-west of the country that runs along the Mediterranean coastline from the French border to Tuscany and includes the city of Genova.

## A case study for the use of LUCAS — monitoring soil across the EU

The remainder of this chapter provides some background information in relation to the possible uses that can be made of the LUCAS data set; it concentrates on one particular area, soil. A more detailed list of areas where LUCAS data are currently being used to help analyse and contribute to the development of various EU policy areas is provided in the Introduction section .

The formation of soil is an extremely slow process and soil is therefore sometimes considered as a non-renewable resource. Demand for data and information that may be used to assess the state of European soils has been covered, among others, by the 6th Environment Action Programme, which outlined the EU's soil thematic strategy (see box), the sustainable use of soil to preserve its functions, and plans to restore degraded or polluted soils. These principles were confirmed in the 7th Environment Action Programme which restates the EU's commitment to: reduce soil erosion; increase organic matter in soil; limit the effects of man-made pressures on soil; manage land in a sustainable fashion; and remedy sites with contaminated soils.

**Figure 13.1:** Landscape diversity expressed by the Shannon evenness index, by NUTS 2 regions, 2012 (1)
(index, range = 0–1; with a value of zero representing a landscape with no diversity (only one land cover type) and a value of one representing the maximum diversity (in other words, all types of land cover in equal amounts))




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Spanish autonomous cities, Canarias, French overseas departments, Croatia and the Portuguese autonomous islands: not available.
*Source:* Eurostat, LUCAS 2012

### THE EU'S SOIL THEMATIC STRATEGY

In 2006, the European Commission's communication titled 'Thematic strategy for soil protection' (COM(2006) 231) laid out plans to ensure that the EU is committed to a high level of soil protection, with the objective of protecting soil functions and preventing further soil degradation. Within this framework, the EU Member States decide how best to protect the sustainable development of their own soils, while the European Commission provided an impact assessment of the economic, social and environmental impacts of different policy measures.

In February 2012, the European Commission published a policy report on the implementation of the strategy (COM(2012) 46). This provided an overview of the actions undertaken within the EU's soil thematic strategy, namely in relation to raising awareness, research, integration and legislation. It showed that the strategy has helped raise the profile of soil issues, for instance by integrating them into other policies. It also presented soil degradation trends both in Europe and globally, as well as future challenges to ensure soil protection.

***For more information:***

Joint Research Centre: The state of soil in Europe

### *Soil degradation in Europe*

Within the agricultural domain, land management practices such as organic and integrated farming can maintain and enhance organic matter in soil. However, there is an on-going pattern of soil degradation in the EU, despite policies to encourage soil protection. Soil degradation processes may be exacerbated by human activity, such as, agricultural and forestry practices, industrial activities, tourism, urban and industrial sprawl or construction works. As a result, soil degradation may impact directly upon water and air quality, biodiversity and climate change, and is therefore of interest to a range of policymakers.

Some of the main factors that cause soil degradation in the EU include soil erosion (by water or by wind), and a decline in the proportion of organic matter contained within soils: almost half the soil in the EU is considered to have a low content of organic matter and this is particularly evident in the southern Member States. Other forms of soil degradation include salinisation (the accumulation of soluble salts in soils), flooding, landslides or soil contamination from industrial activities (the use and presence of dangerous substances in production processes). Fully functioning soil reduces the risk of floods and protects underground water supplies by neutralising or filtering out potential pollutants.

Another form of soil degradation is that of soil sealing, when soil is replaced by an impermeable material, for example, due to the covering of land for housing, roads or other construction work. A roadmap to a resource-efficient Europe COM(2011) 571 — one of the flagship initiatives of the Europe 2020 strategy — has called for EU policies, by 2020, to 'take into account their direct and indirect impact on land use in the EU and globally', such that the rate of land take (land taken for urban and other artificial land development) is maintained on a path which aims to achieve no net land take by 2050.

### *LUCAS soil database*

In 2009, the European Commission extended the LUCAS exercise to include an additional module in relation to soil. This survey was the first attempt to construct a pan-European topsoil database, which could serve as a baseline for EU-wide soil monitoring.

A total of nearly 20 000 topsoil samples were collected from approximately 10 % of the LUCAS 2009 data points in 23 of the EU Member States; Bulgaria, Croatia, Cyprus, Malta and Romania were initially excluded. Subsequently, Cyprus and Malta provided soil samples even though LUCAS was not carried out on their territories in 2009, while 664 and 1 427 topsoil samples were collected in Bulgaria and Romania in 2012.

Each sample was equivalent to around 0.5 kg of topsoil (0–20 cm in depth). All samples were registered and visually checked; mineral soils were air-dried and repacked, before being sent to a central laboratory for physical and chemical analyses to measure, among others: particle size (clay, silt and sand content), pH (acidity and alkalinity), organic carbon, carbonate content, phosphorus content, total nitrogen content and extractable potassium content.

### *LUCAS data — its application to monitor the soil thematic strategy*

LUCAS is based on a uniform methodology, has flexibility in its design to allow European Commission services to specify particular survey modules (such as the soil survey in 2009), and can provide soil monitoring data within two or three years.

LUCAS data have been used to make an initial analysis of land take, soil sealing, and more generally land cover and land use, while specific information from the soil module has been used to monitor the chemical and physical properties of soil across the EU. The latter has allowed a wide range of policy assessments to be made, for example, a better evaluation of carbon stocks in European soils, considered important within the context of climate change policy and for food production (as organic matter maintains soil fertility).

While the soil thematic strategy (COM(2006) 231) has helped raise the profile of these issues, there is still no systematic monitoring and protection of soil quality across Europe. In its progress report on the implementation of the strategy (COM(2012) 46) — published in 2012 — the European Commission noted that results from LUCAS could be a starting point for a harmonised system of monitoring. At the time of writing, the European Commission is drafting a Communication which highlights the importance of good land management and aims to raise awareness about the value of land as a resource; this Communication is likely to be adopted in 2015.

### *LUCAS data — its application to monitor agro-environmental indicators*

The EU's agricultural policy post-2013 contains commitments to incorporate a range of environmental concerns, for example, in a Communication entitled 'Development of agri-environmental indicators for monitoring the integration of environmental concerns into the common agricultural policy' (COM(2006) 508), the European Commission proposed a set of 28 agri-environmental indicators, including indicators for soil quality and soil erosion.

#### Soil quality

The LUCAS soil module includes the evaluation of the organic carbon content of soils (as derived from residual plant and animal material decomposed under the influence of temperature, moisture and ambient soil conditions); this indicator is named the organic carbon concentration of soil. A high level of organic carbon content may be linked with good soil conditions from an agro-environmental point of view and is likely to promote limited soil erosion, a high filtration capacity, a rich habitat for soil organisms, and provide a sink for atmospheric carbon dioxide. The annual loss of organic matter can vary greatly in soils, depending on natural factors (for example, climate, soil material, drainage status, land cover and topography), and human-induced factors (for example, type of plant / crop cover, land use, land management practices).

At present the LUCAS data are available only for 2009: this information provides a useful baseline against which the impact of the CAP post-2013 could be measured, especially in relation to the sustainable management of natural resources and climate action. If the LUCAS soil module is repeated at a later point in time, then organic carbon loss could be evaluated, a key indicator for measuring the pace of soil degradation.

#### Soil erosion

Soil's vulnerability to erosion depends on a range of environmental conditions and human activities. By removing the most fertile topsoil, erosion reduces soil productivity and, where soils are shallow, may lead to an irreversible loss of farmland. Severe erosion is commonly associated with the development of temporary or permanently eroded channels or gullies that can fragment farmland.

Soil erosion is defined as the area exposed to the risk of erosion (in hectares and as a percentage of the total area). LUCAS data has been used in a modelling exercise (RUSLE) conducted by the European Commission's Joint Research Centre (JRC) which evaluated soil erosion rates. The work carried out by the JRC suggests that the following types of data will be needed, in the future, to produce reliable indicators for soil erosion:

- soil data — texture, organic carbon content, structure, permeability;
- climate data — precipitation and temperature;
- land cover;
- topography;
- management — human and agricultural practices.

## Data sources and availability

LUCAS is a harmonised in situ land cover and land use survey, implying that data are gathered through direct observations made by surveyors on the ground. The use of an area frame survey reduces the statistical burden on farmers and other land owners as they do not need to respond to a questionnaire.

The latest LUCAS field work took place between March and September 2012 for the EU-27 Member States (no information was collected for Croatia as the survey was conducted before Croatian membership of the EU).

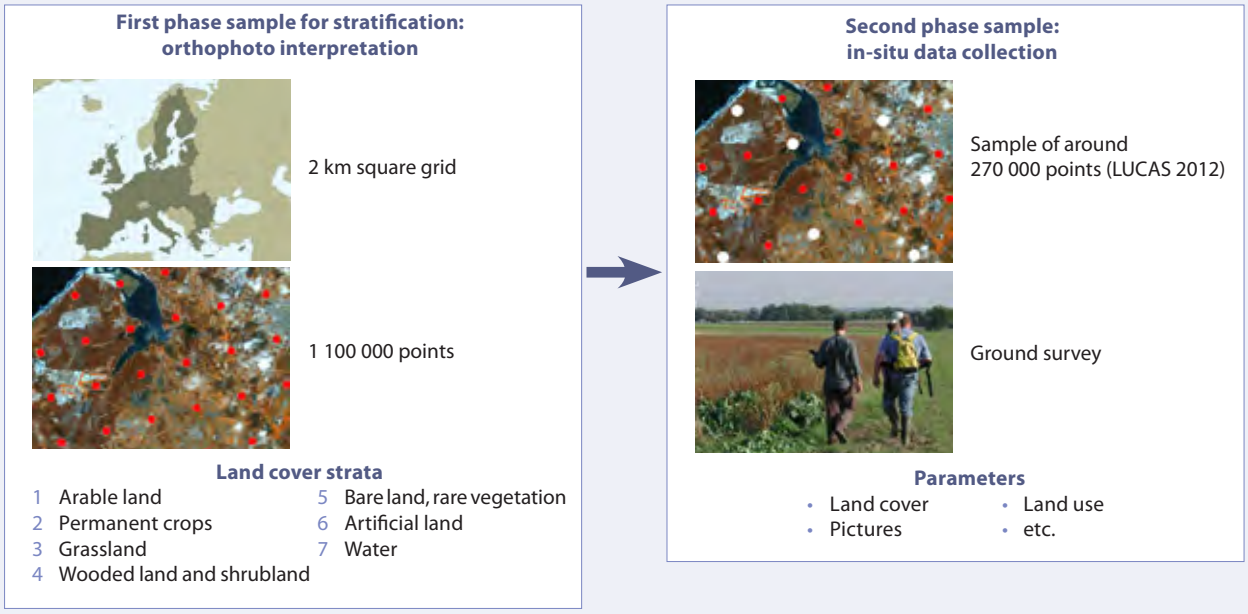
## What type of information is available?

There are two main types of information derived from LUCAS that may be presented to users: aggregated statistical data and elementary data (for individual survey points). The aggregated results show land cover and land use for the EU-27 and national averages for the EU Member States, and can also be shown at a more detailed level, for example, for more than 250 NUTS 2 regions. These statistics can be supplemented by indices relating to landscape composition, richness, structure, dissection and diversity which may be aggregated to a national or a regional level from the information collected at individual survey points.

### HOW IS LUCAS CONDUCTED?

To conduct LUCAS, the EU' territory was divided up using a 2*2 km grid whose nodes constituted around 1.1 million points. From this, a sample of some 270 000 points were selected on the basis of stratification information — each of these points was visited by one of the 750 field surveyors (mostly agrarian and forestry engineers).

***Sampling strategy: sampling design***




*Includes material © (2010) RapidEye AG, Germany; all rights reserved*

At each survey point, the surveyor: observes the land cover; observes the land use; notes other environmental parameters on the ground (for example, irrigation, grazing, burned areas, fire breaks); takes a series of photographs (of the reference point, as well as pictures to the north, south, east and west); walks 250 metres in an eastward direction (a 'transect') recording the different land cover and linear elements, such as walls, hedges, roads, railway lines, irrigation channels or electricity power lines. This information collected for each transect can be used to analyse the fragmentation, richness and diversity of landscapes — for example, the Shannon evenness index.

***Transect information collected by LUCAS — the transect walked by the surveyor***

*Acknowledgement: PNOA © INSTITUTO GEOGRÁFICO NACIONAL DE ESPAÑA — Xunta de Galicia*

The elementary data is in situ micro-data for each of the surveyed points. It provides a rich source of information for further, detailed analyses. The data are presented in a tabular format in country-specific files, available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/lucas/data/LUCAS_primary_data/2012.

Since the 2006 reference period, Eurostat has also made available a photograph archive from LUCAS. Photographs can be requested by using the online form: http://epp.eurostat.ec.europa.eu/portal/page/portal/lucas/data/LUCAS_primary_data/form.

### ACCESS LUCAS DATA — EUROSTAT'S STATISTICAL ATLAS

This application is an interactive viewer that allows users to study layers of statistical data in combination with geographical information. The statistical atlas can be used for viewing maps composed of LUCAS data and provides users with the opportunity to see all of the information collected at each of the surveyed points, including the coordinates of the location, the classification of land cover and land use and the photographs that were taken.

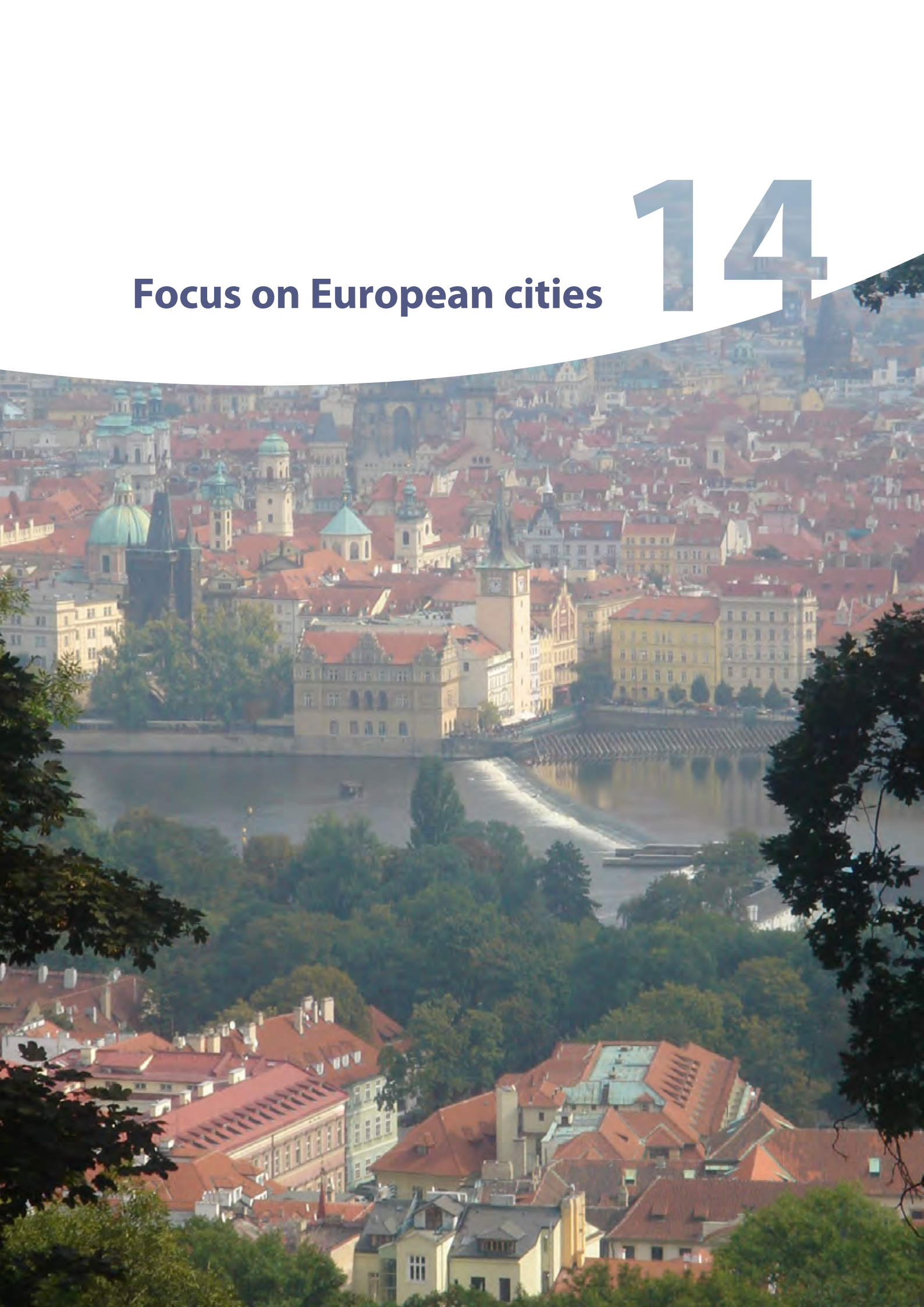
***LUCAS online viewer (select LUCAS data from the drop-down list — top right corner of the application):***

http://ec.europa.eu/eurostat/statistical-atlas/gis/viewer

***Examples of photographs taken at a specific survey point:***

Central photograph: the surveyed LUCAS point; remaining images taken from the surveyed point to the north, south, east and west.

# 14 Focus on European cities



# Introduction

Towns and cities across the European Union (EU) provide a home to more than 70 % of the EU-28's population. In today's globalised economy, the quality of life offered in the EU's cities is crucial for attracting and retaining a skilled labour force, businesses, students and tourists. However, the social and economic concentration of resources in urban areas can result in undesirable side-effects: for example, congestion or crime. Cities are therefore seen as both the source of and solution to economic, environmental and social challenges and, as such, they are central to achieving the Europe 2020 goals of 'smart, sustainable and inclusive growth'.

European cities face a variety of challenges: ranging from ageing populations, through migration and urban sprawl, to counteracting climate change. By contrast, Europe's dynamic cities attract investment, people and services, thereby stimulating creativity and innovation. There is often a paradox insofar as: some of the most thriving cities in the EU have some of the highest levels of social exclusion and income disparities; living and working in the same city is less polluting, while city dwellers are generally exposed to more pollution; some cities offer the greatest concentration of employment opportunities, while others have some of the highest levels of unemployment.The EU promotes sustainable growth to drive the competitiveness of Europe's cities, with the goal of safeguarding a high quality of life for those living in the EU both today and in the future. Over the last 20 years, the EU's cohesion policy has supported a wide range of urban initiatives.

## Europe 2020

Cities are seen as both the source and solution of economic, environmental and social challenges: they are home to an increasing share of the EU's population, they account for the largest share of its energy use and they generate about 85 % of its GDP. Therefore, cities are central to achieve the Europe 2020 targets of smart, sustainable and inclusive growth.

Urban development policy seeks to promote the social, economic and physical transformation of cities through integrated and sustainable solutions. The European Commission has stated that 'it is crucial that all levels of governance be aware of the need to implement effectively the Europe 2020 strategy'. As such, regional policy and urban development play a central role in the Europe 2020 policy. Three flagship projects within the Europe 2020 strategy — the digital agenda, the innovation union and youth on the move — address specific urban challenges.

To assist regional authorities and cities, the Committee of the Regions — in close cooperation with the European Commission — released a handbook on the Europe 2020 strategy for cities and regions that provides explanations on how local and regional authorities can contribute to the implementation of the Europe 2020 strategy through adopting best practices and agreements between different tiers of government to coordinate and focus actions / resources on the Europe 2020 strategy goals and targets.

### URBAN DEVELOPMENT — COHESION POLICY FUNDING

During the programming period 2007–13, total cohesion policy funding of EUR 21.1 billion was available for sustainable urban development initiatives, around 6.0 % of the total cohesion policy budget. The vast majority of this investment came from the cohesion fund and the European Regional Development Fund (ERDF). Some of the main priorities for sustainable urban development initiatives included urban and rural regeneration programmes (EUR 9.8 billion), clean urban transport (EUR 7.0 billion), the rehabilitation of industrial sites and contaminated land areas (EUR 3.4 billion), and housing (EUR 917 million).

During the 2014–20 programming period, European cities are expected to benefit even more from the EU's regional policy. Urban areas will be directly targeted by several of the European Regional Development Fund (ERDF) priorities, while each EU Member State will invest a minimum of 5 % of the ERDF in integrated sustainable urban development. An urban development network will review the deployment of European funds as well as support the exchange of experience between cities involved in integrated sustainable urban development and in urban innovative actions.

***For more information:***

Cohesion policy and urban development: http://ec.europa.eu/regional_policy/activity/urban/index_en.cfm

## Sustainable investment

Suburbanisation, congestion and the risks of poverty, social exclusion and unemployment are challenges faced by many cities. Complex issues such as these require integrated solutions in terms of urban planning and regeneration, alongside the development of urban infrastructure, transport services, housing, heritage and cultural sites, brownfield sites and new commercial floor space. Funding for initiatives such as these is often dependent upon plans to decouple economic growth from the use of resources, supporting a shift towards a low carbon economy, promoting energy efficiency, increasing the use of renewable energy sources, and modernising transport systems.

The promotion of urban development and regeneration can play a valuable role in the implementation of the Europe 2020 strategy, through: enhancing access to information and communication technologies; enhancing the competiveness of SMEs; supporting the shift towards a low-carbon economy; promoting climate change adaptation and risk prevention; protecting the environment and promoting resource efficiency; promoting sustainable transport and removing bottlenecks in network infrastructures; promoting employment and supporting labour mobility; promoting social inclusion and combating poverty; investing in education, skills and lifelong learning; and enhancing institutional capacity and ensuring an efficient public administration.

Urban development issues have been integrated, to a large extent, into regional and national programmes supported by structural and cohesion funds. The Leipzig charter on sustainable European cities, agreed in 2007, demonstrated the EU's commitment to making urban areas healthy, attractive and sustainable places to live and work. This work was further extended in 2010 with the Toledo declaration that resulted from a meeting of the ministers responsible for urban development in the EU Member States. The declaration sets out the EU's commitment to defining and applying integrated urban regeneration as one of the key tools of the Europe 2020 strategy, in particular through the promotion of energy efficiency, the renovation of buildings and housing, along with improvements to existing public transport systems and policies designed to limit the development of outlying areas around cities.

The exchange of best practice and networking between urban planners and other local experts has been facilitated by the URBACT programme, which promotes sustainable urban development through a range of funding initiatives. At the time of writing, the URBACT III programme (to cover the programming period 2014–20) was still under discussion. However, the next programming period is likely to be more results-oriented and will incorporate a reference framework for sustainable cities, a toolkit designed to help cities promote and enhance their work.

# Main statistical findings

This chapter presents indicators relating to the demographics of EU cities: it provides an analysis of age structures, citizenship, and perceptions of foreigners. The second half looks at the issue of housing and presents information on: the average size of households; the distribution of one person households; perceptions in relation to the ease of finding good housing at a reasonable price. These indicators are just a few examples of the wide range of data that is available within the Urban Audit.

The Urban Audit provides information and comparable measurement on a range of socioeconomic aspects that relate to the quality of urban life in European cities. The data cover more than 900 cities across the EU Member States, EFTA and candidate countries (cities from Norway, Switzerland and Turkey are currently included). Note that there may be considerable differences in relation to the latest reference period available for each city.

## Resident populations living in Europe's cities

Based on a typology related to the degree of urbanisation, some 71.7 % of the EU-28's population lived in a densely-populated or an intermediate urbanised area in 2012; around 200 million persons were living in densely-populated areas and almost 160 million in intermediate urbanised areas.

There is a diverging pattern as concerns the increasing share of the European population that is living in urban areas. On one hand, some of Europe's largest cities continue to attract both internal and external migrants, and these cities continue to expand — often this implies urban sprawl, as previously rural areas in the neighbourhood of expanding metropolitan areas are developed to cater for the growing population. On the other, those cities associated with former industrial heartlands have seen their population size contract, as output from major industries has declined or even ceased to exist, thereby leading to a shortage of jobs, urban decay and people leaving to search for work elsewhere.

### *Many cities in England, the Netherlands and Belgium were within close proximity of each other*

**Map 14.1** presents the resident population of Urban Audit core cities as of 1 January 2012: each circle represents a city and the size of the circle reflects its number of inhabitants. One of the most striking aspects of the distribution is the close proximity of cities to each other in much of England (the United Kingdom), the Netherlands and Belgium. By contrast, the Nordic Member States, France and interior Spain and Portugal were characterised by their relatively low density of cities.

These differences in spatial structure can be classified according to levels of centralisation and clustering. On one hand, there are countries like France which appear to have a relatively monocentric structure based on Paris. This may be contrasted with the polycentric structure observed in western Germany, where there is no dominant city and several of the main urban centres are of a similar size.

### *More than eight million inhabitants in London and Istanbul*

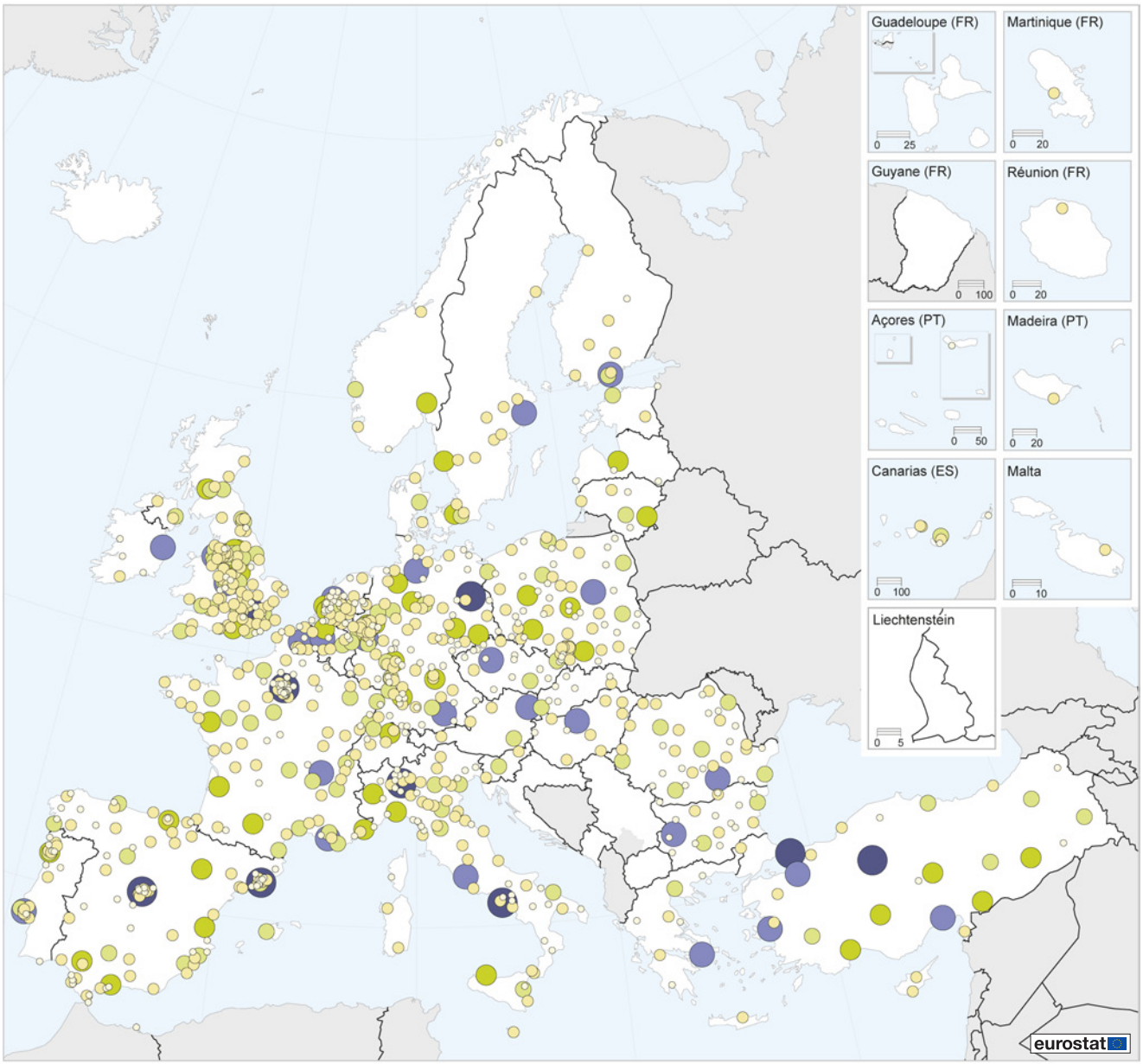
Across the whole of Europe, the most populous cities were London (data are for 2011) and Istanbul (data are for 2000), they both recorded resident populations of more than 8.0 million persons. In 2012, the next largest cities across the EU included Paris (6.5 million) and Berlin (3.5 million), while Madrid, Barcelona, Milano and Napoli each reported 3.2 or 3.1 million inhabitants; this was also the case for Ankara in Turkey (data are for 2000).

The seven EU cities with a population of more than 3.0 million residents were followed by 23 cities which had a population of between 1.0 and 3.0 million inhabitants; 14 of these were capital cities, while the remaining nine cities were divided equally between Germany, France and the United Kingdom.

There were 41 cities across the EU in the next tier with between 0.5 and 1.0 million residents, followed by 101 cities with 250–500 thousand residents, and 383 cities with 100–250 thousand inhabitants. The Urban Audit also provides results from a further 306 smaller cities in the EU, which had fewer than 100 thousand residents.

At the other end of the range, the smallest capital city was Luxembourg, which had just less than 90 thousand inhabitants in 2009; as such, London was about 90 times the size of Luxembourg.

**Map 14.1:** Total resident population in the Urban Audit core cities, 1 January 2012 (1) (inhabitants)




(1) For some cities an alternative reference period has been used, the exceptions are too lengthy to document; the information presented in the map relates to the most recent data available for each city. Bulgaria, Ireland, Greece, Paris (greater city), Latvia, Lithuania, Malta, Poland, Portugal and the United Kingdom: estimates. Dublin, Athina, Barcelona, Bilbao, Paris, Milano, Napoli, Amsterdam, Rotterdam, Lisboa, Porto, Helsinki / Helsingfors, Stockholm, London, Liverpool, Leicester, Portsmouth, Greater Nottingham, Southend-on-Sea, Reading, Preston, Zürich, Genève, Basel, Bern, Lausanne, Luzern and Lugano: greater city.

*Source:* Eurostat (online data code: urb_cpop1)

## Age structure of the resident population

**Figure 14.1** shows an example of how the age structure of the population varies across European cities. It provides a comparison of the age structure for six EU Member States and compares this with similar information for each of their capital cities.

When looking at the relative weight of younger persons (those aged 0–19 years) in the total population, each capital city shown in **Figure 14.1** reported a lower share than the national average; despite the relative size of the working-age population (and therefore the child-bearing population) being above the national average in Madrid, Budapest, Dublin and especially Berlin. There are several possible reasons for this, including: people living in capital cities were having fewer children that their compatriots living outside of the capital; people were leaving the capital city after starting families; people of working age without children were moving into capital cities.

### *Working-age persons generally drawn to capital cities*

The cultural attractions of most capital cities, coupled with the educational and employment opportunities that they offer, might suggest that capital cities have a higher share of working-age persons (aged 20–54). This was often, but not always true, as the proportion of working-age persons living in Warszawa and Lisboa was lower than the respective national averages for Poland and Portugal.

It is also conceivable that older persons (aged 65 and over) might be tempted to move away from capital cities for their retirement to avoid some of the disadvantages often associated with big cities, such as congestion and crime. However, once again in Warszawa and Lisboa, as well as in Madrid and Roma, elderly persons accounted for a higher proportion of the population than the national average.

## Old-age dependency ratios

### *Population ageing already prevalent in many Italian and German cities*

The ratio between the number of older persons and those of working age is referred to as the old-age dependency ratio, and this is shown in **Map 14.2** for 866 cities in the EU and 43 cities across Norway, Switzerland and Turkey. Those cities with an old-age dependency rate of 35.0 % or more in 2012 (as shown by the darkest shade in the map) were mainly located in Italy (52 cities) and Germany (47 cities). This was in keeping with national patterns, as Italy and Germany both have very low fertility rates and relatively high life expectancy rates — hence, it is likely that their populations will continue to age and shrink in the coming decades. Among the remaining cities with old-age dependency rates of at least 35.0 % there were 12 cities in France (data are for 2010), nine in the United Kingdom (data are for 2011), seven in Spain, three in Belgium, two in Portugal and one each in Greece (data are for 2009) and the Netherlands.

The largest cities (population of at least 500 thousand inhabitants) with an old-age dependency rate of at least 35.0 % included the Italian cities of Roma (one of only two capitals with an old-age dependency ratio of at least 35.0 %), Genova and Torino; Nice in the south-east of France (2010 data); the Ruhr city of Essen in Germany; and the Portuguese capital of Lisboa.

### *Less than two working-age persons for each older person in Fréjus, Sanremo and Savona*

There were only three EU cities where the old-age dependency ratio exceeded 50.0 %, all on the Mediterranean coast. The highest old-age dependency ratio was recorded in the French resort of Fréjus (57.2 %, 2010 data), while the other two cities were located just over the border in the Italian towns of Sanremo and Savona. The French and Italian Riviera was not the only coastal region that seemingly attracted retirees, as relatively high old-age dependency ratios were recorded elsewhere on the coast of France (Perpignan, Bayonne and La Rochelle), for several coastal resorts in the United Kingdom (Great Yarmouth, Eastbourne and Torbay) and for the Belgian resort of Oostende.

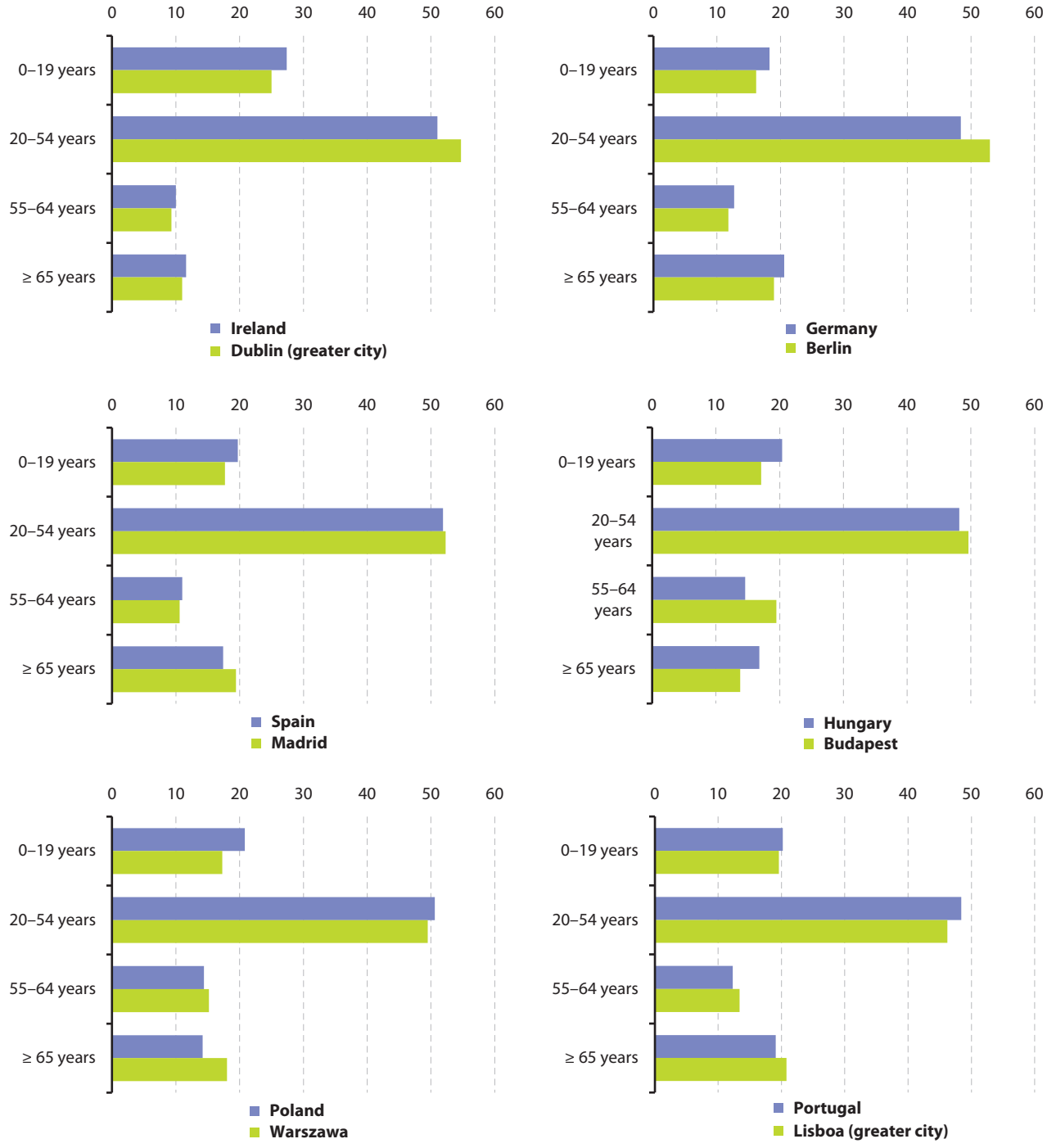
### *Suburban areas often characterised as having a high proportion of persons of working-age*

There were 103 cities in the EU that reported old-age dependency ratios of less than 20.0 % (as shown by the lightest shade). The lowest old-age dependency ratio in the EU was 9.2 % in Slatina (Romania), while two suburban areas close to Madrid — Fuenlabrada and Parla — had the second and third lowest rates (9.8 % and 10.6 %). This pattern of relatively low old-age dependency rates observed for suburban areas around the Spanish capital was repeated for the French capital, as Marne la Vallée, Saint Denis, Cergy-Pontoise, Saint-Quentin en Yvelines and Evry were the only French towns and cities to record old-age dependency ratios below 15.0 % and they are all situated within a radius of no more than 20 km from central Paris. Several reasons may underlie this pattern: young people may be unable to afford to buy or rent in the centre of big cities and instead choose to live in the surrounding suburbs, families may choose to move to the suburbs to have more space, older people may move out of the suburbs.

### *Low old-age dependency rates in several north-western capitals as well as in the Cypriot capital*

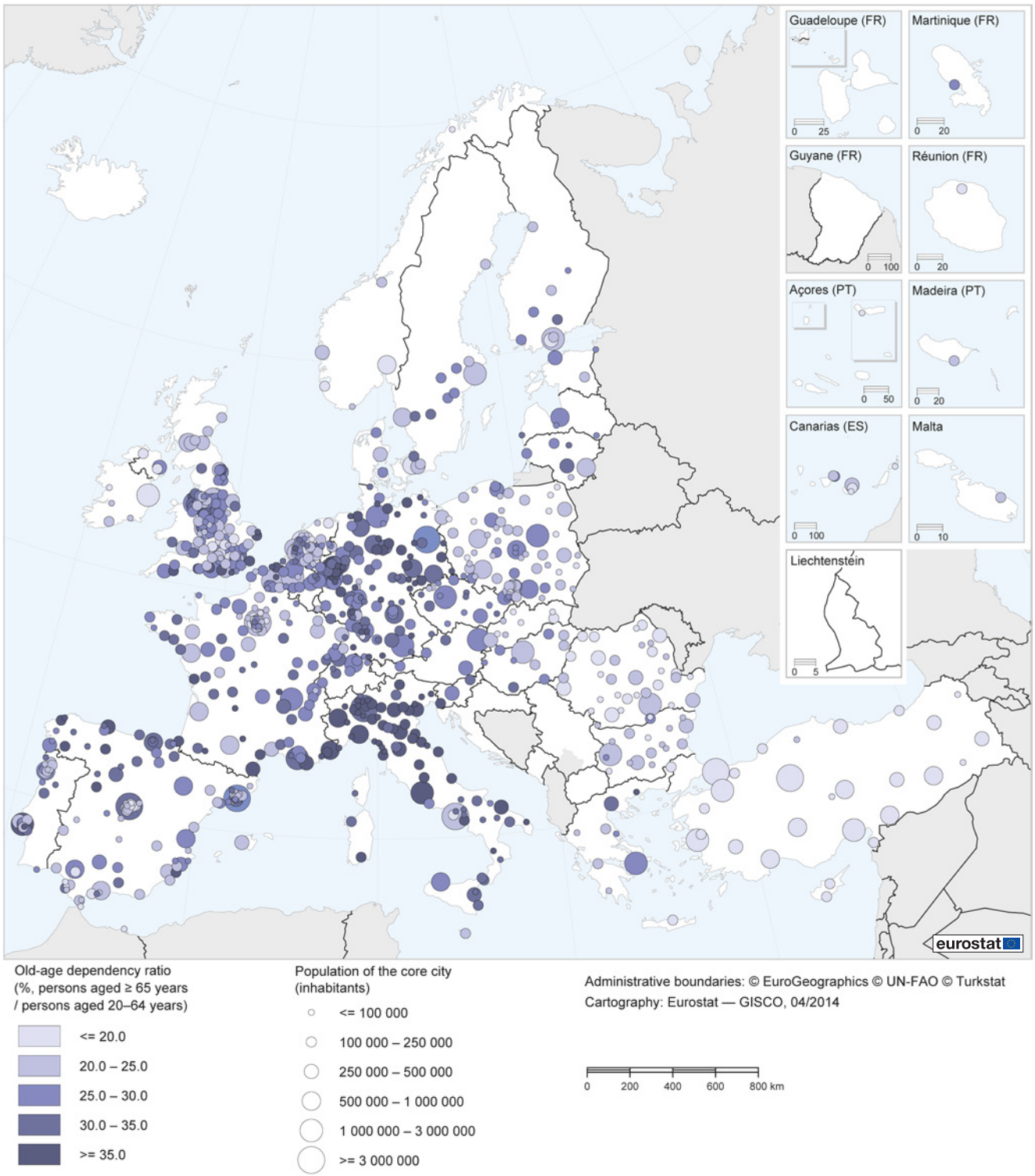
Among these 103 EU cities with the lowest old-age dependency rates there were five capital cities: Amsterdam (the Netherlands), Lefkosia (Cyprus), London (the United Kingdom), Dublin (Ireland) and København (Denmark). The only large city (more than 500 thousand inhabitants) in the EU with an old-age dependency ratio of less than 20.0 %, which was not a capital city, was Manchester in the United Kingdom. Old-age dependency rates were also low across all Turkish cities (data are for 2000).

**Figure 14.1:** Age structure of the population, selected capital cities from the Urban Audit, 2012 (1)
(% of total population)




(1) Ireland and Dublin: 2011.
*Source:* Eurostat (online data code: urb_cpopstr)

**Map 14.2:** Old-age dependency ratio in the Urban Audit core cities, 2012 (1)
(%, persons aged ≥ 65 years / persons aged 20–64 years)




(1) For some cities an alternative reference period has been used, the exceptions are too lengthy to document; the information presented in the map relates to the most recent data available for each city. Bulgaria, Ireland, Greece, Paris (greater city), Latvia, Lithuania, Malta, Poland, Portugal and the United Kingdom: estimates. Dublin, Athina, Barcelona, Bilbao, Paris, Milano, Napoli, Amsterdam, Rotterdam, Lisboa, Porto, Helsinki / Helsingfors, Stockholm, London, Liverpool, Leicester, Portsmouth, Greater Nottingham, Southend-on-Sea, Reading, Preston, Zürich, Genève, Basel, Bern, Lausanne, Luzern and Lugano: greater city.

*Source:* Eurostat (online data code: urb_cpop1)

SPOTLIGHT ON THE REGIONS: LEFKOSIA, CYPRUS

**University of Cyprus, Lefkosia**

Lefkosia (Nicosia) is the capital of Cyprus with a population of almost 235 000 inhabitants. The old-age dependency ratio in Lefkosia was 18.4 %, one of the lowest among any of the cities covered by the Urban Audit, while the national average for the whole of Cyprus was 20.2 %. Lefkosia was one of five capital cities to report an old-age dependency rate of less than 20.0 %; the others were all in north-western Europe (London, Dublin, Amsterdam and København).

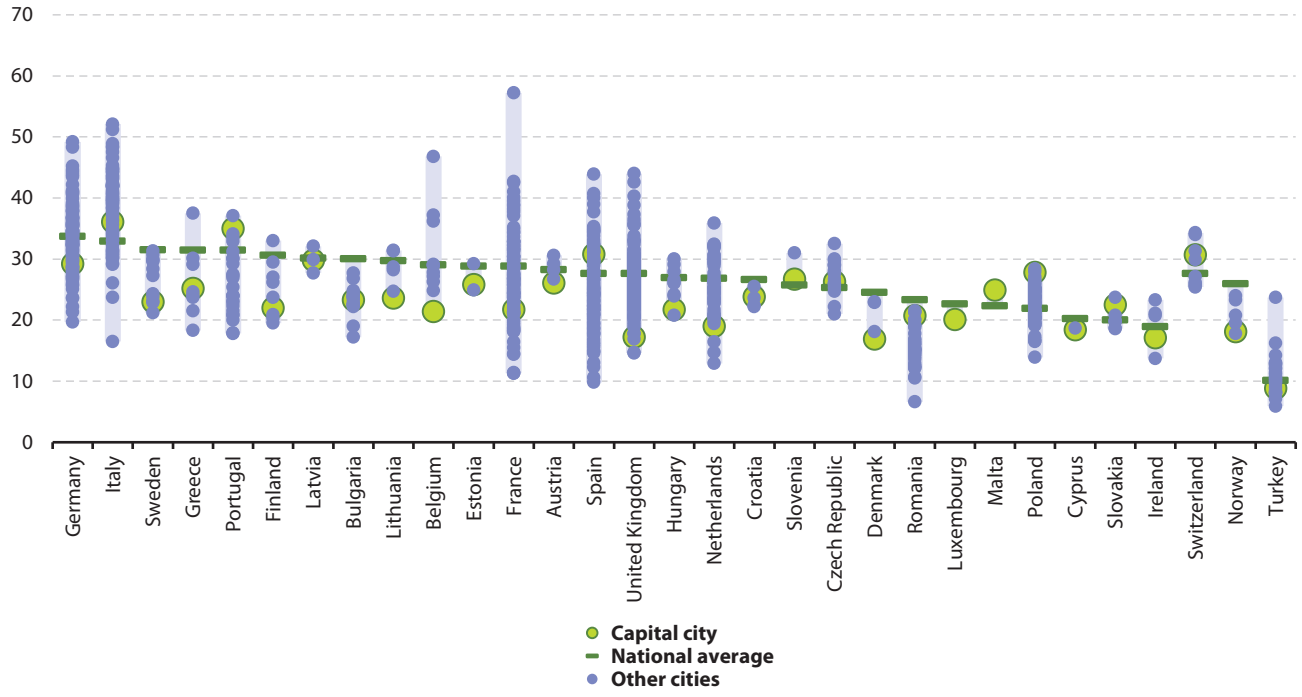
*Photo: University of Cyprus*

**Figure 14.2** provides an alternative analysis of the range of old-age dependency ratios across cities. It confirms that the elderly generally tended to avoid living in capital cities, as old-age dependency ratios in capital cities were below their respective national averages in the majority of EU Member States. There were some exceptions — as noted above these included Lisboa, Madrid, Roma and Warszawa — while the old-age dependency ratios for Ljubljana, Praha, Valletta and Bratislava were also above their respective national averages.

In Sweden, Bulgaria, Croatia, Denmark, Romania, Luxembourg and Cyprus, the national average for the old-age dependency ratio was above the range shown for all cities. In these cases, the relative weight of elderly persons living in rural areas or towns was higher; this was also the case in Norway. In Malta, the opposite pattern could be observed, as the old-age dependency ratio in the capital city of Valletta was higher than the national average for the remainder of this Mediterranean island.

The biggest ranges in old-age dependency ratios between cities of the same country were recorded for the most populous EU Member States, namely, France, Italy, Spain, Germany and the United Kingdom.

**Figure 14.2:** Regional disparities for the old-age dependency ratio in the Urban Audit core cities, 2012 (1)
(%, persons aged ≥ 65 years / persons aged 20–64 years)




(1) The light purple shaded bar shows the range of the highest to lowest city for each country. The dark green bar shows the national average. The green circle shows the capital city. The dark purple circles show the other cities covered by the Urban Audit (subject to availability). For some cities an alternative reference period has been used, the exceptions are too lengthy to document; the information presented relates to the most recent data available for each city. Bulgaria, Ireland, Greece, Cyprus, Latvia, Lithuania, Malta, Poland, Portugal, the United Kingdom and Turkey: estimates. Dublin, Athina, Barcelona, Bilbao, Milano, Napoli, Amsterdam, Rotterdam, Lisboa, Porto, Helsinki / Helsingfors, Stockholm, London, Liverpool, Leicester, Portsmouth, Greater Nottingham, Southend-on-Sea, Reading, Preston, Zürich, Genève, Basel, Bern, Lausanne, Luzern and Lugano: greater city.

*Source:* Eurostat (online data codes: urb_cpopstr and demo_pjangroup)

## Population by place of birth

Globalisation, the free movement of EU nationals within the Union, and political unrest in neighbouring countries are some of the many reasons why Europe's population has become more mixed; most cities have seen their share of non-nationals grow over the last couple of decades. EU nationals from other Member States generally account for less than 10 % of the population in most cities and where their share is higher this is frequently associated with areas that are popular retirement destinations.

**Map 14.3** analyses the population of cities distinguishing native-born populations, in other words, those persons who were born in the same country as for which the data are reported, irrespective of their citizenship; note that the there are no data available for several of the EU Member States (including Italy and the United Kingdom).

There were considerable differences across the EU, as 101 cities (out of the 535 for which data are available) reported at least 95.0 % of their population was native-born, while 61 cities reported that fewer than 75.0 % of their population was native-born.

### *Polish and Bulgarian cities were often populated almost entirely by native-born inhabitants*

Within the former group, almost half of the cities with at least 95.0 % of their population being native-born were Polish (data are for 2011), while all of the Bulgarian cities were also included in this group. These 101 cities where at least 95.0 % of the population was native-born included some relatively large cities such as the Bulgarian capital of Sofia, or the Polish cities of Kraków, Gdansk and Poznan. The remainder were largely composed of cities from southern Spain (including Cádiz, Córdoba and Jaén), northern France (including the ports of Boulogne-sur-Mer, Calais and Cherbourg, and Lens - Liévin and Lorient), Lithuania (including the second largest city of Kaunus), Portugal and Finland.

### *Migrant populations attracted to some of the largest cities in the EU …*

At the other end of the range, the cities with relatively low shares of their populations being native-born were principally located across Germany, the Benelux Member States and Spain. The attraction of big cities to migrants was apparent insofar as the 61 cities where the native-born population accounted for no more than three-quarters of all inhabitants included big cities such as München, Nürnberg or Frankfurt am Main in Germany, Amsterdam and 's-Gravenhage (the Hague) in the Netherlands, or Bruxelles / Brussel and Antwerpen in Belgium.

### *… while those cities in Spain with a low proportion of native-born inhabitants were often characterised as retirement / holiday destinations*

The Spanish cities that recorded a low proportion of inhabitants being native-born were principally tourist / retirement destinations (attracting not just foreign retirees but also foreign workers) either on the Costa del Sol (Marbella and Torremolinos) or the Costa Blanca (Benidorm, Gandia and Torrevieja). Torrevieja, which is located to the south of Alicante, was the only city to report that its native-born population accounted for less than half of the total number of inhabitants.

The analysis continues in **Map 14.4** with a presentation of the division between national and foreign populations; in other words, based on citizenship. The difference between **Map 14.3** and **Map 14.4** is the inclination or possibility for the non-native population to take the citizenship of the country they are living in; note that there may be differences between EU Member States with respect to how they choose to encourage / dissuade specific non-native populations to take their citizenship. Generally, the results shown in **Maps 14.3** and **14.4** are quite alike, suggesting that a relatively low proportion of foreigners take the citizenship of the country that they move to. Note that there are again a relatively high number of EU Member States for which no data are available (including the United Kingdom).

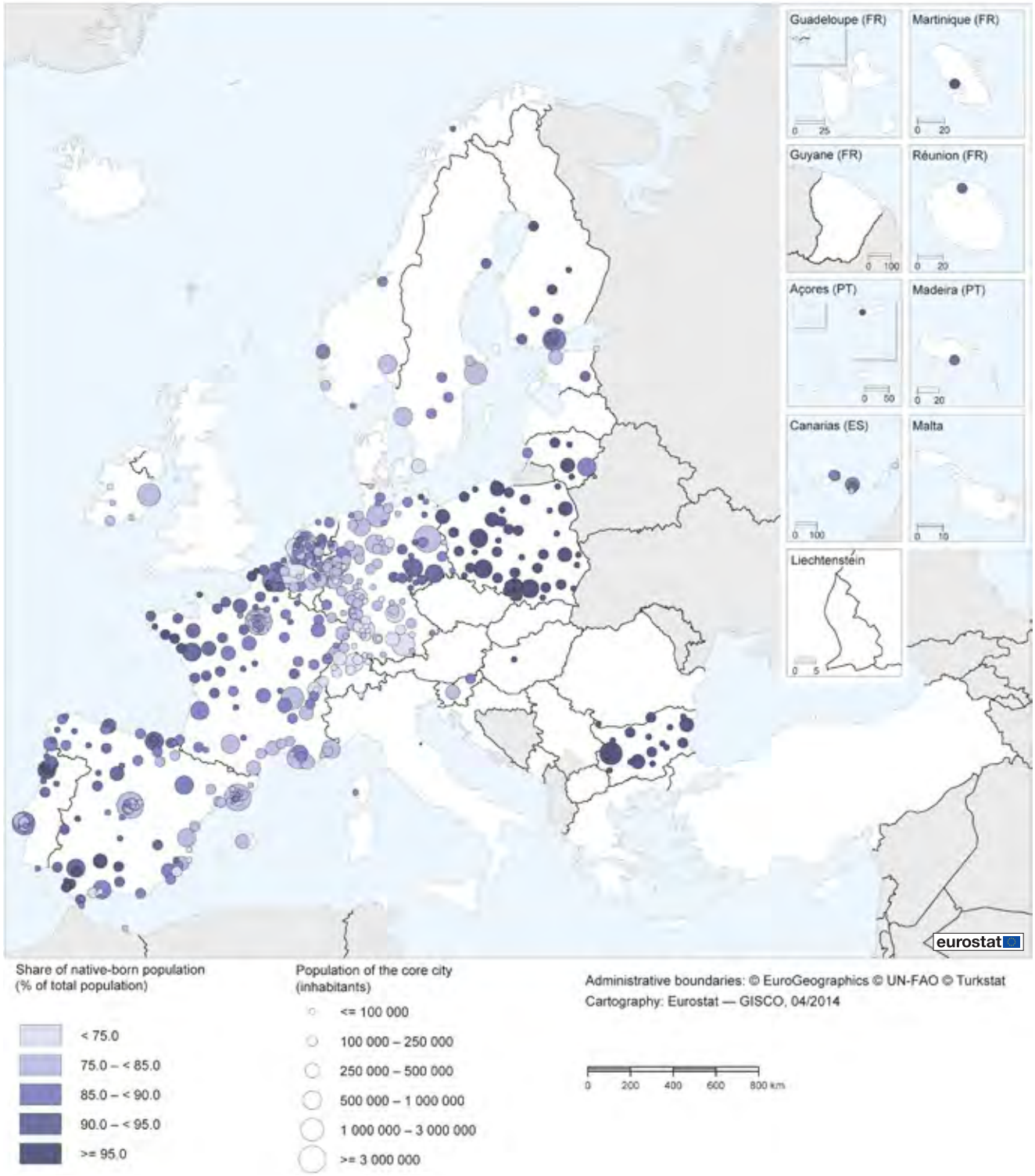
### *Nationals accounted for just over one third of the population of Luxembourg city …*

There were 248 EU cities (among those for which data are available) that reported at least 95.0 % of their population was composed of nationals in 2012. The highest shares were often recorded in Polish, Bulgarian, Hungarian and Lithuanian cities. At the other end of the range, there were three cities where the share of nationals in the total number of inhabitants was less than half: these included Torrevieja, Narva (the third largest city in Estonia on the border with Russia) and Luxembourg (data are for 2009). In the city of Luxembourg, the national population accounted for just over one third of the population, which was the lowest share among any of the cities for which data are available.

### *… but for 95.0 % or more in Sofia, Vilnius, Bratislava, Valletta and Budapest*

**Figure 14.3** provides a more detailed analysis of the breakdown of populations in capital cities (subject to availability). It confirms that more than 95 % of the population was composed of nationals in Sofia, Vilnius, Bratislava, Valletta and Budapest, while nationals accounted for 80–85 % of the population in Wien, Dublin, Madrid and Paris. There were only three capital cities where the share of nationals was lower than this, namely, Rīga (nationals accounted for 71.3 % of the population), Bruxelles / Brussel (66.2 %) and Luxembourg (36.8 %).

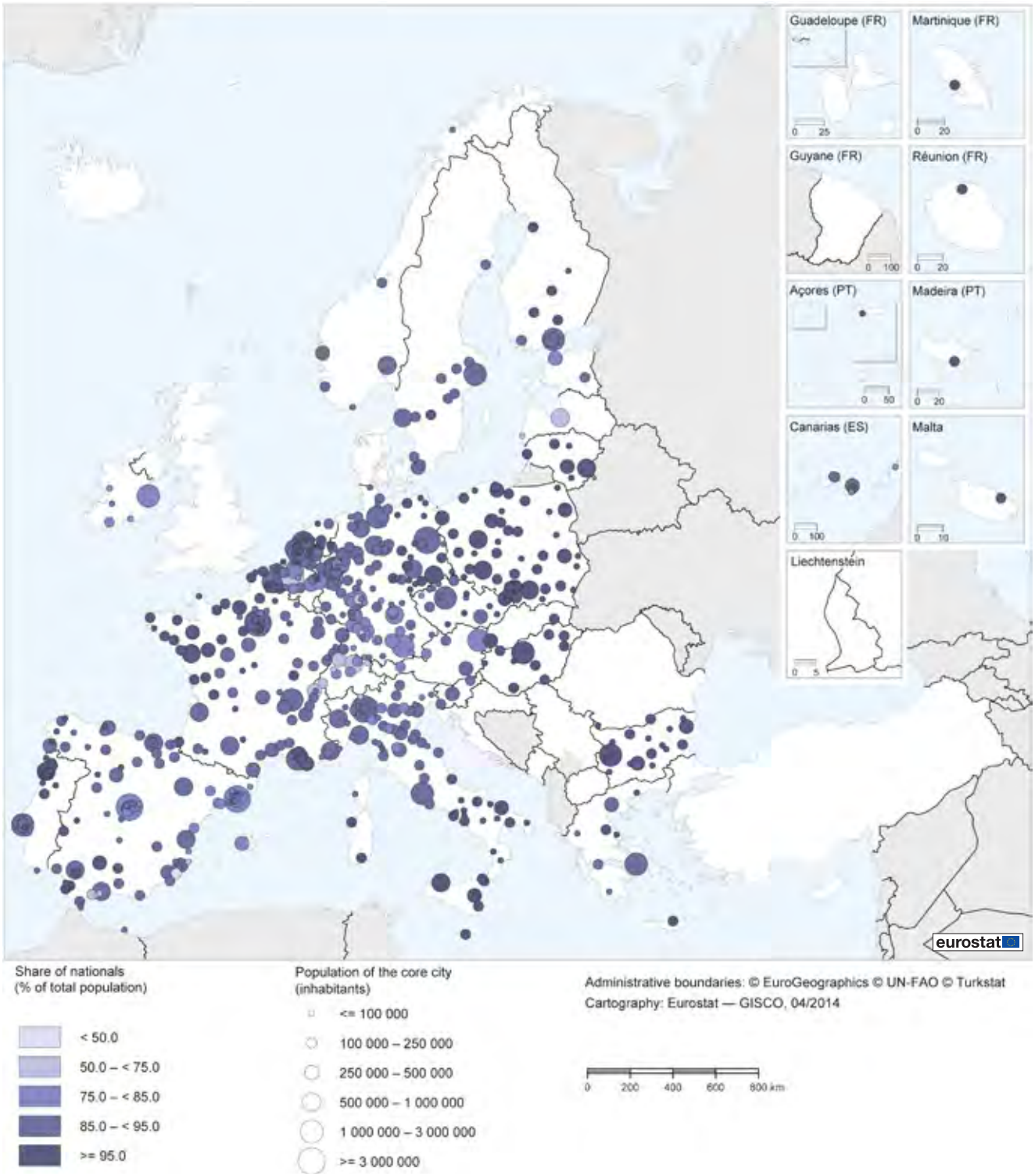
**Map 14.3:** Native-born populations in the Urban Audit core cities, 2012 (1)
(% of total population)




(1) For some cities an alternative reference period has been used, the exceptions are too lengthy to document; the information presented in the map relates to the most recent data available for each city. Bulgaria, Germany, Ireland, Lithuania, Poland and Portugal: estimates. Dublin, Barcelona, Bilbao, Amsterdam, Rotterdam, Lisboa, Porto, Stockholm, Zürich, Genève, Basel, Bern, Lausanne, Luzern and Lugano: greater city.

*Source:* Eurostat (online data code: urb_cpopcb)

**Map 14.4:** National population in the Urban Audit core cities, 2012 ([1])
(% of total population)




([1]) For some cities an alternative reference period has been used, the exceptions are too lengthy to document; the information presented in the map relates to the most recent data available for each city. Bulgaria, some cities in Germany (the exceptions are too lengthy to document), Ireland, Greece, Latvia, Lithuania, Malta, Poland and Portugal: estimates. Dublin, Athina, Barcelona, Bilbao, Milano, Napoli, Amsterdam, Rotterdam, Lisboa, Porto, Helsinki / Helsingfors, Stockholm, Zürich, Genève, Basel, Bern, Lausanne, Luzern and Lugano: greater city.

*Source:* Eurostat (online data code: urb_cpopcb)

### *Higher proportion of the non-national population coming from outside of the EU in Berlin, Paris, Madrid and Wien*

The information presented in **Figure 14.3** also provides a breakdown of the non-national population between those inhabitants that are from other EU Member States and those who come from non-member countries. Among those capital cities for which data are available, there were five which reported that at least 10.0 % of their population was composed of non-EU nationals; they were Berlin, Paris, Madrid, Wien and Bruxelles / Brussel (which had the highest share at 13.5 %). A majority of the population in Luxembourg was composed of EU nationals; Bruxelles / Brussel (20.3 %) and Luxembourg (54.4 %) were the only capital cities to report that at least 10.0 % of their population was composed of nationals from other EU Member States (which may, at least in part, be explained by both of these cities being home to various EU institutions).

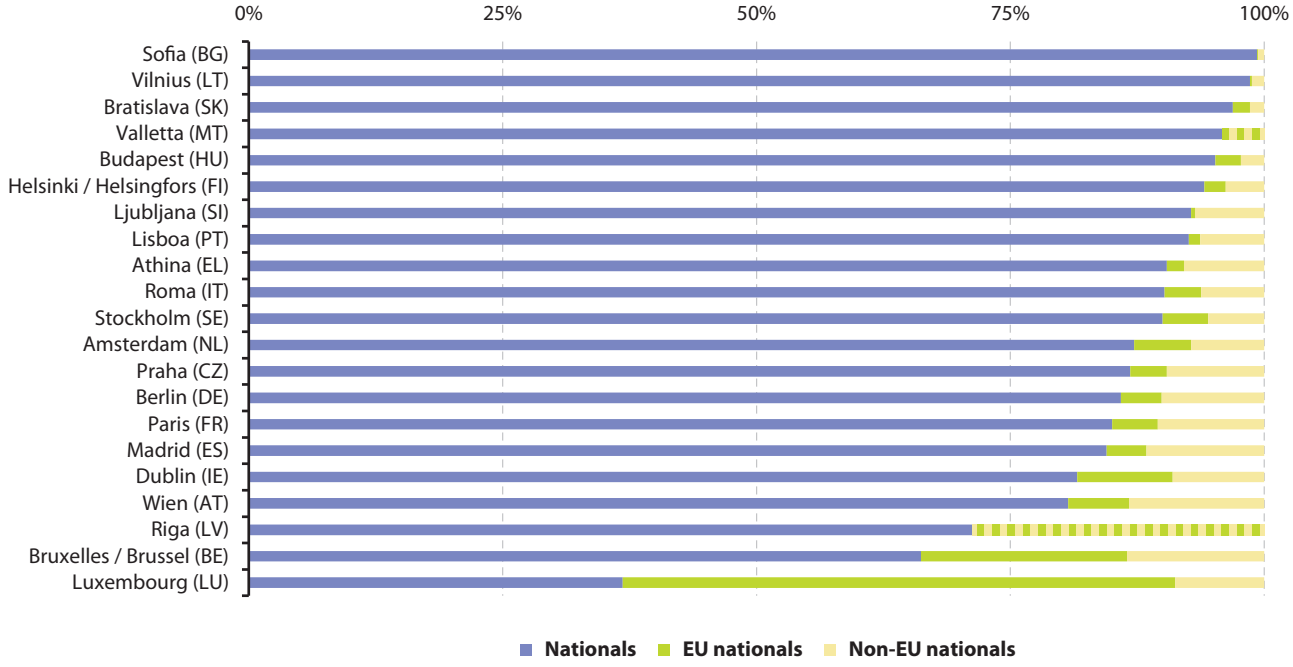
## Perceptions concerning foreigners

**Figure 14.4** is based on results from a perception survey that was conducted in 79 European cities, providing a snapshot of how Europeans feel about the cities they live in. The survey was conducted in December 2012 and results are available for cities across all of the EU Member States, as well as Iceland, Norway, Switzerland, Croatia and Turkey. One of the questions asked of respondents was whether foreigners are good for their city, with answers classified as agreeing or disagreeing and a distinction drawn between those holding stronger or weaker opinions.

### *In 49 of the 79 cities surveyed at least 70 % of respondents agreed that the presence of foreigners was a good thing*

Positive views (strongly agree or somewhat agree) that foreigners were good for the city peaked at 91 % in Cluj-Napoca (Romania), while in 49 of the 79 cities surveyed at least 70 % of respondents agreed that the presence of foreigners was a good thing. Among the 10 cities where the perception of foreigners was at its most positive, there were three Nordic capital cities — København (Denmark), Stockholm (Sweden) and Helsinki (Finland) — and two other capitals, namely, Luxembourg and Ljubljana (Slovenia). The top 10 also included Groningen (the Netherlands) and three other cities from eastern Europe — aside from Cluj-Napoca — namely, Kraków (Poland), Burgas (Bulgaria) and Piatra Neamt (also Romania). The high positive perception regarding the presence of foreigners in Luxembourg is not surprising given that almost two thirds of the population is foreign. This could be contrasted with the situation in one of the other 10 cities that viewed the presence of foreigners most positively, as nationals accounted for 99.5 % of the population in Burgas (data are for 2010).

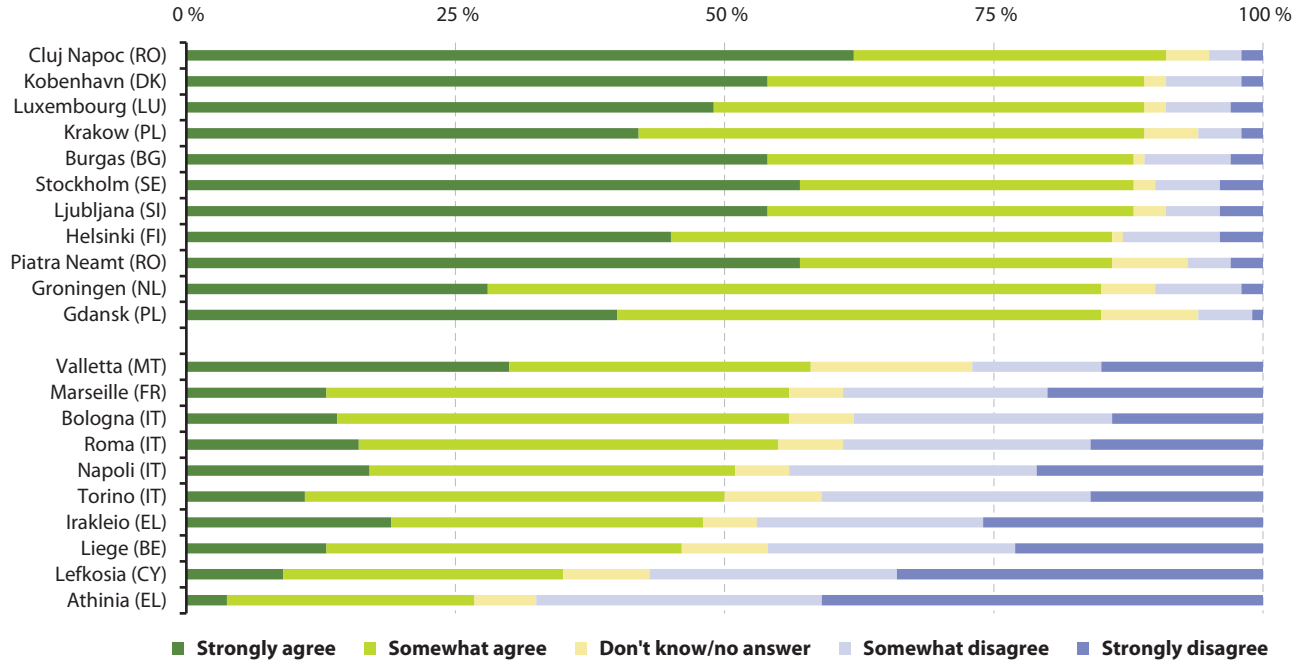
**Figure 14.3:** Breakdown of population by nationality, selected Urban Audit core cities, 2012
(% of total population)




(1) The figure shows the EU Urban Audit capital cities for which data are available. Dublin, Athina, Lisboa, Helsinki / Helsingfors and Stockholm: greater city. Sofia, Dublin, Athina, Riga, Vilnius, Valletta and Lisboa: estimates. Riga and Valletta: EU nationals and non-EU nationals are combined. Praha, Dublin, Vilnius and Lisboa: 2011. Paris, Roma, Budapest and Stockholm: 2010. Athina, Riga, Luxembourg and Valletta: 2009. Sofia, Wien, Bratislava and Helsinki / Helsingfors: 2008.

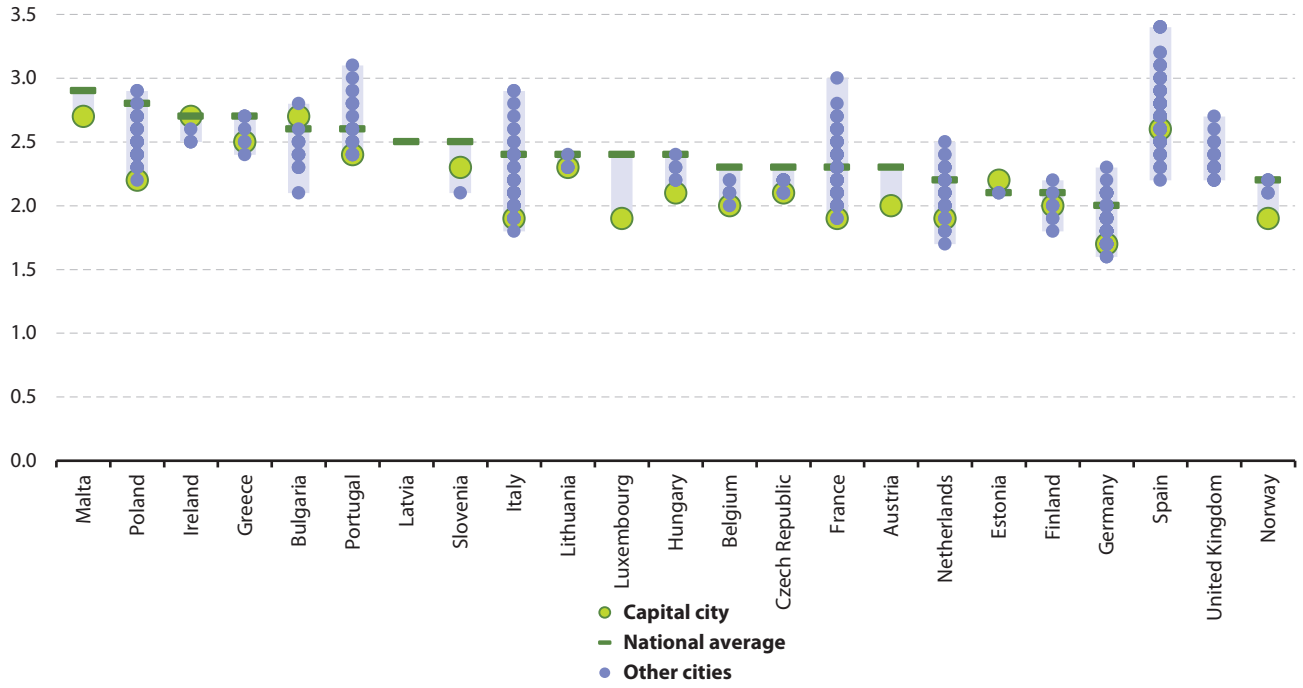
*Source:* Eurostat (online data code: urb_cpopcb)

**Figure 14.4:** Perception regarding the presence of foreigners and whether it is good for the city, selected EU cities, 2012 (1)
(%)




(1) The figure shows the 10 cities where respondents recorded the highest rates of agreement / disagreement concerning the perception that foreigners were good for their city (Groningen and Gdansk shared tenth place in the ranking of the highest rates of agreement). Athinia, Paris, Lisboa and Manchester: surrounding city.
*Source:* Eurobarometer, Perception survey in 79 European cities

**Figure 14.5:** Average size of households in the Urban Audit core cities, 2012 (1)
(persons)




(1) The light purple shaded bar shows the range of the highest to lowest city for each country. The dark green bar shows the national average. The green circle shows the capital city. The dark purple circles show the other cities covered by the Urban Audit (subject to availability). For some cities an alternative reference period has been used, the exceptions are too lengthy to document; the information presented relates to the most recent data available for each city. Those Member States not shown: not available. Spain and the United Kingdom: national average, not available. Latvia and the United Kingdom: capital city, not available. Bulgaria, Germany, Ireland, Greece, Lithuania and Hungary: estimates. Dublin, Athina, Barcelona, Bilbao, Milano, Napoli, Amsterdam, Rotterdam, Lisboa, Porto and Helsinki / Helsingfors: greater city.
*Source:* Eurostat (online data code: urb_cpopstr)

### *Two thirds of the population in Athina disagreed that the presence of foreigners was a good thing*

At the other end of the ranking, just over one quarter (27 %) of the population in the Greek capital of Athina agreed that foreigners were good for their city; this was the lowest value across the 79 cities that were surveyed and may, at least in part, reflect the hardship felt by the local population in relation to the financial and economic crisis. The 10 cities with the lowest proportion of respondents viewing the presence of foreigners positively included one other Greek city (Irakleio), four cities across Italy (including the capital of Roma), the French city of Marseille, the capitals of Cyprus and Malta, as well as the Belgian city of Liège. Four of these cities — Irakleio, Liège, Lefkosia and Athina — reported that less than half their population had a positive view concerning the presence of foreigners in their city.

## Housing

The EU does not have any specific responsibilities with respect to housing; rather, national governments develop their own housing policies. Nevertheless, many of the EU Member States face similar challenges: for example, how to renew housing stocks, how to plan and combat urban sprawl, how to promote sustainable development, how to help young and disadvantaged groups get into the housing market, or how to promote energy efficiency among homeowners.

### Size of households

Differences in household structure may reflect a range of different issues including: societies' culture and norms; the availability of different types of housing stock; the cost of housing; tax and benefit regimes; and social policy. Household structure also has implications for a number of outcomes: the risk of poverty, for example, is closely linked to household structure, while this is also likely to affect children's outcomes (educational achievement, future earnings), and older people's health status may also be linked to household composition.

### *Low average household size in German and Nordic cities*

Across the EU Member States for which data are available in **Figure 14.5**, the average number of persons per household ranged from a low of 2.0 in Germany up to 2.9 in Malta. Generally, the highest average number of persons was recorded in the southern EU Member States, as well as Poland, Ireland and Bulgaria, while the smallest average households were in north-western Europe and the Nordic Member States.

**Figure 14.5** also shows that in some EU Member States the national average for the number of persons per household was higher than in any of the cities for which information exists in the Urban Audit. This pattern suggests that the average number of persons per household was often at its highest in rural areas and that the lowest ratios were frequently recorded in some of Europe's biggest cities. Indeed, the average number of persons per household was sometimes at its lowest in the capital city — for example, in Poland, Portugal, Lithuania, Luxembourg, Hungary, Belgium, the Czech Republic, France and Austria, as well as in Norway.

SPOTLIGHT ON THE REGIONS: GUIMARÃES, PORTUGAL

**Castle, Guimarães**

Guimarães is the birthplace of Portugal; it is located in the far north of the country and is a UNESCO world heritage site. The average size of households was relatively high (2.9 persons per household), in keeping with several other cities in northern Portugal and a more general pattern of larger households in the southern Member States. By means of comparison, the average household in the core (centre) of Lisboa was composed of 2.2 persons and the corresponding average for the centre of Porto was 2.3 persons.

*Photo: António Amen*

### *Average size of households tended to be higher in suburban areas (populated by younger generations)*

The average number of persons per household was close to 3.0 persons across several cities in Spain, Portugal and France. There was also a relatively large dispersion in average household sizes between the different cities of these three countries, which was also the case for Italy. In Spain and in France, the largest households were most frequently recorded in suburban areas: for example, each of Pozuelo de Alarcón, Majadahonda, Coslada and Fuenlabrada (around Madrid) and CA Val de France (around Paris) recorded an average of at least 3.0 persons per household. By contrast, the lowest averages in France were often recorded in the centre of some of the biggest cities, for example, Paris (1.9 persons).

In Italy and Portugal, the differences in the composition of households reflected more a geographical split, with the average size of households higher in the south of Italy (Napoli, Matera (Basilicata) or Barletta (Puglia)) and in the north of Portugal (Paredes, Póvoa de Varzim and Guimarães).

In those EU Member States where the average number of persons per household was relatively low (for example, Germany), the range between different cities was quite small, suggesting that the ageing population and low fertility rates were present across most types of city and most of the territory.

## One person households

With the average number of persons living in each household falling across most of the EU Member States, it is perhaps not surprising to find that the proportion of single or one adult households increased.

### *4 out of every 10 households in Finland and Germany have a single resident*

The trend for more people living alone has resulted from rapid changes in the way that people live and has been compounded by, among others: women generally outliving their partners; growing divorce and separation rates; people being able to afford to live alone out of choice; and the gradual shift of populations to urban centres. As such, the single person household covers the full spectrum of ages and a wide variation in personal situations, including young students and the newly employed that choose to live alone, divorcees, or senior citizens who outlive their spouses.

The phenomenon of the one person household is most pronounced in the Nordic Member States and north-western Europe, for example, one person households accounted for at least 4 out of every 10 persons living in Finland and Germany. At the other end of the range, less than one in five (18.3 %) of the population in Romania lived alone.

### *One person households were conspicuous in capital cities*

**Figure 14.6** shows that the proportion of people living in a one person household tended to be relatively high in capital cities and that national averages were often at the bottom end of the range, suggesting that a lower proportion of the rural population was living alone when compared with the results in Urban Audit cities.

The highest number of one person households was recorded in Göttingen in central Germany (a university town), where just over two thirds (67.7 %) of all households were composed of people living alone in 2012. The only other city, for which data are available, to record a share in excess of 60.0 % was the northern Dutch city of Groningen (which also has a high proportion of students in the city).

By contrast, aside from a few outliers (including capital cities) the proportion of single person households was generally much lower in southern and eastern Europe. A majority of the cities in Spain reported that less than 10.0 % of their households were composed of people living alone.

## Ease of finding good housing

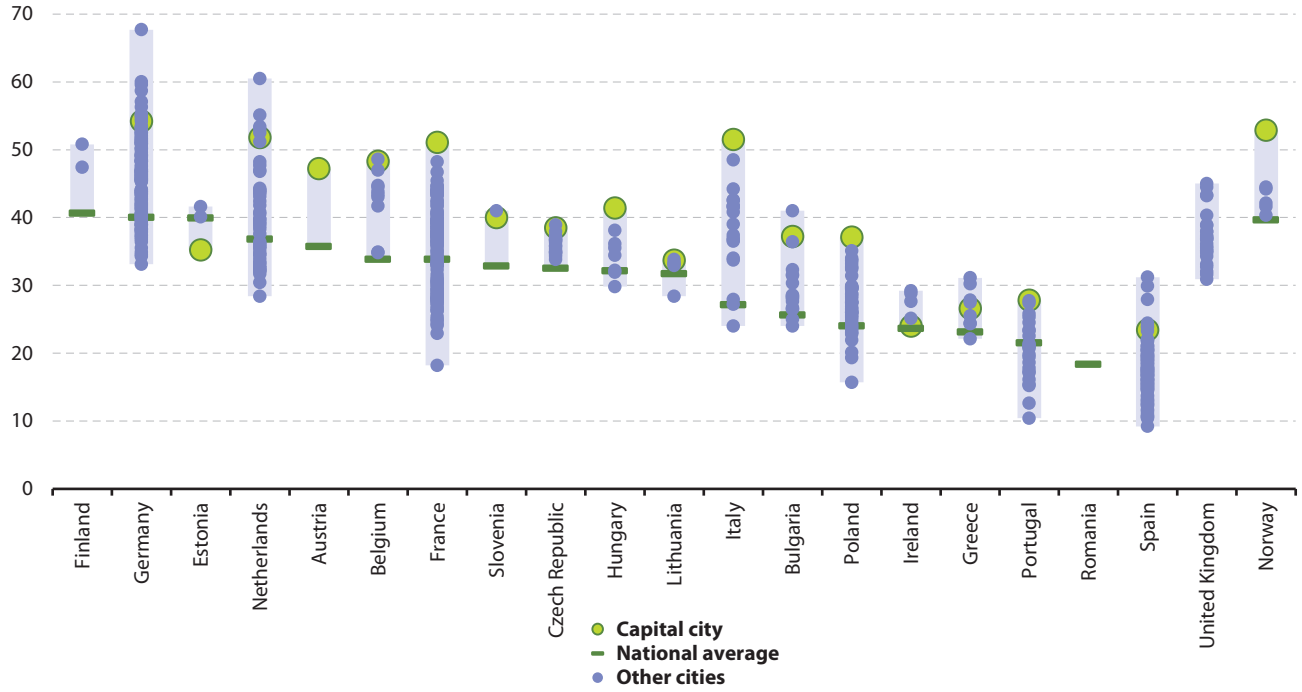
In the perception survey of 79 European cities conducted at the end of 2012, there was a question in relation to the ease with which city dwellers thought it possible to find good housing at a reasonable price within their city. **Figure 14.7** presents the results and shows the general difficulties experienced by many Europeans with respect to this challenge. Indeed, more than half of the respondents to the survey considered that it was a challenge to find good housing at a reasonable price; this was particularly true in capital cities (where prices tend to be higher than in the rest of the country).

The 10 cities where there was the highest level of agreement that it was easy to find good housing at a reasonable price were spread across nine different EU Member States. The proportion of respondents in Oviedo (north-west Spain) who agreed rose to almost two out of every three persons (65 %), while the same ratio was recorded in Oulu (northern Finland), Braga (northern Portugal) and Piatra Neamt (eastern Romania). As such, each of these cities was a relatively large distance away from their capital and often close to relatively remote parts of the country. The list of the 10 cities where there was the highest level of agreement that it was easy to find good housing at a reasonable price also included Aalborg (Denmark), Leipzig (Germany), Miskolc (north-eastern Hungary) and Bialystok (eastern Poland), as well as the port cities of Malaga (Spain) and Belfast (the United Kingdom).

### *Those living in the largest German cities were particularly unsatisfied with the housing situation*

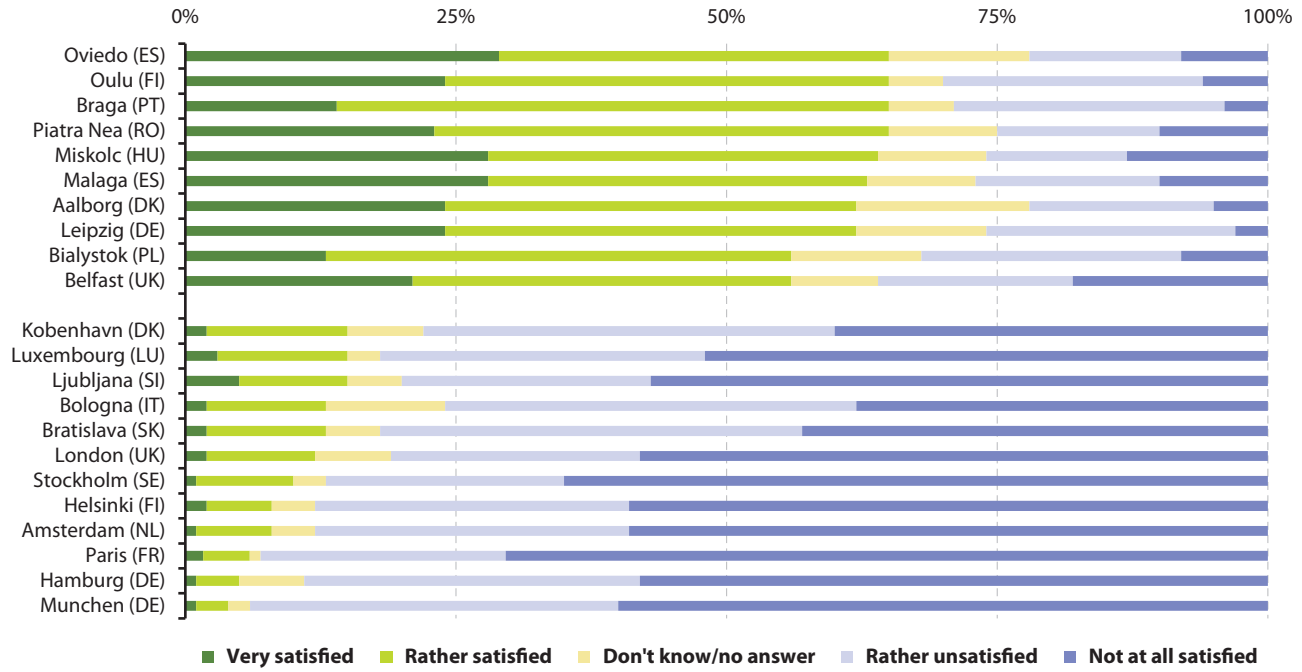
At the other end of the ranking, at least three quarters of the population was unsatisfied with the housing situation in the 12 cities for which information is presented in the bottom half of **Figure 14.7**. These 12 cities were dominated by capital cities, of which there were nine; the three others were all relatively large cities, namely, Bologna (Italy) and Hamburg and München (both Germany). In München, some 94 % of the population stated their dissatisfaction with housing in the city — the highest proportion across any of the 79 cities surveyed. The difficulties experienced in several of Germany's largest cities may be linked to a rapid increase in property prices that is most apparent in the largest urban centres, such as München, Hamburg, Berlin or Frankfurt.

**Figure 14.6:** One person households in the Urban Audit core cities, 2012 (1)
(% of all households)




(1) The light purple shaded bar shows the range of the highest to lowest city for each country. The dark green bar shows the national average. The green circle shows the capital city. The dark purple circles show the other cities covered by the Urban Audit (subject to availability). For some cities an alternative reference period has been used, the exceptions are too lengthy to document; the information presented relates to the most recent data available for each city. Those Member States not shown: not available. Spain and the United Kingdom: national average, not available. Romania, Finland and the United Kingdom: capital city, not available. Dublin, Athina, Barcelona, Bilbao, Amsterdam, Rotterdam, Lisboa and Porto: greater city.
*Source:* Eurostat (online data code: urb_csocsta)

**Figure 14.7:** Satisfaction regarding the ease of finding good housing at a reasonable price, selected EU cities, 2012 (1)
(%)




(1) The figure shows the 10 cities where respondents recorded the highest rates of agreement / disagreement concerning the ease of finding good housing at a reasonable price (Kobenhavn, Luxembourg and Ljubljana shared tenth lowest place in the ranking). Athinia, Paris, Lisboa and Manchester: surrounding city.
*Source:* Eurobarometer, Perception survey in 79 European cities

# Data sources and availability

## Urban Audit

The Urban Audit is a data collection exercise that is undertaken by the national statistical institutes, the Directorate-General for Regional and Urban Policy (DG REGIO) and Eurostat. It provides comparative information on cities in the EU Member States, as well as the EFTA and candidate countries of Norway, Switzerland and Turkey.

The Urban Audit presents a range of indicators that cover most aspects relating to the quality of life in cities, including: demography, housing, health, crime, the labour market, income disparities, local administration, educational qualifications, the environment, climate, travel patterns, the information society and cultural infrastructure; data availability differs from domain to domain. The supply of information concerning urban statistics is currently based on a voluntary agreement, as there is no Community legislation yet relating to the collection of statistics for this topic.

The Urban Audit perception survey is a complement to the regular Urban Audit data collection exercise. The most recent perception survey took place at the end of 2012 and included 79 cities in the EU, EFTA and candidate countries. The results of the survey are presented in a Flash Eurobarometer (No 366), titled 'Quality of life in European cities'. The survey included all capital cities (except for Switzerland), together with between one and six more cities in the larger countries. In each city, around 500 citizens were interviewed.

## Indicator definitions

Population statistics in the Urban Audit refer to the population at its usual residence, in other words, the place where a person normally lives, regardless of temporary absences; this is generally their place of legal or registered residence. To qualify as a resident the respondent should have lived in their place of usual residence for a continuous period of at least 12 months before the reference date, or if they have recently moved then they should have the intention of staying in their new residence for at least one year. Population numbers are a reference for measuring the general size of an urban entity and are used as a denominator for many derived indicators.

A foreigner is a person who does not have the citizenship of the country of usual residence, regardless of the place of birth. EU foreigners are persons living in the reporting country who have the nationality of another EU Member State than the reporting country. Non-EU foreigners are persons living in the reporting country with the nationality of a non-member country, in other words, someone who does not have the nationality of any of the EU Member States. Native-born means a person who was born in the country of usual residence regardless of that person's citizenship. Foreign-born means a person who was born outside of the country of usual residence regardless of that person's citizenship.

In the Urban Audit, the household-dwelling concept is the preferred household unit. It considers all persons living in a housing unit to be members of the same household, such that there is one household per occupied housing unit.

# 15

# Focus on regional competitiveness

# Introduction

This chapter provides a summary of an EU Regional Competitiveness Index, RCI 2013 (Annoni and Dijkstra) report that was published by the European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy) , available at http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/6th_report/rci_2013_report_final.pdf.

The regional competitiveness index (RCI) is based on NUTS 2 regions. It extends the traditional analysis of competitiveness as a purely economic measure to incorporate social elements too. In this way, the definition of competitiveness moves beyond the perspective of businesses to also integrate the perspectives of residents / consumers. The RCI builds on the current debate that prosperity should not only be measured by gross domestic product (GDP) but also through a range of other criteria — such as health or human capital developments (Stiglitz et al., 2009, available at http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf). The definition of regional competitiveness underpinning the RCI may therefore be summarised as: '*the ability to offer an attractive and sustainable environment for firms and residents to live and work*'.

The RCI is designed to improve the understanding of territorial competitiveness at the regional level; after all, different regions have different strengths and weaknesses. Understanding differences in regional competitiveness may help provide an insight into social and economic conditions and offers policymakers a clearer idea of what policy initiatives work in a specific region.

Consider the following scenario: economic and social differences between neighbouring regions have grown to the point where there are considerable flows of people from one region to another; this could lead to a deterioration in the quality or cost of services both in relation to the strain on the overburdened region and the inefficiency in the depopulated area, a deterioration in social cohesion, and perhaps even abandonment of land and / or property in the depopulated area. By understanding the differences in each region's competitive development, policymakers have the opportunity to make policy decisions tailored to each region.

The results presented in this chapter demonstrate that territorial competitiveness in several EU Member States has a strong regional dimension which cannot be observed from an analysis at the national level; the differences are often most pronounced when comparing regions with capital cities to other regions in the same Member State. These gaps and variations in regional competitiveness might be considered as harmful for national competitiveness and could potentially be used by policymakers to target specific actions with the goal of moderating the differences observed, potentially improving overall national competitiveness.

The RCI is a weighted composite measure of multiple dimensions (or pillars). Each dimension, that cannot be directly observed, is indirectly quantified by a set of indicators, statistically assessed and aggregated. Eleven dimensions (which are explained in detail in the Data sources and availability section) are incorporated into the RCI — see **Diagram 15.1**; these different dimensions are aggregated into three sub-indices of competiveness and an overall composite index. The RCI therefore quantifies in a single index what may otherwise be difficult to measure: the level of competitiveness of an individual region. The eleven dimensions are classified into these three sub-indices / groups:

**Diagram 15.1:** Typology of sub-indices and dimensions within the regional competitiveness index (RCI)

| Regional competitiveness index (RCI) |
|---|
| **I. Basic sub-index** |
| i) Institutions |
| ii) Macroeconomic stability |
| iii) Infrastructure |
| iv) Health |
| v) Basic education |
| **II. Efficiency sub-index** |
| vi) Higher education |
| vii) Labour market efficiency |
| viii) Market size |
| **III. Innovation sub-index** |
| ix) Technological readiness |
| x) Business sophistication |
| xi) Innovation |

### COMPOSITE INDICATORS OF COMPETITIVENESS

A number of studies measure competitiveness at the country level through the use of composite indicators. A composite indicator is one which is formed from individual indicators that are compiled into a single index, on the basis of an underlying model covering a multi-dimensional concept that is being measured. Each dimension, that cannot be directly observed, is indirectly quantified by a set of indicators, statistically assessed and aggregated. Two of the most well-known composite indicators in the domain of competitiveness studies are the Global Competitiveness Index (published by the World Economic Forum) and the World Competitiveness Yearbook (released by the Institute for Management Development).

In recent years, several attempts have been made to extend competitiveness analysis to the regional level. For example, the European Competitiveness Index (ECI) focuses on NUTS 1 regions in Europe; this study was conducted before the accession of Bulgaria, Croatia and Romania to the EU. A simpler but more detailed geographical description of competitiveness is presented in the Atlas of Regional Competitiveness, which covers NUTS 2 regions, although this approach does not aggregate indicators to a single composite index. Moreover, a number of EU Member States have made efforts to construct their own national measures of regional competitiveness — for example, Croatia, Lithuania, Finland and the United Kingdom. However, the regional competitiveness index (RCI) offers the first comprehensive picture of the situation for all NUTS 2 regions in the EU-28.

The RCI takes a wider approach to competitiveness, looking at a range of dimensions that focus not only on the productivity of firms (enterprises), but also on societal well-being and the long-term potential for growth. In doing so, the RCI departs from traditional theories which maintain that regional economic performance is derived solely from enterprise performance, and instead reflects the on-going debate that prosperity should not only be measured through GDP (per inhabitant) but that it should also take account of other aspects such as health and human capital development, as expressed within the Stilglitz, Sen and Fitoussi report and the EU's 'Beyond GDP' initiative.

***For more information:***

Global Competitiveness Index: http://www.weforum.org/issues/global-competitiveness

World Competitiveness Yearbook: http://www.imd.org/wcc/news-wcy-ranking/

Stilglitz, Sen and Fitoussi report: http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf

European Commission — beyond GDP: http://ec.europa.eu/environment/beyond_gdp/index_en.html

# Main statistical findings

### *Regional competitiveness gaps within the same country — harmful for national competitiveness?*

There are not only wide variations in the competitiveness of EU Member States but also between regions within the same country. These differences in regional competitiveness within a country highlight the limitations of analyses that are based on the national level and may evoke a debate about whether regional competitiveness gaps are harmful for national competitiveness and how they might be closed.

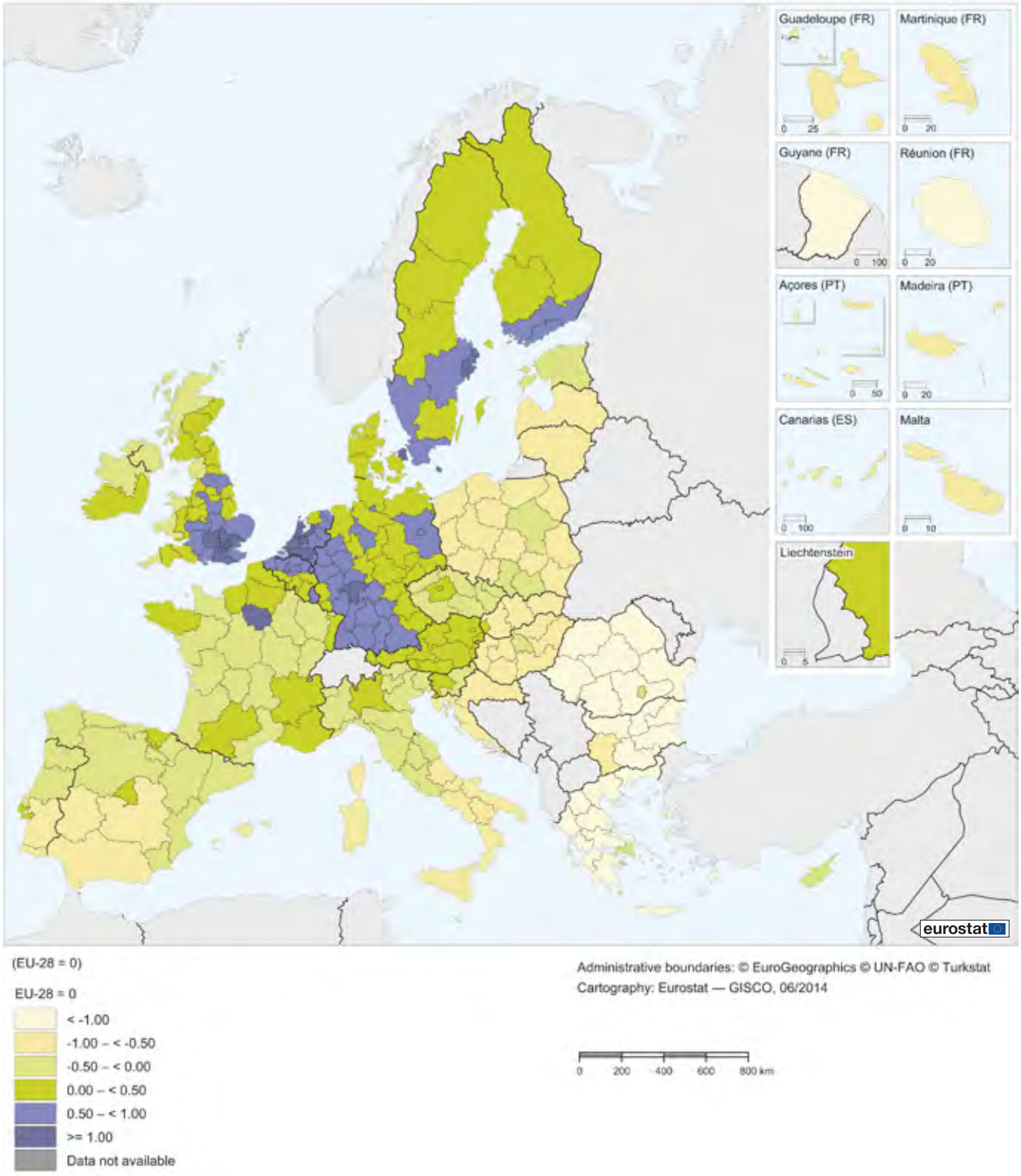
**Map 15.1** shows the regional heterogeneity (except for six countries where NUTS level 2 coincides with the country level) of competitiveness across the EU in 2013 as measured by the composite RCI which is presented in relation to the EU-28 average.

The most competitive regions in the EU in 2013, as measured by the RCI, were principally found in the north-west of Europe, comprising most regions in the Benelux countries, Denmark, Germany, Austria, Sweden and Finland, while high levels of regional competitiveness were also calculated for the south-east of the United Kingdom and northern France (each of these regions is marked in purple on **Map 15.1**). In contrast, the least competitive regions (marked in pale yellow) were generally located in the south-east of Europe, in particular within Bulgaria, Greece and Romania, as well as in some of the French overseas regions.

### *Capital and metropolitan regions often had the highest levels of competitiveness*

**Map 15.1** also shows a relatively polycentric pattern, with a number of highly competitive capital and metropolitan regions spread across Europe. Some capital regions were surrounded by similarly competitive regions (for example, in the Netherlands and the United Kingdom), whereas in other countries (such as Spain, France and many of the Member States that joined the EU in 2004 or later), several of the regions neighbouring the capital were less competitive. This suggests that there are limits to the spill-over effect that might lift the competitiveness of regions surrounding capital cities.

**Map 15.1:** Regional competitiveness index, by NUTS 2 regions, 2013 (1)
(EU-28 = 0)




(1) Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Cheshire (UKD6) and Merseyside (UKD7): estimates based on the NUTS 2006 classification.
*Source:* European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy)

### *Utrecht maintained its position with the highest competitiveness index*

The RCI ranks each region according to its level of competitiveness. The highest ranking region in 2013 was Utrecht (in the Netherlands); Utrecht was also the region with the highest competitiveness index in 2010 (which is when a similar study was last conducted). The least competitive region in 2013 was Severozapaden (in Bulgaria).

**Table 15.1** shows the 10 most competitive regions across the EU and the 10 least competitive regions, based on normalised scores (where the region with the highest RCI was rebased to have a score of 100 points and the region with the lowest RCI was rebased to have 0 points — all other regions were reclassified within this range).

Of the 10 most competitive regions in the EU-28 in 2013, seven were either capital regions or regions that included large cities. The Netherlands and the United Kingdom each had three regions that were present among the top 10 most competitive regions. By contrast, Greece had 5 of the 10 least competitive regions in the EU in 2013.

No region in Bulgaria, Greece, Croatia, Hungary, Poland or Romania, nor any of the Baltic Member States or Cyprus (each a single region at this level of analysis), had an RCI above the EU-28 average in 2013. Furthermore, all but one of the regions in Italy and Portugal had an RCI below the EU-28 average. In the case of the two exceptions — Lombardy in Italy and Lisboa in Portugal — the latest RCI values were very close to the EU-28 average.

By contrast, all of the regions in Belgium, Denmark, Germany, the Netherlands, Austria, Finland and Sweden were more competitive — in terms of their RCIs — than the EU-28 average in 2013; this was also the case for Luxembourg (a single region at this level of analysis).

SPOTLIGHT ON THE REGIONS: UTRECHT (NL31), THE NETHERLANDS

**Oudegracht, Utrecht**

The regional competitiveness of the 12 NUTS 2 regions across the Netherlands was consistently higher than the EU-28 average.

Utrecht had the highest regional competitiveness index in 2013. Flevoland (NL23) and the capital region of Noord-Holland (NL32) were also present among the top 10 regions in the EU.

*Photo: Michiel Verbeek*

**Table 15.1:** Top 10 most and least competitive regions in the EU-28, by NUTS 2 regions, 2013 (1) (index, 0 – 100)

| Top 10 | Region (NUTS code) | RCI 2013 | Bottom 10 | Region (NUTS code) | RCI 2013 |
|---|---|---|---|---|---|
| 1 | Utrecht (NL31) | 100.0 | 257 | Peloponnisos (EL25) | 5.1 |
| 2 | London area (UKH2, UKH3, UKI1 and UKI2) (2) | 94.2 | 258 | Sud-Vest Oltenia (RO41) | 4.2 |
| 3 | Berkshire, Buckinghamshire and Oxfordshire (UKJ1) | 93.5 | 259 | Centru (RO12) | 4.2 |
| 4 | Stockholm (SE11) | 92.7 | 260 | Anatoliki Makedonia, Thraki (EL11) | 3.9 |
| 5 | Surrey, East and West Sussex (UKJ2) | 90.7 | 261 | Notio Aigaio (EL42) | 3.7 |
| 6 | Amsterdam area (NL23 and NL32) (3) | 90.1 | 262 | Dytiki Makedonia (EL13) | 2.8 |
| 7 | Darmstadt (DE71) | 89.2 | 263 | Yugoiztochen (BG34) | 2.7 |
| 8 | Île de France (FR10) | 89.1 | 264 | Sterea Ellada (EL24) | 2.2 |
| 9 | Hovedstaden (DK01) | 88.8 | 265 | Sud-Est (RO22) | 0.1 |
| 10 | Zuid-Holland (NL33) | 87.6 | 266 | Severozapaden (BG31) | 0.0 |

(1) Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Cheshire (UKD6) and Merseyside (UKD7): estimates based on the NUTS 2006 classification.
(2) Aggregated data to take account of commuting patterns, comprising: Bedfordshire and Hertfordshire (UKH2), Essex (UKH3), Inner London (UKI1) and Outer London (UKI2).
(3) Aggregated data to take account of commuting patterns, comprising: Flevoland (NL23) and Noord-Holland (NL32).
*Source:* European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy)

### *Biggest differences in regional competitiveness within the same country in France and Spain*

**Map 15.1** shows that there was a highly competitive core zone in the north-west of Europe that stretched down through Germany and into Austria. It also shows some divisions within individual EU Member States; for example, a north–south divide in Italy (lower levels of competitiveness in the south), and a north-west–south-east divide in the United Kingdom (with Northern Ireland, northern Scotland, parts of Wales, Cumbria and Cornwall being less competitive).

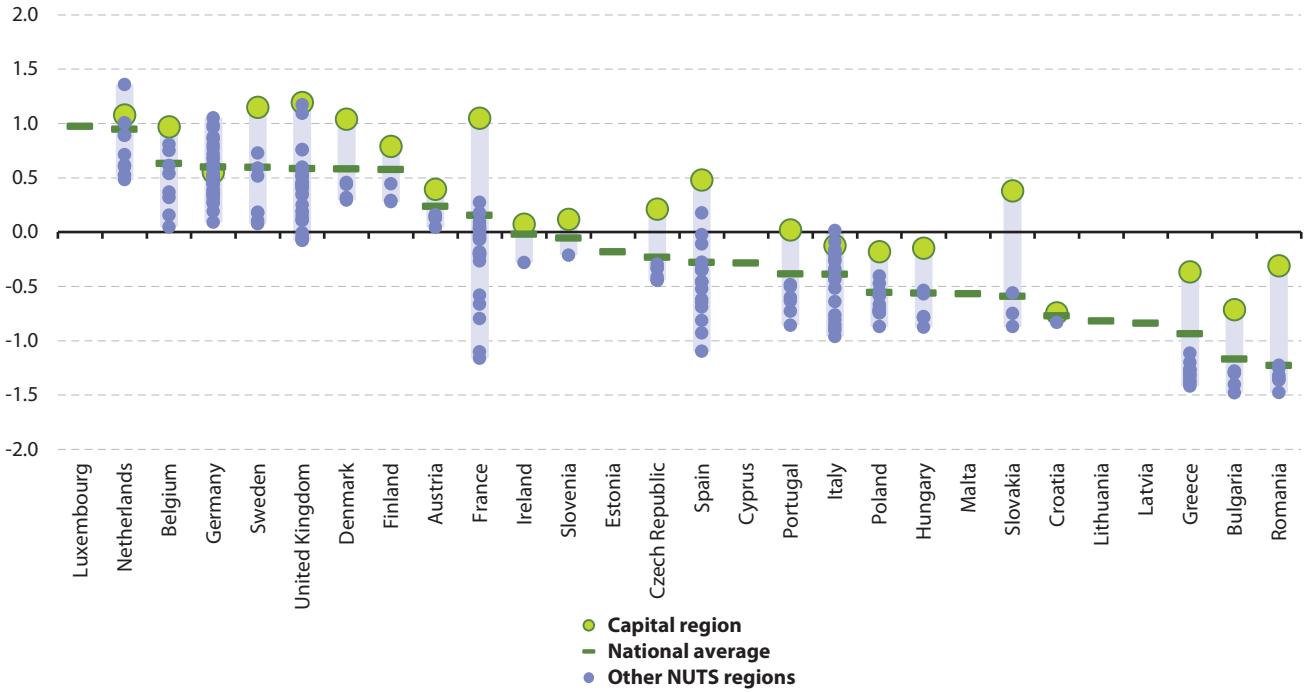
**Figure 15.1** looks at these regional differences in more detail. Within most EU Member States there were considerable differences in regional competitiveness. On the basis of the coefficient of variation for the latest RCIs in 2013, the largest differences across regions in the same EU Member State were in France and Spain (although these results were exacerbated by the presence of overseas regions for both of these countries). Relatively large differences were also apparent in Sweden and the United Kingdom.

### *Berlin — the only capital region with a competitiveness index below its national average*

In most of the EU Member States, the region containing the capital city generally had a far higher level of competitiveness than any other region within the same country. Of the three exceptions to this rule, the regions containing the capitals of Italy and the Netherlands were, nevertheless, among the most competitive regions in their respective countries. By contrast, the competitiveness of Berlin was lower than in many of the other German regions — and also slightly lower than the national average for Germany; it should be borne in mind that Berlin only relatively recently returned to being the capital of Germany following German reunification.

The gaps in competitiveness between capital regions and the second most competitive region in the same country were often quite wide: this pattern was particularly evident in Slovakia, Romania, France, Greece, Denmark and Bulgaria.

**Figure 15.1:** Regional disparities in the competitiveness index, by NUTS 2 regions, 2013 (1)
(EU-28 = 0)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Cheshire (UKD6) and Merseyside (UKD7): estimates based on the NUTS 2006 classification.

*Source:* European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy)

## Three different stages of competitiveness: an analysis of the sub-indices

An analysis of the RCI sub-indices calculated from basic indicators, efficiency indicators and innovation indicators can promote a better understanding of regional competitiveness. It can indicate why a particular region may be lagging in terms of its relative competitiveness, or which dimensions form part of a region's relative strengths.

### I. The basic sub-index

The basic sub-index consists of an aggregated score based on the assessment of the regional quality of institutions, macroeconomic stability, infrastructure, health and basic education. The macroeconomic stability and basic education dimensions are only measured at the country level. These elements are considered to be necessary conditions for developing the basic functions of any economy — they cover aspects like the unskilled or low skilled labour force, infrastructure, the quality of governance and public health (which are also important economic and social determinants).

**Map 15.2** shows the regional distribution of the basic sub-index of competitiveness which is relatively homogenous within individual countries. This is partially because some components of the basic sub-index (one sub-dimension of the institution dimension plus macroeconomic stability and basic education) are only measured at the country level. The map shows that a number of regions in the south and east of the EU had relatively low sub-indices for these basic measures.

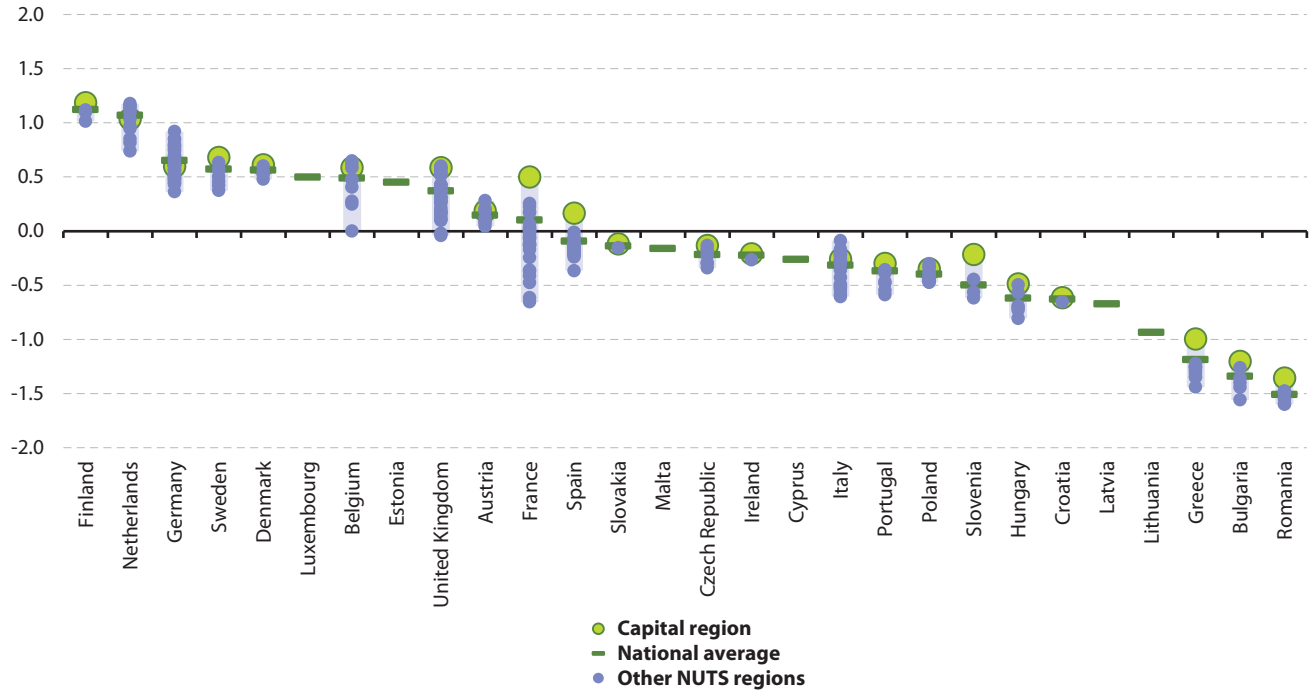
#### *Basic competitiveness: relatively large differences between French regions*

**Figure 15.2** provides more information on the regional distribution of the basic competitiveness sub-index in 2013. When compared with the results for the other two sub-indices (see Figures 3 and 4) it is evident that the level of within-country variation for the basic sub-index was lowest.

Among the EU Member States which have more than a single NUTS 2 region, every region in Belgium, Denmark, Germany, the Netherlands, Austria, Finland and Sweden had a level of basic competitiveness that was above the EU-28 average in 2013. By contrast, basic competitiveness was below the EU-28 average in each and every region of the Czech Republic, Ireland, Croatia, Italy, Hungary, Poland, Portugal, Slovenia and Slovakia, and was particularly low in all the regions of Bulgaria, Greece and Romania.

France had the highest variation, as more than half of its regions had a level of basic competitiveness that was below the EU-28 average, while basic competitiveness was relatively high in the capital region of Île de France.

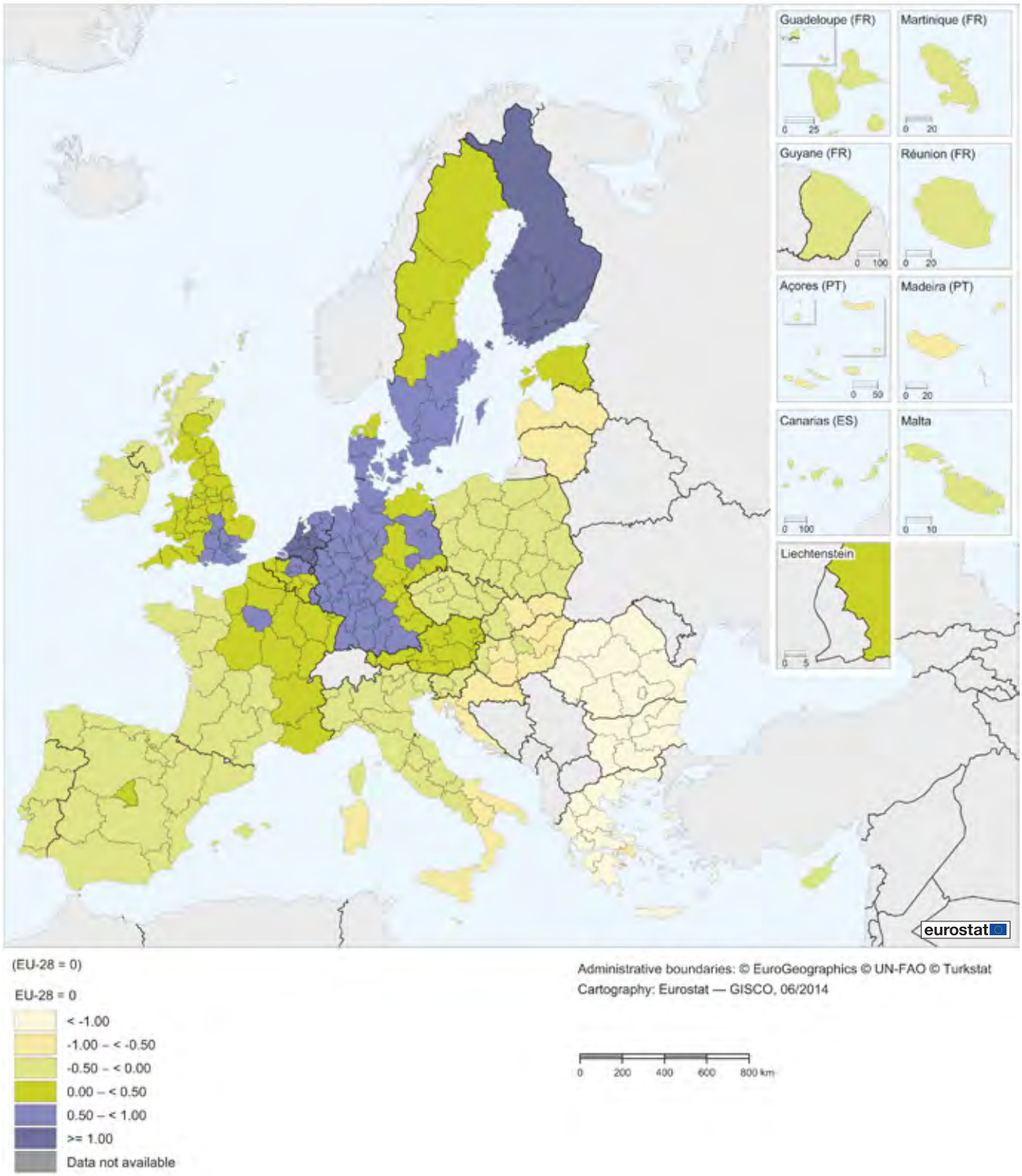
**Figure 15.2:** Regional disparities in competitiveness for the basic competitiveness sub-index, by NUTS 2 regions, 2013 (1)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Cheshire (UKD6) and Merseyside (UKD7): estimates based on the NUTS 2006 classification.

*Source:* European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy)

**Map 15.2:** Regional competitiveness for the basic competitiveness sub-index, by NUTS 2 regions, 2013 (1)
(EU-28 = 0)




(1) Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Cheshire (UKD6) and Merseyside (UKD7): estimates based on the NUTS 2006 classification.
*Source:* European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy)

**Table 15.2** presents results for some of the dimensions that are included in the basic competitiveness sub-index at the national level. Estonia, Luxembourg, the Netherlands, Finland and Sweden were ranked among the top five EU Member States for at least two of the three dimensions shown, while Denmark was consistently among the top five in each ranking (third place for institutions, fourth for macroeconomic stability and fifth for basic education). By contrast, Greece ranked among the bottom three Member States for all of the dimensions in **Table 15.2**, while Bulgaria, Croatia, Italy and Romania were present among the bottom five Member States for two out of the three dimensions shown.

## II. The efficiency sub-index

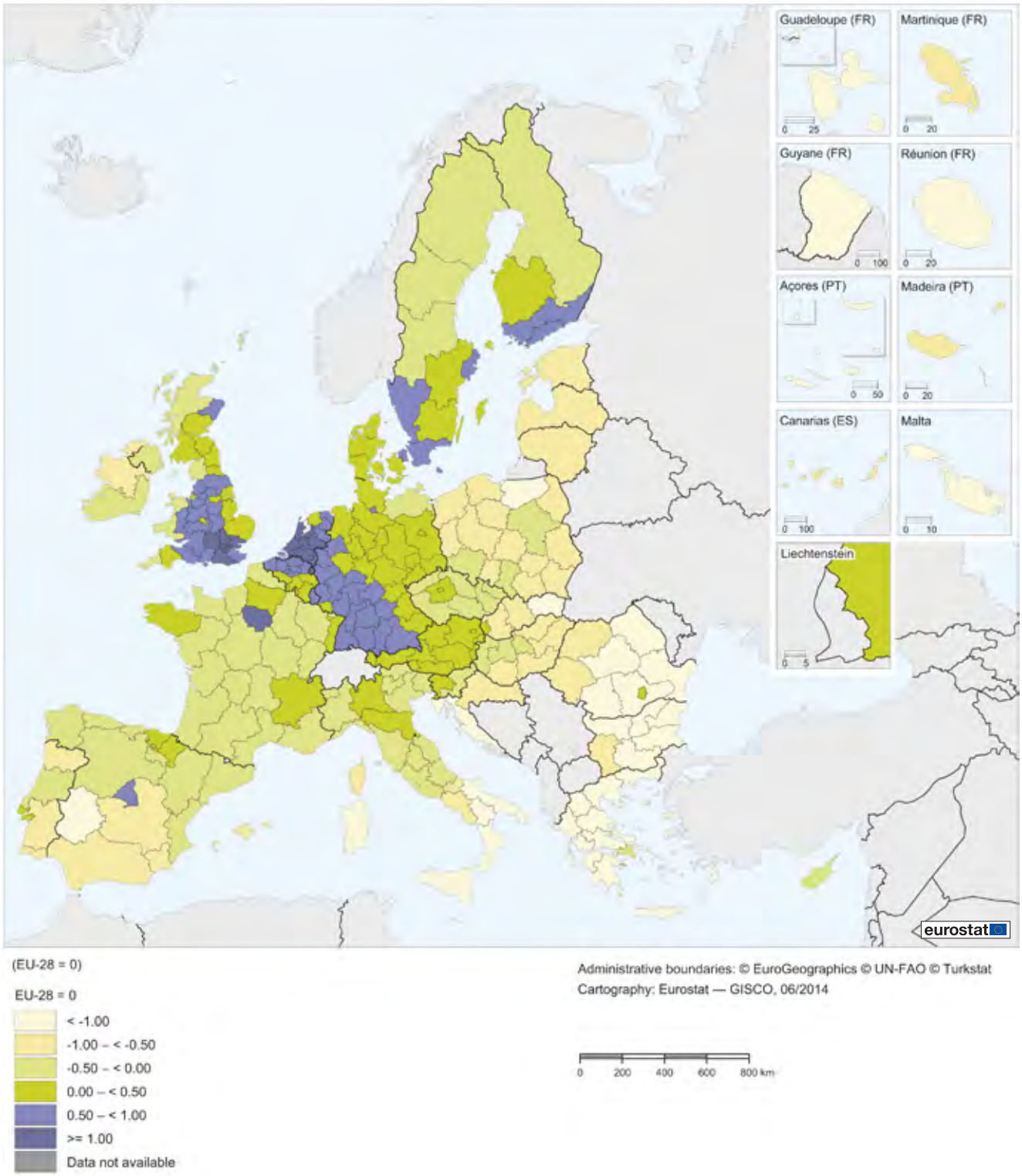
As a regional economy develops, several factors may play a role in terms of further advancing its competiveness — for example, a more skilled workforce or a more efficient labour market. This second group of indicators is categorised under the heading of efficiency measures and covers statistics on the following dimensions: higher education and lifelong learning, labour market efficiency and market size.

**Table 15.2:** Competitiveness for selected dimensions of basic competitiveness sub-index, 2013
(EU-28 = 0)

| | Institutions | Rank | Macroeconomic stability | Rank | Basic education | Rank |
|---|---|---|---|---|---|---|
| **Belgium** | 0.45 | 10 | 0.24 | 14 | 0.29 | 11 |
| **Bulgaria** | -1.70 | 28 | 0.78 | 7 | -2.93 | 25 |
| **Czech Republic** | -0.61 | 20 | 0.61 | 11 | -0.25 | 18 |
| **Denmark** | 1.34 | 3 | 1.00 | 4 | 0.75 | 5 |
| **Germany** | 0.79 | 6 | 0.74 | 8 | 0.49 | 6 |
| **Estonia** | 0.27 | 12 | 2.04 | 1 | 2.17 | 2 |
| **Ireland** | 0.64 | 9 | -1.88 | 27 | 0.42 | 7 |
| **Greece** | -1.34 | 26 | -2.76 | 28 | -0.96 | 24 |
| **Spain** | -0.26 | 15 | -0.21 | 21 | -0.15 | 15 |
| **France** | 0.29 | 11 | -0.01 | 16 | -0.17 | 16 |
| **Croatia** | -1.24 | 25 | 0.96 | 5 | -0.79 | 22 |
| **Italy** | -1.21 | 24 | -0.42 | 24 | -0.46 | 19 |
| **Cyprus** | -0.01 | 14 | -0.41 | 22 | : | |
| **Latvia** | -0.65 | 21 | -0.09 | 17 | 0.32 | 10 |
| **Lithuania** | -0.55 | 19 | -0.42 | 23 | -0.52 | 20 |
| **Luxembourg** | 1.35 | 2 | 1.49 | 2 | -0.87 | 23 |
| **Hungary** | -0.83 | 23 | -0.15 | 19 | 0.38 | 8 |
| **Malta** | 0.07 | 13 | -0.20 | 20 | : | |
| **Netherlands** | 1.33 | 4 | 0.66 | 10 | 1.43 | 3 |
| **Austria** | 0.74 | 7 | 0.71 | 9 | -0.77 | 21 |
| **Poland** | -0.43 | 18 | -0.14 | 18 | 0.81 | 4 |
| **Portugal** | -0.29 | 16 | -1.15 | 26 | 0.12 | 13 |
| **Romania** | -1.56 | 27 | 0.05 | 15 | -2.98 | 26 |
| **Slovenia** | -0.38 | 17 | 0.47 | 12 | 0.18 | 12 |
| **Slovakia** | -0.79 | 22 | 0.34 | 13 | -0.24 | 17 |
| **Finland** | 1.77 | 1 | 0.86 | 6 | 3.94 | 1 |
| **Sweden** | 1.29 | 5 | 1.43 | 3 | 0.11 | 14 |
| **United Kingdom** | 0.72 | 8 | -0.46 | 25 | 0.38 | 9 |

*Source:* European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy)

**Map 15.3:** Regional competitiveness for the efficiency sub-index, by NUTS 2 regions, 2013 (1)
(EU-28 = 0)




(1) Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Cheshire (UKD6) and Merseyside (UKD7): estimates based on the NUTS 2006 classification.
*Source:* European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy)

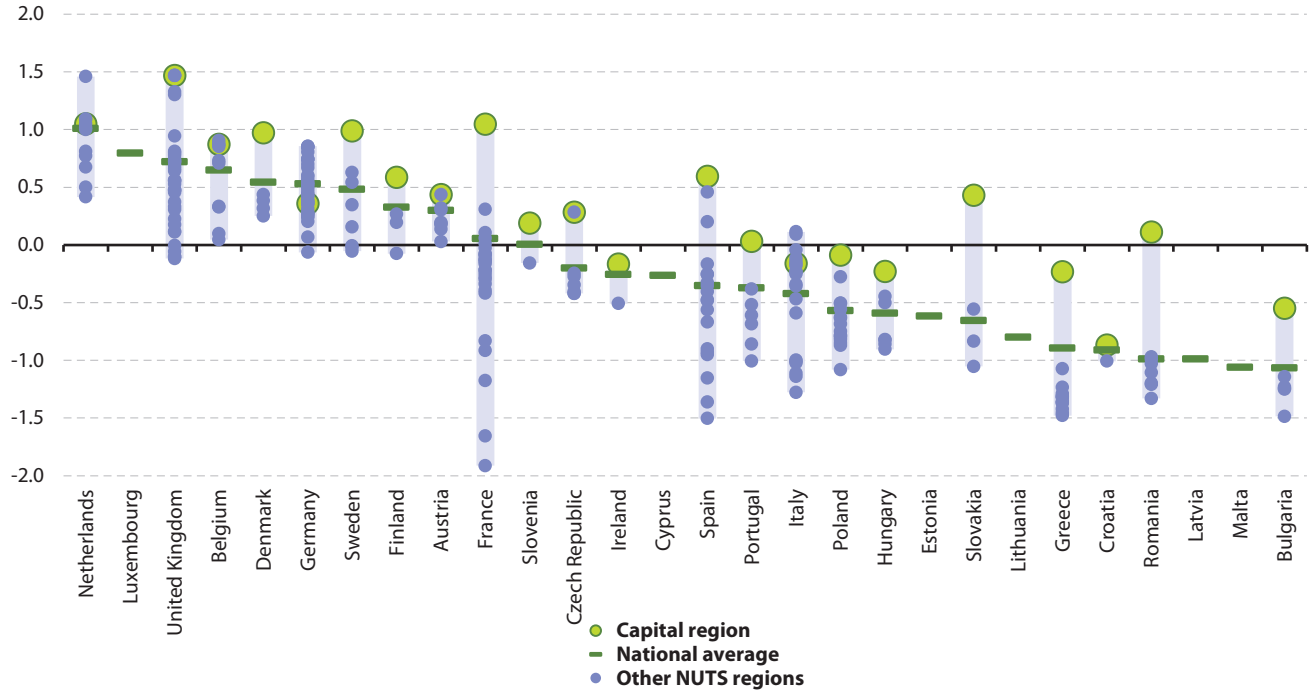
### *The efficiency group: most regions with relatively low levels of basic competitiveness also had low scores for the efficiency sub-index*

**Map 15.3** shows that many of the regions with low scores in the basic aspects of competitiveness were also low performers for the efficiency aspects of RCI. However, there were some regions in the Czech Republic, Estonia (a single region for this analysis), Ireland, Spain, France and Austria — where basic competitiveness was above the EU-28 average — which were lagging behind the EU-28 average for the efficiency sub-index.

**Figure 15.3** shows wide within-country variability for the efficiency sub-index. The largest variations were (again) for France and Spain, where only a handful of regions had levels of competitiveness above the EU-28 average. The level of efficiency competitiveness was below the EU-28 average in each and every region of Bulgaria, Ireland, Greece, Croatia, Italy, Hungary and Poland, while in the Czech Republic, Portugal, Romania and Slovenia, only the capital region had a score above the EU-28 average.

The highest ranked regions for the efficiency sub-index were generally located in Denmark, Sweden, the United Kingdom, Finland and the Netherlands in 2013. The lowest ranked regions tended to be in Greece, Bulgaria, Romania, southern Italy, as well as parts of Spain and Poland.

**Figure 15.3:** Regional disparities in competitiveness for the efficiency sub-index, by NUTS 2 regions, 2013 (1) (EU-28 = 0)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Cheshire (UKD6) and Merseyside (UKD7): estimates based on the NUTS 2006 classification.

*Source:* European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy)

### *Highest competitiveness for higher education and lifelong learning generally in capital regions*

Capital regions were generally among those with the highest scores for the higher education and lifelong learning dimension (see **Table 15.3**) of the efficiency sub-index. There were nevertheless a few exceptions, as Hamburg in Germany, the País Vasco in Spain, Umbria in Italy, Utrecht in the Netherlands, and Berkshire, Buckinghamshire and Oxfordshire in the United Kingdom each had higher scores than their respective capital regions. Three out of these five regions also featured among the top 20 EU regions for the higher education and lifelong learning dimension of competitiveness (the País Vasco, Utrecht, and Berkshire, Buckinghamshire and Oxfordshire).

**Table 15.3:** Regional competitiveness for selected dimensions of efficiency sub-index, by NUTS 2 regions, 2013 ([1])

| | Higher education and lifelong learning ([2]) | | | |
|---|---|---|---|---|
| | Highest region | Rank | Lowest region | Rank |
| **Belgium** | Brussels area (BE10, BE24 and BE31) ([3]) | 21 | Prov. Hainaut (BE32) | 136 |
| **Bulgaria** | Yugozapaden (BG41) | 192 | Severozapaden (BG31) | 261 |
| **Czech Republic** | Prague area (CZ01 and CZ02) ([4]) | 63 | Střední Morava (CZ07) | 175 |
| **Denmark** | Hovedstaden (DK01) | 1 | Syddanmark (DK03) | 51 |
| **Germany** | Hamburg (DE60) | 59 | Weser-Ems (DE94) | 165 |
| **Estonia** | Eesti (EE00) | 138 | - | - |
| **Ireland** | Southern and Eastern (IE02) | 80 | Border, Midland and Western (IE01) | 126 |
| **Greece** | Attiki (EL30) | 148 | Notio Aigaio (EL42) | 262 |
| **Spain** | País Vasco (ES21) | 16 | Ciudad Autónoma de Ceuta (ES63) | 224 |
| **France** | Île de France (FR10) | 55 | Corse (FR83) | 251 |
| **Croatia** | Kontinentalna Hrvatska (HR04) | 231 | Jadranska Hrvatska (HR03) | 232 |
| **Italy** | Umbria (ITI2) | 166 | Valle d'Aosta/ Vallée d'Aoste (ITC2) | 254 |
| **Cyprus** | Κύπρος / Kýpros (CY00) | 162 | - | - |
| **Latvia** | Latvija (LV00) | 201 | - | - |
| **Lithuania** | Lietuva (LT00) | 179 | - | - |
| **Luxembourg** | Luxembourg (LU00) | 28 | - | - |
| **Hungary** | Közép- Magyarország (HU10) | 156 | Dél-Alföld (HU33) | 222 |
| **Malta** | Malta (MT00) | 249 | - | - |
| **Netherlands** | Utrecht (NL31) | 8 | Friesland (NL12) | 93 |
| **Austria** | Vienna area (AT12 and AT13) ([5]) | 128 | Kärnten (AT21) | 176 |
| **Poland** | Mazowieckie (PL12) | 134 | Warmińsko- Mazurskie (PL62) | 237 |
| **Portugal** | Lisboa (PT17) | 103 | Reg. Autón. - Açores (PT20) | 225 |
| **Romania** | Bucureşti - Ilfov (RO32) | 127 | Sud-Est (RO22) | 258 |
| **Slovenia** | Zahodna Slovenija (SI02) | 62 | Vzhodna Slovenija (SI01) | 106 |
| **Slovakia** | Bratislavský kraj (SK01) | 54 | Východné Slovensko (SK04) | 228 |
| **Finland** | Helsinki-Uusimaa and Etelä-Suomi (FI1B and FI1C) | 9 | Åland (FI20) | 118 |
| **Sweden** | Stockholm (SE11) | 2 | Norra Mellansverige (SE31) | 102 |
| **United Kingdom** | Berkshire, Buckinghamshire and Oxfordshire (UKJ1) | 3 | Cumbria (UKD1) | 142 |

([1]) Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Cheshire (UKD6) and Merseyside (UKD7): estimates based on the NUTS 2006 classification.
([2]) Guadeloupe (FR91), Martinique (FR92), Guyane (FR93) and Réunion (FR94): not available.
([3]) Aggregated data to take account of commuting patterns, comprising: Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest (BE10), Prov. Vlaams-Brabant (BE24) and Prov. Brabant Wallon (BE31).
([4]) Aggregated data to take account of commuting patterns, comprising: Praha (CZ01) and Střední Čechy (CZ02).
([5]) Aggregated data to take account of commuting patterns, comprising: Niederösterreich (AT12) and Wien (AT13).
*Source:* European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy)

### *Labour market efficiency generally higher outside the capital region*

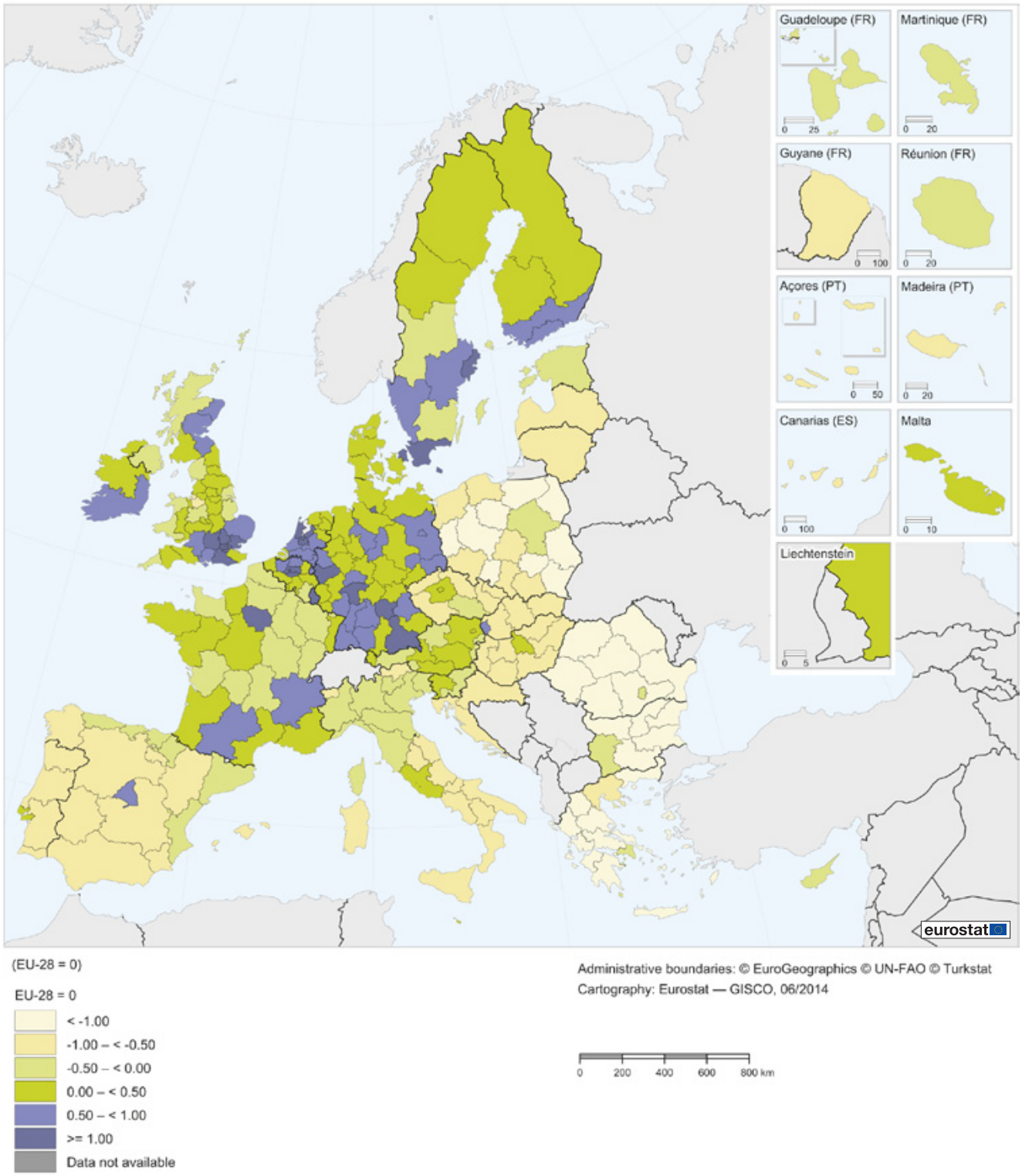
The most competitive regions for the labour market efficiency dimension were widely spread, with the capital region having the highest score in 10 out of the 21 EU Member States for which a regional breakdown is available. The region with the highest labour market efficiency score was consistently outside of the capital in the five largest EU Member States (when measured by population) — the highest levels of labour market efficiency were in Oberbayern (Germany), the País Vasco (Spain), Bretagne (France), the Provincia Autonoma Bolzano/Bozen (Italy) and North-East Scotland (the United Kingdom). Of these, two regions featured among the top 20 EU regions for the labour market efficiency dimension of competitiveness (Oberbayern and North-East Scotland).

**Table 15.3** (continued): Regional competitiveness for selected dimensions of efficiency sub-index, by NUTS 2 regions, 2013 (1)

| | Labour market efficiency | | | |
|---|---|---|---|---|
| | Highest region | Rank | Lowest region | Rank |
| **Belgium** | Prov. W-Vlaanderen (BE25) | 14 | Prov. Hainaut (BE32) | 200 |
| **Bulgaria** | Yugozapaden (BG41) | 136 | Severozapaden (BG31) | 238 |
| **Czech Republic** | Prague area (CZ01 and CZ02) (4) | 89 | Severozápad (CZ04) | 203 |
| **Denmark** | Hovedstaden (DK01) | 26 | Nordjylland (DK05) | 61 |
| **Germany** | Oberbayern (DE21) | 5 | Berlin area (DE30 and DE40) | 132 |
| **Estonia** | Eesti (EE00) | 183 | - | - |
| **Ireland** | Southern and Eastern (IE02) | 196 | Border, Midland and Western (IE01) | 226 |
| **Greece** | Attiki (EL30) | 231 | Sterea Ellada (EL24) | 264 |
| **Spain** | País Vasco (ES21) | 152 | Ciudad Autónoma de Ceuta (ES63) | 266 |
| **France** | Bretagne (FR52) | 65 | Réunion (FR94) | 263 |
| **Croatia** | Jadranska Hrvatska (HR03) | 212 | Kontinentalna Hrvatska (HR04) | 218 |
| **Italy** | Provincia Autonoma Bolzano/Bozen (ITH1) | 53 | Puglia (ITF4) | 253 |
| **Cyprus** | Κύπρος / Kýpros (CY00) | 104 | - | - |
| **Latvia** | Latvija (LV00) | 222 | - | - |
| **Lithuania** | Lietuva (LT00) | 209 | - | - |
| **Luxembourg** | Luxembourg (LU00) | 59 | - | - |
| **Hungary** | Nyugat- Dunántúl (HU22) | 153 | Észak- Magyarország (HU31) | 228 |
| **Malta** | Malta (MT00) | 189 | - | - |
| **Netherlands** | Utrecht (NL31) | 2 | Drenthe (NL13) | 36 |
| **Austria** | Salzburg (AT32) | 10 | Vorarlberg (AT34) | 51 |
| **Poland** | Mazowieckie (PL12) | 121 | Kujawsko- Pomorskie (PL61) | 221 |
| **Portugal** | Centro (PT16) | 164 | Norte (PT11) | 204 |
| **Romania** | Bucureşti - Ilfov (RO32) | 94 | Sud-Est (RO22) | 230 |
| **Slovenia** | Zahodna Slovenija (SI02) | 96 | Vzhodna Slovenija (SI01) | 141 |
| **Slovakia** | Bratislavský kraj (SK01) | 80 | Východné Slovensko (SK04) | 237 |
| **Finland** | Åland (FI20) | 1 | Pohjois-Suomi (FI1D) | 97 |
| **Sweden** | Stockholm (SE11) | 8 | Östra Mellansverige (SE12) | 68 |
| **United Kingdom** | North-East Scotland (UKM5) | 19 | West Midlands (UKG3) | 181 |

(1) Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Cheshire (UKD6) and Merseyside (UKD7): estimates based on the NUTS 2006 classification.
(2) Guadeloupe (FR91), Martinique (FR92), Guyane (FR93) and Réunion (FR94): not available.
(3) Aggregated data to take account of commuting patterns, comprising: Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest (BE10), Prov. Vlaams-Brabant (BE24) and Prov. Brabant Wallon (BE31).
(4) Aggregated data to take account of commuting patterns, comprising: Praha (CZ01) and Střední Čechy (CZ02).
(5) Aggregated data to take account of commuting patterns, comprising: Niederösterreich (AT12) and Wien (AT13).
*Source:* European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy)

**Map 15.4:** Regional competitiveness for the innovation sub-index, by NUTS 2 regions, 2013 (1)
(EU-28 = 0)




(1) Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Cheshire (UKD6) and Merseyside (UKD7): estimates based on the NUTS 2006 classification.
*Source:* European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy)

## III. The innovation sub-index

The last group of RCI dimensions includes measures relating to the level of technological readiness of enterprises and households, business sophistication and innovation. Information and communication technologies (ICT) have changed the organisational structure of both households and enterprises, facilitating the adoption of new and efficient work practices, improving productivity and speeding-up commercial processes. Business sophistication gives an indication of an enterprise's productivity and its potential for responding to competitive pressures. Innovation is especially relevant for developed economies, where most commentators agree there is a clear need to be at the forefront of new technologies, producing cutting-edge products and processes in order to maintain a competitive advantage.

### *Innovative activity concentrated in regional pockets…*

The highest level of heterogeneity across the EU is shown by the innovation sub-index (see **Map 15.4**). Its distribution is characterised by 'islands' of highly innovative territories surrounded by lower performers. The widest variations across regions within the same EU Member State were observed for France and the United Kingdom, with the region of Île de France and the London area clearly established as innovation hotspots.

SPOTLIGHT ON THE REGIONS: STOCKHOLM (SE11), SWEDEN

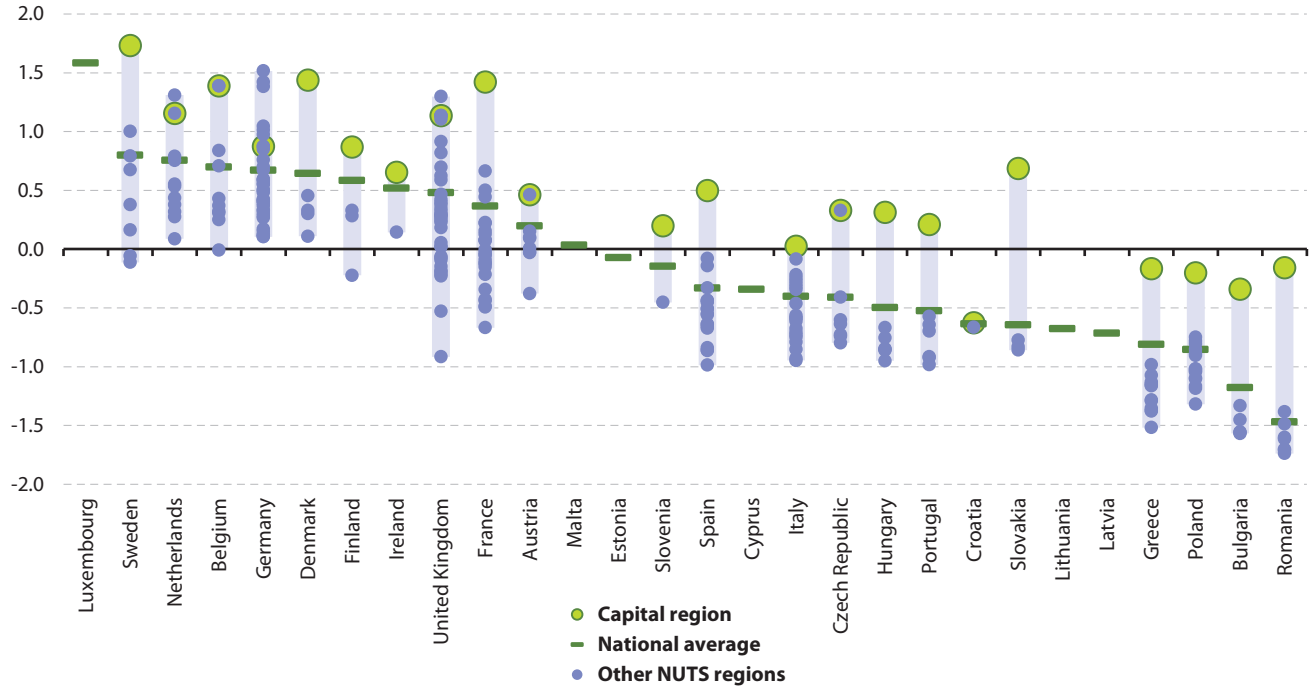
**Riddarholmen (part of the old town), Stockholm**

Regional competitiveness was generally high across all eight of the NUTS 2 regions that combine to make up Sweden. This was particularly true in the capital region of Stockholm, which ranked as the fourth most competitive region in the EU-28 in 2013.

Stockholm was the most competitive region in the EU with respect to its technological readiness and innovative capabilities.

*Photo: Benoît Derrier*

**Figure 15.4:** Regional disparities in competitiveness for the innovation sub-index, by NUTS 2 regions, 2013 (1) (EU-28 = 0)




(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Cheshire (UKD6) and Merseyside (UKD7): estimates based on the NUTS 2006 classification.

*Source:* European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy)

### *… in particular within capital regions*

All the regions in Denmark, Germany, Ireland and the Netherlands had an innovation score above the EU-28 average (see **Figure 15.4**). By contrast, all the regions in Bulgaria, Greece, Poland and Romania were below the EU-28 average. Apart from the capital region — which was above the EU-28 average — all the regions in the Czech Republic, Spain, Italy, Hungary, Portugal, Slovenia and Slovakia also had levels of innovation competitiveness below the EU-28 average.

A closer examination of the data for the various dimensions within the innovation sub-index reveals that capital regions were generally at the top of the ranking for the business sophistication dimension; this may well reflect the location of specific service activities in capital cities.

Technological readiness measures the level at which households and enterprises use technology and is based on indicators such as household access to broadband and enterprise-level technological absorption. The EU regions which appeared most ready to exploit high-tech instruments included those in the United Kingdom (Scotland and southern England), Sweden, Denmark, the Netherlands and northern Germany (see **Table 15.4**). Stockholm (the capital

**Table 15.4:** Regional competitiveness for selected dimensions of the innovation sub-index, by NUTS 2 regions, 2013 ([1])

| | Technological readiness | | | |
|---|---|---|---|---|
| | Highest region | Rank | Lowest region | Rank |
| **Belgium** | Prov. Namur (BE35) | 75 | Prov. Liège (BE33) | 121 |
| **Bulgaria** | Yugozapaden (BG41) | 248 | Severoiztochen (BG33) | 264 |
| **Czech Republic** | Prague area (CZ01 and CZ02) ([3]) | 148 | Střední Morava (CZ07) | 165 |
| **Denmark** | Hovedstaden (DK01) | 11 | Syddanmark (DK03) | 34 |
| **Germany** | Bremen (DE50) | 26 | Mecklenburg-Vorpommern (DE80) | 116 |
| **Estonia** | Eesti (EE00) | 158 | - | - |
| **Ireland** | Southern and Eastern (IE02) | 81 | Border, Midland and Western (IE01) | 110 |
| **Greece** | Attiki (EL30) | 230 | Kentriki Ellada (EL2) ([4]) | 250 |
| **Spain** | Comunidad de Madrid (ES30) | 150 | Galicia (ES11) | 195 |
| **France** | Île de France (FR10) | 109 | Départements d'outre-mer (FR9) ([4]) | 168 |
| **Croatia** | Jadranska Hrvatska (HR03) | 209 | Kontinentalna Hrvatska (HR04) | 219 |
| **Italy** | Provincia Autonoma Trento (ITH2) | 215 | Puglia (ITF4) | 249 |
| **Cyprus** | Κύπρος / Kýpros (CY00) | 200 | - | - |
| **Latvia** | Latvija (LV00) | 216 | - | - |
| **Lithuania** | Lietuva (LT00) | 187 | - | - |
| **Luxembourg** | Luxembourg (LU00) | 72 | - | - |
| **Hungary** | Közép-Magyarország (HU10) | 166 | Észak-Alföld (HU32) | 203 |
| **Malta** | Malta (MT00) | 117 | - | - |
| **Netherlands** | Amsterdam area (NL23 and NL32) ([5]) | 8 | Zeeland (NL34) | 33 |
| **Austria** | Vorarlberg (AT34) | 105 | Steiermark (AT22) | 145 |
| **Poland** | Region Południowo-Zachodni (PL5) ([4]) | 201 | Region Wschodni (PL3) ([4]) | 220 |
| **Portugal** | Lisboa (PT17) | 152 | Alentejo (PT18) | 193 |
| **Romania** | București - Ilfov (RO32) | 235 | Nord-Est (RO21) | 266 |
| **Slovenia** | Slovenija (SI0) ([4]) | 185 | - | - |
| **Slovakia** | Bratislavský kraj (SK01) | 172 | Východné Slovensko (SK04) | 196 |
| **Finland** | Helsinki-Uusimaa and Etelä-Suomi (FI1B and FI1C) | 57 | Åland (FI20) | 146 |
| **Sweden** | Stockholm (SE11) | 1 | Norra Mellansverige (SE31) | 13 |
| **United Kingdom** | Hampshire and Isle of Wight (UKJ3) | 21 | Northern Ireland (UKN0) | 127 |

([1]) Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Cheshire (UKD6) and Merseyside (UKD7): estimates based on the NUTS 2006 classification.
([2]) Aggregated data to take account of commuting patterns, comprising: Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest (BE10), Prov. Vlaams-Brabant (BE24) and Prov. Brabant Wallon (BE31).
([3]) Aggregated data to take account of commuting patterns, comprising: Praha (CZ01) and Střední Čechy (CZ02).
([4]) Information only available for NUTS level 1.
([5]) Aggregated data to take account of commuting patterns, comprising: Flevoland (NL23) and Noord-Holland (NL32).
([6]) Aggregated data to take account of commuting patterns, comprising: Niederösterreich (AT12) and Wien (AT13).
*Source:* European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy)

region of Sweden) had the highest level of technological readiness across any of the EU-28's NUTS 2 regions in 2013. The lowest scores were in Romania, Bulgaria, Italy, Latvia (a single region for this analysis) and parts of Croatia and Poland.

The level of innovative capability influences the ways in which technology is diffused within a region. The indicators within the innovation dimension include, among others, patent applications, knowledge workers, scientific publications, human resources in science and technology and (the strength of) high-tech clusters. The level of heterogeneity in this dimension was very high, with the highest scoring regions located in Finland, Luxembourg (a single region for this analysis) and a number of regions in Sweden, Germany, the United Kingdom, France and Ireland. The capital regions of Bratislavský kraj (Slovakia) and Bucureşti – Ilfov (Romania) also had quite high scores, but were surrounded by regions with much lower scores. As for technological readiness, Stockholm had the highest score for the innovation dimension among any of the EU-28's NUTS 2 regions in 2013. At the other end of the scale, were all of the Bulgarian regions, most regions in Romania, and parts of Poland, Slovakia, Hungary, Italy and Spain.

**Table 15.4** (continued): Regional competitiveness for selected dimensions of the innovation sub-index, by NUTS 2 regions, 2013 (1)

| | Innovative capability | | | |
|---|---|---|---|---|
| | Highest region | Rank | Lowest region | Rank |
| **Belgium** | Brussels area (BE10, BE24 and BE31) (2) | 11 | Prov. Luxembourg (BE34) | 162 |
| **Bulgaria** | Yugozapaden (BG41) | 148 | Yugoiztochen (BG34) | 265 |
| **Czech Republic** | Prague area (CZ01 and CZ02) (3) | 56 | Moravskoslezsko (CZ08) | 240 |
| **Denmark** | Hovedstaden (DK01) | 2 | Syddanmark (DK03) | 137 |
| **Germany** | Oberbayern (DE21) | 4 | Weser-Ems (DE94) | 169 |
| **Estonia** | Eesti (EE00) | 89 | - | - |
| **Ireland** | Southern and Eastern (IE02) | 41 | Border, Midland and Western (IE01) | 73 |
| **Greece** | Attiki (EL30) | 117 | Sterea Ellada (EL24) | 262 |
| **Spain** | Comunidad de Madrid (ES30) | 54 | Ciudad Autónoma de Ceuta (ES63) | 260 |
| **France** | Île de France (FR10) | 16 | Guyane (FR93) | 253 |
| **Croatia** | Kontinentalna Hrvatska (HR04) | 198 | Jadranska Hrvatska (HR03) | 223 |
| **Italy** | Lazio (ITI4) | 81 | Calabria (ITF6) | 247 |
| **Cyprus** | Κύπρος / Kýpros (CY00) | 149 | - | - |
| **Latvia** | Latvija (LV00) | 201 | - | - |
| **Lithuania** | Lietuva (LT00) | 174 | - | - |
| **Luxembourg** | Luxembourg (LU00) | 34 | - | - |
| **Hungary** | Közép-Magyarország (HU10) | 74 | Nyugat- Dunántúl (HU22) | 219 |
| **Malta** | Malta (MT00) | 153 | - | - |
| **Netherlands** | Utrecht (NL31) | 17 | Friesland (NL12) | 164 |
| **Austria** | Vienna area (AT12 and AT13) (6) | 62 | Burgenland (AT11) | 195 |
| **Poland** | Mazowieckie (PL12) | 111 | Świętokrzyskie (PL33) | 254 |
| **Portugal** | Lisboa (PT17) | 146 | Reg. Autón. da Madeira (PT30) | 252 |
| **Romania** | Bucureşti - Ilfov (RO32) | 51 | Sud-Est (RO22) | 266 |
| **Slovenia** | Zahodna Slovenija (SI02) | 69 | Vzhodna Slovenija (SI01) | 165 |
| **Slovakia** | Bratislavský kraj (SK01) | 30 | Východné Slovensko (SK04) | 238 |
| **Finland** | Helsinki-Uusimaa and Etelä-Suomi (FI1B and FI1C) | 6 | Åland (FI20) | 80 |
| **Sweden** | Stockholm (SE11) | 1 | Småland med öarna (SE21) | 143 |
| **United Kingdom** | Berkshire, Buckinghamshire and Oxfordshire (UKJ1) | 3 | Lincolnshire (UKF3) | 182 |

(1) Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Cheshire (UKD6) and Merseyside (UKD7): estimates based on the NUTS 2006 classification.
(2) Aggregated data to take account of commuting patterns, comprising: Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest (BE10), Prov. Vlaams-Brabant (BE24) and Prov. Brabant Wallon (BE31).
(3) Aggregated data to take account of commuting patterns, comprising: Praha (CZ01) and Střední Čechy (CZ02).
(4) Information only available for NUTS level 1.
(5) Aggregated data to take account of commuting patterns, comprising: Flevoland (NL23) and Noord-Holland (NL32).
(6) Aggregated data to take account of commuting patterns, comprising: Niederösterreich (AT12) and Wien (AT13).
*Source:* European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy)

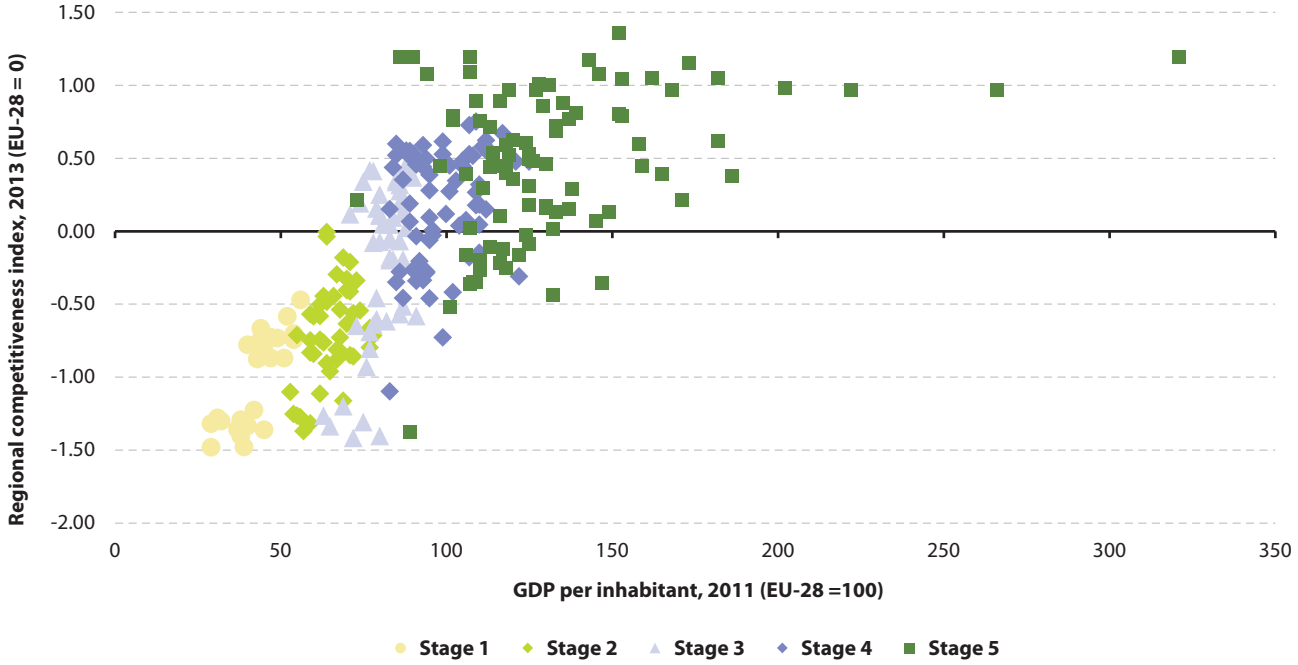
### *The regional competitiveness index — a close relationship with GDP per inhabitant*

EU-28 regions are at different stages of economic development: each EU region was assigned to one of five stages of economic development (defined on the basis of GDP per inhabitant, expressed in relation to the EU average).

**Figure 15.5** compares the calculated RCI values obtained for each NUTS 2 region with the latest information for GDP per inhabitant (covering the 2011 reference year). It shows that there is a close relationship between the two measures and confirms that competitiveness, even when defined using a much wider range of indicators (as in the RCI), tends to be closely related to levels of GDP per inhabitant. On the other hand, competitiveness embraces more factors than purely economic aspects and, in this sense, it can be considered as a measure which goes beyond GDP.

The regions in **Figure 15.5** are colour coded to reflect their different stages of competitive development (stages 1–5 reflect rising levels of GDP per inhabitant). Higher RCI values can be seen to accompany more frequently those regions with higher levels of GDP per inhabitant; while the RCI and GDP per inhabitant of those regions in stages 1 and 2 of their competitive development were clearly at the bottom end of both scales.

**Figure 15.5:** GDP per inhabitant compared with the regional competitiveness index (RCI), by NUTS 2 regions and by stages of competitiveness, 2011 and 2013 (1)




(1) Chemnitz (DED4), Leipzig (DED5), Emilia-Romagna (ITH5), Marche (ITI3), Cheshire (UKD6) and Merseyside (UKD7): estimates based on the NUTS 2006 classification.
*Source:* European Commission (Joint Research Centre and Directorate-General for Regional and Urban Policy) and Eurostat (online data code: nama_r_e2gdp)

# Data sources and availability

As shown in **Diagram 15.1**, there were 11 dimensions ([1]) of competitiveness included in the RCI for 2013, each of these reflects a separate element of territorial competitiveness. These eleven dimensions of competitiveness were classified within three sub-indices.

**The basic sub-index composed of:**

- Institutions are considered important for economic growth insofar as they can improve the provision of public goods, address market and non-market failures, improve efficiency, reduce transaction costs, foster transparency, promote entrepreneurship and facilitate the functioning of labour markets.
- Macroeconomic stability is considered as essential for guaranteeing trust in the market both for consumers and producers of goods and services and for providing the kind of economic conditions that lead to higher rates of long term investment.
- Infrastructure can provide the framework for the maximisation of local economic potential and the optimal use of its resources and is a key factor in determining the location of economic activity.
- Good health among the workforce is one factor in increasing labour market participation and productivity and also leads to a longer working life and lower healthcare and social costs.
- Quality of basic education is considered key to the level of basic skills and competencies required in the workplace. A number of studies have shown a strong, positive association between the quality of schooling and economic growth, and managing human capital at the regional level may be particularly efficient.

**The efficiency sub-index composed of:**

- Higher education, training and lifelong learning are often cited as key to knowledge-driven economies not only with respect to the generation of knowledge but also in the early adoption of technologies or techniques.
- Labour market efficiency is part of the wider efficient allocation of resources. Employment and unemployment rates provide information as to the level of activity in the regional economy, while long-term unemployment indicates the presence of structural problems.
- Market size points to the ability of enterprises to develop and benefit from economies of scale and may play a part in encouraging / discouraging entrepreneurship and innovation.

**The innovation sub-index composed of:**

- Technological readiness measures the level at which households and enterprises use technology. The penetration of technology has facilitated new work practices and lifestyles, aimed at improving productivity and the speeding-up of commercial processes.
- Business sophistication points to the degree of enterprise productivity and potential for responding to competitive pressures. It includes direct investment from abroad which can enhance capital and economic endowment of the host region.
- Innovation in products and processes is often considered as a competitive advantage for developed regions / economies.

The eleven dimensions were populated by a set of indicators: the RCI 2013 exercise was based on a total of 73 indicators (that were selected from an initial set of 80 indicators). Most of these indicators were sourced from Eurostat, while other sources included the World Bank (particularly for opinions on institutions), the OECD (for innovation and education), the World Economic Forum and the Cluster Observatory.

The information collected from this wide range of sources was statistically combined to produce a set of indices for each dimension, the three competitiveness sub-indices and the overall composite indicator of the RCI. For the 2013 exercise, the regions of the EU were divided into five different groups — those considered as being in a low, medium, intermediate, high and very high stage of competitive development (competitiveness stages 1–5). The sub-indices and the overall RCI were calculated based on a weighted combination of the various indicators, with the five different stages of competitiveness being used to modulate the weights, thereby refining the calculation of the overall RCI. For more details of the methods employed, refer to the full EU Regional Competitiveness Index, RCI 2013 report, available at http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/6th_report/rci_2013_report_final.pdf.

([1]) The original study released by the Joint Research Centre made use of the term 'pillar', rather than 'dimension' — however, these two terms may be considered as being synonymous.

The data used to calculate the RCI generally refer to the latest reference period available (which was not necessarily the 2013 reference year). When a regional breakdown was provided this was transformed to the NUTS 2006 classification. Subsequently, the data was reclassified to NUTS 2010 (the classification used in this publication), with the following differences:

- for Brussels (Belgium), Prague (the Czech Republic), Berlin (Germany), Amsterdam (the Netherlands), Vienna (Austria) and London (the United Kingdom), a number of NUTS 2 regions were aggregated to take account of commuters (in other words, residents of regions surrounding capital regions who make frequent trips to the capital region in order to work);
- information collected for the individual regions of Itä-Suomi (FI13, NUTS 2006) and Pohjois-Suomi (FI1A, NUTS 2006) was reclassified to Pohjois- ja Itä-Suomi (FI1D, NUTS 2010);
- information collected for Etelä-Suomi (FI18, NUTS 2006) was used for Helsinki-Uusimaa (FI1B, NUTS 2010) and for Etelä-Suomi (FI1C, NUTS 2010);
- there is no one-to-one correspondence between NUTS 2006 and NUTS 2010 for the following regions: Chemnitz (DED4, NUTS 2010), Leipzig (DED5, NUTS 2010), Emilia-Romagna (ITH5, NUTS 2010), Marche (ITI3, NUTS 2010), Cheshire (UKD6, NUTS 2010) and Merseyside (UKD7, NUTS 2010). However, as the differences between the two NUTS versions are generally relatively small, the data based on the NUTS 2006 has been used as a proxy to include information for NUTS 2010 regions (both in maps and in figures).

# Annex 1 — Classification of territorial units for statistics, 2010 version

## European Union: NUTS 2 regions (capital region is shown in bold)

### Belgium

**BE10 Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest**
BE21 Province/Provincie Antwerpen
BE22 Province/Provincie Limburg
BE23 Province/Provincie Oost-Vlaanderen
BE24 Province/Provincie Vlaams-Brabant
BE25 Province/Provincie West-Vlaanderen
BE31 Province/Provincie Brabant Wallon
BE32 Province/Provincie Hainaut
BE33 Province/Provincie Liège
BE34 Province/Provincie Luxembourg
BE35 Province/Provincie Namur

### Bulgaria

BG31 Северозападен/Severozapaden
BG32 Северен централен/Severen tsentralen
BG33 Североизточен/Severoiztochen
BG34 Югоизточен/Yugoiztochen
**BG41 Югозападен/Yugozapaden**
BG42 Южен централен/Yuzhen tsentralen

### Czech Republic

**CZ01 Praha**
CZ02 Střední Čechy
CZ03 Jihozápad
CZ04 Severozápad
CZ05 Severovýchod
CZ06 Jihovýchod
CZ07 Střední Morava
CZ08 Moravskoslezsko

### Denmark

**DK01 Hovedstaden**
DK02 Sjælland
DK03 Syddanmark
DK04 Midtjylland
DK05 Nordjylland

### Germany

DE11 Stuttgart
DE12 Karlsruhe
DE13 Freiburg
DE14 Tübingen
DE21 Oberbayern
DE22 Niederbayern
DE23 Oberpfalz
DE24 Oberfranken
DE25 Mittelfranken
DE26 Unterfranken
DE27 Schwaben
**DE30 Berlin**
DE40 Brandenburg
DE50 Bremen
DE60 Hamburg
DE71 Darmstadt
DE72 Gießen
DE73 Kassel
DE80 Mecklenburg-Vorpommern
DE91 Braunschweig
DE92 Hannover
DE93 Lüneburg
DE94 Weser-Ems
DEA1 Düsseldorf
DEA2 Köln
DEA3 Münster
DEA4 Detmold
DEA5 Arnsberg
DEB1 Koblenz
DEB2 Trier
DEB3 Rheinhessen-Pfalz
DEC0 Saarland
DED2 Dresden
DED4 Chemnitz
DED5 Leipzig
DEE0 Sachsen-Anhalt
DEF0 Schleswig-Holstein
DEG0 Thüringen

### Estonia

**EE00 Eesti**

### Ireland

IE01 Border, Midland and Western
**IE02 Southern and Eastern**

### Greece

EL11 Ανατολική Μακεδονία, Θράκη/Anatoliki Makedonia, Thraki
EL12 Κεντρική Μακεδονία/Kentriki Makedonia
EL13 Δυτική Μακεδονία/Dytiki Makedonia
EL14 Θεσσαλία/Thessalia
EL21 Ήπειρος/Ipeiros
EL22 Ιόνια Νησιά/Ionia Nisia
EL23 Δυτική Ελλάδα /Dytiki Ellada
EL24 Στερεά Ελλάδα/Sterea Ellada
EL25 Πελοπόννησος/Peloponnisos

**EL30 Αττική/Attiki**
EL41 Βόρειο Αιγαίο/Voreio Aigaio
EL42 Νότιο Αιγαίο/Notio Aigaio
EL43 Κρήτη/Kriti

## Spain

ES11 Galicia
ES12 Principado de Asturias
ES13 Cantabria
ES21 País Vasco
ES22 Comunidad Foral de Navarra
ES23 La Rioja
ES24 Aragón
**ES30 Comunidad de Madrid**
ES41 Castilla y León
ES42 Castilla-La Mancha
ES43 Extremadura
ES51 Cataluña
ES52 Comunidad Valenciana
ES53 Illes Balears
ES61 Andalucía
ES62 Región de Murcia
ES63 Ciudad Autónoma de Ceuta
ES64 Ciudad Autónoma de Melilla
ES70 Canarias

## France

**FR10 Île de France**
FR21 Champagne-Ardenne
FR22 Picardie
FR23 Haute-Normandie
FR24 Centre
FR25 Basse-Normandie
FR26 Bourgogne
FR30 Nord - Pas-de-Calais
FR41 Lorraine
FR42 Alsace
FR43 Franche-Comté
FR51 Pays de la Loire
FR52 Bretagne
FR53 Poitou-Charentes
FR61 Aquitaine
FR62 Midi-Pyrénées
FR63 Limousin
FR71 Rhône-Alpes
FR72 Auvergne
FR81 Languedoc-Roussillon
FR82 Provence-Alpes-Côte d'Azur
FR83 Corse
FR91 Guadeloupe
FR92 Martinique
FR93 Guyane
FR94 Réunion

## Croatia

HR03 Jadranska Hrvatska
**HR04 Kontinentalna Hrvatska**

## Italy

ITC1 Piemonte
ITC2 Valle d'Aosta/Vallée d'Aoste
ITC3 Liguria
ITC4 Lombardia
ITF1 Abruzzo
ITF2 Molise
ITF3 Campania
ITF4 Puglia
ITF5 Basilicata
ITF6 Calabria
ITG1 Sicilia
ITG2 Sardegna
ITH1 Provincia Autonoma di Bolzano/Bozen
ITH2 Provincia Autonoma di Trento
ITH3 Veneto
ITH4 Friuli-Venezia Giulia
ITH5 Emilia-Romagna
ITI1 Toscana
ITI2 Umbria
ITI3 Marche
**ITI4 Lazio**

## Cyprus

**CY00 Κύπρος/Kýpros**

## Latvia

**LV00 Latvija**

## Lithuania

**LT00 Lietuva**

## Luxembourg

**LU00 Luxembourg (Grand-Duché)**

## Hungary

**HU10 Közép-Magyarország**
HU21 Közép-Dunántúl
HU22 Nyugat-Dunántúl
HU23 Dél-Dunántúl
HU31 Észak-Magyarország
HU32 Észak-Alföld
HU33 Dél-Alföld

## Malta

**MT00 Malta**

### Netherlands

NL11 Groningen
NL12 Friesland
NL13 Drenthe
NL21 Overijssel
NL22 Gelderland
NL23 Flevoland
NL31 Utrecht
**NL32 Noord-Holland**
NL33 Zuid-Holland
NL34 Zeeland
NL41 Noord-Brabant
NL42 Limburg

### Austria

AT11 Burgenland
AT12 Niederösterreich
**AT13 Wien**
AT21 Kärnten
AT22 Steiermark
AT31 Oberösterreich
AT32 Salzburg
AT33 Tirol
AT34 Vorarlberg

### Poland

PL11 Łódzkie
**PL12 Mazowieckie**
PL21 Małopolskie
PL22 Śląskie
PL31 Lubelskie
PL32 Podkarpackie
PL33 Świętokrzyskie
PL34 Podlaskie
PL41 Wielkopolskie
PL42 Zachodniopomorskie
PL43 Lubuskie
PL51 Dolnośląskie
PL52 Opolskie
PL61 Kujawsko-Pomorskie
PL62 Warmińsko-Mazurskie
PL63 Pomorskie

### Portugal

PT11 Norte
PT15 Algarve
PT16 Centro
**PT17 Lisboa**
PT18 Alentejo
PT20 Região Autónoma dos Açores
PT30 Região Autónoma da Madeira

### Romania

RO11 Nord-Vest
RO12 Centru
RO21 Nord-Est
RO22 Sud-Est
RO31 Sud - Muntenia
**RO32 Bucureşti - Ilfov**
RO41 Sud-Vest Oltenia
RO42 Vest

### Slovenia

SI01 Vzhodna Slovenija
**SI02 Zahodna Slovenija**

### Slovakia

SK01 Bratislavský kraj
**SK02 Západné Slovensko**
SK03 Stredné Slovensko
SK04 Východné Slovensko

### Finland

FI19 Länsi-Suomi
**FI1B Helsinki-Uusimaa**
FI1C Etelä-Suomi
FI1D Pohjois- ja Itä-Suomi
FI20 Åland

### Sweden

**SE11 Stockholm**
SE12 Östra Mellansverige
SE21 Småland med öarna
SE22 Sydsverige
SE23 Västsverige
SE31 Norra Mellansverige
SE32 Mellersta Norrland
SE33 Övre Norrland

### United Kingdom

UKC1 Tees Valley and Durham
UKC2 Northumberland and Tyne and Wear
UKD1 Cumbria
UKD3 Greater Manchester
UKD4 Lancashire
UKD6 Cheshire
UKD7 Merseyside
UKE1 East Yorkshire and Northern Lincolnshire
UKE2 North Yorkshire
UKE3 South Yorkshire
UKE4 West Yorkshire
UKF1 Derbyshire and Nottinghamshire
UKF2 Leicestershire, Rutland and Northamptonshire
UKF3 Lincolnshire
UKG1 Herefordshire, Worcestershire and Warwickshire
UKG2 Shropshire and Staffordshire
UKG3 West Midlands

UKH1 East Anglia
UKH2 Bedfordshire and Hertfordshire
UKH3 Essex
**UKI1 Inner London**
UKI2 Outer London
UKJ1 Berkshire, Buckinghamshire and Oxfordshire
UKJ2 Surrey, East and West Sussex
UKJ3 Hampshire and Isle of Wight
UKJ4 Kent
UKK1 Gloucestershire, Wiltshire and Bristol/Bath area
UKK2 Dorset and Somerset
UKK3 Cornwall and Isles of Scilly
UKK4 Devon
UKL1 West Wales and The Valleys
UKL2 East Wales
UKM2 Eastern Scotland
UKM3 South Western Scotland
UKM5 North Eastern Scotland
UKM6 Highlands and Islands
UKN0 Northern Ireland

## EFTA countries: statistical regions at level 2 (capital region is shown in bold)

### Iceland

**IS00 Ísland**

### Liechtenstein

**LI00 Liechtenstein**

### Norway

**NO01 Oslo og Akershus**
NO02 Hedmark og Oppland
NO03 Sør-Østlandet
NO04 Agder og Rogaland
NO05 Vestlandet
NO06 Trøndelag
NO07 Nord-Norge

### Switzerland

CH01 Région lémanique
**CH02 Espace Mittelland**
CH03 Nordwestschweiz
CH04 Zürich
CH05 Ostschweiz
CH06 Zentralschweiz
CH07 Ticino

## Candidate countries: statistical regions at level 2 (capital region is shown in bold)

### Montenegro

**ME00 Црна Гора/Crna Gora**

### The former Yugoslav Republic of Macedonia

**MK00 Поранешна југословенска Република Македонија/Poranešna jugoslovenska Republika Makedonija**

### Serbia

**RS00 Република Србија/Republika Srbija**

### Turkey

TR10 İstanbul
TR21 Tekirdağ, Edirne, Kırklareli
TR22 Balıkesir, Çanakkale
TR31 İzmir
TR32 Aydın, Denizli, Muğla
TR33 Manisa, Afyonkarahisar, Kütahya, Uşak
TR41 Bursa, Eskişehir, Bilecik
TR42 Kocaeli, Sakarya, Düzce, Bolu, Yalova
**TR51 Ankara**
TR52 Konya, Karaman
TR61 Antalya, Isparta, Burdur
TR62 Adana, Mersin
TR63 Hatay, Kahramanmaraş, Osmaniye
TR71 Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir
TR72 Kayseri, Sivas, Yozgat
TR81 Zonguldak, Karabük, Bartın
TR82 Kastamonu, Çankırı, Sinop
TR83 Samsun, Tokat, Çorum, Amasya
TR90 Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane
TRA1 Erzurum, Erzincan, Bayburt
TRA2 Ağrı, Kars, Iğdır, Ardahan
TRB1 Malatya, Elazığ, Bingöl, Tunceli
TRB2 Van, Muş, Bitlis, Hakkari
TRC1 Gaziantep, Adıyaman, Kilis
TRC2 Şanlıurfa, Diyarbakır
TRC3 Mardin, Batman, Şırnak, Siirt

# Annex 2 — Other classifications used in this publication

## International statistical classification of diseases and related health problems: ICD

See: http://apps.who.int/classifications/icd10/browse/2010/en

## International standard classification of education: ISCED

See: http://www.uis.unesco.org/Education/Documents/isced-2011-en.pdf

## Statistical classification of economic activities in the European Community: NACE

See: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-RA-07-015/EN/KS-RA-07-015-EN.PDF

## European Union, EFTA and candidate countries: Urban Audit cities

See: http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/documents/RYB_2014_AnnexUA.doc

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KS-HA-14-001-EN-N

Publications Office

ISBN 978-92-79-38906-1

9 789279 389061

doi:10.2785/54659