Eurostat regional yearbook

2022 edition

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Eurostat regional yearbook

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Foreword

The *Eurostat regional yearbook* provides statistics on the people, economy and environment for regions across the European Union (EU). National figures alone cannot reveal the full and sometimes complex picture of what is happening within the EU's Member States.

The Eurostat regional yearbook offers a set of indicators, which are divided into three main parts: people and society, economy and business, and the environment and natural resources. The analyses presented include maps, figures and infographics, and are designed to highlight regional variations and similarities.

This year's publication focuses on the European year of youth 2022 initiative and the impact of the COVID-19 crisis.

The objective of the European year of youth 2022 is to assist the efforts of the EU, its Member States, regional and local authorities to support and engage with youth in a post-pandemic perspective by building a better future – greener, more inclusive and digital.

The COVID-19 pandemic has profoundly changed the world that we live in. While all regions in the EU have been affected by the pandemic, there have been marked differences in regional outcomes reflecting, among other factors, the prevalence and circulation of the virus, the age structure of populations, economic structures and specialisations, digital infrastructures, differences in environmental conditions and different strategies implemented by national, regional or local authorities.

There has been an asymmetric impact on regions with particular economic specialisations, for example, those that normally welcome a high number of tourists, regions characterised by high levels of international or retail trade, or regions characterised by high levels of precarious employment.

For those wishing to trace the latest COVID-19 developments – as and when additional data become available – Eurostat's most up-to-date statistics showing the economic and social impacts of the crisis can be found online at: https://ec.europa.eu/eurostat/web/covid-19/overview.

The Eurostat regional yearbook is available online in Statistics Explained on Eurostat's website. The latest data can be downloaded from Eurostat's database, where not only fresher but also more disaggregated data may be found.

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

Mariana Kotzeva

Director-General, Eurostat

Abstract

Statistical information is an important tool for understanding and quantifying the impact of political decisions in a specific territory or region. The *Eurostat regional yearbook 2022* provides a detailed picture relating to a broad range of statistical topics across the regions of the EU Member States, as well as the regions of the EFTA and candidate countries.

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

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

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Contents

Introduction

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

The COVID-19 crisis has changed the EU and the wider world profoundly. The impact of the pandemic and its associated measures within the EU is visible in this 2022 edition of the *Eurostat regional yearbook*; most of the subjects covered include information up until at least 2020 thereby illustrating the initial impact of the crisis. Some chapters also present data for 2021 when it is often possible to detect the first signs of recovery – at a regional level – for topics such as mortality, education, the labour market and use of the internet.

This 2022 edition also focuses on the European year of youth 2022 initiative. Its objective is to assist the efforts of the EU, its Member States, regional and local authorities to support and engage with youth in a post-pandemic perspective by building a better future – greener, more inclusive and digital. Most chapters in this edition have a special focus highlighting a range of youth issues.

The impact of the Russian military aggression against Ukraine and related sanctions, alongside population movements, disruptions to energy market and global food security are not yet visible in this latest edition of the *Eurostat regional yearbook* – since all of the statistics presented refer to earlier reference years.

European statistics

SUBNATIONAL STATISTICS

EU Member States are often compared with each other in statistical presentations, but in reality it can be difficult to compare a small country, such as Malta, which had 516 000 inhabitants on 1 January 2021, or Luxembourg, which had 635 000 inhabitants, with larger Member States such as Germany, the most populous EU Member State, where there were 83 million inhabitants. Furthermore, there are considerable differences between Member States as regards their territorial composition. For example, Ireland, Finland and Sweden are generally rural and sparsely-populated, whereas the Benelux Member States and Malta are characterised by much higher levels of population density. Equally, within individual Member States there can be great diversity: for example, the densely-populated, urbanised areas of Nordrhein-Westfalen in the west of Germany may be contrasted with the sparsely-populated, largely rural, north-eastern region of Mecklenburg-Vorpommern.

Therefore, analysing data at a subnational or regional level is often more meaningful as such an analysis may highlight disparities within EU Member States, for example an east-west divide in Germany or a north-south divide in Italy. Furthermore, these analyses may reveal differences in patterns of economic development. Germany and Poland have largely polycentric patterns of (economic) development with several, relatively large cities spread across their territory. By contrast, France and Romania are examples of a more monocentric pattern of development, with their activity more concentrated in and around their respective capitals.

Over the past few years, Eurostat has expanded the range of statistics that it provides beyond national and regional information to cover other territorial typologies, addressing the growing needs of policymakers, particularly within the context of cohesion and territorial developments. These changes are based on harmonising and integrating various typologies under two broad headings: those linked to regional statistics and those linked to statistics for local administrative units (LAU or municipalities). With this in mind, a process of legislative consolidation was accomplished by *Regulation (EU) 2017/2391 of the European Parliament and of the Council of 12 December 2017 as regards the territorial typologies (Tercet)*. This regulation establishes a common statistical classification of territorial units to enable the collection, compilation and dissemination of European statistics at different territorial levels.

STATISTICS ON REGIONS – THE NUTS CLASSIFICATION

At the heart of regional statistics is NUTS – the EU's classification of territorial units for statistics. This regional classification for EU Member States is based on a hierarchy of regions and subdivides each Member State into regions that are classified according to three different levels, covering NUTS levels 1, 2 and 3 from larger to smaller areas. Some EU Member States have a relatively small population and/or area and may therefore not be subdivided at some (or even all) of the different levels of the NUTS classification. For example, Estonia, Cyprus, Latvia, Luxembourg and Malta are each composed of a single NUTS level 2 region according to the 2021 version of the NUTS classification.

For non-member countries covered in this publication – EFTA and candidate countries – the concept of 'statistical regions' is used instead of NUTS. This applies

the same principles as those used in the establishment of the NUTS classification but is based on gentlemen's agreements between the countries concerned and Eurostat (rather than having any legislative basis).

Table 1 provides an overview of the number of regions for each of the EU Member States and non-member countries that are covered in the *Eurostat regional yearbook*.

Most of the regional statistics shown in the *Eurostat regional yearbook* are for NUTS level 2 regions. However, subject to data availability, some maps and figures are shown for either NUTS level 1 regions (more aggregated geographical information) or NUTS level 3 regions (the most detailed level of regional information). The more detailed statistics are only available for a limited selection of indicators that cover topics such as demography, economic accounts, tourism and environmental statistics.

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

The NUTS regulation and classification

The NUTS classification is defined in *Regulation (EC) No 1059/2003 of the European Parliament and of the Council of 26 May 2003 on the establishment of a common classification of territorial units for statistics (NUTS)*, which has to be amended by a European Commission regulation each time the classification is updated (when a new version of the NUTS is needed). The NUTS regulation specifies that there should be a minimum period of three years stability during which time the classification should not be changed; exceptions are made when the accession (or departure) of an EU Member State occurs. Since 2003, the NUTS classification has been amended several times, partly due to regular amendments, partly due to changes in the membership of the EU, and partly due to changes to the territorial boundaries of existing Member States (for example, the inclusion of data for the French region of Mayotte).

The sixth amendment of the NUTS classification (*Commission Delegated Regulation (EU) No 2019/1755*) was adopted in August 2019 and applies to any data transmitted to Eurostat from 1 January 2021 onwards; it is referred to as NUTS 2021. This version of NUTS is the basis for classifying regional statistics as used in the 2022 edition of the *Eurostat regional yearbook*; this is the first time that the new classification has been presented. It should be noted that some older data presented in this publication may have been collected using a previous version of NUTS, although these statistics have (where possible) been recoded to NUTS 2021. As a consequence, data are sometimes not available for a small number of regions where a simple recoding or aggregation of data from previous versions of NUTS was not possible (for example due to changes in boundaries).

Table 1: Number of NUTS 2021 regions and statistical regions by country

	NUTS level 1	NUTS level 2	NUTS level 3
EU	92	242	1 166
Belgium	3	11	44
Bulgaria	2	6	28
Czechia	1	8	14
Denmark	1	5	11
Germany	16	38	401
Estonia	1	1	5
Ireland	1	3	8
Greece	4	13	52
Spain	7	19	59
France	14	27	101
Croatia	1	4	21
Italy	5	21	107
Cyprus	1	1	1
Latvia	1	1	6
Lithuania	1	2	10
Luxembourg	1	1	1
Hungary	3	8	20
Malta	1	1	2
Netherlands	4	12	40
Austria	3	9	35
Poland	7	17	73
Portugal	3	7	25
Romania	4	8	42
Slovenia	1	2	12
Slovakia	1	4	8
Finland	2	5	19
Sweden	3	8	21
	Level 1	**Level 2**	**Level 3**
Iceland	1	1	2
Liechtenstein	1	1	1
Norway	1	7	13
Switzerland	1	7	26
Montenegro	1	1	1
North Macedonia	1	1	8
Albania	1	3	12
Serbia	2	4	25
Turkey	12	26	81

Source: Eurostat

Table 2: Population size constraints for NUTS 2021 regions
(number of inhabitants)

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

Source: Eurostat

The main principles of the NUTS classification

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

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

OTHER TERRITORIAL TYPOLOGIES

Previous editions of the *Eurostat regional yearbook* showed a range of other territorial typologies to extend subnational analyses to topics such as cities and commuting zones, or statistics compiled by degree of urbanisation. The latter is a classification based on three types of area, which are defined using a population grid of 1 km^2 cells in combination with population thresholds to identify cities (densely-populated areas), towns and suburbs (intermediate density areas) and rural areas (thinly-populated areas).

While statistics such as these remain highly relevant for policy debate in the EU and more generally at a global level, an editorial decision was taken when compiling this 2022 edition of the *Eurostat regional yearbook* to concentrate on regional statistics.

European policy background

European policymaking is inherently multidimensional: on the one hand, it has to encompass a broad framework providing objectives for the EU as a whole, while on the other it needs to acknowledge the often specific needs of national and subnational territories. Recent challenges such as the global financial and economic crisis, security concerns from terror attacks, the refugee crisis, the departure of the United Kingdom from the EU (Brexit), the COVID-19 crisis, or the war in Ukraine provide just a few examples of the two-sided nature of delivering both EU-wide and local solutions in a coherent manner.

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

COHESION POLICY

What is cohesion policy?

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

During the period 2021–2027, the framework for regional development and cohesion policy in the EU focuses on providing funds to the least developed regions of the EU for five key investment priorities:

- smarter Europe, through innovation, digitalisation, economic transformation and support to small and medium-sized businesses;
- a greener, carbon-free Europe, implementing the Paris Agreement and investing in energy transition, renewables and the fight against climate change;
- a more connected Europe, with strategic transport and digital networks;
- a more social Europe, delivering on the European Pillar of Social Rights and supporting quality employment, education, skills, social inclusion and equal access to healthcare;
- a Europe closer to citizens, by supporting locally-led development strategies and sustainable urban development across the EU.

Cohesion policy is delivered through a number of specific funds:

- The European Regional Development Fund (ERDF) aims to strengthen economic, territorial and social cohesion in the EU by correcting development imbalances between its regions. It focuses on providing funding for key policy areas such as: innovation and research; the digital agenda; support for small and medium-sized enterprises (SMEs); and the low-carbon economy.
- The Cohesion Fund aims to reduce economic and social disparities and to promote sustainable development. Funding is directed specifically at infrastructure projects to support the development of transport, energy and digital infrastructure within trans-European networks and at energy and transport projects that display clear environmental benefits in terms of energy efficiency, the use of renewable energy, developing rail transport, supporting inter-modality, or strengthening public transport.
- The European Social Fund Plus (ESF+) provides support for people, with a focus on improving employment and education opportunities across the EU, as well as the situation of the most vulnerable people (those at risk of poverty).
- The Just Transition Fund is a financial instrument within cohesion policy. It aims to provide support to territories facing serious socioeconomic challenges arising from the transition towards climate neutrality and is designed to facilitate the implementation of a European Green Deal (which aims to make the EU climate-neutral by 2050).

Cohesion policy: how is the budget decided?

Over time there has been a fragmentation of the rules and financing governing various EU cohesion funds. This resulted in an increased burden on local authorities managing programmes and may also have deterred businesses from applying for EU funding.

For the period 2021–2027, there have been a number of changes in how cohesion policy is organised and managed. *Regulation (EU) No 2021/1060 of 24 June 2021* – the Common Provisions Regulation (CPR) – provides a policy framework so that shared management funds, including EU cohesion funds, continue to fulfil the objectives of promoting convergence and supporting the least developed parts of the EU. As the main legal basis for cohesion policy, the CPR makes it possible to address emerging economic and social challenges through greater flexibility in terms of transferring resources and extended capacity. Furthermore, through the CPR, all cohesion funds – the ERDF, the Cohesion Fund and the ESF+ – are subject to the same rules of programming, management and monitoring.

The total budget for cohesion policy and the rules associated with its allocation are jointly decided by the Council and the European Parliament. Political agreement on the legislative package for cohesion policy for 2021–2027 was reached at the end of 2020.

A total of €274.3 billion have been allocated in the multiannual financial framework for regional development and cohesion between 2021 and 2027. While discussions around a political agreement on cohesion policy were ongoing, the COVID-19 crisis rapidly changed the socioeconomic landscape. As a result, the REACT-EU (Recovery Assistance for Cohesion and the Territories of Europe) package was agreed ([1]). It provided an additional €50.6 billion of new funding for 2021 and 2022 as part of the European Recovery Instrument (also known as Next Generation EU). For more information, including a breakdown of allocations by fund and by EU Member State, see: Budget allocations for the EU's cohesion policy 2021–2027.

The bulk of the budget for the EU's cohesion policy is provided to regions whose development lags behind the EU average, in particular, less developed regions predominantly located in the south or the east of the EU, the Baltic Member States and several outermost regions. Funding is concentrated on these less developed regions, with the goal of reducing economic, social and territorial disparities.

For the 2021–2027 period, the allocation of funds uses a method that remains largely based on regional gross domestic product (GDP) per inhabitant. However, a set of new criteria has been added – youth unemployment, low education levels, climate change, and the reception and integration of migrants – to better reflect the challenges faced by each region.

A specific allocation method will be used to distribute the REACT-EU funds between EU Member States. This is different from the normal cohesion policy allocation method and will take into account levels of prosperity, the magnitude of economic contraction due to the COVID-19 pandemic, and the impact of the crisis on unemployment (including among young people).

([1]) REACT-EU provides additional funding to extend the EU's crisis response to the COVID-19 pandemic, while contributing towards a green, digital and resilient recovery. It is designed to support job maintenance, including through short-time work schemes and support for the self-employed; support job creation and youth employment measures; health care systems; and the provision of working capital and investment support for small and medium-sized enterprises.

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

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

For the period 2021–2027, eligibility for cohesion funds is based on NUTS level 2 regions being ranked and split into three groups:

- less developed regions, where GDP per inhabitant was less than 75 % of the EU average;
- transition regions, where GDP per inhabitant was 75 %–100 % of the EU average; and
- more developed regions, where GDP per inhabitant was more than 100 % of the EU average.

Cohesion policy: implementation

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

The rules for cohesion policy funding during the period 2021–2027 have been simplified and harmonised so that the same rules are applied to each of the different funds. Procedures have been adapted so that they are based upon a results-orientated approach with more transparent controls, less bureaucracy, the introduction of specific preconditions before funds can be released, and the introduction of measurable targets for better accountability. The aim is that these simplified rules and coordinated structures will allow for a greater empowerment of subnational authorities in the management of EU funds.

Cohesion policy: integrated into broader policy goals

Regional policy and funding help deliver many of the EU's overall policy objectives. Cohesion policy programming is embedded within overall economic policy coordination, in particular the European Semester, the digital transition, A European Green Deal and the promotion of the European Pillar of Social Rights. These links between cohesion policy and broader reforms have been strengthened such that the European Commission may suspend regional funding to any EU Member State which does not comply with the EU's economic rules.

OTHER POLICY AREAS THAT IMPACT ON SUBNATIONAL AREAS

While the EU's regional policy can play an important role in delivering broader policy goals in a range of socioeconomic fields such as education, the labour market, energy, research and development or the environment, other EU policy areas can, in a similar way, have an impact on regions across the EU.

Urban development policy in the EU

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

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

European policymakers recognise the important role that may be played by the urban dimension of regional policy, in particular measures designed to assist the fight against poverty and social exclusion. In doing so, the urban dimension of cohesion policy will be strengthened during the period 2021–2027, with a minimum of 6 % of the ERDF dedicated to sustainable urban development strategies, alongside a

new European Urban Initiative (EUI) to be launched in the third quarter of 2022 with the goal of supporting cities to innovate, access knowledge and understand policy. The EUI is designed to strengthen integrated and participatory approaches to sustainable urban development and aims to do so by facilitating and supporting cooperation and capacity building among urban actors, innovative actions, knowledge, policy development and communication.

Rural development policy in the EU

The EU is seeking to develop a long-term vision for rural areas, designed to help rural areas meet a wide range of economic, social and environmental challenges. This initiative – the Rural Pact – seeks to develop a common European vision for vibrant, connected, and sustainable rural areas by 2040; it is coordinated by the European Commission. Its aim is to mobilise public authorities and stakeholders to act on the needs and aspirations of rural businesses and residents to develop a comprehensive action plan designed to help rural communities and businesses reach their full potential.

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

At the end of 2021, a political agreement was reached on a new common agricultural policy for the period 2023–2027. The new legislation aims to make the common agricultural policy (CAP) more responsive to future challenges, while continuing to support EU farmers for a sustainable and competitive agricultural sector. The new policy is built around 10 key objectives that are focused on social, environmental and economic goals. The objectives are: to ensure a fair income for farmers; to increase competitiveness; to improve the position of farmers in the food chain; climate change action; environmental care; to preserve landscapes and biodiversity; to support generational renewal; vibrant rural areas; to protect food and health quality; fostering knowledge and innovation.

Following the allocation of the EU's long-term budget – the multiannual financial framework (2021–2027) – a transitional regulation ensuring continued support for agriculture, forestry and rural areas was agreed concerning funding during 2021 and 2022. This extends most of the rules relating to the CAP that were in place during the 2014–2020 period, while also including new elements to encompass stronger green ambitions. In total, some €387 billion of funding has been allocated to the CAP for the period 2021–2027. This comes from two different funds: €291 billion from the European agricultural guarantee fund (EAGF) and €96 billion from the EAFRD.

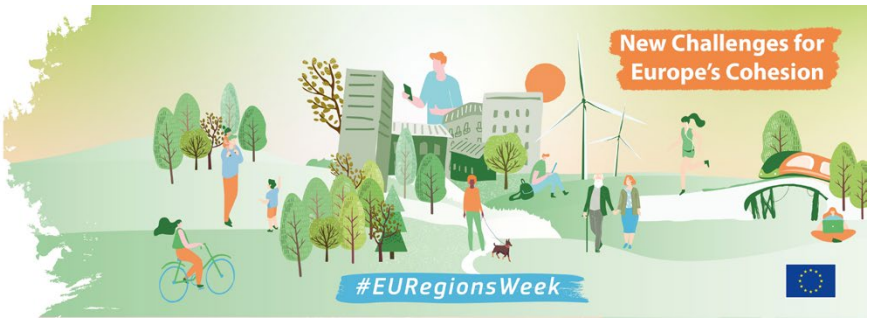
European Committee of the Regions

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

During the period 2020–2025, the CoR aims to bring the EU closer to its people through three main priorities:

- bringing the EU closer to people – democracy and the future of the EU (with the goal of reinforcing democracy at all levels of government, improving the way the EU works, ensuring its policies and programmes meet the real needs of citizens);
- managing fundamental societal transformations – building resilient regional and local communities (using the United Nations (UN's) Sustainable Development Goals to identify solutions that ensure the EU sufficiently supports local and regional authorities in responding to future emergencies and addressing the societal transformations taking place in their communities from challenges such as global pandemics as well as climate, digital and demographic transitions);
- promoting cohesion as a fundamental value – place-based EU policies (ensuring that economic, social and territorial cohesion is fostered and respected in all EU policies that affect people and their places of living).

The #CohesionAlliance 2.0 is a coalition of people who believe that the role of EU cohesion policy should be strengthened post-2020. The alliance was created through cooperation between leading European associations of cities and regions and the European Committee of the Regions. In May 2020, a proposal was put forward for a renewed declaration in view of decisions to be taken on the EU's multi-annual financial framework and the EU's recovery plan. A final version of the declaration was agreed and adopted on 14 July 2020.



The European Week of Regions and Cities is an annual multi-day event which allows regions and cities to showcase their capacity to encourage growth and job creation, implement EU cohesion policy, and provide evidence of the importance of the local and regional level for good governance. Organised by the CoR and the European Commission's Directorate-General for Regional and Urban Policy, it has become a networking platform for regional and local development – which is viewed as a key event for policy practitioners – and is the biggest EU event dedicated to regional policy. The 20th European Week of Regions and Cities will be held 10–13 October 2022 under the headline of 'New challenges for Europe's cohesion' and will concentrate on four principal themes (that are closely aligned with the European Commission's priorities):

- the green transition;
- territorial cohesion;
- the digital transition; and
- youth empowerment.

European Green Deal

To overcome the existential threat of climate change, the EU has enacted a new growth strategy designed to transform the EU into a modern, resource-efficient and competitive economy, where:

- there are no net emissions of greenhouse gases by 2050;
- economic growth is decoupled from resource use; and
- no person and no place is left behind.

The European Green Deal (COM(2019) 640 final) provides details of how the EU plans to develop into a sustainable economy by turning climate and environmental challenges into opportunities, and making the transition fair and inclusive for all.

Reaching these targets will require action from all regions and all sectors of the EU economy, including: investing in environmentally-friendly technologies; supporting industry to innovate; rolling out cleaner, cheaper and healthier forms of private and public transport; decarbonising the energy sector; ensuring buildings are more energy efficient; and working with international partners to improve global environmental standards.

To do so, the EU will provide financial support and technical assistance through the Just Transition Fund to help those that are most affected by the move towards the green economy. For example, assistance may be provided to regions and sectors that depend on fossil fuels or carbon-intensive processes. It will draw on sources of funding from the EU budget, supplemented by national co-financing and funds from the European Investment Bank. It is expected to mobilise close to €30 billion in investments.

A Europe fit for the digital age

Digital technology has and will continue to change people's lives in a rapid manner. The EU's digital strategy aims to make this transformation work for people and businesses. On 9 March 2021, the European Commission presented a vision for the EU's digital transformation by 2030. This is based on four key points – government, skills, infrastructure and business – that are the cornerstones of the 2030 Digital Compass: the European way for the Digital Decade (COM(2021) 118 final). Some of the targets set for 2030 include:

- having 20 million employed ICT specialists in the EU (with convergence between women and men);
- having all households in the EU covered by a Gigabit network and all populated areas covered by 5G;
- having the EU produce at least 20 % of the world's output of cutting-edge and sustainable semiconductors;
- having 75 % of EU enterprises making use of cloud computing services, big data and artificial intelligence;
- having online provision for all key public services in the EU (those used by individuals and by enterprises);
- to provide all Europeans with access to their medical records online;
- to have 80 % of EU citizens using a digital ID solution.

The European Commission aims to strengthen the digital sovereignty of the EU and to set standards, rather than following those of others – with a focus on data, technology, and infrastructure. The goal is to achieve this through a robust, joint governance structure (to identify successes and gaps) and through multi-country projects combining support from the EU's budget, national governments and the private sector.

European Pillar of Social Rights

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

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

These three headings cover a set of 20 key principles. To monitor the progress being made in strengthening the social dimension of the EU, the European Commission has established a social scoreboard. The information presented is also used for economic policy coordination as part of the European Semester. In her *Political guidelines for the period 2019–2024,* the European Commission President, Ursula von der Leyen, highlighted the need to reconcile 'the social and the market in today's modern economy' and undertook to implement fully the European Pillar of Social Rights. In January 2021, she stated that 'As we overcome the pandemic, as we prepare necessary reforms and as we speed up the twin green and digital transitions, I believe it is time to also adapt the social rulebook'.

On 4 March 2021, the European Commission adopted the European Pillar of Social Rights Action Plan (COM(2021) 102 final) designed to turn the 20 key principles into specific actions, while also proposing three new headline targets for the EU to reach by 2030:

- at least 78 % of the population aged 20–64 years should be in employment by 2030;
- at least 60 % of all adults should be participating in training every year by 2030;
- a reduction of at least 15 million in the number of people at risk of poverty or social exclusion should be achieved by 2030 (compared with the situation in 2019 when there were 91 million people at risk of poverty or social exclusion).

The action plan has been designed to address both long-term transformations of the EU's labour markets and economies – as shaped by climate change, digitalisation, globalisation and demographic developments – alongside more immediate challenges resulting from the COVID-19 crisis and its impact on jobs, education, the economy, welfare systems and social life.

Despite the European Pillar of Social Rights not making any specific reference to regional policy, policymakers have shown a growing interest in analysing information at a more detailed, subnational level. Many of the indicators in the social scoreboard may be provided by Eurostat for a range of territorial typologies – principally, by region (using the NUTS classification) or by degree of urbanisation.

Sustainable Development Goals

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

On 22 November 2016, the European Commission adopted the Communication, *Next steps for a sustainable European future – European action for sustainability* (COM(2016) 739 final). It details the significance of the SDGs, identified EU policies that contribute to the implementation of SDGs, and announced plans for regular monitoring within an EU context. The EU has made a firm commitment towards delivering on the SDGs and on the Paris Agreement on climate change. Within this context, Eurostat has been called upon to regularly monitor progress towards the SDGs in an EU context. For this purpose it coordinates the development and release of an EU SDG indicator set and produces regular monitoring reports.

With a broad range of challenges ahead, the EU highlighted further actions required to help secure a sustainable future in a reflection paper released by the European Commission in January 2019, *Towards a sustainable Europe by 2030*. The paper highlighted that some of the most important global challenges to be faced in the coming years include issues around social equality, solidarity and environmental protection. In her *Political guidelines for the period 2019–2024*, the European Commission President underlined this commitment noting that 'economic policy should go hand in hand with social rights, the EU's climate neutrality objective and a competitive industry'. With this in mind, she suggested there was a need to 'refocus the European Semester into an instrument that integrates the United Nations' Sustainable Development Goals'.

A SHORT READING GUIDE

Coverage

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

The *Eurostat regional yearbook* contains regional statistics for the Member States of the EU, alongside data for a number of non-member countries – EFTA countries (Iceland, Liechtenstein, Norway and Switzerland) and candidate countries (Montenegro, North Macedonia, Albania, Serbia and Turkey).

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

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

How to interpret the maps

A majority of the maps in the *Eurostat regional yearbook* are choropleth maps (that use different colour shades to show regional differences for a particular indicator). These maps have been made using a standardised approach.

- Most of these maps are composed of six sequential colours, from a light yellow (for low values) through to dark blue (for high values).
- The class boundaries in each map are computed exclusively in relation to the distribution of regional values for EU Member States (even when maps also include data for regions in non-member countries). The boundaries for the lower classes are based on the 10th and the 25th percentiles, the middle class on the 50th percentile, and the upper classes on the 75th and the 90th percentiles. Each of these boundaries was subsequently rounded up/down to make the class boundaries easier to read. As such, the lightest shade of yellow and the darkest shade of blue portrays those EU regions with approximately the lowest/highest 10 % of values.
- Some choropleth maps have been produced using a diverging colour scheme. These maps have been produced to show the distribution of regions around a particular value (for example, those regions that have values that are below/above an EU policy target) or to show distributions of regions below/above zero. These maps use three yellow shades (that show values that are progressively lower than an EU target or zero) and three blue shades (that show values that are progressively higher than an EU target or zero).

Proportional circles and pie charts have been used in maps when presenting data in absolute values (for example, the total number of people living in a region or the gross domestic product of a region). The size of each circle generally represents the underlying level for the main indicator, while additional information may be presented by shading circles in different colours or dividing circles into pie segments.

Non-member countries that are excluded from the spatial coverage of the *Eurostat regional yearbook* are systematically denoted in all maps using a light shade of grey. If data are not available for any regions in the EU Member States, EFTA countries or candidate countries, these are denoted using a dark shade of grey.

Timeliness

There is a wide range of surveys and data collection exercises whose data feed into the *Eurostat regional yearbook*. As a result, there may be differences concerning the latest available reference year between the articles as each aims to show the latest information. In general, 2021 data are available for demography (as used in the chapter on population), the labour force survey (as used in the chapters on education and the labour market) and the information society survey (as used in the chapter on the digital society). Otherwise, the most common reference period is 2020, which is generally the latest year for which information is available in most of the other chapters, for example, living conditions, the economy or tourism. Note that Eurostat's website may have fresher data due to the continuous nature of data collection and processing (resulting in updates and new reference periods being added throughout the year). Online data codes below each of the maps and figures help users to locate the freshest data.

Metadata

Eurostat's data are published with accompanying metadata that provide background information on each source, as well as specific information (flags) for individual data cells. The flags provide information relating to the status of the data, for example, detailing whether the data are estimated, provisional or forecasted. These flags are generally not shown in this publication (in order to restrict the metadata shown under maps and figures to a minimum). Some cells may be flagged as confidential and these are simply shown as being 'not available'; as such, they cannot be distinguished from other values where data have not been provided (for whatever reason).

When compiling the maps and figures for this edition of the *Eurostat regional yearbook*, cases where the latest data were missing were identified. Given the considerable impact of the COVID-19 pandemic and its associated restrictions, two different methods were employed to try to fill these gaps for missing data.

- Datasets where the most recent data available were for 2020 or 2021: in these cases, because there could be considerable differences between 2019 and 2020 due to COVID-19 impacts, an effort was made to fill missing cells with higher aggregates of NUTS or with national data rather than making use of data from 2019.
- Datasets where the most recent data available were for 2019 or an earlier year: in these cases, an effort was made to fill missing cells first with older regional data (at the same NUTS level) before making use of more aggregated NUTS levels or national data.

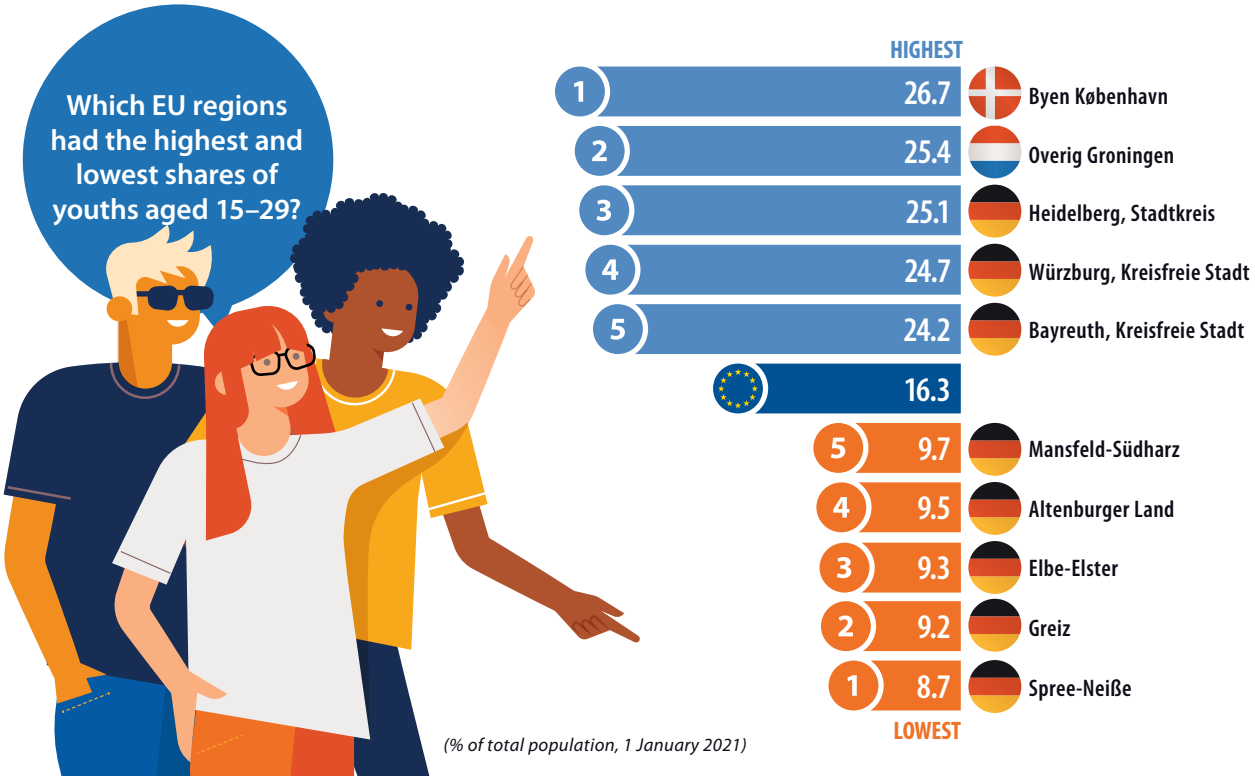
In both cases, these exceptions for different geographical levels or for different reference periods are documented in the footnotes provided. This is also the case for breaks in series and other major methodological differences.

A People and society

1. Population

Demographic developments in the European Union (EU) are far from uniform, with considerable variations both between and within individual EU Member States. One factor that is often key to explaining these divergences is the mobility of young people, reflecting – among other issues – their search for education and/or job opportunities. The increased mobility of younger generations can result in profound changes to demographic structures in particular geographic areas, with some regions thriving due to an inflow of younger more-qualified generations, whereas others lag behind. These developments can lead to considerable differences in demographic structures, resulting in (among other consequences):

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



Source: Eurostat (online data codes: demo_r_pjangrp3 and demo_pjan)

Regional populations

On 1 January 2021, there were 447.2 million persons living in the EU. This was 277 700 fewer than a year before, the first time that a reduction was recorded since the start of the time series in 1960. While the rate at which the EU population has been growing slowed in recent years, the impact of the COVID-19 crisis and mortality patterns may explain, to a large degree, the fall during 2020 in the total number of persons living in the EU.

Most people across the EU live in relatively densely-populated cities, towns and suburbs, while the vast majority of the EU's land area is more sparsely-populated. There are 242 NUTS level 2 regions and 1 166 NUTS level 3 regions across the EU from which a detailed typology for analysing demographic developments can be established. Note that some of the differences covered below reflect the criteria used to determine the administrative boundaries that are used to delineate each of these regions.

As of 1 January 2021, there were 61 NUTS level 2 regions in the EU that had at least 2.25 million people (as shown by the two largest sizes of circles in Map 1.1). These most populous regions in the EU included the capital regions of Germany, Ireland, Greece, Spain, France, Italy, the Netherlands, Poland, Portugal, Romania and Sweden. At the upper end of the distribution, there were only two regions with at least 10.0 million people, the French capital region (Ile-de-France; 12.4 million) and Lombardia (10.0 million) in the north of Italy.

Regions with fewer than 850 000 people as of 1 January 2021 (shown by the two smallest sizes of circles in Map 1.1) were often rural, remote or peripheral regions. Among these, the least populous NUTS level 2 regions with less than 250 000 persons included the Spanish Ciudades de Ceuta y Melilla, the mountainous Italian region of Valle d'Aosta/Vallée d'Aoste, and four island regions – Ionia Nisia, Voreio Aigaio (both Greece), Região Autónoma dos Açores (Portugal) and Åland (Finland). The lowest population count (just over 30 000 persons) was in Åland.

Most capital regions are projected to see their populations grow during the next three decades

Populations change in a dynamic fashion over time, as a function of births, deaths and migratory flows; this is true for regional as well as national populations. The EU is undergoing a period of progressive ageing of its population with low fertility rates combining with long-term increases in life expectancy leading to a growing share of the elderly in the total population. This on-going process of demographic ageing has a number of socioeconomic impacts: for example, there will probably be a sizeable reduction in the number and share of working-age persons which may result in considerable challenges for public expenditure on pensions, healthcare and long-term care costs.

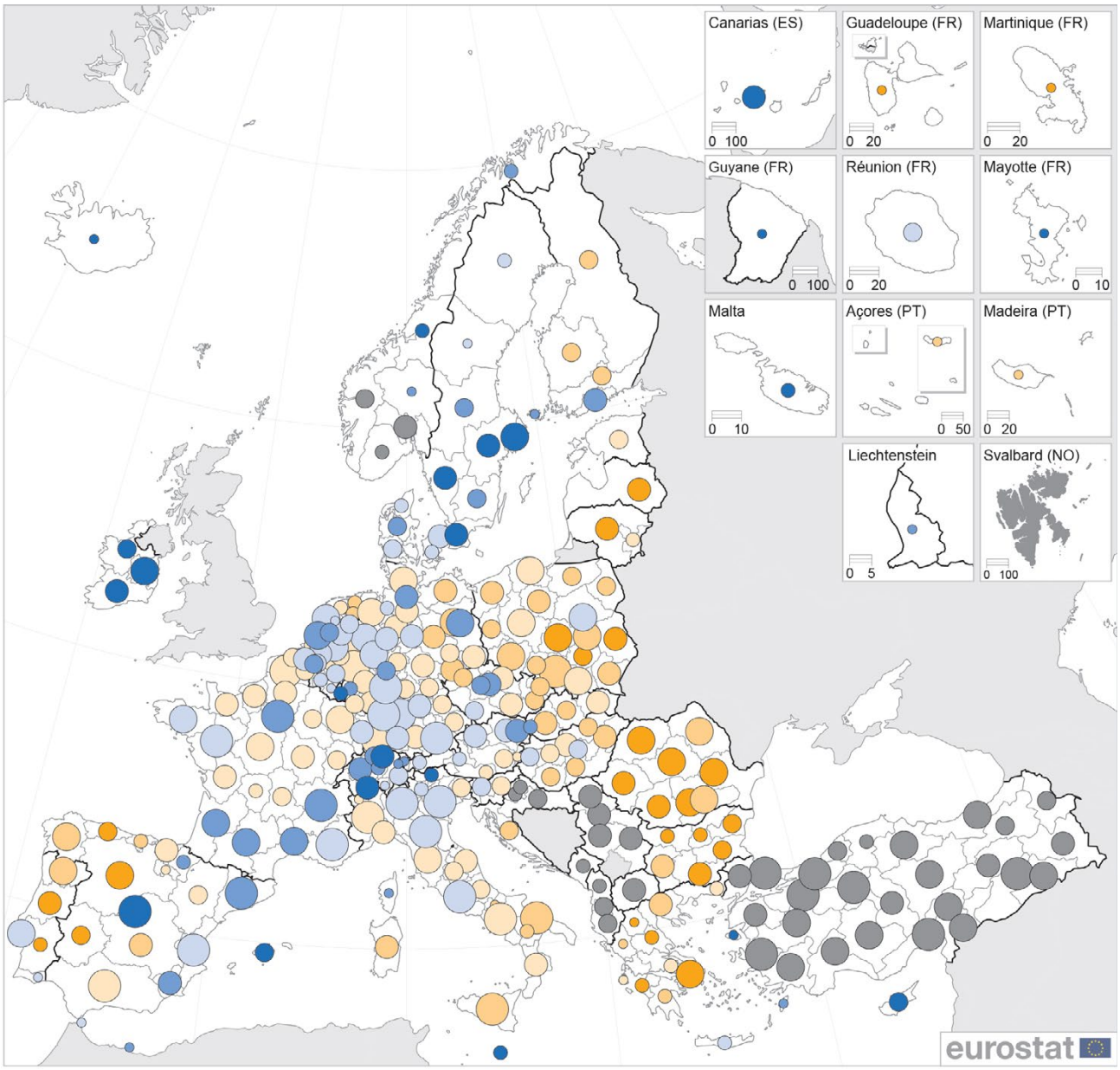
EUROPOP2019 is the latest set of population projections released by Eurostat. It provides 'what-if' scenarios that may be used to trace projected population developments (based on various assumptions that are held constant over time). According to the baseline projection, the EU's population will fall by 6.0 million persons during the next three decades, equivalent to an overall fall of 1.3 % (or 13 per 1 000).

Map 1.1 shows projected changes in populations for NUTS level 2 regions between 1 January 2021 and 1 January 2050. In the vast majority of EU Member States, capital regions have some of the highest positive projected rates of change, suggesting that they will (continue to) exert a considerable pull on both international and inter-regional migrants.

There are 17 regions across the EU where the population is projected to increase by at least 15.0 % (or 150 per 1 000) during the next three decades (as shown by the darkest shade of blue in Map 1.1). Particularly high projected growth – more than 25.0 % – was projected in regions as far afield as Mayotte and Guyane (France), Voreio Aigaio (Greece), Malta, Illes Balears (Spain), Eastern and Midland (Ireland) and Stockholm (Sweden).

Regional populations are projected to increase between 1 January 2021 and 1 January 2050 across many densely-populated, predominantly urban regions of the EU. Looking in more detail at population developments within individual EU Member States, every region of Denmark, Ireland, Cyprus, Luxembourg, Malta and Sweden is projected to experience an increase in population numbers during the period under consideration. By contrast, population levels are projected to fall across many eastern regions of the EU and in the Baltic Member States. This pattern is particularly apparent in Bulgaria, Estonia, Latvia, Lithuania and Romania, where every region is projected to see its population fall. A similar pattern is foreseen in Poland, Slovenia and Slovakia, as every region – except for the capital region – is projected to experience a decline in population numbers.

Map 1.1: Population developments, 2021–2050
(by NUTS 2 regions)



Note: as of 1 January. Svalbard og Jan Mayen (NO0B): not available.

Source: Eurostat (online data codes: demo_r_pjangrp3, proj_19rp3, demo_pjan and proj_19np)

Population structure

The COVID-19 pandemic disproportionately impacted the elderly in terms of morbidity and mortality (see below for more details). As a result, regions characterised by high shares of elderly populations are more likely to have witnessed relatively rapid changes in their population structures.

Some of the highest median ages in the EU were recorded in regions across Germany, Spain and Italy …

The median age is an indicator that may be used to analyse population ageing; it gives an idea of the pace at which the EU's population structure is changing. The median age of the EU population was 38.4 years in 2001 (the first reference year for which information is available). Over a period of 20 years, the median age in the EU increased by more than five years, to stand at 44.1 years by 2021.

In 2021, the highest median ages among NUTS level 3 regions of the EU were recorded in the mountainous region of Evrytania in central Greece (56.3 years) and Arr. Veurne in north-west Belgium (55.5 years). The 10 EU regions with the highest median ages otherwise included (predominantly eastern) German regions, among which the highest median age was recorded in Suhl, Kreisfreie Stadt (55.4 years). These regions in Germany were often characterised by relatively low levels of disposable income and relatively high unemployment rates (when compared with other regions in Germany). It is therefore likely that their high median ages reflect, at least to some degree, younger people having moved – for example to regions with larger and more affluent cities in Germany, or further afield (for example, to neighbouring countries such as Austria) – in search of higher wages and/or better job opportunities.

The median age of the population was also relatively high in a number of Spanish and Italian regions that were characterised by relatively low fertility rates and rural depopulation (in part reflecting a range of push factors that encourage younger people to leave their region). This pattern was most evident in north-western regions of Spain – for example, Galicia, Principado de Asturias and Castilla y León – and in northern regions of Italy – for example, Liguria and Friuli-Venezia Giulia. In some of these regions, population ageing was enhanced as coastlines provided popular retirement destinations (thereby pulling in additional old people).

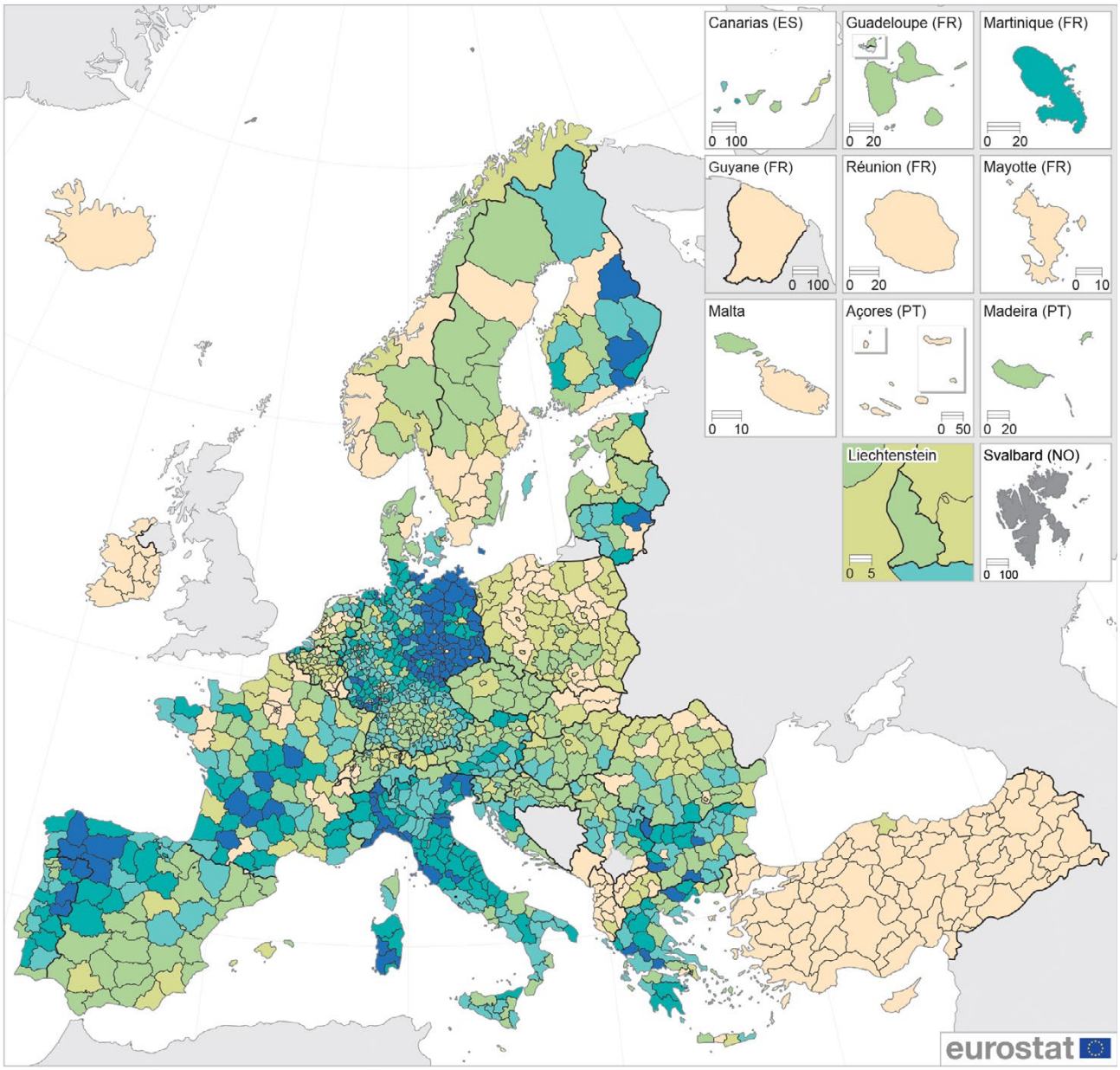
… while some of the lowest median ages were recorded in and around capital cities

Capital regions often exert a considerable pull on international and inter-regional migrants, as they tend to provide a wide range of educational and employment opportunities. This process can lead to a shift in population structures, with younger people accounting for a growing share of the total population in capital regions; over time, this pattern may self-propagate, insofar as populations with younger age structures are more likely to have relatively high birth rates.

In 2021, several of the NUTS level 3 regions in the EU with the lowest median ages were capital regions, those of Denmark, France (the suburbs of Seine-Saint-Denis and Val-d'Oise), Belgium, Ireland and Greece. Among these, the lowest median age was recorded in Byen København (33.8 years). The other regions with the lowest median ages were:

- outermost regions and autonomous regions/cities – two of these had particularly low median ages (reflecting their high fertility rates), the French régions ultrapériphériques of Mayotte (18.1 years) and Guyane (26.3 years);
- cities with relatively large student populations – Heidelberg, Stadtkreis in Germany and Gdański in Poland.

Map 1.2: **Median age of the population, 1 January 2021**
(years, by NUTS 3 regions)



Note: Serbia, 1 January 2020 instead of 1 January 2021.

Source: Eurostat (online data codes: demo_r_pjangrp3 and demo_pjan)

As society recovers from the effects of the COVID-19 crisis, the EU designated 2022 as the European Year of Youth

An alternative indicator for analysing the population age structure is the share of young persons (aged 15–29 years) – hereafter referred to as youths – in the total population. As of 1 January 2021, youths made up some 16.3 % of the EU's total population. Among NUTS level 3 regions, they accounted for more than one quarter of the total population in the Danish capital region of Byen København (26.7 %), as well as in the student cities of Overig Groningen in the Netherlands (25.4 %) and Heidelberg, Stadtkreis in Germany (25.1 %). At the other end of the range, the smallest shares of youths in the total population were recorded in three German regions: Spree-Neiße (8.7 %), Greiz (9.2 %) and Elbe-Elster (9.3 %).

There were 46 NUTS level 3 regions across the EU where youths accounted for at least one fifth of the total population as of 1 January 2021. These regions were predominantly characterised as urban and many were university cities: it is likely that younger people arrived in these regions after completing their compulsory education to either continue their studies or to look for alternative and perhaps more varied work. These regions where youths made up at least one in five of the population were concentrated across a small number of EU Member States – Belgium, Denmark, Germany, Greece, Spain, France, Cyprus, the Netherlands and Sweden. In most of these, the capital region featured among the list of regions where youths accounted for at least 20.0 % of the total population; the only exceptions were in Germany and Spain.

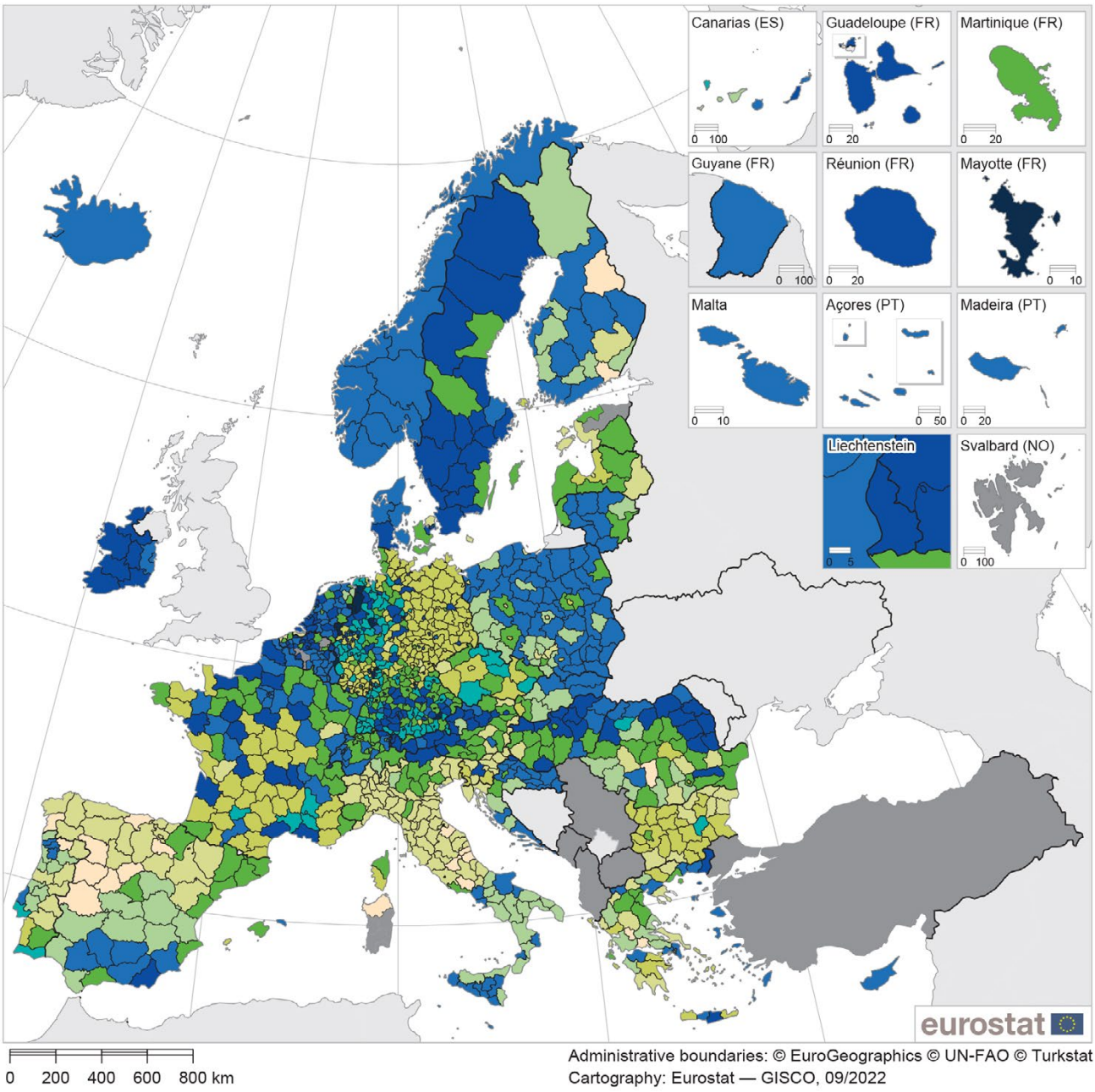
EUROPOP2019 data can be used to provide an idea of how the EU's population structure is projected to change in the coming years. According to these projections, youths will account for 14.9 % of the EU population by 2050. This is 1.4 percentage points lower than their share on 1 January 2021, providing further evidence concerning the progressive ageing of the EU population. Among the 1 153 NUTS level 3 regions for which data are available, the latest projections suggest that almost three quarters (72.0 %) will experience a fall in the relative share of youths within their total populations between 2021 and 2050.

Map 1.3 shows information on the share of youths in regional populations (as of 1 January 2021) and projected changes for this share (between 2021 and 2050); the colours used within the map present a matrix of possibilities. For example, the darkest shade of blue indicates those regions which already had a relatively high share of youths as of 1 January 2021 and where projected changes suggest the share will increase further by 2050. By contrast, those regions in a pale shade of yellow had a relatively low share of youths as of 1 January 2021 and projected changes suggest the share will fall even further by 2050. There were 16 NUTS level 3 regions with a relatively high share of youths that was projected to remain constant or continue growing (as shown by the dark blue shade). They were almost exclusively located in Germany (14 regions); the only exceptions being Bezirk Verviers — Deutschsprachige Gemeinschaft, a German speaking region of Belgium, and one of the French régions ultrapériphériques, Mayotte.

Looking in more detail at the projected developments for the youth population, the 10 NUTS level 3 regions with the biggest absolute increases – as measured by the projected percentage point change in the share of youths between 2021 and 2050 – were all located in Germany. At the other end of the range, the 10 regions with the biggest projected falls (again in absolute terms) in their youth populations were more widely distributed. Half of them (five regions) were located in Germany, while the other five included two regions from eastern Poland – Chełmsko-zamojski and Przemyski – the capital regions of Dytiki Attiki in Greece and Paris in France, as well as Tâmega e Sousa in Portugal.

The largest relative increases in youth populations across EU regions – as measured by the projected change in the share of youths between 2021 and 2050 in percentage terms – were also recorded in Germany; there were 24 NUTS level 3 regions across Germany where the increase in the share of youths is projected to be higher than 30.0 %. At the other end of the range, there were three regions where the share of youths is projected to fall by more than 30.0 %: Chełmsko-zamojski (down 31.7 %), Paris (down 32.1 %) and Noord-Drenthe in the Netherlands (down 35.2 %).

Map 1.3: **Projected change in the share of young people in the total population, 1 January 2021 and 1 January 2050**
(by NUTS 3 regions)



Note: the share of young persons (aged 15–29 years) in the total EU population was 16.3 % as of January 2021; this is projected to fall 1.4 percentage points by 1 January 2050.

Source: Eurostat (online data codes: demo_r_pjangrp3, proj_19rp3, demo_pjan and proj_19np)

Map 1.4 presents the crude rate of total population change. Between 1 January 2020 and 1 January 2021, the EU's population fell by 277 700 people; this was the first time that a reduction was recorded since the start of the time series in 1960. The fall in EU population could be wholly attributed to natural change (in other words, more deaths than births), as net migration plus adjustment remained positive (in other words, more people entered the EU rather than left it). Some of the demographic changes witnessed in 2020 may be attributed to direct and indirect impacts of the COVID-19 crisis.

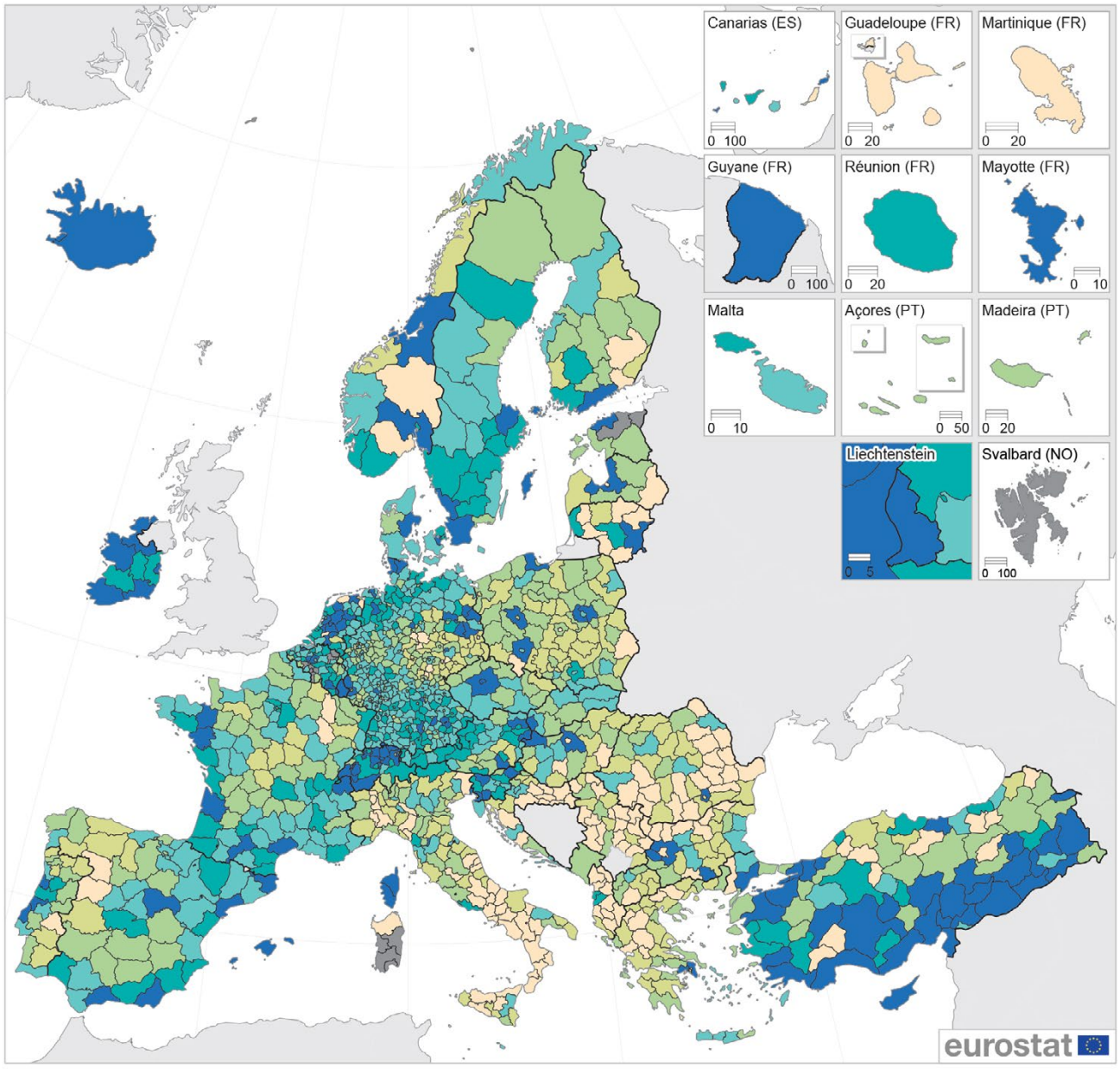
At a regional level, changes in the total population result not just from migratory flows to and from other countries but also from flows of people within the national territory (moving from one region to another). Indeed, such intra-regional migration generally accounts for a larger share of the net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

Some of the main developments include:

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

In 2020, the crude rate of population change was positive in 43.2 % of the 1 153 NUTS level 3 regions for which data are available; the rate was negative in 56.3 % of regions, while it remained unchanged in six regions. The highest crude rate of population increase was recorded around the Bulgarian capital in the province of Sofia, where the population increased 50.8 per 1 000 persons (some 11 800 persons). This pattern – high population growth in or close to the capital region – was repeated in a number of other EU Member States: the crude rate of population increase was 42.2 per 1 000 persons in Dytiki Attiki in Greece, 40.4 per 1 000 persons in Zuidwest-Friesland in the Netherlands and 33.9 per 1 000 persons in Ilfov in Romania. At the other end of the range, Zuidoost-Zuid-Holland in the Netherlands recorded the lowest crude rate of population change, at -88.6 per 1 000 persons (a fall of 34 600 persons).

Map 1.4: Crude rate of total population change, 2020
(per 1 000 persons, by NUTS 3 regions)



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

Fertility

EU regions with relatively high levels of fertility are protected, to some degree, from the impact of population ageing. One factor which may explain the relatively low levels of fertility in the EU is the growing proportion of women giving birth later in life. This may be linked, among other factors, to: higher female participation rates in further education and/or more women choosing to establish a career before starting a family; lower levels of job security (for example, in the gig economy); the increasing cost of raising children and of housing; and a decline in the number of traditional family units (less people getting married and more people getting divorced). In 2020, there were 4.07 million live births across the EU, while the median age of women at childbirth was 31.5 years.

The vast majority of regions in the EU had a total fertility rate that was below the natural replacement rate

The total fertility rate is defined as the mean number of children who would be born to a woman during her lifetime, if she were to spend her childbearing years conforming to the age-specific fertility rates of a given year. In 2020, the EU's total fertility rate was 1.50 live births per woman. This was considerably below the natural replacement rate – the average number of live births per woman required to keep the population size constant in the absence of migration in developed world economies – of 2.1 children per woman. The regional distribution of this indicator was somewhat skewed insofar as there were 437 NUTS level 3 regions (or 38.0 % of all regions) where the total fertility rate was below the EU average, while there were 714 regions (or 62.0 % of all regions) where the rate was equal to or higher than the EU average. Across most of the EU Member States, predominantly urban regions (which tend to have a higher proportion of young people) generally recorded higher fertility rates than predominantly rural, remote and sparsely-populated regions.

Of the 1 151 NUTS level 3 regions for which data are available, there were only 16 where the total fertility rate was at least 2.10 live births per woman. These included all of the French régions ultrapériphériques except for Martinique, three other French regions situated around the capital – Seine-Saint-Denis, Val-d'Oise and Essonne – six regions in Romania, Sliven in Bulgaria, Kaiserslautern, Landkreis in Germany and Ikaria, Samos in Greece. The highest fertility rates were recorded in two of the EU's outermost regions, Mayotte (4.12 live births per woman) and Guyane (3.66 live births per woman). Aside from these, the highest fertility rate was in the eastern Romanian region of Vaslui (3.01 live births per woman).

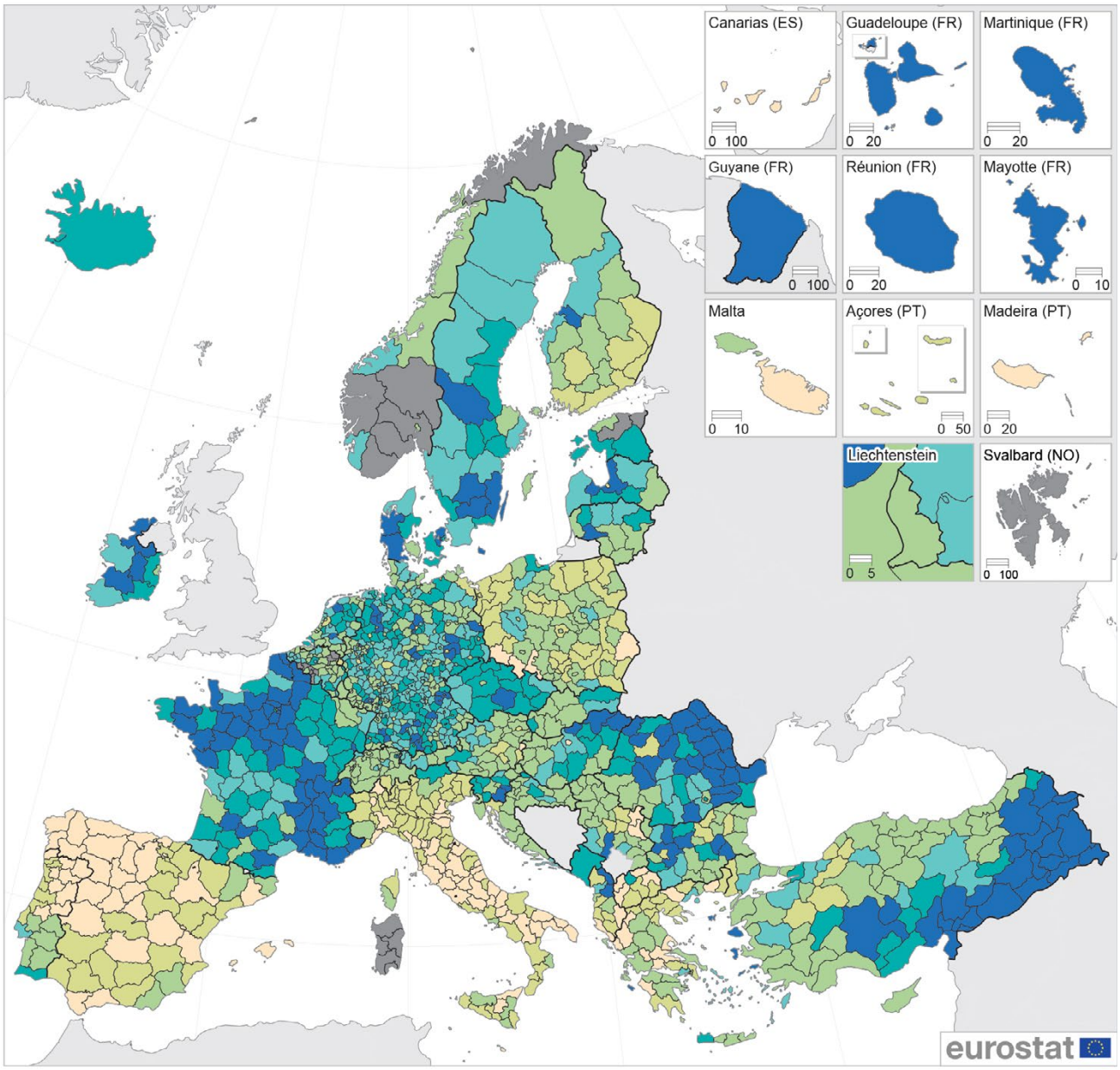
By contrast, some of the lowest fertility rates were recorded in southern regions of the EU, principally across Greece, Spain, Italy and Portugal. There were 13 regions that registered a total fertility rate of less than 1.00 live births per woman in 2020; 11 of these were in Spain and the other two were in Greece. The lowest fertility rate was recorded in the central Greek region of Fokida (0.77 live births per woman).

The EU's total fertility rate is projected to increase to 1.62 live births per woman by 2050

According to the assumptions used within EUROPOP2019, the EU's total fertility rate will gradually rise during the next three decades to stand at 1.62 by 2050 (compared with 1.50 in 2020); note that a different methodology is used for computing these projections. The latest projections indicate that this situation of a rising fertility rate between 2020 and 2050 will be repeated in approximately four fifths (80.5 %) of the NUTS level 3 regions in the EU (915 out of 1 137). However, total fertility rates will generally rise at a modest pace: the latest assumptions reveal only 44 regions (or 3.9 % of all regions) with rates increasing by at least 0.25 between 2020 and 2050. By contrast, there were just seven regions where the latest assumptions are for fertility rates to fall by at least 0.25 between 2020 and 2050.

There are only 11 NUTS level 3 regions in the EU where the latest assumptions are for fertility rates in 2050 to remain equal to or above 2.10. Almost half (five) of these regions were located in France – they were either régions ultrapériphériques or regions situated close to the capital; they were joined by three regions from Romania, two regions from Bulgaria and one region from Spain.

Map 1.5: Total fertility rate, 2020
(live births per woman, by NUTS 3 regions)



EU = 1.50
- ≥ 1.80
- 1.70 – < 1.80
- 1.60 – < 1.70
- 1.35 – < 1.60
- 1.20 – < 1.35
- < 1.20
- Data not available

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 07/2022

0 200 400 600 800 km

Note: Canarias (ES703–ES709), most regions in Croatia (HR02, HR05 and HR06), Kainuu (FI1D8), Pohjois-Pohjanmaa (FI1D9), Oslo (NO081), Rogaland (NO0A1) and Møre og Romsdal (NO0A3), 2019.

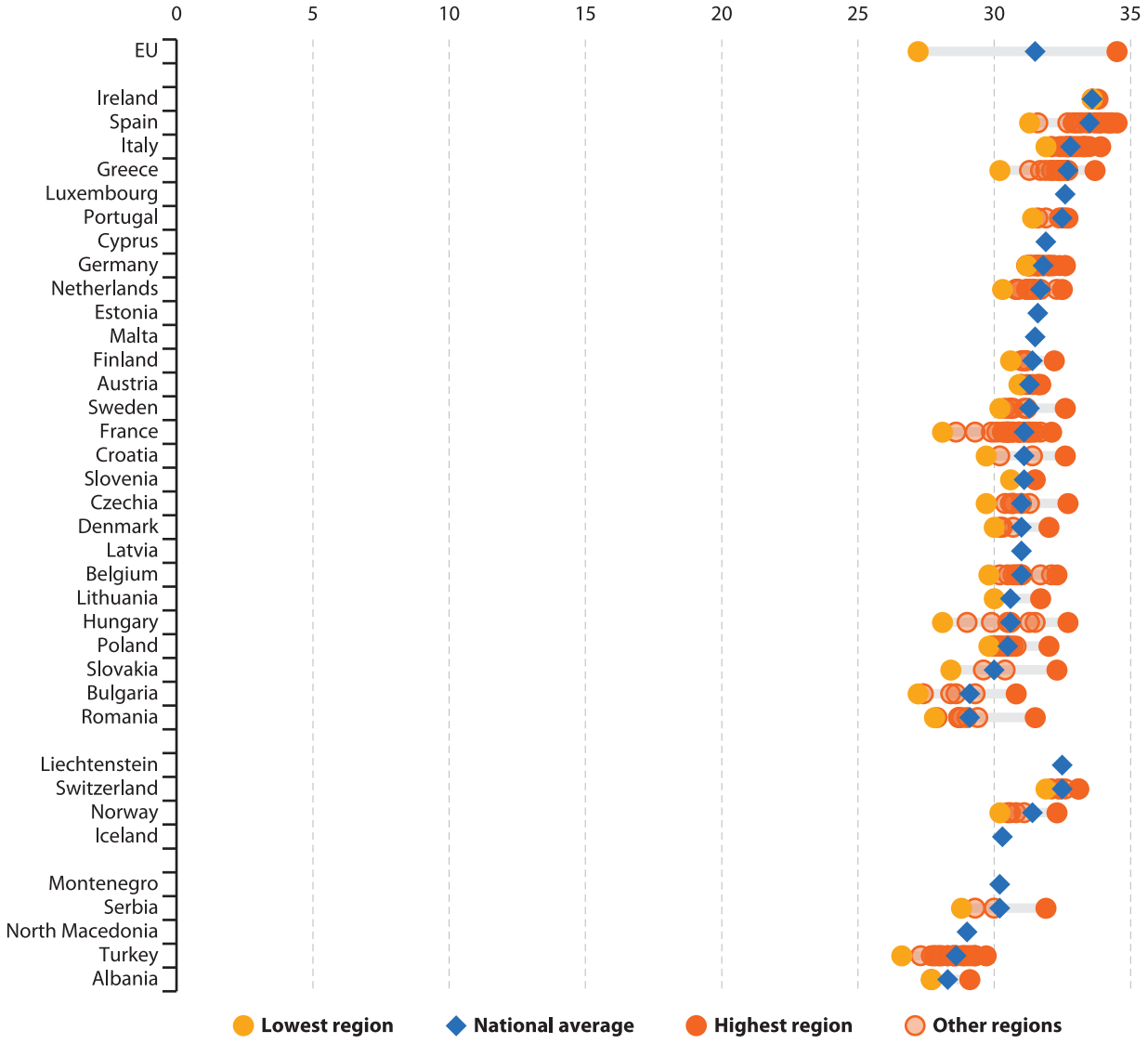
Source: Eurostat (online data codes: demo_r_find3 and demo_find)

There has been a relatively rapid increase across the EU in the age at which mothers give birth

In 2007 (the first reference year for which data are available), slightly less than one fifth of all live births in the EU were childbirths from women aged 35 years or more. By 2018, this share had risen to more than one in four and this share continued to increase, reaching 26.1 % in 2020. The median age of women at childbirth across the EU was 31.5 years in 2020 (see Figure 1.1), ranging from a high of 34.5 years in Galicia (north-west Spain) down to a low of 27.2 years in Severozapaden (north-west Bulgaria).

Looking in more detail within individual EU Member States, the pattern of delayed childbirth was often quite pronounced in capital regions. This was particularly the case in eastern Member States, as the median age of women at childbirth in the capital regions of Romania, Slovakia and Hungary was 2.1 to 2.4 years above their respective national average. A similar pattern, although less marked, was repeated in most of the remaining multi-regional Member States; the only exceptions were Ireland and Portugal (where the latest data for the capital region and the national average were identical).

Figure 1.1: Median age of mothers at childbirth, 2020
(years, by NUTS 2 regions)



Note: ranked on the national average. Svalbard og Jan Mayen (NO0B): not available.
Source: Eurostat (online data codes: demo_r_find3 and demo_find)

Life expectancy

Life expectancy at birth is the average number of years a newborn would live if subjected throughout his/her life to current mortality conditions. During the last two centuries, life expectancy in the EU rose at a relatively consistent pace with a few exceptional periods (such as during war). This increased longevity can be attributed to a range of factors including significant advances in medical treatment and care, changes in living and environmental conditions, changes in working conditions/occupations, as well as lifestyle changes. This pattern of rising life expectancy in the EU has, in recent years, shown signs of change. Indeed, there was a slight fall in life expectancy between 2014 and 2015 and no change between 2016 and 2017 (note however that these reductions may be linked to breaks in series). The latest data available relate to 2020 and provide a first estimate as to the impact of the COVID-19 pandemic. Life expectancy in the EU stood at 80.1 years in 2020, a fall of 0.3 years when compared with the year before (pre-pandemic).

The regional distribution around the EU average was somewhat skewed, insofar as there were 70 regions with life expectancy below 80.1 years in 2020, while there were 168 that had a life expectancy of more than 80.1 years. There are a range of potential drivers that may impact on inter-regional differences in life expectancy, including:

- proximity to healthcare services – capital regions tend to have a greater number and variety of healthcare facilities compared with rural regions;
- the prosperity of a region – life expectancy is generally higher in regions characterised by a higher standard of living and lower in regions characterised by poverty and social deprivation;
- lifestyle and cultural differences – for example, the type of work that predominates in a region, the typical diet of a region, or the incidence of smoking and alcohol consumption;
- climatic conditions – people living in warm or temperate and relatively dry climates tend to live longer lives than those living in regions that experience more extreme weather conditions.

The above factors may explain, at least to some degree, why some of the highest regional life expectancies in 2020 were concentrated in Spain, Italy and France. These three EU Member States accounted for 15 of the 17 NUTS level 2 regions in the EU that had a life expectancy at birth of more than 83.0 years; the other two regions were Ipeiros (north-west Greece) and Åland (an autonomous island region of Finland). Severozapaden in north-west Bulgaria recorded, by some margin, the lowest level of life expectancy, at 72.1 years. This was at least 0.7 years lower than in the four regions with the next lowest levels of life expectancy: two more Bulgarian regions – Severen tsentralen and Yugoiztochen; Mayotte in France; and Nord-Est (north-east Romania).

Figure 1.2 confirms that there was generally a relatively narrow range between life expectancies at birth for different regions of the same EU Member State. In 2020, by far the biggest intra-regional difference was recorded in France, as life expectancy in the southern island region of Corse (84.0 years) was 10.7 years higher than in the outermost region of Mayotte (73.3 years).

In 2020, capital regions tended to record a higher life expectancies than their respective national averages. This situation was particularly pronounced in Hungary and Czechia where newborns in the capital regions of Budapest and Praha could expect to live at least two years longer than the national averages. By contrast, the opposite situation could be observed in the Belgian and Austrian capital regions, as newborns in Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest and Wien could expect to live 1.4 years and 1.1 years less than the national averages.

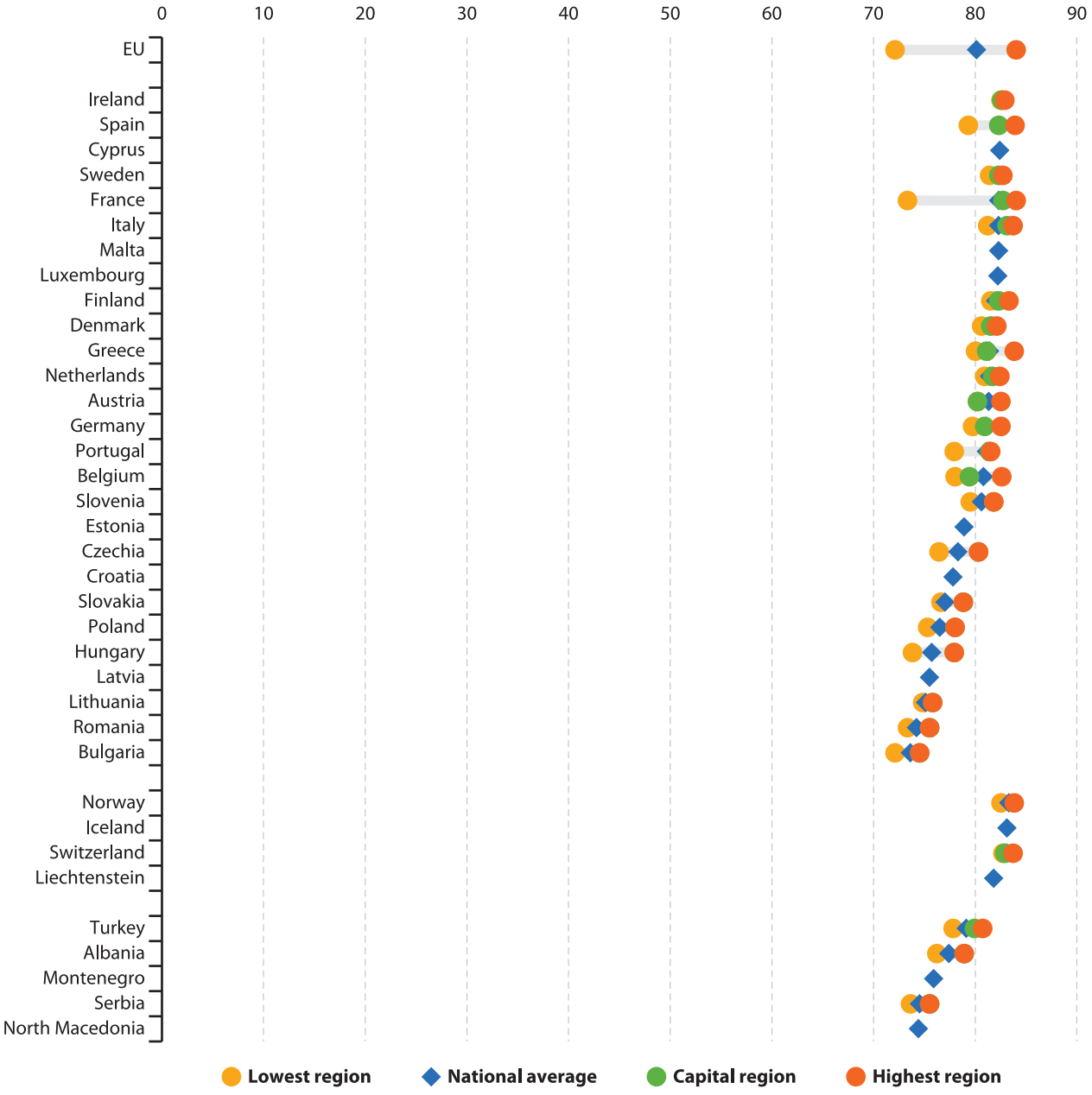
A girl born on the island region of Corse in 2020 could expect to live 87.0 years

In 2020, the highest life expectancies for women were concentrated in several regions of across Spain and France. The highest life expectancy at birth was recorded for the island region of Corse in France (87.0 years), followed by Galicia in Spain (86.7 years), Ipeiros in Greece, Pays de la Loire and Midi-Pyrénées in France, and Åland in Finland (all 86.4 years).

The highest life expectancies for men in 2020 were spread more widely over a greater number of EU Member States, with several regions from each of Ireland, Greece, Spain, France, Italy and Sweden featuring at the top of the ranking. The highest life expectancy at birth among males was 81.4 years, as recorded in three different regions; Ipeiros in Greece, Illes Balears in Spain and Umbria in Italy.

The EU gender gap for life expectancy at birth was 5.7 years in favour of women in 2020. Female life expectancy was consistently higher than male life expectancy across every NUTS level 2 region of the EU. Some of the largest gender gaps were recorded in the Baltic Member States and several Polish regions, while the difference in life expectancy between the sexes was generally much narrower in Dutch and Swedish regions. Vidurio ir vakarų Lietuvos regionas in Lithuania had the largest gender gap for life expectancy at birth (10.1 years difference), while the smallest gap was recorded in Mayotte (1.5 years).

Figure 1.2: Life expectancy at birth, 2020
(years, by NUTS 2 regions)



Note: Croatia, national data. Guyane (FRY3), Oslo og Viken (NO08), Agder og Sør-Østlandet (NO09), Vestlandet (NO0A) and Svalbard og Jan Mayen (NO0B): not available. Turkey: 2019.

Source: Eurostat (online data codes: demo_r_mlifexp and demo_mlexpec)

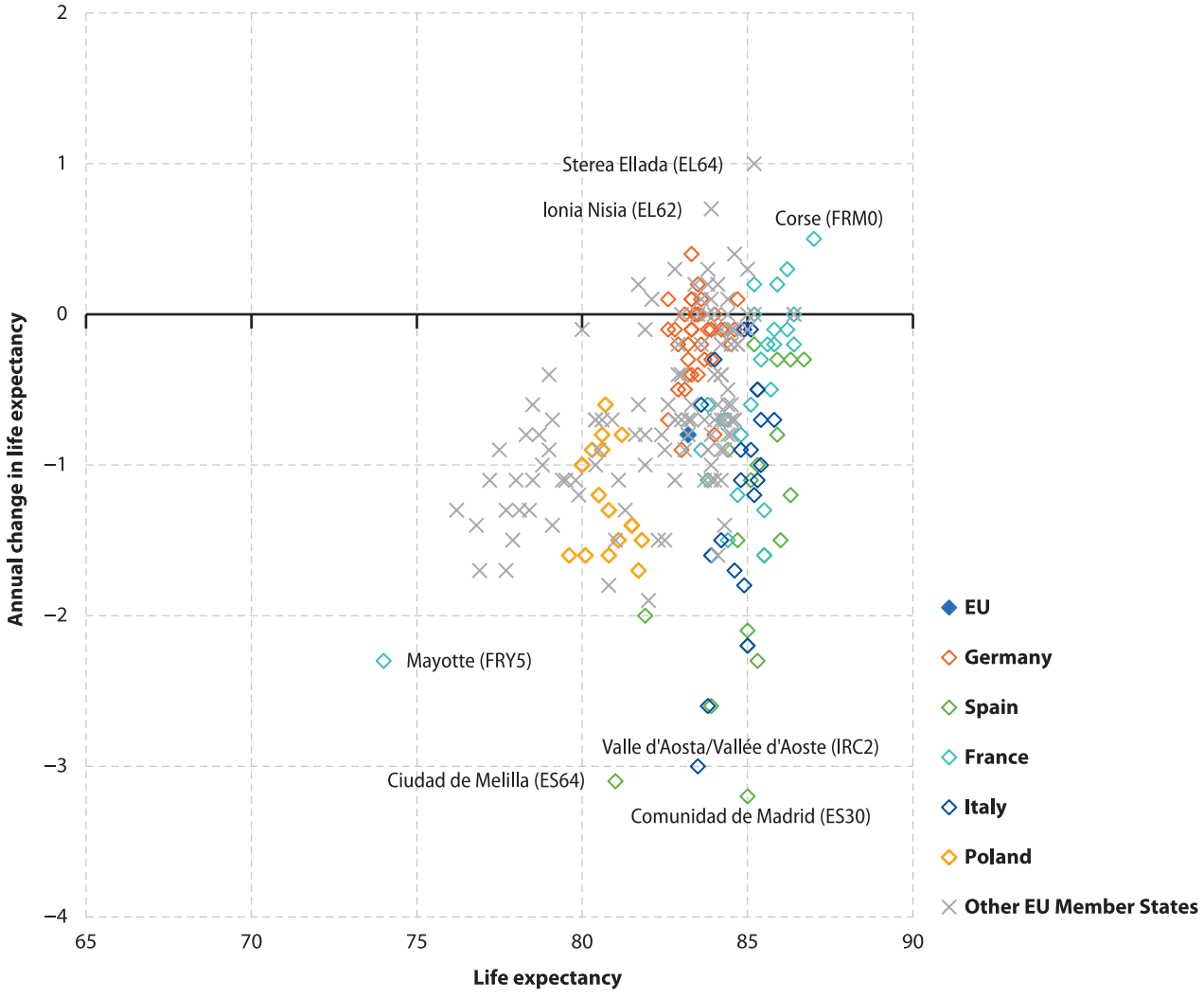
EU life expectancy fell in 2020 with the onset of the COVID-19 crisis

There was a fall in life expectancy in both 2020 and – to a lesser degree – 2021. Life expectancy at birth in 2020 (the latest reference year available for regional data) was 83.2 years for women and 77.5 years for men. Between 2019 and 2020, life expectancy at birth in the EU fell 0.8 years for females and 1.0 years for males; the COVID-19 crisis is likely (among other factors) to have played a considerable role in reversing the general upward development of life expectancies for both sexes as witnessed over the previous two decades. The fall in life expectancy was somewhat skewed insofar as the declines recorded for males were greater than those for females in 138 NUTS level 2 regions (or 58.0 % of all regions), while the opposite was true in 75 regions (or 31.5 % of all regions); there were 25 regions where the fall in life expectancy was the same for both sexes.

This pattern was in contrast to recent developments, as up until the onset of the pandemic the gender gap had been narrowing somewhat.

Some of the largest falls in life expectancy were recorded in regions characterised as having experienced some of the worst infection rates during the first wave of the COVID-19 pandemic (when little was known about the virus). This was the case in several regions of Spain and northern Italy, as well as a number of capital regions in western EU Member States. In 2020, the average life expectancy of a newborn female in Comunidad de Madrid fell by 3.2 years, while the average life expectancy of a newborn male born in the Spanish capital region fell by 3.6 years; these were the largest falls recorded in the EU. Some of the other regions that experienced considerable reductions in life expectancy are indicated in Figures 3 and 4.

Figure 1.3: Life expectancy at birth for females, 2020
(years, by NUTS 2 regions)



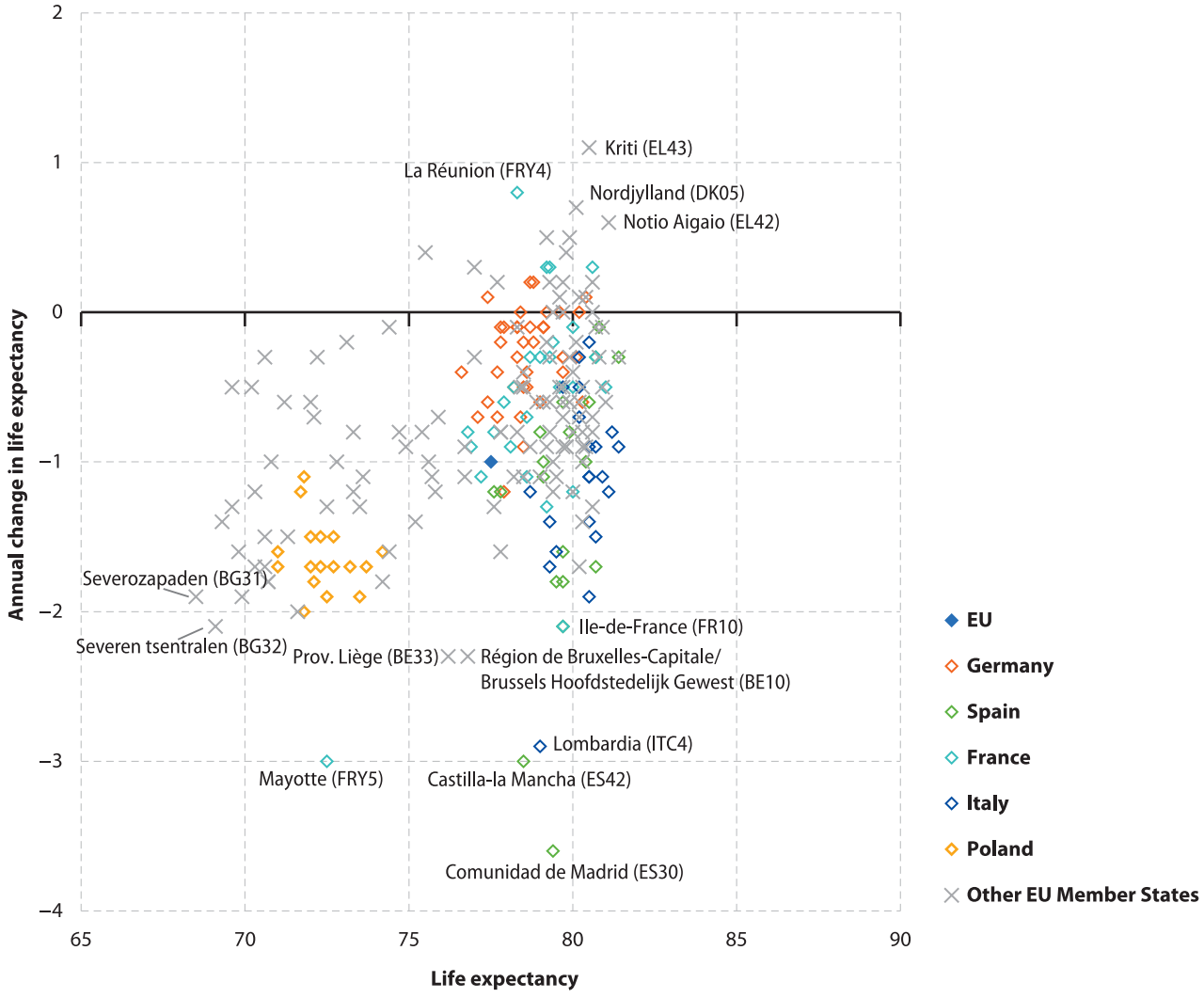
Note: Croatia, national data. Guyane (FRY3): not available.
Source: Eurostat (online data codes: demo_r_mlifexp and demo_mlexpec)

By contrast, there were a number of regions that seemingly avoided the full impact of the COVID-19 pandemic, at least in terms of its impact on life expectancy. Many of these were popular holiday destinations, which often remained inaccessible during lockdown periods (as ferry and air passenger services were curtailed), for example, Sterea Ellada, Ionia Nisia, Kriti and Notio Aigaio in Greece, or Corse and La Réunion in France. As a result, the impact on the life expectancy of their local populations appears to have been relatively low. However, many of these regions experienced some of the largest economic shocks during the pandemic as visitor numbers plunged (see Chapter 7 and Chapter 10 for more details).

Projections of life expectancy are part of population projections, providing information which can be used to assess patterns of population ageing. This in turn may be used to determine the sustainability of pension schemes and social security systems, or the future demand for services such as healthcare. EUROPOP2019 projections provide detailed information relating to projected life expectancies. By 2050, life expectancy at birth for females in the EU is projected to reach 88.4 years, equivalent to an increase of 5.2 years over the next three decades (up from 83.2 years in 2020). In a similar vein, the latest projections foresee life expectancy at birth for males in the EU rising to 84.0 years by 2050, a somewhat larger increase of 6.5 years (again in relation to 2020).

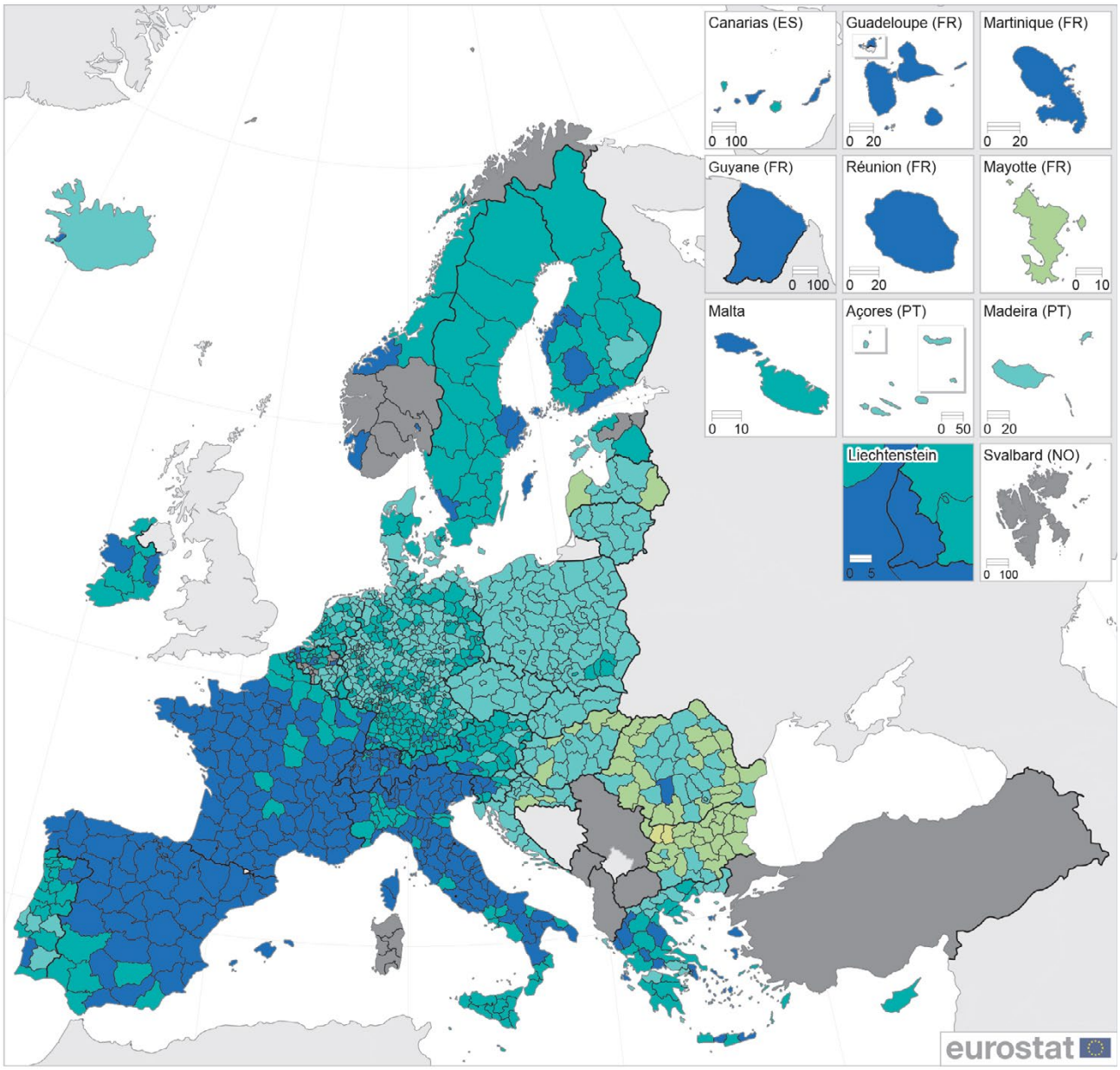
The latest data available suggest that the highest life expectancies for females in 2050 are projected for regions in Greece, Spain and France, while the highest life expectancies for males are projected across the same three EU Member States, as well as in Italy.

Figure 1.4: Life expectancy at birth for males, 2020
(years, by NUTS 2 regions)



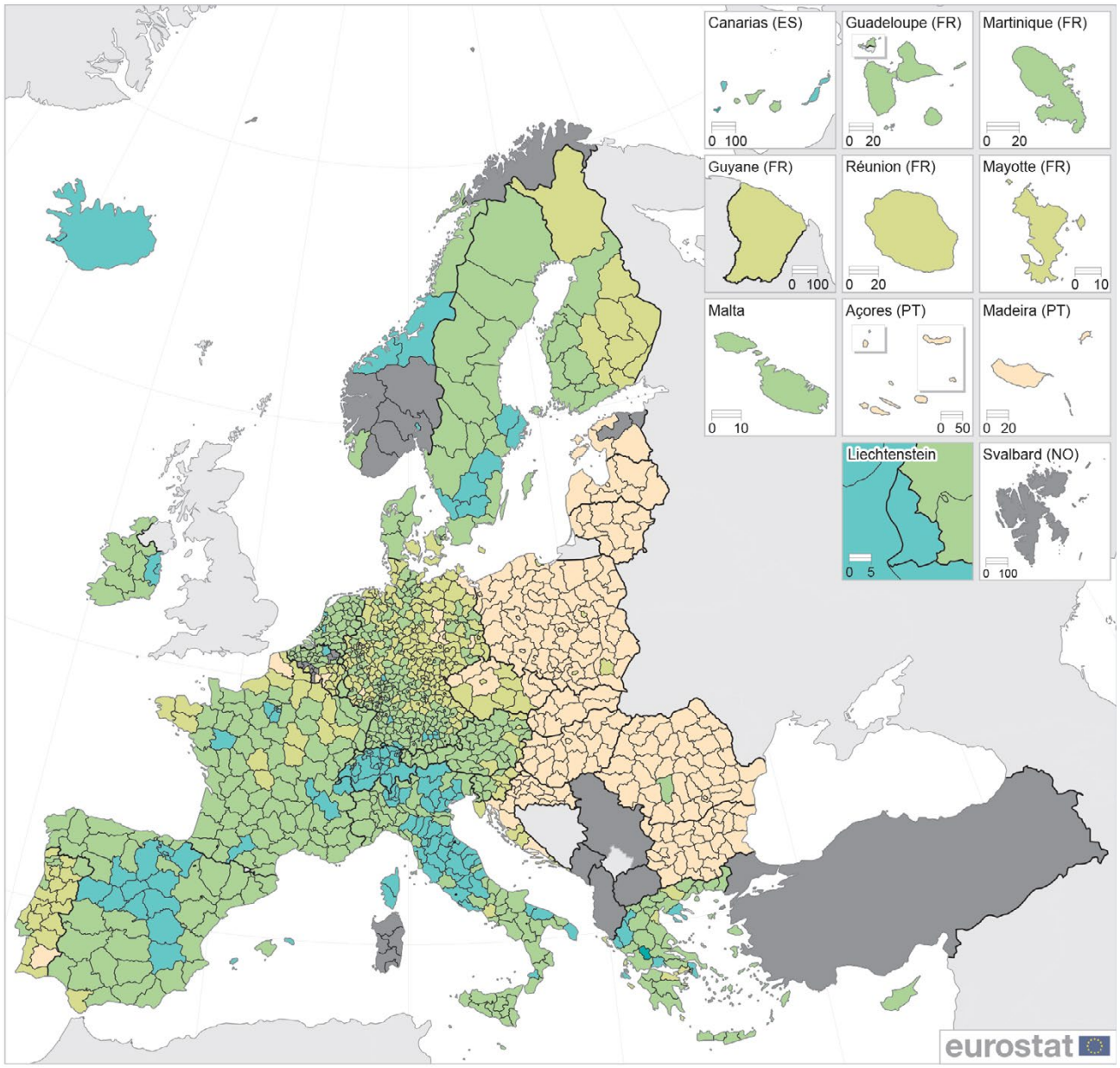
Note: Croatia, national data. Guyane (FRY3): not available.
Source: Eurostat (online data codes: demo_r_mlifexp and demo_mlexpec)

Map 1.6: **Projected life expectancy at birth for females, 2050**
(years, by NUTS 3 regions)



Source: Eurostat (online data code: proj_19ralexp3)

Map 1.7: Projected life expectancy at birth for males, 2050
(years, by NUTS 3 regions)



Source: Eurostat (online data code: proj_19ralexp3)

Mortality

Every region of the EU was touched, in some form, by the COVID-19 crisis. As governments attempted to slow the spread of the virus – closing down economic sectors and imposing restrictions on personal mobility that were unprecedented in modern times – a public health crisis was accompanied by a major socioeconomic crisis, with rising unemployment and growing inequality.

From a statistical perspective, the pandemic also impacted on the ability of statistical authorities to collect and process data using established methods. At the same time, there was a surge in demand for statistics to measure the impact of the crisis, with particular interest in data covering the number of infections and mortality.

With this in mind, Eurostat set-up a new data collection exercise for weekly death statistics; these data are classified by sex, five-year age groups and NUTS level 3 regions. In order to look at the extraordinary impact of the COVID-19 pandemic on deaths across the EU, a weekly baseline average has been calculated, based on weekly information for 2016 to 2019. The impact of the pandemic is measured as the difference between the number of deaths during a particular week compared with the average number of deaths during the same week of the baseline period. As such, the statistics that are shown in Maps 8 and 9 provide information about the burden of mortality potentially related to the COVID-19 pandemic, covering not only deaths that were directly attributed to the virus but also those indirectly related to it.

The impact of the pandemic was unevenly spread in both geographic and socioeconomic terms, as successive waves of the virus impacted different EU Member States and their regions. Among other reasons, some of these differences may be linked to:

- the ability of regional health care facilities to cope with a sudden rush of cases and differential access to well-equipped hospitals;
- the health status of regional populations, such as the incidence and/or severity of pre-existing health conditions (particularly those affecting the respiratory system);
- regional population structures, for example the number and share of elderly people, the proportion of elderly persons living in care homes, the share of disadvantaged and minority ethnic groups in regional populations;
- a variety of other socioeconomic factors, such as the average number of people living alone and within extended families, or the share of people able to work from home during the pandemic;
- the timing, speed and severity of national and regional government measures that were put in place to slow the spread and mitigate the impact of the virus, coupled with public awareness, vigilance and adherence to rules/restrictions.

At the start of 2020, the average number of weekly deaths in the EU was generally lower than that observed in previous years (2016–2019). However, while mortality normally starts to decline in March of each year, in 2020 the number of deaths started to increase. The first cases of COVID-19 in Europe were recorded in Italy and the number of deaths was soon rising at a rapid pace in northern Italian regions, especially in Lombardia. As they witnessed scenes of hospitals struggling to cope, European governments adopted a series of unprecedented measures. These included restrictions on movement, rules on physical distancing, mandatory face covering in closed public settings, and the introduction of various elements of test, track, trace, isolate and support systems.

The initial stages of the pandemic saw a rapid increase in mortality rates in Italy, Spain and Belgium, whereas most eastern Member States of the EU were relatively untouched by the first wave of infections. After comparatively low levels of infections and deaths during the summer months of 2020, a second wave established itself across much of the EU during the autumn as infections and death rates accelerated again. A peak was recorded in November 2020, with mortality rates particularly high in eastern Member States, for example Bulgaria, Poland and Romania.

At the very end of 2020 and the start of 2021, the first COVID-19 vaccinations were administered within the EU; these were initially given to the elderly, healthcare staff and nursing home residents, as well as those who were immunocompromised or suffered from other diseases. The roll-out of the vaccine progressed rapidly during the spring and summer months of 2021, providing protection to a growing share of the EU population. In many of the EU Member States, booster jabs were administered towards the end of the year.

The Beta variant of the COVID-19 virus was first identified in late 2020 in South Africa and spread to Europe soon after. By the end of 2021, the Delta variant (which had been the predominant strain of the virus during much of 2021) was gradually being replaced by the Omicron variant. Maps 8 and 9 show the situation for the average number of weekly deaths in 2021, the former provides information for the start of the year (for weeks 1–9), while the latter provides information on the situation at the end of the year (for weeks 44–52); note the analyses exclude information for Ireland, while the data for Germany concerns NUTS level 1 regions.

By tracking all causes of mortality, statistics on weekly deaths provide a measure for the direct and indirect impacts of the COVID-19 pandemic. This is particularly valuable when: i) COVID-19 mortality is undercounted (for example, if COVID-19 was not mentioned on the death certificate as the cause of death); or ii) when there are high numbers of deaths that are indirectly related to COVID-19 (for example deaths from other causes that may be attributed to a shortage of health care resources caused/worsened by the pandemic).

At the start of 2021, the average number of weekly deaths was relatively high in several regions across Czechia and Slovakia …

During weeks 1–9 of 2021 (in other words, from 4 January 2021 to 9 March 2021), there were, on average, a total of 113 thousand deaths every week across the EU; this was 10.9 % higher than the average recorded during the same period in 2016–2019. The average number of weekly deaths during weeks 1–9 of 2021 was higher than the baseline average in 170 out of 213 NUTS regions for which data are available (in other words around four out of every five).

At the start of 2021, the average number of weekly deaths was relatively high (compared with the baseline period) in Czechia, Poland, Portugal and Slovakia. Aside from the atypical case of Mayotte in France (where the average number of deaths was more than twice as high as for the baseline period), the highest number of deaths (relative to the baseline period) were recorded in the Czech regions of Severozápad and Severovýchod and in the Slovak regions of Západné Slovensko and Bratislavský kraj; average weekly deaths in these four regions were 74.3–87.6 % higher.

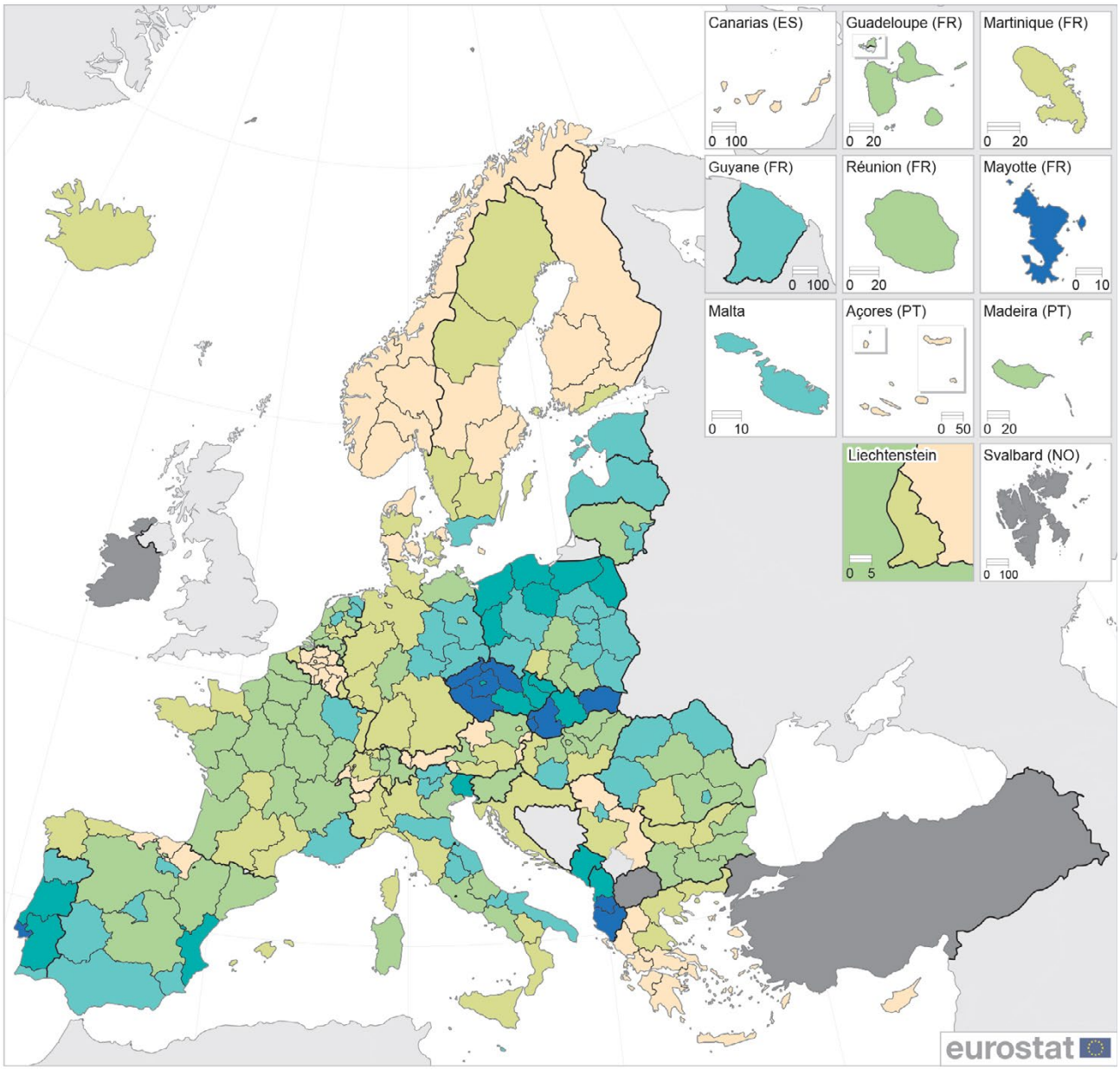
… while at the end of 2021, the average number of weekly deaths was higher than the average for the baseline period in all but three regions of the EU

Map 1.9 shows the impact of the pandemic at the end of 2021, during weeks 44–52 (in other words, from 1 November 2021 to 2 January 2022). There were, on average, 113 thousand deaths each week across the EU during this period, which was one quarter (25.0 %) higher than the norm recorded for the same period in 2016–2019. In contrast to the start of the year, almost every region of the EU (98.6 % of the 213 NUTS regions for which data are available) was affected by the health impacts of the virus in the closing weeks of 2021. There were only three exceptions where the average number of weekly deaths was below the baseline average for 2016–2019: Åland in Finland, Västsverige and Stockholm in Sweden.

At the end of 2021, the average number of weekly deaths was relatively high (compared with the baseline period) in Bulgaria, Czechia, Poland and Slovakia. The persistently high number of deaths in several eastern EU Member States may be attributed, at least in part, to a relative low take-up of the vaccination. The highest number of deaths (relative to the baseline period) were recorded in the Polish regions of Podlaskie, Podkarpackie and Lubelskie and in the Slovak regions of Východné Slovensko and Stredné Slovensko; average weekly deaths in these four regions were 73.4–89.2 % higher.

The difference between the start and the end of 2021 may be contrasted by looking at the number of regions where the average number of weekly deaths was at least 50.5 % above its normal level (as shown by the darkest shade of blue in Maps 8 and 9). This count progressed from 9 regions at the start of the year to reach 34 regions during the final weeks of the year; thereby suggesting that the pandemic was still a major concern. The virus became more uniformly distributed over time, with relatively small inter-regional variations within Member States and fewer highly irregular regional peaks (possibly reflecting far more being known about the virus as well as governments and health care services adopting common practices).

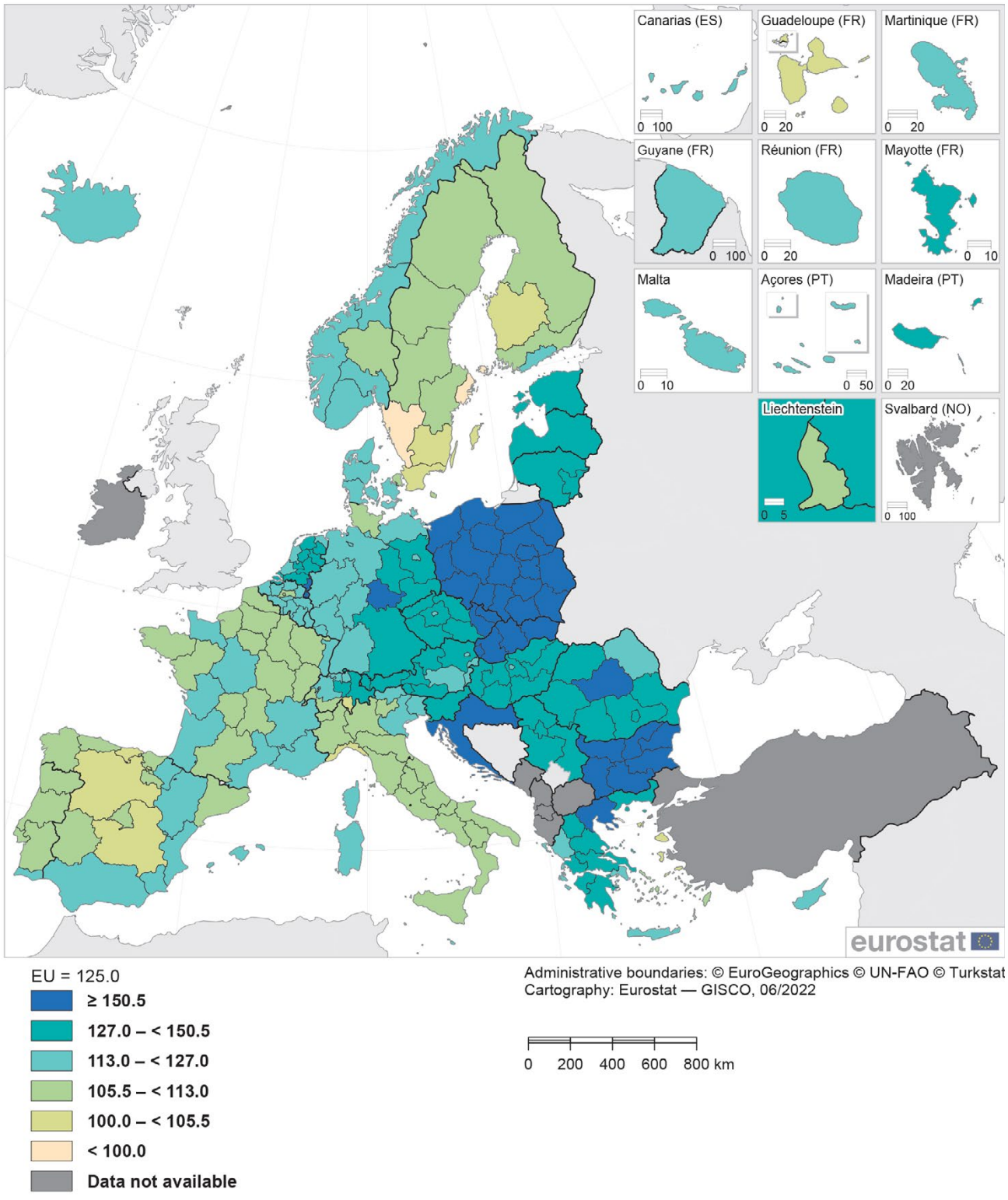
Map 1.8: Average weekly deaths, start of 2021
(weekly baseline average = 100, weeks 1–9 (4 January 2021 to 9 March 2021), by NUTS 2 regions)



Note: the weekly baseline average is calculated as the average across 2016 to 2019 for each week. Germany: NUTS level 1. Croatia and Slovenia: national data. EU average: excluding Ireland.

Source: Eurostat (online data codes: demo_r_mwk2_ts and demo_r_mwk_ts)

Map 1.9: Average weekly deaths, end of 2021
(weekly baseline average = 100, weeks 44–52 (1 November 2021 to 2 January 2022), by NUTS 2 regions)



Note: the weekly baseline average is calculated as the average across 2016 to 2019 for each week. Germany: NUTS level 1. Croatia and Slovenia: national data. EU average: excluding Ireland.

Source: Eurostat (online data codes: demo_r_mwk2_ts and demo_r_mwk_ts)

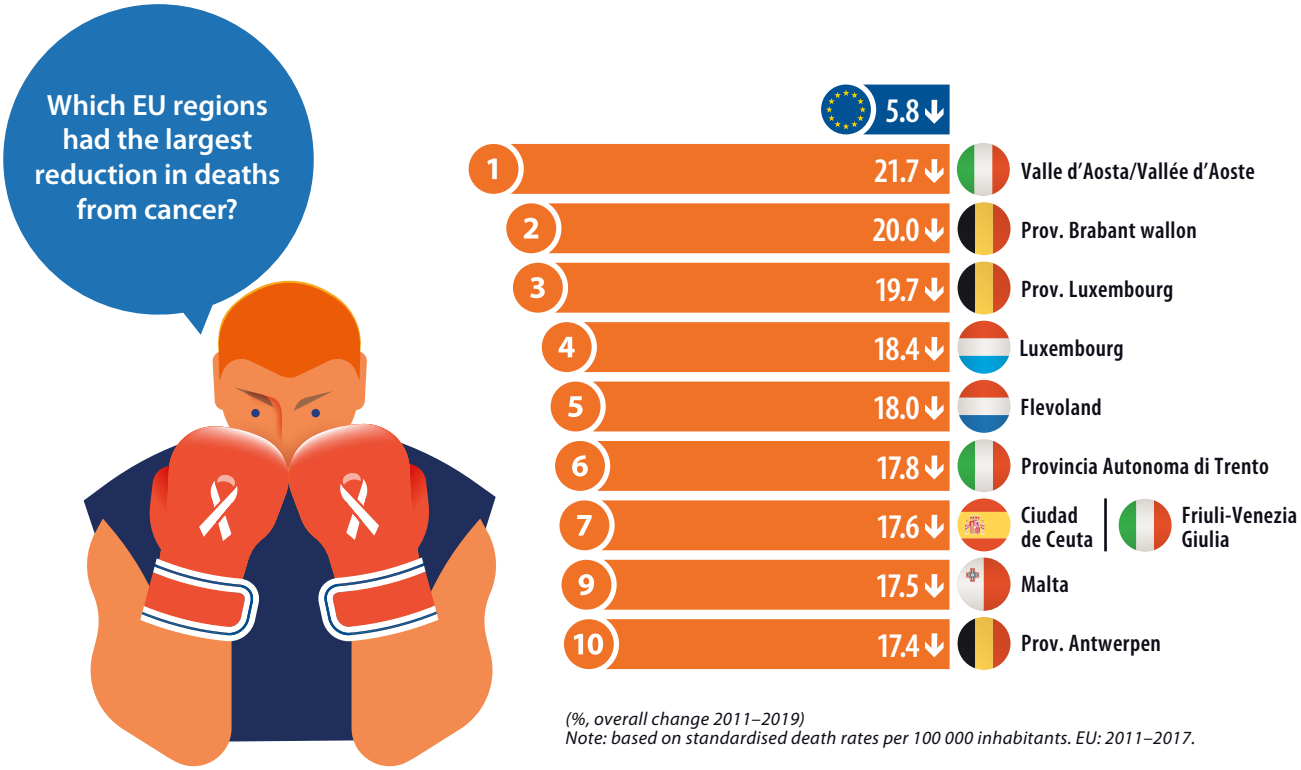
2. Health

Health is an important priority for most Europeans, who expect to receive efficient healthcare services – for example, if contracting a disease or being involved in an accident – alongside timely and reliable public health information. The overall health of the European Union (EU) population is closely linked to that of the environment through – among other influences – the quality of the air we breathe, the water we drink and the food we eat.

The COVID-19 crisis resulted in severe human suffering and a considerable loss of life. At the time of writing (June 2022), the pandemic continues to affect the EU, although most actions to mitigate the spread of the virus – such as restrictions on personal mobility and economic sectors – have been lifted in most EU Member States. Although many aspects of daily life have returned to normal, COVID-19 continues to impact healthcare: for example, operations/treatments were cancelled or delayed during the pandemic because frontline staff had been redeployed to take care of those suffering from the virus. At an individual level, some patients decided to forego hospital visits during the pandemic, thereby missing regular check-ups and screening for a variety of diseases. The opening chapter of this publication provides information on the demographic impacts of the COVID-19 crisis through an analysis of life expectancy and weekly deaths.

Cancer concerns many of us: it accounts for approximately one quarter of all deaths in the EU. For decades, the EU has been working to tackle cancer, through actions such as tobacco control or protection from hazardous substances. On the eve of World Cancer Day (3 February 2021), the European Commission launched Europe's Beating Cancer Plan, which is structured around four key areas: i) prevention; ii) early detection; iii) diagnosis and treatment; and iv) quality of life for cancer patients and survivors.

Across EU regions (NUTS level 2), the largest reduction in deaths from cancer was recorded in the northern Italian region of Valle d'Aosta/Vallée d'Aoste, down overall 21.7 % between 2011 and 2019. The number of deaths from cancer fell by around one fifth in two Belgian regions – Prov. Brabant wallon and Prov. Luxembourg – while there were also relatively large declines in Luxembourg and in Flevoland in the Netherlands.



(%, overall change 2011–2019)
Note: based on standardised death rates per 100 000 inhabitants. EU: 2011–2017.

Source: Eurostat (online data code: hlth_cd_asdr2)

Health care

Hospital bed numbers and/or the number of medical doctors are indicators that may be used to measure the capacity of health care systems in regular times and also their preparedness/resilience to pandemics such as COVID-19.

Hospital beds are defined as those which are regularly maintained and staffed and immediately available for the care of patients admitted to hospitals; these statistics cover beds in general hospitals and in speciality hospitals. In 2019, there were 2.38 million hospital beds in the EU. This equated to 532 hospital beds per 100 000 inhabitants, or – expressed in a different way – there was, on average, one hospital bed for every 188 people.

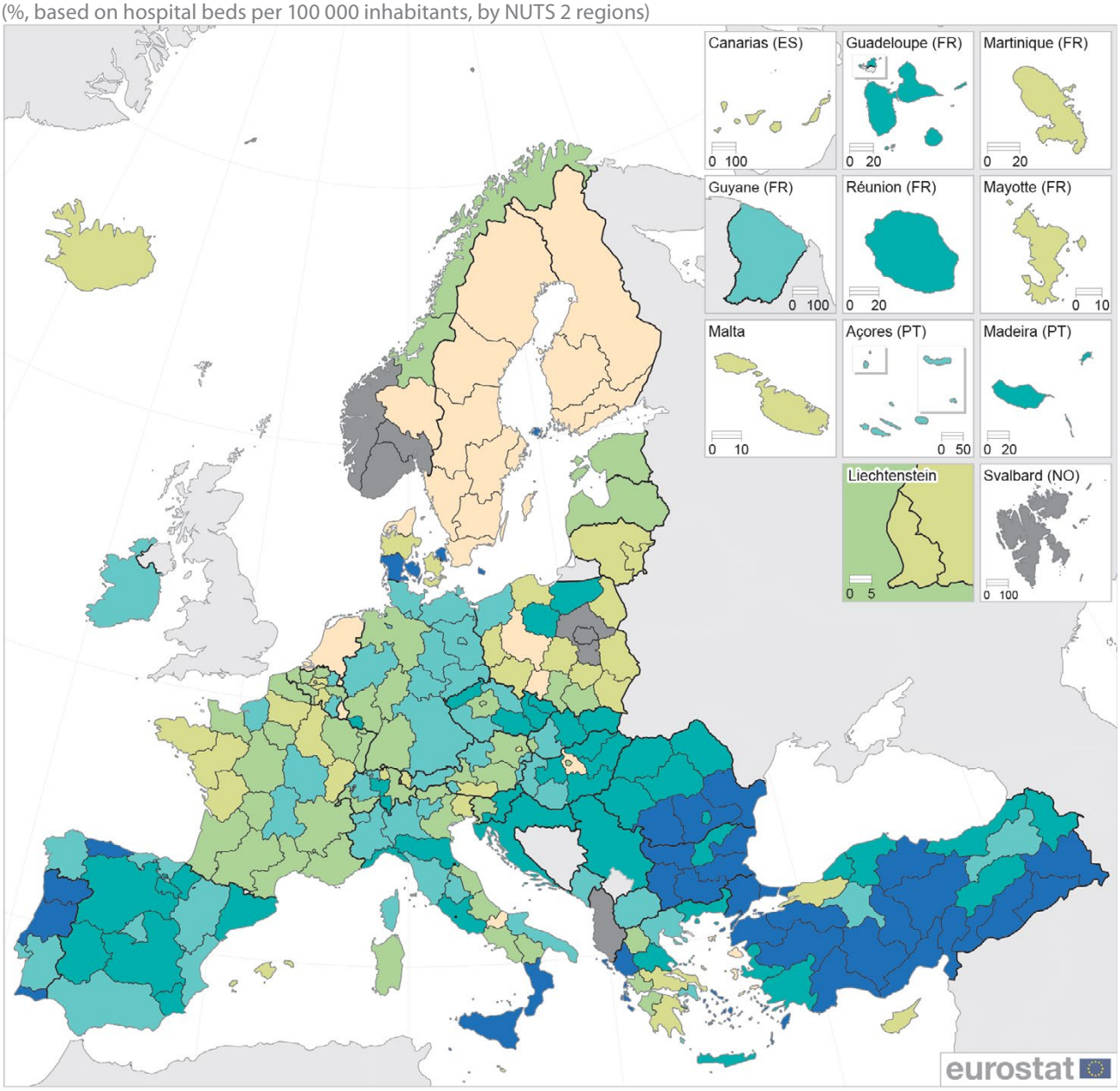
In 2019, much of Germany (NUTS level 1 regions), Austria and Poland, as well as several capital regions in eastern EU Member States had a relatively high density of hospital beds. To some extent, this reflects country-specific ways of organising health care and the types of service provided to patients. The predominantly rural, northern German region of Mecklenburg-Vorpommern had the highest density of hospital beds in the EU, at slightly less than 1 300 hospital beds per 100 000 inhabitants. There were three other regions that had ratios in excess of 1 000 hospital beds per 100 000 inhabitants: the northern Polish region of Zachodniopomorskie, and the capital regions of Romania (Bucureşti-Ilfov) and Hungary (Budapest).

Map 2.1 shows how the overall number of hospital beds per 100 000 inhabitants changed during the period from 2015 to 2019; for the EU as a whole, there were 3.1 % fewer beds in 2019. This falling number of hospital beds relative to population numbers may reflect, among other factors: cuts to healthcare spending in the aftermath of the global financial and economic crisis; medical and technological developments; or changes in healthcare policies. For example, the need for hospital beds may be reduced through a greater provision of day-care and outpatient services as well as reductions in the average length of hospital stays; such changes may result from the introduction of new treatments and less invasive forms of surgery.

Almost three quarters (71.3 %) of the EU regions shown in Map 2.1 recorded a fall in their number of hospital beds per 100 000 inhabitants between 2015 and 2019. There were 22 regions where the overall reduction was at least 11.0 %; this group included every region of Finland (except Åland) and all eight Swedish regions, as well as Luxembourg and the Netherlands (national data). The biggest reductions in hospital bed numbers were recorded in Finland: Pohjois- ja Itä-Suomi, Länsi-Suomi and Etelä-Suomi were the only regions in the EU where the number of beds per 100 000 inhabitants fell by more than 20.0 %.

There were 58 regions in the EU where the number of hospital beds per 100 000 inhabitants increased between 2015 and 2019. They included every region of Bulgaria and Romania, while most of the remaining regions were in eastern or southern EU Member States. However, the highest increases in hospital bed numbers were recorded in Åland (Finland; up overall almost 50 %), the Danish capital region of Hovedstaden (19.4 %) and Calabria (Italy; 18.0 %).

Map 2.1: Overall change in hospital beds, 2015–2019
(%, based on hospital beds per 100 000 inhabitants, by NUTS 2 regions)



Note: Germany, NUTS level 1. Ireland, Croatia, the Netherlands and Serbia: national data. Malta: 2015–2018. North Macedonia: 2015–2017. Hungary and Slovakia: break in series.

Source: Eurostat (online data code: hlth_rs_bdsrg)

On average there was one doctor for every 256 inhabitants in the EU

Medical doctors include generalists (such as general practitioners) as well as medical and surgical specialists. They provide services to patients as consumers of healthcare, including: giving advice, conducting medical examinations and making diagnoses; applying preventive medical methods; prescribing medication and treating diagnosed illnesses; giving specialised medical or surgical treatment.

In 2019, there were 1.7 million medical doctors in the EU; this equated to an average of 390.6 medical doctors per 100 000 inhabitants. Map 2.2 shows the regional distribution of medical doctors, with:

- a very high number of medical doctors relative to the size of the population across several regions of Greece – note that Greek data refer to medical doctors licensed to practice, which is a broader measure than practising doctors (as reported by a majority of EU Member States);
- a very high number of medical doctors relative to population size in many capital regions – this was particularly notable for Attiki (Greece), Praha (Czechia), Wien (Austria), Área Metropolitana de Lisboa (Portugal), Bratislavský kraj (Slovakia), Bucureşti-Ilfov (Romania), Sostinės regionas (Lithuania), Budapest (Hungary), Berlin (Germany) and Comunidad de Madrid (Spain) where there were in excess of 500 doctors per 100 000 inhabitants;
- a relatively high number of medical doctors relative to population size across a wide range of other urban regions (as healthcare services – including those provided by physicians – are more likely to be concentrated in regions that are characterised by relatively high population density);
- a relatively low number of medical doctors relative to population size across much of Poland (2017 data), as well as several regions in the Netherlands, France (outermost regions), Hungary and Romania.

Leaving aside the atypical Spanish region of Ciudad de Ceuta, the highest number of medical doctors relative to population size was recorded in the Greek capital, Attiki (814 medical doctors licensed to practice per 100 000 inhabitants). This was 10 times as high as the lowest ratio (81 practising doctors per 100 000 inhabitants), as recorded in the outermost French region of Mayotte.

The place or location of basic health services – for example, hospitals and ambulances – is often critical for those people who want to make use of them; the further a basic service is from their place of residence, the more time it will likely take for them to reach a service.

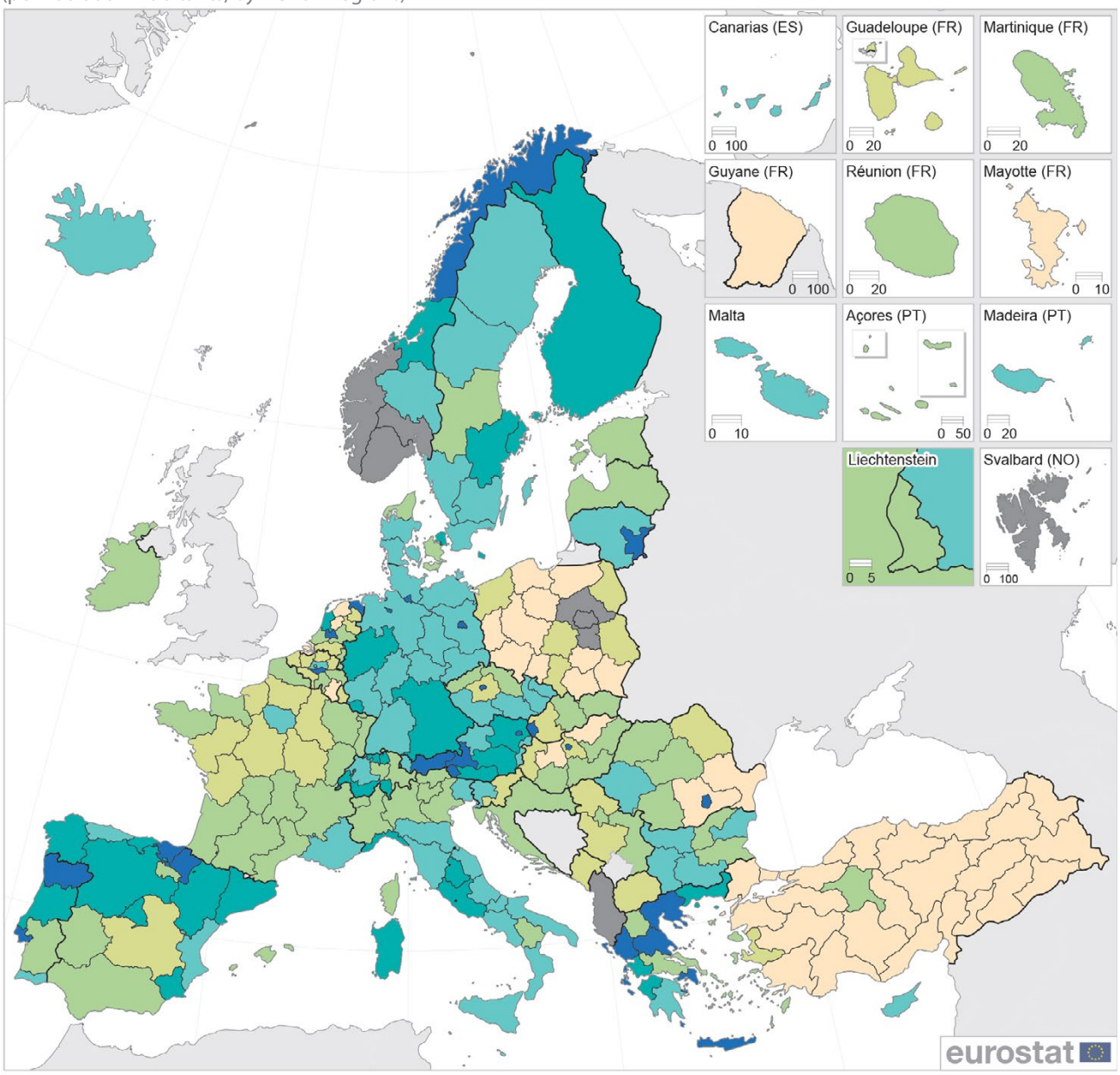
To measure how easily basic services can be reached by the resident population, Eurostat undertook some spatial analyses of health statistics and geographical information. Combining the road network together with the location of healthcare facilities, average travel times to the most accessible healthcare facility were computed (note this could have been across a national border).

Map 2.3 shows that average travel times to the nearest hospital were, as may be expected, generally lower in densely-populated areas: this was particularly notable in France, the Benelux countries, Germany and Czechia. By contrast, some people living in sparsely-populated areas faced a trip of several hours to the nearest hospital facility. Note that white grid cells in the map are uninhabited.

Average travel time to the nearest health facility by European region can be computed by aggregating the grid information of Map 2.3. In 2020, an estimated 82.5 % of the EU population was living within 15 minutes driving time of their nearest hospital.

In 2020, 129 regions had their population estimated to be living within 15 minutes driving time of a hospital; this equated to slightly more than 1 in 10 regions within the EU. Most of these were capital or urban regions with relatively high population density. At the other end of the scale, 89 regions had less than half of their population living within 15 minutes driving time of a hospital. Most of these were sparsely-populated regions often around the periphery of the EU, for example, in southern and eastern EU Member States, particularly the interiors of Spain and Portugal and rural regions of Croatia, Hungary, Poland, Romania and Slovenia; there were also several regions in Sweden where less than half of the population was living within 15 minutes driving time of a hospital. Looking in more detail, there were 11 regions that reported less than 10 % of their population were living within 15 minutes driving time of a hospital. Five of these were in Poland, four were in Romania and the other two were in Sweden.

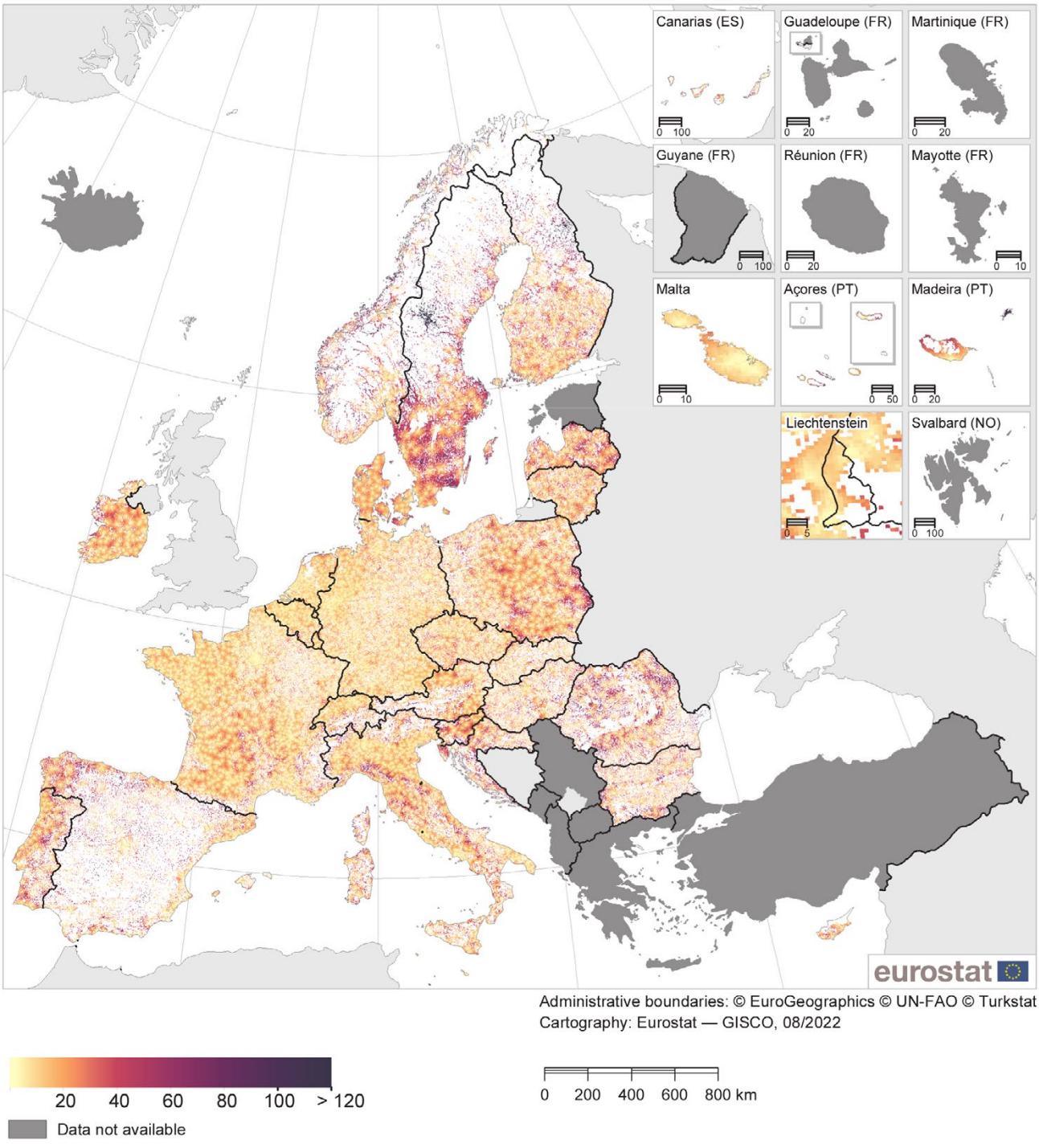
Map 2.2: Medical doctors, 2019
(per 100 000 inhabitants, by NUTS 2 regions)



Note: Eurostat gives preference to the concept of practising health care staff. Greece, Portugal and Finland: medical doctors licensed to practice. Slovakia, North Macedonia and Turkey: professionally active medical doctors. Germany, NUTS level 1. Ireland, Croatia and Finland: national data. Denmark, Estonia, Malta, Finland, Sweden and Serbia: 2018. Luxembourg, Poland and North Macedonia: 2017.

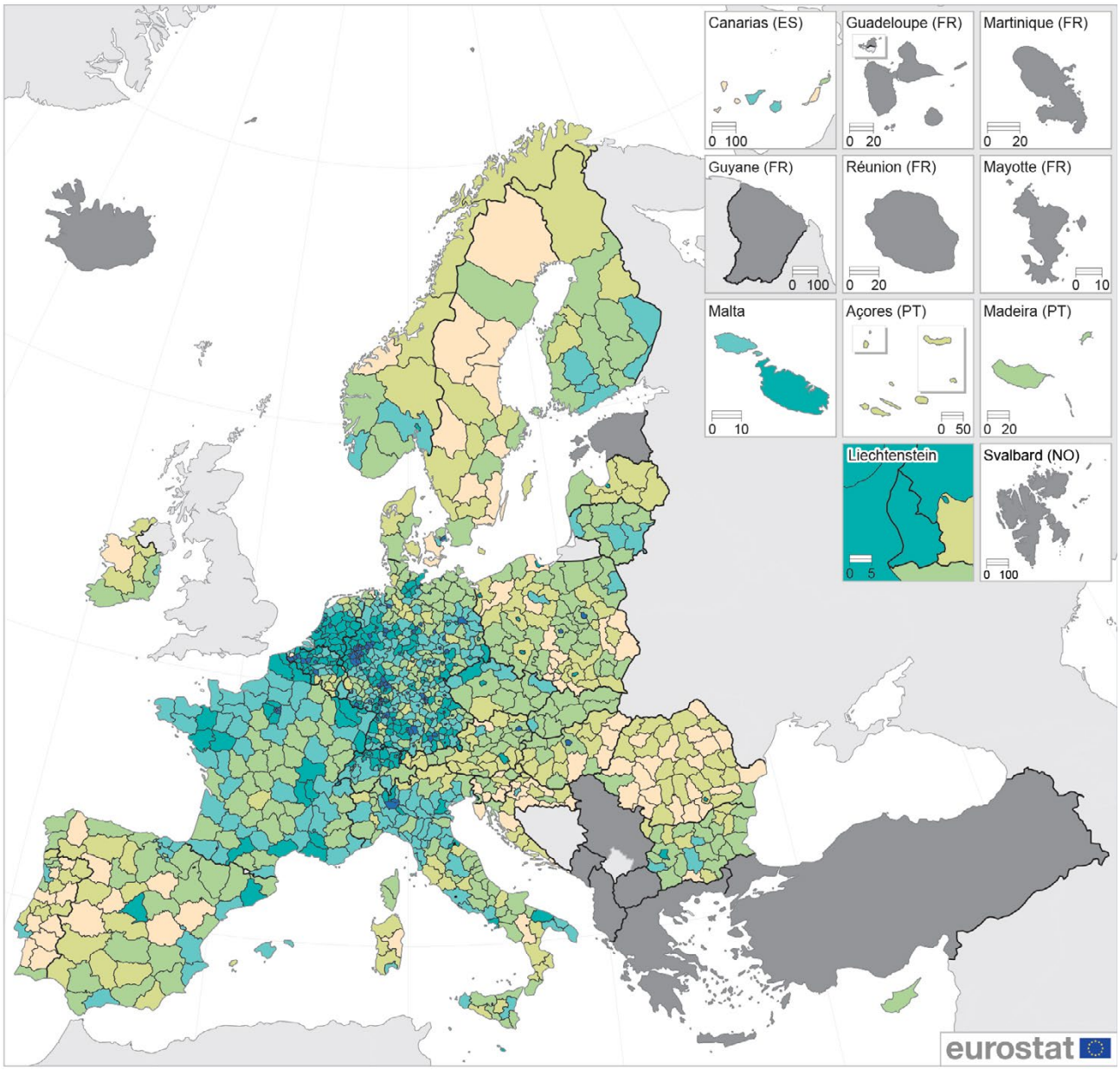
Source: Eurostat (online data codes: hlth_rs_prsrg and hlth_rs_prs1)

Map 2.3: Travel time to nearest hospital, 2020
(minutes, by 1 km² grid cells)



Note: the nearest hospital may be across a national border. Only populated grid cells are shown (white grid cells are uninhabited).
Source: TomTom Multinet, 2020, Geostat population grid 2018, Eurostat-GISCO hospital locations 2020

Map 2.4: Population living within 15 minutes driving time of a hospital, 2020
(%, by NUTS 3 regions)



EU = 82.5
- = 100.0
- 95.0 – < 100.0
- 85.0 – < 95.0
- 66.5 – < 85.0
- 50.0 – < 66.5
- < 50.0
- Data not available

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 10/2022

0 200 400 600 800 km

Note: EU estimate based on available data.

Source: TomTom Multinet, 2020, Geostat population grid 2018, Eurostat-GISCO hospital locations 2020

Causes of death

Health inequalities were brought into stark contrast during the COVID-19 pandemic, with the number of deaths disproportionately high among elderly persons, those already suffering from pre-existing health conditions and disadvantaged groups within society. However, a wide range of factors determine regional mortality patterns, with deaths linked, among other issues, to age structures, sex, access to healthcare services, living/working conditions and the surrounding environment.

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

Maps 2.5 and 2.6 show information for standardised death rates, whereby age-specific mortality rates are adjusted to reflect the structure of a standard population. This removes the influence of different age structures between regions (as elderly persons are more likely to die than younger persons or are more likely to catch/contract a specific illness/disease) and results in a more comparable measure across space and/or over time.

Some of the most economically-disadvantaged regions in the EU recorded the highest death rates

In 2020, there were 5.18 million deaths across the EU. The impact of the COVID-19 crisis was considerable, as the total number of deaths rose by more than half a million compared with the year before, equivalent to an increase of 11.4 %. However, this rapid increase in deaths should be interpreted with care as the daily monitoring of COVID-19 deaths for news releases during the pandemic covered people with COVID-19 (having tested positive) which is different to the causes of death data collection (deaths from COVID-19, as documented by death certificates).

Official statistics in this domain take a significant period of time to produce and regional data are not yet available for 2020 or 2021. Map 2.5 shows information both for the relative number and for the main causes of death across NUTS level 1 regions with information generally available for 2019. There were 10 regions in the EU where standardised death rates were above 1 300 deaths per 100 000 inhabitants (as shown by the largest circles). Most of these had relatively low living standards, as their GDP per inhabitant (in purchasing power standards (PPS)) was commonly less than two thirds of the EU average. This situation was most notable in Severna i Yugoiztochna (Bulgaria) which recorded the highest death rate in the EU (1 638 deaths per 100 000 inhabitants) and the lowest level of GDP per inhabitant (38 % of the EU average). The other regions with high death rates included all four regions in Romania, the two non-capital regions of Hungary, another Bulgarian region (Yugozapadna i Yuzhna tsentralna), as well as Latvia and Lithuania.

A similar pattern was apparent between regions within individual EU Member States. For example, the highest standardised death rates in the four largest Member States in 2019 were recorded in Saarland (rural, western Germany), Sur (southern Spain), Hauts-de-France (northern France; 2017 data) and Isole (the islands of Italy). All four regions were relatively disadvantaged, as they recorded levels of GDP per inhabitant that were considerably lower than their respective national averages.

In 2017, one quarter of all deaths in the EU were attributed to cancer

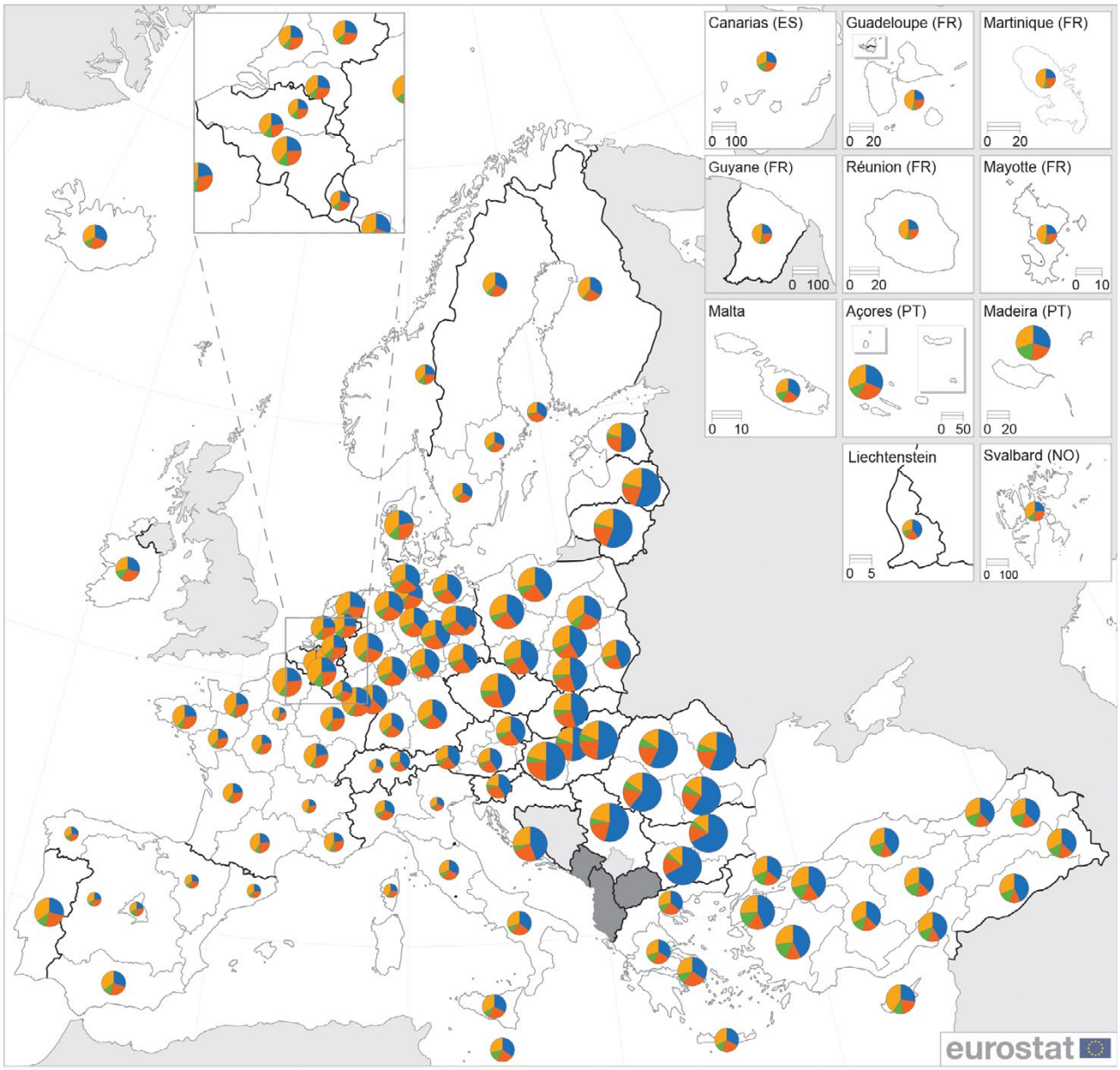
In 2017, the three principal causes of death in the EU were: diseases of the circulatory system, malignant neoplasms (hereafter referred to as cancer) and diseases of the respiratory system. Diseases of the circulatory system accounted for more than one third (36.6 %) of all deaths. Cancer accounted for one quarter (25.1 %) of the total number of deaths; a more detailed analysis is provided below. The proportion of deaths resulting from diseases of the respiratory system was much lower, at 7.9 %; the remaining 30.4 % of deaths in the EU had a variety of other causes.

Map 2.5 shows the main causes of death in 2019 for NUTS level 1 regions. In Severna i Yugoiztochna (Bulgaria) – the region with the highest standardised death rate – more than two thirds of all deaths (67.3 %) were attributed to diseases of the circulatory system. The 12 regions across the EU where more than half of all deaths were caused by diseases of the circulatory system included every region of Bulgaria, Hungary and Romania, as well as the three Baltic Member States.

The very small, Finnish region of Åland had the highest share of deaths attributed to cancer (32.4 %). There were four more regions in the EU where more than 30.0 % of deaths were caused by cancer: Slovenia and three regions from France (2017 data): Pays de la Loire, Centre — Val de Loire and the capital region of Ile-de-France.

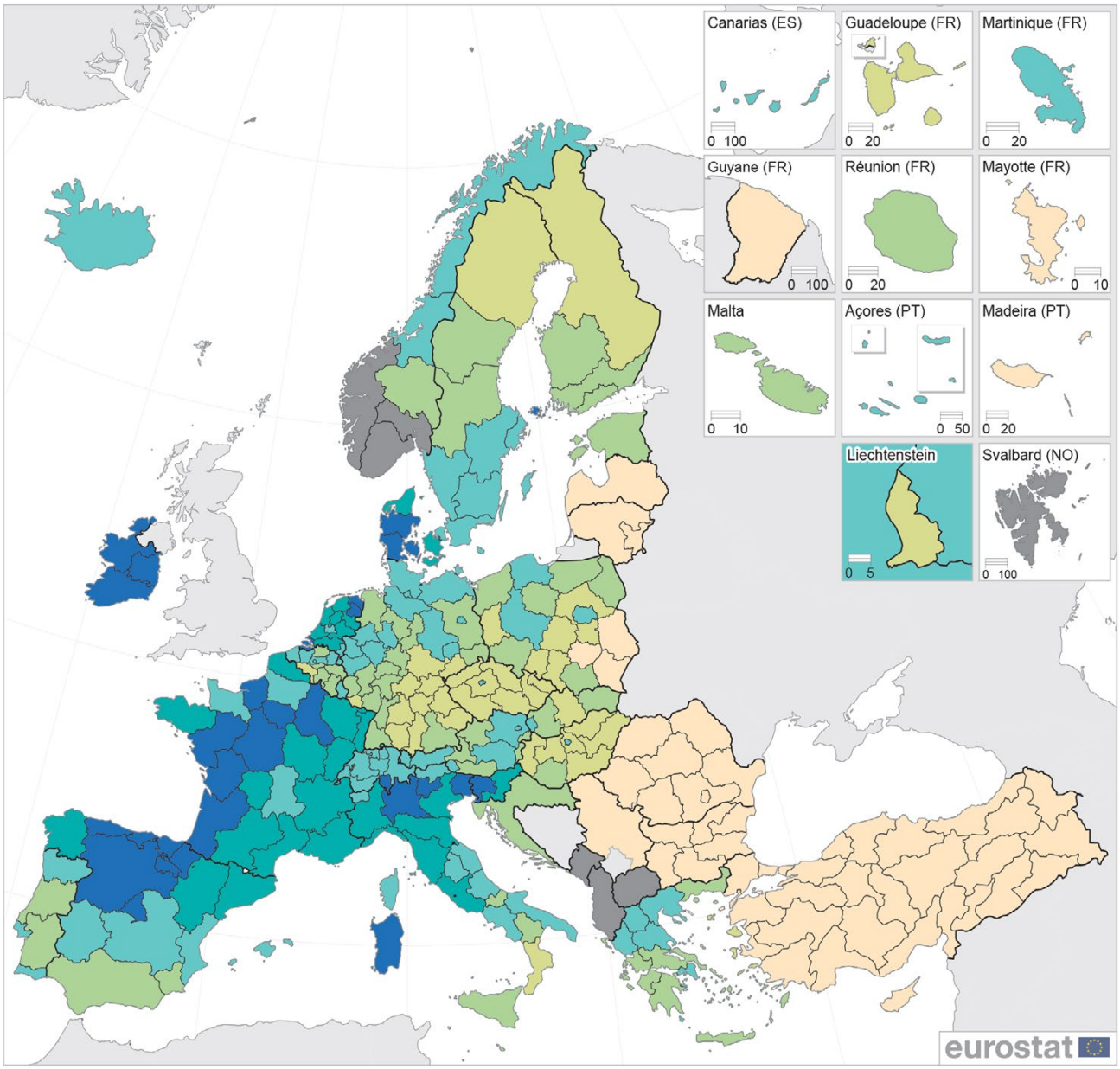
In 2019, the Região Autónoma da Madeira in Portugal had, by far, the highest share (17.9 %) of deaths caused by diseases of the respiratory system. The next highest shares were recorded in the Spanish regions of Canarias (14.5 %) and Comunidad De Madrid (13.7 %). Diseases of the respiratory system accounted for less than 10.0 % of all deaths in almost four fifths (79.3 %) of EU regions.

Map 2.5: Death rates and main causes of death, 2019
(by NUTS 1 regions)



Note: Serbia, national data. EU and France: 2017. Montenegro, North Macedonia and Albania: not available.
Source: Eurostat (online data code: hlth_cd_asdr2)

Map 2.6: Deaths from cancer, 2019
(% of all deaths, based on standardised death rates per 100 000 inhabitants, by NUTS 2 regions)



EU = 25.1
- ≥ 29.0
- 28.0 – < 29.0
- 25.0 – < 28.0
- 23.5 – < 25.0
- 21.5 – < 23.5
- < 21.5
- Data not available

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 06/2022

0 200 400 600 800 km

Note: Croatia and Serbia, national data. EU and France: 2017.
Source: Eurostat (online data code: hlth_cd_asdr2)

FOCUS ON DEATHS FROM CANCER

As noted above, cancer is one of the leading causes of death (one quarter of all deaths in the EU), placing a considerable burden on healthcare systems and government budgets. Cancer research, innovation and new technologies can save lives. Indeed, the last 20 years have seen considerable scientific progress, for example, through understanding of the role of genetics. Europe's Beating Cancer Plan aims to raise awareness and address key risk factors such as cancers caused by smoking, harmful alcohol consumption, obesity, a lack of physical activity, or exposure to pollution, carcinogenic substances and radiation.

On average there were 252 deaths per 100 000 inhabitants from cancer in the EU

Despite medical advances, there were 1.17 million deaths across the EU from cancer in 2017. Some of the most fatal forms of cancer include cancer of the trachea, bronchus and lung (hereafter referred to simply as lung cancer), colorectal cancer, breast cancer, pancreatic cancer and prostate cancer. The EU's standardised death rate from cancer was 252 per 100 000 inhabitants.

In 2019, standardised death rates from cancer peaked at 352 deaths per 100 000 inhabitants in Dél-Dunántúl (Hungary). Hungarian regions also accounted for the second and third highest rates in the EU: Észak-Magyarország (349 deaths per 100 000 inhabitants) and Észak-Alföld (345 deaths per 100 000 inhabitants). More generally, there was a clear geographic split in terms of the distribution of regional death rates: the eastern and Baltic Member States recorded some of the highest death rates from cancer; the lowest rates were principally recorded around the Mediterranean Sea, as well as in several regions across Austria, Finland and Sweden.

There were five regions in the EU where standardised death rates from cancer were less than 200 deaths per 100 000 inhabitants. Three of these were outermost regions of France (2017 data) – Mayotte, Guadeloupe and Guyane. Leaving these atypical regions aside, the lowest death rates from cancer were in Cyprus and the Spanish capital region of Comunidad de Madrid.

Map 2.6 shows the share of all deaths in 2019 attributed to cancer; note that this ratio is influenced by the overall number of deaths in each region as well as the prevalence of other causes of death. For example, many regions in eastern Europe have particularly high death rates from diseases of the circulatory system, which tends to result in a relatively low share of deaths from cancer; this pattern was particularly true in Bulgaria and Romania.

In 2019, cancer accounted for a relatively high proportion of the total number of deaths in several EU Member States. The highest shares were generally recorded across Ireland (all three regions), northern and central Spain, northern and western France (2017 data), northern Italy and Sardegna, as well as several regions in Denmark and the Netherlands. However, the highest regional share was in Zahodna Slovenija where almost one third (32.7 %) of all deaths were attributed to cancer, followed by Åland in Finland (32.4 %) and Northern and Western in Ireland (30.9 %). By contrast, the outermost French region of Mayotte recorded only slightly more than 1 in 10 deaths being attributed to cancer (11.5 %; 2017 data).

Figure 2.1 shows developments for standardised death rates for four specific types of cancer. Each line chart shows the EU average, the regions with the highest/lowest rates in 2019 and the regions with the biggest overall increases/decreases for the period 2011–2019.

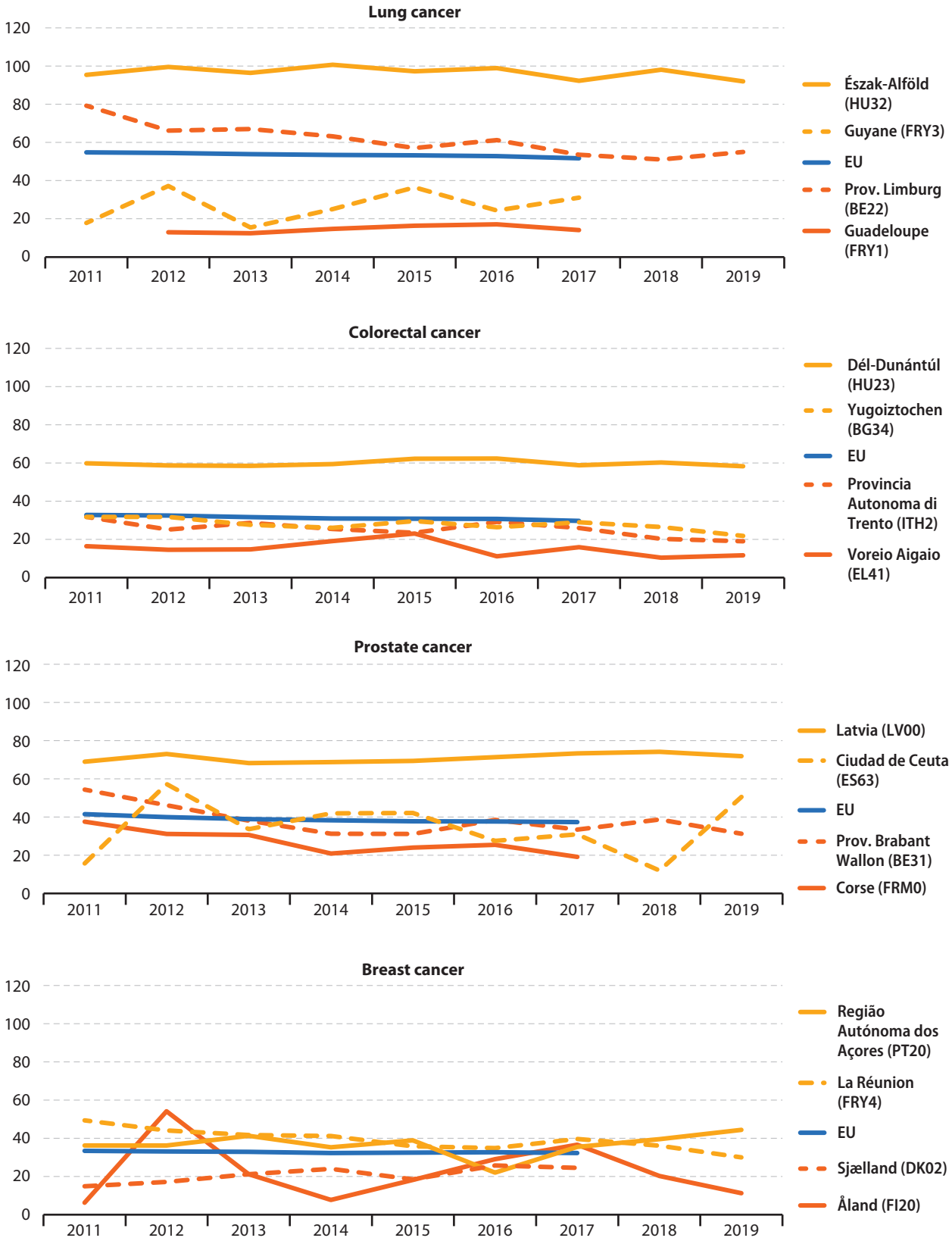
Standardised death rates for the EU fell for all four types of cancer during the period under consideration (2011–2017). The death rate for all forms of cancer fell overall 5.8 %, with larger decreases recorded for prostate cancer among men (down 10.0 %) and colorectal cancer (down 9.3 %). The death rate for lung cancer – which has the highest death rate among different types of cancer – fell 5.6 % (in line with the overall rate for all forms of cancer), while there was a smaller decrease for breast cancer among women (down 3.2 %).

Across the EU, around 9 out of 10 (90.3 %) regions recorded a decrease in their standardised death rate from cancer between 2011 and 2019. This pattern was repeated for the different forms of cancer. For lung cancer, the standardised death rate fell in 84.9 % of regions, while a similar reduction was recorded for colorectal cancer where death rates decreased in 82.8 % of regions. By contrast, around three quarters (74.8 %) of all regions in the EU recorded a decline in death rates from prostate cancer among men, while two thirds (66.4 %) of regions recorded a decline in death rates from breast cancer among women.

The biggest reductions in standardised death rates during the period 2011–2019 were recorded in:

- Prov. Limburg in Belgium for lung cancer;
- Provincia Autonoma di Trento in Italy for colorectal cancer;
- Prov. Brabant Wallon in Belgium for prostate cancer among men;
- Sjælland in Denmark for breast cancer among women.

Figure 2.1: Deaths from selected cancers, 2011–2019
(standardised death rates per 100 000 inhabitants, selected NUTS 2 regions)



Note: the figures show the EU average (in blue), the regions with the highest/lowest rates in 2019 (solid yellow and orange lines) and the regions with the biggest overall increases/decreases (broken yellow and orange lines) for the period 2011–2019. Prostate cancer: males. Breast cancer: females. Croatia: national data. Ireland, Greece (EL5 and EL6), Poland (PL7, PL8 and PL9) and Slovenia: 2013–2019. EU and France (except Guadeloupe and Mayotte): 2011–2017. Guadeloupe (FRY1): 2012–2017. Mayotte (FRY5): not available.

Source: Eurostat (online data code: hlth_cd_asdr2)

3. Education

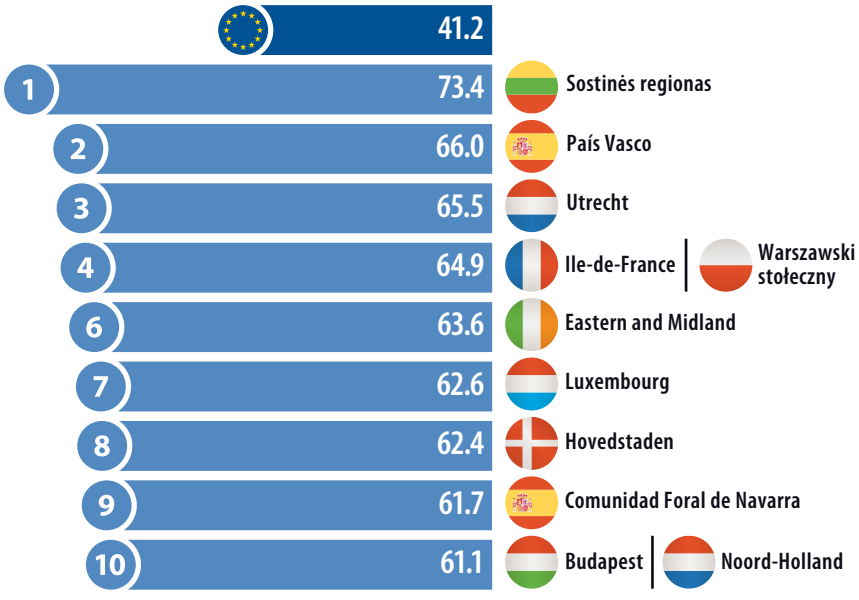
Alongside the provision of healthcare, public expenditure on education is often considered as one of the most important investments that can be made in people. Education has the potential to drive forward socioeconomic development: this is particularly the case in a globalised world, where a highly-skilled workforce can be an advantage in terms of productivity, innovation and competitiveness.

Education and training play a vital role in the economic and social strategies of the European Union (EU). In February 2021, a *Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021–2030)* (2021/C 66/01) was adopted. It builds on previous strategies and pursues five priority actions:

- improve quality, equity, inclusion and success for all in education and training;
- make lifelong learning and mobility a reality for all;
- enhance competences and motivation in the education profession;
- reinforce tertiary education; and
- support the green and digital transitions in and through education and training.

The Resolution sets a number of policy targets for the European Education Area designed to promote collaboration between EU Member States and monitor progress. One of the targets foresees having at least 45 % of young people aged 25–34 years in the EU with a tertiary level of education attainment by 2030. In 2021, this target had already been reached in 72 NUTS level 2 regions (or 30 % of the total number of regions across the EU at this level of detail). The highest regional share was recorded in the capital region of Lithuania – Sostinės regionas – at 73.4 % (see the infographic).

The COVID-19 crisis put considerable pressure on education and training institutions, their staff and pupils/students. It often resulted in a widespread shift to remote learning during specific lockdown periods. This change in the means of delivery of education and training underlined a range of inequalities, including a digital divide, with pupils and students from



(%, 2021)
Note: Corse (FRM0), 2020. Trier (DEB2): 2019. Mayotte (FRY5) and Åland (FI20): not available.

Source: Eurostat (online data code: edat_lfse_04)

disadvantaged backgrounds and those living in rural and remote areas often facing greater obstacles when trying to study at home.

Statistics on education and training cover a wide range of topics, such as:

- participation (in terms of enrolments and entrants);
- personnel;
- learning mobility;
- outcomes (in terms of graduates, educational attainment levels, and the transition from education to work);
- foreign languages (in terms of foreign language learning and self-reported language skills);
- expenditure.

This chapter presents data following the natural progression of pupils and students through different levels of the education system (according to the International standard classification of education (ISCED) – see box for more details) – before analysing transitions from education into the labour market. Note that data on the participation of pupils and students in various levels of education generally refer to 2020, while the latest data on transitions into the labour market are for 2021.

Based on the latest information available from each of the EU Member States, in 2020 there were 93.3 million pupils and students enrolled across the EU in all levels of education from early childhood education to doctoral studies (as covered by ISCED levels 0–8).

International standard classification of education (ISCED)

As national education systems vary in terms of structure and curricular content, statistics on education and training are compiled according to the international standard classification of education (ISCED).

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

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

The term 'tertiary education' refers to ISCED levels 5-8.

Early childhood education

Research has shown that early experiences of children are often critical for their long-term development. Early childhood education and care programmes which are intentionally designed to support children's cognitive, physical and socio-emotional development are considered as educational in the ISCED classification (ISCED level 0, early childhood education) ([1]). Early childhood education programmes ([2]) constitute the first level of education in education and training systems and play a key role in redressing 'unequal' life chances, tackling inequalities through preventing the formation of early skills gaps.

Within the strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021–2030), one of the seven key policy targets concerns the share of children aged between 3 years and the starting age of compulsory primary education participating in early childhood education. Eurostat data are used to measure progress towards the goal that, by 2030, at least 96 % of children in this age group are participating in early childhood education.

In 2020, there were 30 regions across the EU where every child between the age of 3 years and the age for starting compulsory primary education participated in early childhood education

Some 15.7 million children in the EU were enrolled in early childhood education in 2020; young boys accounted for a 51.5 % share of pupils at this level. Map 3.1 shows a more detailed analysis for 206 NUTS level 2 regions; note that statistics presented for Germany relate to NUTS level 1 regions, while national data are presented for Croatia and the Netherlands.

There were considerable differences across the EU in terms of regional participation rates, with the highest rates generally recorded in the westernmost regions and lower rates across most eastern regions and Greece. At the top end of the distribution, there were 30 regions in the EU where every child between the age of 3 years and the age for starting compulsory primary education participated in early childhood education (as shown by the darkest shade of blue).

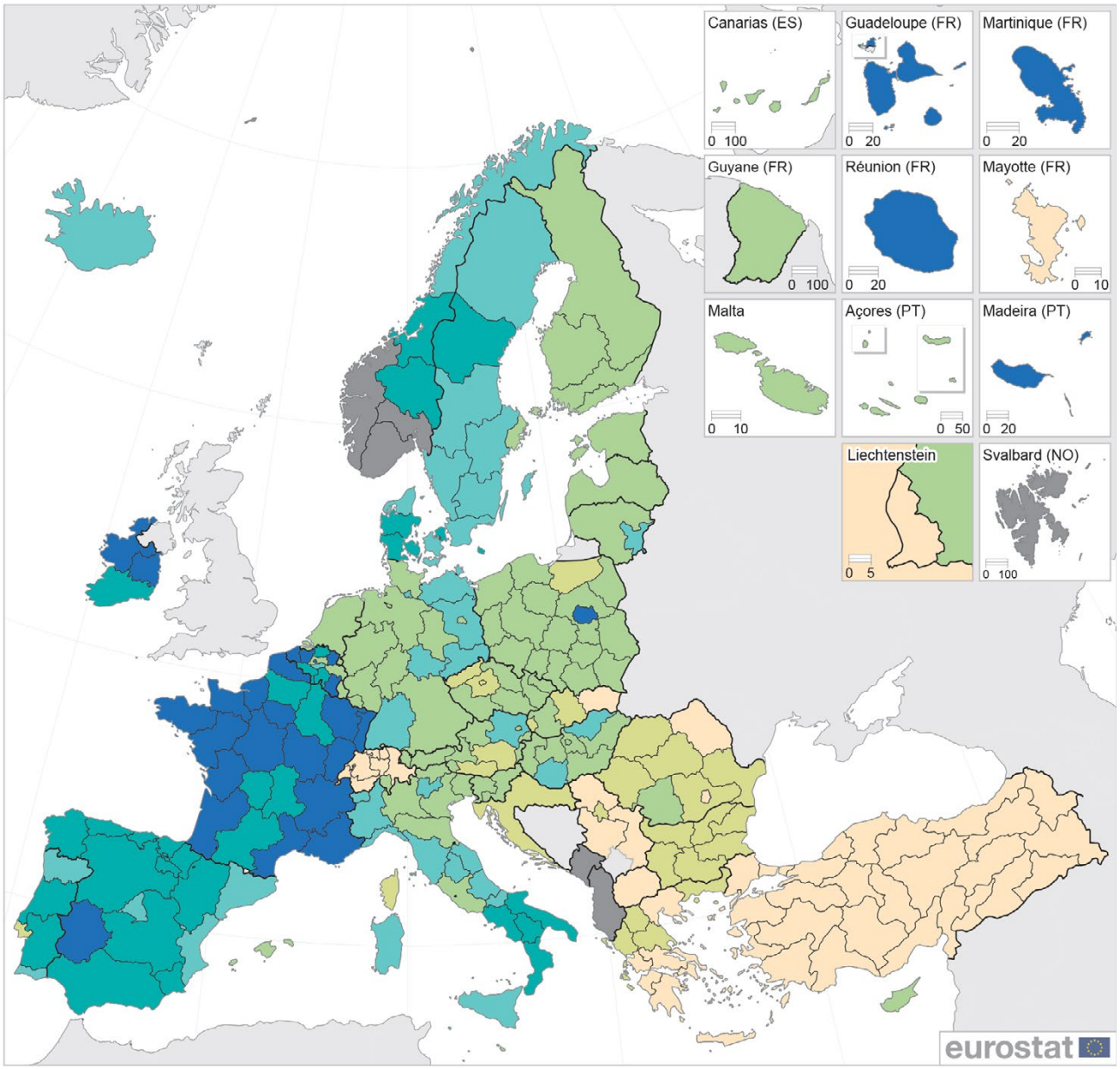
Looking in more detail, there were 79 regions (in other words, more than one third of all EU regions for which data are available) where the share of children between the age of 3 years and the age for starting compulsory primary education participating in early childhood education had already reached the target of 96.0 % in 2020. These regions were mostly located in Belgium, Denmark, Ireland, Spain and France – where (practically) all children in this age group participated in early childhood education. There were also several regions in (predominantly southern) Italy, Portugal and Sweden, two regions in Germany, as well as the capital regions of Lithuania and Poland where the policy target had already been achieved.

In 2020, the share of young children participating in early childhood education was less than 75.0 % in approximately one twentieth of the EU regions for which data are available (12 out of 206). The regions with relatively low participation rates (as shown by the lightest shade of yellow in Map 3.1) were concentrated in Greece (eight regions); Mayotte (France), Nord-Est and Bucureşti-Ilfov (both Romania) and Východné Slovensko (Slovakia) also had relatively low rates. The lowest share was recorded in Voreio Aigaio in Greece (47.9 %) – this was the only region in the EU where less than half of all children between the age of 3 years and the age for starting compulsory primary education participated in early childhood education.

([1]) At this age, learning activities will be very different to the traditional methods adopted within the context of compulsory schooling, and will take place alongside/as part of caring activities (in other words, supervision, nutrition and health) most of the time. Programmes providing childcare only (in other words, supervision, nutrition and health) without a sufficient set of purposeful learning activities cannot be considered as educational according to ISCED and are not classified as early childhood education.

([2]) Typically designed to introduce young children to organised instruction outside of the family context; programmes have an intentional education component and target children below the age of entry into ISCED level 1 (primary education).

Map 3.1: Participation rates in early childhood education, 2020
(%, by NUTS 2 regions)



Note: pupils from age 3 to the starting age of compulsory education at primary level, as % of the population of the corresponding age.
Germany: NUTS level 1. Croatia and the Netherlands: national data. North Macedonia: 2018.

Source: Eurostat (online data code: educ_uoe_enra22)

Upper secondary education

School attendance in the EU Member States is compulsory at least for primary and lower secondary education. Young people who have successfully completed lower secondary education may enter upper secondary education (ISCED level 3), when they may have to make choices concerning subjects or specialisations to study, as well as their future education and/or career paths. Upper secondary education in the EU typically ends when students are aged 17 or 18 years. These programmes are designed primarily to prepare students so that they may continue their studies at a tertiary level (general programmes), or to provide them with the necessary skills and competencies that are relevant for a specific occupation or trade (vocational programmes).

Just over half of all upper secondary students in the EU were enrolled in general education programmes

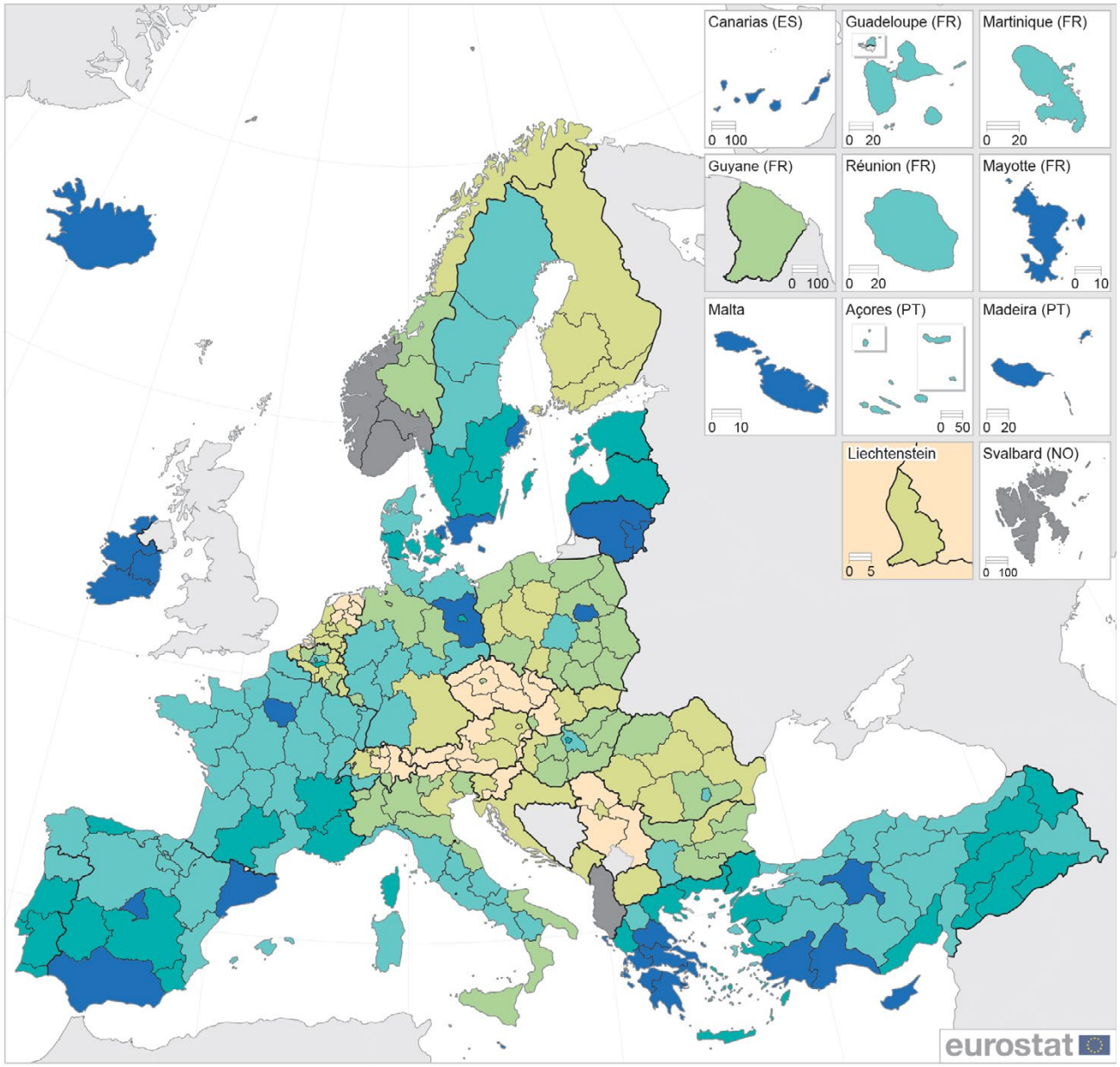
In 2020, there were 17.9 million students enrolled in the EU's upper secondary education programmes, with just over half of these (51.3 %) participating in general education that tends to be more academic; the remainder followed upper secondary vocational education programmes that are more technical or practical in nature.

Map 3.2 reflects the organisation of educational systems at a national level and the relative position of general education and vocational education programmes. Among the 217 NUTS level 2 regions for which data are available (note that statistics presented for Germany relate to NUTS level 1 regions, while national data are presented for Croatia), the split was fairly even between the number with a majority enrolled in general programmes and the number with a majority enrolled in vocational education programmes. There were 115 regions in the EU where a majority of upper secondary students followed general education programmes and 101 regions where a majority of upper secondary students followed vocational education programmes; Łódzkie in Poland had equal numbers of students following each type of programme. Some of these differences between regions can be attributed to the availability of and perceptions concerning general and/or vocational education. For example, a majority of upper secondary students in Ireland, Greece, Cyprus or Lithuania tend to follow general education programmes (as a stepping stone to tertiary education), whereas students in Czechia, the Netherlands, Austria or Slovenia are more likely to follow vocational education programmes.

In 2020, there were 25 regions across the EU where the share of upper secondary students following a general education programme was at least 65.0 % (as shown by the darkest shade of blue in Map 3.2). These regions were concentrated in Ireland (all three regions), Greece (6 out of 13 regions), Lithuania (both regions), Cyprus and Malta. Together with their five capital regions, this group also included the capital regions of Sweden (Stockholm), Denmark (Hovedstaden), Spain (Comunidad de Madrid), France (Ile-de-France) and Poland (Warszawski stołeczny), as well as Andalucía, Canarias and Cataluña in Spain, Brandenburg in Germany (that encircles the German capital region of Berlin; NUTS level 1), Região Autónoma da Madeira in Portugal, Mayotte in France, and Sydsverige in Sweden. Two thirds of the multi-regional EU Member States reported that their capital region had the highest share of upper secondary students enrolled in general education programmes; this may be linked to the relatively high concentration of general and academic establishments in these regions.

At the other end of the range, there were 22 regions in the EU where the share of upper secondary students following a general education programme was less than 30.0 % (as shown by the lightest shade of yellow) and therefore where a relatively high share of students followed vocational education programmes in 2020. These regions were principally located in Czechia (every region except for the capital region of Praha), the Netherlands (6 out of 12 regions) and Austria (6 out of 9 regions). This group also included Provincia Autonoma di Bolzano/Bozen (Italy), Západné Slovensko (Slovakia) and Vzhodna Slovenija (Slovenia). The last of these was one of only three regions in the EU where less than one in four upper secondary students were enrolled in general education programmes: Vzhodna Slovenija (24.8 %), Oberösterreich in Austria (24.2 %) and Severozápad in Czechia (23.0 %).

Map 3.2: Students enrolled in upper secondary education – general, 2020
(% of all students in upper secondary education, by NUTS 2 regions)



Note: Germany, NUTS level 1. Croatia: national data. Montenegro: 2019.
Source: Eurostat (online data codes: educ_uoe_enrs06 and educ_uoe_enrs04)

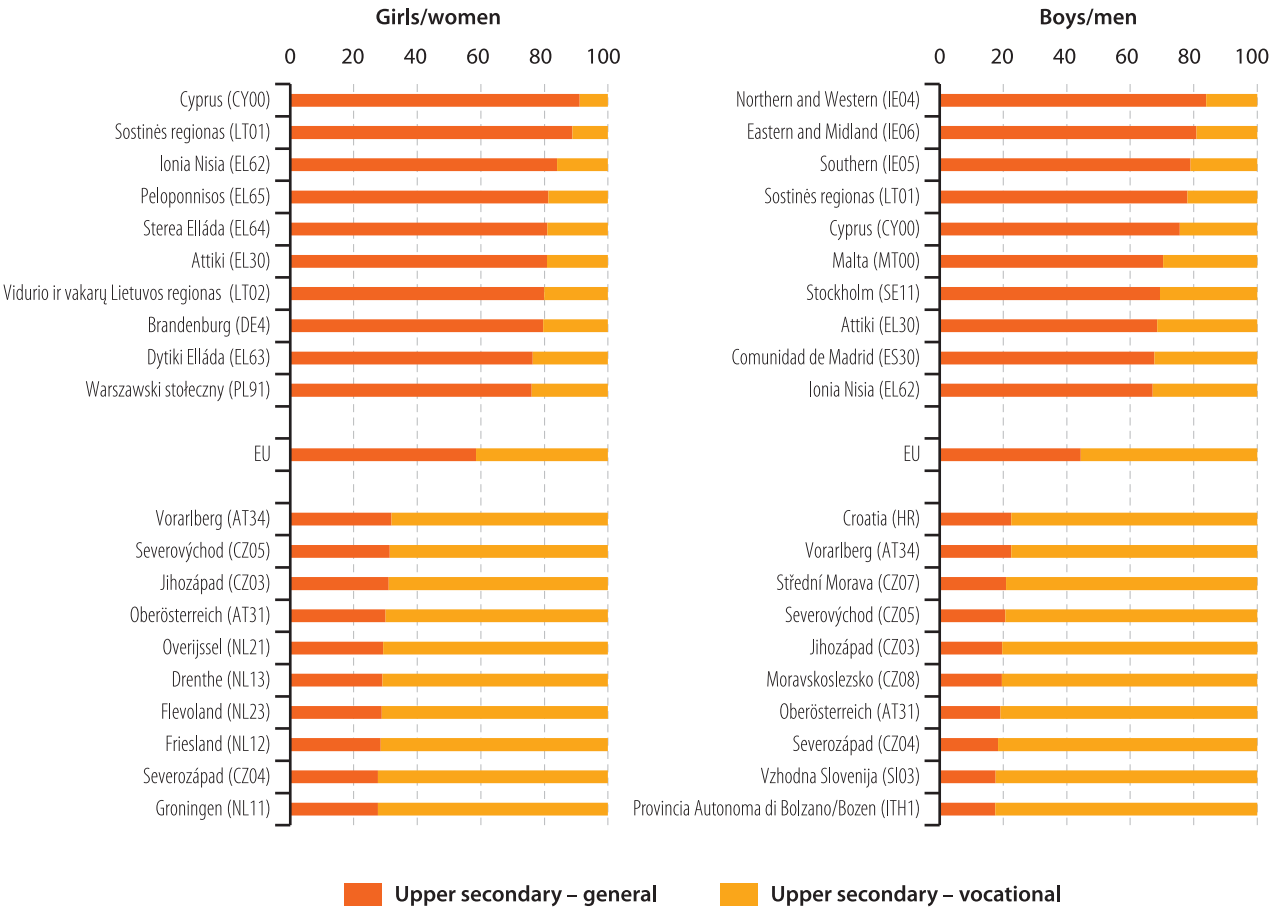
Female upper secondary students were more likely (than male students) to enrol in general education programmes

In 2020, there were 8.7 million female upper secondary students in the EU, a majority of whom (58.4 %) were enrolled in general education programmes. By contrast, there were 9.2 million male upper secondary students, with a lower share (44.4 %) enrolled in general education programmes. As such, a greater proportion of female students at this level of education were following more academic studies.

Figure 3.1 highlights those regions with the highest and lowest shares of upper secondary students following general education programmes. In 2020, the highest shares among female students were recorded in Cyprus (91.1 %), Sostinės regionas (the capital region of Lithuania; 88.8 %) and Ionia Nisia in Greece (84.0 %). The highest shares among male students were recorded in the three Irish regions: Northern and Western (83.9 %), Eastern and Midland (the capital region; 80.9 %) and Southern (79.0 %).

In 2020, at least 7 out of 10 female upper secondary students followed a vocational education programme in five Dutch regions – Groningen, Friesland, Flevoland, Drenthe and Overijssel – as well as Severozápad in Czechia and Oberösterreich in Austria. More than four out of every five male upper secondary students followed a vocational education programme in Provincia Autonoma di Bolzano/Bozen in Italy, Vzhodna Slovenija in Slovenia, Severozápad, Moravskoslezsko and Jihozápad in Czechia, and Oberösterreich.

Figure 3.1: Students enrolled in upper secondary education, 2020
(% of all students in upper secondary education, selected NUTS 2 regions)



Note: the figure shows the regions with the highest and lowest shares for each sex. Germany: NUTS level 1. Croatia: national data.
Source: Eurostat (online data code: educ_uoe_enrs06)

Tertiary education

Tertiary education (ISCED levels 5–8) builds on secondary education, providing learning activities at a higher level of complexity. This level of education – provided by universities and other tertiary educational institutions – can play an important role in society, fostering innovation, increasing economic development and growth, and more generally improving individual well-being.

The number of people enrolling in tertiary education across the EU has risen in recent decades, reflecting a number of factors, such as: demographic patterns; changes in labour force participation (particularly for women); increased demand from employers for tertiary education qualifications for jobs that previously required a secondary level of education; an increased awareness of the benefits of tertiary education; access to student finance, scholarships and other benefits; different patterns of learning mobility (within and from outside of the EU); an increased demand for longer tertiary education, such as the extension from a bachelor's degree to master's or doctoral studies; an increasing share of adults participating in lifelong learning.

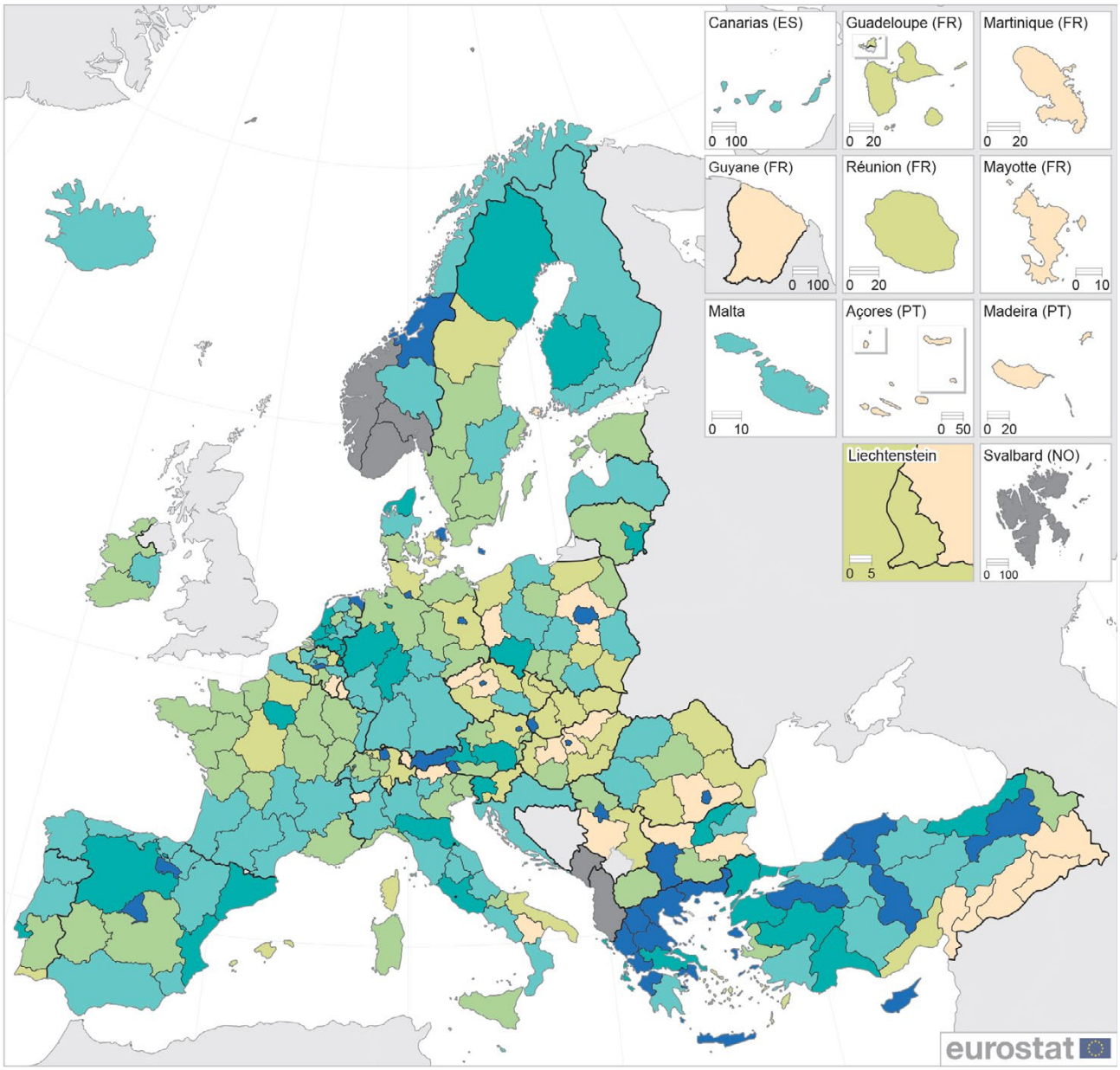
There were 18.0 million students enrolled in the EU's tertiary education institutions in 2020. They accounted for almost one in five (19.4 %) of all pupils and students enrolled in the EU's education system. A majority of the students enrolled in the tertiary education sector were female (54.0 % of the total).

Map 3.3 shows the proportion of students enrolled in tertiary education relative to the total number of pupils and students in all levels of education. The distribution of this indicator was somewhat skewed, insofar as there were 82 regions with a share equal to or above the EU average of 19.4 %, compared with 135 regions with shares below the EU average. Many urban and capital regions recorded relatively high shares of pupils and students enrolled in tertiary education. Aside from the location and availability of tertiary education establishments, the share of all students enrolled in tertiary education may also reflect, at least to some degree, previous demographic and vital events – for example, developments for the share of young people within the total population or the fertility rate.

In 2020, the share of tertiary education students in the total number of pupils and students across all levels of education was at least 27.0 % in 25 out of 217 of the NUTS level 2 regions for which data are available (note that statistics presented for Germany relate to NUTS level 1 regions, while national data are presented for Croatia). Among these regions – which are shown in the darkest shade of blue in Map 3.3 – the share of tertiary students peaked at more than 40.0 % in Wien (the capital region of Austria), La Rioja (Spain), and three Greek regions – Dytiki Makedonia, Ipeiros and Dytiki Ellada – the latter being the only region in the EU where an absolute majority (50.7 %) of pupils and students were enrolled within tertiary education.

At the other end of the range, there were 22 regions in the EU where tertiary students accounted for less than 9.0 % of all pupils and students in 2020. These regions were widely distributed across 12 different EU Member States, with no more than three regions in each of these (as was the case for France, Italy and Hungary). These 22 regions were characterised as either remote and/or island locations, or regions neighbouring a capital region. The lowest shares of tertiary students – less than 5.0 % – were recorded in Provincia Autonoma di Bolzano/Bozen in Italy, Sud-Muntenia in Romania, Mayotte in France and Střední Čechy in Czechia; the latter recorded the lowest share in the EU, at 1.7 %.

Map 3.3: Students enrolled in tertiary education, 2020
(% of all pupils and students in education, by NUTS 2 regions)



EU = 19.4
- ≥ 27.0
- 21.5 – < 27.0
- 17.5 – < 21.5
- 13.5 – < 17.5
- 9.0 – < 13.5
- < 9.0
- Data not available

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 06/2022

0 200 400 600 800 km

Note: the total of all pupils and students in education excludes early childhood educational development. Ireland: private government independent institutions are only partially covered. Germany: NUTS level 1. Croatia: national data: Estonia: 2017.

Source: Eurostat (online data codes: educ_uoe_enra11 and educ_uoe_enra01)

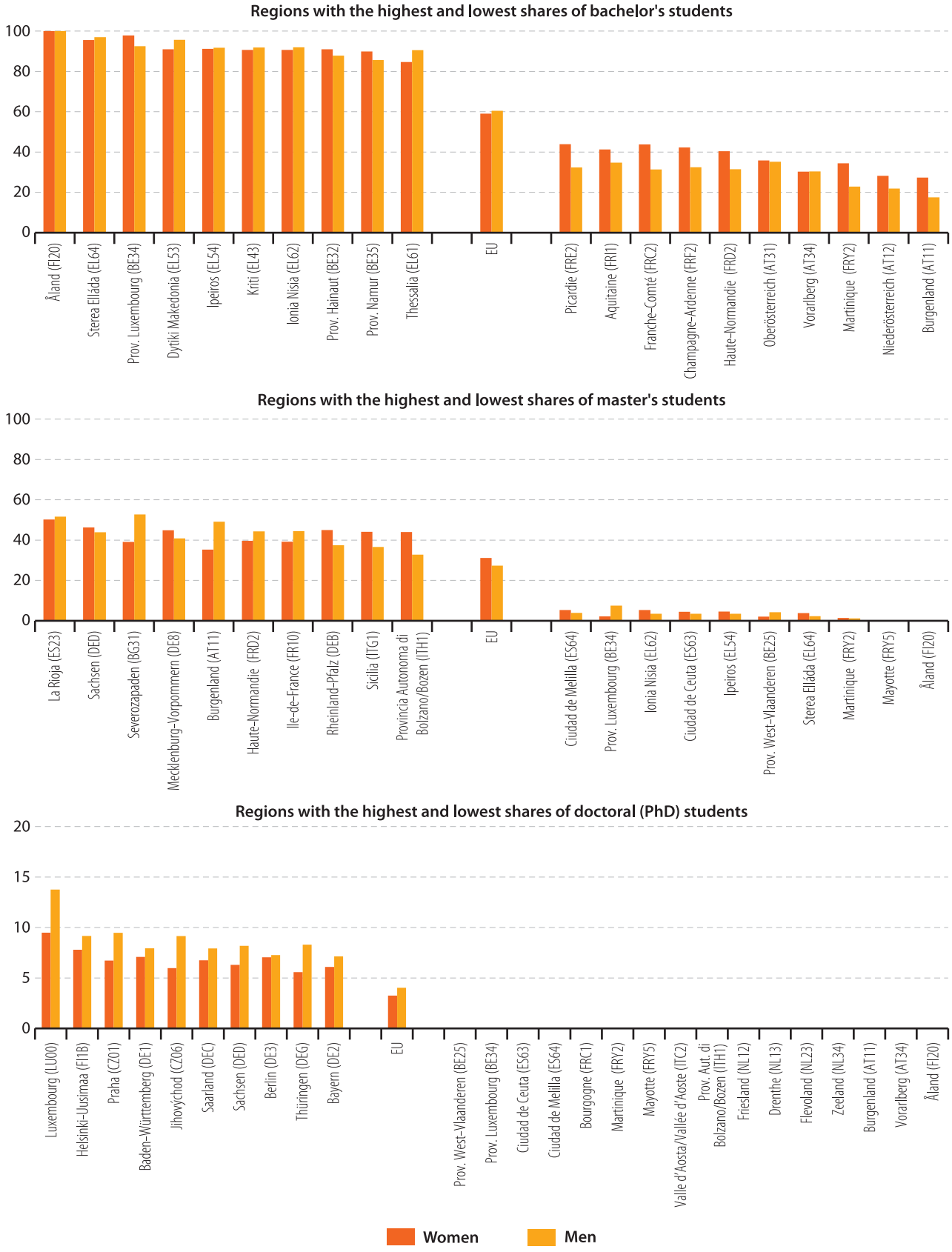
There were more women (than men) studying for bachelor's and master's degrees

In 2020, there were 10.7 million students across the EU enrolled in bachelor's programmes. This figure was slightly more than twice as high as the count of students enrolled in master's programmes (5.3 million), while there were 0.7 million students enrolled in doctoral (PhD) programmes. As noted above, women accounted for a majority of the students enrolled within tertiary education: this gender gap was particularly apparent among students studying for a master's degree (57.2 % were women) and somewhat smaller among those studying for a bachelor's degree (53.4 % were women). By contrast, a small majority (51.3 %) of the students studying for a doctoral degree were men.

Unsurprisingly, the highest numbers of tertiary students were recorded in some of the EU's principal urban regions. In 2020, there were 724 000 tertiary students enrolled in Ile-de-France (the French capital region), 418 000 in Comunidad de Madrid (the Spanish capital region) and 396 000 in Cataluña (also in Spain). The only other NUTS level 2 regions in the EU with more than 300 000 tertiary students were Andalucía in Spain, Lombardia and Lazio (the Italian capital region) in Italy, and Rhône-Alpes in France; note that statistics presented for Germany relate to NUTS level 1 regions, while national data are presented for Croatia. Nordrhein-Westfalen (830 000) had the highest number of tertiary students in Germany, while Bayern and Baden-Württemberg also recorded more than 300 000 tertiary students.

Figure 3.2 provides information for those EU regions with the highest and lowest shares of tertiary students enrolled to study for a bachelor's, master's or doctoral degree. Note that each national education system has its own specific characteristics, with an education offer that is focused on particular fields or levels of education. This may explain, at least to some degree, why there were 16 regions across the EU where there were no tertiary students enrolled to study for a doctoral degree in 2020, whereas 13.8 % of male tertiary students and 9.5 % of female tertiary students in Luxembourg were enrolled to study for a doctoral degree (2019 data; the highest shares in the EU). Several (other) capital regions – those of Finland, Czechia and Germany (NUTS level 1) – also recorded a relatively large share of tertiary students enrolled at the highest level of education.

Figure 3.2: Students enrolled in tertiary education, 2020
(% of all tertiary students, selected NUTS 2 regions)



Note: the difference in the scales used for the y-axes. Ranking based on total shares for all students (women and men). Germany: NUTS level 1. Croatia: national data. Estonia, Cyprus, Latvia, Luxembourg and Malta: 2019.

Source: Eurostat (online data codes: educ_uoe_enrt06 and educ_uoe_enra01)

Educational attainment

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

PEOPLE WITH AT LEAST AN UPPER SECONDARY LEVEL OF EDUCATIONAL ATTAINMENT

For educational attainment, the principal target set by the strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021–2030) is to ensure that the share of early leavers (aged 18–24 years) across the EU with no more than a lower secondary education and no longer in education or training should be less than 9 % by 2030. This target is supplemented by the analysis of a complementary indicator – detailed here – namely, the share of people aged 20–24 years with at least an upper secondary (or intermediate) level of educational attainment; here a target of at least 90 % has been set for 2030. Note that statistics on educational attainment pertain to the highest level of attainment reached at the moment of the survey interview and that some people in the target age range might still be in the process of studying. Equally, people may leave the region where they completed a particular level of education in order to find work or continue their studies, moving to regions offering a wider range of labour market and educational opportunities.

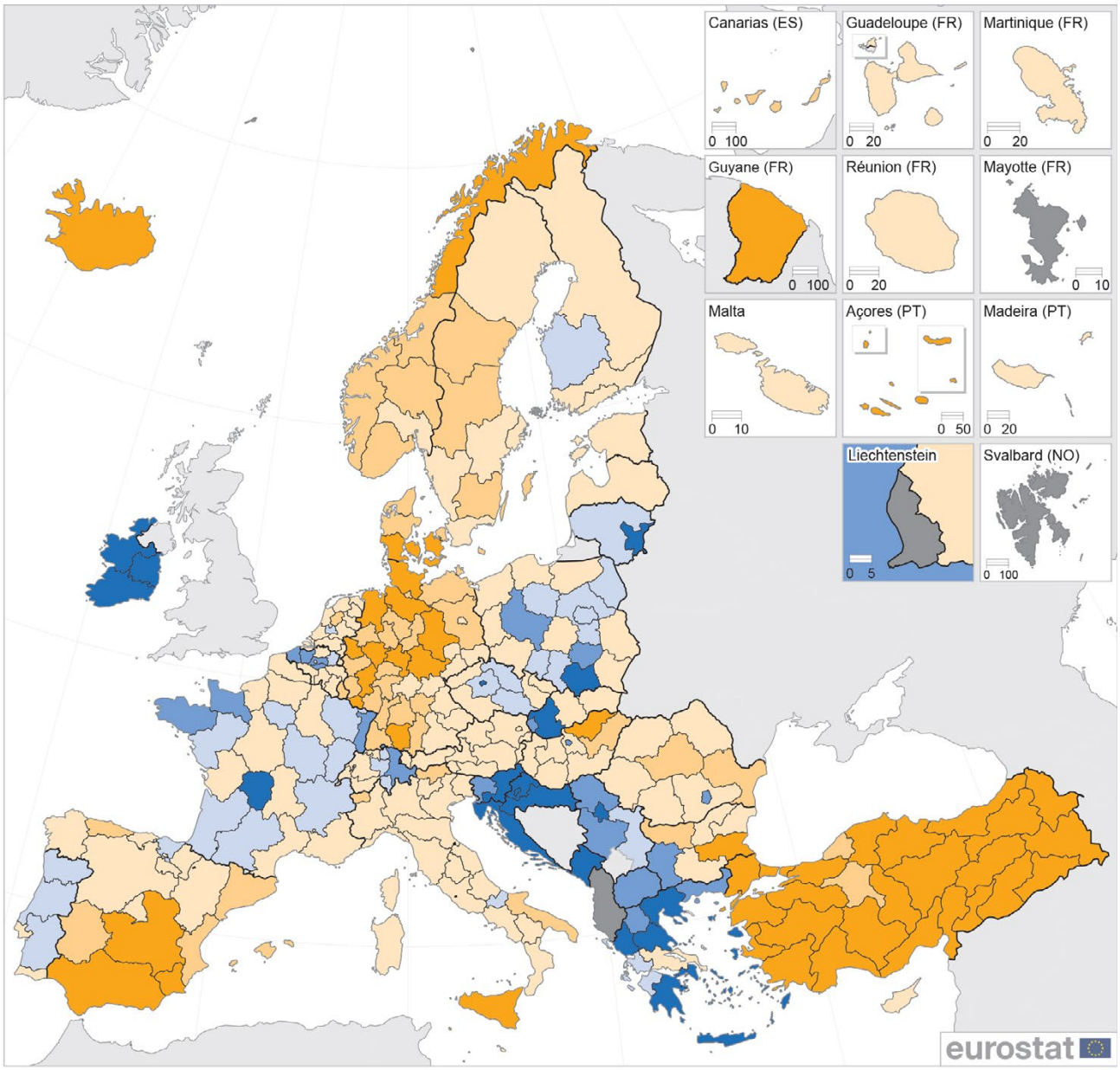
The last couple of decades have seen an expansion in the number of students graduating in intermediate (at most upper secondary or non-tertiary post-secondary) and higher (tertiary) levels of education. The share of the EU population aged 20–24 years with at least an intermediate level of educational attainment increased between 2002 and 2021 from 76.8 % to 84.6 %.

The share of young people with at least an intermediate level of education peaked at 99.8 % in the Greek region of Ipeiros

Map 3.4 shows the proportion of young people with at least an intermediate level of education in 2021. Among the 240 NUTS level 2 regions for which data are available (2020 data for Trier in Germany; no information for Mayotte in France or Åland in Finland), there were 21 regions where this measure of educational attainment was at least 95.0 % (as shown by the darkest shade of blue). These regions with very high shares of young people having attained at least an intermediate level of education were concentrated across Ireland (all three regions), Greece (8 out of 13 regions) and Croatia (all four regions). The remaining regions with very high shares included the capital regions of Czechia and Lithuania, as well as single regions from each of France, Poland, Slovenia and Slovakia. The north-western Greek region of Ipeiros had the highest share of young people aged 20–24 years having attained at least an intermediate level of educational attainment, at 99.8 %. The second and third highest shares were also recorded in Greek regions: Thessalia (99.5 %) and Notio Aigaio (98.3 %).

At the other end of the spectrum, there were 23 regions in the EU where less than three quarters of all young people aged 20–24 years had attained at least an intermediate educational attainment in 2021 (as shown by the darkest shade of yellow in Map 3.4). These regions were primarily located across north-western regions of Germany, southern Denmark and southern Spain. However, there were also very low levels of intermediate educational attainment in Yugoiztochen (Bulgaria), Észak-Magyarország (Hungary), Sicilia (Italy), as well as two outermost regions of the EU – Região Autónoma dos Açores (Portugal) and Guyane (France); the last of these recorded the lowest share in the EU, at 63.2 %.

Map 3.4: People with at least an upper secondary education qualification, 2021
(% of people aged 20–24, by NUTS 2 regions)



Note: the EU has a policy target in this area, namely to reach a share of at least 90 % by 2030 (regions already having attained this target are shaded in blue).
Trier (DEB2), Montenegro, North Macedonia and Turkey: 2020.

Source: Eurostat (online data code: edat_lfse_04)

PEOPLE WITH A TERTIARY LEVEL OF EDUCATIONAL ATTAINMENT

One of the seven EU policy targets within the strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021–2030) concerns tertiary educational attainment. The EU seeks to ensure that, by 2030, the share of people aged 25–34 years with tertiary educational attainment should be at least 45.0 %.

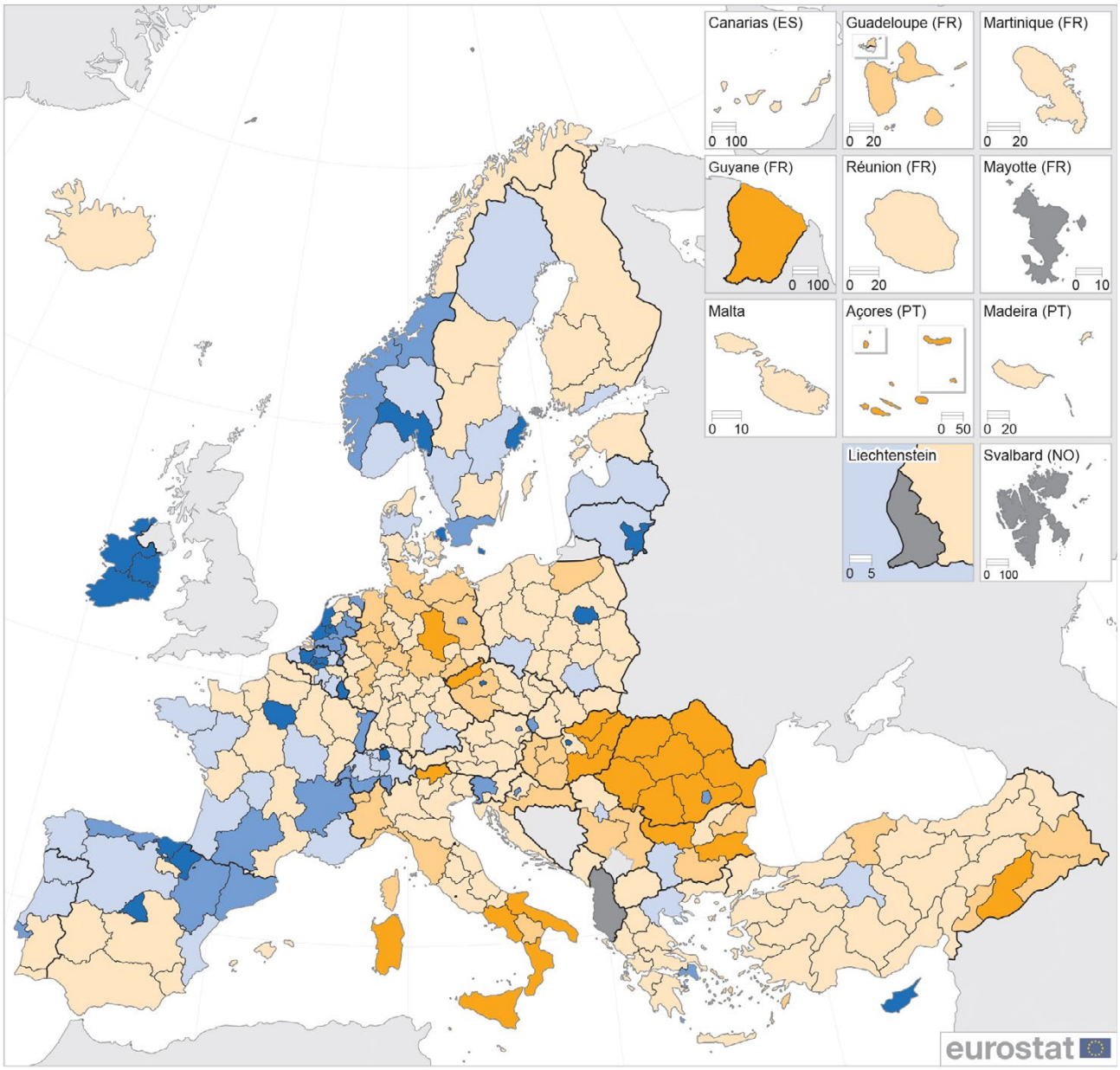
Approximately one quarter of all EU regions have reached the policy goal for tertiary educational attainment

In 2021, just over two fifths (41.2 %) of the EU population aged 25–34 years had a tertiary level of educational attainment; note that some people within this age group might still be studying. Of the 240 NUTS level 2 regions for which data are available (2019 data for Trier in Germany; 2020 data for Corse in France; no information for Mayotte in France or Åland in Finland), there were 72 regions that had already reached or surpassed the EU policy target of 45.0 % (as shown by the blue shades in Map 3.5). By contrast, the share of people aged 25–34 years with a tertiary level of education attainment was less than the 45.0 % target in more than two thirds of all EU regions (as shown by the yellow shades).

At the top end of the distribution, there were 22 regions in the EU where at least 55.0 % of young people aged 25–34 years had a tertiary level of educational attainment in 2021. They included the capital regions of Lithuania, France, Poland, Ireland, Luxembourg, Denmark, Hungary, the Netherlands, Sweden, Czechia, Cyprus, Spain and Belgium. Relatively high shares of tertiary educational attainment were also recorded in several regions specialised in research and innovation activities and/or high-technology manufacturing, for example, Utrecht in the Netherlands, País Vasco in northern Spain, Southern in Ireland and Prov. Brabant Wallon in Belgium. Regions such as these – together with capital regions – would appear to act as a magnet for highly-qualified people, exerting considerable 'pull effects' through the varied educational, employment and social/lifestyle opportunities that they offer.

At the bottom end of the distribution, there were 22 regions in the EU where less than a quarter of all people aged 25–34 years had a tertiary level of educational attainment in 2021 (as shown by the darkest shade of yellow). These regions were principally concentrated in eastern EU Member States, as well as several predominantly southern regions of Italy, but also included the outermost regions of Guyane (France) and Região Autónoma dos Açores (Portugal) among others. Many were characterised as rural regions that had a relatively large agricultural sector, with a low level of supply of highly-skilled employment opportunities. Others were characterised by their relatively high specialisation in vocational educational programmes, with students moving into the labour market through apprenticeships and training schemes rather than as a result of obtaining academic qualifications. The lowest regional levels of tertiary educational attainment among people aged 25–34 years were recorded in three Romanian regions: Centru (17.5 %), Sud-Est (15.9 %) and Sud-Muntenia (15.3 %).

Map 3.5: Tertiary educational attainment, 2021
(% of people aged 25–34, by NUTS 2 regions)



Note: the EU has a policy target in this area, namely to reach a share of at least 45 % by 2030 (regions already having attained this target are shaded in blue).
Corse (FRM0), Montenegro, North Macedonia and Turkey: 2020. Trier (DEB2): 2019.

Source: Eurostat (online data code: edat_lfse_04)

Transition from education to work

The final section of this chapter provides information on the situation of young people as they aim to transition from education into work. When students complete their studies there may be a number of barriers that restrict their progression into the labour market, for example: a lack of relevant work experience; a lack of skills; or an overall lack of jobs during periods of economic shock (for example, during the COVID-19 crisis).

EMPLOYMENT RATE OF RECENT GRADUATES FROM VOCATIONAL PROGRAMMES

A *Council Recommendation of 24 November 2020 on vocational education and training (VET) for sustainable competitiveness, social fairness and resilience* (2020/C 417/01) set an EU benchmark for recent graduates from vocational programmes. The target – defined in relation to people aged 20–34 years having graduated 1–3 years earlier with an upper secondary or post-secondary non-tertiary vocational education – is for the employment rate of this subpopulation to be at least 82.0 % by 2025.

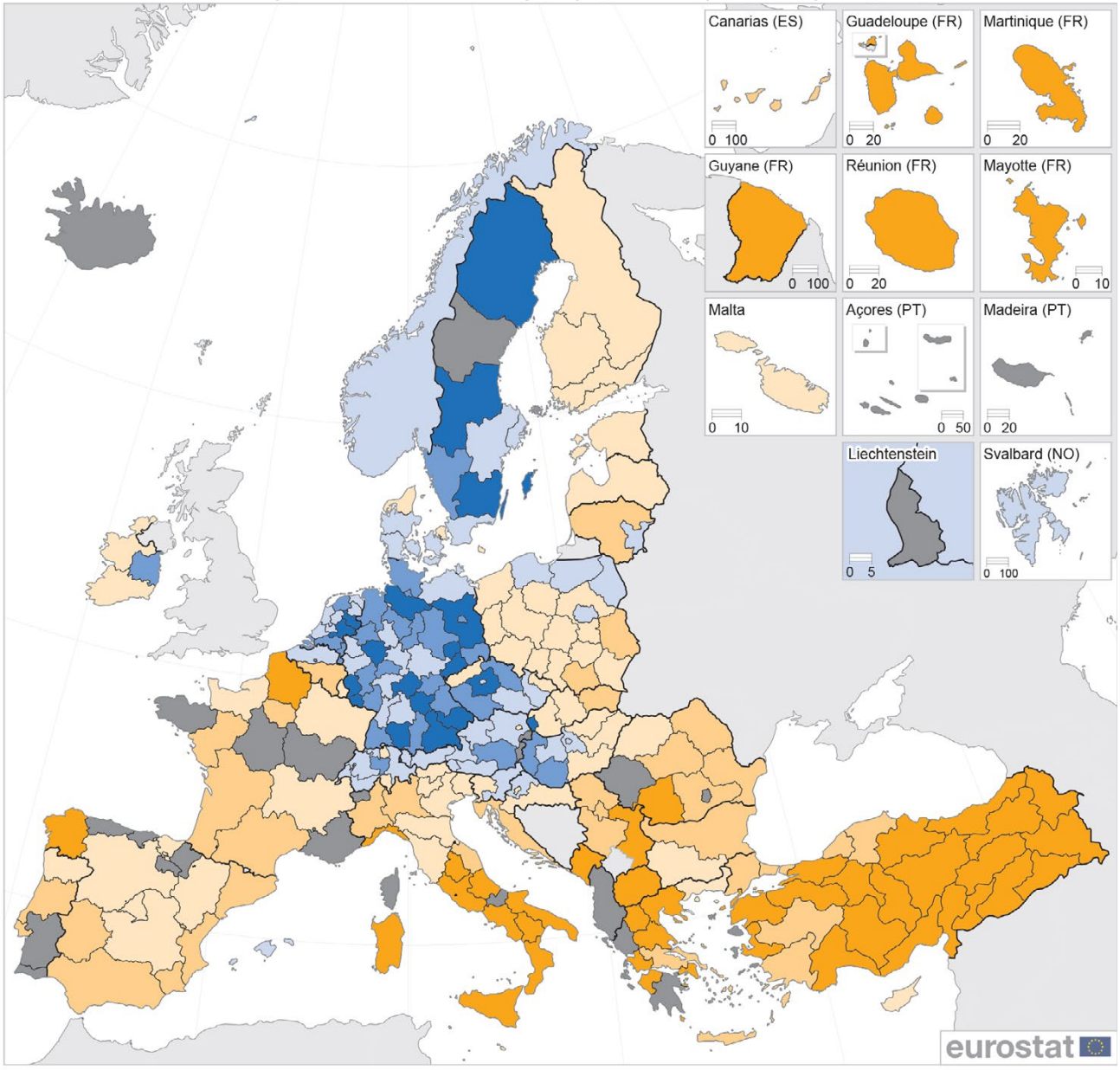
Between 2015 and 2019, the EU employment rate for recent graduates from vocational education programmes in upper secondary or post-secondary non-tertiary education (as covered by ISCED levels 3 and 4) increased from 72.3 % to 79.1 %. However, the employment rate for this subpopulation fell 3.4 percentage points in 2020 as the COVID-19 crisis likely impacted on the number of (new) job opportunities that were open to young people; there was a modest recovery in 2021, as the employment rate for this subpopulation rose to 76.4 %. As such, the EU employment rate for recent vocational graduates was 5.6 percentage points below the EU target of at least 82.0 % for 2025.

Map 3.6 shows that the employment rate of recent vocational graduates in 2021 was already at or above the target in every region of Germany, the Netherlands and Sweden, as well as in all but one of the regions in Austria (the exception being the capital region of Wien) for which data are available, and all but two of the regions in Czechia and Denmark; these regions with shares of 82.0 % or higher are shown by the blue shades in Map 3.6. Employment rates for this subpopulation were particularly high in a cluster of regions in Germany and Sweden, as well as in the Slovak capital city region (Bratislavský kraj), Střední Čechy in Czechia, and Overijssel and Gelderland in the Netherlands.

Among the 190 NUTS level 2 regions for which data are available in 2021 (note that statistics presented for Belgium, Bulgaria and France relate to NUTS level 1 regions, while mixed reference periods are used ranging from 2019 to 2021), there were five regions where all recent vocational graduates successfully found work: Střední Čechy, Trier in Germany (2019 data), Bratislavský kraj, and Norra Mellansverige and Övre Norrland (also 2019 data) in Sweden.

The lowest employment rates for recent vocational graduates were generally recorded in southern regions of the EU. In 2021, there were 19 regions where less than 57.5 % of all recent vocational graduates had found work and these were located in Italy (10 regions, predominantly in the south), Greece (five regions; three of which were for earlier reference periods), France (two NUTS level 1 regions), as well as Galicia in Spain and Sud-Vest Oltenia in Romania. The lowest regional employment rates of recent graduates from vocational programmes were recorded in three Italian regions: Calabria (33.8 %), Campania (31.8 %) and Sicilia (27.1 %)

Map 3.6: Employment rate of recent graduates from vocational programmes, 2021
(% of graduates aged 20–34 with an upper secondary or post-secondary non-tertiary level of vocational educational attainment having left education and training 1–3 years earlier, by NUTS 2 regions)



Note: as covered by ISCED levels 3 and 4. The EU has a policy target in this area, namely to reach a share of at least 82 % by 2025 (regions already having attained this target are shaded in blue). Belgium, Bulgaria and France: NUTS level 1. Norway: national level. Norway, Switzerland, Montenegro, North Macedonia and Turkey: 2020. Includes earlier reference years for several other regions (too many to document).

Source: Eurostat (online data code: edat_lfse_33)

EARLY LEAVERS FROM EDUCATION AND TRAINING

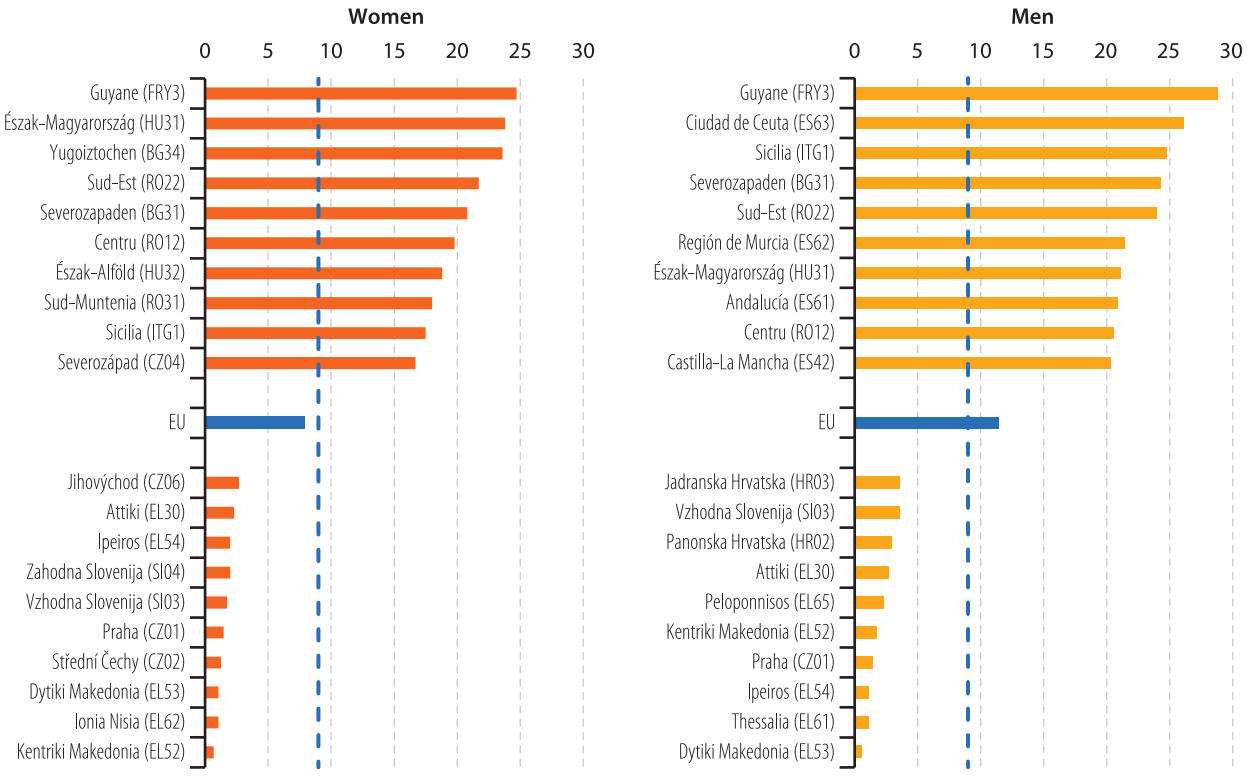
Within the EU, education policy seeks to ensure that all people in the EU (irrespective of age) have the skills, knowledge and capabilities to develop their careers. The transition from education into work may prove particularly difficult for people with low levels of literacy and numeracy, those who leave education at an early age, and people coming from disadvantaged backgrounds. One particular area of concern is the proportion of early leavers from education and training. These are individuals aged 18–24 years who have at most a lower secondary level of educational attainment (ISCED levels 0–2) and who were not engaged in any further education and training (during the four weeks preceding the EU labour force survey). This indicator forms one of the seven key targets outlined in the strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021–2030); the EU has set a goal to reduce the proportion of early leavers to less than 9.0 % by 2030.

Over the last two decades, the share of early leavers from education and training gradually declined across the EU. From a peak of 16.9 % in 2002 (the start of the time series), this share fell each and every year through to 2017. Having remained unchanged in 2018, there were further falls in the following three years. By 2021, the share of young people who had at most a lower secondary level of educational attainment and who were not engaged in any further education and training was 9.7 %; this was only 0.7 percentage points higher than the target set for 2030. With relatively few job opportunities available for young people during the COVID-19 crisis, it is possible that some young people deferred their entry into the labour market and sought instead education and training opportunities at the height of the pandemic.

The share of early leavers from education and training in the EU was higher among young men (11.4 %) than among young women (7.9 %)

There is both a spatial and a gender dimension to the issue of early leavers from education and training. The proportion of early leavers tends to be higher in rural and sparsely-populated regions of the EU, as well as in regions characterised as former industrial heartlands. Among other reasons, this pattern may be a reflection of lower life chances and weak local labour markets (which may act as a 'push factor' to drive away more talented students). For the gender dimension, a higher

Figure 3.3: Early leavers from education and training, 2021
(% of people aged 18–24, selected NUTS 2 regions)



Note: the figure shows the regions with the highest and lowest shares for each sex. The dotted blue line shows the EU policy target for 2030 (<9 % of early leavers). Based on available data, some regions are not available (too many to document). Includes earlier reference years for some regions (too many to document).

Source: Eurostat (online data code: edat_lfse_16)

proportion of young men (compared with young women) tend to be early leavers. Within the EU, the share of early leavers from education and training in 2021 was 11.4 % among young men, which was 3.5 percentage points higher than the corresponding share among young women (7.9 %). This pattern was repeated in the vast majority of EU Member States as – at a national level – only Bulgaria and Romania recorded lower rates of early leavers for young men. The largest gender gaps were recorded in Belgium, Estonia, Cyprus and particularly Spain (7.0 percentage points in favour of young women).

In 2021, the proportion of early leavers from education and training was already less than 9.0 % in more than half of EU regions: 118 out of 228 NUTS level 2 regions for which data are available (note the latest information available is for mixed reference periods covering various years from 2019 to 2021). Some of the lowest shares of early leavers were concentrated in eastern and southern regions of the EU, in particular across parts of Czechia, Greece, Croatia and Slovenia. There were three regions where the overall (young men and young women combined) share of early leavers from education and training was less than 1.0 %: Praha (the capital region of Czechia), Dytiki Makedonia and Thessalia (both in Greece; 2020 data).

In 2021, the highest regional shares of early leavers from education and training were principally concentrated in southern Spain and southern Italy, eastern Hungary and much of Bulgaria and Romania, as well as sparsely-populated, island and/or peripheral regions of the EU. Concerning island and/or peripheral regions, it is likely that a disproportionately high share of students have to leave home if they wish to follow a particular course or programme, leaving behind a higher concentration of early leavers. Região Autónoma dos Açores in Portugal (23.2 %), Guyane in France (23.3 %) and Ciudad de Ceuta in Spain (25.5 %; 2020 data) had the highest overall shares of early leavers from education and training.

Figure 3.3 presents information on the highest and lowest shares of early leavers from education and training by sex. It confirms that the share of early leavers was generally higher among young men than among young women. Some of the highest rates among young men were concentrated in Spanish regions and several eastern regions of the EU, while the highest rates among young women were also generally recorded in eastern regions of the EU.

At the other end of the distribution, the lowest shares of early leavers among young women – less than 2.0 % – were recorded in Vzhodna Slovenija in Slovenia, Praha and Střední Čechy in Czechia, and three regions in Greece – Dytiki Makedonia, Ionia Nisia and Kentriki Makedonia. There were five regions where the share of early leavers among young men was less than 2.0 %: Praha in Czechia and four regions in Greece.

4. Labour market

The COVID-19 crisis had a considerable impact on all European Union (EU) labour markets. With the exception of key workers, there was generally an increase in the number of people usually working from home. Other members of the labour force were impacted in different ways: some were placed on furlough schemes ([1]), others were made unemployed and some self-employed lost their income.

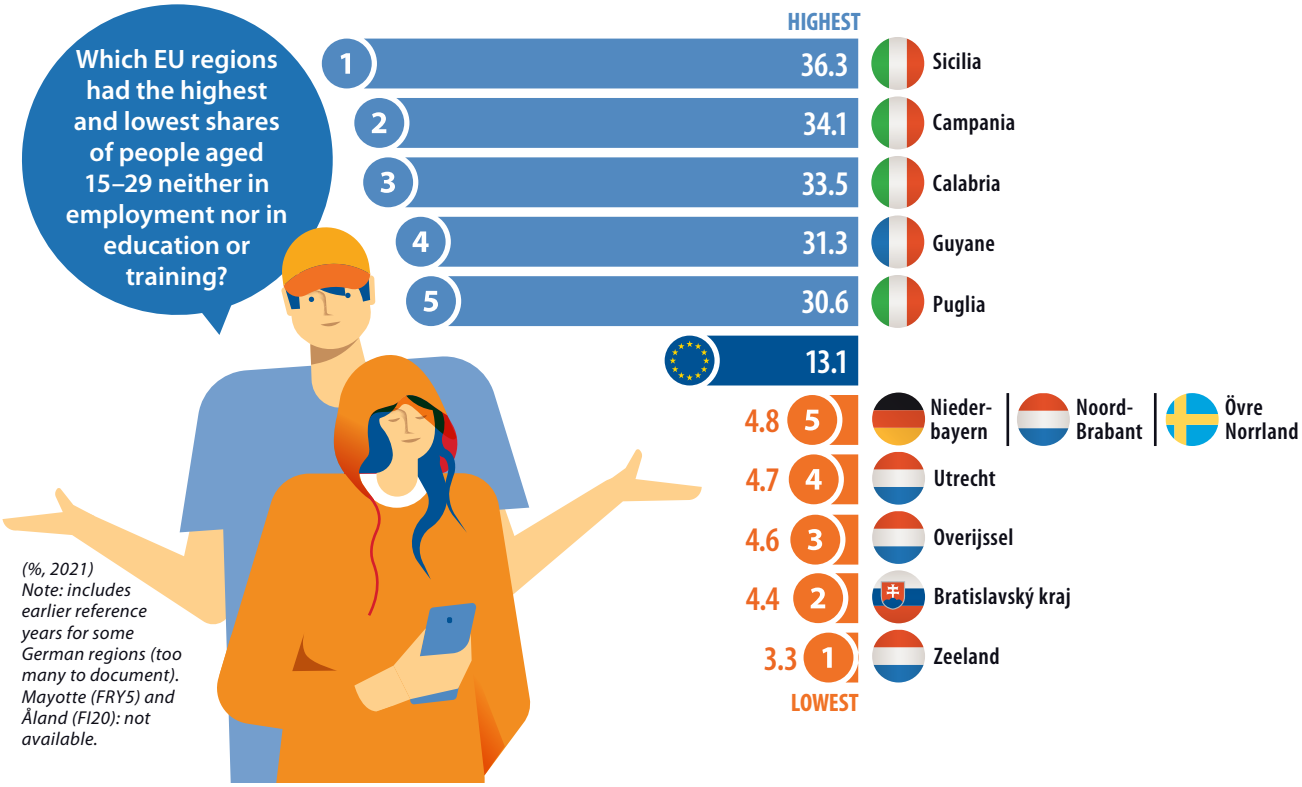
Like the lockdown measures themselves, the impact of the measures varied considerably between and within EU Member States. This reflected not only the specific restrictions that were imposed, but also local economic structures and labour market conditions. The crisis impacted particular groups within the labour market, for example, young people, temporary employees, those in precarious employment, or those working in leisure, hospitality and transport-related activities.

The asymmetric impact of the COVID-19 crisis was driven, at least in part, by the level of social contact and the feasibility of making use of technology at work. It is likely that the crisis has accelerated some labour market transformations while introducing new ones: job losses have come from many activities, including some activities in long-term decline, as well as leisure and hospitality-related activities and/or among workers with precarious employment contracts. The crisis also accelerated the introduction of digital technologies and a move towards more widespread use of flexible working arrangements.

On 4 March 2021, the European Commission set out its ambition for a stronger social EU to focus on jobs and skills, paving the way for a fair, inclusive and resilient socioeconomic recovery from the COVID-19 crisis. The *European Pillar of Social Rights Action Plan* (COM(2021) 102 final) outlines a set of specific actions and headline targets for employment, skills and social protection in the EU. It includes a benchmark for the employment rate, namely that – by 2030 – at least 78 % of people aged 20–64 years should be in employment.

Towards the end of 2021, the European Commission President Ursula von der Leyen announced that 2022 would be the European Year of Youth. This programme provides young people with an opportunity to build a better future that is greener, more inclusive and digital. It is designed to:

([1]) Also known by other names, such as temporary lay-off or technical unemployment. In a furlough scheme, for a fixed or open-ended period of time employees were not required to work but were not made unemployed. Depending on the details of specific schemes: the workers received full, reduced or no pay; the employers received full, partial or no financial support from public authorities. Furlough schemes helped employers to retain employees during economically difficult times, with the intention of the employees returning to work for the same employer at the end of the scheme.



(%, 2021)
Note: includes earlier reference years for some German regions (too many to document). Mayotte (FRY5) and Åland (FI20): not available.

Source: Eurostat (online data code: edat_lfse_22)

- encourage young people, especially those with fewer opportunities, from disadvantaged backgrounds, from rural or remote areas, or belonging to vulnerable groups, to become actors for positive change;
- promote opportunities provided by EU policies for young people to support their personal, social and professional development;
- draw inspiration from the actions, vision and insights of young people to further strengthen common EU projects.

This chapter analyses EU labour markets and is split into four main sections, covering:

- youths (defined here as people aged 15–29 years);
- COVID-19 impacts, including changes in the proportion of people usually working from home;
- regional employment, including information on employment rates and the number of hours worked;
- regional unemployment rates, including information on labour market slack and long-term unemployment ratios.

In 2021, the population of the EU aged 15–74 years numbered 331.8 million persons. The labour force was composed of 212.5 million people within this age range, while 119.2 million people in this age range were considered to be outside the labour force, in other words economically inactive. This latter cohort is largely composed of school-age children, students, pensioners, people caring for other family members, as well as volunteers and those unable to work because of long-term sickness or disability. The EU labour force aged 15–74 years was composed of 197.6 million employed persons and 15.0 million people who were not working but were actively seeking and available for work, in other words unemployed persons.

Focus on youths

During the initial stages of the COVID-19 crisis, many young people found their education disrupted with classes moving online. Others had to search for or try to retain a job in a struggling economy, with sectors traditionally employing a high number of young people – such as those related to leisure and hospitality – in lockdown and/or facing other restrictions. Some young people were physically isolated from friends and family, while others returned to or stayed in their family home. As well as their own direct experiences of the crisis, they also experienced its impact on (other) family members.

The crisis brought about by the COVID-19 pandemic and the need to help young people who were affected by it, led in October 2020 to a *Council Recommendation on A Bridge to Jobs – Reinforcing the Youth Guarantee and replacing the Council Recommendation of 22 April 2013 on establishing a Youth Guarantee 2020/C 372/01*. The reinforced Youth Guarantee is a commitment by all EU Member States to ensure that every person under the age of 30 receives a good quality offer of employment, continued education, an apprenticeship, or a traineeship, within a period of four months of becoming unemployed or leaving education. It is backed up by significant EU financing, through the NextGenerationEU temporary instrument that forms part of the recovery plan for Europe, as well as the long-term EU budget.

In 2021, the EU's NEET rate for youths was 13.1 %

The share of youths (aged 15–29 years) in the EU who were neither in employment nor in education and training (NEET rate) stood at 12.6 % in 2019. This rate provides a useful measure for studying the vulnerability of young people in terms of their labour market and social exclusion. The NEET rate is closely linked to economic performance and the business cycle. With the onset of the COVID-19 crisis, the NEET rate increased 1.2 percentage points to 13.8 % in 2020, but subsequently fell in 2021 to 13.1 %.

The infographic at the start of this chapter shows those regions with the highest and lowest shares of youths who were neither in employment nor in education and training in 2021. There were seven regions in the EU where less than 1 in 20 youths were neither in employment nor in education and training; four of these were in the Netherlands, including Zeeland that had the lowest NEET rate for youths (3.3 %) across NUTS level 2 regions. At the other end of the range, there were five regions in the EU where more than 30.0 % of all youths were neither in employment nor in education and training; four of these were in southern Italy, including Sicilia that had the highest NEET rate in the EU, at 36.3 %.

In recent years, several EU Member States have enacted new employment laws with the goal of liberalising labour markets, for example, by providing a wider range of possibilities for hiring staff through temporary, fixed-term or zero hours contracts. In some cases this has resulted in a division between permanent, full-time employees and those with more precarious employment contracts. The latter are often young people and/or people with relatively low levels of educational attainment. This may explain, at least to some degree, why young people in the labour market generally fare worse during economic downturns such as the global financial and economic crisis or the COVID-19 crisis. During a downturn, employers are also less likely to recruit new workers (young people coming into the labour market) or to replace older workers who retire.

The EU's youth unemployment rate was 13.0 %

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

The youth (defined here as people aged 15–29 years) unemployment rate in the EU fell from a peak of 19.8 % in 2013 to 11.9 % by 2019, before rising to 13.3 % in 2020 and then falling slightly to 13.0 % in 2021. The COVID-19 crisis and its associated measures disproportionately impacted on young people in unemployment terms: the youth unemployment rate rose 1.4 percentage points in 2020, while the overall unemployment rate increased 0.4 points.

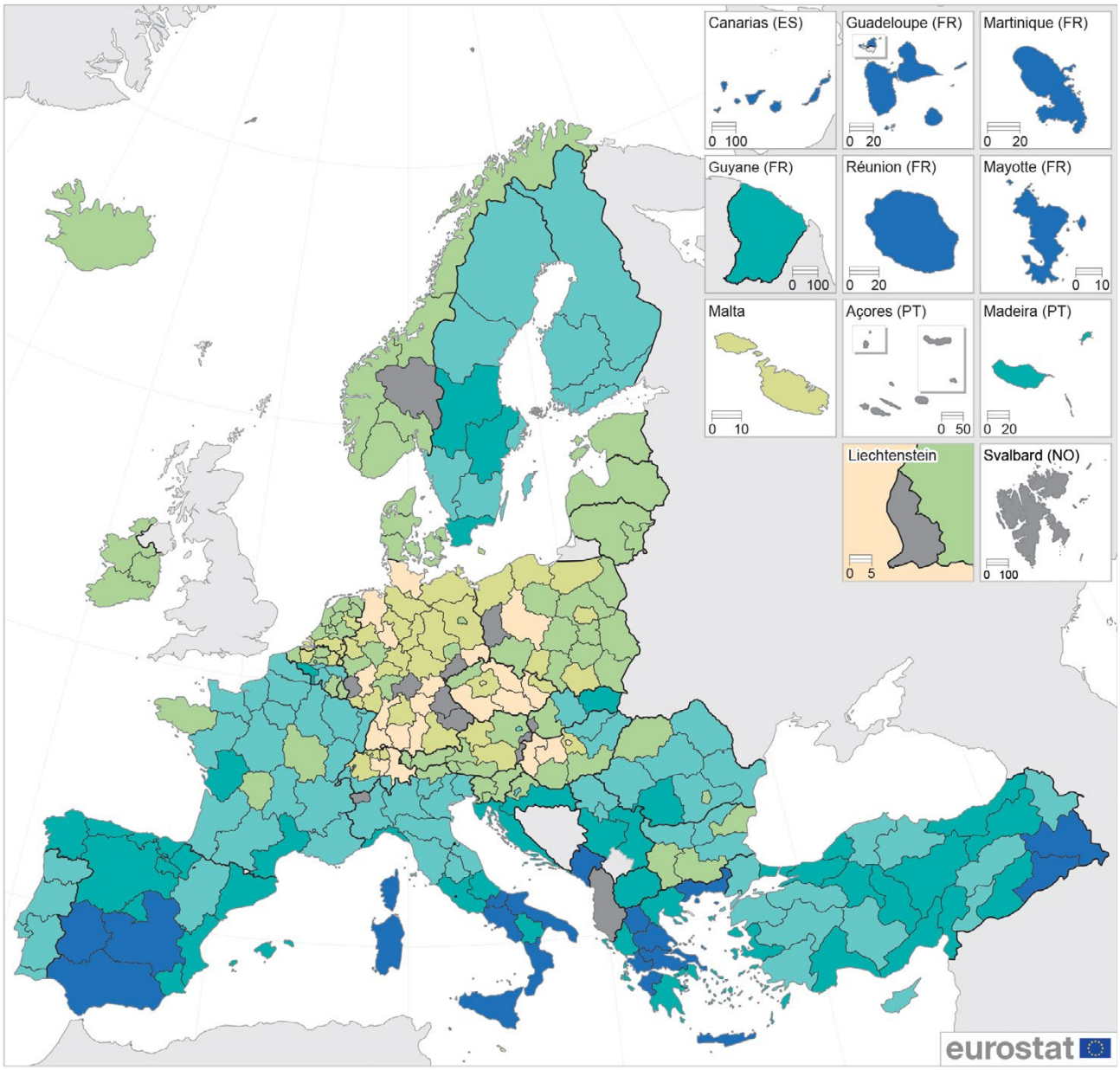
Note that the youth unemployment rate is based on the same principles as the definition for the overall unemployment rate, in that it is calculated as a share of the labour force. As such, when the youth unemployment rate is 13.0 %, this does not mean that 13.0 % of all youths are unemployed. Rather, 13.0 % of youths who are in the labour force are unemployed (and the remaining 87.0 % are employed), while youths outside the labour market (for example studying) are neither in the numerator nor the denominator used to calculate this ratio.

In 2021, relatively low youth unemployment rates were concentrated in a group of regions that covered an area running through much of Germany (data often refer to 2019) and Czechia, as well as several regions in Poland, Hungary and the Netherlands. Map 4.1 shows there were 19 regions overall where the latest youth unemployment rate was less than 5.0 % (as shown by the lightest shade of yellow). Excluding those regions from Germany (where data refer to 2019), the lowest youth unemployment rates were recorded in eastern regions of the EU: four regions in Czechia – including Jihozápad, that had the lowest rate among NUTS level 2 regions, at 3.7 % – three regions in Hungary (including the capital region of Budapest), and Wielkopolskie in Poland.

High youth unemployment rates were concentrated in southern Europe. There were 23 regions where 30.0 % or more of the labour force aged 15–29 years was unemployed (as shown by the darkest shade of blue). This group included six regions from each of Greece, Spain and Italy, as well as Corse and four outermost regions of France (note the latest data available for Corse and Mayotte refer to 2020). At the top end of the range, there were six, largely peripheral or remote regions where the youth unemployment rate was higher than 40.0 %: Ciudades Autónomas de Ceuta y Melilla (two regions in Spain), Anatoliki Makedonia, Thraki and Dytiki Makedonia (two regions in Greece), Mayotte in France, and Sicilia in Italy.

The EU's youth unemployment rate (13.0 %) was almost twice as high as the overall unemployment rate (7.0 %) in 2021. To give some idea of the disproportionate incidence of unemployment among people aged 15–29 years, the youth unemployment rate in 2021 was consistently higher than the overall unemployment rate (for people aged 15–74 years) in each of the 192 NUTS level 2 regions for which data are available. In close to half (46.4 %) of these 192 regions, the youth unemployment rate was at least twice as high as the overall unemployment rate. The highest ratio between these two rates was recorded in Vest in Romania, where the youth unemployment rate was 3.5 times as high as the overall unemployment rate, while relatively high ratios (2.8 or 2.9 times as high) were recorded in Basilicata and Molise in southern Italy, and Prov. Vlaams-Brabant in Belgium.

Map 4.1: Youth unemployment rate, 2021
(% of labour force, people aged 15–29, by NUTS 2 regions)



Note: Montenegro, North Macedonia and Turkey, 2020. Includes earlier reference years for some German, French, Polish and Portuguese regions (too many to document).

Source: Eurostat (online data code: lfst_r_lfu3rt)

Focus on COVID-19 impacts

During the COVID-19 crisis, a large proportion of the labour force was faced with changing patterns of work. For health workers, this often meant working longer hours and/or in more challenging circumstances. For others it meant working from home or accepting a temporary lay-off, in other words reducing (partly or completely) their working time for technical or economic reasons (sometimes supported by government schemes designed to encourage employers to retain their workforce).

The share of employed people working from home grew at its fastest pace in capital regions and other urban regions

In 2019, approximately 1 in 20 (5.5 %) employed people aged 20–64 years in the EU usually worked from home. The impact of the COVID-19 crisis was apparent as this share more than doubled in 2020 – increasing by 6.8 percentage points – to 12.3 %. Although the annual rate of change slowed, there was a further increase in the share of people usually working from home in 2021, as it reached 13.5 %. The regional distribution of working from home was somewhat skewed, insofar as there were 95 NUTS level 2 regions where this share was above the EU average in 2021, compared with 140 regions that recorded lower than average shares.

In Stockholm – the capital region of Sweden – two out of every five employed people (or 40.5 %) were usually working from home in 2021. This was the highest share across NUTS level 2 regions, with two more capital regions recording the next highest shares: some 39.3 % of employed people were usually working from home in Eastern and Midland in Ireland, while the share was slightly lower in Helsinki-Uusimaa in Finland, at 37.0 %. The other seven regions that featured among those with the highest shares of employed people usually working from home were either capital regions – Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest in Belgium (32.9 %) and Ile-de-France in France (29.2 %) – or predominantly urban regions from Belgium, the Netherlands and Germany.

Working from home was less prevalent across many of the eastern and southern regions of the EU. In 2021 (2020 for some regions), there were 43 regions where less than 5.0 % of employed people were usually working from home. These included all four of the regions in Bulgaria (for which data are available), all but one of the regions in Croatia, Hungary and Romania (the only exceptions being the capital regions of Grad Zagreb, Budapest and Bucureşti-Ilfov), a majority of the regions in Greece, several regions from Poland and Italy, as well as one region each from Czechia, Spain and Slovakia.

The extent of the increase in homeworking reflects, at least to some degree, the economic structure of each region, with greater homeworking opportunities for those employed in professional, financial, information and communication, education and government sectors. By contrast, there were likely to be fewer opportunities for homeworking for people employed in manufacturing or distributive trades.

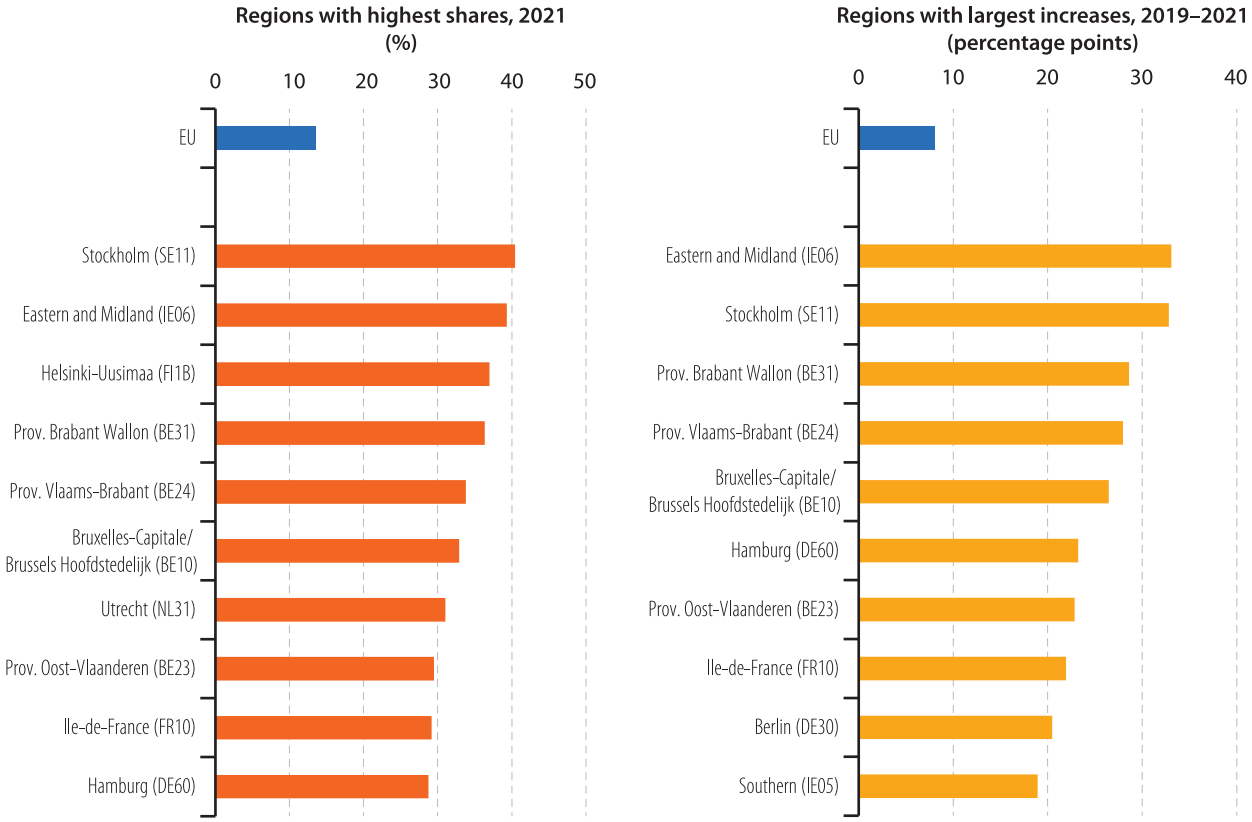
As noted above, the share of employed people in the EU usually working from home rose by 8.0 percentage points between 2019 and 2021. Perhaps the most striking aspect of the right-hand side of Figure 4.1 concerns the rapid increase in the proportion of employed people who were working from home in several capital and urban regions. For example, there were increases of 33.1 and 32.8 percentage points in Eastern and Midland and in Stockholm. In other words, when comparing the situation pre-pandemic with the situation in 2021, the share of employed people usually working from home increased in these two capital regions by an amount that was more than four times as high as the increase for the EU average. In a similar vein, there was a cluster of three neighbouring Belgian regions – Prov. Brabant Wallon, Prov. Vlaams-Brabant and Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (the capital region) – where the share of employed people usually working from home rose by more than three times the EU average during the period under consideration.

By contrast, there were three regions in the EU where the share of employed persons usually working from home fell between 2019 and 2021; in each case, the decline in homeworking was relatively small. Zeeland in the Netherlands recorded a fall of 0.5 percentage points, Podlaskie in Poland a fall of 1.0 points, and Região Autónoma da Madeira in Portugal a fall of 1.4 points.

Hovedstaden – the Danish capital region – was the only region in the EU where more than one third of employed persons had been in their current job for less than 24 months

Historically, it was relatively normal for someone to work throughout their whole career for the same employer. In recent decades, some labour markets in the EU have undergone a considerable transformation and it is now far more common for people to change jobs quite frequently. Job tenure refers to the length of time that an employed person has been in a job. During a recession, or a period of economic shock, it is common for this measure to increase, as short-tenured jobs are lost (those who were hired last tend to be fired first) and relatively few new jobs are created. As the economy recovers, employers start to hire new staff, thereby reducing average tenure (as those that start a new job have, by definition, zero tenure).

Figure 4.1: Employed people usually working from home, 2021
(people aged 20–64, selected NUTS 2 regions)



Note: based on available data, some regions are not available (too many to document). Includes earlier reference years for some regions (too many to document).

Source: Eurostat (Labour force survey)

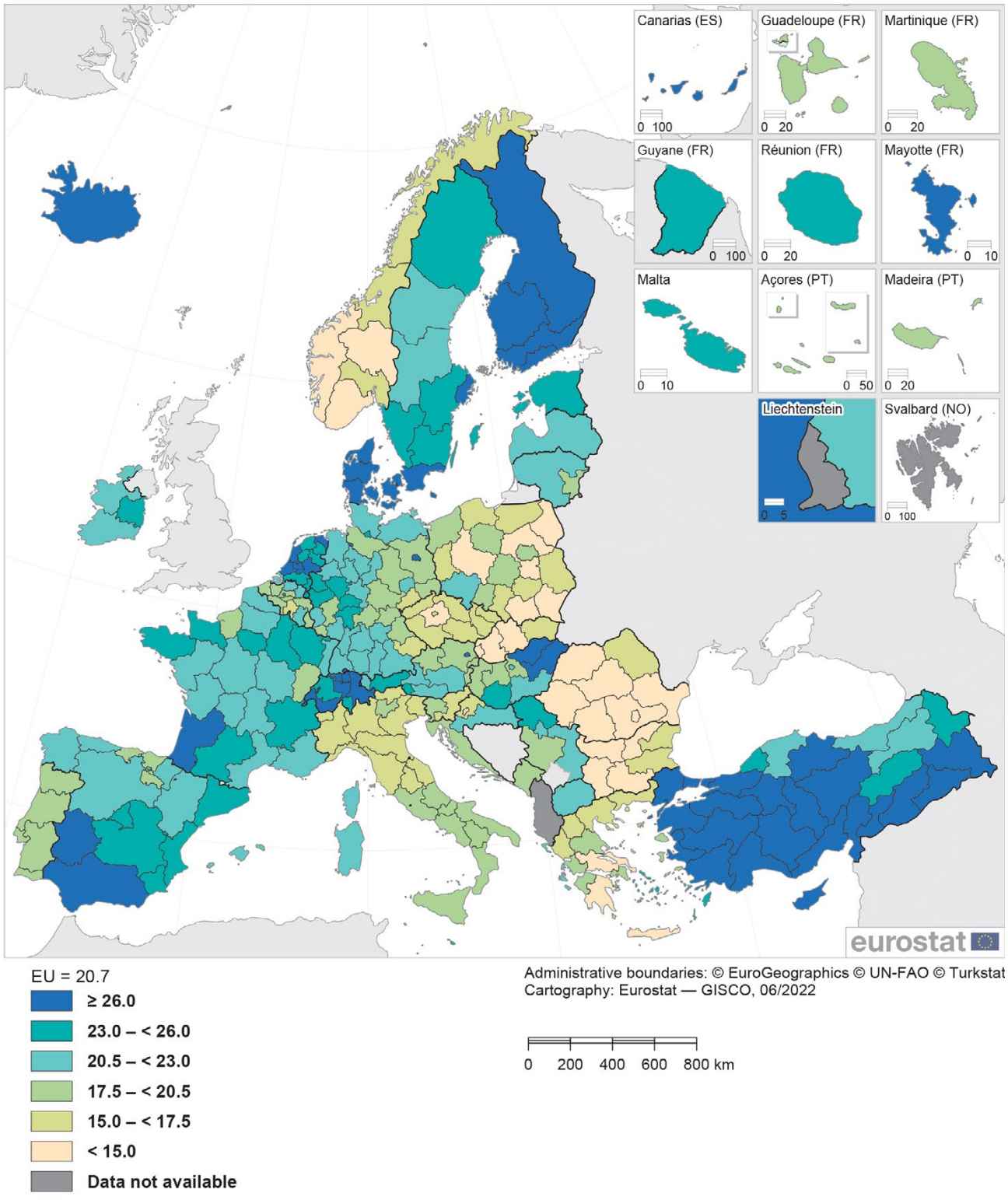
In 2019, the share of employed people (aged 20–64 years) in the EU who had been in their current job for less than 24 months was 22.2 %. Following the onset of the COVID-19 crisis, this proportion fell to 20.7 % in 2020 and it remained at the same level in 2021. This pattern may be explained, at least in part, by employers being more likely to lay-off people with a relatively short tenure (as they have a lower cost of dismissal) and those with precarious employment contracts, rather than dismiss experienced members of staff.

Map 4.2 shows the share of employed people (aged 20–64 years) by employment tenure. In 2021, just over one third (34.1 %) of all employed persons working in Hovedstaden – the Danish capital region – had been employed in their current job for less than 24 months; this was the highest share in the EU among NUTS level 2 regions. There were 28 regions across the EU where the share of employed people who had been in their current job for less than 24 months was at least 26.0 % (as shown by the darkest shade of blue).

These regions were concentrated in northern and western regions of the EU. They included every region of Denmark, all of the regions in Finland (for which data are available) and almost half of the regions in the Netherlands (including the capital region of Noord-Holland). There were four other capital regions where a high share of those employed had been in their current job for less than 24 months: Wien in Austria, Cyprus, Berlin in Germany, and Stockholm in Sweden.

In 2021, there were 24 regions (or approximately 1 in 10 regions across the EU) where the share of employed people who had been in their current job for less than 24 months was less than 15.0 % (as shown by the lightest shade of yellow in Map 4.2). They included six regions that recorded a single-digit share: Yugozapaden in Bulgaria (9.8 %) and five regions in Romania, including the capital region of Bucureşti-Ilfov, each with shares in the range of 8.2–8.9 %. The lowest share of employed people who had been in their current job for less than 24 months was in Sud-Vest Oltenia, at 8.2 %.

Map 4.2: **Share of employed people who have been in their current job for less than 24 months, 2021**
(%, people aged 20–64, by NUTS 2 regions)



Note: Mayotte (FRY5), Montenegro, North Macedonia and Turkey: 2020. Trier (DEB2): 2019.
Source: Eurostat (online data code: lfst_r_egad)

Employment

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

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

As part of its work to put in place a strong social EU that focuses on jobs and skills for the future, the European Commission has made a number of proposals to address the challenges linked to new societal, technological and economic developments, as well as the socioeconomic consequences of the COVID-19 crisis. Alongside initiatives providing support for youth employment and adequate minimum wages, the European Commission has also provided guidance designed to support a job-rich recovery: *Commission Recommendation on an effective active support to employment following the COVID-19 crisis (EASE)* (C(2021) 1372 final). The European Pillar of Social Rights Action Plan proposes three ambitious headline targets for 2030. Among these, the EU has set itself a goal whereby at least 78 % of the population aged 20–64 years should be in employment by 2030.

The EU employment rate was 73.1 % in 2021, above its pre-pandemic level

Prior to the onset of the COVID-19 crisis, the EU's employment rate for the working-age population (20–64 years) had increased for six consecutive years to 72.7 % in 2019; this pattern came to an abrupt end in 2020 as the rate fell by 1.0 percentage points. In 2021, the employment rate recovered all of its losses during the crisis, as it rebounded to 73.1 %, somewhat above its pre-pandemic level.

Map 4.3 presents the employment rate for NUTS level 2 regions: those regions with rates equal to or above 78.0 % are shown in shades of blue. In 2021, almost one third of all regions (77 out of the 242 for which data are available) in the EU had already reached or surpassed this level. These regions were concentrated across much of Czechia, Denmark, Germany, Estonia, Malta, the Netherlands and Sweden.

Looking in more detail, the highest regional employment rate in 2021 was recorded in the island region of Åland (Finland), at 89.1 %. Leaving this atypical region aside, the next highest rates were in the Netherlands and Sweden: Noord-Brabant (84.1 %) and Utrecht (84.0 %), Mellersta Norrland (84.0 %) and Stockholm (83.8 %). There were several other capital regions with relatively high employment rates, including Warszawski stołeczny in Poland (83.7 %), Sostinės regionas in Lithuania (83.6 %), and Bratislavský kraj in Slovakia (83.4 %). Three German regions – Unterfranken, Chemnitz and Niederbayern, together with Zeeland in the Netherlands – had similarly high rates (83.4–83.5 %).

Rural, sparsely-populated or peripheral regions recorded some of the lowest regional employment rates in the EU. This pattern was apparent in Spain and Italy (particularly the southern parts), much of Greece, and the outermost regions of France. Most of these regions were characterised by a lack of intermediate and highly-skilled employment opportunities.

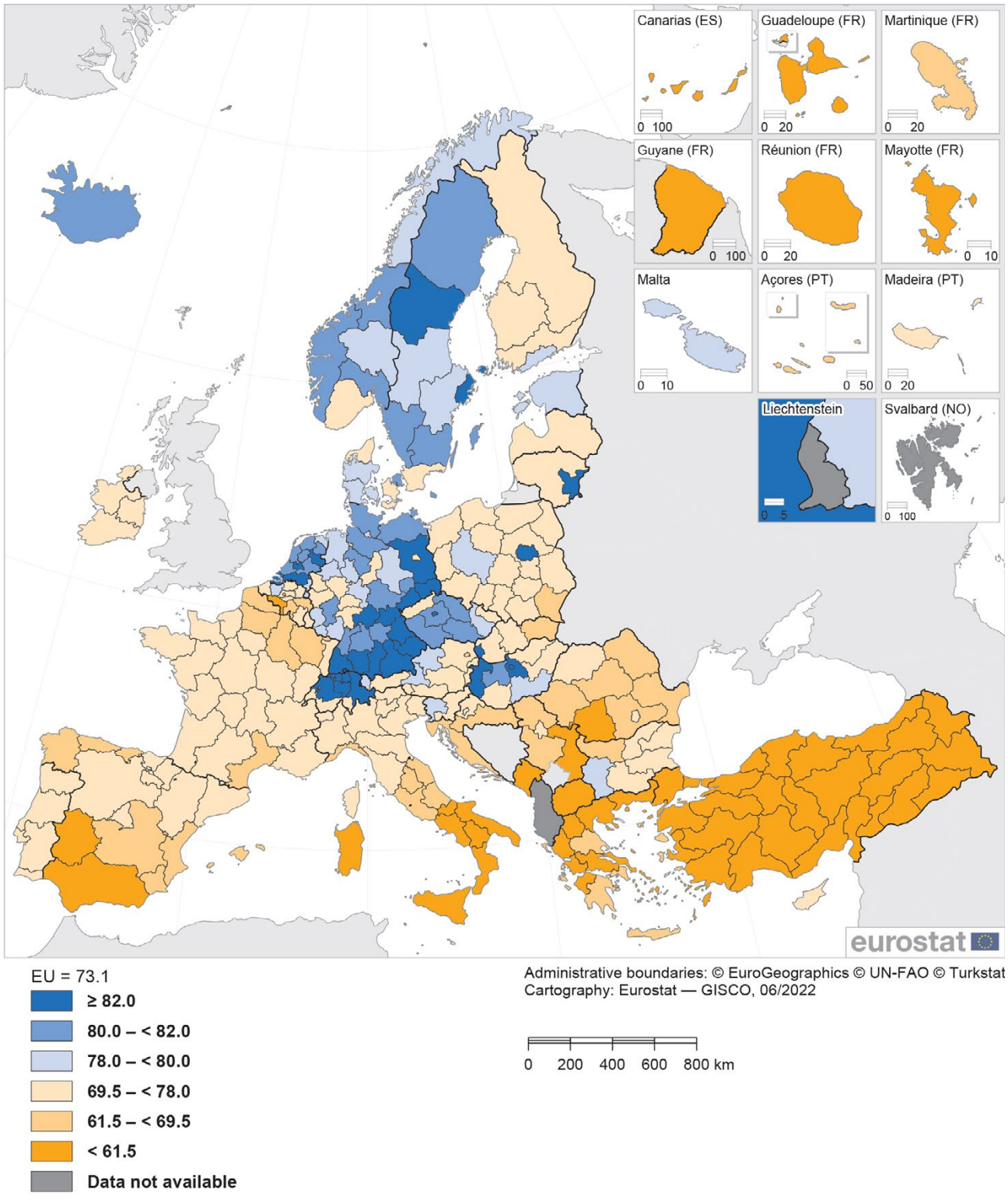
Former industrial heartlands that have not adapted economically make up another group of regions characterised by relatively low employment rates. Some of these have witnessed the negative impact of globalisation on traditional areas of their economies (such as coal mining, steel or textiles manufacturing). Examples include a band of regions running from north-east France into the Région Wallonne (Belgium).

More than one quarter (64 out of the 242 regions for which data are available) of all EU regions had an employment rate that was below 69.5 % in 2021 (as shown by the two darkest shades of yellow in Map 4.3). Among these, there were five regions – Sicilia, Campania and Calabria (in southern Italy) as well as Mayotte (2020 data) and Guyane (outermost regions of France) – where less than half of the working-age population was employed.

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

Within individual EU Member States, there were often relatively large differences in employment rates between regions. For example, in most of the eastern and Baltic Member States that were multi-regional it was common to find the capital region had the highest employment rate, as was the case in Bulgaria, Czechia, Croatia, Lithuania, Hungary, Poland, Romania, Slovenia and Slovakia in 2021; this was also the case in Denmark, Ireland, Spain and Portugal. The situation was reversed in a number of western Member States – for example, Belgium and Austria – where the capital region had one of the lowest regional employment rates.

Map 4.3: Employment rate, 2021
(%, people aged 20–64, by NUTS 2 regions)



Note: the EU has a policy target in this area, namely to reach a share of at least 78 % by 2030 (regions already having attained this target are shaded in blue).
Mayotte (FRY5), Montenegro, North Macedonia and Turkey: 2020.

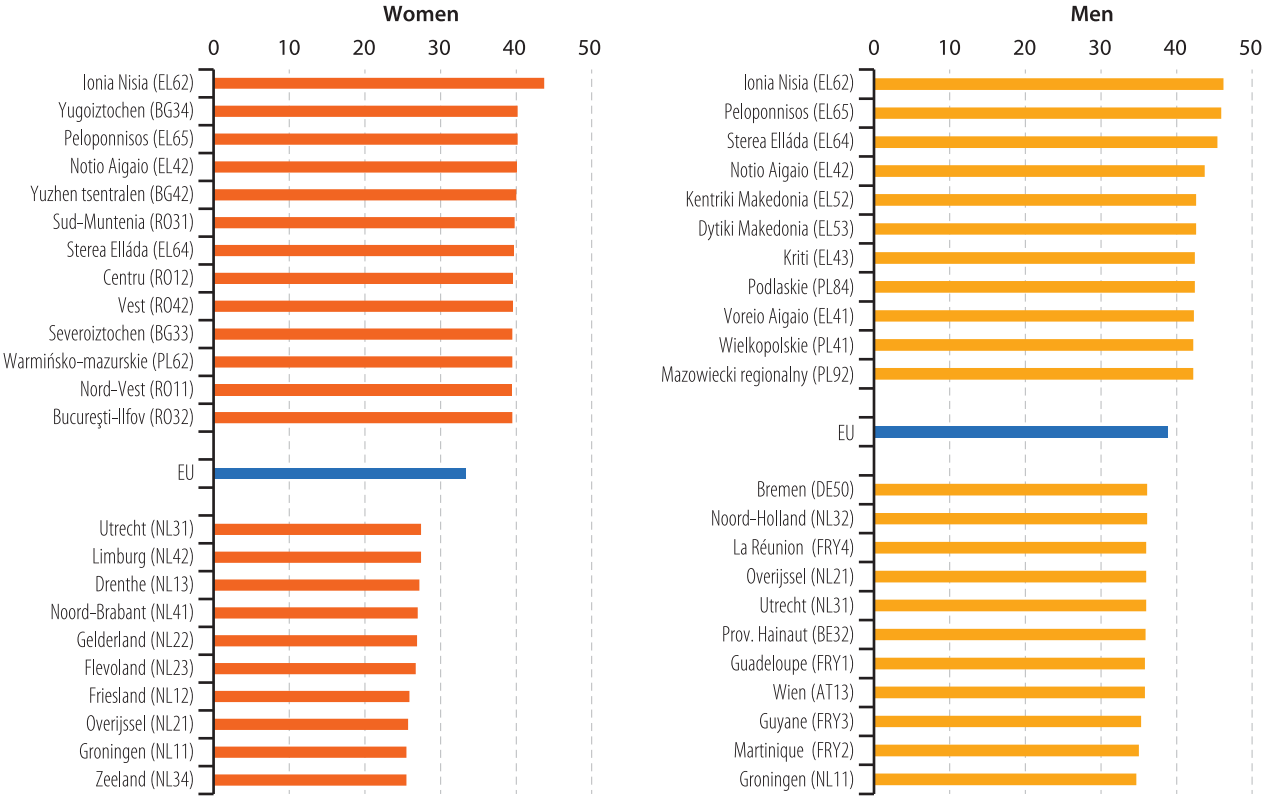
Source: Eurostat (online data code: lfst_r_lfe2emprtn)

In 2019, employed persons (aged 20–64 years) in the EU worked, on average, 36.8 hours per week in their main job. With the onset of the COVID-19 crisis, this figure fell 0.6 hours per week in 2020, before a modest rebound of 0.2 hours per week in 2021.

Figure 4.2 shows the average number of hours worked in a main job for selected NUTS level 2 regions. In 2021, women in the EU worked an average of 33.4 hours in paid employment, which was 5.4 hours less than the average figure for men (38.8 hours). Working time varied greatly between EU Member States and between the sexes, reflecting among other factors, the propensity for people to work on a part-time basis. This is apparent when looking at the average number of weekly hours worked among women, as Dutch regions occupied the bottom 10 positions in the ranking; note a relatively high share of both women and men in the Netherlands work on a part-time basis. In 2021, the lowest numbers of actual weekly hours in a main job were recorded in Groningen: 25.5 hours for women (Zeeland had the same value for women) and 34.7 hours for men.

By contrast, the highest number of weekly hours worked in a main job tended to be concentrated in Greek or in eastern regions of the EU. Ionia Nisia in Greece had the highest value both for women (43.7 hours) and for men (46.2 hours). There were four other regions in the EU where the average working week for women had a duration of at least 40.0 hours: Yugoiztochen and Yuzhen tsentralen in Bulgaria, and Peloponnisos and Notio Aigaio in Greece. For men, there were 40 regions across the EU where the average working week was at least 40.0 hours: they included every region of Greece, all but one of the regions in Poland (the exception being Podkarpackie), and a majority of the regions in Romania. At the top of the range, there were three regions in Greece where the working week for men exceeded 45.0 hours: Ionia Nisia, Peloponnisos and Sterea Elláda.

Figure 4.2: Average number of actual weekly hours in main job, 2021
(number of hours, people aged 20–64, selected NUTS 2 regions)



Note: the figure shows the regions with the highest and lowest shares for each sex. The rankings may include more than 10 regions if several regions have identical values. Mayotte (FRY5): 2020.

Source: Eurostat (online data code: lfst_r_lfe2ehrwa)

Unemployment

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

After six consecutive years of falling unemployment, the EU unemployment rate among people aged 15–74 years increased with the onset of the COVID-19 crisis, rising 0.4 percentage points in 2020; there was a partial recovery in 2021 as the rate fell 0.2 points. In 2021, there were 15.0 million unemployed people in the EU, while the unemployment rate was 7.0 %.

Map 4.4 shows unemployment rates across NUTS level 2 regions: the highest rates in 2021 – as shown by the darkest shade of blue – were recorded in southern and outermost regions of the EU. In 2021, regional unemployment rates of at least 14.5 % were recorded in 9 of the 13 regions from Greece (the exceptions being the capital region of Attiki, Peloponnisos, Ionia Nisia and Voreio Aigaio), eight regions from Spain, four of the outermost regions of France (Mayotte; 2020 data), and four regions from the southern half of Italy.

The lowest rates – as shown by the lightest shade of yellow – were largely concentrated in a cluster of regions that stretched from Germany into Poland, Czechia and Hungary; there were also relatively low unemployment rates – less than 3.0 % – in Bratislavský kraj (the capital region of Slovakia) and Prov. Oost-Vlaanderen (in northern Belgium). The lowest unemployment rates of all were recorded in: Střední Morava and Praha in Czechia; Közép-Dunántúl and Nyugat-Dunántúl in Hungary; Warszawski stołeczny, Wielkopolskie and Pomorskie in Poland. Each of these seven regions had an unemployment rate within the range of 2.1–2.3 %. The unemployment rate was also very low in the German regions of Niederbayern, Unterfranken, Trier, Oberpfalz, Oberfranken and Koblenz, as well as in the Polish region of Lubuskie (all 2019 data).

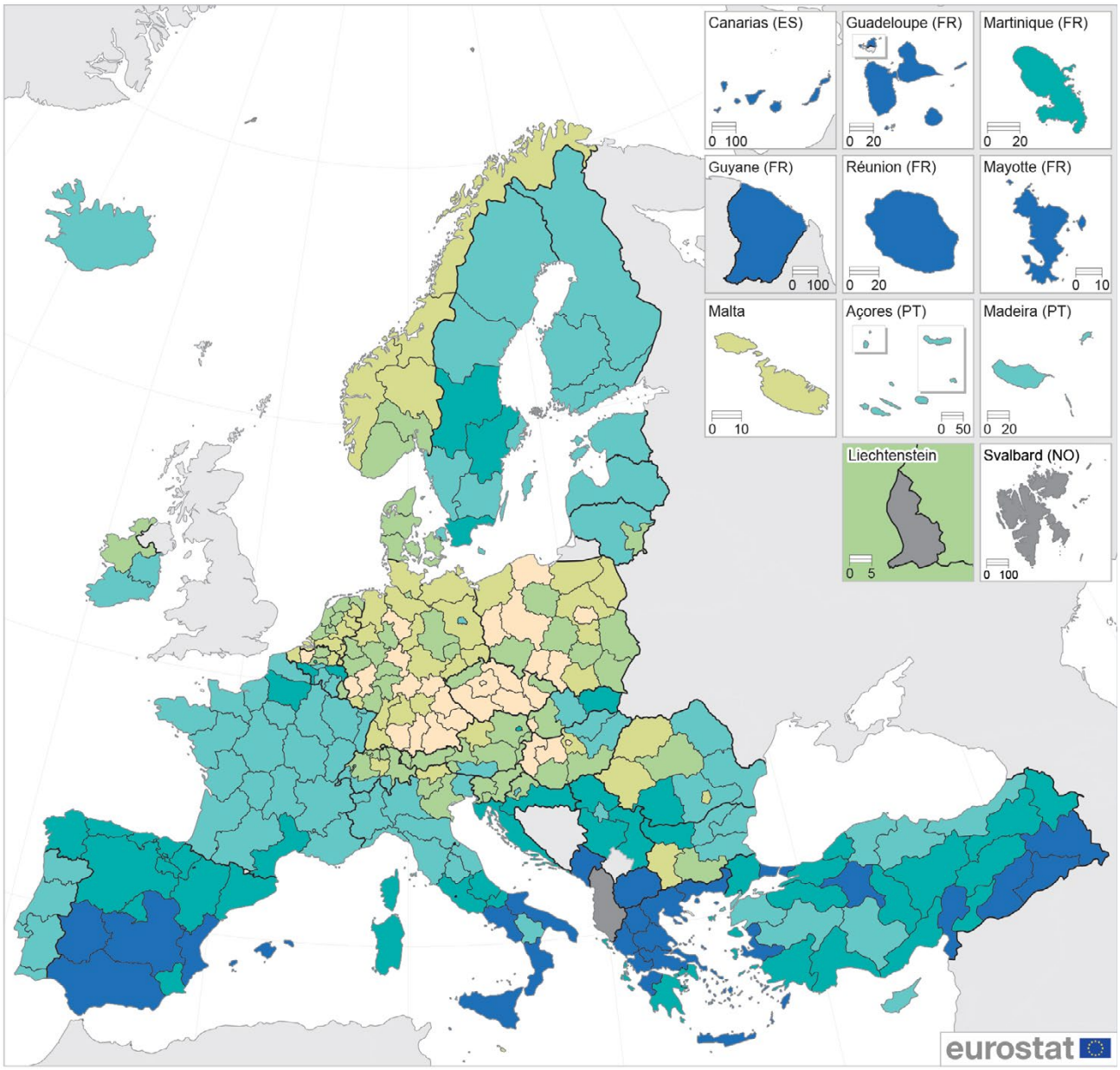
To look at COVID-19 impacts on the labour market, a comparison of regional unemployment rates between 2019 (pre-pandemic) and 2021 reveals that more than 60 % (141 out of 224) of NUTS level 2 regions for which data are available had a higher unemployment rate in 2021, with 75 regions recording a lower unemployment rate, and no change in eight regions ([2]). Some of the largest increases in unemployment rates were recorded in popular tourist destinations: Notio Aigaio and Kriti in Greece, Jadranska Hrvatska in Croatia, Illes Balears and Canarias in Spain, Corse in France, Wien (the capital region of Austria) and Tirol in Austria. Unemployment rates also rose by more than 2.5 percentage points during the period under consideration in Nord-Est, Sud-Vest Oltenia and Sud-Muntenia in Romania, and Prov. Liège in Belgium.

Most people in the EU labour force that become unemployed remain without work for a relatively short period of time (a matter of a few weeks or months). However, for some unemployed people the period without work can last much longer. Long-term unemployment concerns people who have been without work for at least 12 months. The long-term unemployment ratio is defined as the number of people who have been unemployed for at least a year as a proportion of all unemployed people.

The reasons why people may find themselves in long-term unemployment are many and varied. One of the causes is a lack of skills that are relevant to the local demand from employers: this can inhibit a successful transition from being out of work to being in employment. The longer people are unemployed, their skills may become more outdated and they may become more discouraged, thereby reinforcing their difficulties to find work. As a result, some people can be locked into a vicious spiral, with long-term unemployment closely linked to poverty and social exclusion.

([2]) Note, however, that a new EU regulation governing data collection for unemployment has recently come into force; as a result 2021 data are not fully comparable with those for 2019.

Map 4.4: Unemployment rate, 2021
(% of labour force, people aged 15–74, by NUTS 2 regions)



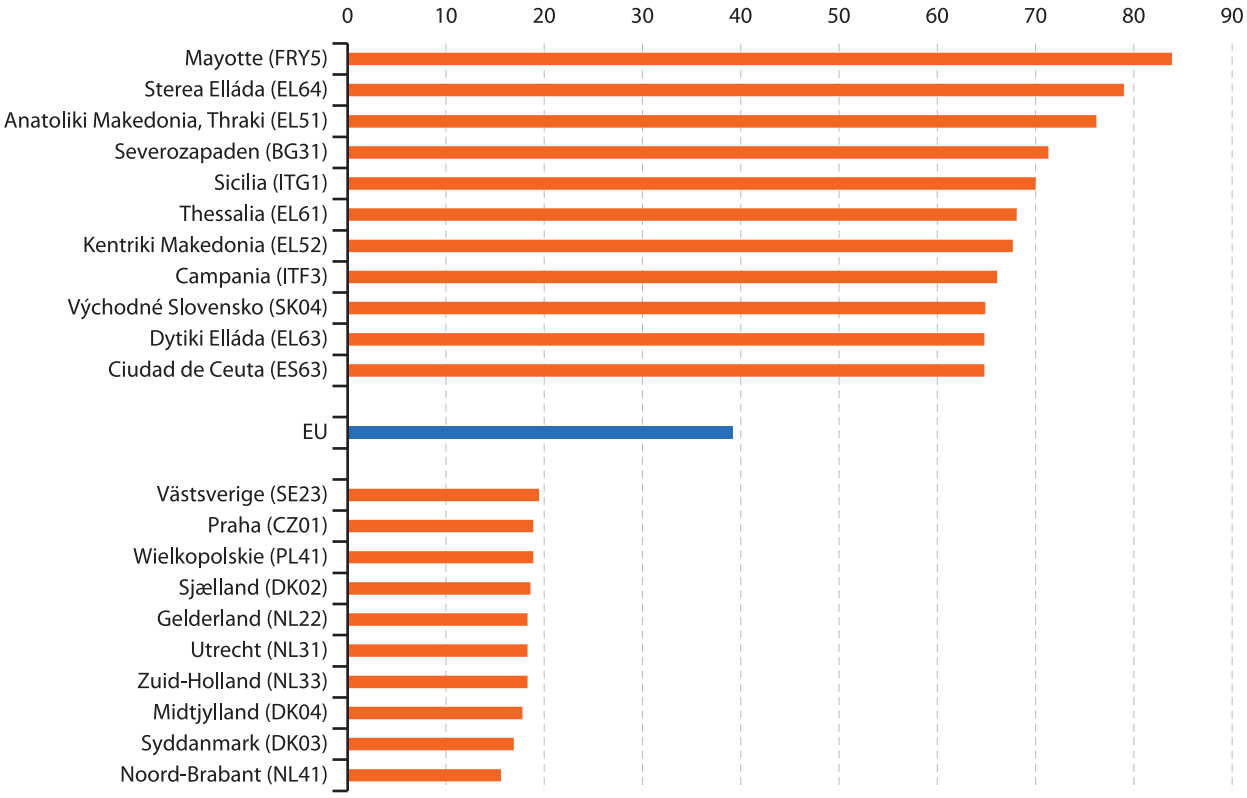
Note: Gießen (DE72), Leipzig (DED5), Mayotte (FRY5), Montenegro, North Macedonia and Turkey: 2020. Niederbayern (DE22), Oberpfalz (DE23), Oberfranken (DE24), Unterfranken (DE26), Bremen (DE50), Kassel (DE73), Koblenz (DEB1), Trier (DEB2), Saarland (DEC0), Chemnitz (DED4) and Lubuskie (PL43): 2019.

Source: Eurostat (online data code: lfst_r_lfu3rt)

Figure 4.3 shows the NUTS level 2 regions in the EU with the highest and lowest long-term unemployment ratios. In 2021, approximately one fifth of EU regions reported that more than half of all unemployed persons had been without work for at least 12 months. Some of the highest long-term unemployment ratios were concentrated in Greece, with a peak in Sterea Elláda (79.0 %); a higher value was recorded in Mayotte (83.9 %) for 2020. At the other end of the range, there were 11 regions in the EU where less than 20.0 % of all unemployed persons in 2021 had been without work for at least 12 months; this was also the case for Wielkopolskie in Poland (2019 data). These regions with relatively low long-term unemployment ratios were principally concentrated in Denmark and the Netherlands, but also included Praha (the capital region of Czechia), Västsverige in Sweden and Prov. West-Vlaanderen in Belgium. The lowest long-term unemployment ratios were recorded in the Dutch region of Noord-Brabant (15.6 %) and the Danish region of Syddanmark (16.9 %).

For many years, official statistics have measured the unemployment rate, in other words, the share of the labour force that is without work but looking for and being available to work. However, these figures may underestimate the demand for employment: besides unemployed people, there are other groups who may be interested in extending their working hours or returning to the labour force. In order to better reflect this potential demand, an indicator for labour market slack takes account of i) unemployed people, ii) underemployed part-time workers (who want to work more), iii) people who are available to work but are not looking for work, and iv) people who are looking for work but are not immediately available to work. While the first two of these subpopulations are part of the labour force, the other two are outside the labour force and are considered as part of the potential additional labour force (to some degree, they may be viewed as representing 'employment demand').

Figure 4.3: Long-term unemployment ratio, 2021
(% of unemployed, people aged 15–74, selected NUTS 2 regions)



Note: the figure shows the regions with the highest and lowest ratios. The rankings may include more than 10 regions if several regions have identical values. Based on available data, some regions are not available (too many to document). Includes earlier reference years for some regions (too many to document).

Source: Eurostat (online data code: lfst_r_lfu2ltu)

To allow comparisons between these four groups, which do not all belong to the labour force, the concept of 'extended labour force' is used. It includes people: a) in the labour force (unemployed and employed) and b) in the potential additional labour force (the two categories outside the labour force, in other words, those available but not seeking, and those seeking but not available). The total unmet demand for employment (also known as labour market slack) is expressed as a percentage of this extended labour force.

In 2021, labour market slack in the EU amounted to 14.0 % of the extended labour force among people aged 15–74 years. Less than half of this figure (6.7 %; note that the denominator here is the extended labour force, not – as previously – the labour force) corresponded to unemployed people, while slightly more than half was composed of the other three groups described above.

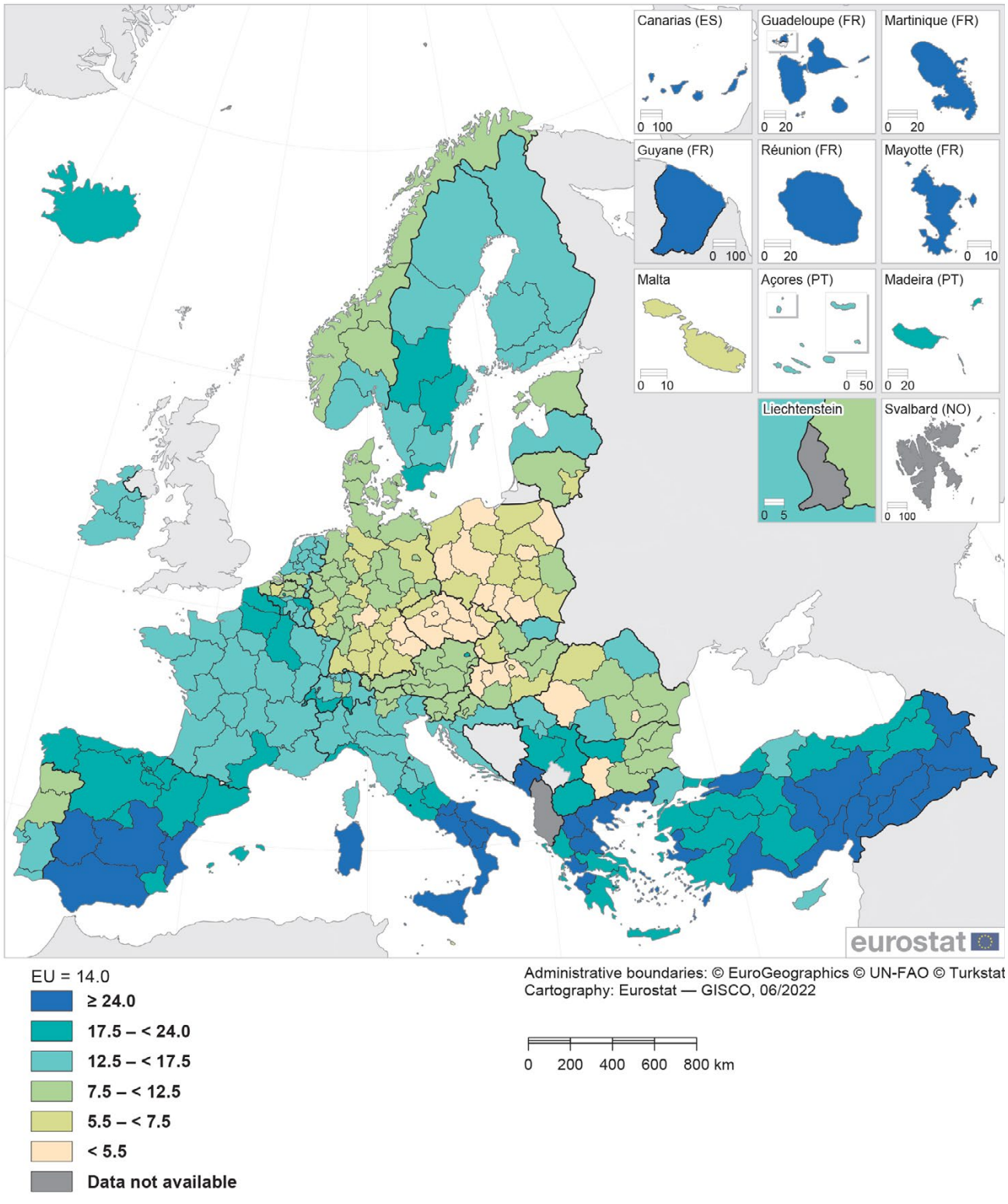
Map 4.5 shows labour market slack for NUTS level 2 regions. Its regional distribution was relatively normal, insofar as 132 out of 242 regions (or 54.5 %) reported shares below the EU average, with the remainder (45.5 %) recording shares that were equal to or above the EU average. Nevertheless, there was a stark spatial divide: unmet demand for employment was a relatively high share of the extended labour force in several of the southern EU Member States, while labour market slack impacted a relatively low share of the extended labour force in most eastern EU Member States.

The highest shares of labour market slack – of at least 24.0 % of the extended labour force – are shown by the darkest shade of blue in Map 4.5. They were concentrated in just four of the EU Member States: seven regions in each of Spain and Italy, six regions in Greece, as well as the five outermost regions of France (Mayotte; 2020 data). The lowest levels of labour market slack – less than 5.5 % of the extended labour force – are shown in the lightest shade of yellow. They were mainly in eastern EU Member States and included the capital regions of Bulgaria, Czechia, Poland, Romania and Slovakia; there were also three regions in southern Germany that had low levels of labour market slack.

In 2021, the share of the extended labour force with unmet demand for employment ranged from 3.1 % in Bratislavský kraj (the capital region of Slovakia) to 41.4 % in the island region of Sicilia in Italy (excluding older data for Mayotte in France).

In many eastern regions of the EU, it was relatively common to find that unemployment accounted for a high proportion of labour market slack, in other words, there were relatively few people who were underemployed, seeking work but not immediately available, or available to work but not seeking. This was particularly notable in the Romanian and Slovak capital regions of Bucureşti-Ilfov and Bratislavský kraj where unemployment made up more than four fifths of labour market slack. By contrast, all of the regions in the Netherlands were characterised by a high share of their labour market slack being accounted for by underemployed part-time workers or those who wish to work additional hours and are available to do so.

Map 4.5: Labour market slack, 2021
(% of extended labour force, people aged 15–74, by NUTS 2 regions)



Note: Mayotte (FRY5), Åland (FI20), Montenegro, North Macedonia and Turkey: 2020. Trier (DEB2): 2019.
Source: Eurostat (online data code: lfst_r_sla_ga)

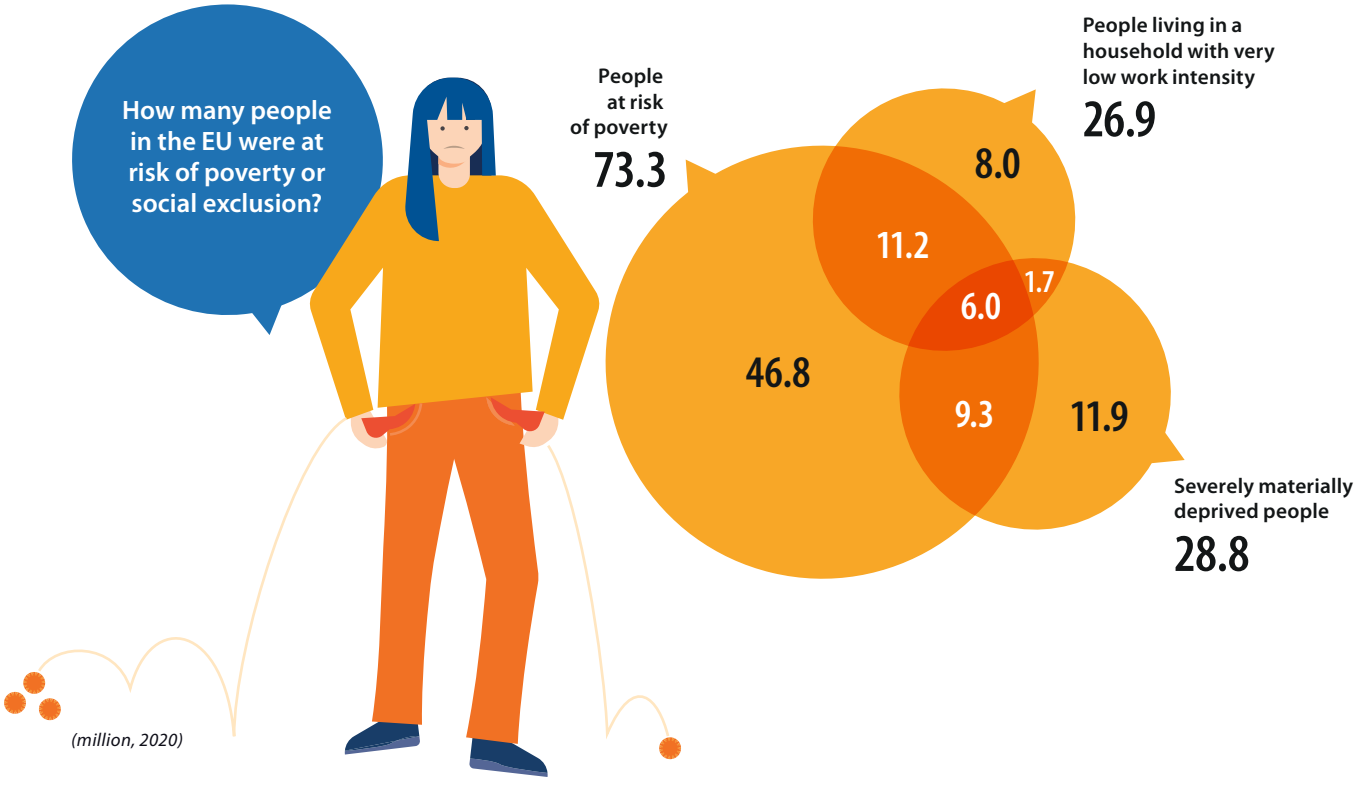
5. Living conditions

By global standards, most people living in the European Union (EU) are relatively prosperous. According to the OECD, the subjective well-being of the EU's population – as measured by life satisfaction – is also relatively high. This likely reflects the EU's high income/wealth levels and its network of established social protection systems that provide a safety net for many of the less fortunate. Nevertheless, more than one fifth (21.6 %) of the EU population was at risk of poverty or social exclusion in 2020 (see the infographic for more information).

Furthermore, the COVID-19 crisis has underlined systemic inequalities in living conditions both between and within individual EU Member States. While some people were fortunate enough to continue working full-time from home (and in some cases were even able to save more of their income than usual), frontline and key workers faced increased health risks. Many people in precarious employment or working in sectors/businesses impacted by successive lockdowns faced reduced earnings, short-time work (furlough schemes / temporary lay-offs / technical unemployment) and unemployment. Indeed, the asymmetric impact of the crisis meant that it has in many cases exacerbated existing inequalities: some groups in society have been much more harshly affected than others, for example, the elderly, young people, parents of young children (particularly single-parents), low-wage earners, women, migrants, or people with disabilities.

On 4 March 2021, the European Commission set out its ambition for a stronger social EU to focus on education, skills and jobs, paving the way for a fair, inclusive and resilient socioeconomic recovery from the COVID-19 crisis, while fighting discrimination, tackling poverty and alleviating the risk of exclusion for vulnerable groups. *The European Pillar of Social Rights Action Plan* (COM(2021) 102 final) outlines a set of specific actions and headline targets for employment, skills and social protection in the EU. It includes a benchmark for reducing the number of people at risk of poverty and social exclusion by at least 15 million persons (of which, at least five million should be children) between 2019 and 2030.

Sociodemographic characteristics like age, educational attainment, sex, country of birth / citizenship can play an important role in shaping an individual's living conditions. Wider societal developments, such as the impact of globalisation, coupled with unexpected shocks – for example, the global financial and economic crisis or the COVID-19 crisis – can also have a considerable impact. In some cases, these can rapidly undo long-term gradual reductions in inequality, thereby reinforcing or exacerbating patterns of inequality and exclusion.



Source: Eurostat (online data code: ilc_pees01n)

Access to healthcare and risk of infection

The latest regional information on living conditions concerns data for 2020. As such, these statistics may be used to gauge the resilience of health and social care systems to pandemics such as COVID-19 through analyses of the availability of health care resources (see Chapter 2 for more information) and the (unmet) demand for health care services. Data on poverty, income and living conditions can also be used to identify cohorts within the population that are particularly susceptible to the impact of shocks/crises, for example, specific subpopulations lacking the space in their dwellings to allow somebody infected with COVID-19 to self-isolate.

There are a variety of reasons why an individual may report having unmet needs for medical examination. Such unmet needs can result in poorer health for people not receiving care and may increase health inequalities if concentrated among disadvantaged groups. The following are of interest with regard to illustrating equity in access to health care services:

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

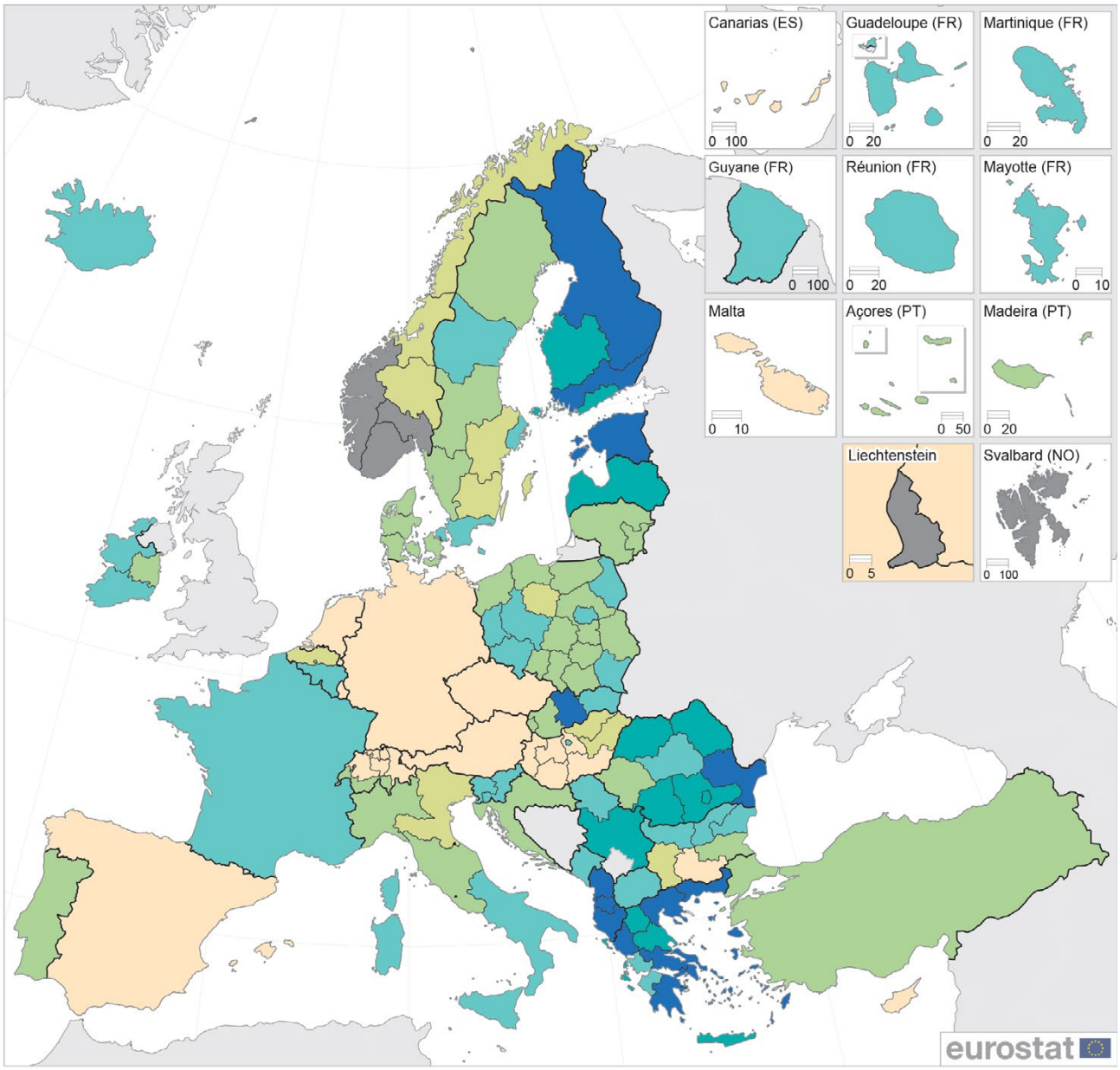
Less than 1 in 50 adults living in the EU had unmet needs for medical examination

In 2020, the proportion of the EU adult population (defined here as people aged 16 years or over) with unmet needs for medical examination – due to it being too expensive, too far to travel, and/or because of waiting lists – was 1.8 %. An analysis by sex reveals that the share of women with unmet needs for medical examination (2.2 %) was somewhat higher than the share recorded among men (1.5 %), resulting in a gender gap of 0.7 percentage points. A gender gap – with a higher share for women than men – was observed across most of the EU Member States (2019 data for Italy), with Czechia, Denmark and Luxembourg the only ones to report a higher share of their male populations facing unmet medical needs; identical shares were recorded for men and women in Germany, the Netherlands and Austria.

One may expect that the share of the adult population with needs for medical examination increases as people get older and their demand for health care tends to increase. Across the EU, the proportion of people aged 65 years or over with unmet needs for medical examination was 2.7 % in 2020. This was three times as high as the share (0.9 %) recorded among youths (defined here as those aged 16–29 years). This pattern – a higher proportion of older people (than youths) with unmet needs for medical attention – was repeated in a majority of the EU Member States and was particularly pronounced in several eastern and Baltic Member States. However, in the Netherlands, Sweden, Denmark, Cyprus and Ireland, a higher proportion of youths (than older people) had unmet needs for medical examination. Note that in Czechia, Germany, Luxembourg, Malta and Austria, the share of youths who reported unmet needs for medical examination was negligible (0.0 %).

Regional shares of the adult population with unmet needs for medical examination were distributed as follows around the EU average: in 2020, there were 42 regions that had shares below the EU average of 1.8 %, while there were 60 regions with shares that were equal to or greater than 1.8 %. Note that the statistics presented in this section for Belgium and Italy relate to NUTS level 1 regions and that only national data are available for Czechia, Germany, Spain, France, Croatia, the Netherlands, Austria and Portugal. At the upper end of the distribution, regional shares of the adult population with unmet needs for medical examination were particularly high in Estonia, a majority of regions across Greece, Sud-Est in Romania, Stredné Slovensko in Slovakia, Etelä-Suomi and Pohjois- ja Itä-Suomi in Finland (as shown by the darkest shade of blue). Estonia had the highest proportion of unmet needs for medical examination (13.0 %), while the Greek region of Anatoliki Makedonia, Thraki was the only other region in the EU to record a double-digit share (10.9 %). The high proportion of adults in Estonia with unmet needs for medical examination could be attributed largely to the length of waiting lists, while cost was the principal reason for unmet needs for medical examination across Greek regions.

Map 5.1: Self-reported unmet needs for medical examination, 2020
(%, people aged ≥ 16 years, by NUTS 2 regions)



Note: unmet needs for medical examination due to it being too expensive, too far to travel and/or because of waiting lists. Belgium, Italy and Serbia: NUTS level 1. Czechia, Germany, Spain, France, Croatia, the Netherlands, Austria, Portugal and Turkey: national data. Länsi-Suomi (FI19) and Åland (FI20) are aggregated (same value for both regions). Italy, Nord-Norge (NO07) and North Macedonia: 2019. Iceland: 2018.

Source: Eurostat (online data codes: hlth_silc_08_r and hlth_silc_08)

People in the EU lived in dwellings with an average of 1.7 rooms per person

The COVID-19 crisis brought into stark contrast differences in living conditions, for example between people fortunate enough to have a garden and those living in high-rise flats with no balcony. Within the context of the crisis, the average number of rooms per person may be used, among other indicators, to help assess conditions such as the strain of coping with long periods of confinement at home (alone) or the risks of infection through household transmission.

In 2020, dwellings in the EU averaged 1.7 rooms per person. Map 5.2 shows that there were considerable differences across NUTS level 2 regions; note that the statistics presented in this section for Belgium and the Netherlands relate to NUTS level 1 regions and that only national data are available for Germany, France, Croatia and Portugal. Regional shares were skewed around the EU average, as 99 out of 154 regions for which data are available had an average of less than 1.7 rooms per person; there were 44 regions that had a higher average number of rooms and 11 regions where dwellings averaged the same number of rooms as for the EU as a whole.

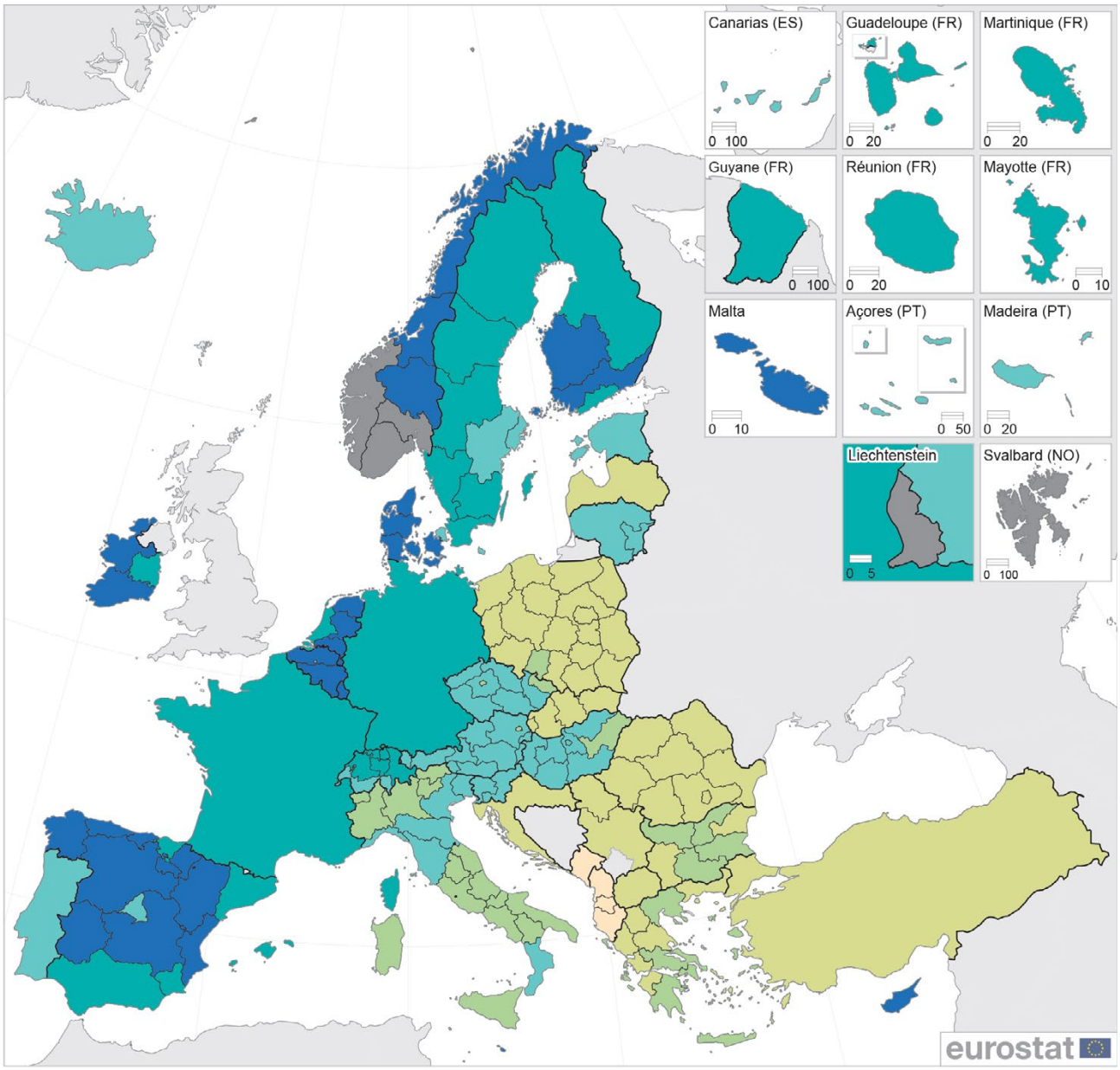
The regions with the lowest average number of rooms per person in 2020 were concentrated in eastern EU Member States – this was particularly the case in Poland, Romania and Slovakia. A couple of regions in Greece also had a relatively low average number of rooms. At the bottom of the range, there were three regions in Romania – Nord-Vest, Centru and the capital region of Bucureşti-Ilfov – with an average of 1.0 rooms per person.

Outside of their capital regions, the average number of rooms per person was particularly high – 2.0 rooms or more (as shown by the darkest shade of blue in Map 5.2) – in Belgium (NUTS level 1), Denmark, Ireland and most of northern and central Spain. Cyprus, Luxembourg, Malta, three out of the four regions in the Netherlands (NUTS level 1; the exception was West-Nederland) and three regions in Finland also recorded a relatively high average number of rooms per person. At the top end of the range, there were five regions within the EU where dwellings had, on average, 2.3 rooms per person: Région wallonne in Belgium (NUTS level 1); Northern and Western, and Southern in Ireland; Castilla y León in Spain; and Malta.

The distribution of the average number of rooms per person in each region reflects, among other factors, the stock of different types of dwelling and whether or not people are living alone, in nuclear families (a couple and their dependent children) or in extended families. In 2020, more than half (52.8 %) of the EU population lived in a house (detached, semi-detached or terraced), while 46.2 % lived in flats (apartments); a small number of people lived in other forms of dwelling, for example student halls of residence, mobile/recreational homes, or non-residential buildings (such as shopkeepers living above their shop). Among the EU Member States, upwards of three quarters of the population lived in houses in Ireland, Croatia and Belgium. By contrast, almost two thirds of the population lived in a flat/apartment in Spain and Latvia.

The regions with a relatively high average number of rooms per person were often characterised as predominantly rural, with a tendency for a relatively high proportion of people to live in houses (some of which were under-occupied, as grown-up children had already left the family home). By contrast, the age structure of the population is often quite young in predominantly urban regions, where it is often necessary to pay a premium for space. Note that some rural regions of eastern and southern EU Member States are characterised by a relatively high proportion of people living in extended households (for example, with three generations living under the same roof). In these regions it was often commonplace to find a lower average number of rooms per person.

Map 5.2: Average number of rooms per person, 2020
(number, by NUTS 2 regions)



Note: the average number of rooms includes kitchens, bedrooms, dining rooms, living rooms, study rooms and habitable cellars/basements; it excludes (among others) garages, bathrooms and utility rooms. Belgium, the Netherlands and Serbia: NUTS level 1. Germany, France, Croatia, Portugal and Turkey: national data. Länsi-Suomi (FI19) and Åland (FI20) are aggregated (same value for both regions). Nord-Norge (NO07): 2019. Austria and Iceland: 2018.

Source: Eurostat (online data code: ilc_lvho04n and ilc_lvho03)

People at risk of poverty or social exclusion

There are two principal measures of poverty. Relative poverty concerns the situation where people whose income and/or resources prevent them from enjoying a 'normal' standard of living for the society in which they live (in other words, a situation where household income is a certain percentage below the median level). By contrast, absolute poverty is the deprivation of basic human needs, for example, a lack of food, shelter, water, sanitation facilities, health or education (in other words, where a household's income is insufficient to afford the basic necessities of life).

The indicator for people 'at risk of poverty or social exclusion' is based on both relative and absolute poverty measures. This indicator is quite a broad concept: it does not depend exclusively on a household's level of income, as it also reflects severe deprivation or quasi-joblessness. The number/share of people at risk of poverty or social exclusion combines three separate criteria (see the infographic at the start of this chapter for a breakdown) covering people who are in at least one of the following situations:

- at risk of poverty – people with an equivalised disposable income (after social transfers) below the at-risk-of-poverty threshold, which is set at 60 % of the national median equivalised disposable income after social transfers;
- facing severe material and social deprivation – people unable to afford at least 7 out of 13 items (six of which are related to the individual and seven of which are related to the household in which they live) that are considered by most to be desirable (or even necessary) for having an adequate quality of life;
- living in a household with very low work intensity – where working-age adults (18–64 years, excluding students aged 18–24 years and those who are retired) worked no more than 20 % of their total potential during the previous 12 months.

The European social model is based on offering protection to those who are most in need. Regardless of their differences, these models are designed to provide people with some protection against, among other issues, the costs of bringing up a family, the risks related to unemployment, poor health, the consequences of old age, housing and social exclusion.

SEVERE MATERIAL DEPRIVATION RATE

Severe material deprivation refers to the enforced inability (rather than the choice not to do so) to afford four (or more) of the following nine items: to face unexpected expenses; to pay for one week annual holiday away from home; to eat meat or an equivalent source of proteins every second day; to keep a home adequately warm; a colour television set; a washing machine; a personal car; a telephone; to pay rent, mortgage/house loan or utility bills.

With the onset of the COVID-19 crisis in 2020, the number of people in the EU experiencing severe material deprivation increased by 1.9 million

There were 25.8 million people across the EU facing severe material deprivation in 2020, equivalent to 5.9 % of the total population. Having peaked at 44.6 million persons in 2012 in the aftermath of the global financial and economic crisis, there was a rapid fall in the number of people experiencing severe material deprivation. This fall was particularly fast during the period 2017–2019, when annual reductions of more than 10 % were recorded. However, the impact of the COVID-19 crisis reversed this pattern: the number of people in the EU experiencing severe material deprivation increased by 1.9 million (or 8.0 %) in 2020.

Youths (aged 16–29 years) were more likely than the general population to experience severe material deprivation; the gap between the generations was particularly marked when comparing youths and older persons (aged 65 years or more). In 2020, 6.9 % of youths in the EU faced severe material deprivation, in contrast to 4.4 % of older people. In a majority of the EU Member States, a higher proportion of youths (than older people) experienced severe material deprivation; the difference was particularly broad in Sweden, Belgium, Denmark, Ireland, Finland and Cyprus, where youths were more than three times as likely to experience severe material deprivation as older people. By contrast, in four of the eastern and all three of the Baltic Member States, as well as in Malta and Portugal, a higher proportion of older people (than youths) experienced severe material deprivation.

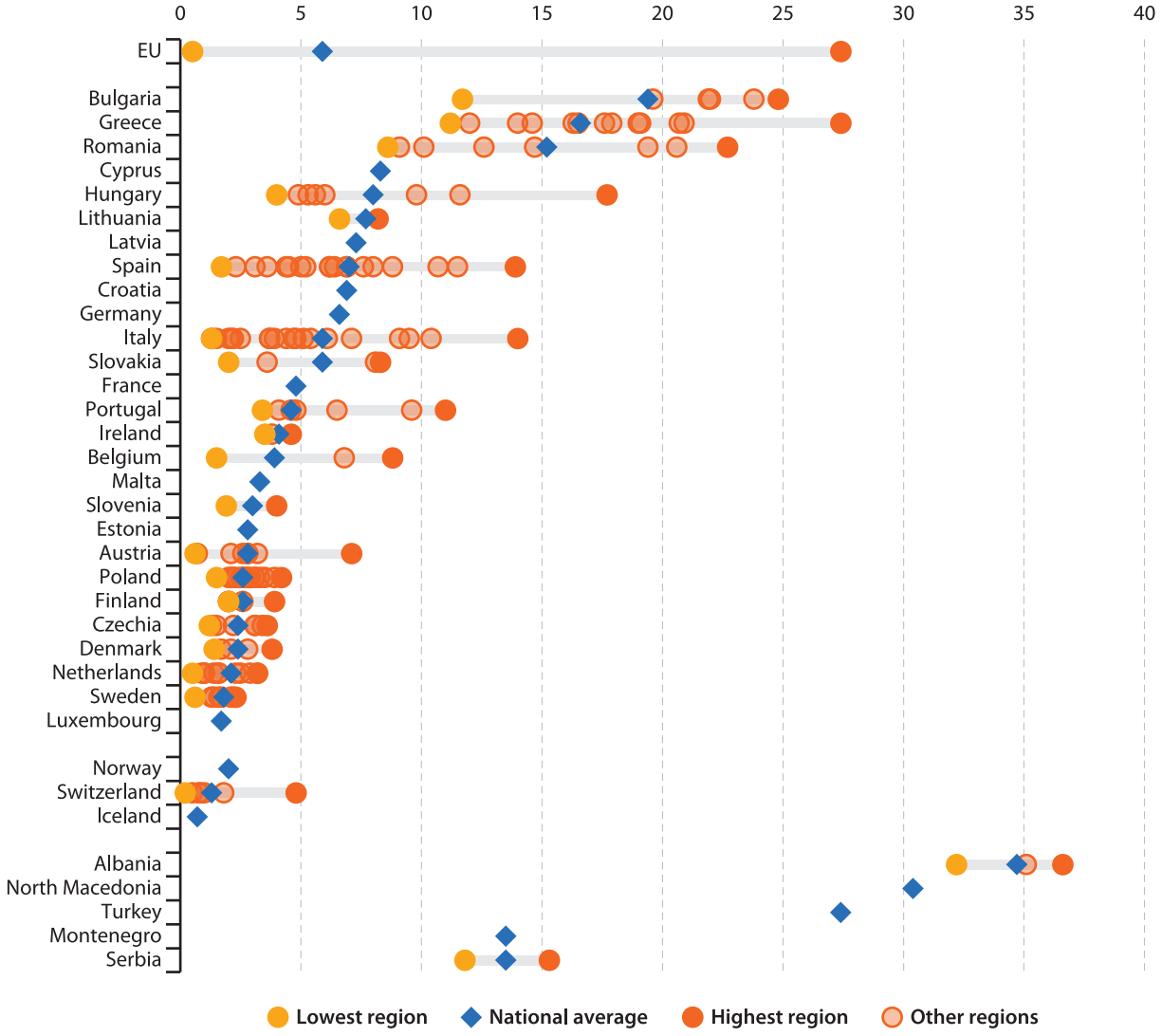
There were nine regions in the EU where more than one fifth of the population experienced severe material deprivation in 2020

Figure 5.1 shows the regional distribution of severe material deprivation rates. Note that the statistics presented in this section for Belgium relate to NUTS level 1 regions and that only national data are available for Germany, France and Croatia; the latest data available for Austria refers to 2018. Severe material deprivation rates tended to be higher in several of the eastern and southern EU Member States, whereas the western and Nordic Member States generally had lower rates.

In 2020, the highest shares of people experiencing severe material deprivation were recorded in Dytiki Elláda in Greece (27.4 %) and Yugoiztochen in Bulgaria (24.8 %). There were seven additional regions spread across three EU Member States where more than one fifth of the population was unable to afford at least four out of nine material items: Yuzhen tsentralen, Severozapaden and Severen tsentralen (also in Bulgaria); Notio Aigaio and Peloponnisos (also in Greece); Sud-Est and Sud-Muntenia (both in Romania).

In 2020, every region of the Nordic Member States, Luxembourg, the Netherlands, Czechia, Poland, Estonia, Slovenia, Malta and Ireland had a severe material deprivation rate that was less than the EU average (5.9 %); this was also the case in France (for which only national data are available). Aside from the capital region of Wien, this pattern was also repeated in Austria (2018 data; Burgenland, not available). There were five regions across the EU where the severe material deprivation rate was less than 1.0 %: Zeeland and Gelderland in the Netherlands, Kärnten and Oberösterreich in Austria (both 2018 data), and the most northerly region of Sweden, Övre Norrland.

Figure 5.1: Severe material deprivation rate, 2020
(%, by NUTS 2 regions)



Note: ranked on the national average. Belgium and Serbia: NUTS level 1. Germany, France, Croatia, Norway and Turkey: national data. Länsi-Suomi (FI19) and Åland (FI20) are aggregated (same value for both regions). North Macedonia: 2019. Austria and Iceland: 2018. Burgenland (AT11): not available.

Source: Eurostat (online data codes: ilc_mddd21 and ilc_mddd11)

SEVERE MATERIAL AND SOCIAL DEPRIVATION RATE

The severe material and social deprivation rate is a wider concept than severe material deprivation. It shows the proportion of the population who could not afford (rather than did not want or did not need) at least 7 out of the following 13 items (six of which are related to the individual and seven of which are related to the household). The items at household level are:

- capacity to face unexpected expenses;
- capacity to afford one week annual holiday away from home;
- capacity to avoid arrears (in mortgage/house loan, rent, utility bills and/or hire purchase instalments);
- capacity to afford a meal with meat (including chicken), fish or a vegetarian equivalent every second day;
- ability to keep their home adequately warm;
- have access to a car/van for personal use;
- capacity to replace worn-out furniture.

The items at individual level are:

- having an internet connection;
- capacity to replace worn-out clothes with new ones;
- having two pairs of properly fitting shoes (including a pair of all-weather shoes);
- capacity to spend a small amount of money each week on themselves (pocket money);
- ability to have regular leisure activities;
- ability to get together with friends/family for a drink/meal at least once a month.

Many of these items are considered by most people in the EU to be desirable or even necessary to lead an acceptable life. Note the severe material and social deprivation rate is one of the three elements of the risk of poverty and social exclusion within the framework of the EU's 2030 target on poverty and social exclusion.

In 2020, the EU severe material and social deprivation rate stood at 6.8 %; statistics presented in this section for Belgium and Italy relate to NUTS level 1 regions and only national data are available for Germany, France, Croatia, Austria and Portugal. Severe material and social deprivation rates were skewed insofar as almost two thirds of all regions in the EU (89 out of 138 for which data are available) had a rate below the EU average, while 48 regions had a rate higher than the EU average, and one region matched the EU average.

The proportion of youths (aged 16–29 years) in the EU who faced severe material and social deprivation in 2020 was 6.1 %, some 0.7 percentage points lower than the average for the whole population, but 0.5 points higher than the corresponding rate for people aged 65 years or over (5.6 %). It is interesting to note that children (aged less than 16 years) were the subpopulation most likely to face severe material and social deprivation in 2020 (8.5 %).

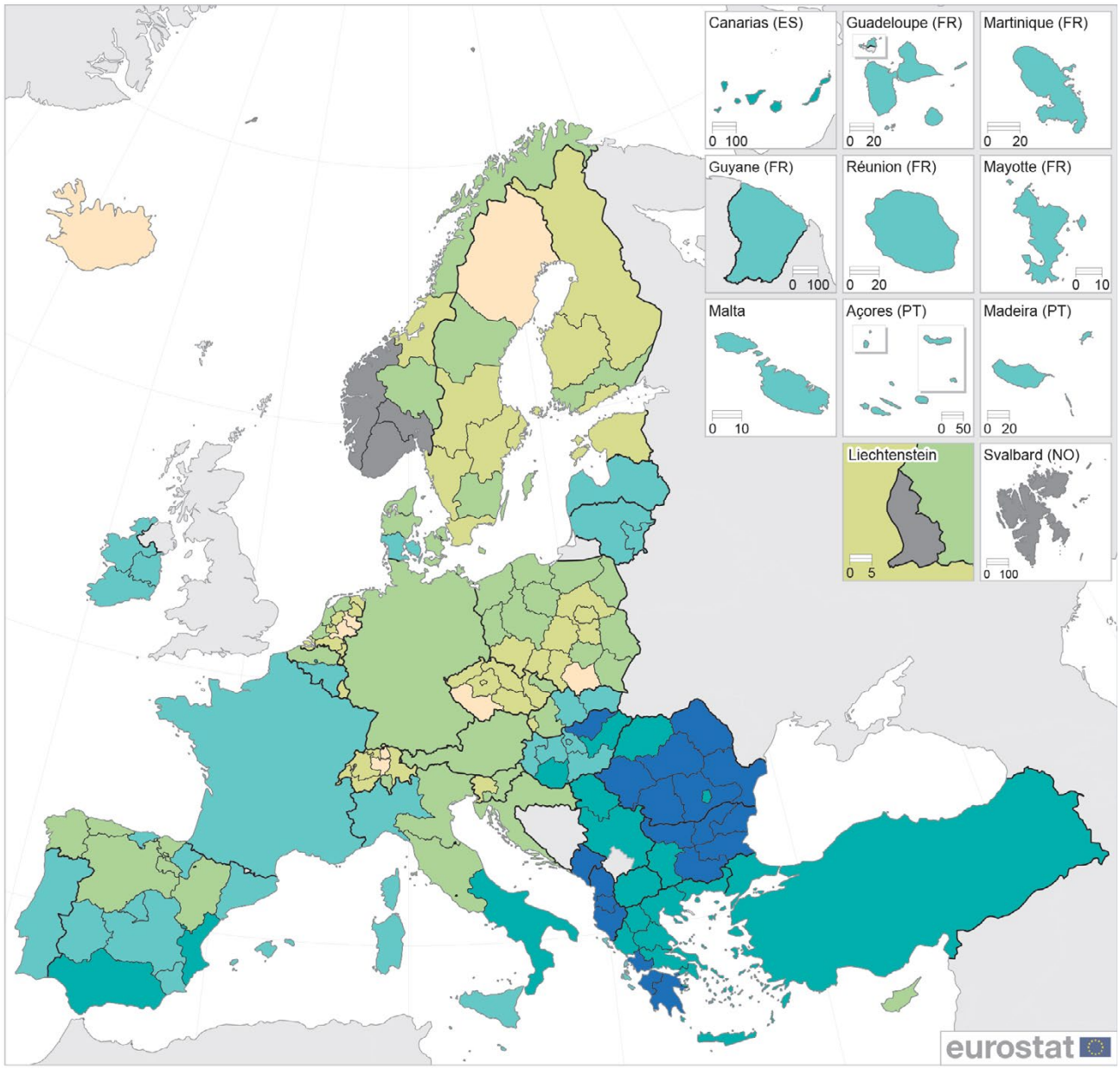
Map 5.3 shows that the highest severe material and social deprivation rates (as shown by the darkest shade of blue) were concentrated in the south-east corner of the EU. They included all but one of the Bulgarian regions and all but two of the Romanian regions, the exceptions being the capital regions of Yugozapaden and Bucureşti-Ilfov as well as Nord-Vest. High rates were also observed in Dytiki Elláda and Peloponnisos in Greece, and Észak-Magyarország in Hungary. Some of the lowest severe material and social deprivation rates were recorded across northern EU Member States, as well as a belt of regions running from southern Poland, through Czechia, Slovakia and into Slovenia, and a small group of regions in Luxembourg and the Netherlands.

In 2020, there were two regions in Romania where more than one third of the population faced severe material and social deprivation

Every region of Bulgaria, Greece, Latvia and Romania had a severe material and social deprivation rate in 2020 that was above the EU average of 6.8 %. A similar pattern was observed in Belgium (NUTS level 1), Lithuania and Hungary, although they each had a single region where the severe material and social deprivation rate was below the EU average, respectively Vlaams Gewest, Sostinės regionas and Nyugat-Dunántúl. By contrast, every region of Czechia, Denmark, Estonia, Ireland, Cyprus, Luxembourg, Malta, the Netherlands, Poland, Slovenia, Slovakia, Finland and Sweden had a rate that was below the EU average; this was also the case in Germany, France, Croatia, Austria and Portugal (for which only national data are available).

Across EU regions, the highest severe material and social deprivation rate was recorded in the Romanian region of Sud-Est (41.1 % in 2020). Together with its neighbouring region of Sud-Muntenia (35.2 %), these were the only two regions in the EU where more than one third of the population faced severe material and social deprivation. At the other end of the range, there were five regions in the EU where less than 1.5 % of the population experienced severe material and social deprivation. Rates within the range of 1.2–1.4 % were recorded in Overijssel and Gelderland in the Netherlands, Małopolskie in Poland, and Övre Norrland in Sweden. However, the lowest rate was in south-west Czechia, as just 0.7 % of the population in Jihozápad faced severe material and social deprivation.

Map 5.3: Severe material and social deprivation rate, 2020
(%, by NUTS 2 regions)



EU = 6.8
- ≥ 18.5
- 10.5 – < 18.5
- 4.5 – < 10.5
- 2.5 – < 4.5
- 1.5 – < 2.5
- < 1.5
- Data not available

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 06/2022

0 200 400 600 800 km

Note: Belgium, Italy and Serbia, NUTS level 1. Germany, France, Croatia, Austria, Portugal and Turkey: national data. Länsi-Suomi (FI19) and Åland (FI20) are aggregated (same value for both regions). Nord-Norge (NO07): 2019. Iceland: 2018.

Source: Eurostat (online data codes: ilc_mdsd18 and ilc_mdsd11)

AT-RISK-OF-POVERTY RATE

The at-risk-of-poverty rate (after social transfers) is also one of the three criteria used to identify people at risk of poverty or social exclusion. It identifies the proportion of the population which lives in a household with an annual equivalised disposable income that is below 60 % of the national median. Note that at-risk-of-poverty rates do not measure poverty itself, rather they provide information on the share of the population with a level of income that is below a threshold which is set separately for each EU Member State. In other words, it is a measure of relatively low income compared with other residents in the country; this does not necessarily imply a low overall standard of living.

The at-risk-of-poverty rate before social transfers measures a hypothetical situation where social transfers are absent (pensions not being considered as a social transfer). Pensions, such as old-age and survivors' (widows' and widowers') benefits, are counted as income (before social transfers) and not as social transfers. When comparing at-risk-of-poverty rates before and after social transfers it is possible to assess the impact and redistributive effects of welfare policies. These transfers cover assistance that is given by central, state or local institutional units and include, among others, unemployment benefits, sickness and invalidity benefits, housing allowances, social assistance and tax rebates.

In 2020, the reduction in the EU's at-risk-of-poverty rate due to the impact of social transfers was 8.3 percentage points, as the rate fell from 25.0 % before social transfers to 16.7 % after social transfers. The impact of social transfers in reducing the risk of monetary poverty was relatively evenly distributed in spatial terms, as at-risk-of-poverty rates fell by less than the EU average in 53.5 % of EU regions (69 out of the 129 for which data are available). Note that statistics presented in this section for Belgium and the Netherlands relate to NUTS level 1 regions and only national data are available for Czechia, Germany, Spain, France, Croatia and Portugal.

There was a relatively clear north–south divide in terms of the redistributive impact of social transfers in the EU. These differences reflect historical, political, economic and cultural factors, among others. The impact of social transfers to reduce the risk of poverty was particularly marked in the Nordic Member States, Belgium, Estonia, Ireland, Luxembourg and Austria (2018 data); this was also the case in Germany and France (for which only national data are available). On the other hand, social transfers had a relatively low impact in percentage point terms on the risk of monetary poverty in many southern and eastern regions of the EU.

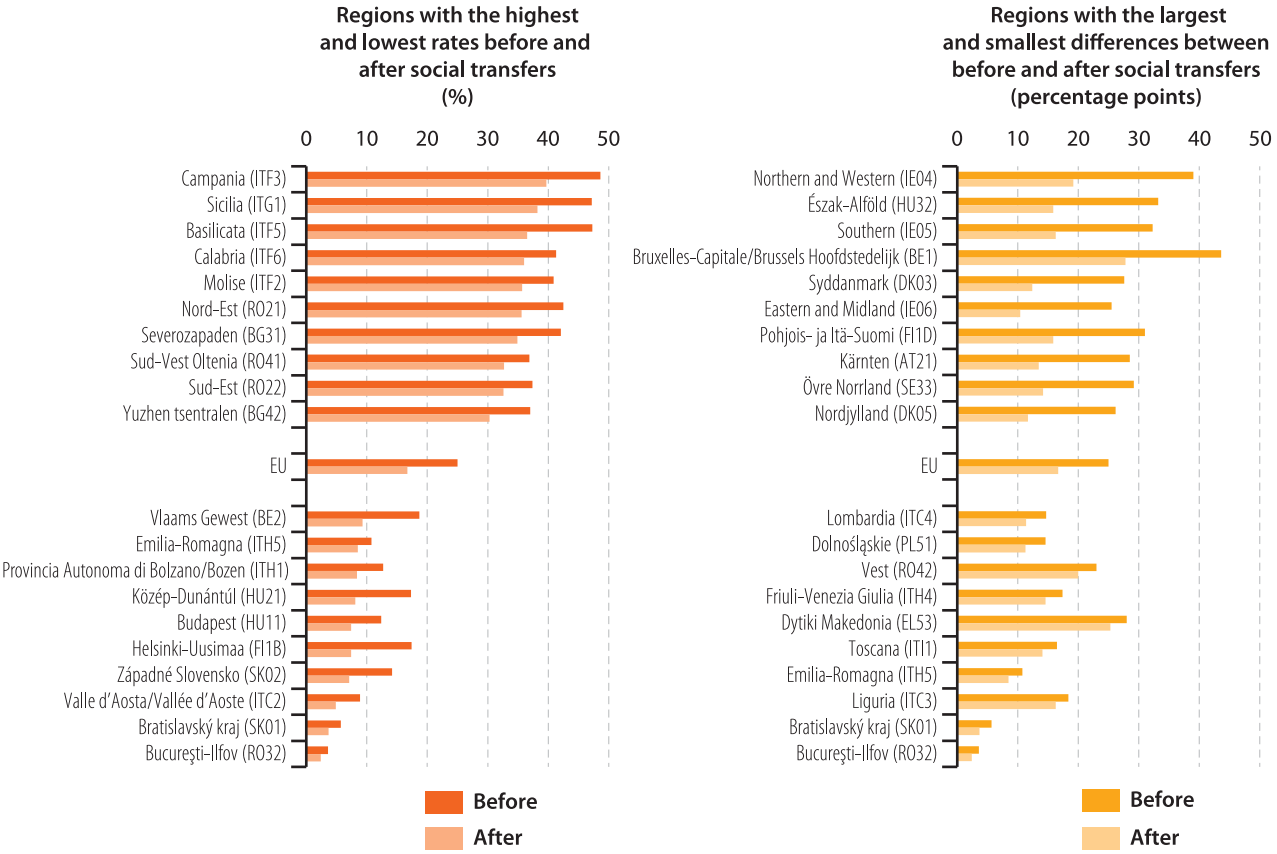
The risk of monetary poverty after social transfers was higher in the EU among youths (aged 16–29 years): it stood at 20.1 % in 2020, which was 3.4 percentage points higher than the average for the whole population. This pattern – higher monetary poverty among youths (than for the total population) – was repeated in approximately half (13 out of 27) of the EU Member States. The at-risk-of-poverty rate after social transfers was particularly high among youths in the Nordic Member States, at least 1.5 times as high as the rate for the whole population. By contrast, the risk of monetary poverty among youths in Malta, Croatia and Latvia was no more than three quarters of the rate recorded for the whole of their respective populations.

Figure 5.2 is split into two parts: the left-hand side presents for 2020 those regions in the EU with the highest and lowest at-risk-of-poverty rates after social transfers. Prior to social transfers, there were eight regions across the EU where upwards of two fifths of the population faced the risk of monetary poverty: the southern Italian regions of Sicilia, Basilicata and Campania had the highest rates, with almost half of their populations concerned (47.2–48.6 %). The next highest shares were recorded in the capital region of Belgium (43.6 %), Nord-Est in Romania (42.5 %), Severozapaden in Bulgaria (42.1 %), as well as two more southern Italian regions – Calabria (41.3 %) and Molise (40.9 %).

After taking account of the redistributive impact of social transfers, none of these eight regions mentioned above reported that more than two fifths of their populations were at risk of monetary poverty. Nevertheless, seven out of the eight continued to record the highest at-risk-of-poverty rates after social transfers in the EU, with more than one third of their total populations experiencing such a risk. The highest risks of poverty after social transfers were recorded in the five southern Italian regions – each with rates in the range of 35.7–39.7 % – with the peak in Campania.

By contrast, social transfers played a greater role in reducing the risk of poverty in Bruxelles-Capitale/ Brussels Hoofdstedelijk (the Belgian capital region), with a 15.8 percentage points reduction in the at-risk-of-poverty rate after social transfers. This sizeable fall meant that the Belgian capital featured among those EU regions where social transfers had their largest impact on reducing monetary poverty. The redistributive impact of social transfers was even greater than in the Belgian capital region in Northern and Western in Ireland, where the risk of monetary poverty was more than halved, falling from 39.0 % to 19.2 % (a reduction of 19.8 points). The next largest reductions were in Észak-Alföld in Hungary (where the risk of monetary poverty fell 17.3 points) and Southern in Ireland (down 16.0 points).

Figure 5.2: At-risk-of-poverty rate before and after social transfers, 2020
(selected NUTS 2 regions)



Note: Belgium, the Netherlands and Serbia, NUTS level 1. Czechia, Germany, Spain, France, Croatia and Portugal: national data. Länsi-Suomi (FI19) and Åland (FI20) are aggregated (same value for both regions). Austria: 2018.

Source: Eurostat (online data codes: ilc_li10_r, ilc_li41, ilc_li10 and ilc_li02)

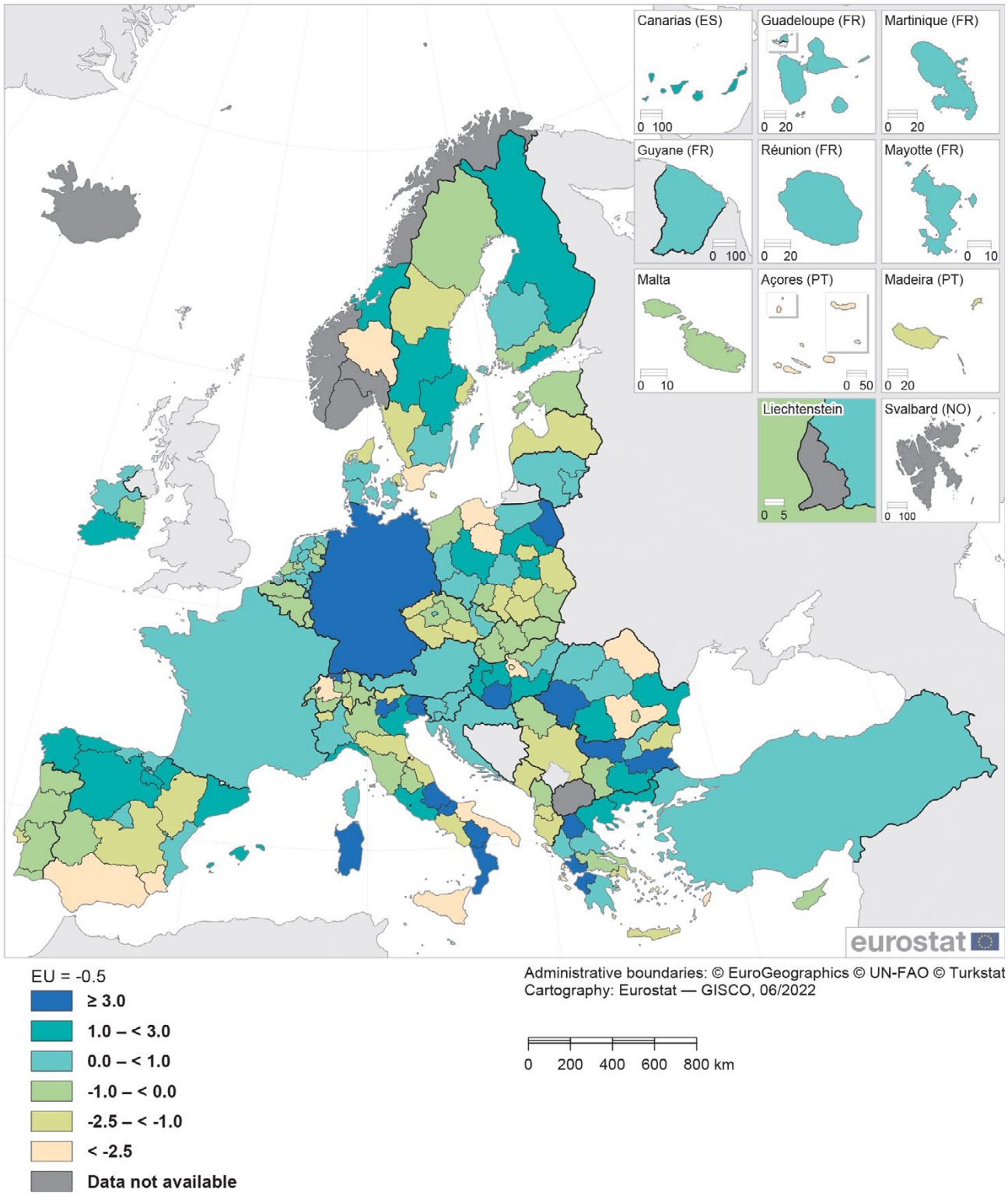
Map 5.4 provides an initial assessment of potential COVID-19 impacts on monetary poverty in the EU. Between 2019 and 2020, the at-risk-of-poverty rate (after social transfers) fell by 0.5 percentage points. Note that during periods of economic shocks/crises (when incomes may be falling), it is possible that the share of the population at risk of monetary poverty also falls, if a smaller proportion of the population has an income below 60 % of the median level. Note also that statistics presented in this section for Belgium relate to NUTS level 1 regions and only national data are available for Germany, France, Croatia and Austria.

In 2020, there was an annual reduction in the at-risk-of-poverty rate across 77 regions of the EU (out of 160 for which data are available), while monetary poverty increased in 74 regions; there were nine regions where there was no change in the at-risk-of-poverty rate between 2019 and 2020. This mixed pattern was observed in several EU Member States, for example:

- in Greece, the risk of monetary poverty rose by more than 3.0 percentage points in the inland regions of Dytiki Makedonia and Dytiki Elláda, whereas it fell by a similar margin in the popular tourist islands of Notio Aigaio and Ionia Nisia;
- in Italy, the risk of monetary poverty fell by more than 3.0 percentage points in Puglia and Sicilia, whereas it rose by more than 5.0 points in Calabria and Sardegna and by more than 9.0 points in Molise and Basilicata;
- in Hungary, the risk of monetary poverty fell by at least 3.0 percentage points in Budapest and the surrounding region of Pest, whereas it rose by 4.8 points in Dél-Dunántúl;
- in Romania, the risk of monetary poverty fell by 5.5 percentage points in Nord-Est, whereas it rose by a similar margin (5.3 points) in Vest.

The map shows this varied pattern of developments in some of the EU Member States, likely reflecting a rapid change in income levels as a result of COVID-19 impacts. Some of these Member States with considerable regional disparities were characterised by social transfers having a relatively low impact on

Map 5.4: Change in the at-risk-of-poverty rate after social transfers, 2019–2020
(percentage points, annual change, by NUTS 2 regions)



Note: Belgium and Serbia, NUTS level 1. Germany, France, Croatia, Austria and Turkey: national data. Denmark, Germany, Ireland, France and Luxembourg: break in series. Länsi-Suomi (FI19) and Åland (FI20) are aggregated (same value for both regions).

Source: Eurostat (online data codes: ilc_li41 and ilc_li02)

the risk of monetary poverty. On the other hand, annual changes in the risk of monetary poverty were distributed quite evenly across the national territories of some other Member States: for example, changes between 2019 and 2020 were within the range of -1.0 to 0.8 percentage points in the Netherlands, while in Slovakia the range was -0.3 to -0.8 points.

The largest annual increases in the at-risk-of-poverty rate (as shown by the darkest shade of blue in Map 5.4) were concentrated in Italy. Basilicata (an increase of 9.4 percentage points), Molise (up 9.2 points), Friuli-Venezia Giulia (up 6.2 points) and Sardegna (up 5.7 points) saw the biggest increases in the risk of monetary poverty between 2019 and 2020. The only other regions in the EU where this risk rose by more than 5.0 points were: Vest in Romania, Yugoiztochen in Bulgaria and Calabria in Italy. Note also that the considerable increase in the at-risk-of-poverty rate in Germany (only national data available), rising 3.7 percentage points between 2019 and 2020, may be explained, at least in part, by a break in series.

At the other end of the range, the biggest annual decreases in the at-risk-of-poverty rate (as shown by the lightest shade of yellow) were widely distributed, although primarily located in eastern and southern regions of the EU. Of the 16 regions that recorded an annual reduction of more than 2.5 percentage points, three were in Spain, there were two regions from each of Greece, Italy, Hungary, Poland and Romania, as well as single regions from Belgium, Portugal and Sweden. There were three regions where the risk of monetary poverty fell by more than 5.0 percentage points between 2019 and 2020. The biggest reduction was recorded in Nord-Est in Romania (down 5.5 points), followed by Sydsverige in Sweden (down 5.4 points) and Ciudad de Ceuta in Spain (down 5.3 points).

PEOPLE AT RISK OF POVERTY OR SOCIAL EXCLUSION

The final part in this section brings together some of the different indicators described above to provide a consolidated overview of the situation concerning people at risk of poverty or social exclusion. As noted at the beginning of this chapter, people at risk of poverty or social exclusion are in at least one of the following three situations: at-risk-of-poverty, facing severe material and social deprivation, or living in a household with very low work intensity. This combined measure is a key policy indicator and has been included in the European Pillar of Social Rights Action Plan as one of three EU targets for monitoring progress towards a 'strong social Europe'. The action plan targets reducing the number of people at risk of poverty or social exclusion by at least 15 million between 2019 and 2030, with at least five million of the reduction concerning children.

In the aftermath of the global financial and economic crisis, there was a general widening of socioeconomic inequalities. It is too early to judge the impact of the COVID-19 crisis, not least because the pandemic is still on-going at the time of writing, but also because the latest reference year for most statistics on income and living conditions is 2020. Nevertheless, more rapidly available statistics in other areas suggest that the COVID-19 crisis has impacted particularly upon some disadvantaged groups in society. Often these are people who already faced (pre-pandemic) a higher risk of poverty or social exclusion, such as children and young people, people with precarious employment contracts, people with health problems or disabilities, or people working in relatively low pay sectors/businesses.

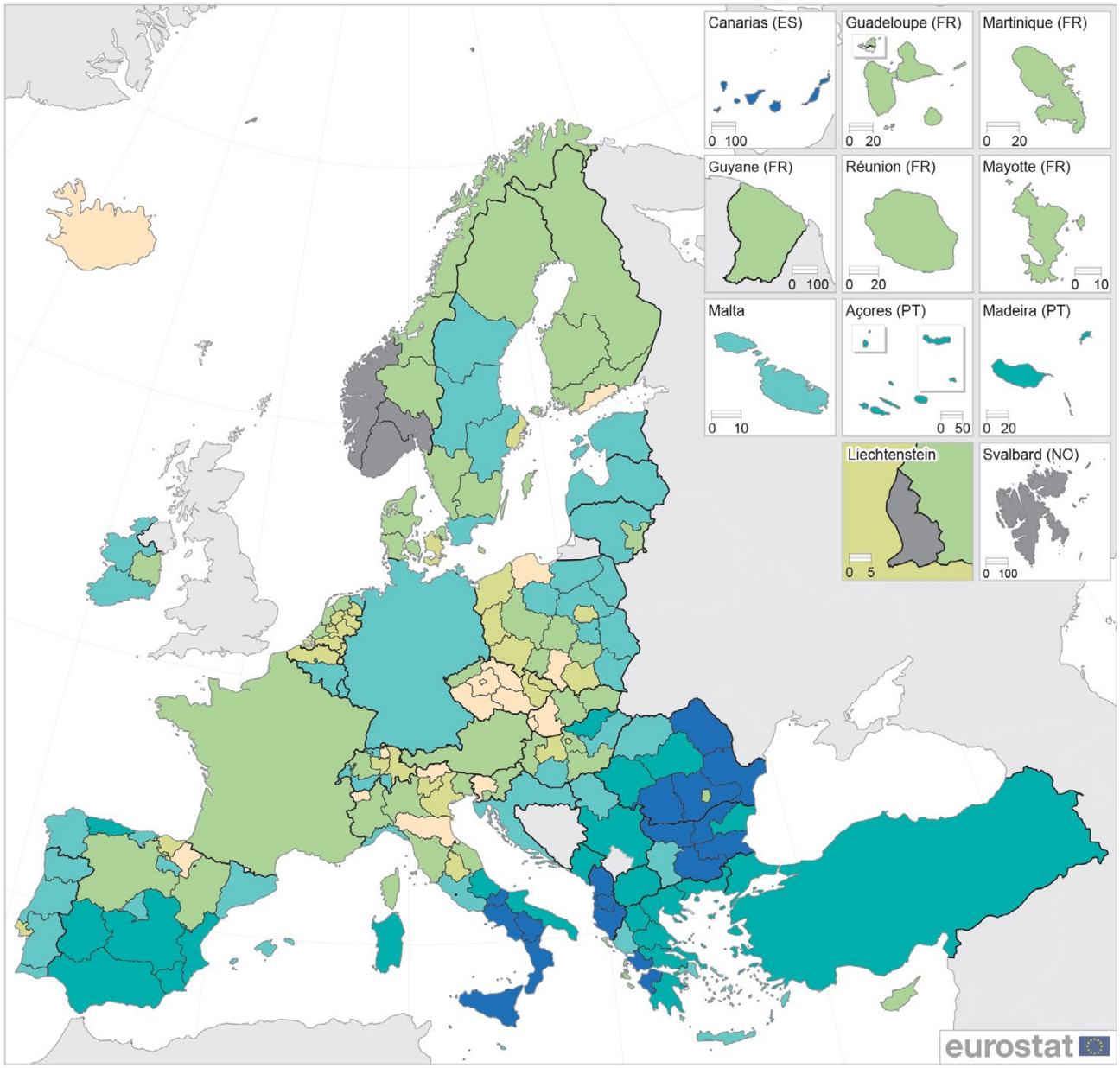
Some 21.6 % of the EU population was at risk of poverty or social exclusion in 2020

Between 2015 (the first reference year for which data are available) and 2019, there were four consecutive annual reductions in the number of people in the EU who were at risk of poverty or social exclusion. Having fallen to 92.2 million persons in 2019, the onset of the COVID-19 crisis impacted upon the risk of poverty and social exclusion, with a 2.5 million (or 2.7 %) increase in 2020. As such, more than one fifth (21.6 %) of the EU's total population was at risk of poverty and social exclusion.

Across the EU, the risk of poverty or social exclusion was higher among youths (aged 16–29 years) than it was for the general population (24.8 % compared with 21.6 %). This pattern – a higher risk of poverty or social exclusion among youths (than for the total population) – was repeated in approximately half (13 out of 27) of the EU Member States. Such risks were generally higher for youths (than for the total population) across many of the northern and western Member States; this was particularly notable in Denmark, Sweden, Luxembourg, Germany and Finland. By contrast, the risk of poverty or social exclusion was often lower for youths in a number of eastern and all of the Baltic Member States; this was particularly notable in Croatia and Latvia.

Map 5.5 shows the regional distribution of people at risk of poverty or social exclusion across NUTS level 2 regions. Note that the statistics presented for Belgium relate to NUTS level 1 regions and that only national data are available for Germany, France, Croatia and Austria. The share of the population that was at risk of poverty or social exclusion was skewed, as almost three fifths (58.8 %) of all regions in the EU (94 out of the 160 for which data are available) recorded a share below the EU average. The overall picture was one where a relatively low proportion of people faced the risk of poverty or social exclusion in several eastern regions of the EU, concentrated in Czechia, Hungary, Poland, Slovenia and Slovakia (including all of their capital regions). Equally, there were also relatively low shares across most of the Netherlands, several northern and central Italian regions, the capital regions of Portugal, Finland and Sweden and one or two regions of Belgium, Denmark and Spain. By contrast, those living

Map 5.5: People at-risk-of-poverty or social exclusion, 2020
(%, by NUTS 2 regions)



Note: Belgium and Serbia, NUTS level 1. Germany, France, Croatia, Austria and Turkey: national data. Länsi-Suomi (FI19) and Åland (FI20) are aggregated (same value for both regions). Nord-Norge (NO07) and North Macedonia: 2019. Iceland: 2018.

Source: Eurostat (online data codes: ilc_peps11n and ilc_peps01n)

across much of Bulgaria, Greece and Romania, as well as central and southern regions of Spain and southern regions of Italy, were often more likely to be at risk of poverty or social exclusion. This was also the case in the Belgian capital region and one or two regions in Hungary and Portugal.

Some of the highest proportions of people at risk of poverty or social exclusion were recorded in rural and remote eastern and southern regions of the EU. In 2020, the highest share of people at risk of poverty or social exclusion was recorded in Sud-Est in Romania (51.9 %); it was the only region in the EU where a majority of the population faced such risks. The next highest shares were in the southern Italian region of Campania (47.4 %) and the Bulgarian region of Severozapaden (44.2 %). Note that all three regions had relatively high risks of monetary poverty after social transfers.

People living in the capital regions of many eastern and some southern EU Member States were often less likely to be at risk of poverty or social exclusion than their counterparts living in other regions. In 2020, the Slovak and Czech capitals – Bratislavský kraj and Praha – recorded the lowest shares of people at risk of poverty or social exclusion in the EU (5.9 % and 8.1 % respectively). Several other eastern EU Member States recorded relatively low shares of people at risk of poverty or social exclusion in their capital region. This pattern was particularly notable in Romania, as the share of people at risk of poverty or social exclusion in Bucureşti-Ilfov was 16.0 %, less than one third of the share recorded in Sud-Est.

Elsewhere, the pattern described above was often reversed. Despite their capital regions (and other large cities/agglomerations) being among some of the most affluent regions in the EU, several western and Nordic regions were characterised by social deprivation. For example, more than one third (36.4 %) of the population in Région De Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (NUTS level 1) and almost one quarter (18.0 %) of the population in Hovedstaden were at risk of poverty or social exclusion; these were higher shares than in any of the other regions of Belgium or Denmark.

Income distribution

The issue of inequality has gained increasing importance in political and socioeconomic discourse in the aftermath of the global financial and economic crisis, and in the context of people and regions being 'left behind'.

GDP per inhabitant has traditionally been used to assess regional divergence/convergence in overall living standards. However, it does not capture the distribution of income within a population and thereby does little to reflect economic inequalities.

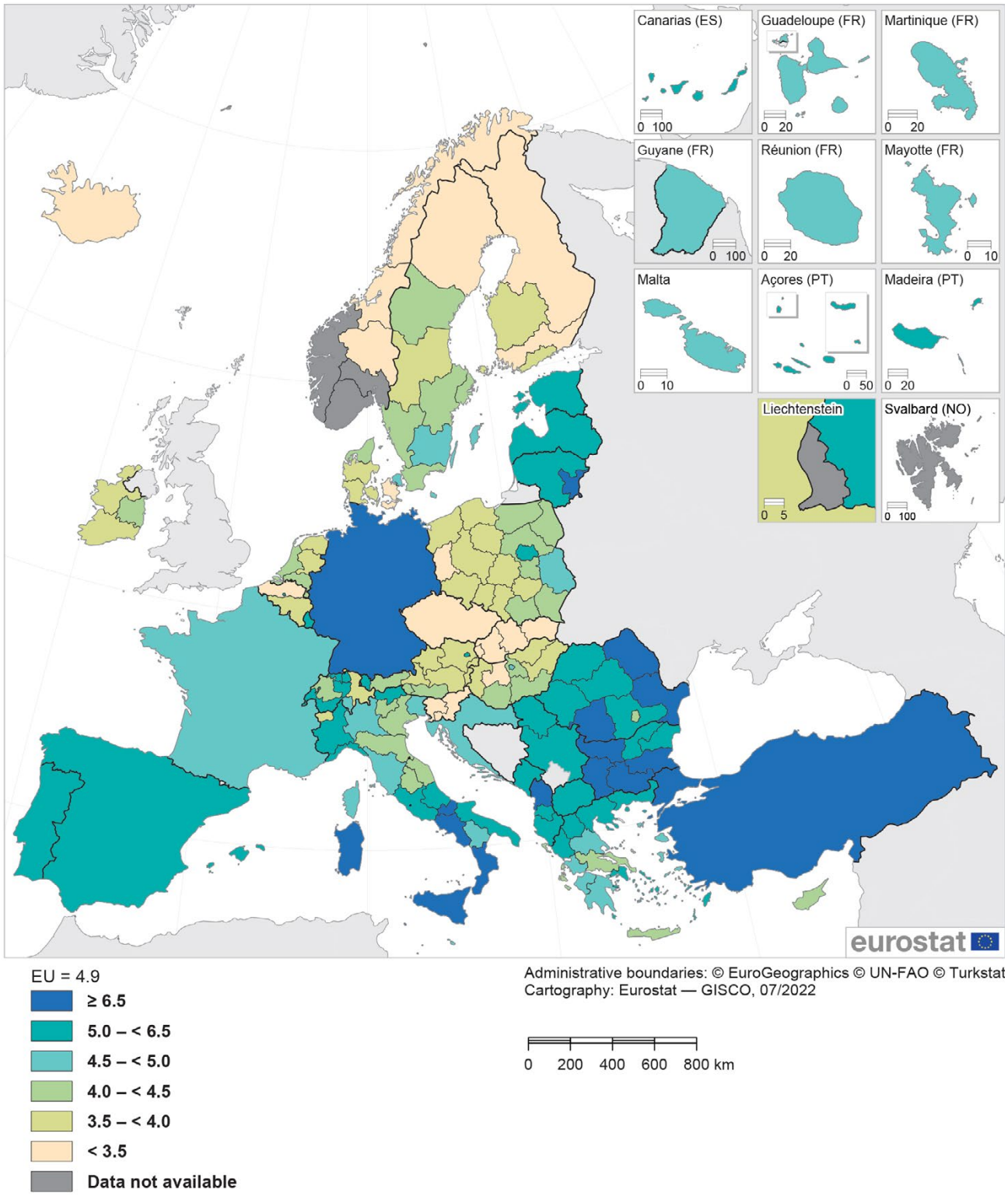
Income comprises earnings (such as wages, salaries and bonuses), capital income from dividends, interest on savings accounts, rent from property, as well as welfare benefits, state pensions and other government transfers. The income quintile share ratio (S80/S20 ratio) measures the inequality of income distribution. It is calculated as the ratio between the share of income received by the 20 % of the population with the highest income (the top quintile) and the share of income received by the 20 % of the population with the lowest income (the bottom quintile). In 2020, the EU's income quintile share ratio was 4.9 – in other words, the collective income received by the 20 % of people with the highest incomes was almost five times as high as the collective income received by the 20 % with the lowest incomes.

Map 5.6 shows the regional distribution of the income quintile share ratio. Note that the statistics presented for Belgium and the Netherlands relate to NUTS level 1 regions and that only national data are available for Czechia, Germany, Spain, France, Croatia and Portugal. At a national level, the distribution of income was most equitable in Slovakia, Slovenia and Czechia, whereas it was least equitable in Latvia, Germany, Romania and Bulgaria. The regional distribution of the income quintile share ratio was skewed: almost two thirds (83 out of 129) of those regions for which data are available had a ratio that was below the EU average of 4.9, while there were four regions that had the same ratio, and just under one third of regions where income disparities were greater than the EU average.

Within multi-regional EU Member States, the distribution of income often followed a different pattern in the capital region when compared with the rest of the country. It was commonplace to find that the capital region had the highest income quintile share ratio. This was the case, for example, in the capital regions of Belgium (NUTS level 1), Denmark, Ireland, Lithuania, Hungary, Austria (2018 data), Poland, Slovenia and Finland. This pattern was reversed in Romania and Slovakia, as their lowest income quintile share ratios were recorded in the capital regions of Bucureşti-Ilfov and Bratislavský kraj.

Across the whole of the EU, the highest income quintile share ratios were recorded in several regions characterised as having a relatively high proportion of people at risk of poverty or social exclusion. Molise in southern Italy had the highest ratio in 2020, as the income of the top 20 % of earners in this region was 10.4 times as high as the income of the bottom 20 % of earners. The next highest income quintile share ratios were 8.9 in Nord-Est in Romania and 8.5 in the Bulgarian regions of Severozapaden and Yugozapaden. At the other end of the range, the income shares held by the highest earning 20 % of the population in the Slovak regions of Bratislavský kraj and Západné Slovensko were only 2.6 or 2.7 times as high as those held by the lowest earning 20 % of the population in the same regions.

Map 5.6: Income quintile share ratio (S80/S20), 2020
(ratio, by NUTS 2 regions)



Note: Belgium, the Netherlands and Serbia, NUTS level 1. Czechia, Germany, Spain, France, Croatia, Portugal and Turkey: national data. Länsi-Suomi (FI19) and Åland (FI20) are aggregated (same value for both regions). Nord-Norge (NO07) and North Macedonia: 2019. Austria and Iceland: 2018.

Source: Eurostat (online data codes: ilc_di11_r and ilc_di11)

6. Digital society

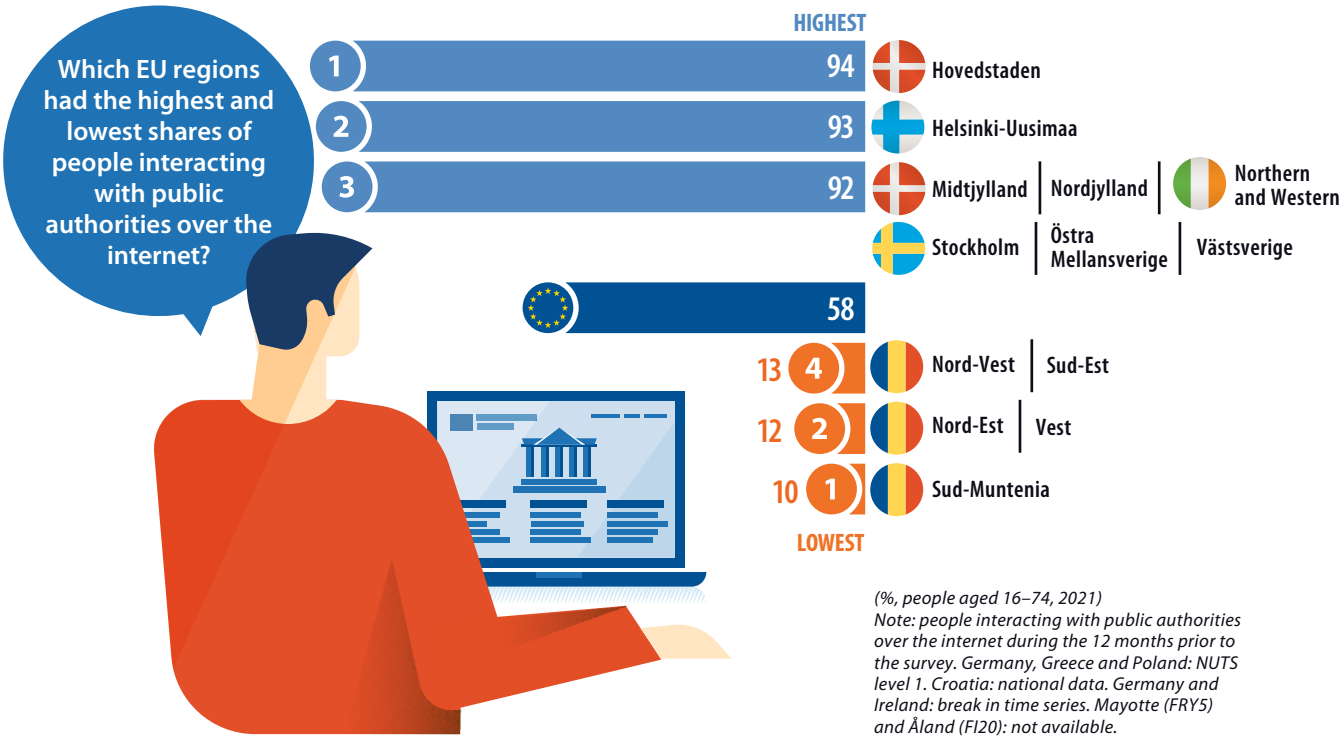
Information and communication technologies (ICTs) affect people's everyday lives in many ways, at work, studying, in the home and elsewhere – for example, when communicating, keeping abreast of the news, being entertained, interacting with public authorities (see the infographic), paying bills or shopping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

The infographic shows that in the European Union (EU) almost three fifths (58 %) of people aged 16–74 years made use of the internet to interact with public authorities in 2021. Much higher shares were recorded in most Nordic regions, as well as regions across Ireland and the Netherlands. The highest share of people interacting with public authorities was recorded in the Danish capital region – Hovedstaden – at 94 %.

Access to ICTs is considered by many as fundamental for improving productivity levels and the competitiveness of regions. As internet and digital technologies continue to transform the world, ICT innovations provide a stream of new business opportunities. It is hoped that this new digital world, the *internet of things* – which is working its way into many aspects of society – will provide tools that may be applied to a range of EU policy objectives in fields as diverse as health, security, climate, transport, energy, or the modernisation of the public sector.

Digital solutions can enrich our lives in many ways. But the benefits arising from digital technologies do not come without risks or costs. Some people no longer feel in control over what happens with their personal data and are increasingly overloaded by digital solicitations for their attention. Furthermore, malicious cyberactivity may threaten personal well-being or disrupt critical infrastructures and wider security interests.

The COVID-19 crisis and related restrictions impacted on the use of various digital technologies; in some parts of society it radically changed the role and perception of digitalisation, often accelerating the pace of change. Pupils and students made increased use of online studying while many in the workforce experienced a shift towards a greater use of digital technologies while working from home. Away from studying and working, there was also an increase in the use of digital technologies for communication between people who were physically restricted in their movements and limited in the extent to which they could meet up. The crisis was accompanied by increased consumption of online services, for example ordering goods and services online, having online meetings or video chats, or using streaming services. Digital technologies also played a direct role in the efforts made to counter the spread of COVID-19, for example through test and trace procedures or for the rollout of vaccination programmes.



(%, people aged 16–74, 2021)
Note: people interacting with public authorities over the internet during the 12 months prior to the survey. Germany, Greece and Poland: NUTS level 1. Croatia: national data. Germany and Ireland: break in time series. Mayotte (FRY5) and Åland (FI20): not available.

Source: Eurostat (online data codes: isoc_r_gov_i and isoc_ciegi_ac)

Household surveys to collect data on ICT usage are usually conducted during the second quarter of each year (although the precise date at which surveys are conducted varies across EU Member States). In general, data refer to the first quarter of the reference year and often concern activities during the previous 3 or 12 months. Note: all of the statistics presented below cover people aged 16–74 years. Data for Germany, Greece and Poland relate to NUTS level 1 regions; data for Turkey are presented for level 1 statistical regions.

Internet users

Although the internet is an almost constant part of the lives of many people in the EU, some people are excluded to a greater or lesser extent, resulting in the so-called digital divide. People living in remote regions may be excluded as a lack of investment in infrastructure leads to access and/or performance issues when trying to use the internet; this may result in socially undesirable outcomes. Some other people, particularly within older generations, may not have the necessary e-skills to take full advantage of various services that are provided via the internet. With a growing share of day-to-day tasks being carried out online, the ability to use modern technologies becomes increasingly important to ensure everyone can participate in the digital society. During the COVID-19 crisis a new digital divide emerged, not only a spatial divide between well-connected urban areas and rural and remote territories, but also one between people who could fully benefit from a wide range of digital services in a secure digital space, and those who could not – digital poverty. The digital divide is likely to be further challenged in the next few years, as 5G internet services (the fifth generation of cellular network technology) are gradually rolled out.

Four fifths of all people aged 16–74 years in the EU made use of the internet on a daily basis

For the ICT survey of households and individuals, an internet user is defined as a person aged 16–74 years making use of the internet in whatever way: whether at home, at work, or anywhere else; whether for private or professional purposes; regardless of the device (desktop computer, laptop, netbook or tablet, smartphone, games console or e-book reader) or type of connection being used.

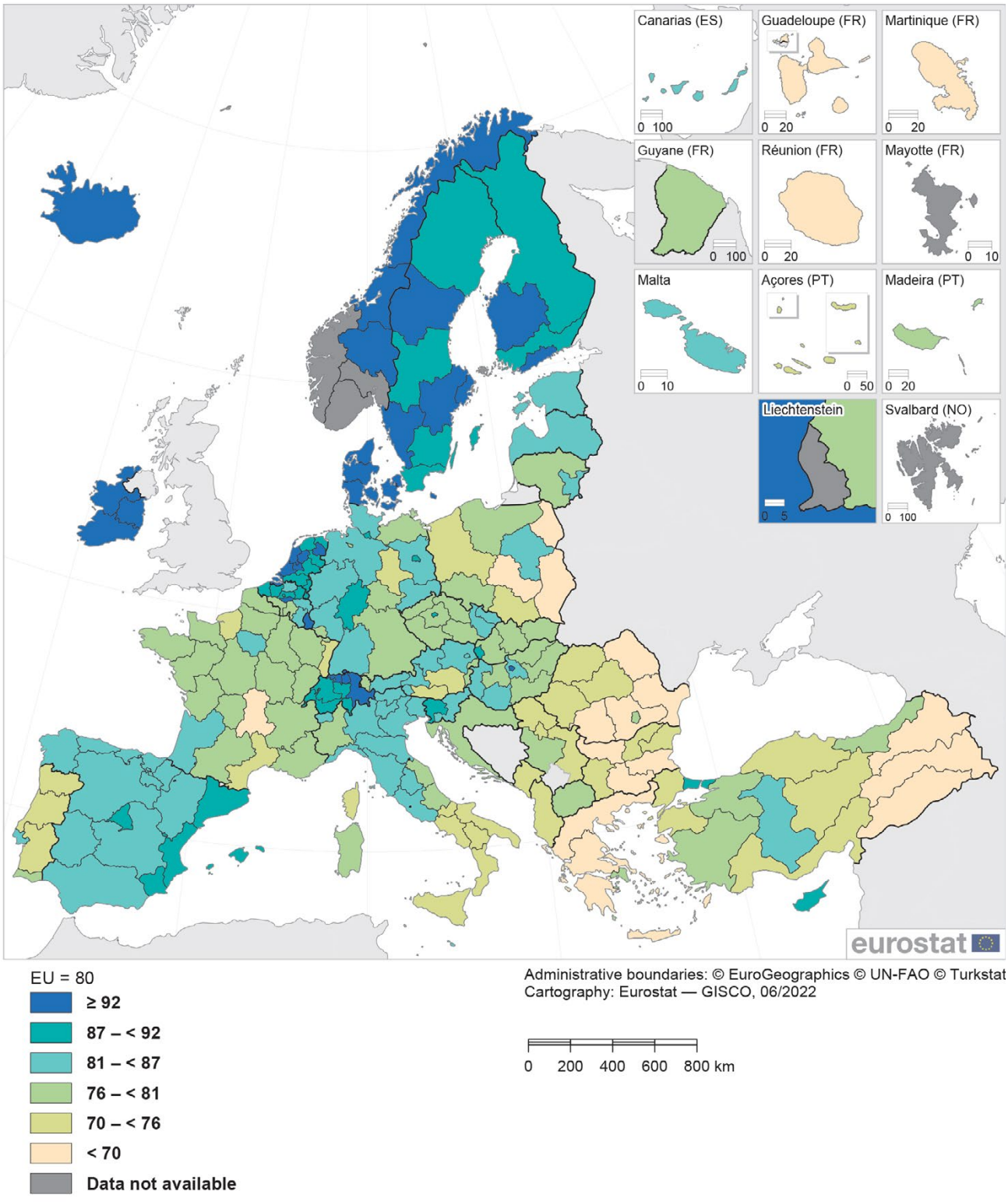
In 2021, four fifths (80 %) of the EU's population aged 16–74 years reported having used the internet on a daily basis during the three months preceding the survey; this figure was 26 percentage points higher than a decade before (54 % in 2011). Internet use was particularly high among younger generations: some 95 % of youths (defined here as people aged 16–29 years) in the EU made use of the internet on a daily basis in 2021; by contrast, the share for older people (aged 65–74 years) was considerably lower, at 50 %.

In every region of the EU, more than 60 % of the population aged 16–74 years was making use of the internet on a daily basis

Map 6.1 shows the regional distribution of daily internet use across NUTS level 2 regions; note that data for Germany, Greece and Poland relate to NUTS level 1 regions. There were widespread disparities between EU regions in terms of daily use of the internet along broad geographical lines: northern and western regions generally recorded higher levels than southern or eastern regions.

In 2021, the lowest share of people aged 16–74 years making daily use of the internet was recorded in the outermost region of La Réunion in France (61 %). The second lowest shares (62 %) were in Severozapaden (Bulgaria) – the poorest region in the EU, as measured by GDP per inhabitant – and in Sud-Vest Oltenia (Romania). At the other end of the range, the highest shares of people making daily use of the internet were recorded in Northern and Western in Ireland, Zeeland in the Netherlands, and Midtjylland in Denmark, where more than 95 % of people were using the internet on a daily basis. Very high shares were also recorded in the capital regions of the Nordic Member States – Hovedstaden, Helsinki-Uusimaa and Stockholm – and of Ireland (Eastern and Midland) and Luxembourg. Indeed, across many of the EU Member States it was common to find capital regions and other predominantly urban regions recording some of the highest proportions of people making daily use of the internet, while more rural or remote regions recorded lower shares; this pattern was most clearly seen in several of the eastern Member States.

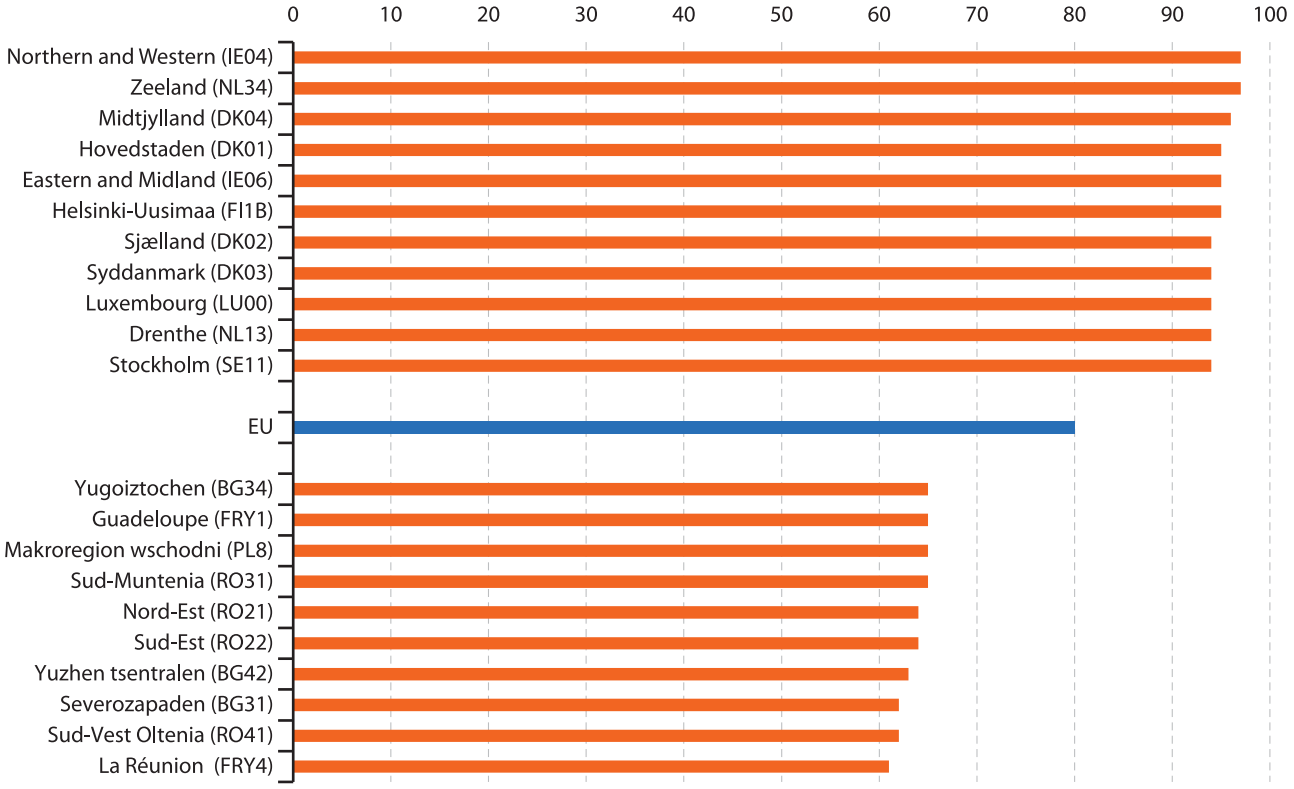
Map 6.1: **Daily internet users during the three months preceding the survey, 2021**
(%, people aged 16–74, by NUTS 2 regions)



Note: Germany, Greece, Poland and Turkey, NUTS level 1. Croatia and Albania: national data.
Source: Eurostat (online data codes: isoc_r_iuse_i and isoc_ci_ifp_fu)

An analysis for the EU regions with the highest and lowest shares of daily internet users is presented in Figure 6.1. Alongside the regions mentioned above, those regions in the EU with the highest shares of daily internet users in 2021 also included two more Danish regions (Sjælland and Syddanmark) and an additional Dutch region (Drenthe). At the other end of the range, the vast majority of EU regions with the lowest shares of daily internet users were located in Bulgaria, Greece, Romania or the outermost regions of France; this group also included Makroregion wschodni and Makroregion centralny in Poland (NUTS level 1).

Figure 6.1: Daily internet users during the three months preceding the survey, 2021
(%, people aged 16–74, selected NUTS 2 regions)



Note: the figure shows the regions with the highest and lowest shares. The ranking may include more than 10 regions if several regions have identical values. Germany, Greece and Poland: NUTS level 1. Croatia, national data. Mayotte (FRY5) and Åland (FI20): not available.

Source: Eurostat (online data codes: isoc_r_iuse_i and isoc_ci_ifp_fu)

Internet activities

With the prolific use in modern society of mobile devices such as smartphones and tablets, the frequency with which people use the internet has grown exponentially. Although it was initially used as a means to exchange information (often in a working environment), the range of activities conducted over the internet has rapidly changed. For example, it is less than 15 years since commercially successful app stores or streaming services were launched.

PARTICIPATION IN SOCIAL NETWORKS

One of the most popular activities on the internet is participation in social networks, for example, using Facebook, Instagram, Snapchat, TikTok or Twitter. The propensity to make use of such services is closely linked to age. A much higher proportion of younger people use social networks on a regular basis, and young people are also more likely to be early adopters of new apps/services as they seek alternative ways of exchanging text, sound, images, video and other information.

In 2021, close to three fifths (57 %) of the EU's population (aged 16–74 years) participated in social networks during the three months prior to the latest survey. The participation rate for youths aged 16–29 years (83 %) was almost four times as high as the corresponding rate for older people aged 65–74 years (23 %). During the most recent five-year period for which data are available, there was little or no change in the share of youths participating in social networks, as it appears to have already reached saturation; note the statistics presented do not provide a measure of the average time spent interacting with social networks. By contrast, the proportion of older people using social networks almost doubled during the same period.

Despite relatively low levels of internet access, many eastern regions of the EU recorded high shares of people participating in social networks

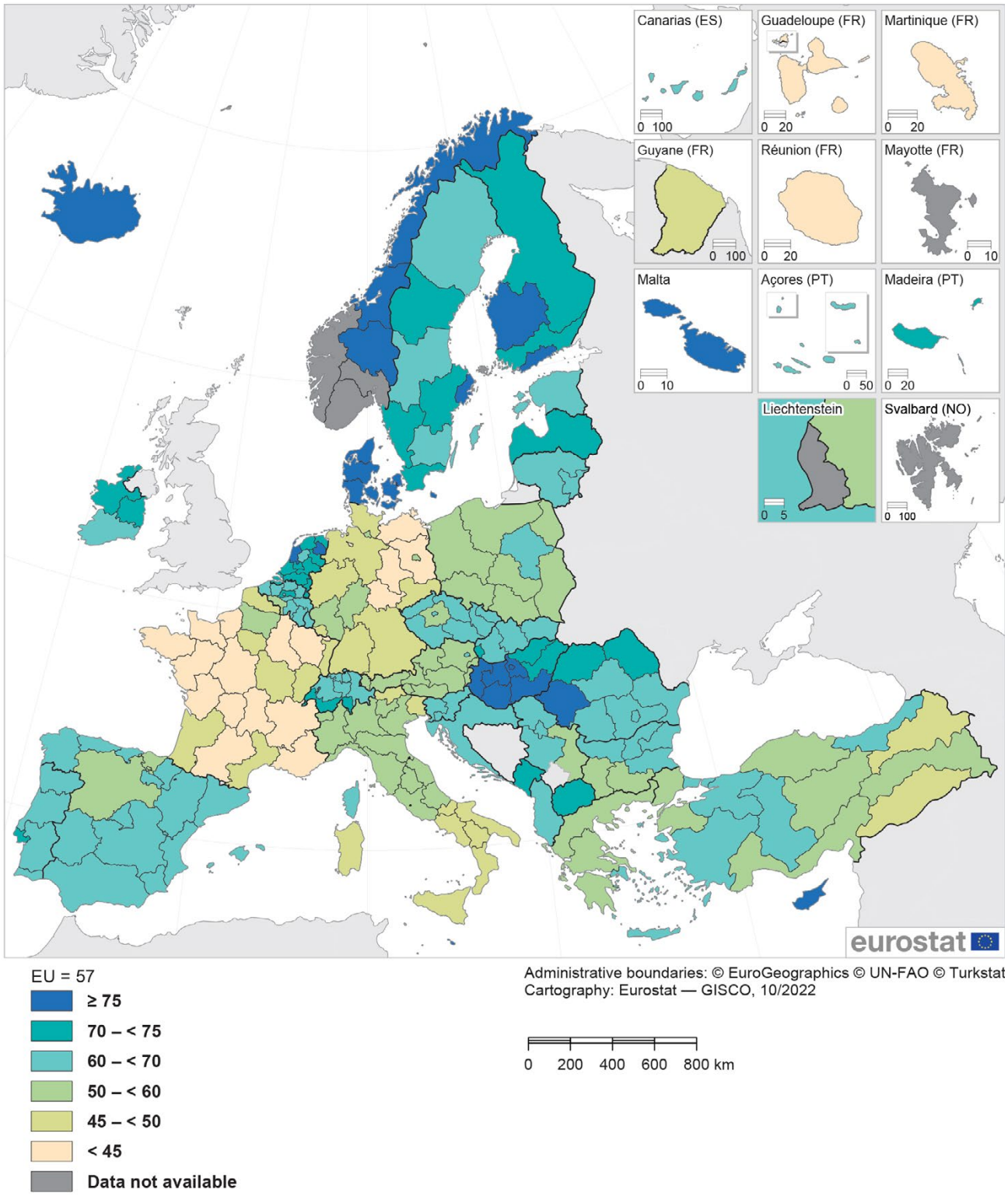
In 2021, there were 19 NUTS level 2 regions across the EU where at least three quarters of the population participated in social networks (as shown by the darkest shade of blue in Map 6.2; note again that data for Germany, Greece and Poland relate to NUTS level 1 regions). The regions with the highest shares were concentrated in Denmark (all five regions) and Hungary (six out of eight regions), while three other Nordic regions, two Dutch regions and single regions from each of Cyprus, Malta and Romania also reported that at least three quarters of people aged 16–74 years participated in social networks.

Although many would argue that social networks are ubiquitous, there were 45 NUTS level 2 regions in the EU where less than half of all people aged 16–74 years participated in social networks (as shown by the two lightest shades of yellow). Focusing on the 21 regions where less than 45 % of people participated in social networks, these were exclusively located in Germany (NUTS level 1 regions) and France. Several of these were characterised as predominantly rural or outermost regions. Participation in social networks was particularly low in the eastern German regions of Thüringen, Brandenburg, Mecklenburg-Vorpommern and Sachsen-Anhalt (each of these had a share within the range of 34–37 %) and in the outermost regions of La Réunion (35 %) and Guadeloupe (36 %) in France.

The wide differences in participation rates for social networks may, at least in part, be linked to whether (or not) people are connected to the internet. Relatively low rates of internet access will, by definition, limit the potential use of social networks. However, internet access was generally widespread in much of France and Germany. As such, other factors may be relevant, for example, an ageing population structure in certain regions, or issues linked to privacy and the willingness of individuals to share their data online. By contrast, despite relatively low levels of internet access, many eastern regions of the EU recorded high shares of people participating in social networks.

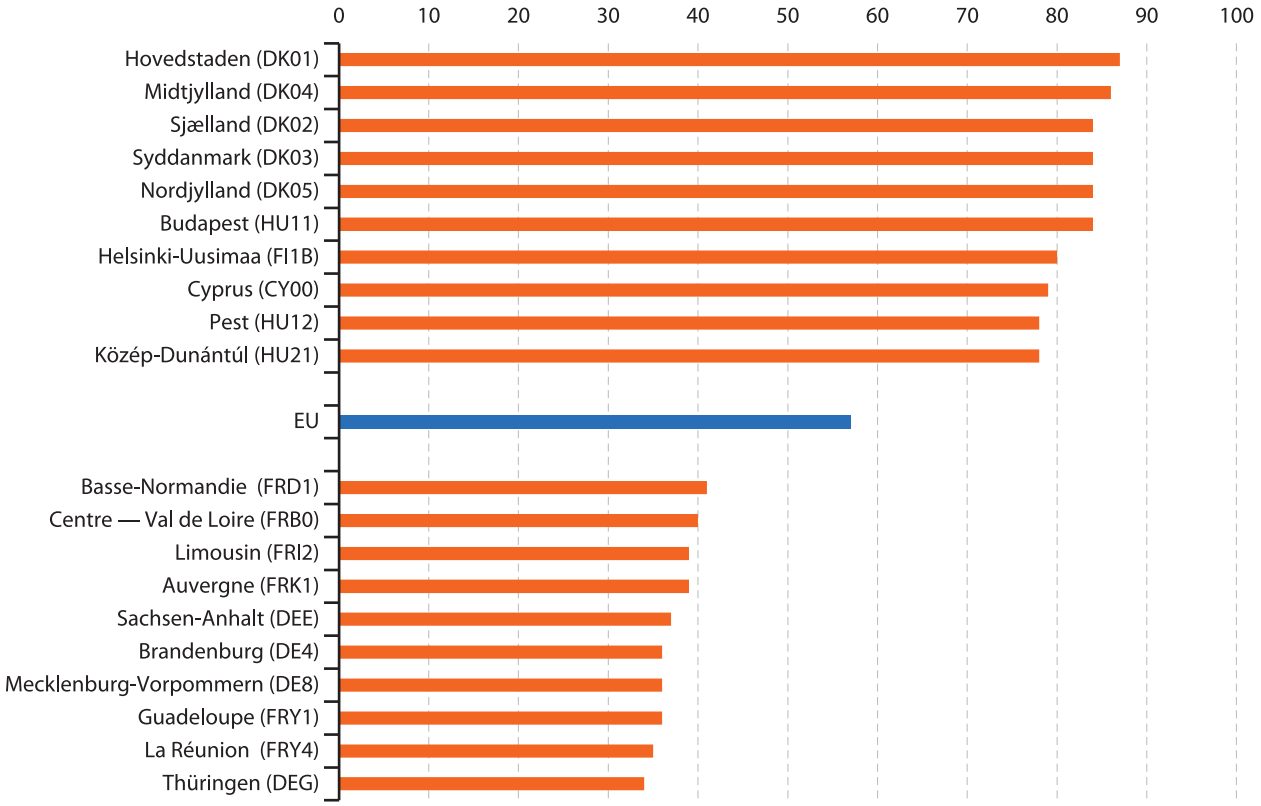
Figure 6.2 shows, in more detail, the NUTS level 2 regions with the highest and lowest shares of people participating in social networks.In 2021, the highest participation rates were recorded in all five regions of Denmark. A peak of 87 % was recorded in the capital region of Hovedstaden, closely followed by Midtjylland (86 %), while the three other Danish regions each had a share of 84 %; they were joined by Budapest (the capital region of Hungary). There were two other Hungarian regions with very high participation rates – Pest and Közép-Dunántúl. Outside of Denmark and Hungary, the only other regions in the EU where at least 78 % of people aged 16–74 years participated in social networks were Helsinki-Uusimaa (the capital region of Finland) and Cyprus.

Map 6.2: **People participating in social networks during the three months preceding the survey, 2021**
(%, people aged 16–74, by NUTS 2 regions)



Note: Germany, Greece, Poland and Turkey, NUTS level 1. Croatia and Albania: national data.
Source: Eurostat (online data codes: isoc_r_iuse_i and isoc_ci_ac_i)

Figure 6.2: People participating in social networks during the three months preceding the survey, 2021
(%, people aged 16–74, selected NUTS 2 regions)



Note: the figure shows the regions with the highest and lowest shares. Germany, Greece and Poland: NUTS level 1. Croatia: national data. Mayotte (FRY5) and Åland (FI20): not available.

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

INTERNET BANKING

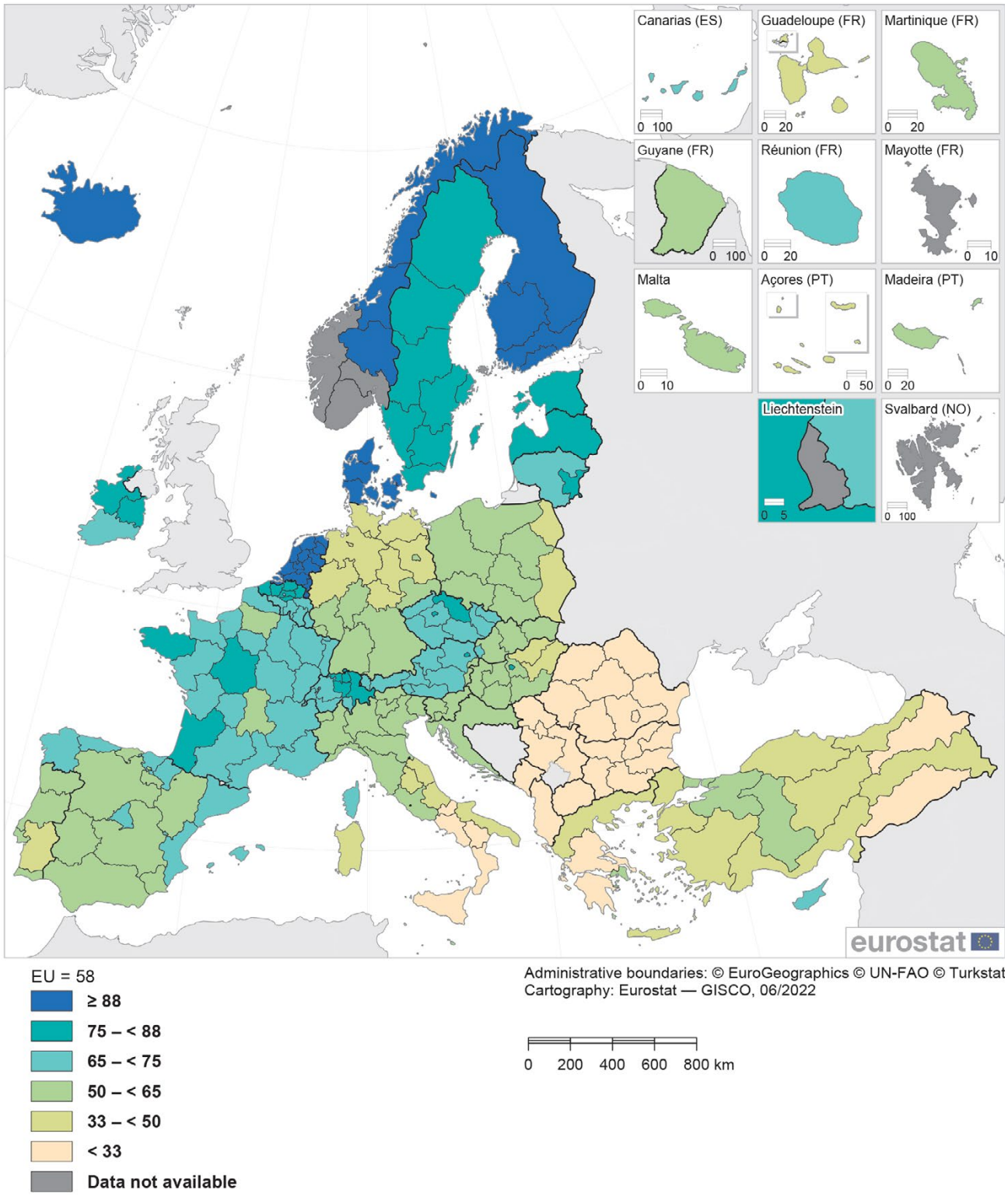
In recent years, one of the main developments within the EU's banking sector has been an expansion of online services. The frequency with which consumers visit their local branch has fallen rapidly, as the number of branches has contracted and online transfers and e-payments becoming the norm. Some markets have seen the emergence of internet (or virtual) banks that do not have any physical branches. As such, internet banks eliminate the overheads associated with running local branches and they are often in a better position to offer more competitive services than 'bricks and mortar' banks.

In 2021, almost three fifths (58 %) of the EU's population (aged 16–74 years) used the internet for banking during the three months prior to the latest survey. As with most internet activities, there were some quite large differences between age groups concerning the take-up of internet banking. Youths (aged 16–29 years) were slightly more likely to make use of internet banking (61 %) than the whole of the population aged 16–74 years. This relatively low figure may be linked to young people not (yet) having a bank account, and therefore by definition, having no need for internet banking. Looking in more detail, the proportion of people aged 16–19 years who used the internet for banking was just 38 %; however, this share increased rapidly with age as a growing share of young people joined the labour force or moved into tertiary education, rising to 68 % for people aged 20–24 years and 74 % for those aged 25–29 years.

The use of internet banking reflects, to some degree, the availability of broadband internet connections. Nevertheless, an individual's choice as to whether or not they use the internet for banking often comes down to a matter of trust (which may reflect national characteristics). In 2021, at least 94 % of people aged 16–74 years made use of internet banking in every NUTS level 2 region of Denmark, at least 91 % in every region of Finland (no data for Åland) and at least 88 % in every region of the Netherlands; note again that data for Germany, Greece and Poland relate to NUTS level 1 regions.

The regions where the use of internet banking was below the EU average were predominantly located in eastern and southern regions of the EU. In 2021, every region of Bulgaria and Romania reported that less than one third of all people aged 16 -74 years made use of internet banking (as shown by the lightest shade of yellow in Map 6.3); this was also in five southern regions of Italy and in Kentriki Elláda in Greece (NUTS level 1).

Map 6.3: People using internet banking during the three months preceding the survey, 2021
(%, people aged 16–74, by NUTS 2 regions)



Note: Germany, Greece, Poland and Turkey, NUTS level 1. Croatia and Albania: national data.
Source: Eurostat (online data codes: isoc_r_iuse_i and isoc_ci_ac_i)

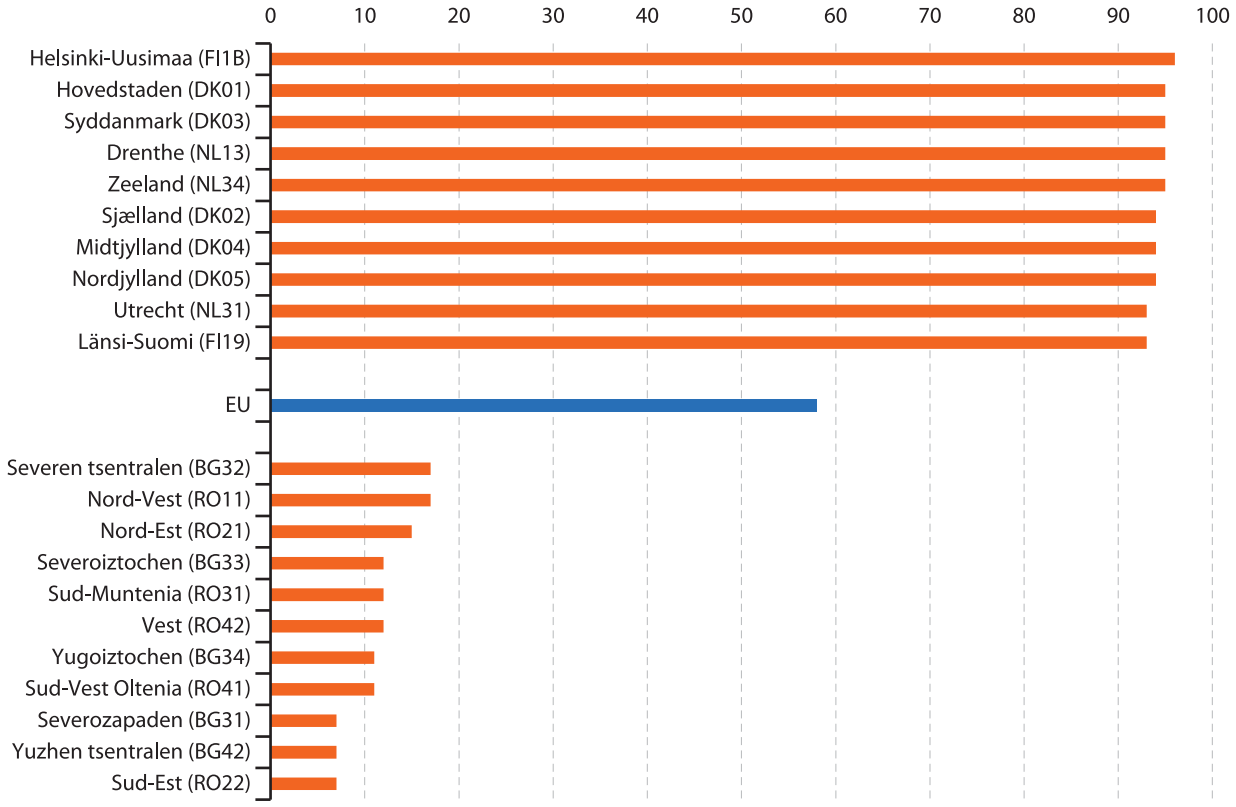
More than 19 out of every 20 people aged 16–74 years in the Finnish capital region of Helsinki-Uusimaa made use of the internet for banking

Figure 6.3 provides a more detailed set of information concerning the penetration of online banking among people aged 16–74 years. In 2021, Helsinki-Uusimaa (the capital region of Finland) had the highest share of people using internet banking (96 %). This was closely followed by Hovedstaden (the capital region of Denmark) and Syddanmark (also in Denmark), and by Drenthe and Zeeland (both in the Netherlands); all four of these regions had shares of 95 %. The remaining regions at the top of the list confirmed that consumers in Danish, Dutch and Finnish regions were highly likely to make use of internet banking.

As noted above, by far the lowest take-up of internet banking in the EU was recorded across the regions of Bulgaria and Romania. This was particularly notable in the two Bulgarian regions of Severozapaden and Yuzhen tsentralen, and Sud-Est in Romania; these were the only three regions across the EU to record a single-digit share of people using internet banking. Issues around access to financial services may explain, at least to some degree, these very low figures, as a relatively high number of people in both Bulgaria and Romania do not possess a bank account.

People living in rural regions are more likely to face issues in being able to access a physical branch of their bank; however, the use of internet banking was generally lower in rural and remote regions (than it was in urban regions). Some of the lowest usage rates for online banking were recorded in regions characterised by a low level of internet connectivity and/or an older population age structure. For example, less than 30 % of people aged 16–74 years from the southern Italian regions of Calabria, Campania and Sicilia made use of internet banking in 2021; this was also the case in the central Greek region of Kentriki Ellada (NUTS level 1).

Figure 6.3: People using internet banking during the three months preceding the survey, 2021
(%, people aged 16–74, selected NUTS 2 regions)



Note: the figure shows the regions with the highest and lowest shares. The ranking may include more than 10 regions if several regions have identical values. Germany, Greece and Poland: NUTS level 1. Croatia: national data. Mayotte (FRY5) and Åland (FI20): not available.

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

E-commerce

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

The vast majority of retail sales in the EU continue to take place in shops. However, the ability to shop 24 hours a day, coupled with the ease of making electronic payments, is gradually leading to a digital transformation of the EU's retail space, disrupting many aspects of shopping behaviour; this development was reinforced during the COVID-19 crisis.

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

In 2021, two thirds (67 %) of the EU's population aged 16–74 years reported that they had bought/ordered goods or services over the internet in the 12 months prior to the survey. The propensity to make use of e-commerce – as with many other internet activities – is closely linked to age. For example, people aged 25–34 years were 2.3 times as likely to have made use of the internet to buy/order goods or services (84 %) when compared with people aged 65–74 years (36 %). Note however that this digital divide between the generations has been gradually closing.

Map 6.4 shows that some of the highest shares of people buying/ordering goods or services over the internet were concentrated in Denmark, Ireland and the Netherlands. In 2021, all five of the NUTS level 2 regions in Denmark, as well as all but one of the regions in Ireland (the exception was Southern) and the Netherlands (the exception was Limburg) reported that at least 88 % of all people aged 16–74 years made use of e-commerce. There were also two regions in Sweden – Stockholm (the capital region) and Mellersta Norrland – where a very high proportion of people ordered goods or services over the internet (as shown by the darkest shade of blue in the map); note again that data for Germany, Greece and Poland relate to NUTS level 1 regions.

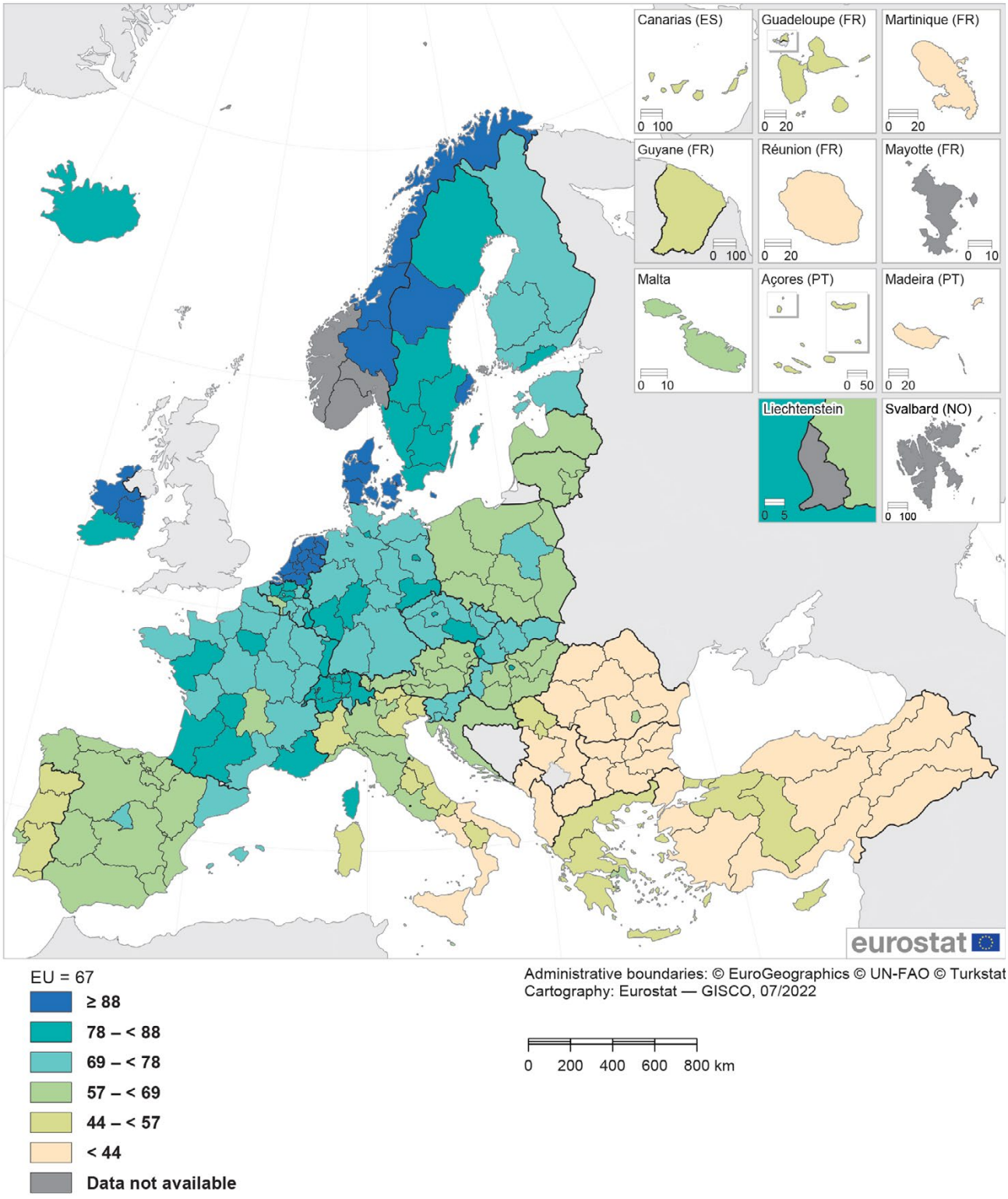
In 2021, approximately 1 in 10 NUTS level 2 regions (20 out of 196 regions for which data are available) reported that less than 44 % of people aged 16–74 years ordered goods or services over the internet (as shown by the lightest shade of yellow in Map 6.4). The vast majority of these regions were located in eastern and southern regions of the EU. The use of e-commerce was particularly narrow in Bulgaria, Romania and central/southern regions of Italy. This may reflect, at least in part, relatively low levels of internet access/use and relatively high numbers of people not possessing bank accounts and/or credit card (thereby making it more difficult to pay online). There were also relatively low shares of people ordering goods or services over the internet in the outermost regions of La Réunion and Martinique (both in France), as well as Região Autónoma da Madeira in Portugal; these low shares may, at least in part, be linked to relatively high shipping costs for goods purchased online.

Almost one in five people aged 16–74 years in the EU reported that they had never made an online purchase

Map 6.5 shows how recently people ordered goods or services over the internet. When surveyed in 2021, almost two thirds (57 %) of all people aged 16–74 years in the EU confirmed that they had made an online purchase during the previous three months. Relatively few people made irregular use of e-commerce: 10 % made their last online purchase some 3–12 months before the survey (bringing to 67 % the share of people having made their last online purchase anytime during the 12 months before the survey) and 5 % made their last online purchase more than a year before. By contrast, the share of people aged 16–74 years who reported that they had never made an online purchase was 18 %.

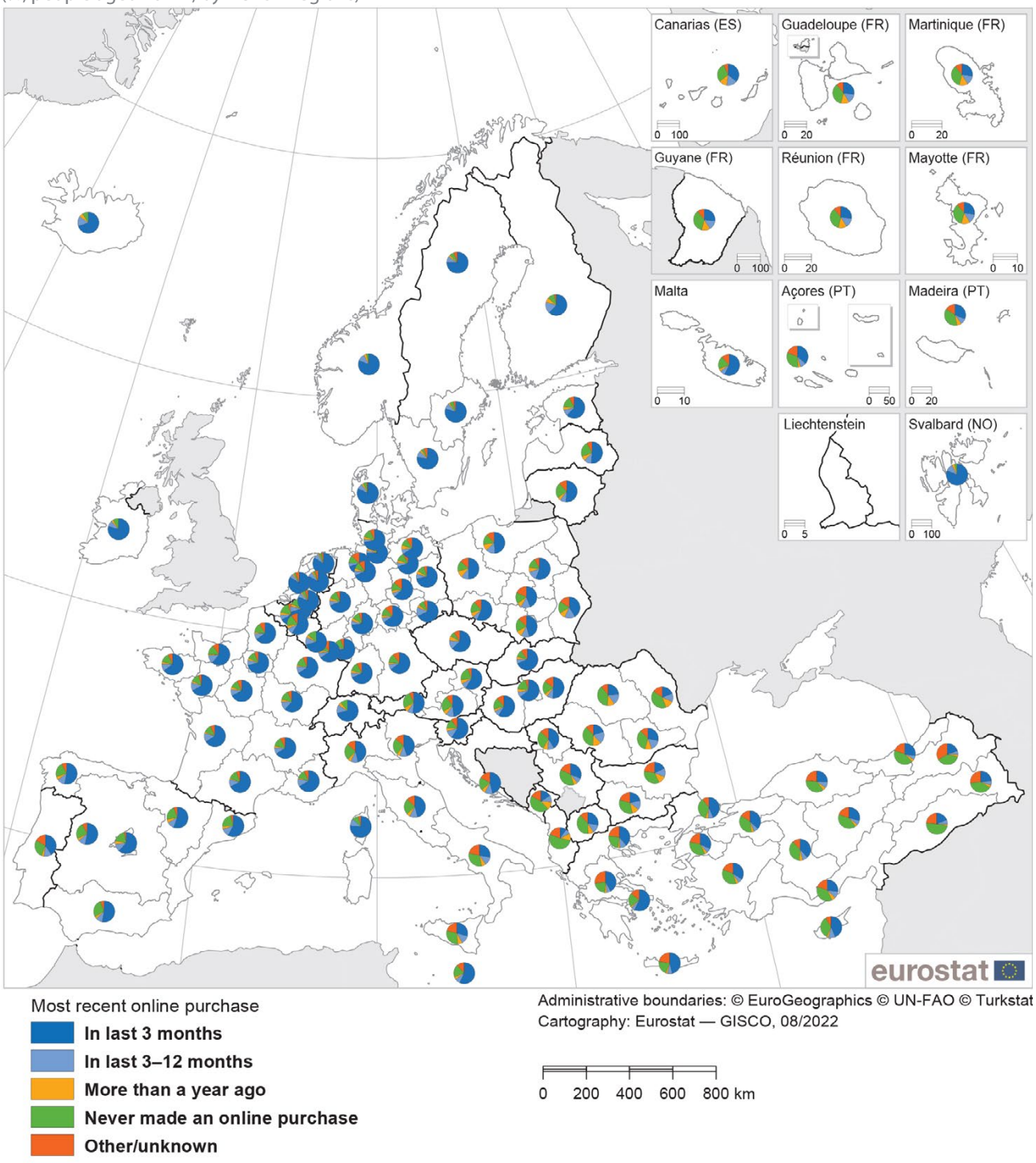
This pattern was repeated in the vast majority (81 out of 91) of NUTS level 1 regions, as the most common response when asked about their most recent online purchase was for people to say that they had made a purchase during the previous three months. There were 11 NUTS level 1 regions where at least three quarters of all people aged 16–74 years reported that they had made an online purchase during the previous three months; these regions were located exclusively in Denmark, Ireland (both single regions), as well as all four regions in the Netherlands and all three regions of Sweden; they were joined by the island region of Corse in France and the German region of Hamburg. The highest shares were recorded in the Netherlands: Noord-Nederland, Oost-Nederland and West-Nederland all recorded shares within the range of 83–84 %.

Map 6.4: People ordering goods or services over the internet for private use during the 12 months preceding the survey, 2021
(%, people aged 16–74, by NUTS 2 regions)



Note: Germany, Greece, Poland and Turkey, NUTS level 1. Croatia and Albania: national data.
Source: Eurostat (online data codes: isoc_r_blt12_i and isoc_ec_ib20)

Map 6.5: Share of people ordering goods or services over the internet for private use, 2021
(%, people aged 16–74, by NUTS 1 regions)

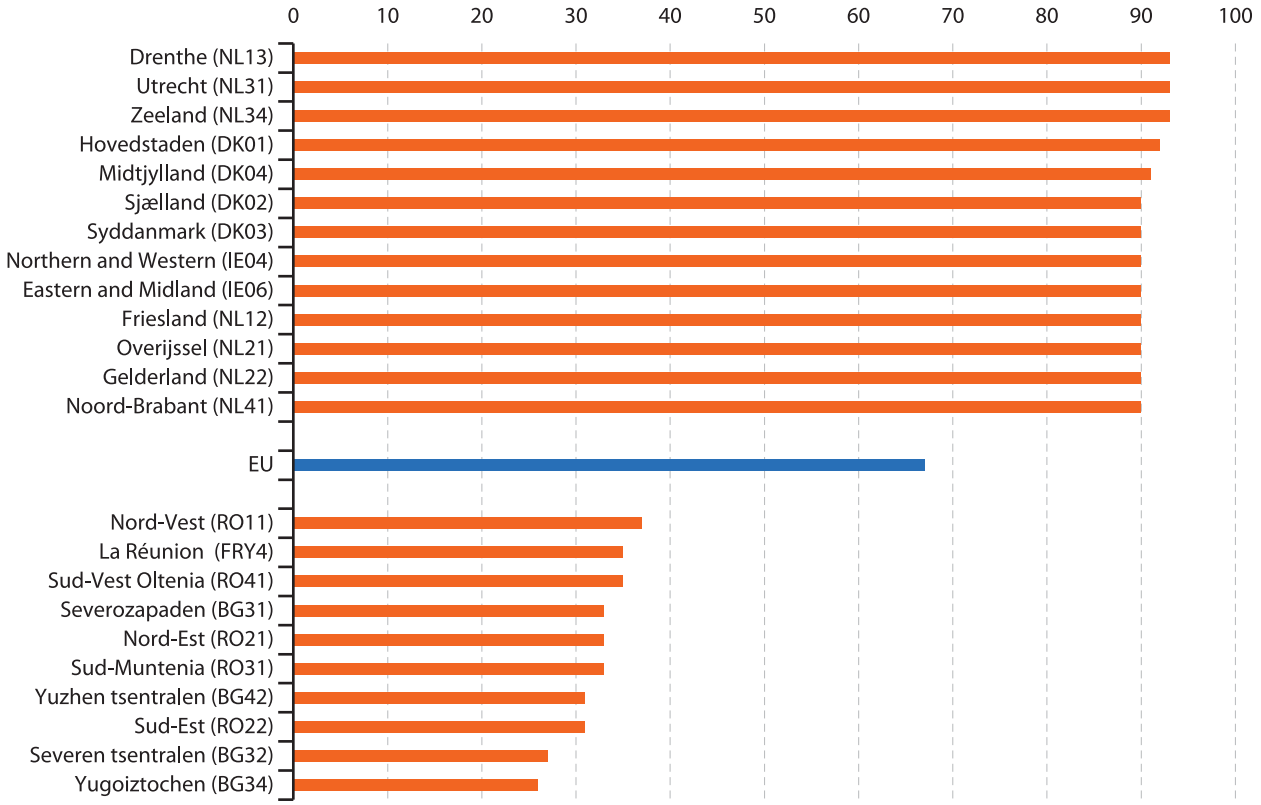


Note: Åland (FI2) and Liechtenstein, not available.
Source: Eurostat (online data codes: isoc_r_blt12_i and isoc_ec_ib20)

In 2021, there were five NUTS level 2 regions in the EU where more than 9 out of every 10 people aged 16–74 years ordered goods or services over the internet for private use. These were the Dutch regions of Drenthe, Utrecht and Zeeland (all three had a share of 93 %) and the Danish regions of Hovedstaden (92 %) and Midtjylland (91 %). There was also a high share of people making use of e-commerce in four other Dutch regions, two other Danish regions, and two out of the three Irish regions (including the capital region).

At the other end of the range, there were seven NUTS level 2 regions in the EU where no more than one third of all people aged 16–74 years reported in 2021 that they had made an online purchase during the previous 12 months. These regions were exclusively located in Bulgaria or Romania. The Bulgarian regions of Severen tsentralen (27 %) and Yugoiztochen (26 %) had the lowest shares in the EU.

Figure 6.4: People ordering goods or services over the internet for private use during the 12 months preceding the survey, 2021
(%, people aged 16–74, selected NUTS 2 regions)



Note: the figure shows the regions with the highest and lowest shares. The ranking may include more than 10 regions if several regions have identical values. Germany, Greece and Poland: NUTS level 1. Croatia: national data. Mayotte (FRY5) and Åland (FI20): not available.

Source: Eurostat (online data codes: isoc_r_blt12_i and isoc_ec_ib20)

B

Economy and business

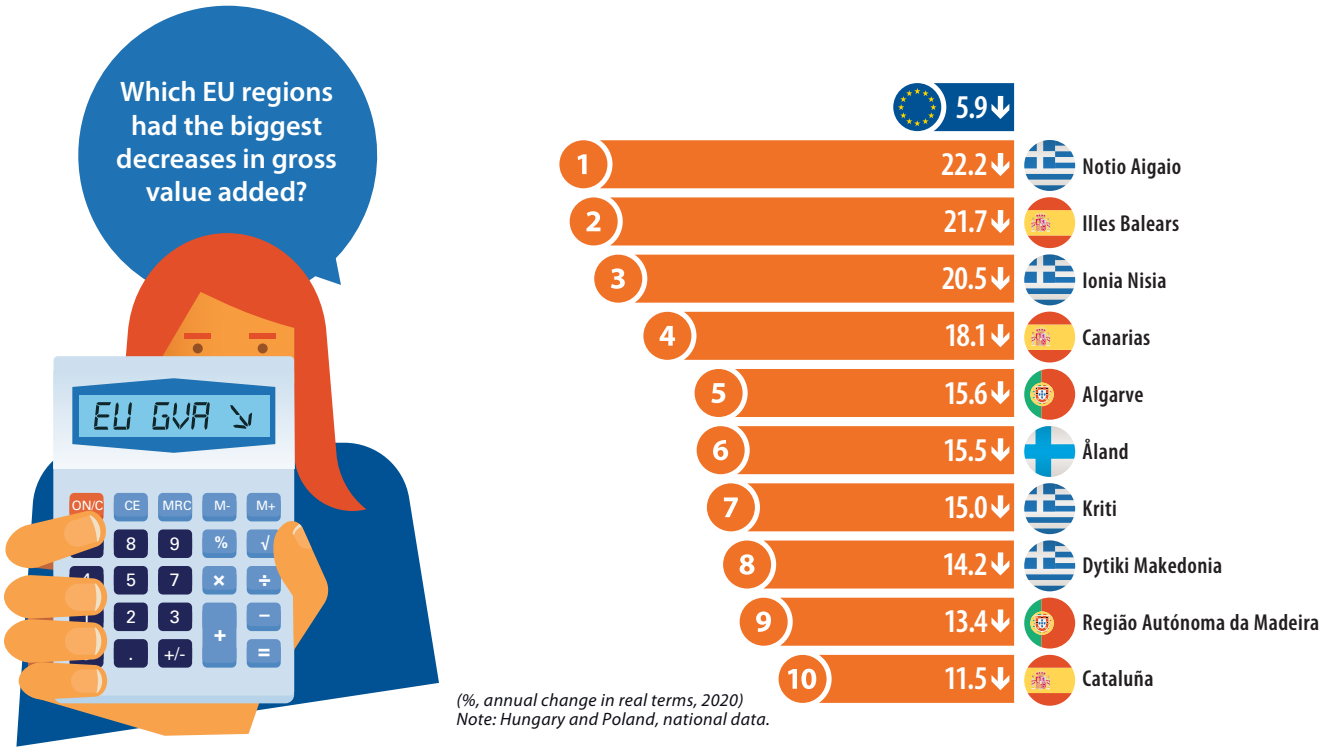
7. Economy

At the onset of the COVID-19 crisis, the European Commission, for the first time, activated the general escape clause of the Stability and Growth Pact. By relaxing budgetary rules/requirements, national governments had more freedom to support their economies and mitigate the pandemic's socioeconomic consequences. Nevertheless, there was a 5.9 % real terms contraction in the European Union's (EU's) gross value added between 2019 and 2020. The infographic shows those regions that experienced the largest declines in output: many of them were popular holiday destinations. With extensive stimulus programmes, vaccine rollouts and the gradual easing of restrictions, economic growth resumed across much of the EU in 2021.

The EU's regional policy aims to support broader socioeconomic priorities such as the European Semester and the European Pillar of Social Rights. Regional accounts are important in this context, as they are used, among others, when deciding upon the regional allocation of cohesion policy expenditure. The main focus of the EU's cohesion policy is to help regions converge/catch-up. Many of the less-developed and transition regions in the EU may be characterised as having relatively low-growth, low-income (primarily in eastern and southern EU Member States) or pockets of poverty, social exclusion and/or industrial decline (regions that have been 'left-behind'); these are the regions that receive the bulk of EU regional funds.

The EU's regional expenditure has historically been allocated on the basis of gross domestic product (GDP) per capita. As of 2021, the rules for allocating funding became simpler: they were tailored to locally-led development strategies that continue to take account of GDP per inhabitant, alongside information on the socioeconomic and environmental situation (for example, youth unemployment, low levels of educational attainment, the reception and integration of migrants, or climate change).

This chapter starts with information on regional GDP, the principal aggregate for measuring economic output (presented in absolute values and per inhabitant ratios), and the related concept of gross value added. It also provides information relating to regional specialisations in distributive trades, transport, accommodation and food service activities, areas of the economy that were particularly vulnerable to the COVID-19 crisis. Having looked at GDP from an output approach, the focus of the second section switches to the income of households: information is presented for primary income (from paid work and self-employment, as well as from interest, dividends and rents) per inhabitant, disposable income per inhabitant, and the compensation of employees per hour worked. The final section looks at another indicator related to labour, namely labour productivity (or gross value added per person employed) in order to assess patterns/developments of regional competitiveness.



(%, annual change in real terms, 2020)
Note: Hungary and Poland, national data.

Source: Eurostat (online data codes: nama_10r_2gvagr and nama_10_gdp)

Regional gross domestic product (GDP)

GDP at market prices in the EU was valued at €13.4 trillion in 2020, equivalent to an average of €29 900 per inhabitant. These figures marked a considerable reduction in economic activity when compared with 2019: the direct and indirect impacts of the COVID-19 crisis led to GDP falling by more than €600 billion in current price terms, while GDP per inhabitant fell by €1 400.

Behind these overall figures there are considerable differences between the regions of the EU in terms of their economic performance. Among other factors, these might be explained by: the availability of natural and human resources; changes brought about by globalisation, such as the relocation and outsourcing of manufacturing and some service activities; the legacy of former economic systems; socioeconomic developments; geographic proximity or remoteness to markets.

Statistics are generally reported in current (or 'nominal') terms; in other words, their current value during the particular reference year in question. To make comparisons over time, it can be more revealing to make use of data in constant price terms, where a series has been adjusted to take account of price changes. For example, imagine GDP rose from one year to the next from €100.0 billion to €110.0 billion, while inflation was 2 %. In constant price (or real terms), GDP in the second year would be €107.8 billion, reflecting a real terms growth rate of 7.8 %, compared with a 10.0 % growth rate in nominal terms. During periods of inflationary pressure, series that are denoted in current price terms will be higher than constant price series; this situation may be reversed if there is a period of deflation (falling prices).

Measuring the size of an economy

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

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

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

The 10 EU regions with the highest GDP accounted for more than one fifth of its total economic output

There are 242 NUTS level 2 regions across the EU for which GDP data are available. In 2020, the highest levels of regional GDP were recorded in major hubs of business activity (often within relatively large administrative areas). Ile-de-France – the capital region of France – had, by far, the largest economy (€710 billion of GDP), followed by the northern Italian region of Lombardia (€366 billion) and the southern German region of Oberbayern (€274 billion). There were six more regions in the EU where GDP was within the range of €204–232 billion, all of which could also be characterised as major hubs of business activity: Rhône-Alpes in France; Düsseldorf, Stuttgart and Darmstadt in Germany; Comunidad de Madrid and Cataluña in Spain. Together with Köln (€193 billion of GDP), these 10 regions with the highest levels of regional GDP collectively accounted for 21.2 % of the EU's total economic output.

These major hubs of economic activity also have some of the largest regional populations, although their economic output is typically boosted by commuters who live in surrounding/neighbouring regions. To give an idea of how concentrated economic activity in the EU was, the combined output of the smallest 69 regions was approximately the same as that of Ile-de-France, while the cumulative output of the smallest 141 regions was approximately the same as that for the 10 largest regions in the EU.

GDP per inhabitant in Southern Ireland was more than nine times as high as in the French archipelago of Mayotte

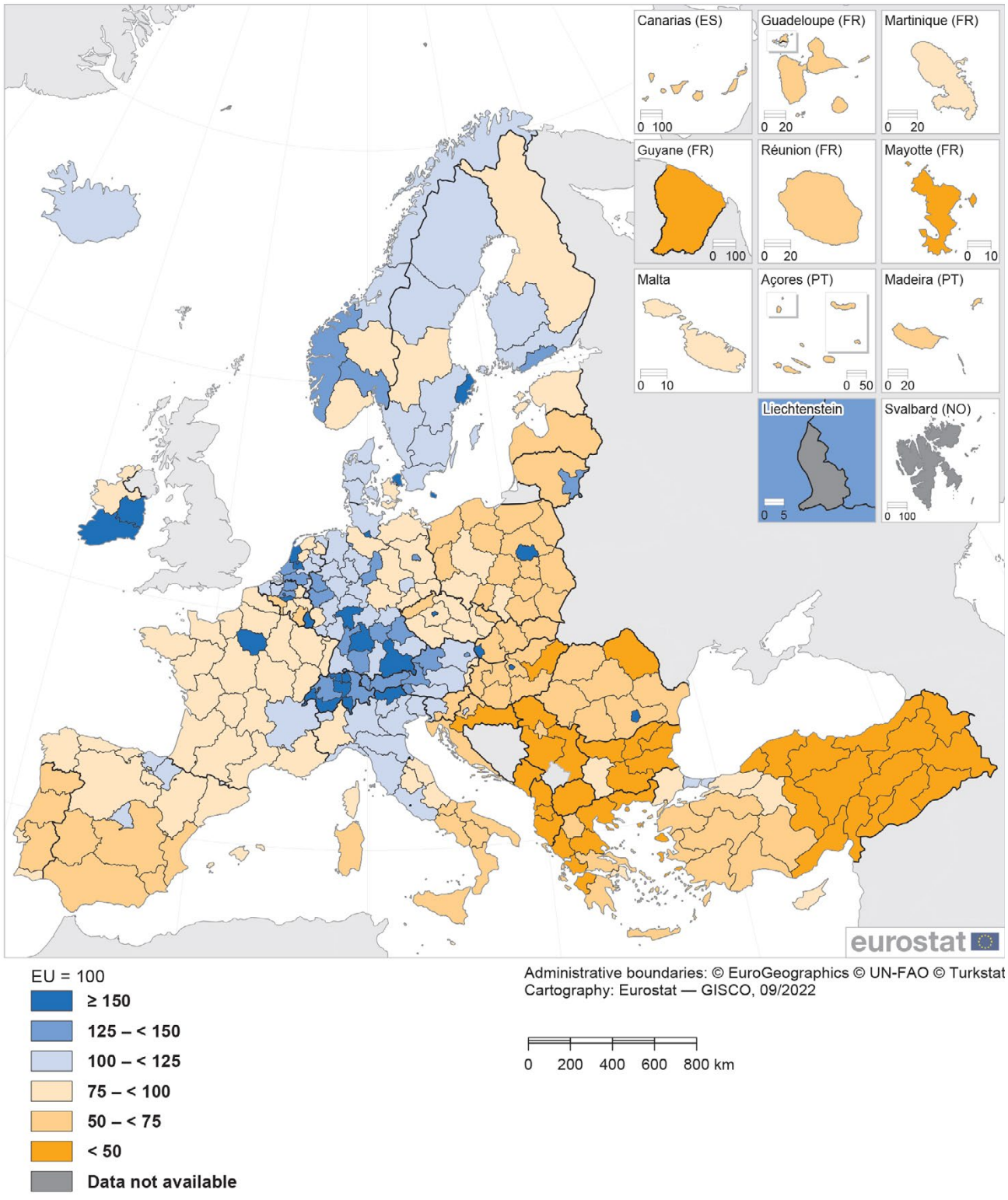
Map 7.1 is based on regional GDP per inhabitant (adjusted for purchasing power and then shown as a percentage of the EU average). Note that some of the differences between regions reflect the (sometimes artificial) administrative boundaries that are used to delineate each region.

In 2020, higher than average levels of GDP per inhabitant were primarily found in a band of regions that ran from the Nordic Member States, down through Germany and the Benelux countries into Austria and northern Italy. Otherwise, there were a few isolated pockets of relatively high regional values for GDP per inhabitant, for example, two out of the three regions in Ireland, specific regions in Spain and France, as well as most of the remaining capital regions. The regional distribution of GDP was relatively skewed insofar as only 38 % of regions (92 out of 242) reported a level of GDP per inhabitant that was above the EU average.

Those regions considered as relatively 'wealthy' – where GDP per inhabitant was at least 50 % above the EU average – are shown in the darkest shade of blue in Map 7.1. Among these 20 regions, Southern in Ireland had the highest regional GDP per inhabitant in 2020; its level of economic output was 2.7 times as high as the EU average. There were four other regions where economic output per inhabitant was at least twice as high as the EU average, they were all capital regions: Luxembourg, Eastern and Midland in Ireland, Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest in Belgium, and Praha in Czechia. Note that some regions with very high levels of GDP are characterised by a strong presence of multinational enterprises and/or commuter flows. This may distort their levels of economic activity, especially if capital assets (for example technology patents) are domiciled in a region. Ireland is home to a number of the world's top technology and pharmaceutical companies.

There were 16 regions across the EU where GDP per inhabitant was less than 50 % of the EU average; they are shown in the darkest shade of yellow in Map 7.1. They were primarily concentrated in Greece (six regions) and Bulgaria (five regions), while there were also three other regions from eastern EU Member States – Észak-Alföld in Hungary, Nord-Est in Romania, and Panonska Hrvatska in Croatia – as well as Guyane and Mayotte (both Régions Ultrapériphériques Françaises). In 2020, the lowest level of regional GDP per inhabitant was recorded in Mayotte (in France), at just under one third of the EU average. The next lowest levels of GDP per inhabitant (all within the range of 36–39 % of the EU average) were recorded in Severozapaden, Severen tsentralen and Yugoiztochen, all in Bulgaria.

Map 7.1: GDP per inhabitant in purchasing power standards (PPS), 2020
(index in relation to the EU average = 100, by NUTS 2 regions)



Note: Norway and Albania, 2019. Switzerland: 2018.
Source: Eurostat (online data codes: nama_10r_2gdp and nama_10_pc)

GROSS VALUE ADDED

When calculated from the output side, the main component of GDP is gross value added. This is defined as output (at basic prices) minus intermediate consumption (at purchaser prices) and is the balancing item of the national accounts' production account. Value added can be analysed according to activity (for example, manufacturing or transport services) and by institutional sector (for example, government, households, financial corporations and non-financial corporations). The difference between value added and GDP is taxes (mainly value added tax (VAT))and subsidies on products.

Gross value added fell in 215 out of 219 regions across the EU

Map 7.2 presents information on the annual change – between 2019 and 2020 – of regional gross value added; it therefore presents an analysis of the (initial) impact of the COVID-19 crisis. Note the information presented is a real rate of change, in other words the effects of inflation have been removed.

Having posted growth rates that were greater than 2.0 % in both 2017 and 2018, the EU's annual rate of change for value added slowed the following year to 1.8 %. The direct and indirect effects of the COVID-19 crisis resulted in a 5.9 % contraction in 2020. To put this figure into context:

- it was the first time that value added had fallen (in real terms) since a modest decline of 0.6 % in 2012;
- the downturn in economic output as a result of the COVID-19 crisis was greater than the losses experienced at the height of the global financial and economic crisis, as output fell by 4.3 % in 2009.

In 2020, the COVID-19 crisis touched every region of the EU. In terms of its economic impact, the annual rate of change for value added was negative in 215 out of 219 regions for which data are available; note statistics presented in this section for Hungary and Poland are only available at a national level.

The largest contraction in value added was in the Greek island region of Notio Aigaio

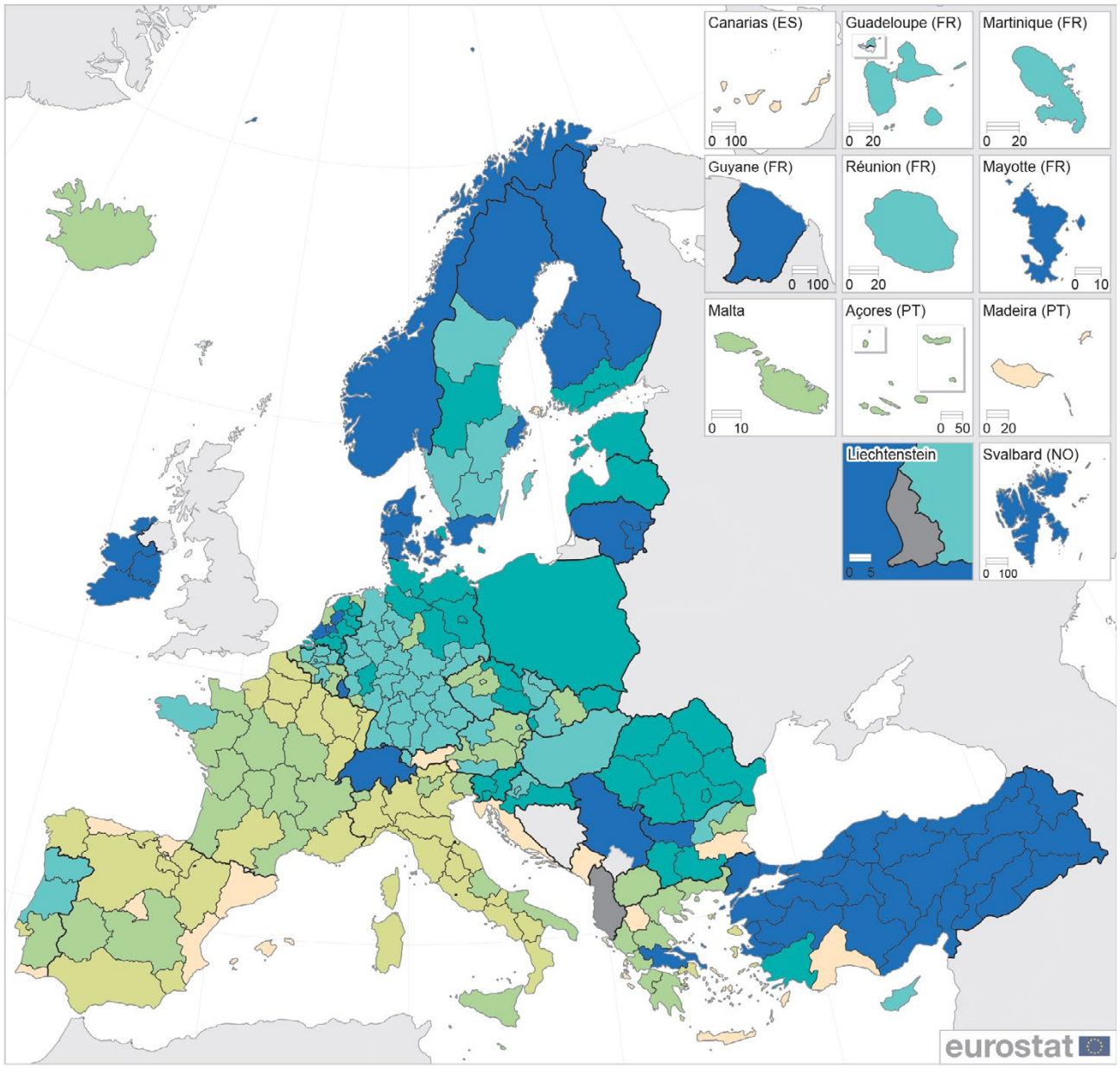
There were 17 NUTS level 2 regions where value added fell by more than 10.0 % in 2020 (as shown by the lightest shade of yellow in Map 7.2): they included many of the EU's most popular tourist destinations, for example: Notio Aigaio and Ionia Nisia in Greece; Illes Balears and Canarias in Spain; Jadranska Hrvatska in Croatia; Tirol in Austria; Algarve and Região Autónoma da Madeira in Portugal. At the onset of the pandemic, restrictions prevented most tourists from travelling and many hospitality businesses from opening. Although the situation improved somewhat during the summer months of 2020 (with a partial re-opening), many holidaymakers decided to stay at home, while business travel was also slow to recover as online meetings became more common. A second wave of the pandemic followed later in the year and acted as a further deterrent to travel.

The largest annual contractions in value added in 2020 were recorded in Notio Aigaio (down 22.2 %), Illes Balears (down 21.7 %) and Ionia Nisia (down 20.5 %); these were the only regions in the EU where value added was at least one fifth lower in 2020. The next largest declines were recorded in Canarias (down 18.1 %), Algarve (down 15.6 %) and Åland in Finland (down 15.5 %).

The economic impact of the COVID-19 crisis was relatively muted – with value added falling by no more than 4.0 % in 2020 – in every region of Denmark, Lithuania, Romania, Slovenia and Finland (except for Åland); this pattern was also observed in Estonia, Latvia, Luxembourg and Poland, where only national data are available.

There were only four regions (out of 219) across the EU where value added increased in 2020. The highest annual growth rate (10.7 %) was recorded in the Irish region of Southern (which was also the 'richest' region in the EU, as measured by GDP per inhabitant). Value added also increased in the two other Irish regions, up 3.6 % in Northern and Western and 1.8 % in the capital region of Eastern and Midland. Mayotte in France was the only other region in the EU to record an increase in its value added in 2020 (up 0.7 %). Some of the rapid growth in Ireland during 2020 can be linked to a buoyant pharmaceuticals sectors (one of the few sectors in the EU economy that continued to grow during the COVID-19 crisis).

Map 7.2: Change in gross value added, 2019–2020
(%, annual change in real terms, by NUTS 2 regions)



Note: Hungary, Poland, Norway, Switzerland and Serbia, national data.
Source: Eurostat (online data codes: nama_10r_2gvagr and nama_10_gdp)

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

Map 7.3 is based on absolute values of regional GDP per inhabitant in PPS terms. The size of each circle reflects the level of GDP per inhabitant, while the colour indicates the change in GDP per inhabitant between 2019 and 2020 (based on the change in an index where the EU average = 100).

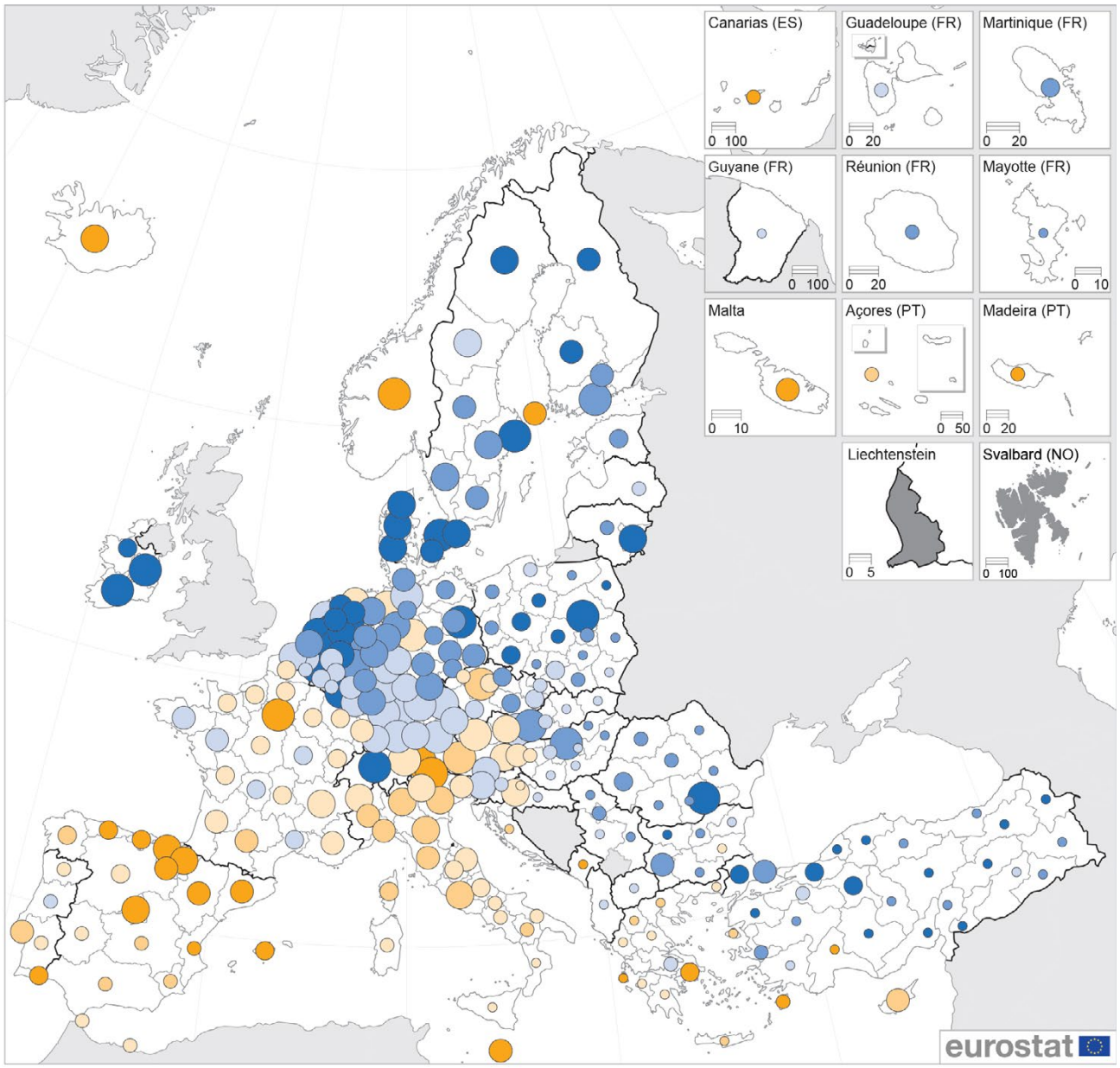
There are often large differences in the economic performance of regions across individual EU Member States. The vast majority of multi-regional Member States are characterised by their capital region having a much higher level of GDP per inhabitant. In several, the capital region – which often acts as a hub of business (and cultural) activity – was the only region where GDP per inhabitant was above the EU average. This pattern was apparent in most of the eastern Member States: Praha (Czechia), Budapest (Hungary), Warszawski stołeczny (Poland), Bucureşti-Ilfov (Romania), Zahodna Slovenija (Slovenia) and Bratislavský kraj (Slovakia). A similar pattern was observed in one of the Baltic Member States – Sostinės regionas (Lithuania) – while the only regions in France to record a level of GDP per inhabitant above the EU average were Ile-de-France (the capital region) and Rhône-Alpes (that includes Lyon, the third largest metropolitan region (behind Paris and Marseille)).

As such, many of the multi-regional EU Member States are characterised by a monocentric pattern of economic development. The only exceptions were: Germany (where the highest level of GDP per inhabitant was recorded in Hamburg), Ireland (Southern) and Italy (Provincia Autonoma di Bolzano/Bozen). Their situation was atypical insofar as they were characterised by a more polycentric pattern of economic development. For example, GDP per inhabitant in the German capital region of Berlin was lower than in 10 of the 37 other German regions, while a similar analysis for Italy reveals that GDP per inhabitant in Lazio was lower than in 5 of the 20 other Italian regions.

GDP per inhabitant in the EU stood at 31 300 PPS in 2019, while it was 29 900 PPS per inhabitant in 2020. The same information for NUTS level 2 regions may be expressed in the form of an index relative to these EU values, permitting a temporal analysis of GDP per inhabitant in PPS terms. Between 2019 and 2020, the largest increases in GDP per inhabitant – relative to developments in the EU – were concentrated in Denmark, Ireland and the Netherlands. The index rose by at least 4 points in every NUTS level 2 region of Denmark and Ireland, as well as 9 out of the 12 regions in the Netherlands – as shown by the dark blue circles in Map 7.3 – a similar development was observed in six Polish regions, three Swedish regions and two Finnish regions, as well as single regions from each of Belgium, Bulgaria, Germany, Lithuania, Romania and Luxembourg. The Netherlands was an exception insofar as its capital region was not present among those regions with a considerable increase in GDP per inhabitant (relative to the EU average).

The circles in Map 7.3 shaded in the darkest shade of yellow experienced the largest reductions in GDP per inhabitant (relative to the EU average) between 2019 and 2020. There were 21 regions across the EU where the index fell by more than 5 points. These were concentrated in southern regions of the EU, with 11 regions in Spain, three regions in Greece, two regions in Portugal, one in Italy and Malta; in addition, there was a single region in each of France, Austria and Finland. Most of the regions with the biggest relative declines were popular international holiday destinations – for example, Illes Balears and Canarias in Spain, Algarve in Portugal, Malta, the Alpine regions of Provincia Autonoma di Bolzano/Bozen in Italy and Tirol in Austria – or capital regions, such as Comunidad de Madrid, Attiki and Ile-de-France.

Map 7.3: GDP per inhabitant, 2020
(by NUTS 2 regions)



Difference compared with previous year (based on index in relation to the EU average = 100)
EU = 0

- ≥ 4
- 2 – < 4
- 0 – < 2
- -2 – < 0
- -4 – < -2
- < -4
- Data not available

Purchasing power standards (PPS)
EU = 29 900

- ≥ 37 650
- 30 900 – < 37 650
- 26 350 – < 30 900
- 22 150 – < 26 350
- 18 050 – < 22 150
- < 18 050

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 08/2022

0 200 400 600 800 km

Note: Norway, Switzerland and Albania, national data.
Source: Eurostat (online data codes: nama_10r_2gdp and nama_10_pc)

POTENTIAL VULNERABILITY TO COVID-19 IMPACTS

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

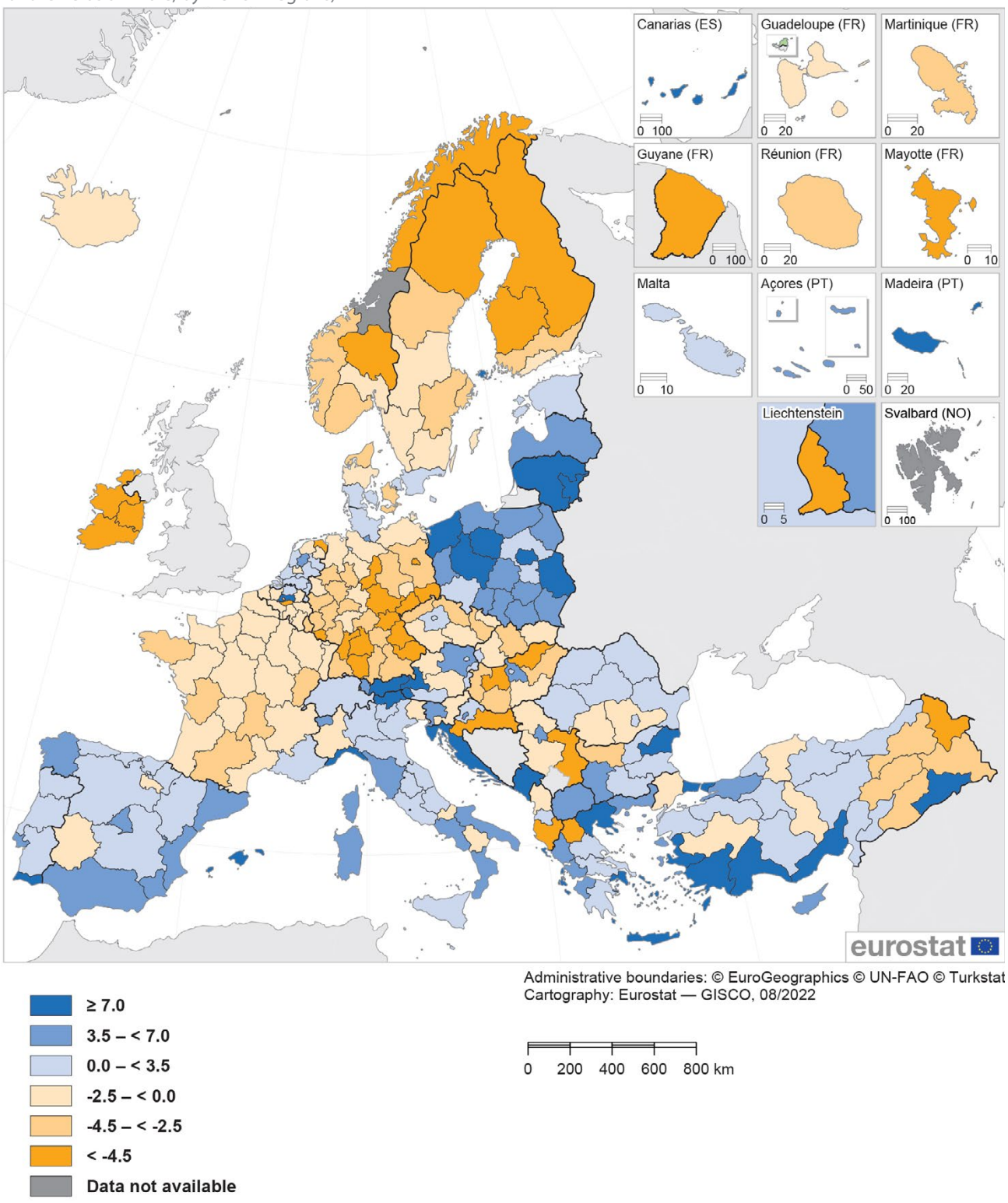
Distributive trades, transport, accommodation and food services (NACE Sections G–I) are generally contact-intensive services, with retail, transport and hospitality among the sectors most impacted by the COVID-19 crisis. Containment measures led to rapid shifts in demand, as people were no longer able to go shopping other than for essentials, travel to see family/friends, take a holiday, or visit a restaurant. General uncertainty and a reduction in working hours also led many households to reduce their consumption and/or increase precautionary saving.

Map 7.4 shows a specialisation index that is based on the share of these activities in regional value added, expressed relative to the same ratio for the whole of the EU; regions that were relatively specialised have positive values. Although the most recent data available are for 2019, these data may be used to analyse those regions that were potentially vulnerable to the impact of the crisis on the selected activities.

In 2019, prior to the pandemic, distributive trades, transport, accommodation and food services accounted for 19.3 % of the EU's total value added. The relative importance of these service activities was considerably higher in several regions characterised as popular holiday destinations, with their share reaching more than half of all added value in two Greek regions – Notio Aigaio (52.7 %) and Ionia Nisia (50.0 %); the next highest share was recorded in Algarve in Portugal (38.9 %, approximately twice as high as the EU average).

Map 7.4 identifies those NUTS level 2 regions that had a high degree of relative specialisation for distributive trades, transport, accommodation and food services (as shown by the darkest shade of blue). Aside from tourism-orientated regions in southern EU Member States and in the Alps, this group also included five regions across Poland, both regions in Lithuania, as well as single regions in Belgium, Bulgaria, Croatia and Finland.

Map 7.4: **Regional specialisation in distributive trades, transport, accommodation and food service activities, 2019**
(percentage points difference compared with the average share of these activities in the economy for the EU as a whole, by NUTS 2 regions)



Note: the map shows the extent to which the structure of a region's output (based on the value added) of distributive trades, transport, accommodation and food services (NACE Sections G–I) differs from the average for the EU; those regions that are relatively specialised have a positive value. Switzerland: national data.

Source: Eurostat (online data codes: nama_10r_3gva and nama_10_a10)

Income

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

PRIMARY INCOME PER INHABITANT

Primary income covers income from paid work and self-employment, as well as from interest, dividends and rents. In 2019, EU primary income per inhabitant averaged 20 100 PPS. The use of data in PPS (rather than in euro terms) takes account of price level differences between countries; it also reflects the fact that household expenditure is predominantly related to consumption.

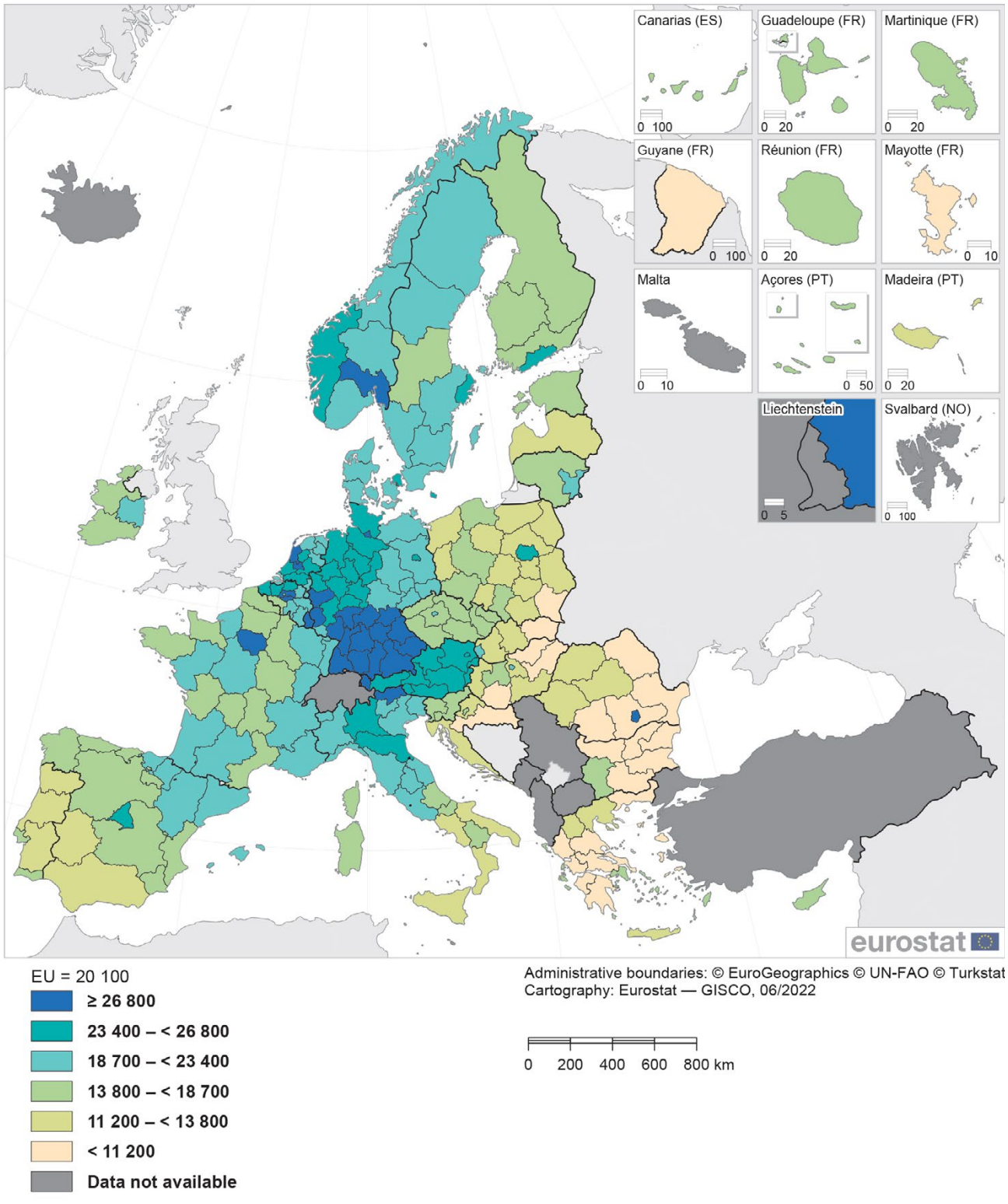
Oberbayern had the highest level of primary income per inhabitant

In 2019, there were 25 regions spread across seven different EU Member States where income per inhabitant was at least 26 800 PPS; these are shown by the darkest shade of blue in Map 7.5. They were concentrated in Germany (16 regions), with the highest income levels predominantly found in western (rather than eastern) regions. Five more regions were in Benelux Member States and the remaining four in France, Italy, Austria and Romania.

At the other end of the range, there were 24 regions spread across eight different EU Member States where primary income per inhabitant was less than 11 200 PPS in 2019 (as shown by the lightest shade of yellow in Map 7.5). These regions were mainly concentrated in Greece or eastern Europe – seven of the 13 regions that compose Greece, all but one of the six regions that compose Bulgaria (the exception being the capital region of Yugozapaden), half of the eight regions that compose Romania, three regions in Hungary, one region each from Croatia, Poland and Slovakia – along with two outermost regions of France.

In 2019, primary income per inhabitant ranged from a high of 37 500 PPS in Oberbayern (southern Germany) down to 6 200 PPS in Severozapaden (Bulgaria). As such, the average level of income in Oberbayern was approximately six times as high as the level recorded in Severozapaden. Three more German regions featured at the top of the ranking with the highest levels of income per inhabitant – Stuttgart, Hamburg and Darmstadt – followed by Luxembourg. Note that Luxembourg had the highest level of income in euro terms (€40 300 per inhabitant) – slightly above the figure recorded for Oberbayern (€40 100 per inhabitant) – although Luxembourg's relatively high cost of living meant that it ranked fifth when analysing the data in PPS terms.

Map 7.5: Net primary income per inhabitant, 2019
(in purchasing power standards (PPS), by NUTS 2 regions)



Source: Eurostat (online data code: nama_10r_2hhinc)

DISPOSABLE INCOME PER INHABITANT

The previous section analysed regional differences in primary income per inhabitant across EU regions. This section focuses on regional income differences within EU Member States. Rather than using net primary income, a more appropriate measure for this purpose is net disposable income. Disposable income is calculated by deducting income taxes and net social contributions from primary income while net social benefits and net current transfers are added.

Regional differences in income levels tend to be lower when analysed in terms of disposable (rather than net primary) income, due to the redistributive nature of tax and welfare systems. For example, regions with relatively high levels of income may be expected to pay higher / a greater share of taxes and social contributions, whereas regions with higher unemployment, an elderly population or a generally more vulnerable population are likely to receive proportionally more unemployment benefits, pensions and other kinds of monetary benefits. As such, the regional distribution of disposable income per inhabitant depends on the inequalities in primary income as well as inequalities in other factors (such as income tax, social benefits and transfer systems, differences in age structure and unemployment rates between regions).

Although Eurostat collects and publishes regional data on net disposable income, it is not recommended to use this information to analyse income differences across the EU; rather, these statistics are used to analyse regional differences within the same Member State. This is because most national statistical offices do not compile regional data for social transfers in kind. The latter are goods and services provided by government for free or at prices that are not economically significant; they mainly include education, health and some social security services, as well as housing, cultural or recreational services.

Figure 7.1 contrasts the distribution of net primary income and disposable income per inhabitant; regional data for each of the EU Member States have been converted into an index, based on the national average = 100. The figure shows the regional dispersion of income was lower for disposable rather than net primary income in 2019. This pattern was particularly pronounced across regions in the eastern EU Member States of Bulgaria, Poland, Romania and Slovakia, where the redistributive nature of tax and welfare systems lowered incomes in capital regions.

That said, many of the eastern EU Member States had relatively high levels of disposable income per inhabitant in their capital regions. In 2019, those living in the Romanian capital region of Bucureşti-Ilfov had a level of disposable income that was almost double (193.8 %) the national average. There were five more capital regions in eastern EU Member States where disposable income per inhabitant was at least one third higher than the national average: Bratislavský kraj in Slovakia (153.5 % of the average), Budapest in Hungary (150.6 %), Yugozapaden in Bulgaria (146.0 %), Warszawski stołeczny in Poland (136.3 %) and Praha in Czechia (133.3 %).

By contrast, Belgium, Germany and Austria were the only multi-regional EU Member States in 2019 to report a level of disposable income per inhabitant in their capital region that was below the national average. Oberbayern had the highest disposable income per inhabitant in Germany (122.3 % of the national average), Prov. Vlaams-Brabant in Belgium (115.5 % of the national average), and Vorarlberg in Austria (104.6 % of the national average).

COMPENSATION OF EMPLOYEES

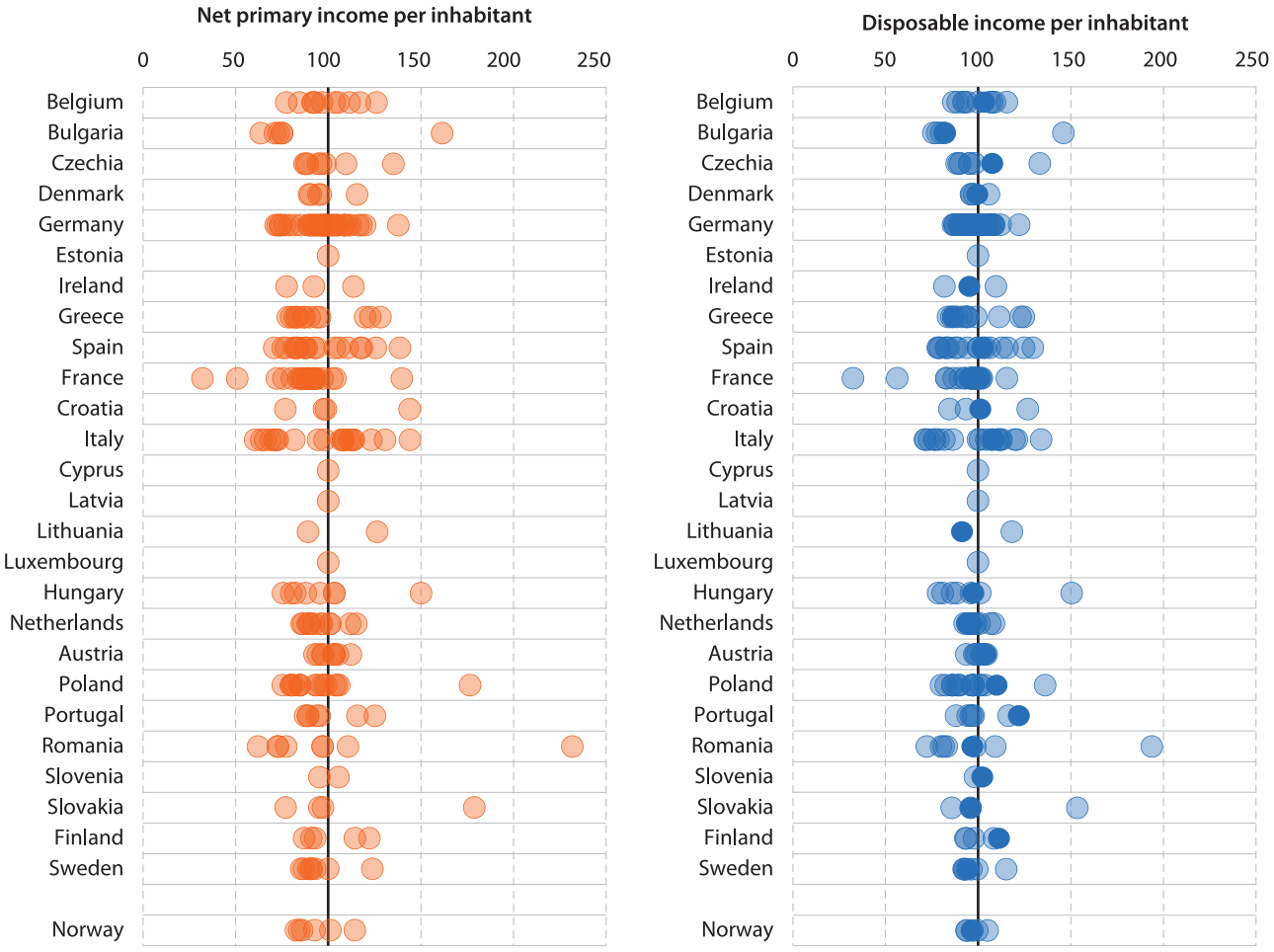
One of the principal areas of interest/concern for many employees is their level of remuneration. Employee compensation is defined (within national accounts) as remuneration, in cash or in kind (such as a company car or vouchers for meals), payable by an employer to an employee in return for work done; it also includes payments linked to social contributions (such as health or pension contributions). The data presented in Figure 7.2 refer to gross (in other words, before tax) hourly compensation in euro terms.

The highest level of employee compensation was recorded in Luxembourg

In 2019, employees working in the EU received an average of €23.9 in gross compensation for each hour that they worked. The highest level of employee compensation was recorded in Luxembourg (€47.6 per hour), while the lowest levels were registered across three different regions of Bulgaria – Severozapaden, Severen tsentralen and Yuzhen tsentralen (€4.8 per hour). As such, the ratio between the highest and lowest levels of employee compensation was almost 10 : 1.

Capital regions often recorded the highest levels of employee compensation, which is perhaps unsurprising given the relatively high cost of living in many of these regions and the fact that they are often the location for company headquarters and national administrations. This pattern was repeated in a majority of multi-regional EU Member States in 2019: the only exceptions were Oberbayern (that had the highest level of compensation per hour worked in Germany), Dytiki Makedonia (Greece), País Vasco (Spain) and Provincia Autonoma di Bolzano/Bozen (Italy).

Figure 7.1: Net primary income and disposable income per inhabitant, 2019
(index in relation to national average = 100, by NUTS 2 regions)

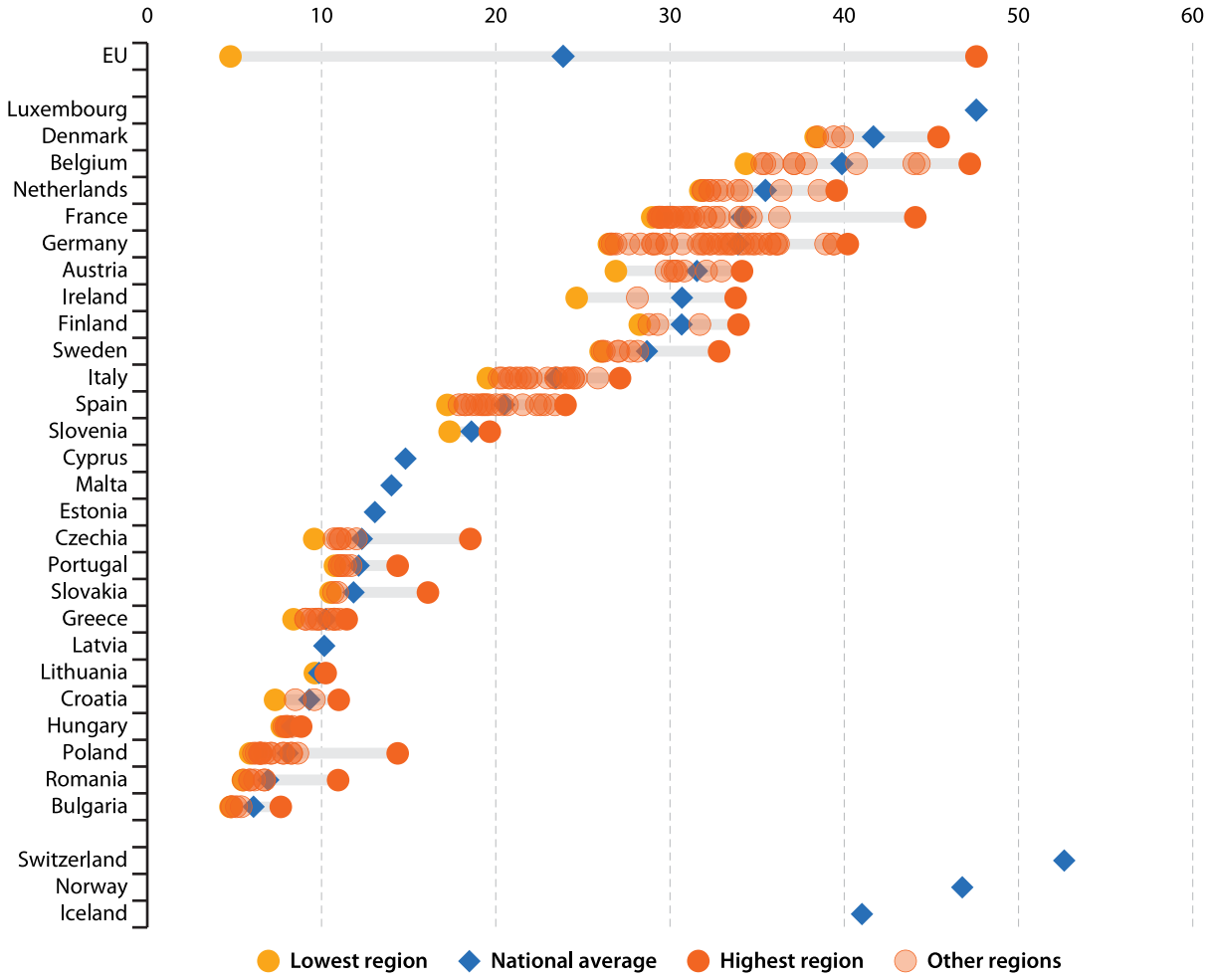


Note: Malta and Svalbard og Jan Mayen (NO0B), not available.
Source: Eurostat (online data code: nama_10r_2hhinc)

It was not uncommon for the capital region to have a notably higher level of average employee compensation per hour worked. This often skewed the regional distribution within individual EU Member States, as the capital was the only region to record an average level of compensation above the national average.

There were eight NUTS level 2 regions in the EU where the average level of employee compensation was above €40.0 per hour in 2019. Aside from Luxembourg (that had the highest level), they included: four regions from Belgium – Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest, Prov. Brabant Wallon, Prov. Vlaams-Brabant and Prov. Antwerpen – with a peak in the capital region (€47.2 per hour); Hovedstaden (the Danish capital region; €45.4); Ile-de-France (the French capital region; €44.1); and Oberbayern in Germany (€40.2).

Figure 7.2: Compensation of employees, 2019
(€ per hour worked, by NUTS 2 regions)



Note: ranked on the national average. Norway and Switzerland: national data.
Source: Eurostat (online data codes: nama_10r_2lp10 and nama_10_lp_ulc)

Labour productivity

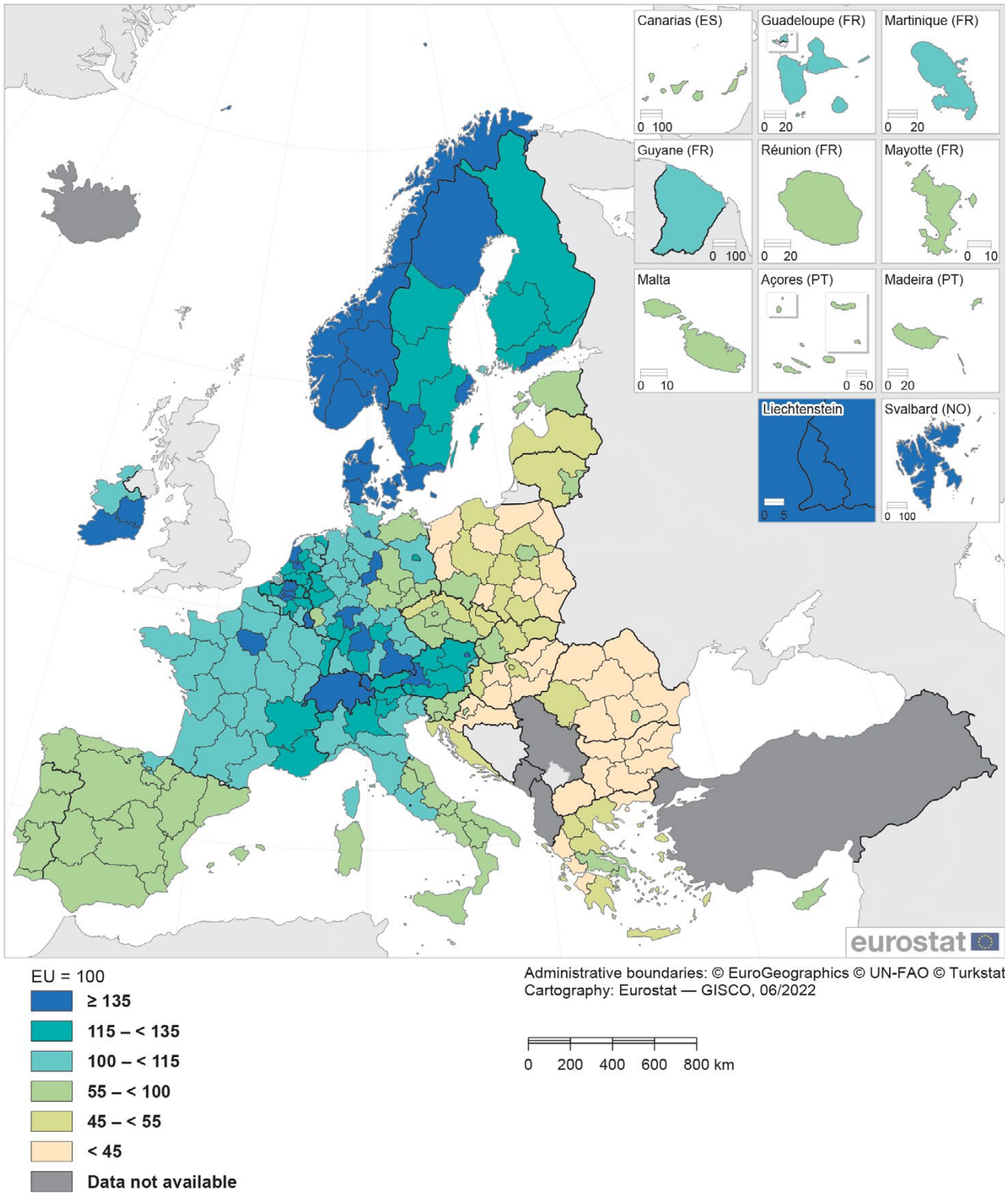
Labour productivity can be defined as GDP or gross value added divided by a measure of labour input, typically the number of persons employed or the number of hours worked. When based on a simple headcount of labour input, as in Map 7.6, changes observed for this indicator can, at least to some degree, reflect changes in the structure of the employment market. For instance, the ratio falls if there is a shift from full-time to part-time work, or if working hours are curtailed due to restrictions such as those imposed during the COVID-19 crisis.

High labour productivity may be linked to the efficient use of labour and/or reflect the skills and experience of the labour force. These in turn may result from the specific mix of activities present in each regional economy as some activities – for example, knowledge-intensive industrial activities, business or financial services – tend to be characterised by higher levels of labour productivity (as well as higher average employee compensation).

In 2020, an average of €64 900 of value was added per person employed in the EU. This figure can be used as the basis for deriving a set of nominal labour productivity indices, which are presented relative to the EU average = 100 (see Map 7.6). Labour productivity was distributed relatively evenly across the EU, insofar as 119 (out of 242) NUTS level 2 regions had an index above the EU average, while 120 regions had an index below the EU average; three regions had the same level of labour productivity as the EU.

The highest regional levels of labour productivity were recorded in western and Nordic regions of the EU. They were particularly concentrated in Belgium, Denmark, Ireland, Germany, Austria and Sweden, where two or more regions had labour productivity indices that were at least 35 % above the EU average; in fact, this was the case in all five regions of Denmark.

Map 7.6: Nominal labour productivity, 2020
(index based on € per person employed in relation to EU average = 100, by NUTS 2 regions)



Note: Liechtenstein and Norway, 2019. Switzerland, national data.
Source: Eurostat (online data codes: nama_10r_2nlp, nama_10_a10 and nama_10_a10_e)

At the top end of the range, there were four NUTS level 2 regions where labour productivity was more than twice as high as the EU average in 2020: Southern, and Eastern and Midland in Ireland, Luxembourg, and Prov. Brabant Wallon in Belgium. The highest level of labour productivity, by far, was recorded in Southern (€227 100 per person employed, some three and a half times as high as the EU average), followed by Eastern and Midland (€161 600 per person employed, approximately two and a half times as high as the EU average). As noted above, the relatively high levels of value added in these Irish regions may be linked to the presence of multinational enterprises, which may inflate their levels of labour productivity (especially when capital assets are domiciled in a region). Labour productivity in Luxembourg (€136 000 per person employed) and Prov. Brabant Wallon (€131 100 per person employed) was slightly more than twice as high as the EU average.

At the other end of the range, there were 31 NUTS level 2 regions in the EU where labour productivity was less than 45 % of the EU average in 2020. They were largely concentrated in eastern EU Member States: all six regions of Bulgaria, two regions in Croatia, five regions in Hungary, nine regions in Poland and six regions in Romania; there were also three regions in Greece. The lowest levels of labour productivity were registered in three regions of Bulgaria: Severen tsentralen (€13 100 per person employed, equivalent to one fifth of the EU average), Yuzhen tsentralen (€13 900 per person employed) and Yugoiztochen (€14 000 per person employed).

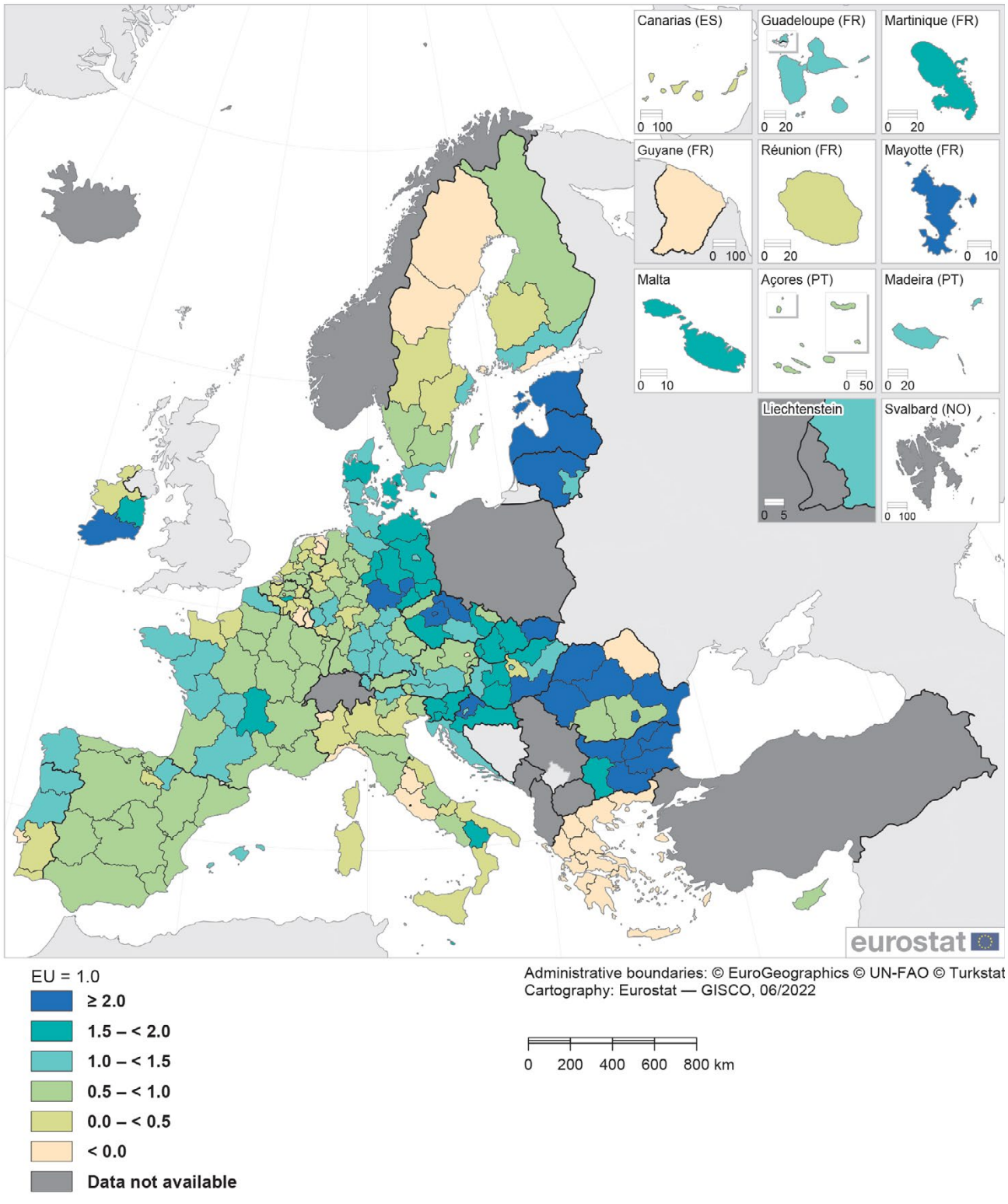
The information presented in the final map is based on labour productivity per hour worked, which takes account of the sectoral, regional and national differences in working time. The change in real labour productivity per hour worked is based on a volume series of gross value added (in other words, adjusted for price changes), divided by the total number of hours worked. From the resulting ratios, annual average rates of change are compiled for the period 2010–2019. Note that the data presented for Mayotte in France cover the period 2014–2019, while there is no information available for Poland.

During the period studied, annual changes in the EU's real labour productivity per hour worked were within the range of 0.4–1.9 %. Labour productivity rose, on average, by 1.0 % per year during this period. Map 7.7 shows that real labour productivity per hour worked increased in the vast majority of NUTS level 2 regions between 2010 and 2019; this was the case in more than four fifths of all regions (191 out of 225 regions for which data are available). There were five regions where real labour productivity per hour worked was the same in 2019 as in 2010, and 29 regions where it fell.

The highest annual average growth rates for real labour productivity per hour worked were principally concentrated in eastern EU Member States. This was particularly notable in Bulgaria and Romania, where a majority of regions had average growth rates of at least 2.0 % per year for the period 2010–2019. They were joined by three regions in Czechia, two regions in eastern Germany, single regions from Ireland, France (Mayotte; 2014–2019), Croatia, Lithuania, Hungary and Slovakia, as well as Estonia and Latvia. The highest productivity growth rates were recorded for the regions of Bucureşti-Ilfov (7.6 %) and Vest (7.4 %) in Romania and for Southern (7.1 %) in Ireland.

The 29 regions where real labour productivity per hour worked decreased between 2010 and 2019 were concentrated in southern regions of the EU, including all 13 regions of Greece and four regions in Italy. Alongside the capital regions of Attiki (Greece) and Lazio (Italy), there were three other capital regions where labour productivity decreased during this period (although by a relatively modest amount): Wien in Austria, Área Metropolitana de Lisboa in Portugal, and Helsinki-Uusimaa in Finland. The lowest rates of change for real labour productivity per hour worked were recorded in two Greek regions: Dytiki Makedonia (an average fall of 4.0 % per year) and Notio Aigaio (an average fall of 3.2 % per year).

Map 7.7: Change in real labour productivity per hour worked, 2010–2019
(%, average annual rate of change, by NUTS 2 regions)



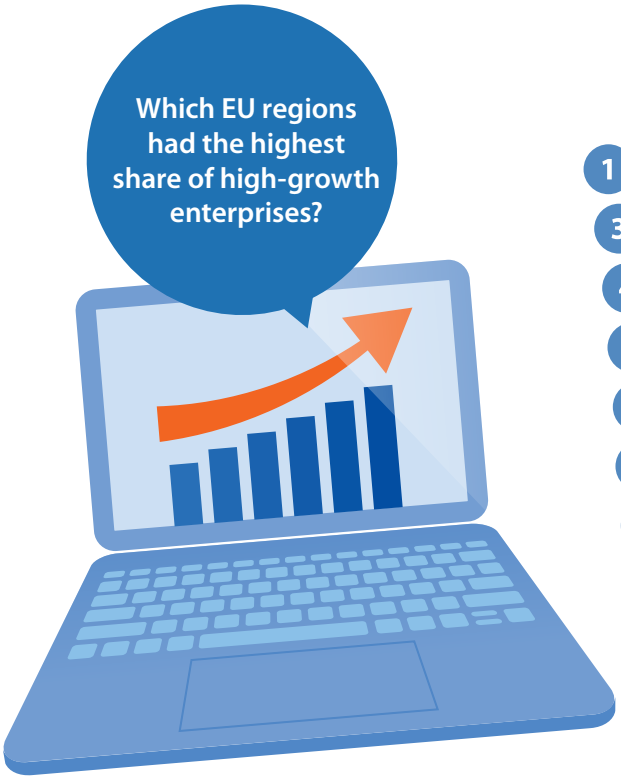
Note: Mayotte (FRY5), 2014–2019.
Source: Eurostat (online data code: nama_10r_2rlp)

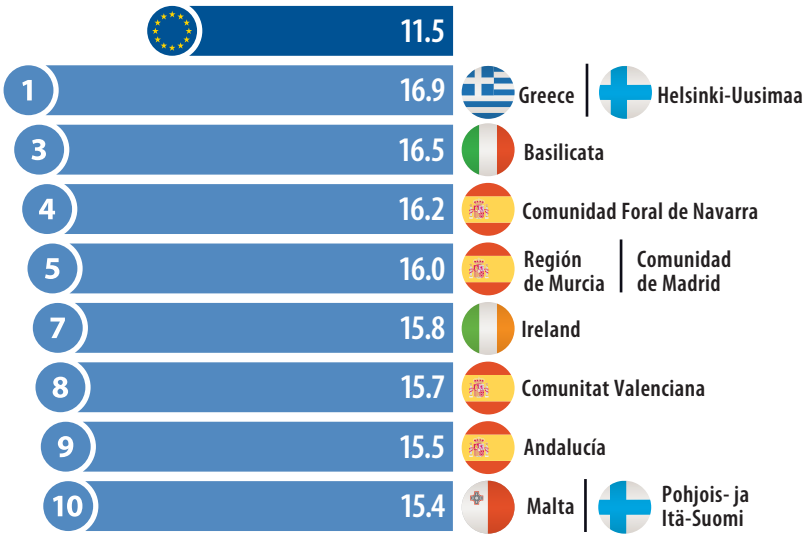
8. Business

Businesses in the European Union (EU) are leaders in many industrial, construction-related and service sectors. However, the global business environment continues to undergo rapid change. This may take the form of technological change, developing patterns of trade and investment, increased awareness of environmental responsibilities, the introduction of new and more flexible working practices, or sudden economic shocks (such as the COVID-19 crisis or the effects of the Russian military aggression against Ukraine). Many of these changes threaten to disrupt markets or impact how businesses work. To remain competitive, among other activities businesses in the EU need to: innovate; embrace technological change; adopt methods that use less energy, reduce waste and avoid pollution; invest in skills.

Presented according to the activity classification NACE, the first part of this chapter is based on a selection of regional enterprise demography statistics with information on enterprise birth and death rates, as well as high-growth enterprises. The infographic shows there were several regions – often concentrated in southern EU Member States – where around one sixth of all enterprises were considered as high-growth enterprises. These enterprises are widely recognised as important engines of economic growth as they create jobs and may innovate and disrupt markets.

The second and third parts of this chapter present structural business statistics (SBS) which may be used to analyse regional patterns of specialisation and concentration across the EU's business economy. Special focuses are provided for retail trade and for accommodation services, two activities that were particularly impacted by the COVID-19 crisis and associated restrictions. Note the latest available data generally concern 2019 and highlights regions that were relatively specialised in these activities and which therefore are likely to have been among those where the economic downturn associated with the crisis was most pronounced.





(% of total number of enterprises in the business economy, 2019)
Note: EU, Belgium, Germany, Ireland, Greece, Cyprus, Latvia, Luxembourg and Slovenia, NACE Sections B to N excluding the activities of holding companies (NACE Group 64.2). Belgium, Germany, Ireland, Greece and Slovenia: national data. Ireland and Greece: 2018.

Source: Eurostat (online data codes: bd_hgnace2_r3 and bd_9pm_r2)

Enterprise demography

Enterprise demography statistics describe enterprise characteristics: they cover, among other things, the birth of new enterprises, the growth and survival of existing enterprises (with particular interest centred on their employment impact), and enterprise deaths. These indicators provide an important insight into business dynamics, as new enterprises / fast-growing enterprises tend to be innovators that may improve the overall level of efficiency and productivity in an economy.

Note that throughout this section on enterprise demography the 'business economy' is generally defined as NACE Sections B to S, excluding Group 64.2. A narrower range of activities has been used for the EU total/average and some EU Member States (detailed information for these exceptions is provided below).

BIRTHS AND DEATHS

The EU enterprise birth rate was 10.0 %

The enterprise birth rate measures the number of new enterprises born during the course of a year in relation to the total population of active enterprises in the same year. The enterprise birth rate in the EU's business economy was 10.0 % in 2019. Note that for the analysis of enterprise birth and death rates, the business economy is defined as NACE Sections B to N excluding the activities of holding companies (NACE Group 64.2) for the EU and Belgium (as well as for Iceland and Serbia).

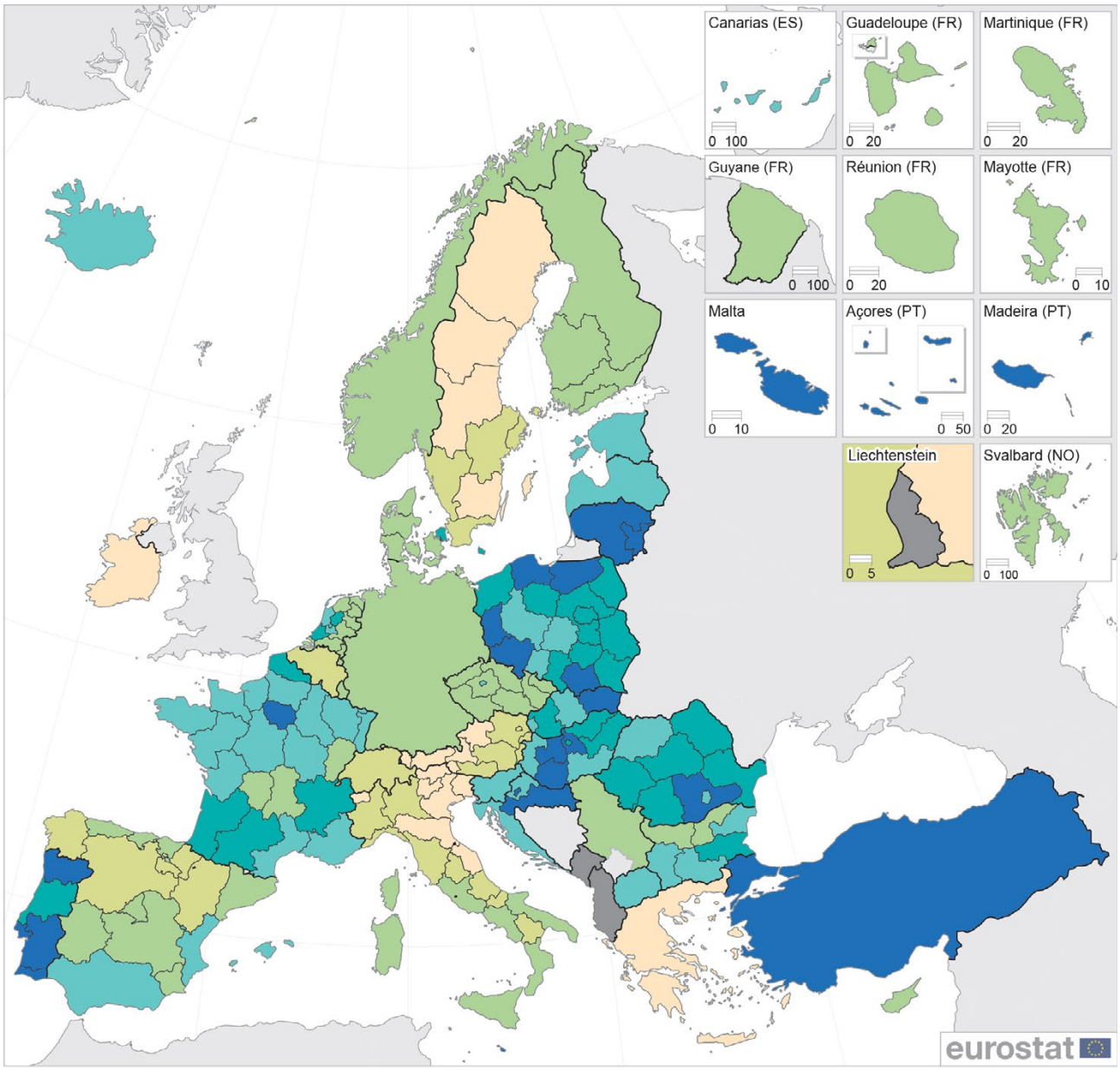
In 2019, there were 22 NUTS level 2 regions (out of 180 for which data are available; note that several EU Member States are unable to provide a regional breakdown for these statistics, see Map 8.1 for more details) where the enterprise birth rate for the business economy in 2019 was at least 13.0 %, as shown by the darkest shade of blue. This group included both Lithuanian regions and all but one of the seven regions in Portugal. Elsewhere, relatively high enterprise birth rates were concentrated across several regions in eastern EU Member States – five from Poland, three from Hungary, two from Croatia and a single region from each of Romania and Slovakia. There were also high enterprise birth rates in Ile-de-France (the capital region of France) and in Malta.

In 2019, close to one in five enterprises active in the business economy of the two Lithuanian regions of Vidurio ir vakarų Lietuvos regionas (19.9 %) and Sostinės regionas (19.2 %) were newly born; these were the highest enterprise birth rates among NUTS level 2 regions. Both of these regions had very high levels of 'business churn' – a measure of how frequently new enterprises are created and existing enterprises close down – indicating a high degree of business dynamism (which is often linked to productivity growth). The capital region of Sostinės regionas is characterised by a cluster of start-ups developing business management systems and financial technologies. The next highest enterprise birth rate was recorded in Área Metropolitana de Lisboa, the capital region of Portugal (17.9 %), which in recent years has become one of the most popular places in the EU for start-ups in the technology sector and remote working. It was followed by four more regions in Portugal – Algarve, the Regiões Autónomas da Madeira e dos Açores, and Norte – and then by Grad Zagreb (the capital region of Croatia; 13.9 %) and Pest (which encircles the capital region of Hungary; 13.7 %).

At the other end of the range, there were 17 NUTS level 2 regions where the enterprise birth rate in 2019 was below 6.5 %. Most of these were concentrated in Italy (mainly in the north), the west of Austria and the north of Sweden; national data reveals that Greece and Ireland also had enterprise birth rates below this threshold. Indeed, the lowest enterprise birth rates were recorded in Greece (4.8 %) and Ireland (4.9 %; 2018 data), while enterprise birth rates of no more than 5.5 % were also recorded in the Austrian regions of Tirol, Salzburg and Vorarlberg, and the Italian region of Provincia Autonoma di Bolzano/Bozen. Note these relatively low figures are likely to reflect a range of factors, including: underlying economic conditions, attitudes to risk, the level of competition, sectoral specialisation and the pace of structural change.

As enterprise birth rates were regularly high (or low) across whole economies, this tends to suggest that they were strongly influenced by the underlying national business environment, administrative, macro- and socioeconomic conditions.

Map 8.1: Enterprise birth rate, 2019
(% of active enterprises in the business economy, by NUTS 2 regions)



Note: the business economy is defined as NACE Sections B–S excluding the activities of holding companies (NACE Group 64.2). EU, Belgium, Iceland and Serbia: NACE Sections B–N excluding the activities of holding companies (NACE Group 64.2). Belgium, Germany, Ireland, Greece, Slovenia, Norway, Switzerland, Serbia and Turkey: national data. Czechia and Ireland: 2018.

Source: Eurostat (online data codes: bd_size_r3 and bd_9bd_sz_cl_r2)

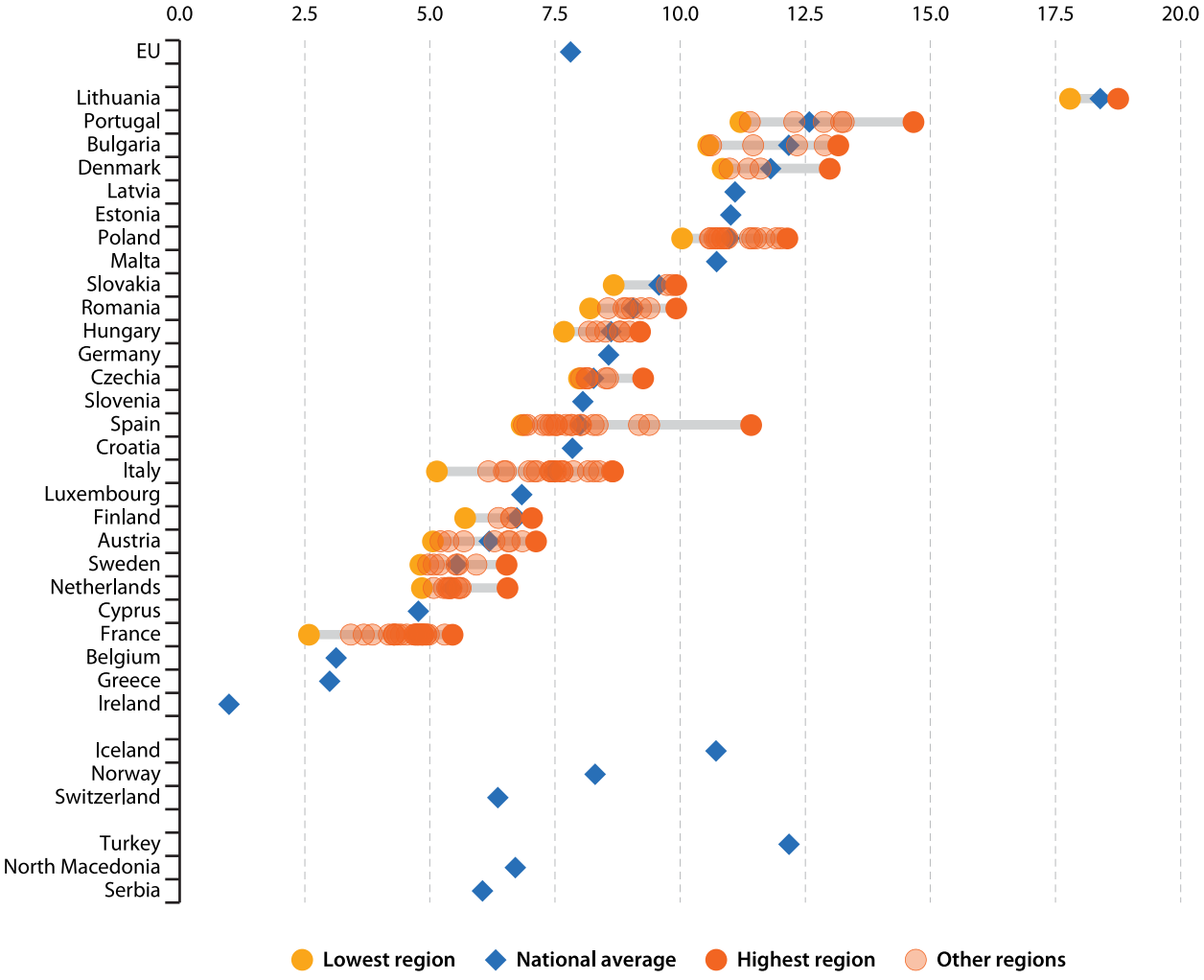
The EU enterprise death rate was 7.8 %

The enterprise death rate in the EU's business economy was 7.8 % in 2018. Note the reference year for enterprise death rates generally lags that for enterprise births as, when compiling statistics on deaths, it is necessary to ensure that enterprises have remained inactive during a period of two years (without being reactivated). It was relatively common for regions with high enterprise birth rates also to record high enterprise death rates. This is perhaps not surprising, as dynamic and innovative enterprises entering a market may be in a position to drive less productive incumbents out of the market ('creative destruction'). Figure 8.1 shows there was a relatively narrow range of regional enterprise death rates across most of the EU Member States. Indeed, there tended to be even less variation in enterprise death rates than was the case for enterprise birth rates.

As for enterprise birth rates, the highest enterprise death rates in 2018 among NUTS level 2 regions in the EU were recorded in the two Lithuanian regions: 18.7 % in Vidurio ir vakarų Lietuvos regionas and 17.8 % in Sostinės regionas. Enterprise death rates were also relatively high across most Portuguese regions, in particular for Área Metropolitana de Lisboa (14.7 %), Região Autónoma da Madeira (13.3 %) and Região Autónoma dos Açores (13.2 %). Severoiztochen in Bulgaria (13.2 %) and the Danish capital region of Hovedstaden (13.0 %) were the only other regions where the enterprise death rate was at least 13.0 %.

Enterprise death rates were extremely low in Ireland, Greece and Belgium (note that only national data are available). Leaving the national Irish data aside, the lowest regional enterprise death rate in 2018 was 2.6 % in the French outermost region of Mayotte. It is also interesting to note that while most French regions had enterprise birth rates that were relatively close to the EU average, their enterprise death rates were generally much lower (suggesting that the total number of enterprises was growing).

Figure 8.1: Enterprise death rate, 2018
(% of active enterprises in the business economy, by NUTS 2 regions)



Note: ranked on the national average. The business economy is defined as NACE Sections B–S excluding the activities of holding companies (NACE Group 64.2). EU, Belgium, Iceland and Serbia: NACE Sections B–N excluding the activities of holding companies (NACE Group 64.2). Belgium, Germany, Ireland, Greece, Croatia, Slovenia, Norway, Switzerland, Serbia and Turkey: national data. Czechia and Turkey: 2017.

Source: Eurostat (online data codes: bd_size_r3 and bd_9bd_sz_cl_r2)

HIGH-GROWTH ENTERPRISES

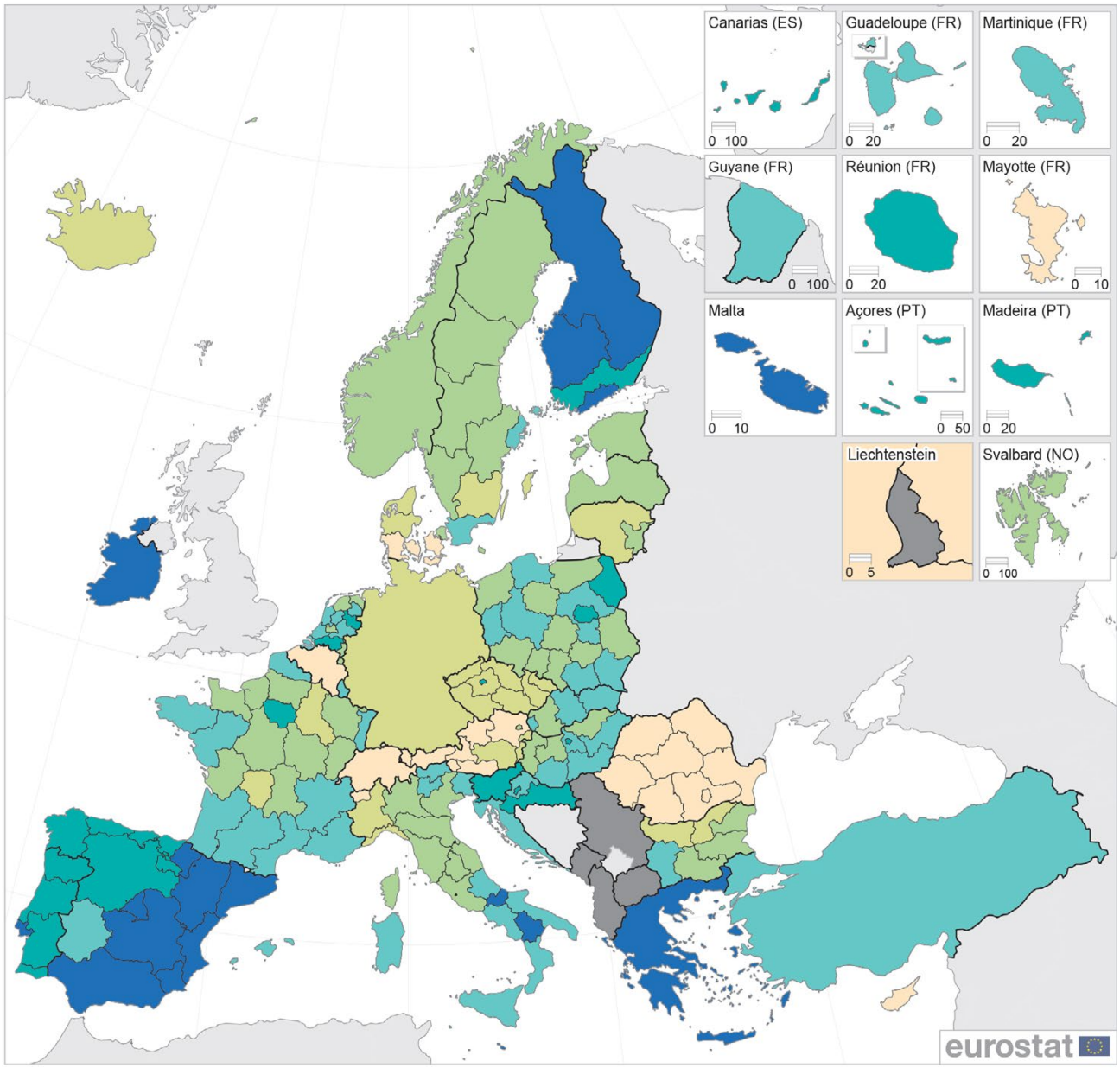
High-growth enterprises are of particular interest to policymakers insofar as they can improve the economic performance of a region, create employment and, if sustained, change its economic structure. For the analysis presented here, high-growth enterprises are defined as those: born before 2016 which had survived up to 2019; with at least 10 employees in 2016; and with average employee growth of more than 10.0 % per year between 2016 and 2019. The threshold of 10 employees in 2016 is designed to exclude very small enterprises where employment increases could be very high in relative terms, but with little economic impact in absolute terms. This indicator should be analysed with caution as it fails to capture potential downsides, insofar as high-growth enterprises may displace incumbents and/or disrupt markets, possibly lowering overall economic performance. Note that in this section on high-growth enterprises, the business economy for the EU, Belgium, Germany, Ireland, Greece, Cyprus, Latvia, Luxembourg and Slovenia (as well as Iceland, Norway, Switzerland and Turkey) is defined as NACE Sections B to N excluding the activities of holding companies (NACE Group 64.2).

High-growth enterprises accounted for more than 1 out of every 10 enterprises active in the EU's business economy, some 11.5 % in 2019. There was a relatively even distribution of high-growth enterprises across the 180 regions for which data are available in the EU: 48.9 % (or 88 out of 180 regions) recorded shares that were below the EU average; 46.7 % (or 84 regions) had shares above the EU average; eight regions had a share that was equal to EU average.

The darkest shade of blue in Map 8.2 shows those NUTS level 2 regions where high-growth enterprises accounted for 14.5 % or more of all active enterprises in 2019; there were 17 regions at or above this boundary. The existence of a high share of high-growth enterprises may reflect, at least in part, the business enterprise structure of each region: it is generally easier for a relatively small enterprise (compared with a relatively large enterprise) to grow at a rapid pace; this pattern is often referred to as the 'catch-up' process. These 17 regions with a relatively high proportion of high-growth enterprises were largely concentrated across southern parts of the EU: eight regions from Spain, two from (southern) Italy and one from Portugal, as well as Malta and Greece (national data for 2018). There was a cluster of three regions in Finland – Helsinki-Uusimaa, Pohjois- ja Itä-Suomi and Länsi-Suomi – where high-growth enterprises accounted for at least 14.5 % of all active enterprises; this was also the case in Ireland (national data for 2018).

The capital regions of Bulgaria, Czechia, Denmark, France, Croatia, Lithuania, Hungary, Austria, Poland, Portugal, Romania, Slovakia, Finland and Sweden recorded the highest proportions of high-growth enterprises on their national territories. This bias towards capital regions might reflect, among other factors, the availability of: capital for business start-ups; highly-qualified people to staff rapidly growing enterprises; a critical mass of potential business and/or consumer clients for new businesses.

Map 8.2: High-growth enterprises, 2019
(% of total number of enterprises in the business economy, by NUTS 2 regions)



Note: high-growth enterprises are defined as those with employment growth of more than 10 %; rates of change are calculated as average annualised rates over a three-year period for the number of (paid) employees for the business economy (NACE Sections B–S excluding the activities of holding companies (NACE Group 64.2)). To be classified as high growth, an enterprise must have had at least 10 employees at the beginning of the period. EU, Belgium, Germany, Ireland, Greece, Cyprus, Latvia, Luxembourg, Slovenia, Iceland, Norway, Switzerland and Turkey: NACE Sections B–N excluding the activities of holding companies (NACE Group 64.2). Belgium, Germany, Ireland, Greece, Slovenia, Norway, Switzerland and Turkey: national data. Ireland and Greece: 2018. Switzerland: 2017.

Source: Eurostat (online data codes: bd_hgnace2_r3 and bd_9pm_r2)

Regional patterns of employment specialisation and concentration in manufacturing

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

In 2019, there were 23.2 million enterprises active in the EU's non-financial business economy (defined here as NACE Sections B to J and L to N and Division 95); together, their gross value added was €6 852 billion and they employed 131.5 million persons.

The EU's manufacturing base has migrated eastwards

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

There has been an eastward shift in the EU's manufacturing base during the last two to three decades, reflecting, among other factors, differences in: labour costs; flows of foreign direct investment (FDI); the presence of multinational enterprises; natural resource endowments; environmental standards. Eastern EU Member States have been increasingly used as manufacturing bases by enterprises from other Member States, in particular neighbouring countries such as Germany, and enterprises from non-member countries that would like to establish a manufacturing base within the EU's single market. They often form an integral part of international supply chains, with a relatively highly-skilled workforce.

In 2019, manufacturing employed close to one quarter (22.9 %) of the EU's non-financial business economy workforce, while its share of value added was 6.2 percentage points higher, at 29.2 %. The three largest manufacturing subsectors in the EU – in employment terms and as defined by NACE divisions – were the manufacture of food products (3.2 % of the non-financial business economy total), the manufacture of fabricated metal products, except machinery and equipment (2.8 %), and the manufacture of machinery and equipment not elsewhere classified (2.4 %). There were only three other manufacturing subsectors which accounted for at least 1.0 % of the EU's non-financial business economy workforce: the manufacture of motor vehicles, trailers and semi-trailers (1.9 %), the manufacture of rubber and plastic products (1.3 %) and the manufacture of electrical equipment (1.1 %).

Figure 8.2 shows information for 24 different manufacturing activities (as defined by NACE divisions). The bars show the number of persons employed in a specific manufacturing activity as a share of the non-financial business economy workforce, with the left- and right-hand ends of each bar providing information on the regions with the highest/lowest regional shares; the point where the blue and orange parts of each bar meet indicates the EU average. For example, in the French region of Pays de la Loire, manufacturing food products employed 11.8 % of the non-financial business economy workforce in 2019; this was 3.7 times as high as the EU average (3.2 %).

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

Figure 8.2 also shows that the distribution of employment across the various manufacturing divisions was often highly skewed, with particularly high levels of employment concentrated in a handful of regions. Activities that involve the primary processing stages of agricultural, fishing or forestry products were often located close to the source of their raw materials. This was the case for manufacturing food products in Pays de la Loire (as mentioned above). There were four agricultural regions where manufacturing food products accounted for 9.0–10.0 % of employment within the non-financial business economy in 2019, namely Ipeiros in Greece, Bretagne and Champagne-Ardenne (both in France), and Mazowiecki regionalny in Poland. Champagne-Ardenne (France; 4.1 %) had the highest employment share for the manufacturing of beverages (NACE Division 11). Regions specialised in the manufacture of textiles (NACE Division 13) were often located close to an abundant supply of water; Norte (Portugal; 3.1 %) had the highest share. Norra Mellansverige (Sweden) had the highest employment shares for the manufacture of basic metals (NACE Division 24; 5.7 %) and for the manufacture of paper and paper products (NACE Division 17; 3.2 %). Panonska Hrvatska in Croatia had the highest employment share for the manufacture of wood and wood products, except furniture (NACE Division 16; 4.6 %).

German regions often specialise in export-orientated subsectors

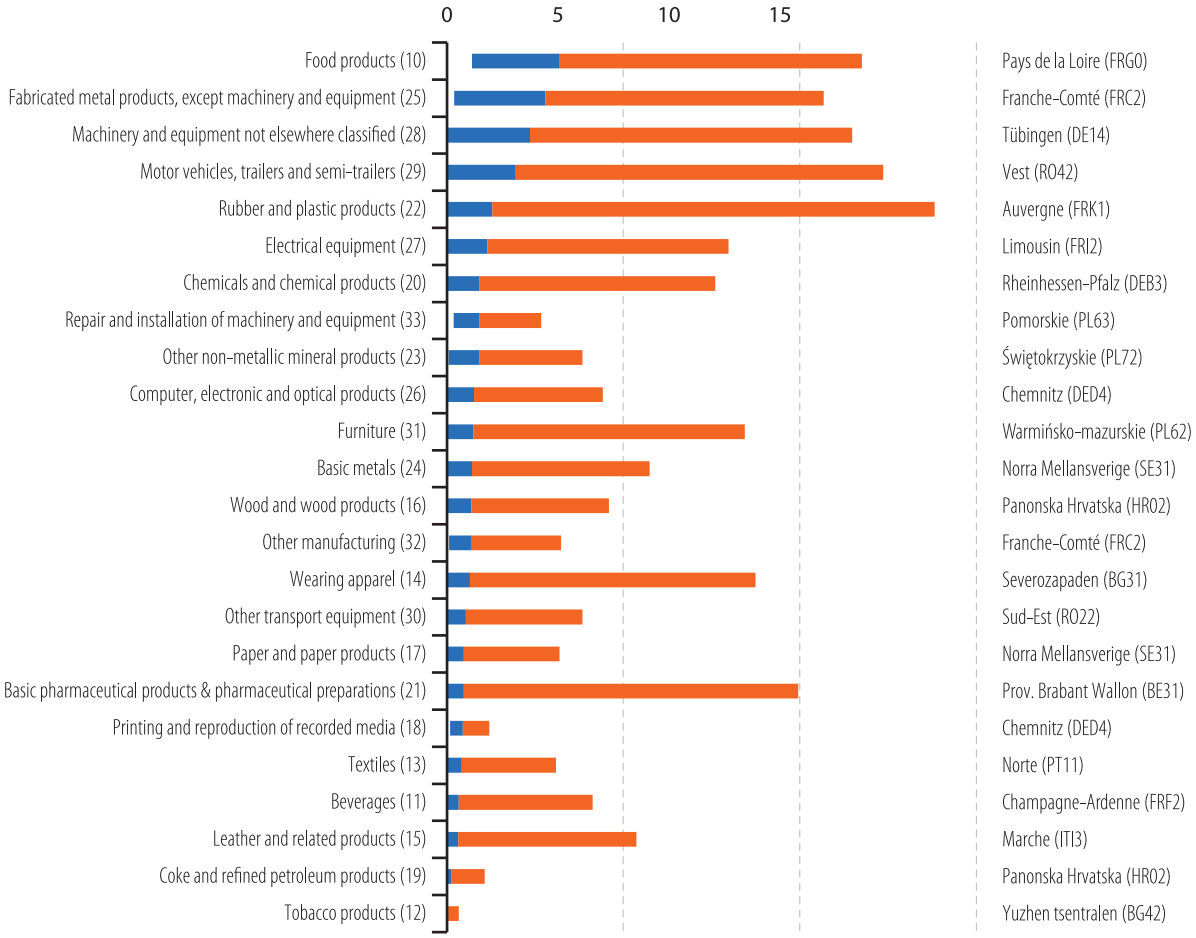
Exports make it possible for enterprises to maintain or increase production when faced with stagnating domestic demand. Germany exports a high proportion of its manufacturing output; this is particularly the case for its motor vehicles, electrical, engineering and chemical subsectors. Over time, some parts of its production that was previously in Germany has been moved abroad, to exploit efficiency gains in global value chains. For example, this has included moving some production to eastern EU Member States characterised by their close geographical proximity and established industrial structures.

In 2019 and among NUTS level 2 regions of the EU, Tübingen in south-west Germany had the highest employment share for the manufacture of machinery and equipment not elsewhere classified (NACE Division 28; 11.5 %). Rheinhessen-Pfalz in western Germany had the highest employment share for the manufacture of chemicals and chemical products (7.6 %), while Chemnitz in eastern Germany had the highest employment shares for the manufacture of computer, electronic and optical products (4.4 %) and printing and reproduction of recorded media (1.2 %).

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

The manufacture of transport equipment is characterised by clusters of economic activity and highly-integrated production chains. In 2019, the westernmost Romanian region of Vest had the highest degree of employment specialisation for the manufacture of motor vehicles, trailers and semi-trailers (NACE Division 29; 12.4 %). Střední Čechy (Czechia; 11.4 %) and Nyugat-Dunántúl (Hungary; 11.2 %) also reported double-digit employment shares for this activity. Another Romanian region, Sud-Est, was the most specialised region for the manufacture of other transport equipment (NACE Division 30; 3.8 %).

Figure 8.2: Regional specialisation within the manufacturing economy, 2019
(% of regional non-financial business economy employment, by NUTS 2 regions)



Note: the EU average is shown by the point within each bar where the blue and orange parts of each bar meet; the range of regional values across NUTS level 2 regions is shown by the bar (above/below the EU average in orange/blue); the name of the region with the highest value is also shown. NACE codes are given in brackets after each of the activity labels. The figure is based on non-confidential data (some activities are not available for a limited number of regions). Mayotte (FRY5): not available.

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

Regional patterns of employment specialisation and concentration in services (other than finance)

Non-financial services (NACE Sections G to J and L to N and Division 95) provided work to 85.4 million persons across the EU in 2019. This equated to slightly less than two thirds (64.8 %) of the total number of persons employed in the non-financial business economy.

Among NUTS level 2 regions, the contribution of non-financial services to the non-financial business economy workforce was less than 45.0 % in 2019 in seven regions concentrated in eastern EU Member States: four of these were located in Czechia (where the capital region of Praha was alone in having a majority of its non-financial business economy workforce employed in non-financial services); the other regions were Sjeverna Hrvatska in Croatia, Vzhodna Slovenija in Slovenia and Opolskie in Poland.

At the other end of the range, there were seven regions in the EU where the contribution of non-financial services to the non-financial business economy workforce was higher than 85.0 % in 2019. They included the capital regions of Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (Belgium), Berlin (Germany) and Noord-Holland (the Netherlands), as well as two regions in Greece that are popular holiday destinations – Ionia Nisia and Notio Aigaio. The remaining two were the German regions of Trier and Koblenz.

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

Figure 8.3 provides information for 31 different service activities, presenting the regions with the highest degree of employment specialisation (based on regional shares for each activity in the non-financial business economy workforce). Some of the variations in employment specialisation may reflect, among other issues: access to skilled employees; the adequate provision of infrastructure; climatic and geographic conditions; proximity to or a critical mass of customers; access to markets; or legislative constraints.

Some service activities are common, appearing in every region, for example, retail trade, wholesale trade, or food and beverage services. They were also the largest employers in 2019, as retail trade (NACE Division 47) accounted for 12.4 % of the EU's non-financial business economy workforce, followed by wholesale trade (NACE Division 46; 7.3 %) and food and beverage service activities (NACE Division 56; 6.4 %). The northern French region of Nord-Pas de Calais had the highest employment share (34.7 %) for retail trade, which may reflect, at least to some degree, its location – providing ease of access to cross-border shoppers from Belgium or the United Kingdom. The highest employment share for wholesale trade was recorded in Región de Murcia (Spain; 16.1 %), reflecting the high level of fruit and vegetables transported out of this region. In regions traditionally associated with tourism and in densely-populated regions, it was commonplace to find that a relatively high share of the non-financial business economy workforce was employed within food and beverage service activities. The highest employment share for these activities was recorded in the island region of Ionia Nisia (Greece; 27.9 %).

Capital regions were among some of the most specialised regions for a range of activities that rely on the close proximity of a large number of potential clients (be these other businesses or households). For example, in 2019 the Área Metropolitana de Lisboa (Portugal) had the highest employment share for office administrative/support and other business support activities (9.7 %), Bucureşti-Ilfov (Romania) for security and investigation activities (5.3 %), Praha (Czechia) for other professional, scientific and technical activities (2.9 %) and Warszawski stołeczny (Poland) for advertising and market research (2.6 %).

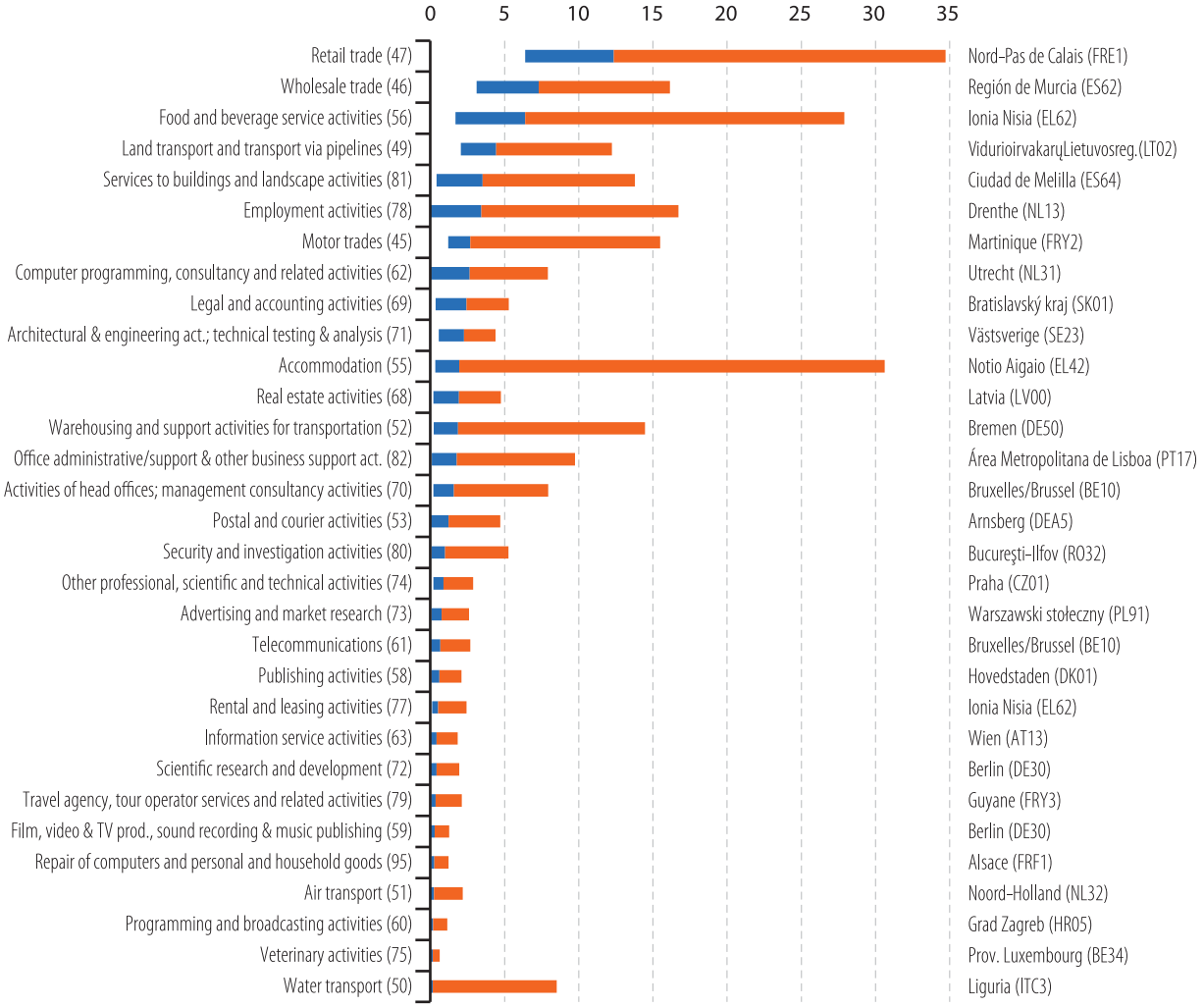
Figure 8.4 presents information on the absolute number of people employed in various service activities (at the NACE section level) for NUTS level 1 regions of the EU in 2019. The largest non-financial services workforces in 2019 were in regions characterised as relatively densely-populated, containing large urban areas: Nordrhein-Westfalen and Bayern in Germany, the French capital region of Ile-de-France, Nord-Ovest in Italy, and Este in Spain. Each of these regions employed at least 3.0 million people in non-financial services, with a peak of 5.0 million in Nordrhein-Westfalen.

There were five NUTS level 1 regions where more than 1.0 million persons were employed in distributive trades

A closer analysis of the five regions with the largest non-financial services workforces reveals that distributive trades (NACE Section G) was consistently the largest employer. In 2019, at least 1.0 million persons worked in distributive trades in each of these five regions, with distributive trades accounting for 32.5–34.9 % of the non-financial services workforce in four of them. The only exception was Ile-de-France, where a considerably lower share (22.8 %) of the non-financial services workforce was employed in distributive trades.

This pattern – distributive trades providing the highest share of employment among NACE sections in the non-financial services economy – was repeated in the vast majority of NUTS level 1 regions. There were only six exceptions among the 92 regions for which data are presented in Figure 8.4. In 2019, more people were employed in administrative and support service

Figure 8.3: Regional specialisation within the non-financial services economy, 2019
(% of regional non-financial business economy employment, by NUTS 2 regions)



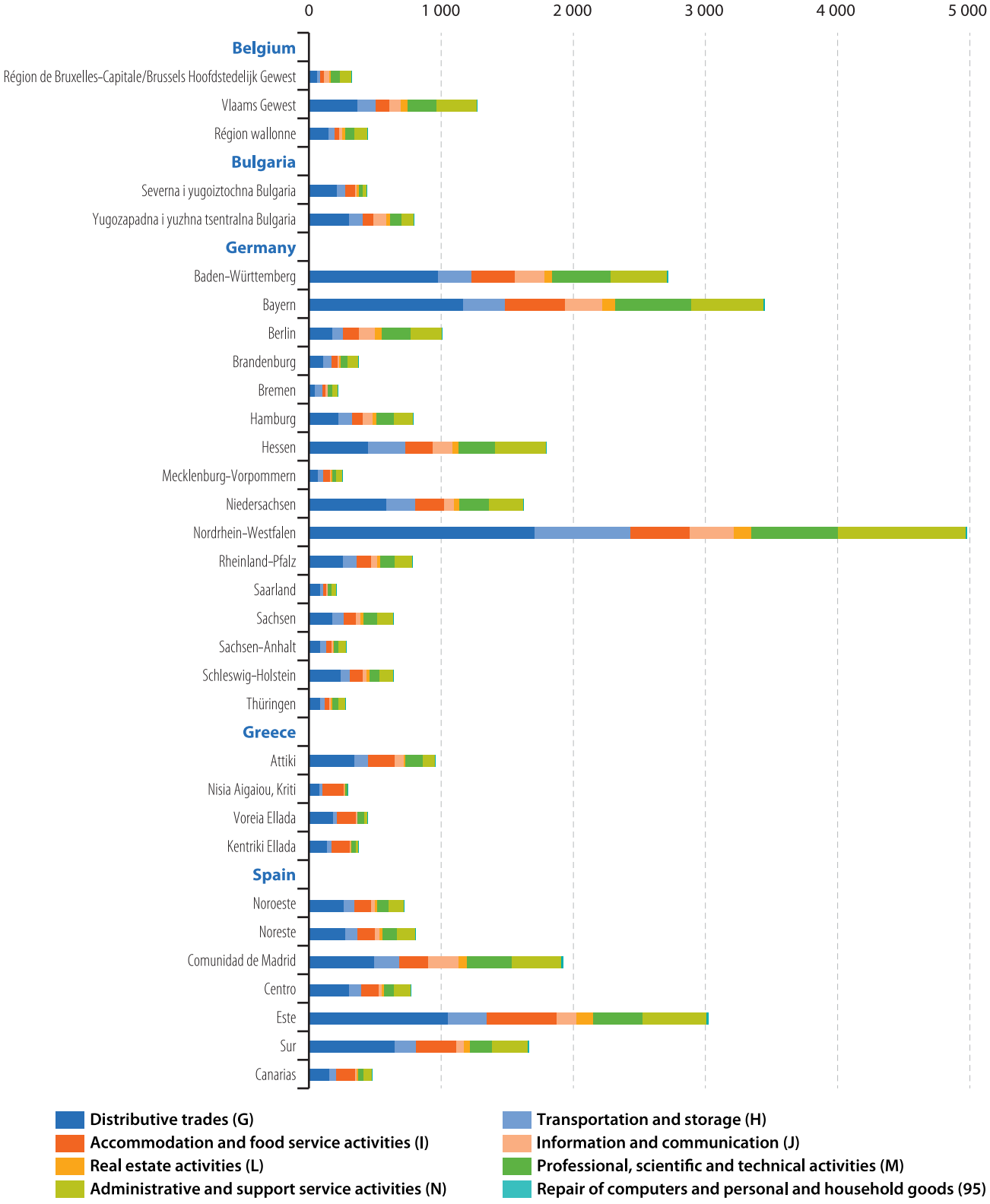
Note: the EU average is shown by the point within each bar where the blue and orange parts of each bar meet; the range of regional values across NUTS level 2 regions is shown by the bar (above/below the EU average in orange/blue); the name of the region with the highest value is also shown. NACE codes are given in brackets after each of the activity labels. The figure is based on non-confidential data (some activities are not available for a limited number of regions). Mayotte (FRY5): not available.

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

activities (NACE Section N) than in distributive trades in the Belgian and German capital regions – Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest and Berlin. In Bremen (Germany) and the archipelago of Åland (Finland), transportation and storage (NACE Section H) had the largest workforce in the non-financial services economy, while in the popular holiday destinations of Nisia Aigaiou, Kriti (Greece) and Região Autónoma da Madeira (Portugal), it was accommodation and food service activities (NACE Section I) that was the largest employer.

In the northern French region of Hauts-de-France, more than half (56.3 %) of the non-financial services workforce was employed in distributive trades in 2019. This was the only NUTS level 1 region in the EU where distributive trades accounted for an absolute majority of those employed in the non-financial services economy; the next highest shares were recorded in two Polish regions, Makroregion Północno-Zachodni (49.8 %) and Makroregion Wschodni (49.3 %).

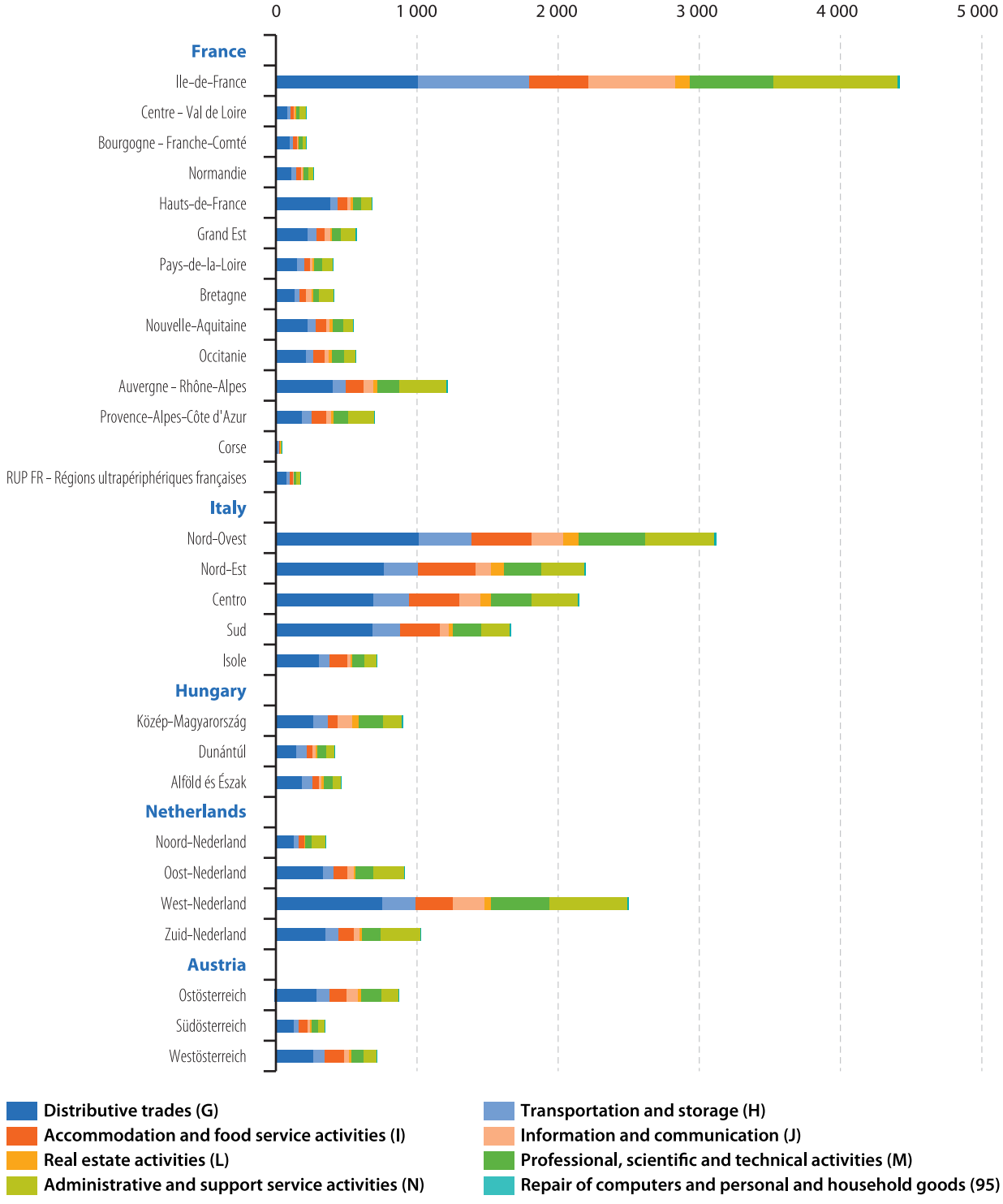
Figure 8.4: Employment in non-financial services, 2019
(1 000 persons employed, by NACE Section in the non-financial services economy, by NUTS 1 regions)



Note: Nisia Aigaiou, Kriti: NACE Section N, not available. Corse and RUP FR - Régions ultrapériphériques françaises: NACE Division 95, 2018 data. Noord-Nederland: NACE Section J, not available. Região Autónoma dos Açores and Região Autónoma da Madeira: NACE Section N, 2018 data.

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

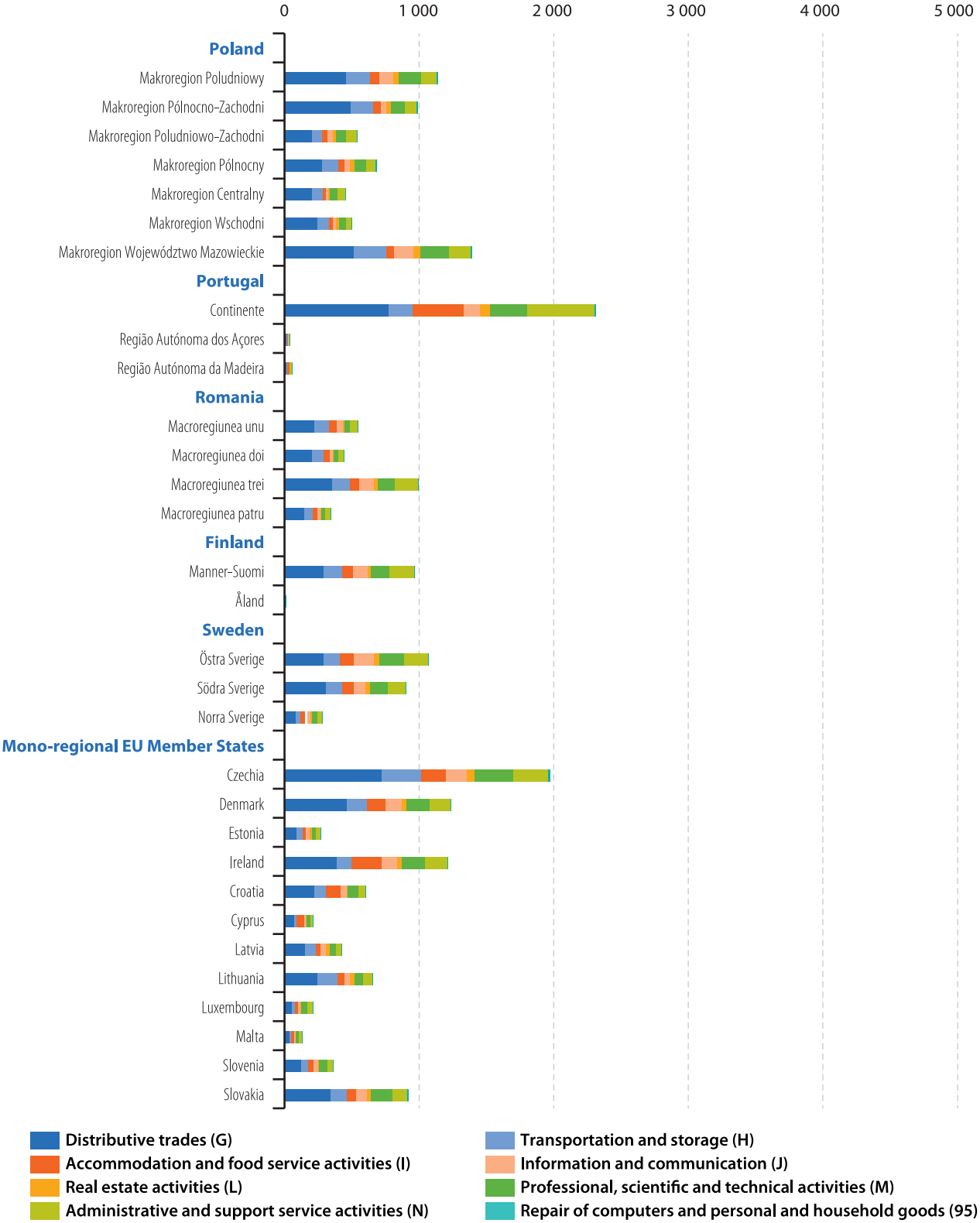
Figure 8.4 (continued): Employment in non-financial services, 2019
(1 000 persons employed, by NACE Section in the non-financial services economy, by NUTS 1 regions)



Note: Nisia Aigaiou, Kriti: NACE Section N, not available. Corse and RUP FR - Régions ultrapériphériques françaises: NACE Division 95, 2018 data. Noord-Nederland: NACE Section J, not available. Região Autónoma dos Açores and Região Autónoma da Madeira: NACE Section N, 2018 data.

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

Figure 8.4 (continued): Employment in non-financial services, 2019
(1 000 persons employed, by NACE Section in the non-financial services economy, by NUTS 1 regions)



Note: Nisia Aigaiou, Kriti: NACE Section N, not available. Corse and RUP FR - Régions ultrapériphériques françaises: NACE Division 95, 2018 data. Noord-Nederland: NACE Section J, not available. Região Autónoma dos Açores and Região Autónoma da Madeira: NACE Section N, 2018 data.

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

The final part of this chapter provides a special focus for two activities that have been particularly impacted by the COVID-19 crisis and its associated restrictions. Note that while the information presented for retail trade and accommodation services refer to 2019 (the latest reference period for which structural business statistics are available), short-term indicators have already confirmed the negative impact of the crisis on activities such as these. The information below highlights regions where retail trade and accommodation services are particularly prevalent; these are likely to be some of the regions where the economic downturn associated with the crisis was most pronounced.

FOCUS ON RETAIL TRADE

Retail trade (NACE Division 47) uses a range of formats to supply consumers, mainly through specialised or unspecialised stores (the latter often distinguished between those with food dominating and others); retail trade also includes retailing outside of stores, through traditional forms such as outdoor markets or via mail order and increasingly via online sales (which became even more popular during the pandemic).

With the onset of the COVID-19 crisis, most EU governments took the decision to close the vast majority of their retail trade activities in March 2020; the only exceptions were generally food retailers and pharmacies. By May 2020, some EU Member States started to remove or dilute some of the measures/ restrictions that had been put in place, as retail outlets started to re-open (usually with a limit on the number of persons allowed to enter shops).

The EU's retail trade sector employed 16.3 million persons in 2019. This represented 12.4 % of the non-financial business economy workforce. The regional distribution of employment in retail trade was somewhat skewed insofar as there were 138 out of 241 NUTS level 2 regions for which data are available (or 57.3 % of all regions) where this share was equal to or above the EU average. Retail trade provided work to 17.5 % or more of the non-financial business economy workforce in 26 regions across the EU (as shown by the darkest shade of blue in Map 8.3). Relatively high employment shares were concentrated in the regions of three southern EU Member States – Greece, Spain and Italy – as well as several regions characterised by industrial decline. The highest employment share for retail trade was in Nord-Pas de Calais in northern France (34.7 %).

In 2019, the retail trade sector employed less than 9.5 % of the non-financial business economy workforce across 25 different regions (as shown by the lightest shade of yellow). They were concentrated in Belgium, Czechia and Germany and also included the capital regions of France, Slovenia, Slovakia, Finland and Sweden, as well as Luxembourg. Many of these regions were characterised as densely-populated, predominantly urban regions, including Bremen in Germany, which had the lowest share (6.4 %) in the EU.

FOCUS ON ACCOMMODATION SERVICES

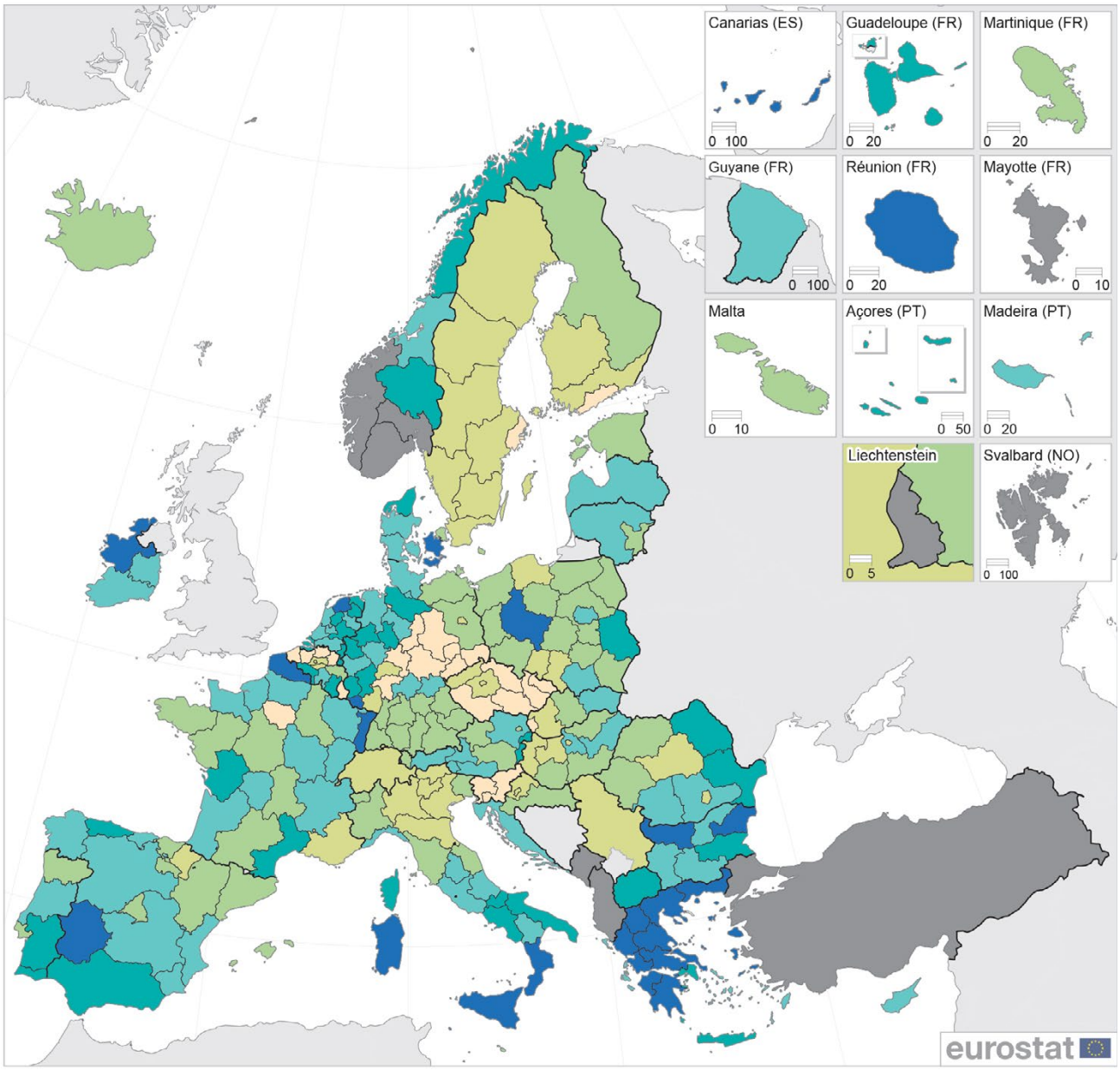
Accommodation service activities (NACE Division 55) include: hotels and similar accommodation such as apartment hotels or motels; holiday and other short-stay accommodation, such as self-contained apartments, chalets, villas and cabins rented on a daily or weekly basis; camping and caravanning sites; other accommodation, such as residences for students and workers or railway sleeping cars.

The COVID-19 crisis had an unprecedented impact on accommodation service activities, with most EU governments closing hotels and other forms of accommodation in March 2020. Despite the gradual re-opening of accommodation services and the successful roll-out of vaccination programmes, many hoteliers faced weak demand. Tourists were often reluctant to book foreign travel and business travel also remained below pre-pandemic levels with trade fairs / conferences slow to restart and some business people choosing to favour online meetings.

Across the EU, accommodation service activities employed 2.6 million persons in 2019. This represented 2.0 % of the non-financial business economy workforce. There were 22 NUTS level 2 regions in the EU where the employment share of accommodation service activities in the non-financial business economy was at least 5.5 % (as shown by the darkest shade of blue in Map 8.4). The regional distribution was highly skewed insofar as accommodation service activities accounted for more than 2.0 % of the non-financial business economy workforce in just one third (80 out of 240) of EU regions.

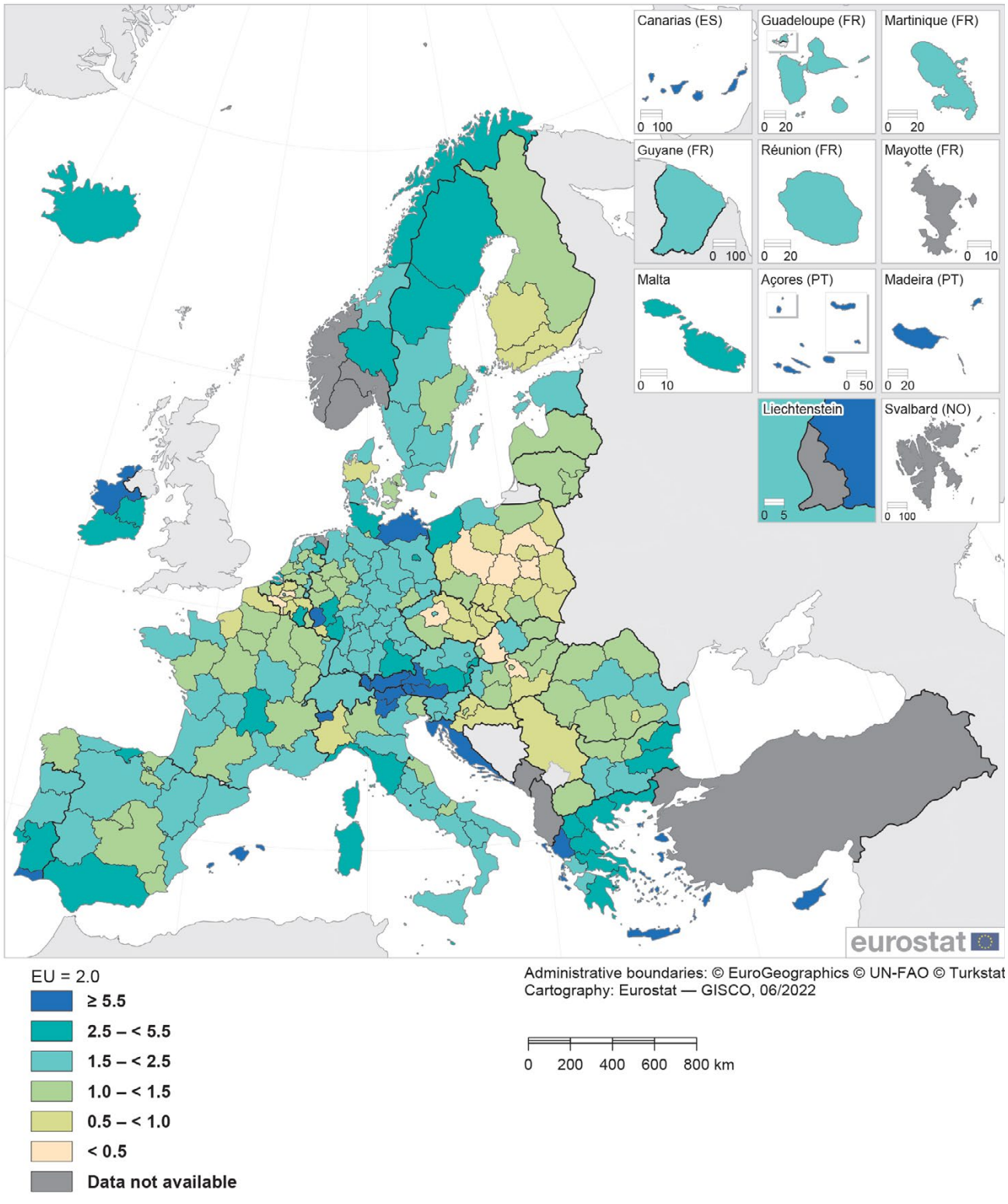
The 22 regions with high employment shares were concentrated, unsurprisingly, in regions notable for tourism, particularly southern coastal regions of the EU and Alpine regions. The highest shares of the non-financial business economy workforce that were employed in accommodation service activities were recorded in three Greek island regions – Notio Aigaio (30.6 %), Ionia Nisia (25.0 %) and Kriti (18.7 %) – followed by Algarve in Portugal (14.8 %) and Provincia Autonoma di Bolzano/Bozen in Italy (14.5 %).

Map 8.3: Employment in retail trade, 2019
(% of regional non-financial business economy employment, by NUTS 2 regions)



Note: NACE Division 47. Switzerland and Serbia: national data. Iceland and Norway: 2018.
Source: Eurostat (online data codes: sbs_r_nuts06_r2 and sbs_na_sca_r2)

Map 8.4: Employment in accommodation services, 2019
(% of regional non-financial business economy employment, by NUTS 2 regions)



Note: NACE Division 55. Switzerland and Serbia: national data. Iceland and Norway: 2018
Source: Eurostat (online data codes: sbs_r_nuts06_r2 and sbs_na_sca_r2)

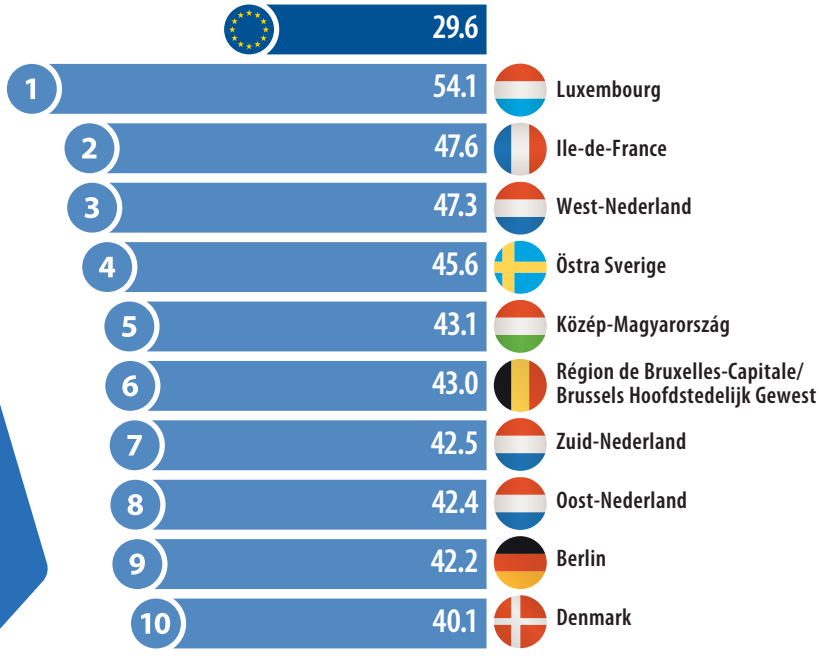
9. Research and development

Spending on research and development (R&D) has the potential to improve the daily lives of millions of people, both within the European Union (EU) and elsewhere, by helping to solve some of the world's largest societal and generational challenges. For example, the European Commission's six priorities for the period 2019–2024 include a target to become the world's first climate-neutral continent by 2050. These guidelines are backed-up by a commitment to invest in innovation and research through the European Green Deal Investment Plan and Just Transition Mechanism, to help facilitate a transition towards a climate-neutral, competitive and inclusive European economy.

The EU is one of the leading global producers of scientific knowledge: it welcomes researchers from all over the world. In May 2021, the European Commission adopted a communication on a *Global Approach to Research and Innovation – Europe's strategy for international cooperation in a changing world* (COM(2021) 252 final). This underlines the EU's desire to play a leading role in supporting international research and innovation partnerships, while delivering innovative solutions that provide green and digital solutions in line with the sustainable development goals and at the same time promoting resilience, prosperity, competitiveness, economic and social well-being.

To develop and expand its knowledge-based economy, the EU requires a consistent supply of highly-skilled/qualified people. Human resources in science and technology (HRST) core refers to people who have successfully completed a tertiary education and who are employed in a science and technology occupation. In 2021, there were 13.2 million young people aged 25–34 years in the EU who met these criteria, which equated to almost one third (29.6 %) of all economically active people of this age. The infographic shows that Luxembourg was the only NUTS level 1 region to report that more than half (54.1 %) of all economically active young people were HRST core. The next highest shares were recorded in Ile-de-France (the capital region of France; 47.6 %) and West-Nederland (in the Netherlands; 47.3 %).

It is often claimed that Europe faces an innovation deficit. Indeed, a European Commission communication adopted in January 2018 *Horizon 2020 interim evaluation: maximising the impact of EU research and innovation* (COM(2018) 2 final) identified that the innovation deficit was not due to an absence of new ideas or discoveries, but instead reflected a lack of success in diffusing/commercialising inventions. This may, in part, be linked to the willingness of EU businesses and financial systems to accept risk, which may impinge upon their ability to identify disruptive research. The communication identified areas such as investing more ambitiously and supporting breakthrough innovations as ways to remedy the deficit.



(% of the economically active population aged 25–34, 2021)
Note: Bremen (DE5), 2019. Corse (FRM) and Åland (FI2): not available.

Source: Eurostat (online data code: hrst_st_rage

This chapter presents statistical information analysing regional developments for a range of research and development-related indicators within the EU, including the following topics: R&D intensity and R&D expenditure per inhabitant, human resources in science and technology (HRST), R&D personnel and the number of researchers.

Research and development expenditure

R&D – creative and systematic work undertaken to increase the stock of knowledge or to devise new applications of existing knowledge – tends to be concentrated in clusters. Research-intensive regions are often situated around academic institutions, high-technology industrial activities and/or knowledge-based services, which attract new start-ups and highly qualified personnel. Gross domestic expenditure on R&D (GERD) includes research expenditure made by business enterprises, higher education institutions, government and private non-profit organisations. In 2020, GERD was valued at €311.1 billion across the EU. Despite the considerable economic impact of the COVID-19 crisis, it is interesting to note there was almost no change (down 0.2 %) in the level of expenditure on R&D.

The most recent reference year with a relatively complete set of regional R&D statistics is 2019. The skewed nature of R&D activity was such that more than half (53.2 %) of the EU's intramural R&D expenditure took place in just 18 out of 199 NUTS level 2 regions. Note the data presented in this section for the Netherlands relate to NUTS level 1 regions, while only national data are available for Ireland and France; the inclusion of these less detailed data – particularly for France – contributes to the skewed nature of R&D activity. The 18 largest regions in the EU in terms of R&D expenditure all recorded in excess of €4.0 billion of such expenditure. This underlines the significance of clusters of scientific and technological excellence. Leaving aside the national data for France, the two regions with the highest levels of R&D expenditure were both located in Germany: Stuttgart (€16.5 billion) and Oberbayern (€12.6 billion).

The highest R&D intensity was recorded in the German region of Braunschweig

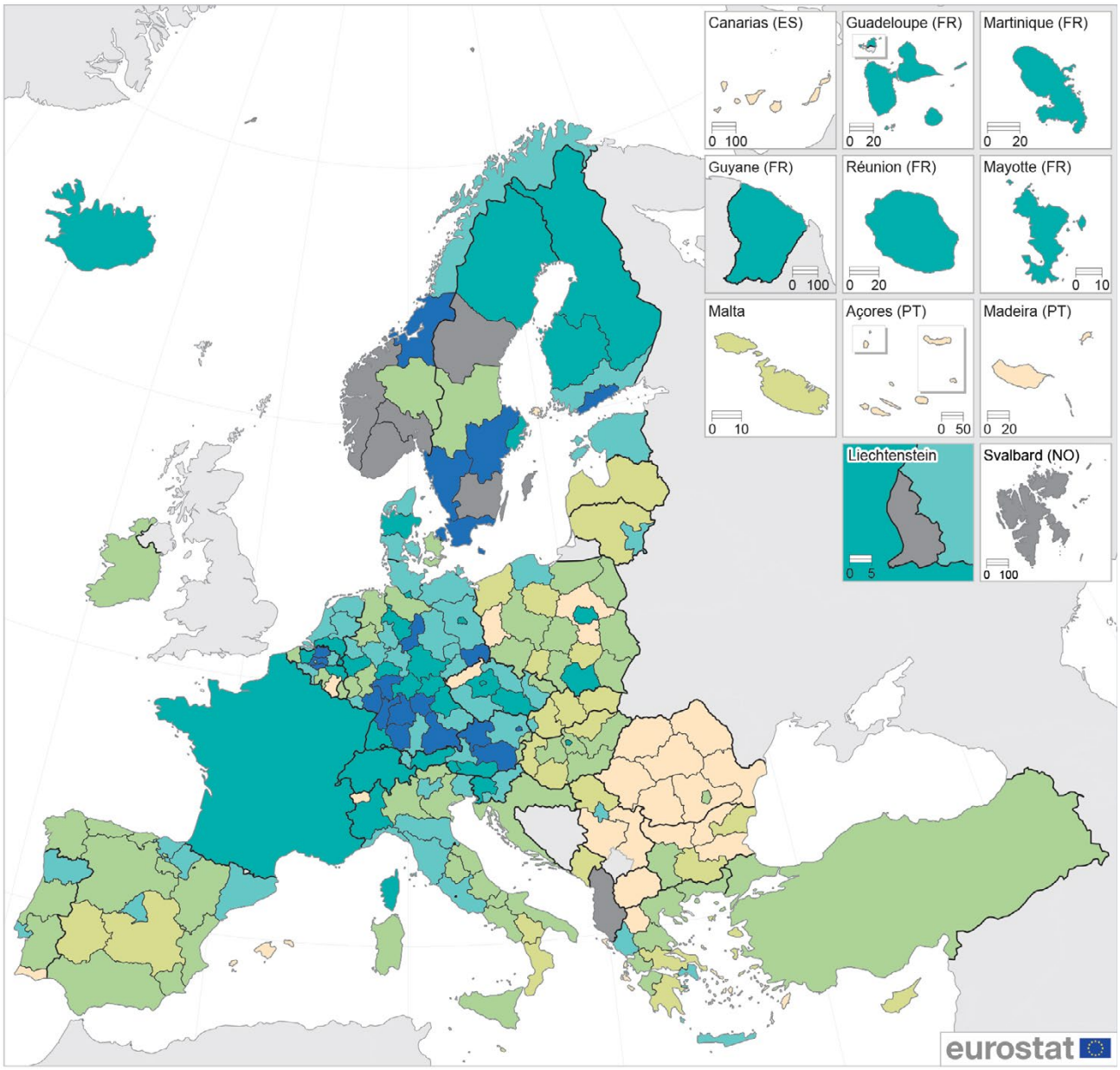
R&D intensity is frequently used as a measure to determine an economy's creative/innovative capacity. It is calculated as the ratio of R&D expenditure relative to gross domestic product (GDP). Despite modest annual increases over most of the last decade, R&D intensity in the EU remained below its long-established target of 3.00 %. This ratio stood at 2.23 % in 2019 and jumped to 2.32 % in 2020 (reflecting the downturn in GDP associated with the COVID-19 crisis rather than an increase in R&D expenditure).

An analysis of the regional distribution of R&D intensity is less influenced than the analysis of R&D expenditure by the use of national and NUTS level 1 data for some EU Member States. However, the regional distribution of R&D intensity was also heavily skewed: less than one quarter (46 out of 199) of all NUTS level 2 regions had a ratio above the EU average (2.23 % in 2019). There were 20 regions that recorded ratios of at least 3.35 % – as shown by the darkest shade of blue in Map 9.1. They were predominantly located in Germany, Belgium (2017 data), Austria and Sweden, although this group also included the capital regions of Denmark (Hovedstaden) and Finland (Helsinki-Uusimaa).

The three highest ratios for R&D intensity were recorded in Braunschweig (7.79 %) and Stuttgart (7.33 %) in Germany, and Prov. Brabant Wallon (7.73 %; 2017 data) in Belgium. The two German regions are characterised by clusters of innovative automotive manufacturers, engineering and component suppliers. The Braunschweig region includes Wolfsburg (which is headquarters to the Volkswagen Group), while the Stuttgart region is home, among others, to the headquarters of Bosch, Mercedes-Benz and Porsche. There were four other regions in the EU where R&D intensity was higher than 5.00 %: Karlsruhe (5.33 %) and Tübingen (5.20 %) in Germany, Steiermark (5.15 %) in Austria, and Västsverige (5.10 %) in Sweden.

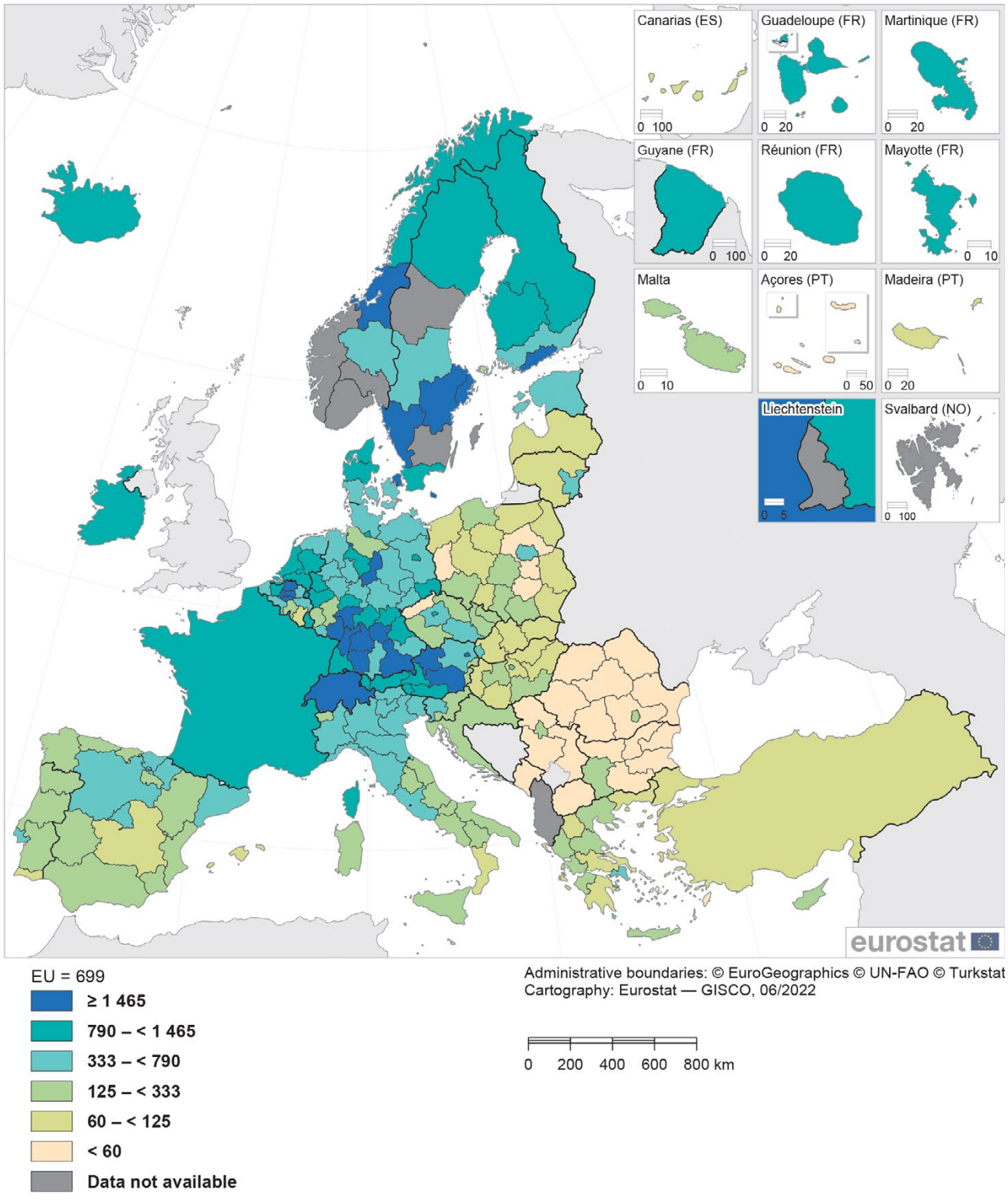
At the other end of the scale, there were 24 regions in the EU where R&D intensity was less than 0.50 % (as shown by the lightest shade of yellow). These regions were concentrated in eastern (Bulgaria, Poland and Romania) and southern (Greece, Spain and Portugal) EU Member States. Several regions with very low R&D intensity were islands or rural regions.

Map 9.1: R&D intensity, 2019
(%, based on gross domestic+ expenditure on R&D (GERD) relative to GDP, by NUTS 2 regions)



Note: the Netherlands, NUTS level 1. Ireland, France, Croatia, Switzerland and Turkey: national data. Montenegro: 2018. Belgium: 2017.
Source: Eurostat (online data code: rd_e_gerdreg)

Map 9.2: R&D expenditure per inhabitant, 2019
(€, by NUTS 2 regions)



Note: the Netherlands, NUTS level 1. Ireland, France, Croatia, Switzerland and Turkey: national data. Montenegro: 2018. Belgium: 2017.
Source: Eurostat (online data code: rd_e_gerdreg)

Average R&D expenditure in the EU was €699 per inhabitant

An alternative measure for the level of R&D expenditure is given by the ratio of expenditure relative to the population size. In 2019, R&D expenditure across the EU averaged €699 per inhabitant. There were 20 NUTS level 2 regions with a ratio of at least €1 465 of R&D expenditure per inhabitant (as shown by the darkest shade of blue in Map 9.2); note the data presented in this section for the Netherlands relate to NUTS level 1 regions, while only national data are available for Ireland, France and Croatia. These regions with high ratios were (once again) concentrated in Germany, Belgium (2017 data), Austria and Sweden, as well as the capital regions of Denmark and Finland.

The three regions with the highest R&D intensities were also the three regions with the highest ratios for R&D expenditure per inhabitant, namely: Stuttgart (€3 972 per inhabitant) and Braunschweig (€3 902 per inhabitant) in Germany, and Prov. Brabant Wallon (€3 514; 2017 data) in Belgium. There were seven other regions where R&D expenditure per inhabitant was at least three times as high as the EU average: Hovedstaden in Denmark; Oberbayern, Karlsruhe and Tübingen in Germany; Västsverige and Stockholm in Sweden; and Steiermark in Austria.

R&D expenditure per inhabitant was lower than the EU average in every region of Bulgaria, Greece, Spain, Lithuania, Portugal, Romania, Slovenia and Slovakia, as well as all but one of the regions in Czechia, Hungary and Poland (the exceptions being their capital regions), and Estonia, Croatia (national data), Cyprus, Latvia and Malta. There were 18 regions where R&D expenditure per inhabitant was less than €60 (as shown by the lightest shade of yellow in Map 9.2). These regions were principally in Bulgaria, Poland and Romania, with single regions from Czechia, Greece and Portugal also in this category. The three lowest ratios were recorded in Romania: Nord-Vest (€19 per inhabitant), Sud-Vest Oltenia (€11 per inhabitant) and Sud-Est (€8 per inhabitant). As such, the skewed nature of R&D expenditure can be underlined by the fact that R&D expenditure per inhabitant in Stuttgart was almost 500 times as high as it was in Sud-Est.

Human resources in science and technology

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

- have successfully completed a tertiary education;
- are employed in a science and technology occupation where the above qualifications are normally required (defined here as those who work as professionals, technicians and associate professionals – as defined by the international standard classification of occupations (ISCO) major groups 2 and 3).

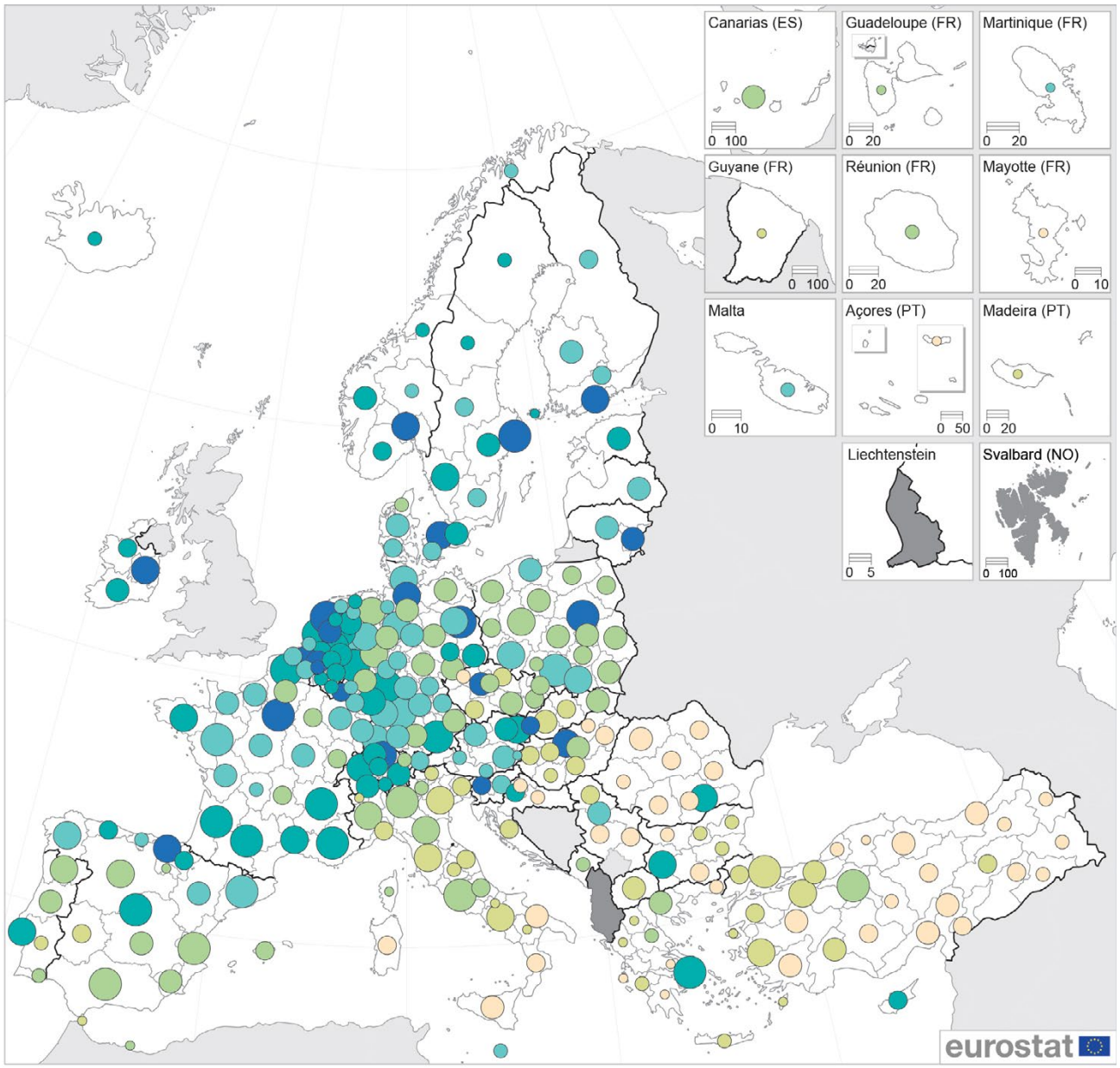
As such, the concept of HRST can relate to a person's level of education, irrespective of their actual professional occupation. By contrast, the concept of R&D personnel relates specifically to the actual occupation of persons, namely if they are directly engaged in R&D (creative and systematic work undertaken to increase the stock of knowledge or to devise new applications of existing knowledge). Therefore, the criteria for HRST are broader, with the number of HRST considerably higher than the number of R&D personnel.

In 2021, there were 117.2 million persons employed in the EU as HRST; among these, there were 74.0 million who met the occupational criterion, 93.1 million who met the educational criterion, and 49.8 million who met both the educational and occupational criteria (otherwise referred to as HRST core).

Map 9.3 shows the distribution of HRST across NUTS level 2 regions. In 2021, the highest counts of HRST were, unsurprisingly, recorded in some of the most populous regions of the EU: Ile-de-France (4.7 million HRST) and Rhône-Alpes (2.1 million) in France; Comunidad de Madrid, Cataluña (both 2.3 million) and Andalucía (2.0 million) in Spain; and Lombardia in Italy (2.0 million). There were 25 regions where more than 980 000 persons were employed as HRST (as shown by the largest circles). Apart from the regions mentioned above, the remainder of this group were principally located in Germany and France, although it also included several regions in other Member States, including four other capital regions.

Map 9.3 also shows the share of HRST in the economically active population (hereafter referred to as the labour force). In 2021, the share of HRST in the EU labour force was 47.0 %. Unlike other science and technology indicators, the regional distribution for this indicator was not highly skewed. Rather, there was a fairly equal split in the number of regions with shares above (109 regions or 45.0 % of the total) and below (133 regions) the EU average.

Map 9.3: Human resources in science and technology, 2021
(by NUTS 2 regions)



Note: Mayotte (FRY5), Montenegro, North Macedonia and Turkey, 2020. Liechtenstein, Svalbard og Jan Mayen (NO0B) and Albania: not available.
Source: Eurostat (online data code: hrst_st_rcat)

The highest shares of HRST in the labour force were concentrated in capital regions and other predominantly urban regions; the latter were principally located in western regions of the EU, the only exception being País Vasco in Spain. To a large degree – given that a majority of HRST meet the education rather than occupation criterion – the regional distribution of HRST in the labour force that is shown by colour shades in Map 9.3 closely resembles the distribution of people with a tertiary level of educational attainment (for more details, see the chapter on education and training). Regions with high shares of HRST in their labour force are likely to experience a number of benefits, such as: higher productivity, higher wage levels and clusters of research and technology activity. Factors such as these, in turn, are likely to reinforce their attractiveness to graduates and to (new) businesses, thereby generating spillover effects.

In 2021, there were 21 NUTS level 2 regions across the EU where HRST accounted for at least 58.0 % of the labour force (as shown by the darkest shade of blue in Map 9.3). These regions were widely dispersed across the EU territory, with their highest concentration in Belgium (four regions), Germany and the Netherlands (both two regions); none of the remaining EU Member States had multiple regions that met this criterion. HRST accounted for a particularly high share (69.0 %) of the labour force in Prov. Brabant Wallon in Belgium, while the capital regions of Poland (Warszawski stołeczny), Sweden (Stockholm), Czechia (Praha) and Hungary (Budapest) were the only other regions in the EU where HRST accounted for more than two thirds of the labour force. Prov. Brabant Wallon and País Vasco in Spain were atypical insofar as they attracted a higher share of HRST to their regional labour force than their respective capital regions; Utrecht in the Netherlands had the same share as Noord-Holland.

At the other end of the range, there were 24 regions across the EU where the share of HRST in the labour force was less than 30.5 % (as shown by the lightest shade of yellow). Generally they were characterised as rural and peripheral regions that were concentrated in eastern and southern parts of the EU. Nord-Est (Romania) had the lowest regional share (19.7 %) and was the only region in the EU where HRST accounted for less than one fifth of the labour force. The second lowest share (22.6 %) was recorded in Ionia Nisia in Greece, while two other regions from Romania – Sud-Est and Sud-Muntenia (both 23.2 %) – were the only other regions in the EU where HRST accounted for less than one quarter of the labour force.

In 2021, there were 13.2 million young persons (aged 25–34 years) who were classified as HRST core (in other words, with a tertiary education and employed in a science and technology occupation). There were 19 NUTS level 1 regions with more than 200 000 young people classified as HRST core. As such, there was a relatively high regional concentration: together these 19 regions accounted for almost half (48.4 %) of all young people classified as HRST core in the EU.

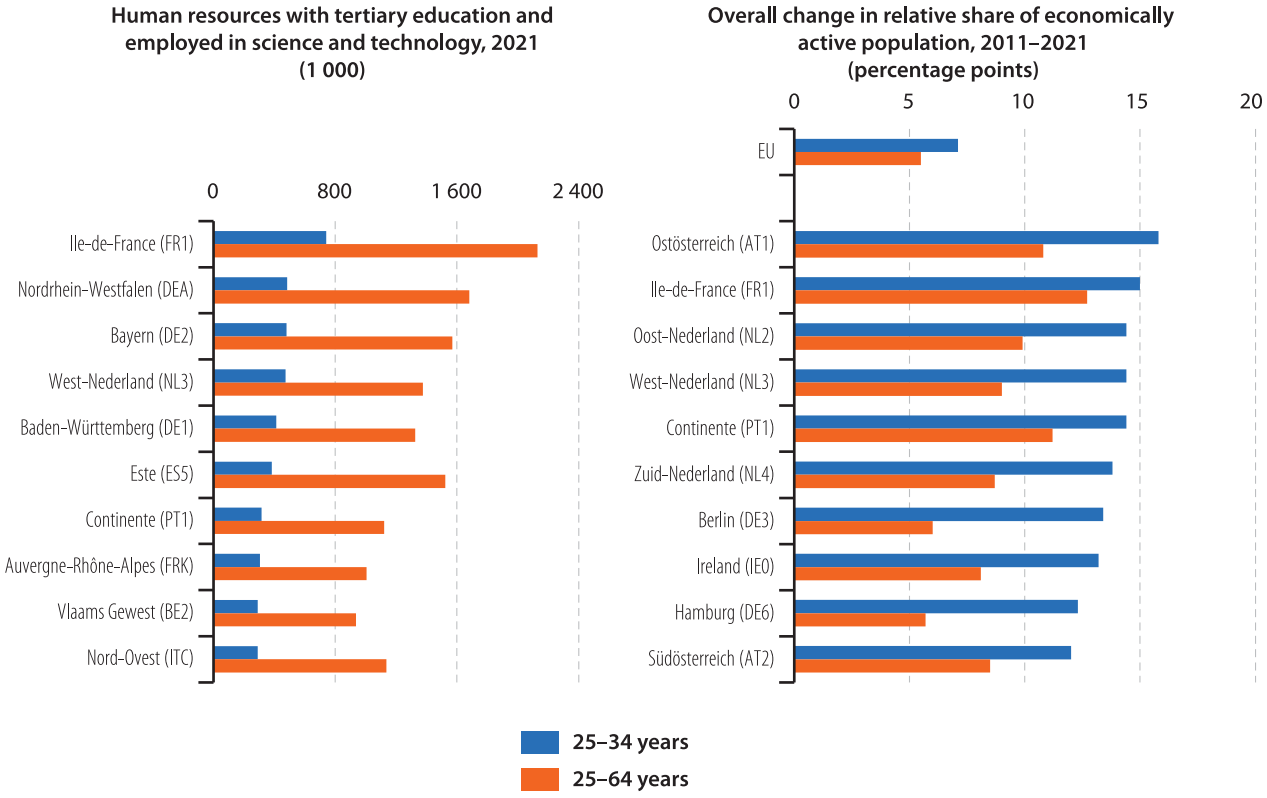
The left-hand side of Figure 9.1 shows those NUTS level 1 regions with the highest number of young people classified as HRST core. In keeping with many other science and technology indicators, some of the highest counts were in the most populous regions of the EU, with a peak in Ile-de-France (741 000). The next highest numbers of young people classified as HRST core were in Nordrhein-Westfalen, Bayern (both Germany) and West-Nederland (in the Netherlands) – all three were within the range of 473 000–485 000.

Within the EU, young people classified as HRST core accounted for 22.5 % of the economically active population of the same age in 2011. A decade later in 2021, this share had risen to 29.6 %, a gain of 7.1 percentage points. Based on this measure, there were 17 NUTS level 1 regions that recorded a double-digit increase between 2011 and 2021. There were seven regions where young people classified as HRST core accounted for a lower share of the economically active population of the same age in 2021 than in 2011.

The right-hand side of Figure 9.1 shows those NUTS level 1 regions with the biggest increases in the relative share of young people classified as HRST core. In Ostösterreich (in Austria) and Ile-de-France (in France), young people classified as HRST core accounted for 16.5 % and 32.6 % of the economically active population of the same age in 2011. A decade later their shares had risen to 32.3 % and 47.6 % respectively; as such, they were the only regions in the EU to record an increase of at least 15.0 percentage points during the period under consideration. Nearly all of the top 10 regions that recorded a considerable increase in their relative shares of young people classified as HRST core were in western EU Member States; the southern region of Continente in Portugal was the only exception.

Job-to-job mobility is defined as the movement of a person from one job to another from one year to the next. It does not include inflows into the labour market of people who were previously unemployed or economically inactive. Job-to-job mobility of employed human resources in science and technology (HRST) is built up by considering the number of HRST employed in the years t−1 and t, that have changed jobs during the most recent 12-month period. This figure is expressed as a proportion of the total number of HRST that are employed in year t. Higher job-to-job mobility rates (especially among international HRST) may stimulate collaboration and the knowledge base and therefore can be beneficial for economic performance.

Figure 9.1: Human resources with tertiary education and employed in science and technology
(selected NUTS 1 regions)



Note: the figure shows the regions with the highest numbers of people aged 25–34 with tertiary education and employed in science and technology and the regions with the biggest increases in the relative importance of this group compared with the economically active population of the same age. Bremen (DE5): 2019 for people aged 25–34. Corse (FRM) and Åland (FI2): people aged 25–34, not available.

Source: Eurostat (online data code: hrst_st_rage)

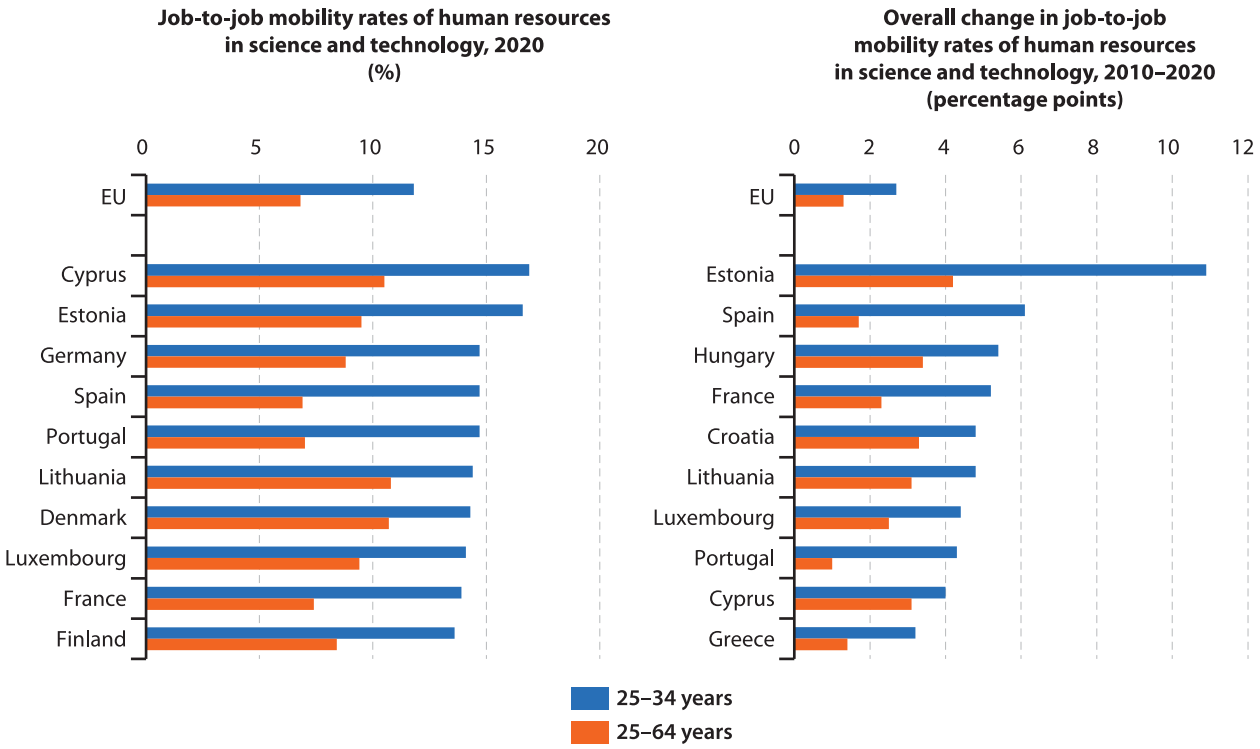
In 2020, the share of HRST aged 25–64 years that changed employer was 6.8 %. Younger people were more mobile, as 11.8 % of HRST aged 25–34 years moved job during the previous 12 months. This pattern – younger HRST being more likely to change employer than the average for all HRST – was repeated in each of the EU Member States. The largest difference between these two cohorts was recorded in Spain (7.8 percentage points), while the smallest was in Sweden (1.3 points).

Figure 9.2 shows (on the left-hand side) those EU Member States with the highest job-to-job mobility rates for younger HRST (aged 25–34 years). In 2020, at least one sixth of younger HRST in Cyprus (16.9 %) and Estonia (16.6 %) changed employer, while shares within the range of 14–15 % were recorded in Germany, Spain, Portugal, Lithuania, Denmark and Luxembourg.

Figure 9.2 also shows (on the right-hand side) those EU Member States that recorded the largest increases in job-to-job mobility rates for younger HRST during the last decade. Between 2010 and 2020, the job-to-job mobility rate for younger HRST in the EU rose by 2.7 percentage points, climbing from 9.1 % to 11.8 %. Estonia had the highest increase among the EU Member States, as its mobility rate for younger HRST rose from 5.7 % to 16.6 %, a gain of 10.9 percentage points; the second largest overall change was recorded in Spain (up 6.1 points).

The final part of this section provides an analysis by sex of HRST core, in other words, human resources with tertiary education and employed in science and technology. In 2021, there were 49.8 million persons within HRST core: there were more female HRST core (26.9 million) than male core HRST (22.9 million). Given that fewer women (than men) are employed in the labour force in general, the gender gap within core HRST (in favour of women) was even wider when expressed as a share of the economically active population: more than one quarter (27.3 %) of all women were considered as HRST core, while the corresponding share among men was one fifth (20.1 %).

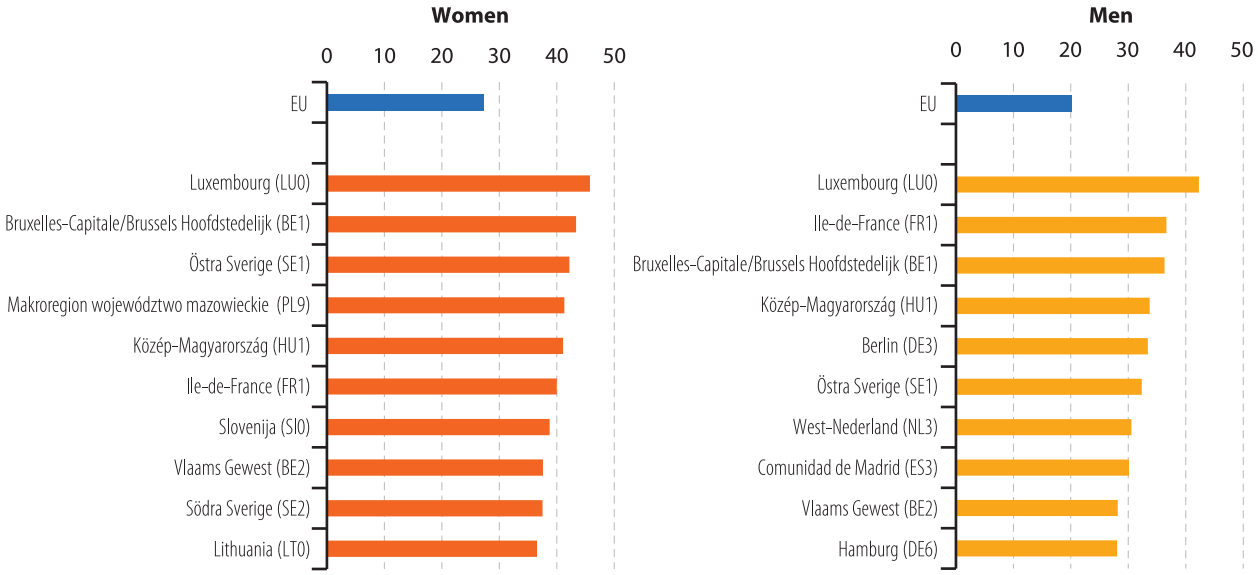
Figure 9.2: Job-to-job mobility of human resources in science and technology



Note: job-to-job moblity rates are calculated as the share of the total number of human resources in science and technology who have changed jobs during the previous 12 months. The figure shows the EU Member States with the highest rates for people aged 25–34 and the Member States with the largest increases in rates for people aged 25–34 during the period 2010–2020.

Source: Eurostat (online data code: hrst_fl_mobage)

Figure 9.3: Human resources with tertiary education and employed in science and technology, 2021
(% of the economically active population, selected NUTS 1 regions)



Note: the figure shows the regions with the highest shares for each sex. Åland (FI2): men, 2020.

Source: Eurostat (online data code: hrst_st_rsex)

Figure 9.3 shows the NUTS level 1 regions that had the highest shares of HRST core for women and men. In 2021, more than two fifths of the economically active population in Luxembourg was considered as HRST core: 40.4 % among men and 45.8 % among women. The other regions where HRST core made up a considerable share of the labour force were predominantly capital and urban regions.

Generally, a higher proportion of the female (than male) labour force was composed of HRST core. This pattern existed in all but eight of the 92 regions for which data are available. The largest gender gaps in favour of women (17–18 percentage points difference) were recorded in Estonia, Latvia and Norra Sverige (the northernmost region of Sweden). The only NUTS level 1 regions where the share of HRST core within the labour force was higher among men (than among women) were in Germany; the largest gender gaps in favour of men were in Bayern (4.1 percentage points difference), Baden-Württemberg (3.7 points) and Saarland (3.2 points).

R&D personnel

R&D personnel consists of all individuals employed directly in the field of R&D. Included are not only researchers, but also technicians and equivalent staff as well as supporting staff (such as managers, administrators and clerical staff). R&D personnel are employed in public and private sectors (in business enterprises, government, higher education and private non-profit organisations) to create new knowledge, products, processes and methods, as well as to manage and support the projects concerned.

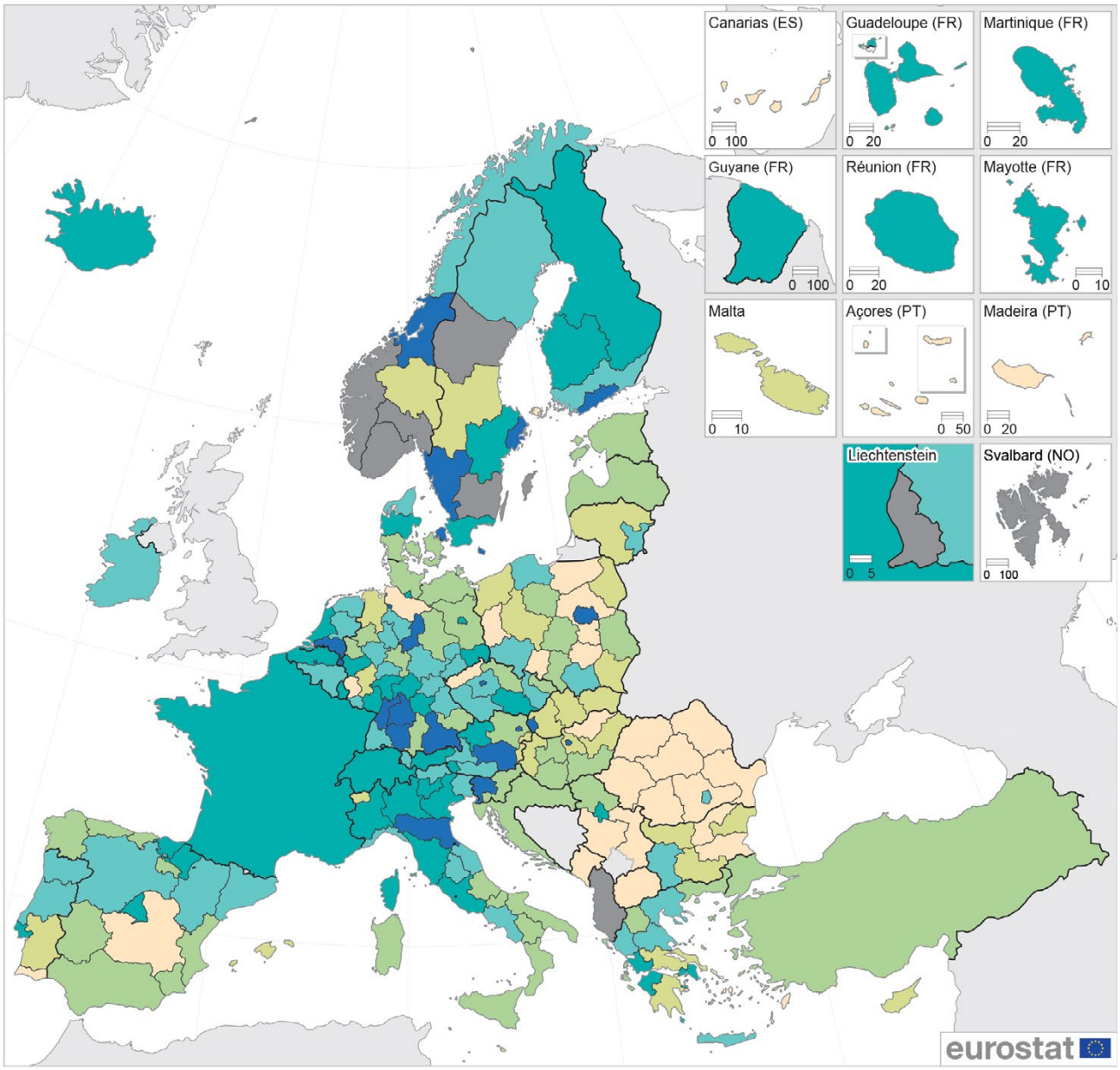
Research and innovation intensity are often considered as crucial for regions seeking to accelerate their economic growth. Indeed, most commentators argue that higher research intensity is likely to drive better economic performance. This section looks at labour inputs: it shows that several relatively wealthy regions in the EU (as measured by regional GDP) have relatively high numbers of R&D personnel.

In 2019, 4.4 million people (or 2.9 million in full-time equivalents (FTEs)) in the EU were categorised as R&D personnel. Map 9.4 puts these figures on the size of the R&D workforce into context, showing R&D personnel as a share of the total number of persons employed: for the EU as a whole, this share was 1.51 % in 2019. As with many science and technology indicators, the regional distribution of R&D personnel was highly skewed: 59 NUTS level 2 regions (out of 191 regions for which data are available; note the data presented in this section for Belgium and the Netherlands relate to NUTS level 1 regions, while only national data are available for Ireland and France) had shares above the EU average, leaving more than two thirds (or 69.1 %) of all regions recording shares below the EU average.

Map 9.4 shows those regions where R&D personnel accounted for a relatively high share of the total number of persons employed (measured in FTEs). In 2019, there were 20 regions in the EU where R&D personnel accounted for at least 2.20 % of the total workforce; they are shown with the darkest shade of blue. The German region of Braunschweig (4.03 %) and the Danish capital region of Hovedstaden (4.00 %) were the only regions in the EU where R&D personnel accounted for at least 4.00 % of the total number of persons employed. The 20 regions where R&D personnel accounted for a relatively high share of the workforce were spread across 13 different EU Member States (data for the Polish capital region of Warszawski stołeczny are for 2017). Alongside six German regions (which did not include the capital region of Berlin), this group of 20 regions with the highest shares of R&D personnel included 10 capital regions, Emilia-Romagna in Italy, Zuid-Nederland in the Netherlands (NUTS level 1), Steiermark in Austria, and Västsverige in Sweden.

At the other end of the range, the share of R&D personnel in the total number of persons employed was less than 0.45 % in 25 regions of the EU (as shown by the lightest shade of yellow). These were concentrated in eastern EU Member States, principally across Romania and Poland (2017 data for one region and 2018 data for one region).

Map 9.4: R&D personnel, 2019
(% of total number of persons employed (measured in full-time equivalents), by NUTS 2 regions)



Note: Belgium and the Netherlands, NUTS level 1. Ireland, France, Switzerland and Turkey: national data. Kujawsko-pomorskie (PL61), Warmińsko-mazurskie (PL62) and Iceland: 2018. Warszawski stołeczny (PL91) and Mazowiecki regionalny (PL92): 2017.

Source: Eurostat (online data code: rd_p_persreg)

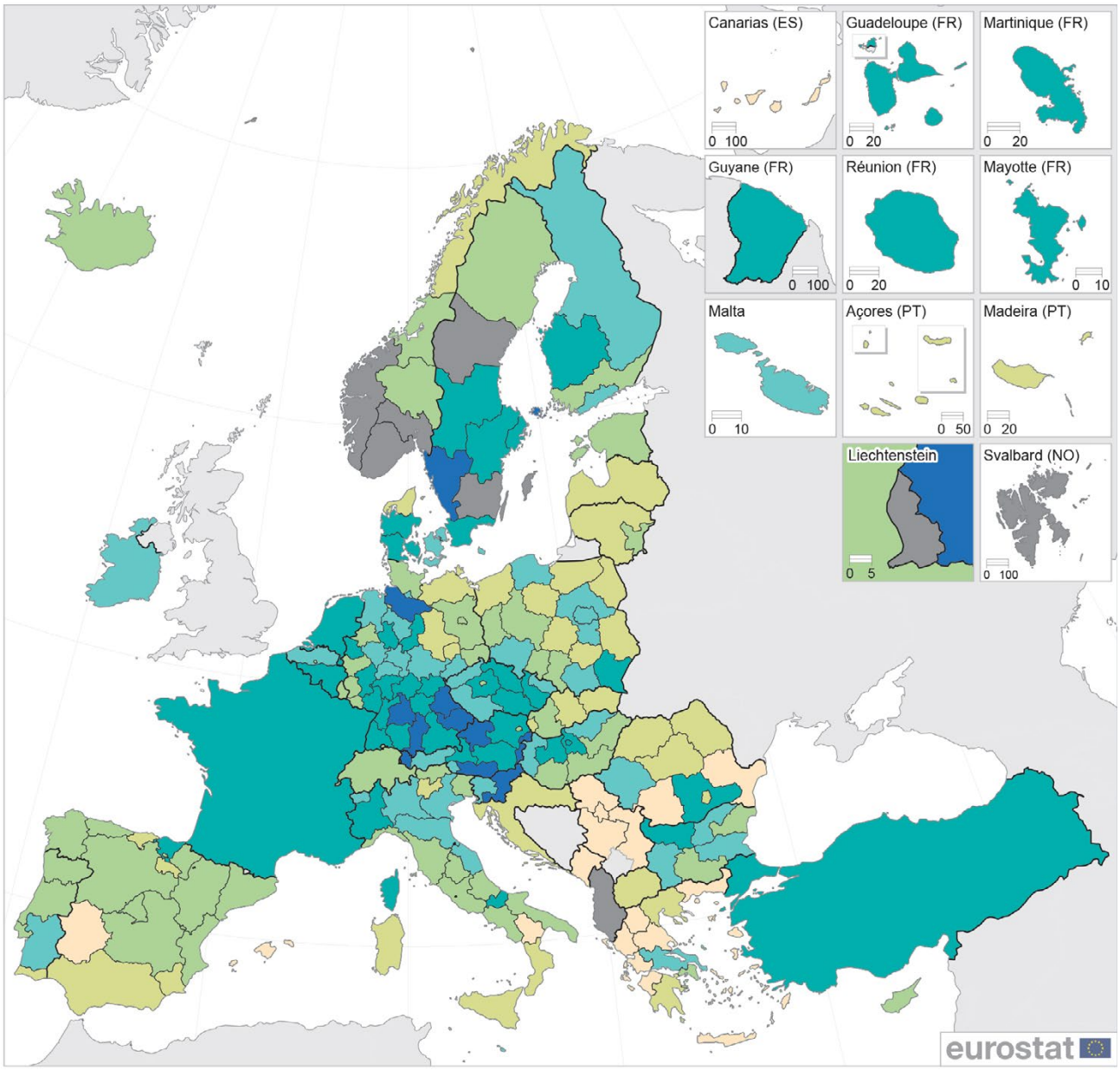
Researchers

Researchers are persons engaged in R&D activities: they are defined as 'professionals engaged in the conception or creation of new knowledge. They conduct research and improve or develop concepts, theories, models, techniques instrumentation, software or operational methods.' In 2020, taking account of different working hours and working patterns, the number of researchers in the EU was 1.89 million in FTEs, equivalent to 1.00 % of the total number of persons employed.

Regional data concerning researchers are only available for 2019 when there were 1.85 million researchers across the EU (or 0.96 % of the total workforce). Many commentators argue that the EU has a structural weakness with respect to research in the business enterprise sector, with lower levels of performance than its global competition. In 2019, just over half (55.3 %) of all researchers working in the EU were employed in the business enterprise sector. This share was also quite skewed, as just over one third (69 out of 188) of NUTS level 2 regions reported that their share of researchers in the business enterprise sector was higher than the EU average; note the data presented in this section for Belgium relate to NUTS level 1, while only national data are available for Ireland, France and the Netherlands, and earlier reference periods for six Polish regions. There were 12 regions across the EU, where the business enterprise sector accounted for 75.0 % or more of all researchers (as shown by the darkest shade of blue in Map 9.5). These regions were concentrated in Germany (five regions) and Austria (four regions), with the highest shares in Vorarlberg in Austria (93.3 %) and Stuttgart in Germany (90.3 %). Regions with relatively high shares of researchers working in the business enterprise sector tended to be characterised by their strong overall research and innovation performance.

There were 15 NUTS level 2 regions in the EU where the share of researchers employed in the business enterprise sector was less than 17.5 % (as shown by the lightest shade of yellow). They were concentrated in southern EU Member States, in particular across much of Greece (where there is a relatively strong emphasis on public innovation through higher education institutions and national research centres).

Map 9.5: R&D researchers in the business enterprise sector, 2019
(% of total researchers (measured in full-time equivalents), by NUTS 2 regions)



Note: Belgium, NUTS level 1. Ireland, France, the Netherlands, Switzerland and Turkey: national data. Lubuskie (PL43), Opolskie (PL52) and Iceland: 2018. Warmińsko-mazurskie (PL62), Lubelskie (PL81), Warszawski stołeczny (PL91) and Mazowiecki regionalny (PL92): 2017.

Source: Eurostat (online data code: rd_p_persreg)

10. Tourism

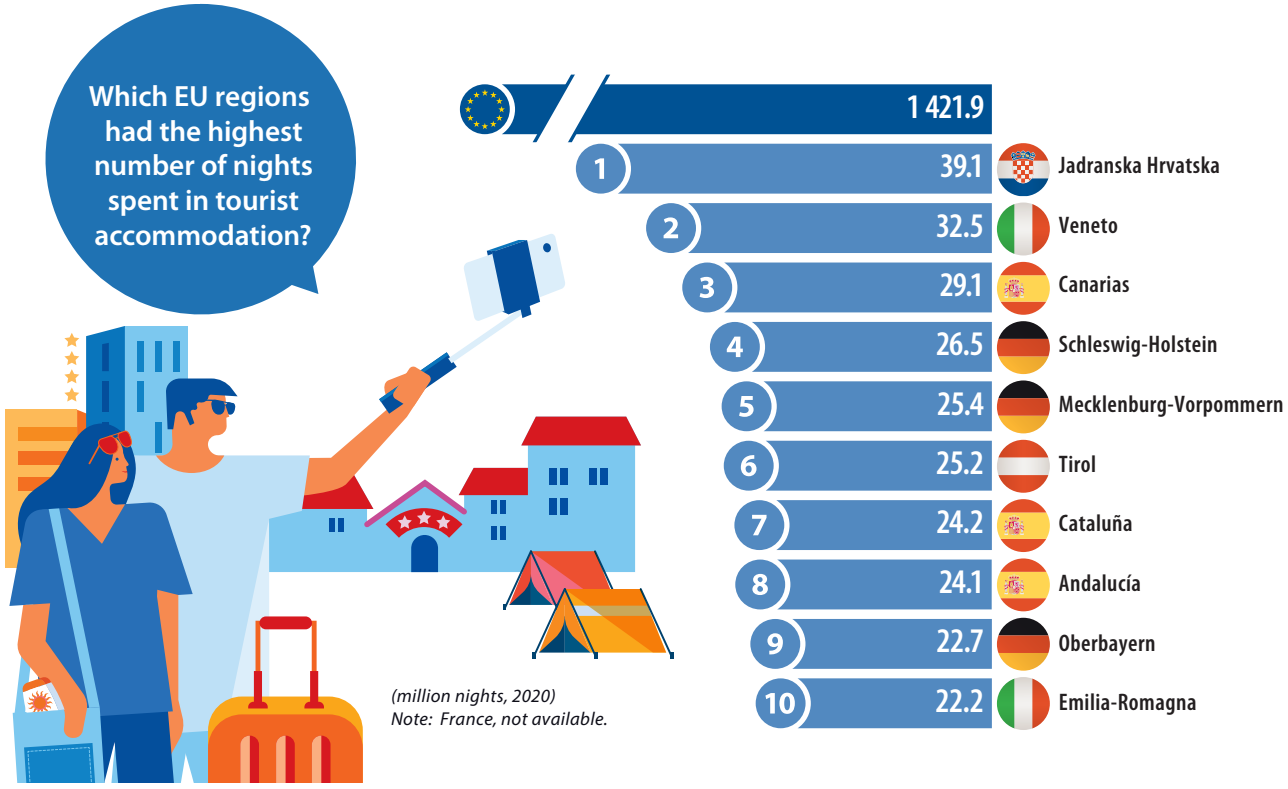
Tourism, in a statistical context, refers to the activity of visitors taking a trip to a destination outside their usual environment, for less than a year. It is important to note that this definition is wider than the common everyday definition, insofar as it encompasses not only private leisure trips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

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

It is important to note that regional data for France were not available at the time of preparing this publication. This may affect the completeness of the analysis, since France typically includes some of the most frequently visited tourist regions in the EU. Furthermore, French tourism was generally less affected by the impact of the COVID-19 pandemic (in part, due to a relatively large proportion of domestic tourists). As such, some French regions may well have been in a comparatively stronger position in 2020 (if compared with other EU regions where tourism was characterised by a higher proportion of international arrivals).

In spring 2020, during the early months of the COVID-19 crisis, virtually all EU Member States implemented containment measures and restrictions on non-essential travel internally and/or internationally; some partially or completely closed borders. Where international travel continued, it was in some cases accompanied by a requirement to go into quarantine. As well as travel-related restrictions, many governments also imposed restrictions on the way that tourism-related businesses could operate, in some cases closing them altogether. These restrictions had an immediate impact on the EU's tourism sector.

During summer 2020, there was a partial recovery in the number of tourist accommodation arrivals in the EU, as some travel/tourism-related restrictions were lifted. Compared with 2019, the number of arrivals in July and August 2020 was particularly low in hotels and similar establishments, while the impact of the pandemic was



Source: Eurostat (online data code: tour_occ_nin2)

less marked in camping grounds, recreational vehicle parks and trailer parks (where arrivals were still down by about one quarter). Many tourists were reluctant to travel and/or feared the risk of further lockdown measures and the reintroduction of specific (travel) restrictions. As such, the partial recovery was principally driven by domestic demand, with large numbers of people staying in their home country and taking a 'staycation' rather than crossing borders for a foreign holiday. This pattern may be seen when analysing the 10 most frequented EU regions in 2020 – see the infographic – as the list includes several regions where domestic tourists accounted for a majority of the total nights spent, notably Schleswig-Holstein, Mecklenburg-Vorpommern and Oberbayern in Germany, Emilia-Romagna and Veneto in Italy, and Andalucía and Cataluña in Spain.

Subsequent waves of the pandemic led many EU Member States to reintroduce restrictions, often with major consequences for winter tourism, while there was more commonly a relaxation/removal of restrictions during summer seasons, albeit with various constraints still in place (for example, wearing masks in confined spaces and/or providing proof of vaccination status). At the time of writing (early summer 2022), the pandemic continues and infection rates are fluctuating. However, almost all restrictions on international travel within the EU have been removed, while a growing number of countries outside the EU have opened up their travel/tourism sectors in an attempt to attract (more) visitors.

This article presents information on regional patterns of tourism across the EU. Its main focus is the provision of tourist accommodation services as measured by the number of nights spent; please note that regional data for France has not been included in the analyses and pan-European comparisons. The chapter concludes with a set of experimental statistics on guest nights spent in short-term accommodation, collected from online booking platforms.

Number of nights spent in tourist accommodation

Tourism statistics are collected from suppliers of tourism services through surveys of tourist accommodation establishments or administrative data. These establishments include all types of accommodation which provide, as a paid service, accommodation for tourists. They are defined according to the activity classification NACE and include: 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).

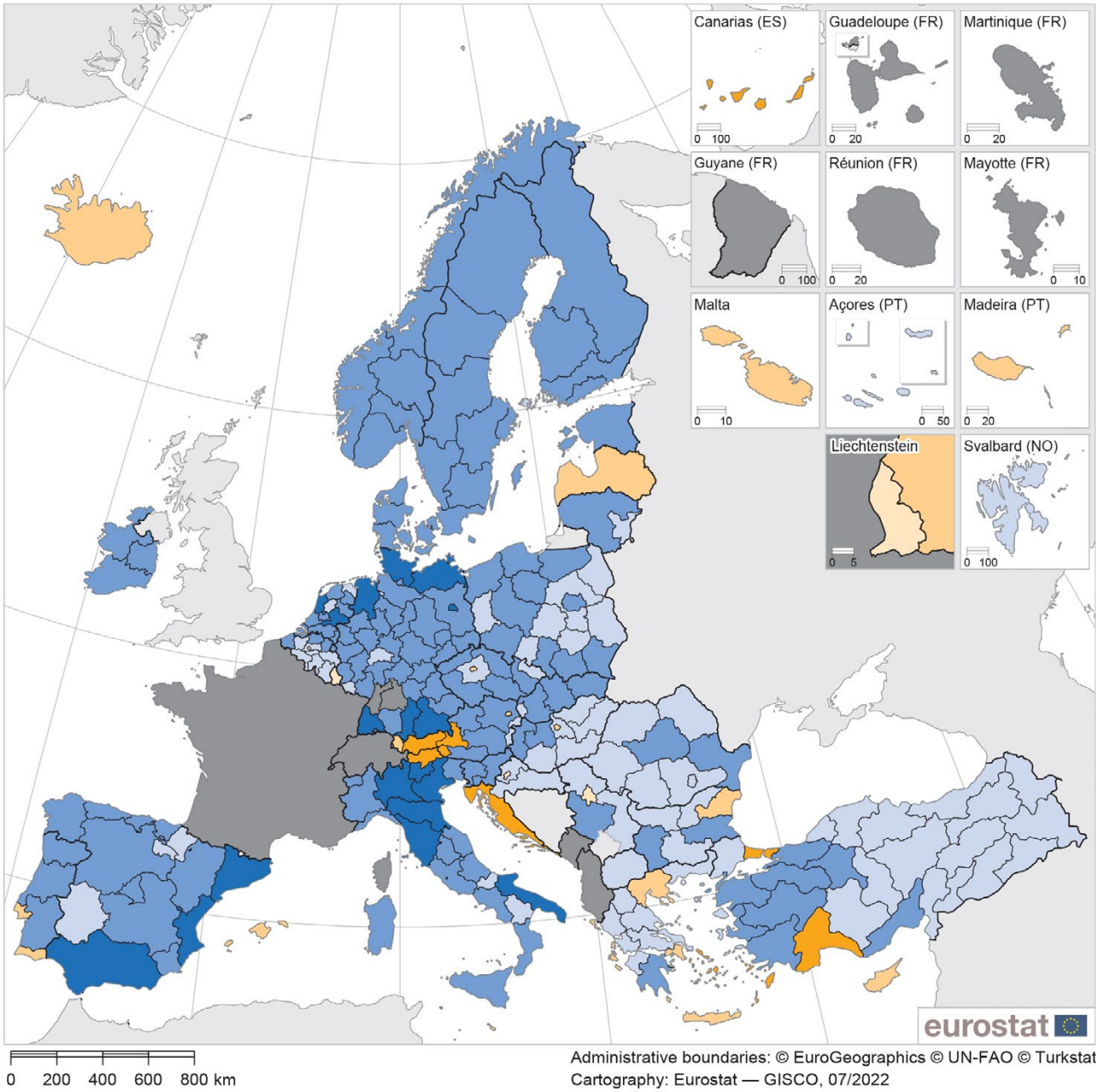
In 2020, there were 1.42 billion nights spent in all forms of tourist accommodation across the EU; note that while there are no regional data for France, information at a national level has been included when compiling data for the EU aggregate. This EU figure refers to the total number of nights spent by tourists and reflects both the length of stay and the number of tourists. It is considered a key indicator for analysing the tourism sector, even if it does not cover stays at non-rented accommodation nor same-day visits.

Map 10.1 shows information on the total number of nights spent in tourist accommodation for NUTS level 2 regions; note there are no regional data available for France. There were 24 regions across the EU where at least 10.00 million nights were spent in tourist accommodation during 2020; these are shown by the darkest shades in the map. Looking in more detail at the top 10 regions, nights spent by domestic tourists outnumbered nights by international tourist in: Schleswig-Holstein, Mecklenburg-Vorpommern and Oberbayern in Germany; Cataluña and Andalucía in Spain; Veneto and Emilia-Romagna in Italy. By contrast, Jadranska Hrvatska in Croatia, Canarias in Spain, and Tirol in Austria had higher numbers of international tourist nights. Together these 10 regions accounted for almost one fifth (19.1 %) of the total nights spent in EU tourist accommodation during 2020. This high concentration of tourist numbers in relatively few locations may have implications for sustainable development.

Those regions with a majority of nights spent by domestic tourists are shown in blue shades in Map 10.1, whereas regions with a higher number of nights spent by international tourists are shaded in yellow. In 2020, this distribution was heavily skewed, as many tourists remained in their country of residence due to the uncertainties associated with the COVID-19 crisis. There were only 25 regions across the EU (out of 213 for which data are available) where the number of nights spent by international tourists was higher than the number spent by domestic tourists. To put these figures into perspective, prior to the pandemic in 2019 there had been 65 regions (out of 233 for which data are available; including most regions in France) with a higher proportion of international tourists. The 25 regions with a higher number of international tourists in 2020 could be split into three principal groups:

- capital regions (as was the case in Belgium, Czechia, Greece, Croatia, Hungary, Austria and Portugal);
- coastal regions that are traditionally popular beach holiday destinations for international tourists (for example, Notio Aigaio in Greece; Canarias in Spain; Jadranska Hrvatska in Croatia; Cyprus; Malta; Algarve in Portugal); and
- mountain regions that are popular winter (and sometimes summer) holiday destinations (for example, Provincia Autonoma di Bolzano/Bozen in Italy; Tirol in Austria); note that some of these regions benefited from an influx of tourists at the start of 2020 prior to the COVID-19 outbreak in March 2020.

Map 10.1: Nights spent in tourist accommodation by domestic and international tourists, 2020
(million nights, by NUTS 2 regions)



Source: Eurostat (online data code: tour_occ_nin2)

In some of these regions, international tourists continued to account for a very high proportion of the total nights spent in tourist accommodation. In 2020, the highest share was recorded in the Greek island region of Kriti (91.4 %), while international tourists accounted for slightly fewer than 9 out of every 10 nights spent in the Adriatic region of Jadranska Hrvatska and in the Alpine region of Tirol (both 88.2 %).

There were 188 regions in the EU (out of 213 for which data are available) where domestic tourists accounted for a majority of the nights spent in tourist accommodation in 2020. This group included 53 regions where domestic tourists accounted for at least 9 out of 10 nights spent, with the highest shares recorded in: the Romanian regions of Sud-Est (98.3 %) and Sud-Vest Oltenia (97.6 %); and the German regions of Mecklenburg-Vorpommern (97.9 %) and Schleswig-Holstein (96.5 %).

COVID-19 impacts: the number of nights spent in EU tourist accommodation halved between 2019 and 2020, falling 50.5 %

The total number of nights spent in EU tourist accommodation fell 50.5 % between 2019 and 2020, providing further evidence of the substantial impact of the COVID-19 crisis on the tourism sector. Every one of the 213 NUTS level 2 regions shown in Map 10.2 (Croatian data only available for Jadranska Hrvatska; national data for France) recorded a fall in the number of nights in 2020.

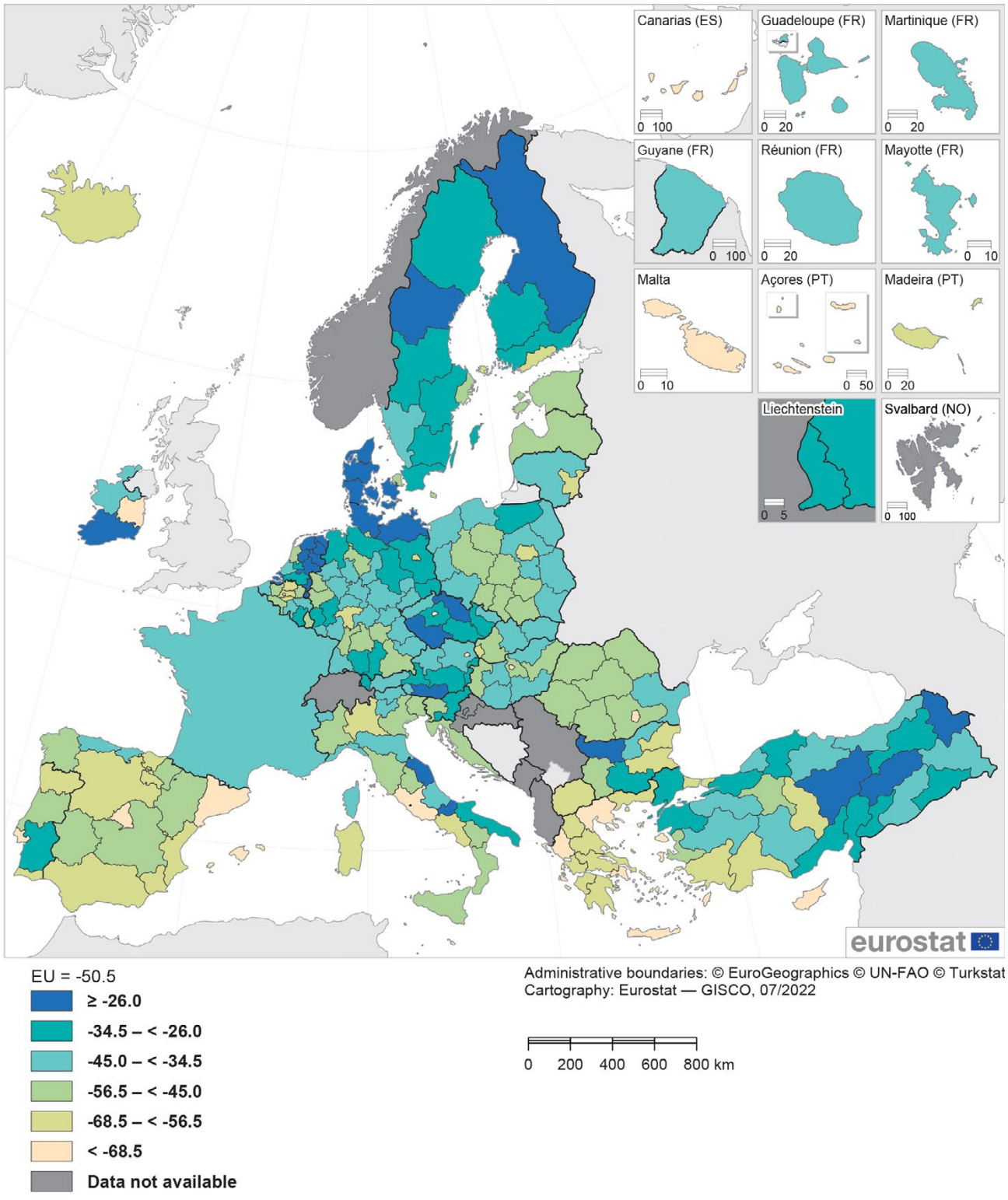
The regional distribution was skewed insofar as there were 81 regions (equivalent to 38.0 % of all regions) where the decrease in total nights spent between 2019 and 2020 was more substantial than the EU average. Among these, the biggest falls – where the number of nights spent fell by more than 68.5 % (as shown by the lightest shade of yellow in Map 10.2) – were primarily concentrated in capital regions and regions situated in southern EU Member States. This group included the capital regions of Belgium, Czechia, Ireland, Greece, Spain, Italy, Hungary, Austria, Portugal and Romania. Half of the remaining 12 regions were located in Greece – Kentriki Makedonia, Kriti, Voreio Aigaio, Ionia Nisia, Notio Aigaio and Ipeiros – they were joined by Illes Balears, Cataluña and Canarias in Spain, Região Autónoma dos Açores in Portugal, as well as Cyprus and Malta. Apart from the capital regions, almost all of these regions from southern EU Member States exhibited two characteristics that may, at least in part, explain why they experienced such dramatic declines in their total number of nights spent in tourist accommodation following the onset of the COVID-19 crisis: most of them traditionally welcome very high numbers of international tourists, while the vast majority are island regions that are typically reached by air transport.

The biggest decrease was registered by Illes Balears, where the annual fall in the number of nights spent in tourist accommodation was 88.8 % in 2020. Regions such as this were impacted twofold: their national, regional or local governments often imposed restrictions on a range of activities to prevent the spread of the virus (for example, closing bars and restaurants earlier than usual, or banning large groups of people), while national governments of potential tourists introduced travel bans and/or quarantine restrictions that stopped or dissuaded many people from travelling to an international destination (particularly when using air transport).

There were 21 regions across the EU where the total number of nights spent in tourist accommodation fell by no more than 26.0 % between 2019 and 2020; these regions are shown by the darkest shade of blue in Map 10.2. Many of these regions were characterised as relatively remote, rural regions, often with a low propensity to attract tourists, especially international tourists. They were concentrated in a band of regions comprising four out of the five regions in Denmark (the exception being the capital region of Hovedstaden), two northerly regions of Germany (Schleswig-Holstein and Mecklenburg-Vorpommern that were very popular among domestic tourists), as well as 8 out of 12 regions in the Netherlands. This group also included single regions from each of Bulgaria, Czechia, Ireland, Italy, Austria, Finland and Sweden.

Looking in more detail, there were only four regions in the EU where the total number of nights spent in tourist accommodation fell by less than 10.0 % between 2019 and 2020. The smallest fall was recorded in the Southern region of Ireland (down 3.6 %), while the three other regions with single-digit decreases were Severozapaden in Bulgaria (down 6.6 %), and Friesland (down 8.8 %) and Groningen (down 9.8 %) in the Netherlands; with the exception of Severozapaden, these regions reported an increase in the relative importance of domestic tourists between 2019 and 2020.

Map 10.2: Change in nights spent in tourist accommodation, 2019–2020
(%, annual change, by NUTS 2 regions)

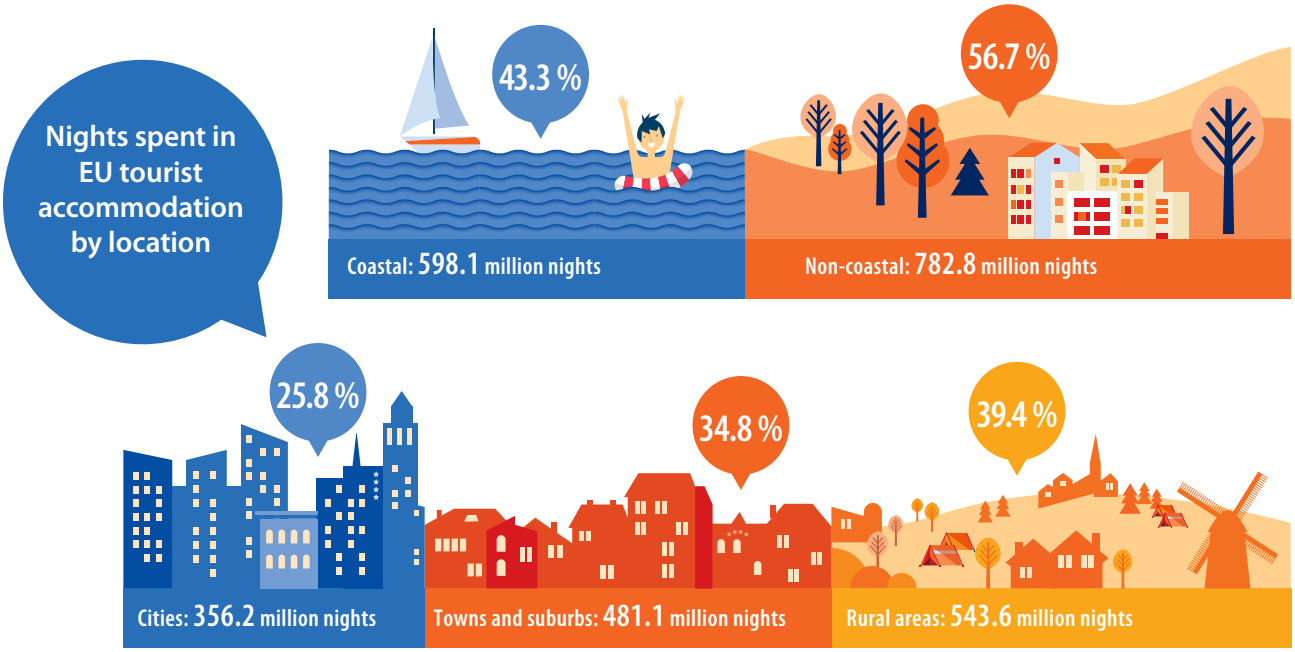


Note: France, national data.
Source: Eurostat (online data code: tour_occ_nin2)

COVID-19 impacts: rural areas and non-coastal regions accounted for a higher proportion of the total nights spent in EU tourist accommodation during 2020

Traditionally, there has been a relatively even split between coastal and non-coastal areas concerning their shares of the total nights spent in EU tourist accommodation; for example, the share of coastal areas was 47.4 % in 2019. International tourists are more likely (than domestic tourists) to spend their holidays in coastal areas. The considerable downturn in international tourist activity following the onset of the COVID-19 crisis was evident insofar as the total number of nights spent in coastal areas fell by 56.1 % in 2020; by contrast, there was a decrease of 48.2 % for non-coastal areas. As the number of nights spent in coastal areas fell at a faster pace, the relative share of coastal areas in the total number of nights spent in EU tourist accommodation declined to 43.3 % in 2020.

Prior to the onset of the pandemic, the distribution of nights spent in EU tourist accommodation according to the degree of urbanisation was also relatively balanced, with approximately one third of all nights spent being accounted for by each of the three categories: cities, towns and suburbs and rural areas. This pattern was altered during the pandemic, as the share of nights spent in rural areas grew at the expense of nights spent in cities. In 2020, almost two fifths (39.4 %) of the total nights spent in EU tourist accommodation were in rural areas, while just over one third (34.8 %) were spent in towns and suburbs, and just over one quarter (25.8 %) in cities.



(2020)

Source: Eurostat (online data code: tour_occ_nin2dc)

There were 12.1 million nights spent in tourist accommodation in the German capital city of Berlin

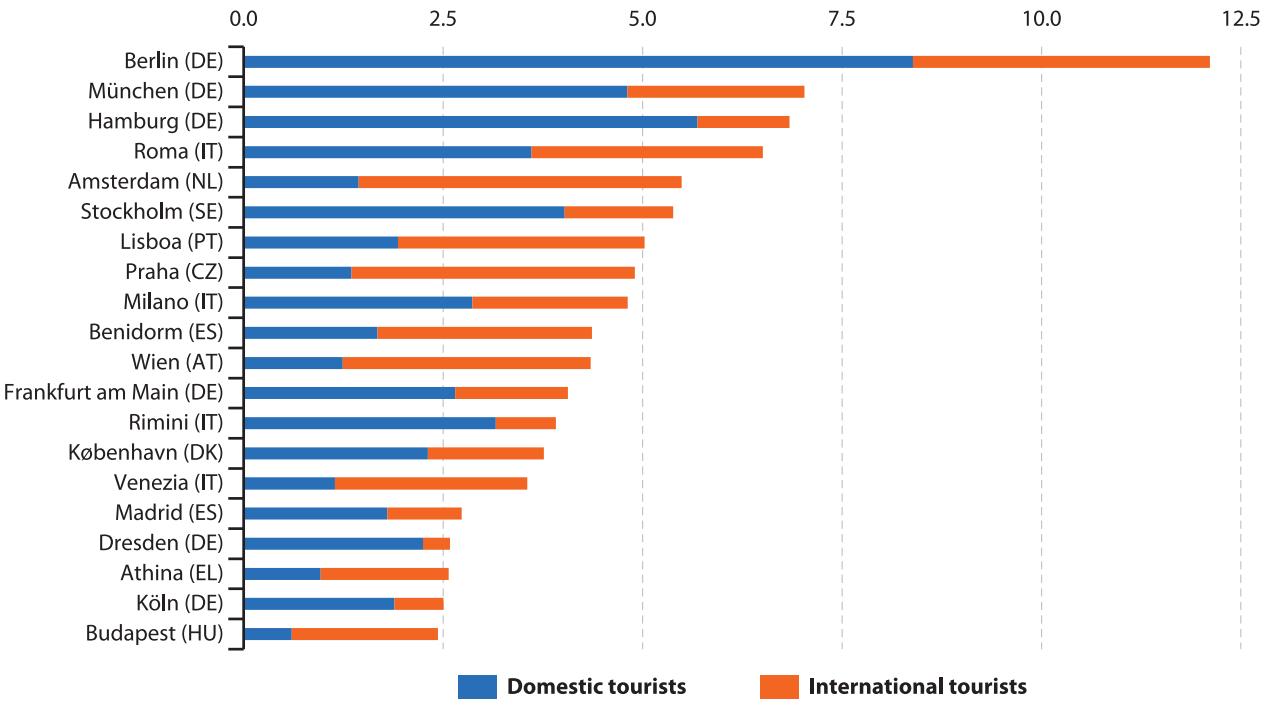
Eurostat has recently introduced a new dataset with information on the number of nights spent at tourist accommodation establishments for almost 600 cities across the EU, as well as four cities in Norway; note for reference year 2020, there is no information available for cities in Ireland, France and Cyprus.

In 2020, 11 out of the 20 cities with the highest numbers of nights spent in tourist accommodation were capitals (see Figure 10.1). Berlin – the capital of Germany – recorded the highest number of nights spent in tourist accommodation, at 12.1 million. This figure was considerably higher than for any other city in the EU, with the next highest values also recorded in Germany – München (7.0 million nights spent) and Hamburg (6.8 million) – while there were three more German cities in the top 20: Frankfurt am Main, Dresden and Köln.

Outside of Germany, the Italian capital of Roma had the fourth highest number of nights spent in tourist accommodation in 2020 (6.5 million). It was followed by the Dutch capital of Amsterdam (5.5 million), the Swedish capital of Stockholm (5.4 million nights), the Portuguese capital of Lisboa (5.0 million nights) and the Czech capital of Praha (4.9 million nights) – all of these capitals featured among the 10 cities with the highest number of tourist nights; the capitals of Austria, Denmark, Spain, Greece and Hungary were present within the top 20. This group of 20 EU cities with the highest number of nights spent in tourist accommodation was completed by three cities located in Italy – Milano, Rimini and Venezia – as well as Benidorm in Spain.

Based on the 20 cities for which information is presented in Figure 10.1, there were three – Dresden (86.9 %), Hamburg (83.2 %) and Rimini (80.7 %) – where domestic tourists accounted for more than four out of every five nights spent in tourist accommodation during 2020. At the other end of the range, there were eight cities where international tourists accounted for a majority of the nights spent in tourist accommodation. The relative importance of international tourists peaked at close to three quarters in the capital cities of Wien (71.4 %), Praha (72.4 %), Amsterdam (73.7 %) and Budapest (75.3 %).

Figure 10.1: Nights spent in tourist accommodation in cities, 2020
(million nights)



Note: the figure shows the EU cities which recorded the highest total number of nights spent in tourist accommodation in 2020. Ireland, France, Cyprus and Maribor (SI): not available.

Source: Eurostat (online data code: tour_occ_ninc)

Jadranska Hrvatska in Croatia had the highest number of nights spent in tourist accommodation by international tourists

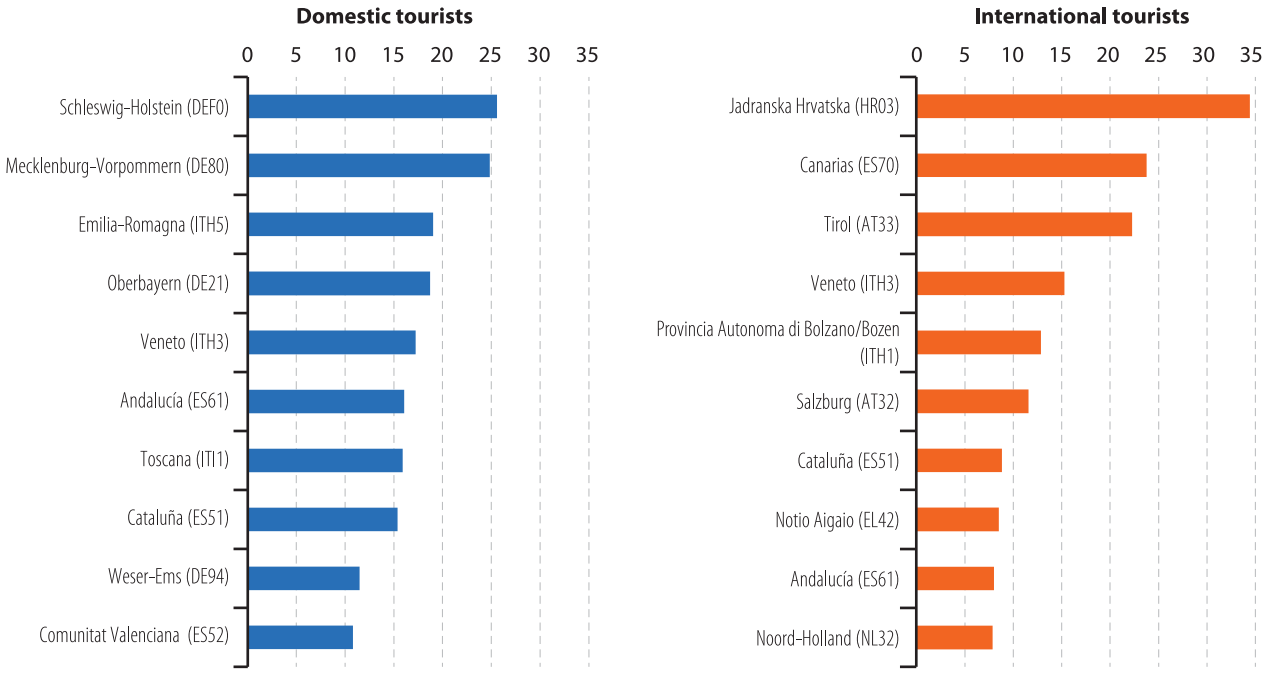
Figure 10.2 presents the EU's most frequented tourist destinations in 2020: it is based on the NUTS level 2 regions which recorded the highest number of nights spent in tourist accommodation by domestic tourists (left-hand side of the figure) and by international tourists (right-hand side of the figure).

The northern German regions of Schleswig-Holstein (25.6 million) and Mecklenburg-Vorpommern (24.8 million) had the highest counts of nights spent by domestic tourists in 2020. They were followed by six regions where domestic tourists accounted for 15.0–20.0 million nights: Emilia-Romagna, Veneto and Toscana in Italy, Oberbayern in Germany, and Andalucía and Cataluña in Spain.

The Adriatic region of Jadranska Hrvatska in Croatia had the highest number of nights spent in tourist accommodation by international tourists (34.4 million in 2020). This was substantially more than the second and third highest values, registered for Canarias in Spain (23.8 million nights) and Tirol in Austria (22.2 million nights). There were three additional regions within the EU which recorded more than 10.0 million nights spent by international tourists in 2020: Veneto and Provincia Autonoma di Bolzano/Bozen in Italy, and Salzburg in Austria.

Prior to the onset of the COVID-19 crisis in 2019, the Spanish island region of Canarias had recorded the highest number of nights spent in tourist accommodation by international tourists (83.9 million), while the number of international tourist nights was within the range of 48.2–80.6 million in Jadranska Hrvatska, Illes Balears, Cataluña and Veneto. By contrast, the Spanish region of Andalucía had recorded the highest number of nights spent in tourist accommodation by domestic tourists (33.5 million in 2019), with Schleswig-Holstein, Mecklenburg-Vorpommern, Emilia-Romagna, Oberbayern and Cataluña each recording between 27.8–30.2 million nights spent by domestic tourists. These figures reveal the asymmetric impact of the pandemic, insofar as regions that traditionally attract high numbers of international tourists were generally far more affected by the crisis than regions that are principally frequented by domestic tourists. For example, the number of nights spent in tourist accommodation by international tourists in Canarias was 71.7 % lower in 2020 (than in 2019), while the number of nights spent by domestic tourists in Schleswig-Holstein was 15.3 % lower in 2020.

Figure 10.2: Top tourist regions in the EU, 2020
(million nights spent in tourist accommodation, selected NUTS 2 regions)



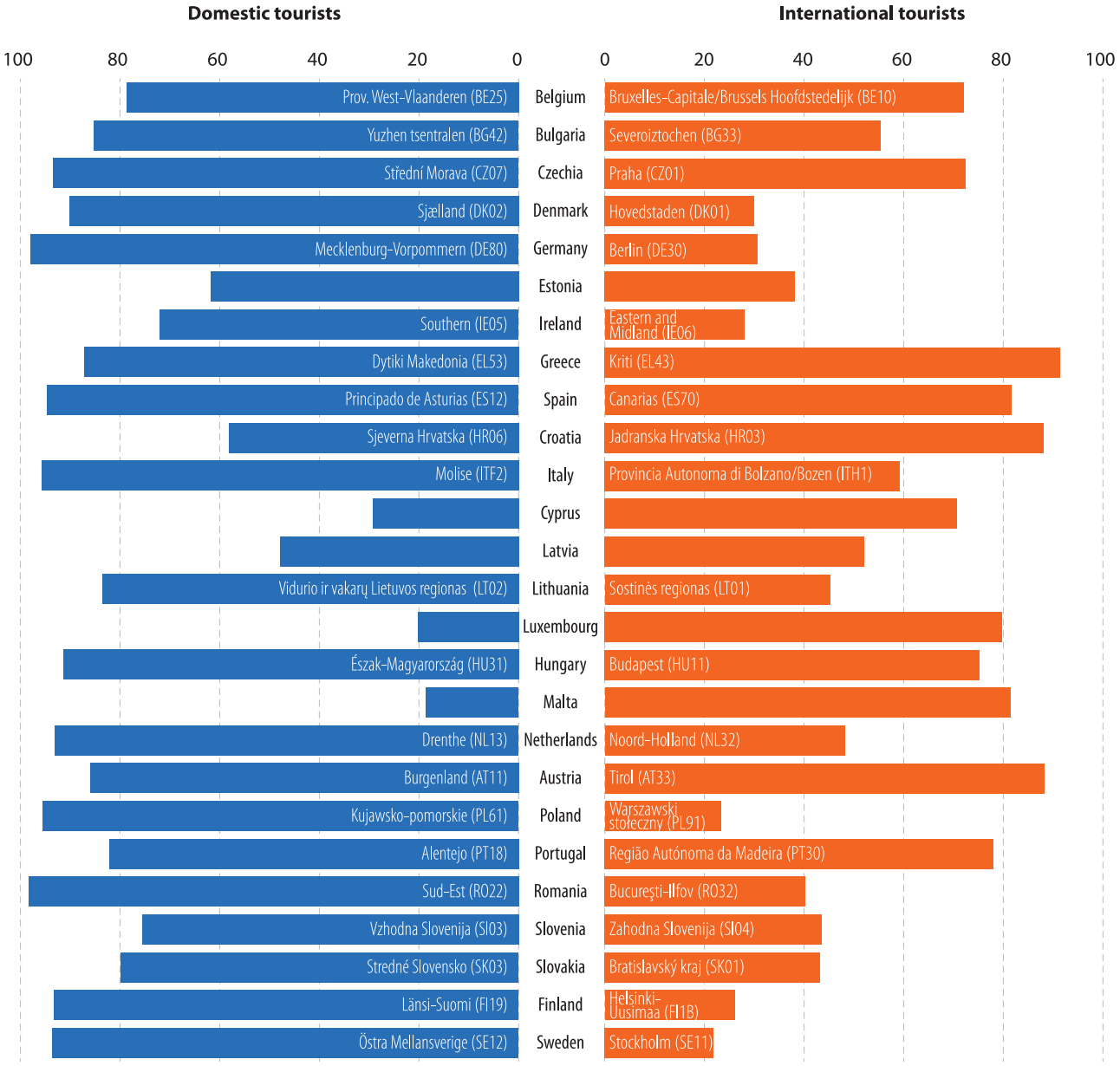
Note: the figure shows the regions in the EU which recorded the highest numbers of nights spent by domestic tourists and by international tourists.
Stuttgart (DE11), Karlsruhe (DE12) and France: not available.

Source: Eurostat (online data code: tour_occ_nin2)

There were several regions in the EU where domestic tourists accounted for more than 95 % of all nights spent in tourist accommodation

The final analysis in this section (see Figure 10.3) presents information about the individual regions in each of the EU Member States with the highest shares of domestic and international tourist nights in 2020; note there are no regional data available for Stuttgart and Karlsruhe (in Germany) or for France. The information presented confirms that the highest shares of international tourists were often registered in capital regions, with this situation observed in two thirds (14 out of 21) of the multi-regional EU Member States for which data are available. International tourists accounted for close to three quarters of all nights spent in tourist accommodation in the Hungarian, Czech and Belgian capital regions, while their share was less than one quarter in the Polish and Swedish capital regions; these relatively low shares were nevertheless the highest recorded among any of the regions in Poland or Sweden.

Figure 10.3: Nights spent in tourist accommodation, 2020
(% share of nights spent by domestic and international tourists in each EU Member State, selected NUTS 2 regions)



Note: the figure shows the region in each EU Member State which recorded the highest share. Stuttgart (DE11), Karlsruhe (DE12) and France: not available. Estonia, Cyprus, Latvia, Luxembourg and Malta: single regions at NUTS level 2.

Source: Eurostat (online data code: tour_occ_nin2)

In some countries, it was more common for coastal or mountainous regions (rather than capital regions) to record the highest share of international tourist nights. In 2020, this situation was observed in Bulgaria, Greece, Spain, Croatia, Italy, Austria and Portugal. In each case, a majority of the nights spent in tourist accommodation were accounted for by international tourists, with the lowest share (55.4 %) recorded in the Bulgarian region of Severoiztochen (that has a Black Sea coastline) and the highest share (91.4 %) in the Greek island region of Kriti. International tourists also accounted for very high shares of the nights spent in tourist accommodation in Jadranska Hrvatska in Croatia, Tirol in Austria (both 88.2 %), as well as the island regions of Canarias in Spain (81.6 %) and Malta (81.4 %).

In 2020, domestic tourists accounted for more than 19 out of every 20 nights spent in tourist accommodation in Sud-Est in Romania, Mecklenburg-Vorpommern in Germany, Molise in Italy, and Kujawsko-pomorskie in Poland. In each of the remaining multi-regional EU Member States, the region with the highest share of domestic tourist nights recorded a share that was above 50.0 %. Shares below 50.0 % were recorded in the relatively small (mono-regional) Member States of Latvia, Cyprus, Luxembourg and Malta.

Guest nights spent at short-stay accommodation offered via online collaborative economy platforms

During the last decades, developments in information and communication technologies have had a major impact on the tourist accommodation market. The emergence of online platforms that make it easier for small scale service providers to advertise/offer their rooms, apartments and holiday homes to potential guests has led to a considerable expansion of this market.

In 2020, there were 271.7 million guest nights spent at EU short-stay accommodation offered via four selected online booking platforms. The impact of the COVID-19 crisis was clearly evident, insofar as the number of guest nights spent at short-stay accommodation reserved through these four platforms fell 46.9 % between 2019 and 2020. This fall in guest nights spent was slightly less than the overall decline in tourist nights spent across all forms of tourist accommodation (down 50.5 %).

Experimental statistics on short-stay accommodation offered via online platforms

The information presented so far in this chapter has been based on official tourism statistics, compiled according to Regulation (EU) No 692/2011. These statistics provide only limited coverage of holiday and short-stay accommodation, as data on holiday homes, apartments and rooms in otherwise private buildings are often outside the scope of tourism registers and surveys. Indeed, official statistics on holiday and short-stay accommodation are generally under-reported, given that several EU Member States limit the scope of observations to establishments with, for example, at least 10 bed places. In recent years, this coverage issue has been further compounded by the emergence of online platforms that provide relatively simple methods for private individuals and small enterprises to offer short-stay accommodation; this has led to a surge in the provision of this type of accommodation.

For this reason, Eurostat embarked on an experimental data collection exercise aimed at improving the completeness of tourism statistics. It is based on a previously unexplored channel, namely data on listings and bookings obtained directly from four major online booking platforms (Airbnb, Booking.com, Tripadvisor and Expedia Group). The exercise was restricted to the collection of information on holiday and short-stay accommodation (NACE Group 55.2), reflecting the principal type of accommodation for service providers within the collaborative economy. Note that these statistics relating to information from online booking platforms include regional data for France.

In popular holiday destinations around the Mediterranean and Black Sea coasts, there were several regions that reported almost 90 % of guest nights spent at short-stay accommodation were taken during the summer season

Across many parts of the EU, tourism demand is generally concentrated in the summer months (or the third quarter of the year), with a peak in August; July often has the second highest demand. It is important to note that 2020 was atypical, insofar as the year started in a relatively normal fashion, before restrictions linked to the COVID-19 crisis led to a dramatic decrease in tourism activity from mid-March onwards. Although some restrictions were lifted before the peak holiday season, many travellers decided to stay at home or take a vacation in their domestic market.

Map 10.3 shows the relative importance of the summer season (defined here as July, August and September). In 2020, more than half (55.9 %) of all guest nights spent at short-stay accommodation reserved through four selected online booking platforms were taken during the summer season; despite the impact of COVID-19, this share was broadly in line with other years.

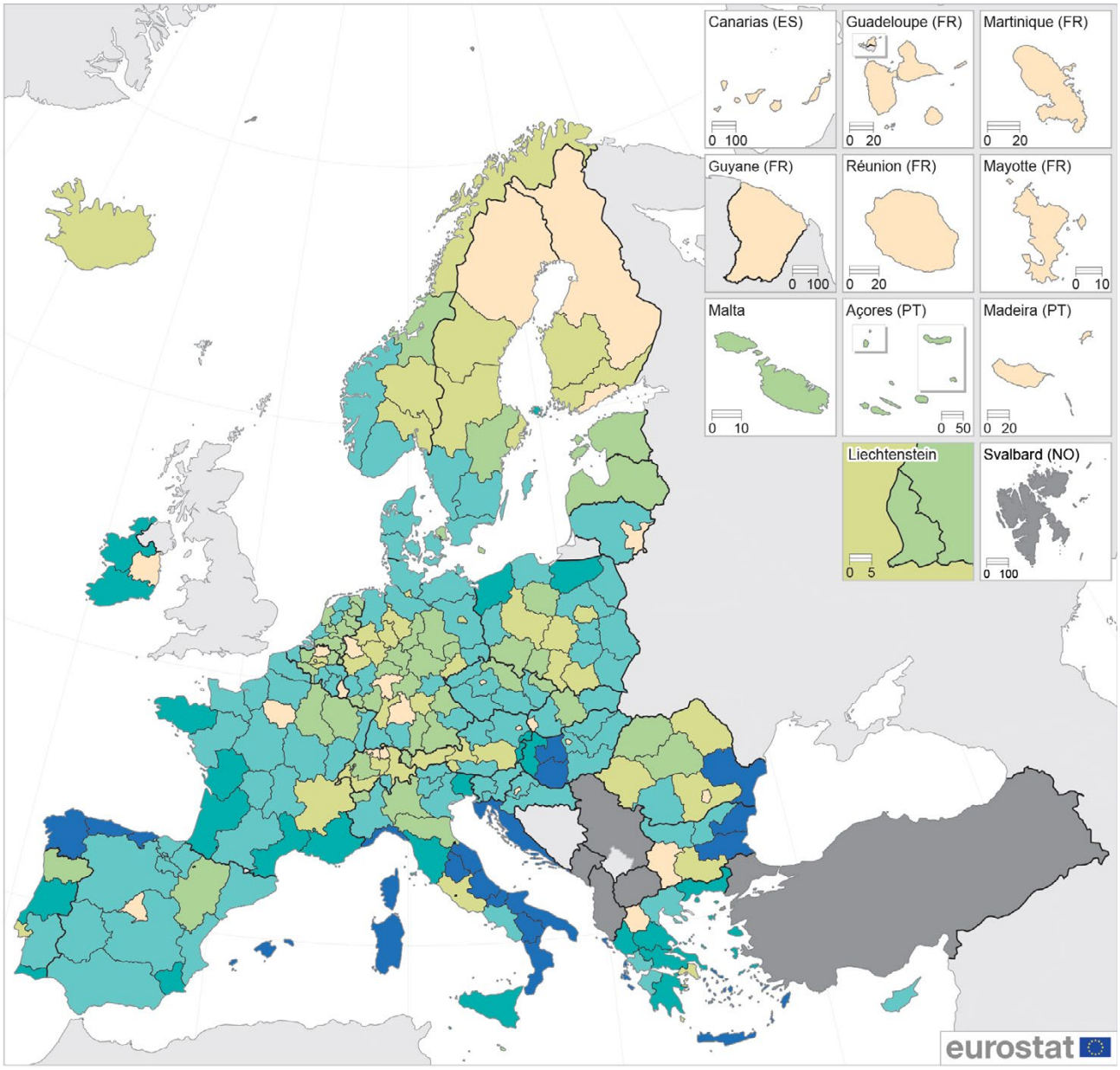
The regional distribution was heavily skewed: in approximately one third (81 out of 242) of the NUTS level 2 regions for which data are available in 2020, the share of all guest nights that were spent in the summer season was higher than the EU average. There were 23 regions where at least three quarters of all guest nights spent at short-stay accommodation reserved through four selected online booking platforms were taken during the summer season (as shown by the darkest shade of blue in Map 10.3). They were primarily located in popular holiday destinations in the southern and eastern EU Member States, often around the Mediterranean and Black Sea coasts. The highest share was recorded in Yugoiztochen in south-east Bulgaria, where almost 9 out of 10 (89.3 %) guest nights spent at short-stay accommodation and booked through these platforms were taken during the summer season. The next highest shares were recorded in Jadranska Hrvatska (Croatia), Ionia Nisia (Greece), Sardegna and Calabria (both Italy), and Corse (France): all five of these regions had shares within the range of 86.0–88.0 %.

At the other end of the range, there were 28 regions in the EU where fewer than one third of all guest nights spent at short-stay accommodation and reserved through these four online booking platforms were taken during the summer season. Half of these were capital regions, namely, those of Belgium, Bulgaria, Czechia, Ireland, Spain, France, Croatia, Lithuania, Luxembourg, Hungary, Austria, Romania, Slovakia and Finland. Several of the others were also regions that contain relatively large cities, for example, Prov. Antwerpen in Belgium, or Stuttgart, Darmstadt and Düsseldorf in Germany. This group of 28 regions also included a number of regions that benefit from favourable climatic conditions outside of the summer season, for example, Canarias in Spain, Região Autónoma da Madeira in Portugal, and all of the outermost regions in France.

Figure 10.4 provides an alternative analysis of the seasonality of tourism. It shows, for each quarter in 2020, the NUTS level 2 regions that, relative to the rest of the year, had the highest share of guest nights spent at short-stay accommodation reserved through four selected online booking platforms. As noted above, it is important to consider the asymmetric impact of the COVID-19 crisis and in particular the dramatic decrease in guest nights spent during much of the second quarter of 2020.

In 2020, the winter season (defined here as January–March) accounted for almost one quarter of the total number of guest nights spent at EU short-stay accommodation reserved through four selected online booking platforms; note the majority of this period was prior to the pandemic. Spring (April–June) accounted for less than one tenth (8.6 %) of the total number of guest nights, as bookings collapsed following the onset of the COVID-19 crisis. With a relaxation of (some) restrictions, a growing number of (particularly domestic) tourists booked this type of accommodation (albeit at levels that were considerably lower than normal): the summer season accounted for more than half (55.9 %) of all guest nights in this type of accommodation and booked in this way in 2020. The final quarter of the year (October–December) saw another decline in bookings as the second wave of the pandemic took hold: the autumn accounted for 12.5 % of the total number of guest nights spent at short-stay accommodation reserved through four selected online booking platforms.

Map 10.3: **Guest nights spent at short-stay accommodation offered via selected online booking platforms during the summer season, 2020**
(% of nights spent in July, August and September as a share of all nights spent, by NUTS 2 regions)



Note: short-stay accommodation offered via Airbnb, Booking.com, Tripadvisor and Expedia Group.
Source: Eurostat (online data code: tour_ce_omn12)

During the winter season, Rhône-Alpes in France recorded the highest number of guest nights spent at short-stay accommodation …

In absolute terms, there were 62.4 million guest nights spent at EU short-stay accommodation reserved through four selected online booking in winter 2020. Across NUTS level 2 regions, the highest count was recorded in the French region of Rhône-Alpes (3.6 million), which comprises a large number of Alpine ski resorts. It was followed by two regions in Spain that are popular year-round with holidaymakers due to their warm climates; Canarias (3.5 million) and Andalucía (3.3 million).

The first part of Figure 10.4 shows those regions which, relative to the rest of the year, had a high propensity to attract tourists during the winter season. There were 10 regions in the EU where more than half of all guest nights spent in short-stay accommodation were taken during the winter season. This group included a number of capital regions (those of Hungary, Spain or Czechia), some popular winter holiday destinations (Tirol and Salzburg in Austria), as well as four of the French outermost regions (where the most favourable climatic conditions are experienced at the start of the year; these distant French regions saw almost no tourists arriving after the winter season, largely due to the impact of the pandemic on international aviation).

During the spring of 2020, there were 23.5 million guest nights spent at EU short-stay accommodation reserved through four selected online booking platforms. The highest regional count – just less than one million nights spent in spring – was recorded in Provence-Alpes-Côte d'Azur in France.

In relative terms, two northern regions of Germany – Mecklenburg-Vorpommern and Schleswig-Holstein – reported that more than one fifth of their total guest nights were spent during the spring season; almost all of the visitors to these two regions were domestic tourists. There were a number of other German regions, as well as several regions in the Netherlands, Finland and Sweden – many of which were relatively rural and/or remote – that attracted a relatively high share of their total guest nights spent during the spring season. As such, tourists who still had the opportunity to travel in the spring of 2020 appeared to be dissuaded from visiting capital cities and other metropolitan regions (with their empty shopping streets and locked down cultural entertainment), favouring instead rural, sparsely-populated areas and self-catering accommodation.

… while the Adriatic region of Jadranska Hrvatska in Croatia had the highest number of guest nights spent during the summer season

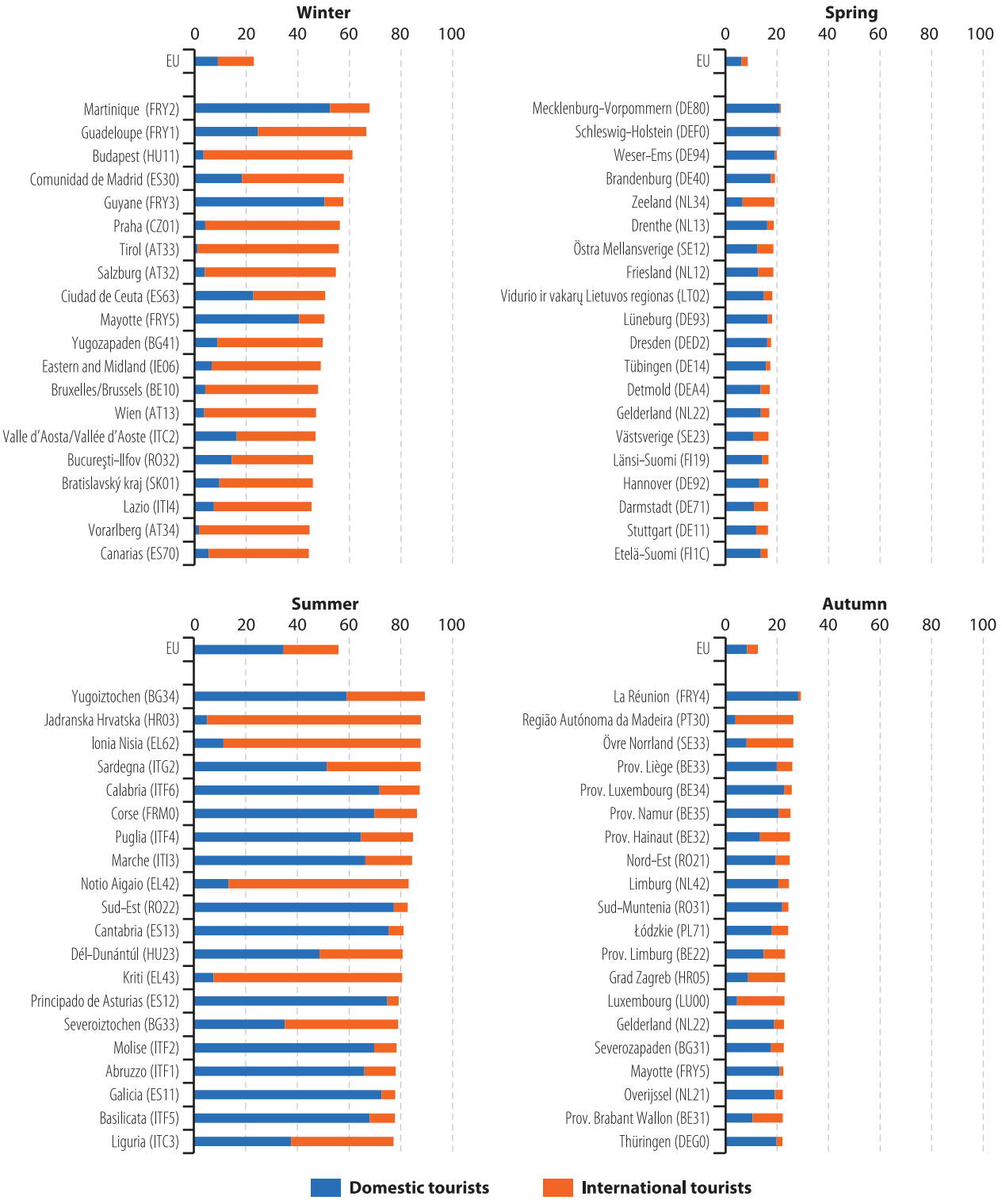
In the summer season of 2020, there were 151.8 million guest nights spent at EU short-stay accommodation reserved through four selected online booking platforms. The highest count in the summer season was recorded in the Croatian region of Jadranska Hrvatska (8.8 million nights spent), although the most frequented destinations were concentrated in France (Provence-Alpes-Côte d'Azur, Aquitaine, Languedoc-Roussillon, Rhône-Alpes and Bretagne) and Spain (Andalucía, Comunitat Valenciana and Cataluña). Outside of these nine regions, the only other to record more than 2.5 million guest nights spent during the summer season were Toscana in Italy, Algarve in Portugal, Canarias in Spain, and Mecklenburg-Vorpommern in Germany.

Those regions which attracted a relatively high proportion of their total number of guest nights spent during the summer season were concentrated around the Mediterranean and Black Sea coasts, as well as in northern Spain. There were six regions in the EU where upwards of 85.0 % of all guest nights were spent during the summer season: Yugoiztochen in Bulgaria, Jadranska Hrvatska in Croatia, Ionia Nisia in Greece, Sardegna and Calabria in Italy, and Corse in France. There was considerable diversity in the composition of visitors to regions with a high share of their total number of guest nights spent during the summer season (see Figure 10.4): for example, while international tourists accounted for more than 9 out of every 10 guest nights spent in Jadranska Hrvatska and Kriti (Greece), domestic tourists accounted for a similar share in Sud-Est (Romania), Principado de Asturias, Galicia and Cantabria (all Spain).

During autumn 2020 – the final quarter of the year – there were 34.1 million guest nights spent at EU short-stay accommodation reserved through four selected online booking platforms. There were four regions with more than one million guest nights spent in the final quarter: Canarias, followed by three regions in France – Provence-Alpes-Côte d'Azur, Rhône-Alpes and the capital region of Ile-de-France.

With the arrival of the second wave of the pandemic, various restrictions linked to the tourism sector were re-imposed by some national governments; their (re) introduction was staggered as a function of how the virus spread across different territories, with case numbers spiking in many eastern EU Member States. This may explain, to some degree, why the autumn season accounted for a relatively high share of guest nights spent in some regions / EU Member States, whereas in others the share was particularly low. Many of the regions where the autumn season accounted for a relatively high share of all guest nights spent were located in the Benelux Member States.

Figure 10.4: Guest nights spent at short-stay accommodation offered via selected online booking platforms during each season, 2020
(% of total nights spent, selected NUTS 2 regions)



Note: short-stay accommodation offered via Airbnb, Booking.com, Tripadvisor and Expedia Group. The figure shows, for each quarter, the regions with the highest shares of total guest nights spent in 2020. Winter: January–March. Spring: April–June. Summer: July–September. Autumn: October–December.

Source: Eurostat (online data code: tour_ce_omn12)

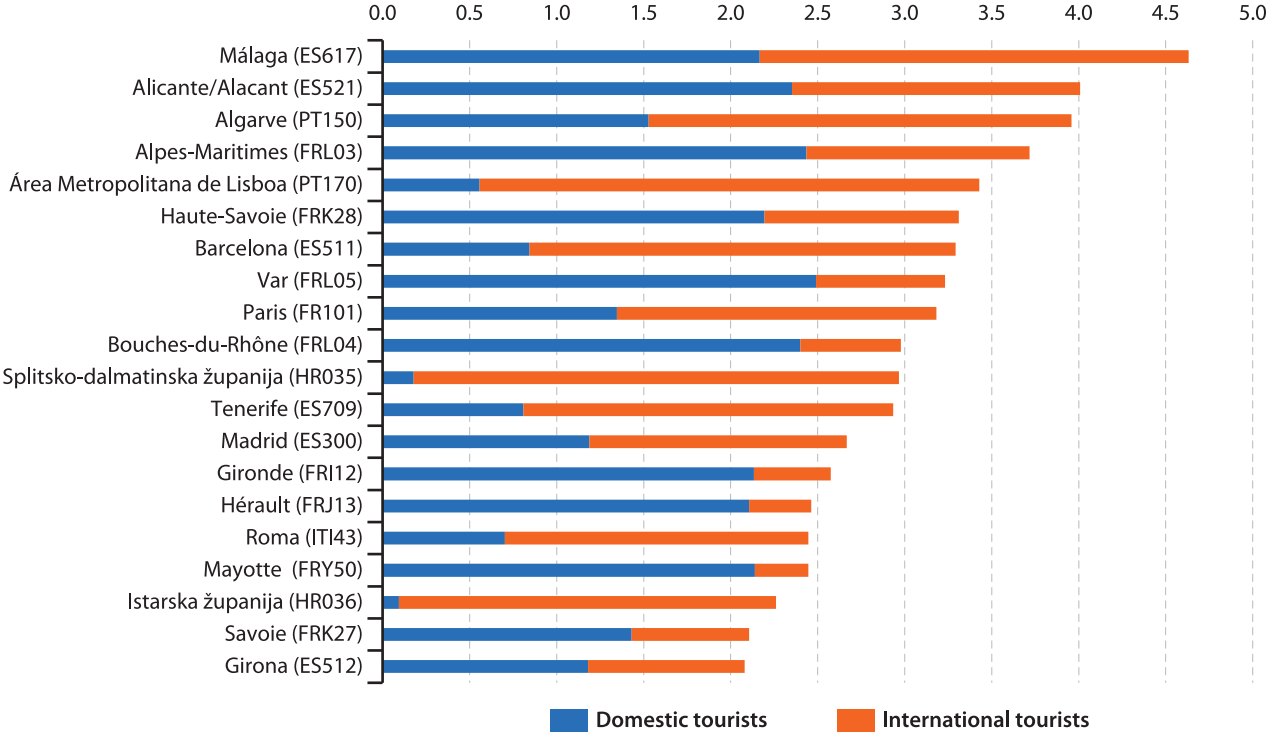
Across NUTS level 3 regions, Málaga in southern Spain recorded the highest number of guest nights spent at short-stay accommodation reserved through four selected online booking platforms

The final analysis in this section based on data from online booking platforms concerns a more detailed dataset, with information for NUTS level 3 regions. Figure 10.5 shows information for the 20 regions that had the highest number of guest nights spent in 2020 at short-stay accommodation. Málaga in the south of Spain had the highest number (4.6 million). This region on the Costa Del Sol coastline contains, among others, the holiday resorts of Torremolinos, Fuengirola, Marbella and Málaga (city). The second highest count was also in Spain: Alicante/Alacant on the Costa Blanca coastline had 4.0 million guest nights spent in short-stay accommodation; its main resorts include Denia, Calpe, Alicante (city), Benidorm and Torrevieja. Alongside these two Spanish regions, there were two other regions from the Iberian Peninsula – Algarve and Área Metropolitana de Lisboa (both in Portugal) – that featured among the five EU regions with the highest number of guest nights spent. The former is a popular holiday destination on the southern coast and includes resorts such as Lagos, Portimão, Albufeira, Faro and Tavira; it had 4.0 million guest nights spent in short-stay accommodation. Área Metropolitana de Lisboa is the capital region of Portugal; it had 3.4 million guest nights spent in short-stay accommodation. The southern French region of Alpes-Maritimes that includes part of the Côte d'Azur – with coastal resorts such as Nice, Antibes and Cannes – as well as alpine ski resorts had 3.7 million guest nights spent in short-stay accommodation.

The relative importance of domestic and international tourists to each of these five regions varied considerably. In 2020, domestic tourists accounted for just 16.2 % of the total number of guest nights spent at short-stay accommodation and reserved through four selected online booking platforms in Área Metropolitana de Lisboa; domestic tourists also accounted for less than half of all guest nights spent in the Algarve (38.6 %) and in Málaga (46.8 %). By contrast, domestic tourists accounted for almost two thirds of the guest nights spent at short-stay accommodation in Alpes-Maritimes (65.5 %) and they also accounted for a majority of the guest nights spent in Alicante/Alacant (58.7 %).

Reservations of short-stay accommodation using four selected online booking platforms were quite concentrated in terms of their spatial distribution. Aside from regions in Spain, Portugal and France, the only other EU Member States to feature among the 20 regions with the highest number of guest nights spent were Croatia (Splitsko-dalmatinska županija and Istarska županija) and Italy (the capital region of Roma).

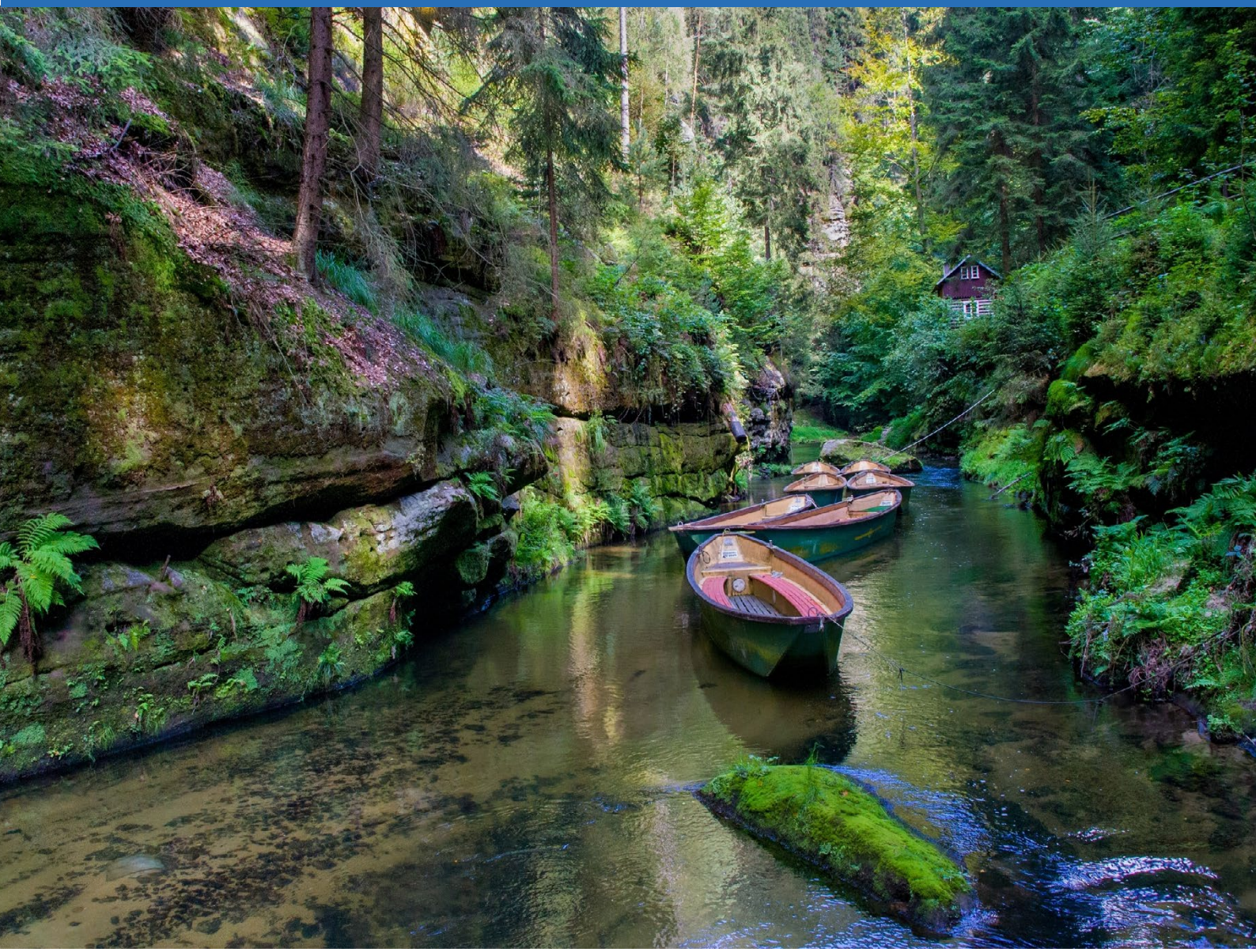
Figure 10.5: Guest nights spent at short-stay accommodation offered via selected online booking platforms, 2020
(million nights, selected NUTS 3 regions)



Note: the figure shows the regions which recorded the highest total number of guest nights spent at short-stay accommodation offered via selected online booking platforms (Airbnb, Booking.com, Tripadvisor and Expedia Group) in 2020.

Source: Eurostat (online data code: tour_ce_oan3)

C Environment and natural resources



11. Transport

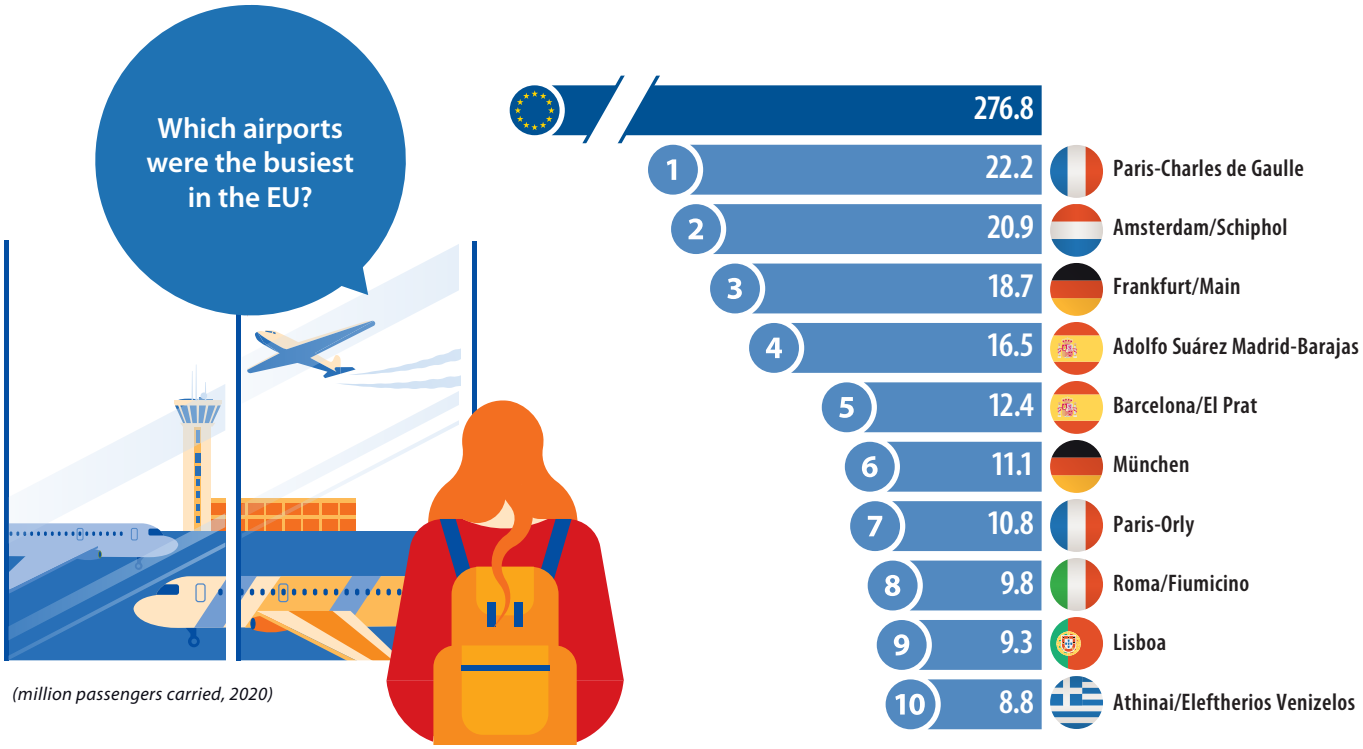
European Union (EU) transport policy aims to promote environmentally friendly, safe and efficient travel, while underpinning the rights of citizens, goods and services to circulate freely within the single market.

In spring 2020, during the early months of the COVID-19 pandemic in the EU, virtually all EU Member States implemented containment measures and restrictions on non-essential travel internally and/or internationally. Some partially or completely closed borders. Where international travel continued, it was in some cases accompanied by a requirement to go into quarantine. These travel-related restrictions had an immediate and massive impact on nearly all modes of transport, particularly concerning passenger transport. As the pandemic continued into 2021, waves of travel restrictions were imposed and lifted. Commercial transport services that operated during the pandemic implemented initiatives to try to protect transport workers and travellers, as well as to ensure the circulation of goods (particularly essential goods) within and between EU Member States as well as between the EU and non-member countries.

Air transport services were one of the economic activities most impacted by the COVID-19 crisis. This was particularly notable for passenger transport, as the total number of passengers carried in the EU fell 73.3 % between 2019 and 2020. Paris/Charles de Gaulle in France and Amsterdam/Schiphol in the Netherlands were the only airports in the EU to carry upwards of 20 million air passengers in 2020 – see the infographic.

This chapter focuses on regional statistics for road, maritime, air and rail transport; it also presents information on road accidents. Note the latest available data relate to the 2020 reference period (as such, they cover the initial impact of the COVID-19 crisis but do not show the partial recovery experienced in 2021). The first section presents information concerning road transport: more specifically data relating to road freight transport, as well as the incidence of road fatalities. The second section provides statistics on maritime traffic: the busiest ports for passengers carried and for freight handled. The third section focuses on air traffic: it presents the annual change in air passenger numbers at a regional level, as well as information for the busiest airports for passengers and for freight and mail. The final section looks at rail freight transport.

Note that the selection of information presented for regional transport statistics within the *Eurostat regional yearbook* changes on an annual basis (covering different forms of transport and focusing on passenger/freight indicators). Previous editions of the publication can be found at https://ec.europa.eu/eurostat/web/regions/publications.



Source: Eurostat (online data codes: avia_paoa and avia_paoc)

Road transport and accidents

ROAD FREIGHT TRANSPORT

Roads are by far the most common transport mode in the EU for passenger and inland freight transport. Policy objectives for road transport include, among other issues: ensuring mobility on an ever more congested road network; reducing road fatalities; lowering air pollution (emissions of carbon dioxide and other pollutants) and the carbon footprint to which road transport contributes; decreasing the reliance on fossil fuel use and promoting the use of electric vehicles; reviewing the working conditions of professional drivers.

The road freight transport sector plays an essential role in transport markets and is an important component of modern economic systems, providing services that connect producers, traders and consumers. This became particularly apparent with the onset of the COVID-19 crisis, as there was a shortage of supply for some goods, while an increasing proportion of consumers shopped online and received deliveries at home.

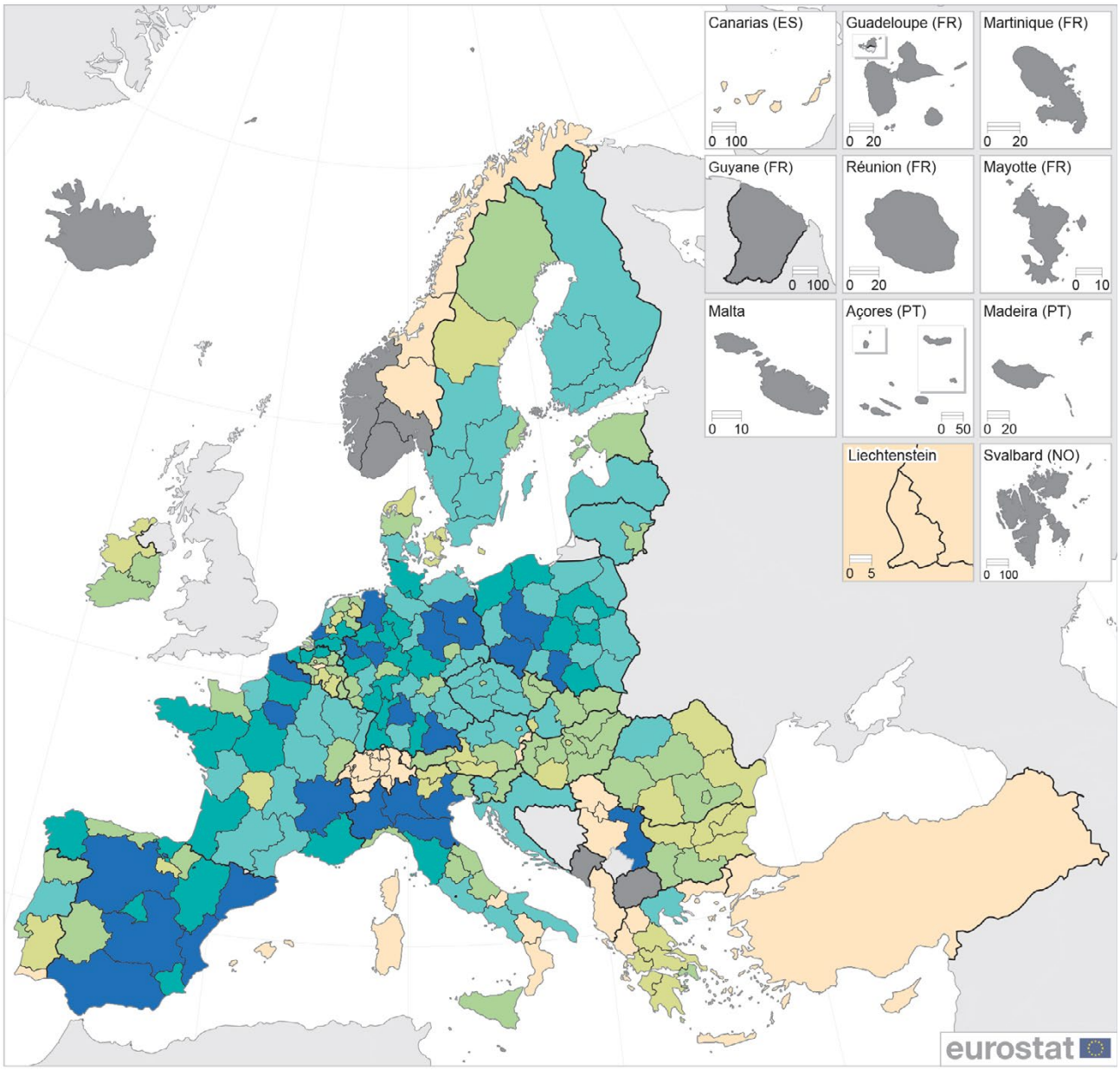
In 2020, the total weight of goods transported by road by vehicles registered in the EU was 13.0 billion tonnes; when taking account of the distance travelled for each goods operation, this equated to 1 803 billion tonne-kilometres (tkm). The weight of goods transported fell by 3.9 % between 2019 and 2020: this was a relatively modest reduction when compared with the impact of the COVID-19 crisis on other transport activities. This may, at least in part, be explained by the European Commission and EU Member States taking rapid actions to mitigate the impact of the crisis (for example, recognising transport employees as key workers and introducing schemes such as *Green lanes* (COM(2020) 685 final) so as to avoid disruptions to essential travel).

There were 23 NUTS level 2 regions in the EU where at least 16.1 billion tkm of road freight was loaded, this accounted for 28 % of the total road freight loaded onto vehicles registered in the EU (as shown by the darkest shade of blue in Map 11.1). Regional statistics for road freight transport should be interpreted with care as the data presented may reflect, to some extent, the size of each region, as those regions characterised by a large area normally transport more freight. In a similar vein, those regions that are characterised by transporting bulk products that tend to weigh a lot (such as raw materials) are also likely to report higher values.

Map 11.1 confirms that many of the regions of loading with the highest levels of road freight transport performance by vehicles registered in the EU were characterised by the presence of freight ports, a relatively high population density, or were located on major road arteries. Road freight transport performance appeared to be particularly concentrated in German, Spanish, Italian and Polish regions of loading. By contrast, the regions of loading with the lowest levels of road freight transport performance were often relatively small island regions or rural regions.

The region of loading with the highest road freight transport performance across NUTS level 2 regions was Cataluña in Spain (38.8 billion tkm in 2020); it was closely followed by another Spanish region, namely Andalucía (38.6 billion tkm). There were two other regions in the EU where this figure stood at more than 30.0 billion tkm: Lombardia in Italy (34.7 billion tkm) and Comunitat Valenciana (also in Spain; 30.3 billion tkm).

Map 11.1: Road freight transport, 2020
(million tonne-kilometres performed, by NUTS 2 regions of loading)



Note: the map shows the road freight transport performed on goods loaded in each region by vehicles registered in any of the EU Member States. EU: includes all road freight transport performed by vehicles registered in any of the EU Member States, regardless of whether the road freight was loaded within the EU or not. Croatia, Albania and Turkey: national data.

Source: Eurostat

ROAD ACCIDENTS

Road safety in the EU has improved in recent decades and EU roads are among the safest in the world. To address the issue of road safety, the European Parliament adopted a resolution in October 2021 on an *EU Road Safety Policy Framework 2021–2030 – Recommendations on next steps towards 'Vision Zero'* (2021/2014), which reaffirmed the EU's commitment to reduce the number of deaths on the EU's roads to almost zero by 2050. Vision Zero provides a strategic plan and monitoring of key safety performance indicators, for example on vehicle safety, seat belt wearing rates, speed compliance or post-crash care. The strategy has set the initial goal of cutting in half the number of fatalities and serious injuries by 2030.

Nevertheless, road safety remains a major societal issue. In 2020, there were 19 102 road fatalities and no fewer than 935 555 injuries on the EU's roads (excluding Ireland). Pre-pandemic, there had been some evidence of a slowdown in the rate at which the number of EU road accidents was falling. However, the COVID-19 crisis led to a considerable reduction in road travel with, among other factors, restrictions on personal movement and fewer people driving to work. This contributed to a considerable fall in the number of road accidents: the number of road fatalities in the EU fell 16.9 % between 2019 and 2020, while the number of road injuries dropped by 22.7 % (again excluding Ireland).

In 2020, Valle d'Aosta/Vallée d'Aoste in Italy and Åland in Finland had zero road fatalities

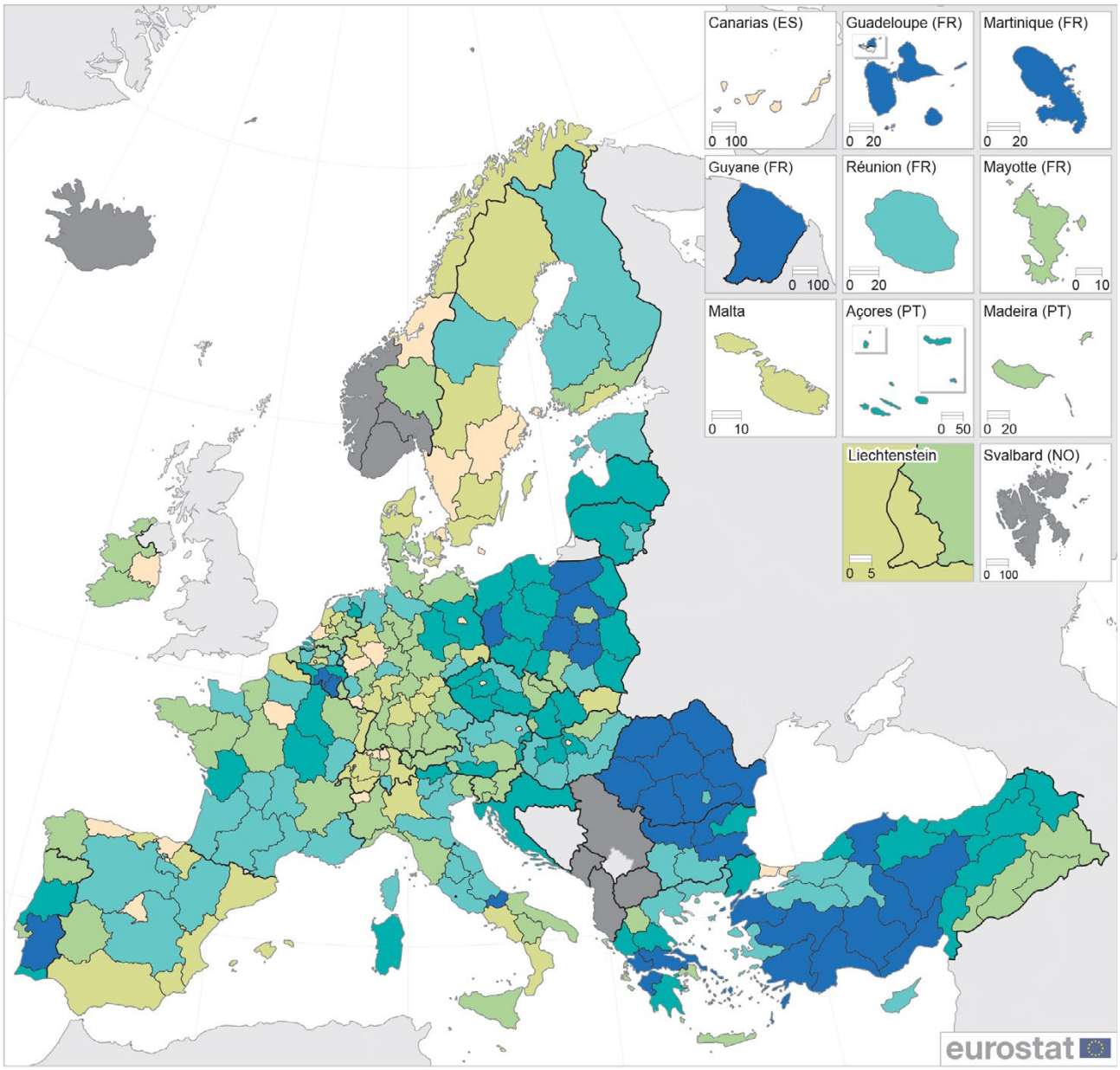
There were 43 road fatalities per million inhabitants in the EU in 2020. These fatalities were quite evenly distributed insofar as 112 out of 239 NUTS level 2 regions recorded an incidence of road fatalities that was below the EU average, while 123 (or 51.5 % of all regions) had a value that was above; there were four regions that had the same number of road fatalities per million inhabitants as the EU average.

Map 11.2 confirms that some of the highest incidence rates for road fatalities in 2020 (as shown by the darkest shade of blue) were recorded in rural regions; note that the information presented in this section includes national data for Croatia. The regions with the highest incidence rates were principally located in Belgium, Bulgaria, Greece, outermost regions of France, Poland and Romania. By contrast, urban regions tended to report a much lower incidence of road fatalities. This may be linked to lower average speeds: for example, there may be lower speed limits in built-up areas while motorway networks in and around major conurbations may be frequently congested. It should be noted that road accident statistics include fatalities and injuries in vehicles which are in transit through a region as well as fatalities and injuries of non-residents staying in a region on holiday, for business or other reason. As such, and other things being equal, regions that have transit corridors or regions with high numbers of visitors may well experience a higher incidence of injuries and fatalities.

Looking in more detail, there were five NUTS level 2 regions with at least 100 road fatalities per million inhabitants. In 2020, the highest incidence was recorded in the southern Portuguese region of Alentejo (135 road fatalities per million inhabitants). The other four regions included: two outermost regions of France – Guadeloupe (124) and Guyane (115); Mazowiecki regionalny that encircles the Polish capital region (123); and the southern Belgian region of Prov. Luxembourg (100).

There were 24 regions across the EU where the incidence of road fatalities was less than 23 deaths per million inhabitants in 2020 (as shown by the lightest shade of yellow in Map 11.2). There were two regions that reported no road deaths at all: Valle d'Aosta/Vallée d'Aoste in northern Italy and the relatively small, island region of Åland in Finland. However, a majority of the 24 regions with relatively low fatality rates were predominantly urban areas; indeed, this group included 10 capital regions. Leaving aside the two regions for which there were no fatalities in 2020, the next lowest incidence rates were recorded in the Swedish capital region of Stockholm (5 road fatalities per million inhabitants), the Austrian capital region of Wien (6), and the northern German region of Hamburg (8).

Map 11.2: Number of road fatalities, 2020
(per million inhabitants, by NUTS 2 regions)



EU = 43
- ≥ 76
- 56 – < 76
- 45 – < 56
- 33 – < 45
- 23 – < 33
- < 23
- Data not available

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 06/2022

0 200 400 600 800 km

Note: Croatia: national data.
Source: Eurostat (online data codes: tran_r_acci and demo_pjan)

Maritime traffic

MARITIME PASSENGERS

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 — providing a means for passengers and freight to arrive/leave. The total number of maritime passengers that embarked or disembarked in EU ports reached a relative peak of 418 million in 2019 prior to the onset of the COVID-19 crisis.

The annual growth rate for the number of maritime passengers in the EU was 5.5 % in 2018, followed by a more modest increase of 1.8 % in 2019. However, the COVID-19 crisis and its associated containment measures led to a rapid contraction in passenger services, in contrast to the situation for freight – see below for more details. The total number of passengers that embarked or disembarked in EU ports almost halved in 2020, falling 45.0 % to 230 million.

Some of the EU's most frequented maritime routes are in the Mediterranean Sea and across the Baltic Sea; note that regional maritime statistics only concern main ports that handle more than 200 000 passengers annually. In 2019, the highest levels of passenger traffic were recorded in the Italian ports of Messina (Sicilia) and Reggio di Calabria (on the Italian mainland), Helsinki (Finland) and Tallinn (Estonia). All four of these ports recorded at least 10.0 million maritime passengers.

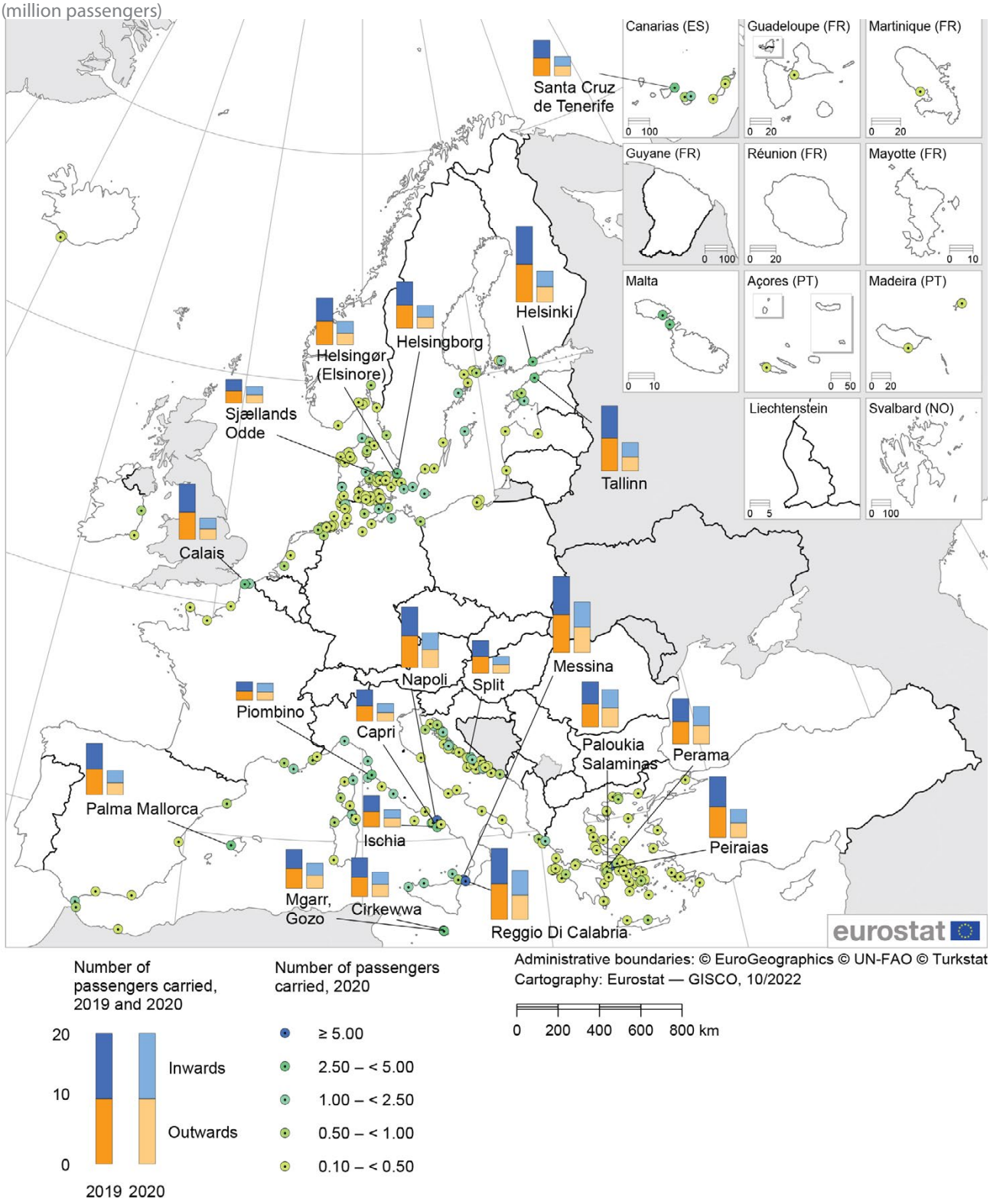
With the onset of the COVID-19 crisis in 2020, passenger numbers fell for each of the main maritime ports of the EU. The impact of the crisis was mixed and reflected, at least to some degree, the balance between national and international services; the latter were more likely to be curtailed during the initial stages of the pandemic. There was a sizeable reduction in the number of maritime passengers embarked or disembarked in Helsinki (down 59.1 % between 2019 and 2020) and Tallinn (down 56.5 %), while the total number of passengers in Messina and Reggio di Calabria fell by around one third (down 33.7 % and 30.8 % respectively). The relative impact of the crisis was lower for ports characterised by local services: for example, passenger numbers in the Greek ports of Paloukia Salaminas and Perama – two ports located at either end of a ferry service in close proximity to Athens – fell by 17.4 % each. The smallest decline, among the top 20 ports for passenger services, was recorded in Piombino (which is located on the Italian mainland in Toscana, with a majority of its services to/from the island of Elba); here, the overall number of passengers fell 8.2 % in 2020. The largest decline, among the top 20 ports for passenger services, was recorded in Calais, down 61.4 %. This large fall reflects the impact of the COVID-19 crisis on its mainly international services and possibly also an impact related to Brexit (as the United Kingdom left the EU on the last day of January 2020).

MARITIME FREIGHT

Maritime freight transport services facilitate international trade between EU Member States and the rest of the world. Along with other products, they contribute towards the security of supply of energy and food, while providing EU exporters with a means of reaching international markets; indeed, the vast majority (in tonnage) of the EU's international freight is transported by sea.

After six consecutive years when the total quantity of maritime freight handled (goods loaded and unloaded) in EU ports had risen (albeit marginally in 2019), the onset of the COVID-19 crisis led to a decline in activity in 2020. The downturn experienced for maritime freight services was relatively modest in comparison with the impact of the crisis on some passenger services. In 2020, 3.3 billion tonnes of maritime freight were handled in EU ports, 7.3 % less than in 2019.

Map 11.3: Maritime passengers carried, 2019 and 2020
(million passengers)



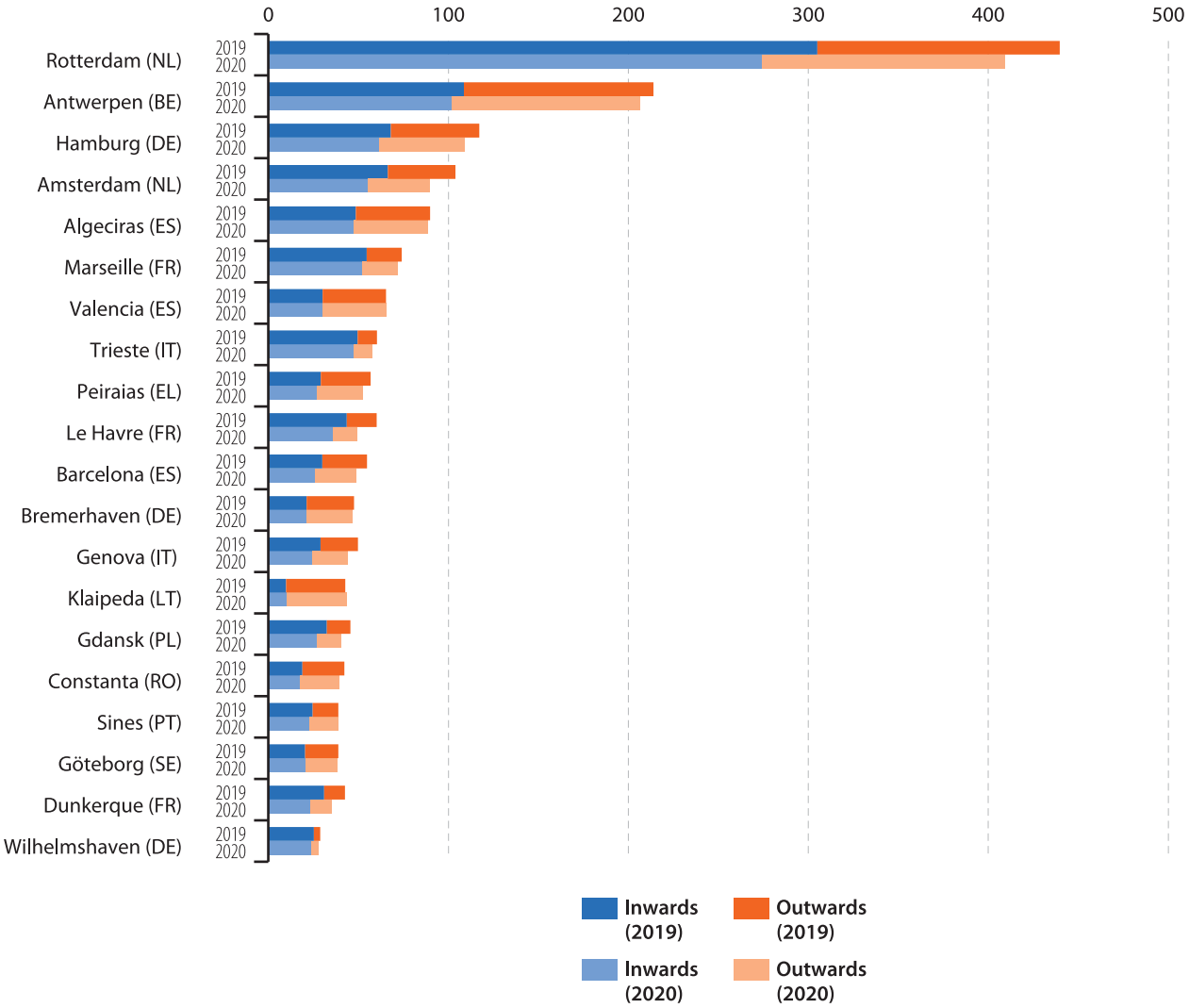
Note: the map shows bar charts for the top 20 ports (based on data for 2020) for maritime passengers in the EU. It also shows as coloured circles those ports with at least 100 000 passengers carried (inwards and outwards combined) for 2020.

Source: Eurostat (online data codes: mar_mp_aa_pphd, mar_mp_aa_cph and mar_pa_aa)

Figure 11.1 shows information for the top 20 EU ports for maritime freight in 2020 (as well as data for 2019 to highlight the impact of the crisis); note that regional maritime statistics only concern main ports that handle more than a million tonnes of goods annually. A large number of the EU's main ports were concentrated along North Sea coastlines, close to some of the most densely populated regions of the EU that are served by an extensive network of motorways, railways, rivers and canals.

Rotterdam in the Netherlands was, by far, the largest port in the EU. With 409 million tonnes of maritime freight loaded and unloaded in 2020, it accounted for more than one tenth (12.3 %) of the total goods handled in EU ports. The position of Rotterdam as the EU's leading freight port is clearly evident, as it loaded/unloaded almost twice as much freight as any of the other port in the EU. The next largest freight ports were all located within relatively close proximity of Rotterdam: the Belgian port of Antwerpen (206 million tonnes of maritime freight), the German port of Hamburg (109 million tonnes), and another Dutch port, in the capital city of Amsterdam (89 million tonnes). Away from the North Sea, the next largest ports in the EU were around the Mediterranean Sea: the Spanish port of Algeciras (88 million tonnes) and the French port of Marseille (72 million tonnes).

Figure 11.1: Maritime freight handled, 2019 and 2020
(million tonnes of goods, top 20 ports in the EU)



Note: ranked by 2020.

Source: Eurostat (online data code: mar_mg_aa_pwhd)

Air traffic

AIR PASSENGERS

In recent decades, liberalisation measures have led to the (rapid) growth of low-cost airlines and an expansion of smaller regional airports which are generally less congested and charge lower landing fees than main international airports.

Air passenger services were particularly hard hit by the COVID-19 crisis; the initial impact of the crisis can be seen in the latest information available. In 2019, there had been 1.0 billion air passengers carried (arrivals plus departures) in the EU; this figure slumped in 2020, falling by almost three quarters (down 73.3 %) to 277 000 passengers. Monthly statistics for more recent periods confirm that air passenger numbers failed to recover fully in 2021 from the impact of the crisis. The latest data available suggest that there was a modest recovery in domestic and short-haul travel, while the number of inter-continental air travellers remained depressed.

Map 11.4 provides information for NUTS level 2 regions on the change in the number of air passengers carried; note that many of the regions for which data are not available do not have a major airport and that only national data are presented for Croatia. There were 74 regions (out of 167) where the number of air passengers carried in 2020 fell at a faster rate than the EU average (down 73.3 %). There were 90 regions (or 54.5 % of all regions) where air passenger numbers fell by a smaller margin than the EU average and one region that had the same annual change as the EU average. Two regions with very small numbers of air passengers (less than 10 000 each) did not record a fall in 2020: in Alentejo in Portugal, the number of air passengers in 2020 was the same as in 2019; in the island region of Sjælland in Denmark, there was an increase.

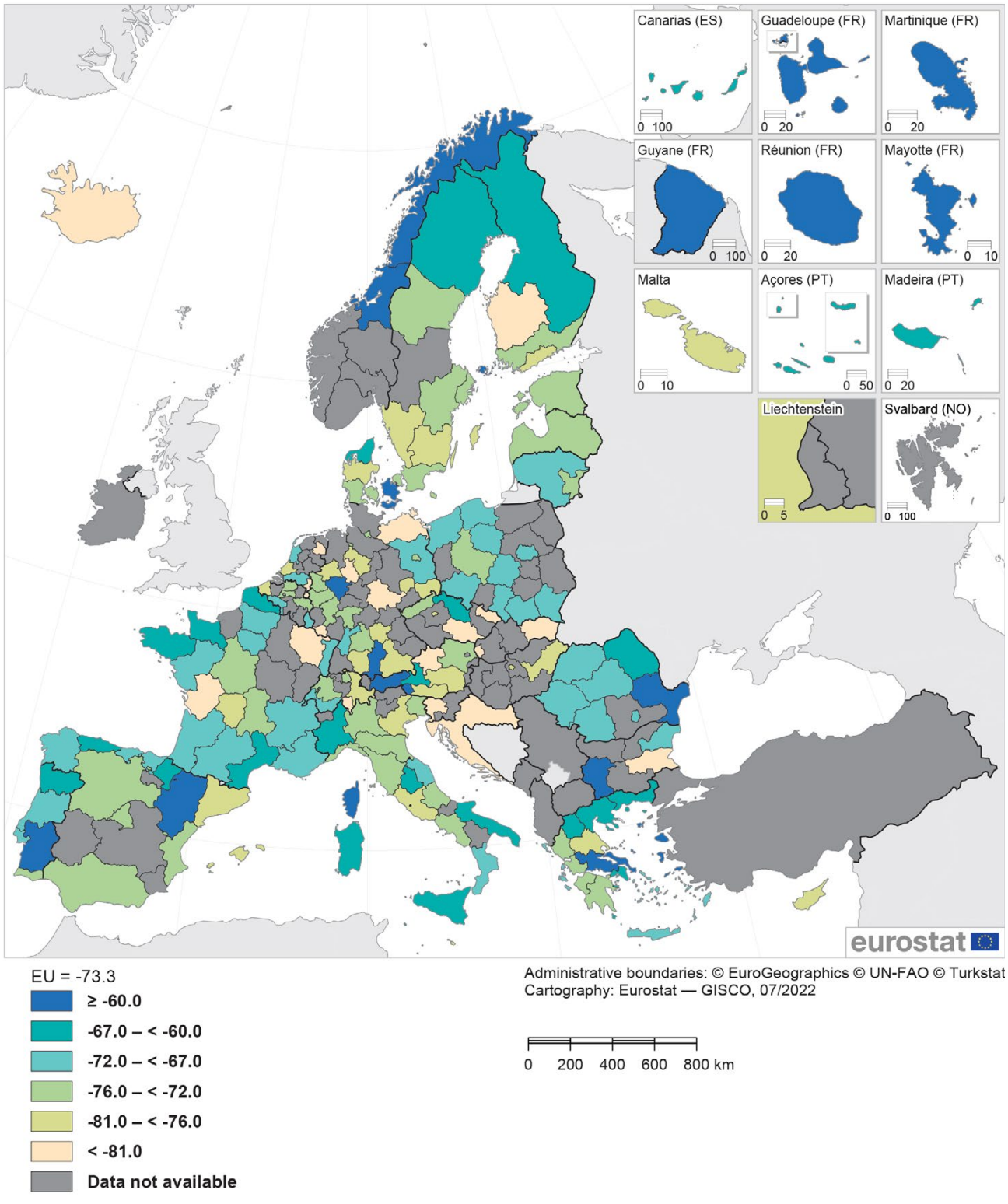
In 2020, the French capital region of Ile-de-France – which is home to Paris-Charles de Gaulle and Paris-Orly airports – had the highest number of air passengers carried, at 33.0 million (there had been 108.0 million in 2019). The Dutch capital region of Noord-Holland – which is home to Amsterdam/Schiphol airport – had the second highest number of air passengers, at 20.9 million (71.7 million in 2019), followed by the German region of Darmstadt – which is home to Frankfurt/Main airport – with 18.7 million passengers (70.4 million in 2019).

The busiest passenger airport in the EU was Paris-Charles de Gaulle

Figure 11.2 presents information relating to the busiest 20 passenger airports in the EU, as measured by the number of passengers carried in 2020. Despite the impact of the COVID-19 crisis, Paris-Charles de Gaulle in France (22.2 million passengers), Amsterdam/Schiphol in the Netherlands (20.9 million passengers) and Frankfurt/Main airport in Germany (18.7 million passengers) remained the three most used airports in the EU. These three airports carried the highest numbers of passengers within the EU (intra-EU transport) and on international flights to/from non-member countries (extra-EU transport): Paris-Charles de Gaulle had the highest number of extra-EU passengers (11.5 million), while Amsterdam/Schiphol had the highest number of intra-EU passengers (10.0 million). There was a somewhat different picture for national air transport, as Adolfo Suárez Madrid-Barajas in Spain had the highest number of passengers (6.0 million), followed by Paris-Orly in France (5.5 million) and Barcelona/El Prat in Spain (4.8 million). These relatively high figures for national air transport in Spain and France reflect the size of these EU Member States and, particularly for Spanish airports, the importance of flights to and from relatively distant island regions.

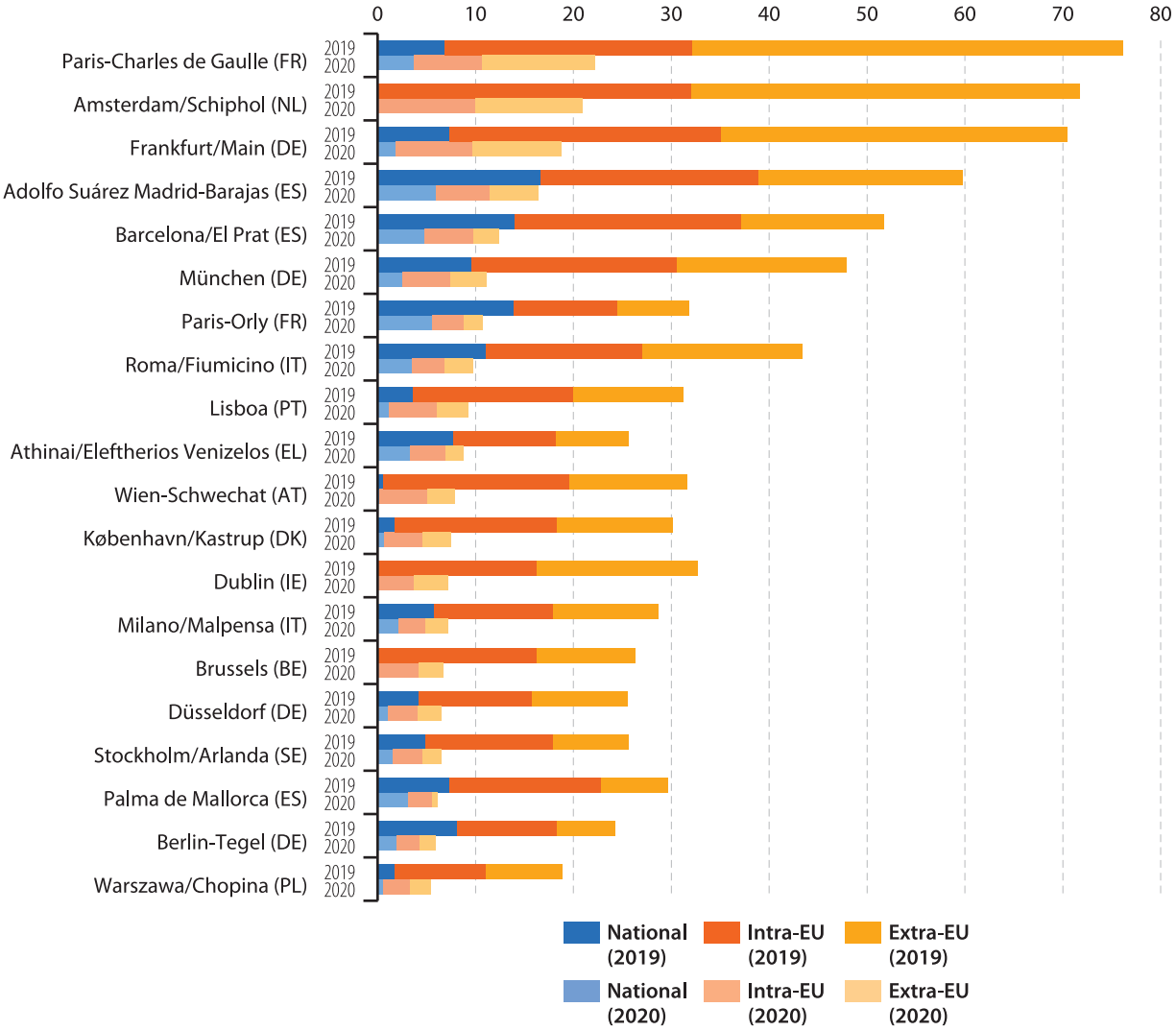
Among the top 20 passenger airports in the EU, the biggest declines in passenger numbers between 2019 and 2020 were recorded for Palma de Mallorca in Spain (down 79.4 %), Dublin in Ireland (down 77.8 %) and Roma/Fiumicino in Italy (down 77.5 %). The downturn in air passenger numbers was widespread and impacted all of the main airports in the EU. Indeed, Paris-Orly (down 66.1 %) and Athinai/Eleftherios Venizelos in Greece (down 65.7 %) were the only airports among the top 20 where the number of air passengers did not fall by at least 70.0 %. For the majority of these top 20 airports, international traffic saw the largest decline in passenger numbers. The only exceptions were København/Kastrup in Denmark, Stockholm/Arlanda in Sweden and Berlin-Tegel in Germany (where the biggest fall was recorded for intra-EU passengers) and Düsseldorf in Germany and Brussels in Belgium (where the biggest fall was recorded for national passengers).

Map 11.4: Change in air passengers carried, 2019–2020
(%, annual change, by NUTS 2 regions)



Note: Croatia, national data.
Source: Eurostat (online data codes: tran_r_avpa_nm and ttr00012)

Figure 11.2: Air passengers carried, 2019 and 2020
(million passengers, top 20 airports in the EU)



Note: ranked by 2020.

Source: Eurostat (online data code: avia_paoa)

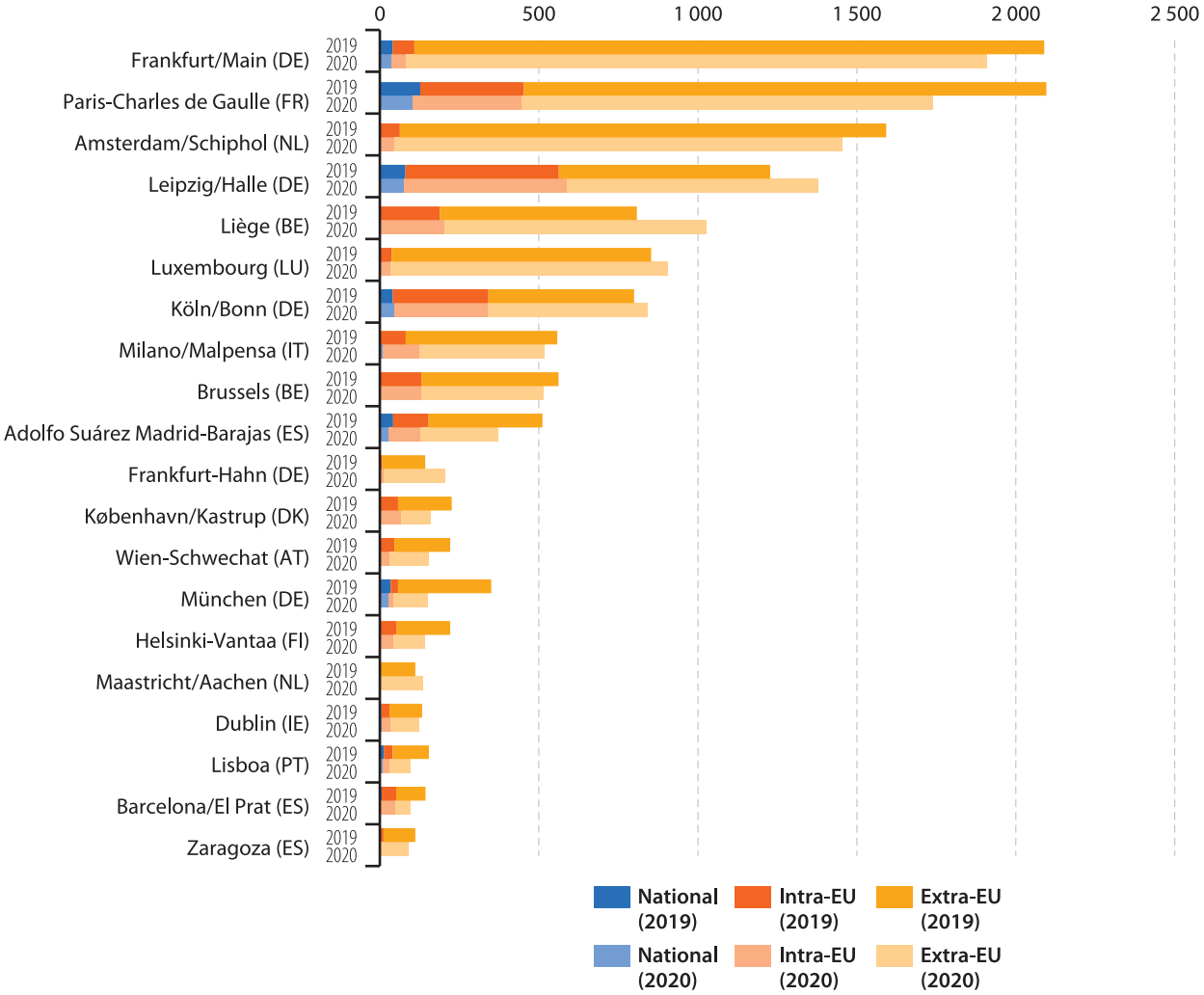
AIR FREIGHT AND MAIL

The quantity of air freight and mail loaded and unloaded increased for six consecutive years up to 2018 to peak at 14.2 million tonnes. Before the COVID-19 crisis there was already a modest reduction in the quantity of goods carried by air in the EU, with a fall of 3.5 % in 2019. This pattern was amplified after the onset of the pandemic, as a further reduction of 9.6 % was recorded in 2020. However, the quantity of air freight and mail rebounded sharply in 2021, up 20.8 % to a record level of 15.0 million tonnes for the first time. This rapid increase may have been fuelled, among other factors, by a shortage of shipping containers and rising prices for maritime transport, congestion at major shipping hubs, logistical difficulties associated with COVID-19 containment measures (especially in Asia), and the growth of e-commerce.

The information presented in Figure 11.3 shows data for the top 20 airports in the EU for freight and mail (based on the quantity of goods carried in 2020). The vast majority of air freight and mail is extra-EU international traffic to/from non-member countries (where speed of delivery provides a competitive advantage). In 2020, Frankfurt/Main airport had the largest quantity of air freight and mail, 1.9 million tonnes. There were four other airports across the EU that recorded at least 1.0 million tonnes of freight and mail: Paris-Charles de Gaulle (1.7 million tonnes), Amsterdam/Schiphol (1.5 million tonnes), Leipzig/Halle airport in Germany (1.4 million tonnes) and Liège airport in Belgium (1.0 million tonnes).

Changes between 2019 and 2020 in the quantity of air freight and mail loaded and unloaded in the EU's top 20 airports varied. The quantity of goods carried in the three principal EU airports for freight and mail fell in 2020, down 8.5 % in Frankfurt/Main, 8.6 % in Amsterdam/Schiphol and down by as much as 17.0 % in Paris-Charles de Gaulle. However, increases were observed in Köln/Bonn (Germany; up 5.3 %), Luxembourg (up 6.1 %), Leipzig/Halle (up 12.2 %), Maastricht/Aachen (the Netherlands; up 22.1 %), Liège (up 26.9 %) and particularly Frankfurt-Hahn (Germany; up 42.8 %).

Figure 11.3: Air freight and mail, 2019 and 2020
(1 000 tonnes loaded and unloaded, top 20 airports in the EU)



Note: ranked by 2020.

Source: Eurostat (online data code: avia_gooa)

Rail traffic

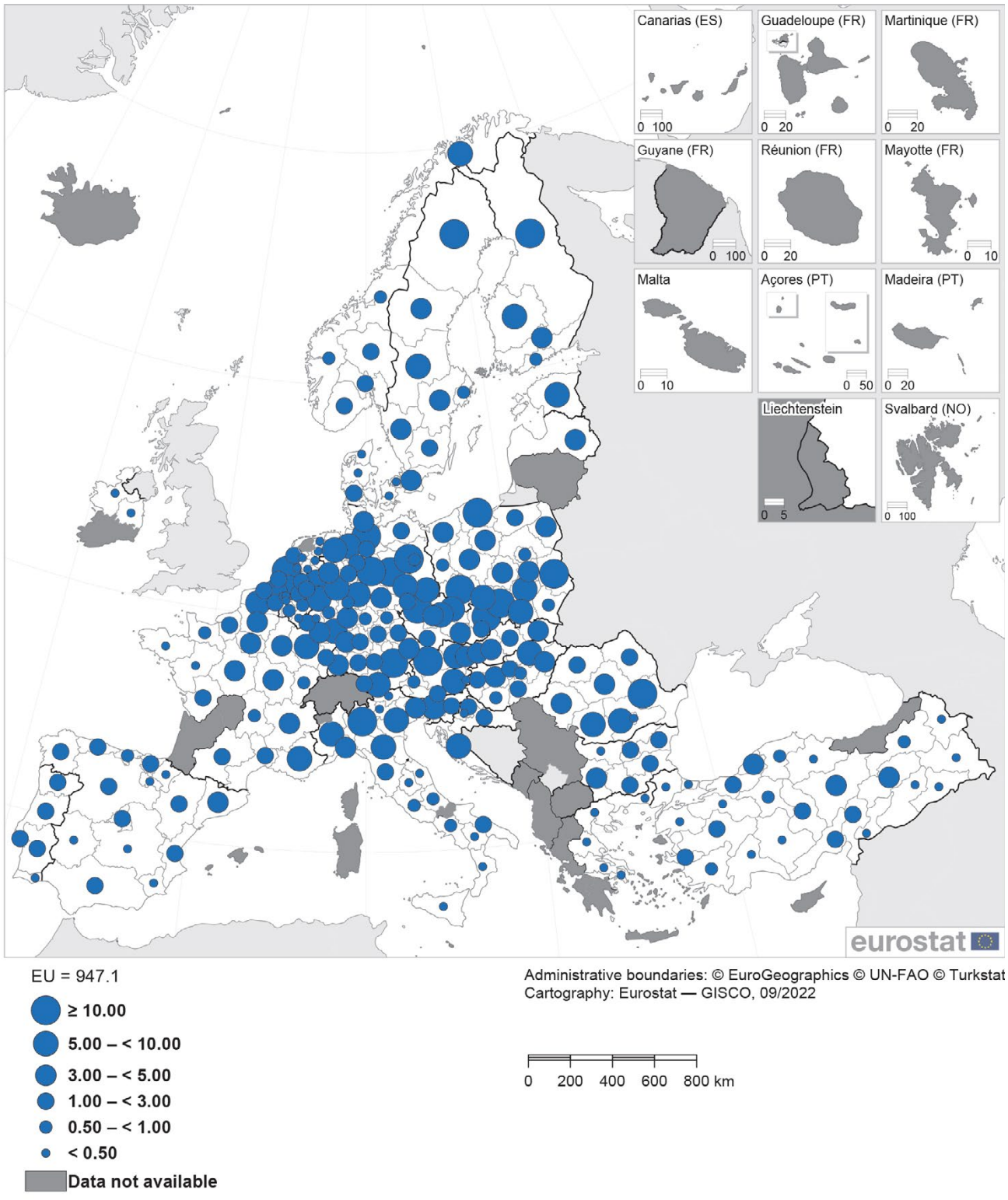
The European Year of Rail was held in 2021 with various events, projects and activities organised to highlight the many dimensions of the EU's rail transport sector: rail's role in culture and heritage, and in innovation; its importance for connecting regions, people and businesses; its part in sustainable tourism; as well as its involvement in relations with neighbouring countries.

The regional distribution of railway infrastructure is shaped by specific historical developments, economic developments and the geographical characteristics of regions. For example, some large EU Member States that have considerable distances between major cities have developed high-speed rail infrastructure (for example, Germany, Spain, France or Italy). Some of the Member States that are more densely-populated, such as Belgium or the Netherlands, have a higher frequency of (generally less rapid) trains. Several eastern Member States have relatively extensive rail networks, reflecting a legacy from the communist or Soviet era when there was often a greater reliance on rail (compared with road) for transporting passengers and goods.

In 2020, there were 947.1 million tonnes of goods transported by rail in the EU. Map 11.5 presents information on rail freight transport by NUTS level 2 region – as measured by the quantity of goods loaded. In general, the lowest levels of rail freight transport were recorded in rural and peripheral regions of the EU (where rail infrastructure was often less extensive). The highest levels of rail freight transport were in a cluster of regions centred on Germany and its neighbours. Many of these regions were characterised as manufacturing centres, where goods are loaded onto railways to be transported within the EU and also to the EU's main ports. Others, such as Hamburg and Zuid-Holland, are regions with major maritime ports, whereby goods arriving by sea are loaded onto railways to be transported to distribution and/or manufacturing centres. The use of rail is often considered a more environmentally-friendly means of transport than road transport and an alternative to congested road networks.

Note that confidential data has been used for some of the regions presented in Map 11.5 and that it is not possible to disclose specific information concerning the quantity of goods loaded. Based on available information, the highest levels of rail freight transport in 2020 were recorded in the German regions of Düsseldorf, Sachsen-Anhalt, Hamburg and Braunschweig (each had 26.9–29.9 million tonnes of goods loaded), as well as the Dutch region of Zuid-Holland (which includes the EU's main port of Rotterdam; 18.9 million tonnes).

Map 11.5: Rail freight transport, 2020
(million tonnes of goods loaded, by NUTS 2 regions of loading)



Note: no railway transport in Cyprus, Malta and Iceland.
Source: Eurostat (online data code: tran_r_rago). Ad-hoc extraction due to confidential data

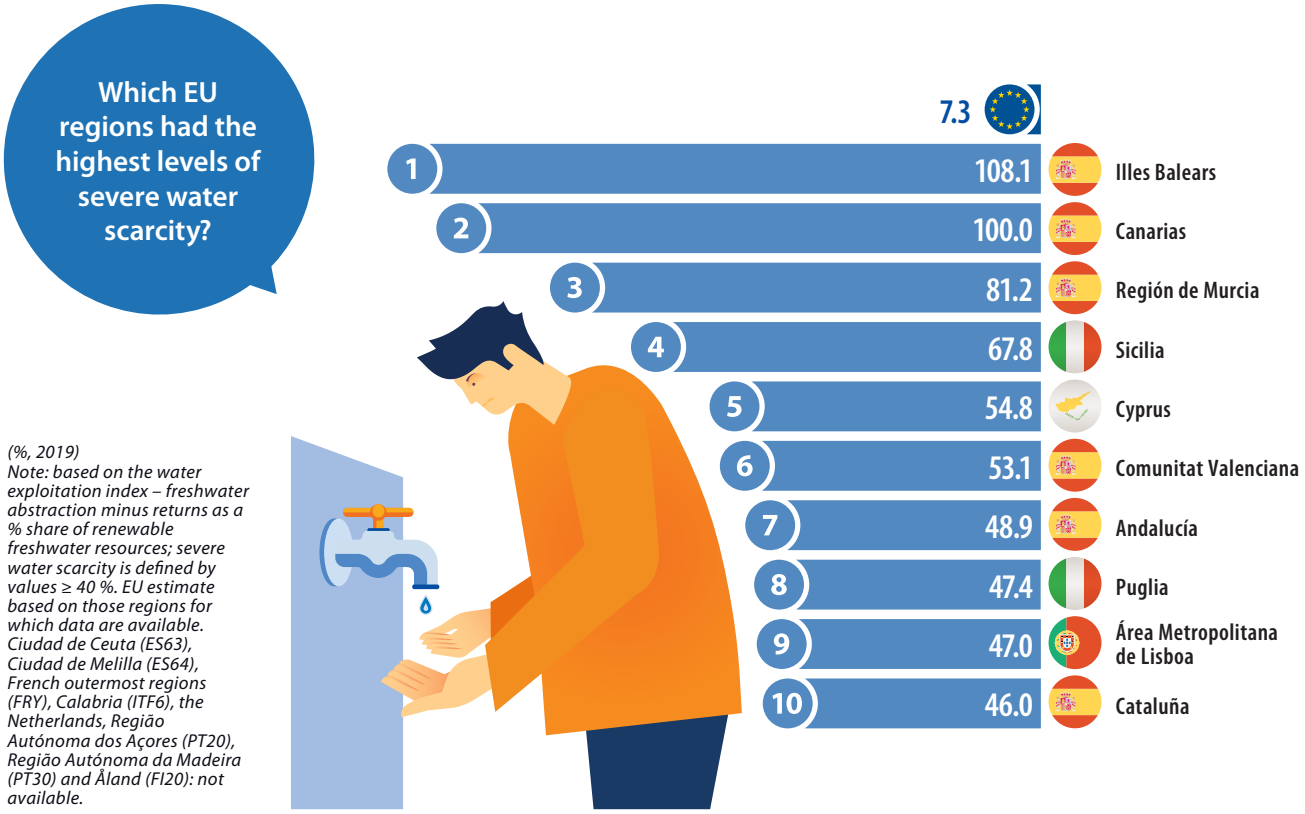
12. Environment

Historically, human activity was generally assumed to have little lasting impact on the land or other parts of the environment, as many people held a common belief that nature could restore or replenish itself. The identification of certain phenomena – rising temperatures, the rapid disappearance of vast areas of forest, desertification, species loss, growing marine pollution or sprawling urban developments – have contributed towards increasing awareness of long-term environmental damage.

Climate change and environmental degradation are two of the most serious threats to the European Union (EU) and the world. The United Nations (UN's) 2030 Agenda for Sustainable Development is a long-term strategy that aims to achieve a range of socioeconomic and environmental goals and protect the Earth from environmental degradation, through sustainable consumption and production, coupled with urgent action on climate change. The agenda introduced a set of 17 Sustainable Development Goals (SDGs); to monitor progress towards these goals the UN has adopted a list of indicators.

SDG 6 'clean water and sanitation' aims to ensure universal access to safe and affordable drinking water, sanitation and hygiene; it also aims to improve water quality, efficiency and sustainability. Most regions of the EU have sufficient water resources: however, water scarcity and drought are becoming increasingly frequent and widespread phenomena. Water scarcity is primarily driven by two factors: water demand, which is largely affected by population and socioeconomic developments; and climate conditions, which control the availability of renewable freshwater resources and the seasonality of water supply. The WEI+ is a water scarcity indicator that provides information on the level of pressure that human activity exerts on the natural water resources of a territory. Values of 20 % or more indicate that water resources are under water stress, and values of 40 % or more indicate that water stress is severe and the use of freshwater resources is unsustainable. In 2019, three Spanish regions had the highest levels of severe water scarcity in the EU – Illes Baleares, Canarias and Región de Murcia – see the infographic for more details. The first section of this chapter highlights several environmental topics related to water (which can affect people's well-being as well as economic resilience): the distribution of wetlands and water bodies that are important for storing water and preserving ecosystems, the impact of droughts, and changes in water exploitation.

SDG 15 'life on land' seeks to protect, restore and promote the sustainable use of terrestrial ecosystems, including the sustainable management of forests.



(%, 2019)
Note: based on the water exploitation index – freshwater abstraction minus returns as a % share of renewable freshwater resources; severe water scarcity is defined by values ≥ 40 %. EU estimate based on those regions for which data are available. Ciudad de Ceuta (ES63), Ciudad de Melilla (ES64), French outermost regions (FRY), Calabria (ITF6), the Netherlands, Região Autónoma dos Açores (PT20), Região Autónoma da Madeira (PT30) and Åland (FI20): not available.

Source: Eurostat, based on early estimates provided by the European Environment Agency (EEA)

Forests are biologically-diverse ecosystems that mitigate climate change through carbon sequestration. One of the impacts of increasing settlements and other man-made developments is that natural habitats have become fragmented by various elements. The second section in this chapter provides information on the distribution of forests and other wooded land in the EU, as well as information on forest connectivity.

In view of reaching the objectives of the *EU Biodiversity Strategy for 2030 – Bringing nature back into our lives* (COM(2020) 380 final) the EU is setting legally binding nature restoration targets to restore degraded ecosystems (the European Commission adopted a proposal for a Nature Restoration Law in June 2022), including those with the most potential to capture and store carbon. The third section in this chapter provides information on changes in the organic carbon stock of agricultural soils, which is important for the resilience of the agricultural sector.

SDG 11 'sustainable cities and communities' focuses on making cities and human settlements inclusive, safe, resilient and sustainable, reducing their environmental impact, among others by improving air quality and municipal and other waste management. Air pollution is a major cause of premature death and disease in the EU, with fine particulate matter ($PM_{2.5}$) deemed to have the most severe impacts on human health. The EU's zero pollution action plan sets a goal of reducing the number of premature deaths caused by fine particulate matter by at least 55 % by 2030 (relative to 2005 levels). This chapter concludes with statistics on the magnitude of the health impacts of air pollution resulting from exposure to fine particulate matter.

Water

Water resources in the EU are affected by a number of different pressures, including natural and extreme events linked to climate change, such as droughts and floods and other anthropogenic (human-induced) impacts such as water pollution or abstractions.

WETLAND AND WATER BODIES

Wetlands are those areas that fall between land and water: they are wet for long enough periods that the plants and animals living in or near them are adapted to, and often dependent on, wet conditions for at least part of their life cycle. With changes to their local habitats, many European amphibian and reptile species are threatened.

Wetlands may be inland expanses of fresh water, or coastal. Some examples of wetlands include inland and salt marshes, reeds, peat bogs, rock sand and mud flats affected by tides. Water bodies are inland areas of still standing surface water; these may be natural water bodies or artificial water bodies, including lakes, ponds and reservoirs filled with fresh water or salty/brackish water. They also include rivers, streams, springs, canals as well as areas covered by glaciers or permanent snow.

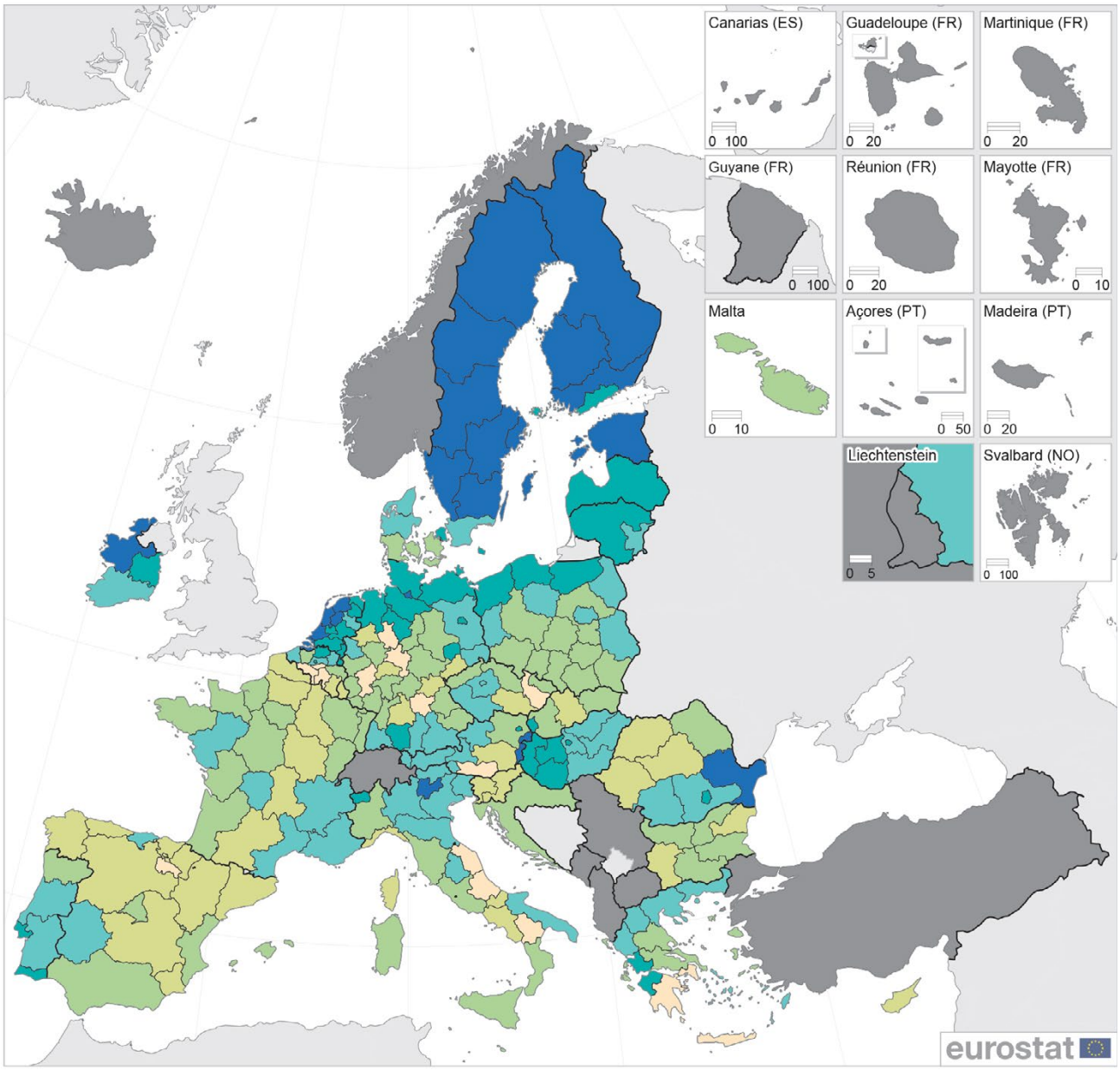
Across the EU in 2018, the area covered by wetlands and water bodies was 202 600 km^2, which was equivalent to 4.9 % of the total area. Map 12.1 shows the regional distribution of wetland and water bodies. This was heavily skewed, insofar as just 36 out of 229 NUTS level 2 regions for which data are available (note that in this section national data are presented for Croatia) – some 15.7 % of all regions – recorded a share that was above the EU average. The regions with the highest shares of wetlands and water bodies were largely concentrated in the Netherlands, Finland and Sweden.

In 2018, close to two fifths (38.4 %) of the total area of Flevoland in the Netherlands was composed of wetlands and water bodies; this was, by far, the highest share in the EU. There were two other regions in the Netherlands where wetlands and water bodies accounted for a very high share of the total area: Friesland (19.5 %) and Noord-Holland (19.0 %). All three of these regions are located around the inland lake of IJsselmeer, created when a dyke was built to block sea waters from the bay and connect Friesland to Noord-Holland. Some of the lake was subsequently drained to create the polders that today form Flevoland (one of these, Flevopolder, is the largest artificial island in the world). The flow of fresh river water into IJsselmeer has largely removed any traces of saltwater from the lake, leaving some distinct aquatic ecosystems.

A majority of the regions in Finland and Sweden had double-digit shares of their total area composed of wetlands and water bodies. Pohjois- ja Itä-Suomi (19.4 %) had the highest regional share in Finland, while the highest share in Sweden was in Västsverige (17.8 %). In contrast to the water bodies of the Netherlands enclosed by man, the thousands of lakes in Finland and Sweden are principally natural remnants of erosion during glacial periods. Aside from these lakes, many of the wetlands in Finland and Sweden are characterised by extensive peatlands and swamp areas that play a critical role in preventing and mitigating the effects of climate change, as well as preserving biodiversity.

The remaining regions in the EU where wetlands and water bodies accounted for at least 6.5 % of the total area (as shown by the darkest shade of blue in Map 12.1) included Northern and Western in Ireland, Sud-Est in Romania, Estonia, Provincia Autonoma di Trento in Italy, Hamburg in Germany, and Burgenland in Austria. These regions had a wide variety of natural habitats including (among others) peatlands, marshes, bogs, rivers, lakes and deltas.

Map 12.1: Wetland and water bodies, 2018
(% of total area, by NUTS 2 regions)



Note: Croatia, national data.
Source: Eurostat (online data code: lan_lcv_ovw)

DROUGHT IMPACT

Severe and frequent droughts may, among other factors, lead to a reduction in water resources, reduce agricultural output, accelerate the process of soil erosion, and cut carbon sequestration. Droughts can also impact biodiversity and the restoration of nature, through habitat loss, the migration of species and the spread of invasive alien species.

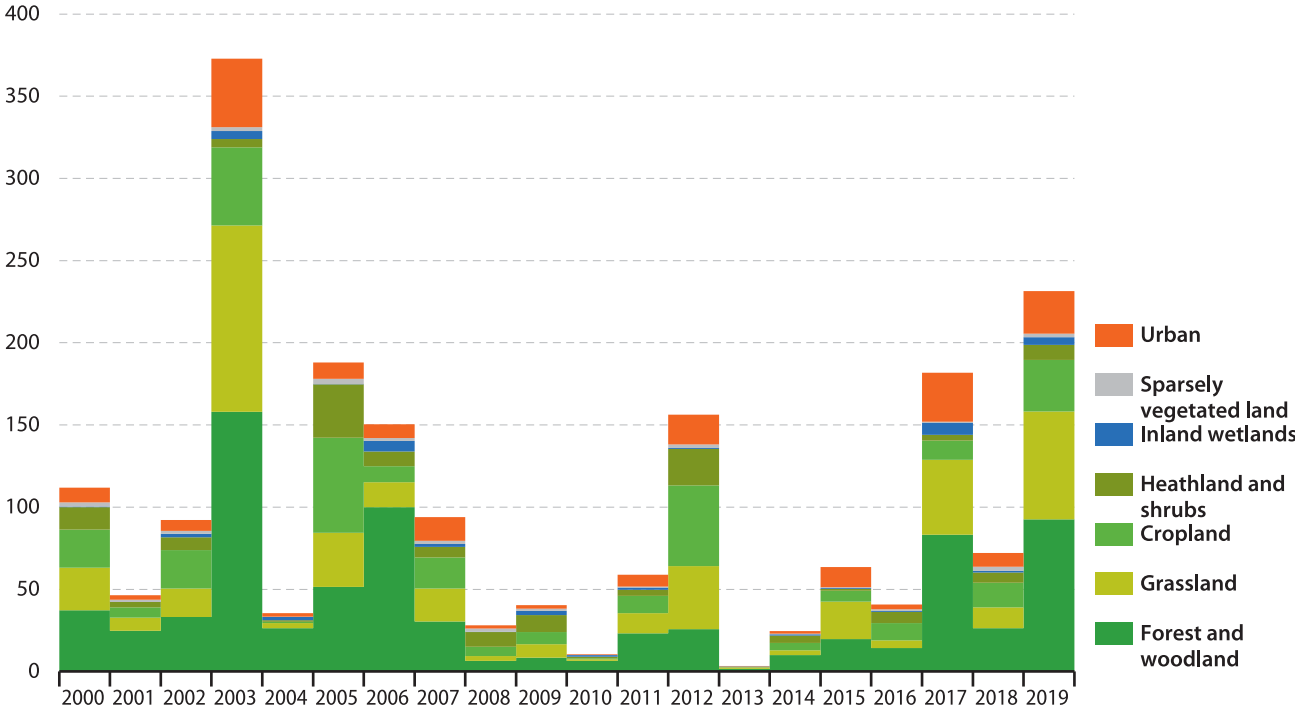
The annual drought impact on vegetation productivity is an indicator computing annual areas of lower than average vegetation conditions as a response to drought pressures, in other words, precipitation shortages and low soil moisture content during the growing season. Lower than average vegetation conditions are addressed by calculating anomalies compared with long-term average vegetation productivity. Vegetation productivity values are disaggregated and detailed by year and land cover size. Monitoring vegetation response to water deficit makes it possible for policymakers to introduce measures to try to increase the resilience of ecosystems in line with the EU's Nature Restoration Law – a key element of the EU's biodiversity strategy for 2030.

Figure 12.1 shows that 2003 was the year (during the last 20 years) when vegetation productivity was impacted over the largest area in the EU. Relatively high areas were under drought impact in two of the last three years for which data are available, 2017 and 2019. The total area of drought impact on vegetation productivity in the EU was 231 400 km^2 in 2019. The highest share (40.0 %) of this area was composed of forest and woodland, while grassland (28.4 %) and cropland (13.5 %) also accounted for relatively high shares of the impacted area.

Looking at the annual average for 2000–2019, there were 18 NUTS level 3 regions where drought impact due to soil moisture deficit covered more than 1 000 km^2. They were often located towards the perimeter of the EU: from Spain in the south to the Baltic Member States and some of the most northerly Nordic regions. A majority were concentrated in western Spain, principally in a band of regions running from León down through Salamanca and Cáceres to Sevilla. The remainder included Lõuna-Eesti (Estonia), Cyprus, Kurzeme, Vidzeme (both Latvia), Lappi (Finland), Jämtlands län, Västerbottens län and Norrbottens län (all Sweden).

Map 12.2 shows the average area of drought impact due to soil moisture deficit for NUTS level 3 regions between 2000 and 2019; the information shown is expressed in relation to the total area of each region. On average, each year 4.8 % of the EU's total area faced drought impacts during this period. The regional distribution of drought impacts was relatively even

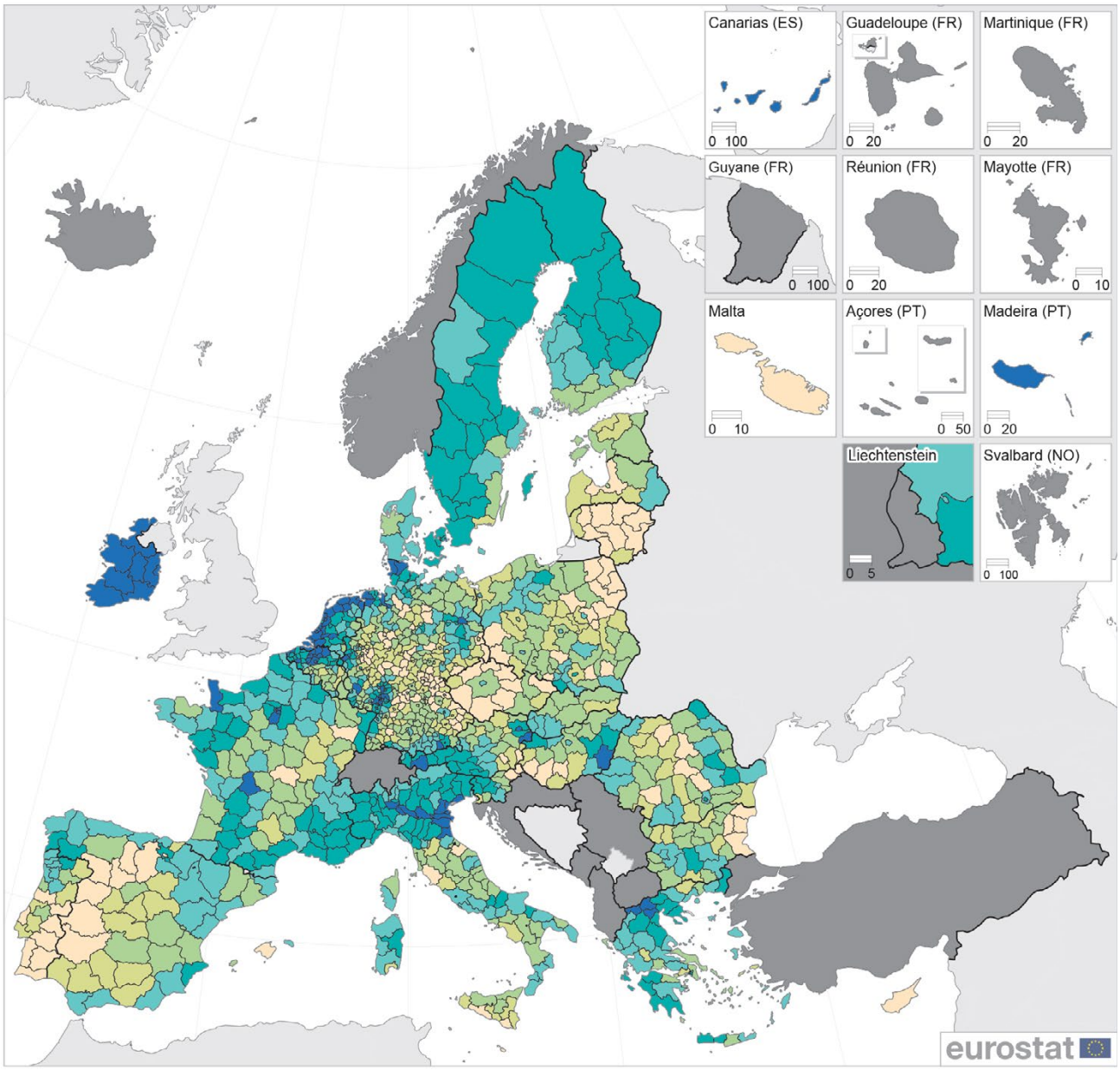
Figure 12.1: Area of drought impact on vegetation productivity, 2000–2019
(1 000 km^2, EU)



Note: the areas shown measure drought pressures in terms of precipitation shortages and low soil moisture content. Anomalies are expressed compared with the long-term average vegetation productivity conditions.

Source: European Environment Agency (EEA)

Map 12.2: Average drought impact area due to soil moisture deficit, 2000–2019
(% share of total area, by NUTS 3 regions)



Note: the information shown measures drought pressures in terms of low soil moisture content. Anomalies are expressed compared with the long-term average vegetation productivity conditions and are shown in relation to the total area of each region.

Source: European Environment Agency (EEA) and Eurostat (online data code: reg_area3)

insofar as there were 597 regions out of 1 139 for which data are available (or 52.4 % of all regions) where the average area impacted by drought was higher than the share recorded for the EU.

Looking in more detail, there were 132 regions in the EU where at least 8.5 % of the total area was impacted by drought due to soil moisture deficit between 2000 and 2019; these regions are denoted in the map by the lightest shade of yellow. They were quite widely dispersed across the EU, with the largest concentrations in south-east Germany, several eastern and Baltic Member States. There were also several regions located around the Mediterranean with a relatively high share of their total area impacted by drought: Cyprus, both of the regions that compose Malta, two regions from Sicilia (Italy), as well as Mallorca (Spain). The highest share, at 16.1 % of its total area, was recorded in the Maltese region of Gozo and Comino/Għawdex u Kemmuna. By contrast, there were 35 regions across the EU where the average drought impacted area was less than 0.05 % between 2000 and 2019. These regions were principally concentrated in western EU Member States, but also included Canarias in Spain, the Região Autónoma da Madeira in Portugal and the Danish capital region.

WATER EXPLOITATION

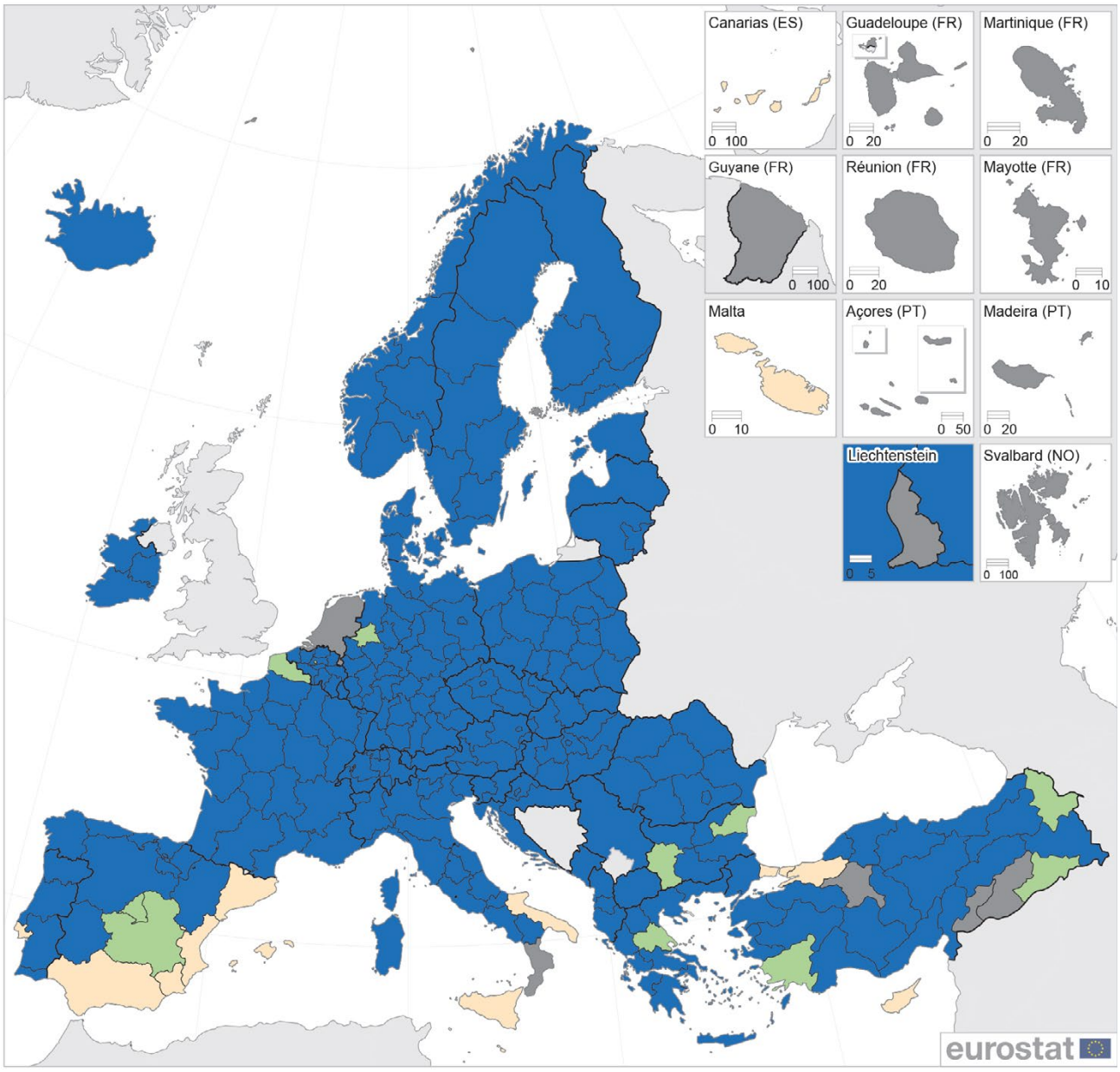
The water exploitation index plus (WEI+) aims to illustrate the pressure on the renewable freshwater resources of a defined territory (for example, a NUTS region) during a specified period (in this case, annual data), as a consequence of water use for human purposes. For the purposes of this publication, index values of 20 % or more indicate that water resources are under stress, and values of 40 % or more indicate that water stress is severe and the use of freshwater resources is unsustainable. Note the information presented in this section is based on early regional estimates provided by the European Environment Agency (EEA); a full set of data for the WEI+ covering the 2019 reference period will be released by the EEA following consultation within the European Environment Information and Observation Network (Eionet).

Water scarcity in the EU is primarily driven by two factors: climate change and water consumption. Climate influences the availability of renewable freshwater resources and the seasonality of water supply; it can lead to water scarcity across all regions of the EU (although phenomena such as droughts are usually more frequently experienced in southern regions). Water consumption is largely a function of population numbers/density and the distribution of economic activities, for example, large volumes of water are required for intensive agriculture, tourism, energy production (hydropower or nuclear energy) or manufacturing activities such as textiles. Some of the EU's main cities are characterised by water stress, as their populations consume more water than is supplied from their local river basin. Indeed, this imbalance is primarily driven by a mismatch between the concentration of people (whether residents or tourists) and local (exploitable) water resources; in such cases, water may be stored in reservoirs and/or redirected from neighbouring regions to ensure the security of supply. A third important factor in relation to water scarcity is water loss in the distribution system (water pipelines); in some regions and EU Member States up to 50 % of water is lost in the distribution system.

Many of the EU regions facing water stress are located in southern Member States. Most are characterised by a relatively high specialisation in agriculture or tourism, both of which may exert considerable pressures on renewable freshwater resources; this is particularly so during the summer months. However, water scarcity also extends to other regions of the EU, often as a result of urbanisation combined with high abstractions from the energy and/or industrial sectors. Finally, from year-to-year, droughts may impact on water stress – even in regions where water scarcity is not perceived to be a critical issue.

In 2019, the EU's WEI+ (freshwater consumption as a share of long-term average renewable freshwater resources) was 7.3 %: as such, the EU as a whole did not experience water stress. That said, there were 11 NUTS level 2 regions in the EU where the WEI+ was at least 40.0 %. These regions with severe water stress (as shown by the lightest shade of yellow in Map 12.3) were located across five different EU Member States, including: six regions in Spain, two regions in southern Italy, the capital city region of Portugal, and the Mediterranean islands of Cyprus and Malta. Together, these 11 regions had 39.2 million inhabitants (or 8.8 % of the EU's total population) living under severe water stress. Particularly high values for the WEI+ were observed in Illes Balears and Canarias in Spain, where freshwater consumption accounted for all renewable freshwater resources available in these regions in 2019 (108.1 % and 100.0 % respectively); the next highest value was also recorded in Spain – Región de Murcia (81.2 %) – while Sicilia in Italy (67.8 %), Cyprus (54.8 %) and Comunitat Valenciana in Spain (53.1 %) were the only other regions in the EU to record indices of more than 50.0 %. If the WEI+ exceeds 100.0 % then consumption is greater than freshwater resources, such that resources available prior to the reference period have to be used to satisfy demand. This primarily occurs in dry years, in regions with high abstraction/consumption pressures, and in regions with no or low external inflow; the overall impact is a lowering of the groundwater table.

Map 12.3: Water exploitation index, 2019
(freshwater abstraction minus returns as a % share of renewable freshwater resources, by NUTS 2 regions)



Note: EU estimate based on those regions for which data are available. Serbia: national data.
Source: Eurostat, based on early estimates provided by the European Environment Agency (EEA)

Aside from the 11 EU regions already identified with severe water stress, Map 12.3 also highlights a further eight regions that experienced water stress (a WEI+ within the range of 20.0 %–39.9 %); they are shown in a light shade of lime green. This group contained three regions from the southern EU Member States – Thessalia in Greece and Comunidad de Madrid and Castilla-La Mancha in central Spain. They were joined by three regions from western EU Member States – Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (the Belgian capital region), Münster (western Germany) and Nord-Pas de Calais (northern France) – while the remaining two regions in this group were both located in Bulgaria, Severoiztochen and Yugozapaden.

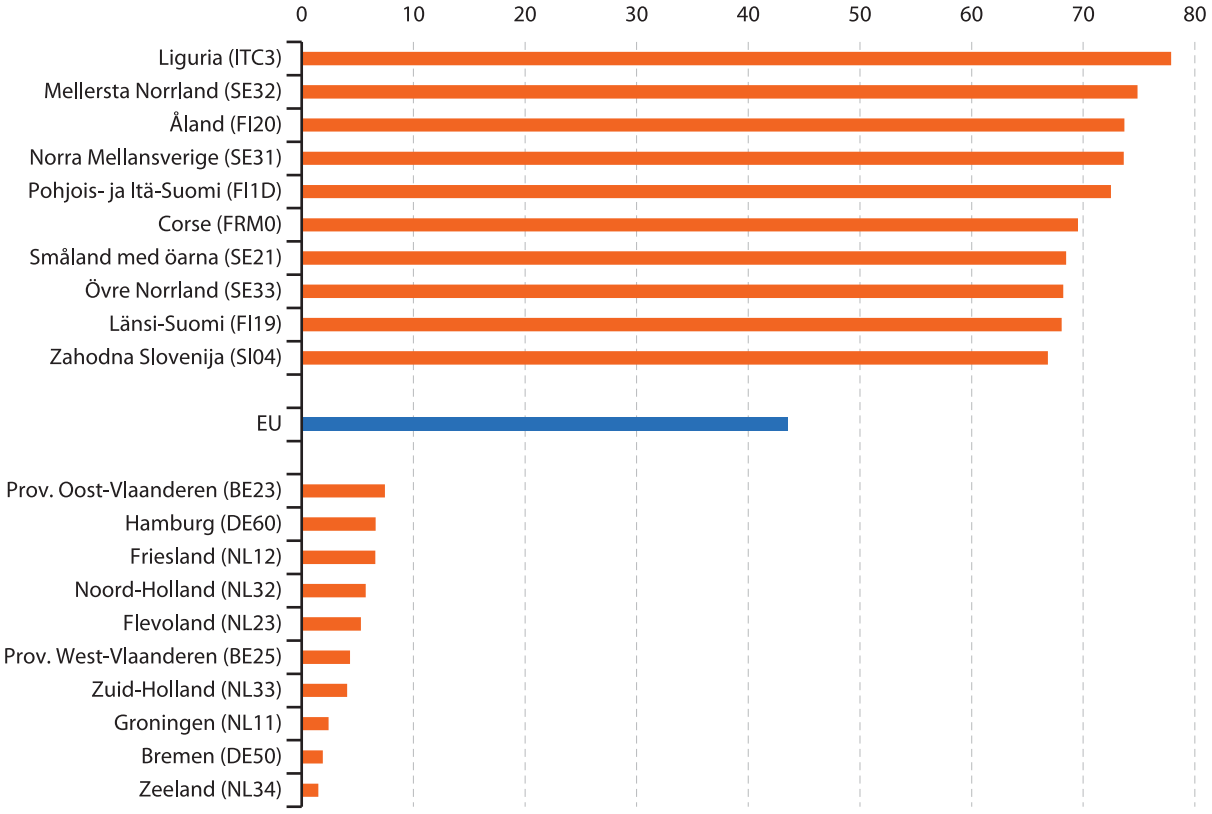
At the other end of the range, there were 24 regions across the EU where the WEI+ was 0.0 % in 2019; in other words, these regions experienced no water stress (they are shown in a dark shade of blue). This group was widely dispersed across western and eastern EU Member States, it included: six regions in Germany, four regions in Romania, three regions in Hungary, two regions from each of France, Austria and Slovakia, as well as single regions from Croatia and Poland; it also included Norra Mellansverige in northern Sweden.

Forests

Forests are important for our health and well-being, as well as the health of the planet. They provide a recreational escape, are rich in biodiversity, and are essential in the fight to mitigate climate change given their important function as a carbon sink. Among other uses, forests provide timber and wood products to a range of downstream industries, are used as a source of fuel, and play an important role in air and water purification, soil stabilisation and erosion control.

According to the Food and Agriculture Organization (FAO) of the United Nations, forests are defined as 'land spanning more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10 %, or trees able to reach these thresholds *in situ*. It does not include land that is predominantly under agricultural or urban land use'. The FAO defines other wooded land as 'land with a canopy cover of 5–10 % of trees able to reach a height of 5 metres *in situ*, or a canopy cover of more than 10 % when smaller trees, shrubs and bushes are included' (see Global Forest Resources Assessment 2020 for more details).

Figure 12.2: Forest and other wooded land, 2018
(% of total area, selected NUTS 2 regions)



Note: the figure shows the regions with the highest and lowest shares. Croatia: national data. Ciudad de Ceuta (ES63), Ciudad de Melilla (ES64), Canarias (ES70), Régions Ultrapériphériques Françaises (FRY), Região Autónoma dos Açores (PT20) and Região Autónoma da Madeira (PT30): not available.

Source: Eurostat (online data code: lan_lcv_fao)

A *New EU Forest Strategy for 2030* (COM(2021) 572 final) is a flagship initiative that forms part of the European Green Deal. It builds on the EU's Biodiversity Strategy for 2030 and includes objectives and targets for reforestation and afforestation of biodiverse forests, including a pledge to plant an additional 3 billion trees by 2030.

In 2018, there were 1.8 million km^2 of forests and other wooded land in the EU; this equated to 43.5 % of its total area. Just under one tenth of the EU's forests and other wooded land were located in a single NUTS level 2 region, namely, Pohjois- ja Itä-Suomi in Finland (164 591 km^2). Övre Norrland in Sweden (111 916 km^2) had the second largest area of forests and other wooded land, followed by two other expansive regions located in (northern) Sweden – Mellersta Norrland and Norra Mellansverige – 57 421 km^2 and 52 740 km^2 respectively. There were 12 more regions where the area of forests and other wooded land was greater than 20 000 km^2: they were concentrated in Nordic and Baltic Member States, but also included Croatia (only national data are available) and the Spanish regions of Castilla y León, Castilla-La Mancha, Andalucía and Aragón.

In 45 out of 229 NUTS level 2 regions for which data are available, forests and other wooded land covered more than half of the total regional area in 2018. Figure 12.2 shows that this share peaked in the northern Italian region of Liguria, where more than three quarters (77.9 %) of the total area was covered by forest and other wooded land. Most of the other regions covered by a high share of forests and other wooded land were Nordic regions already referred to above due to their considerable areas: for example, 72.5 % of the total area of Pohjois- ja Itä-Suomi was covered by forests and other wooded land. The island region of Corse in France and Zahodna Slovenija in Slovenia also featured among those regions where forests and other wooded land covered a high share of the total area.

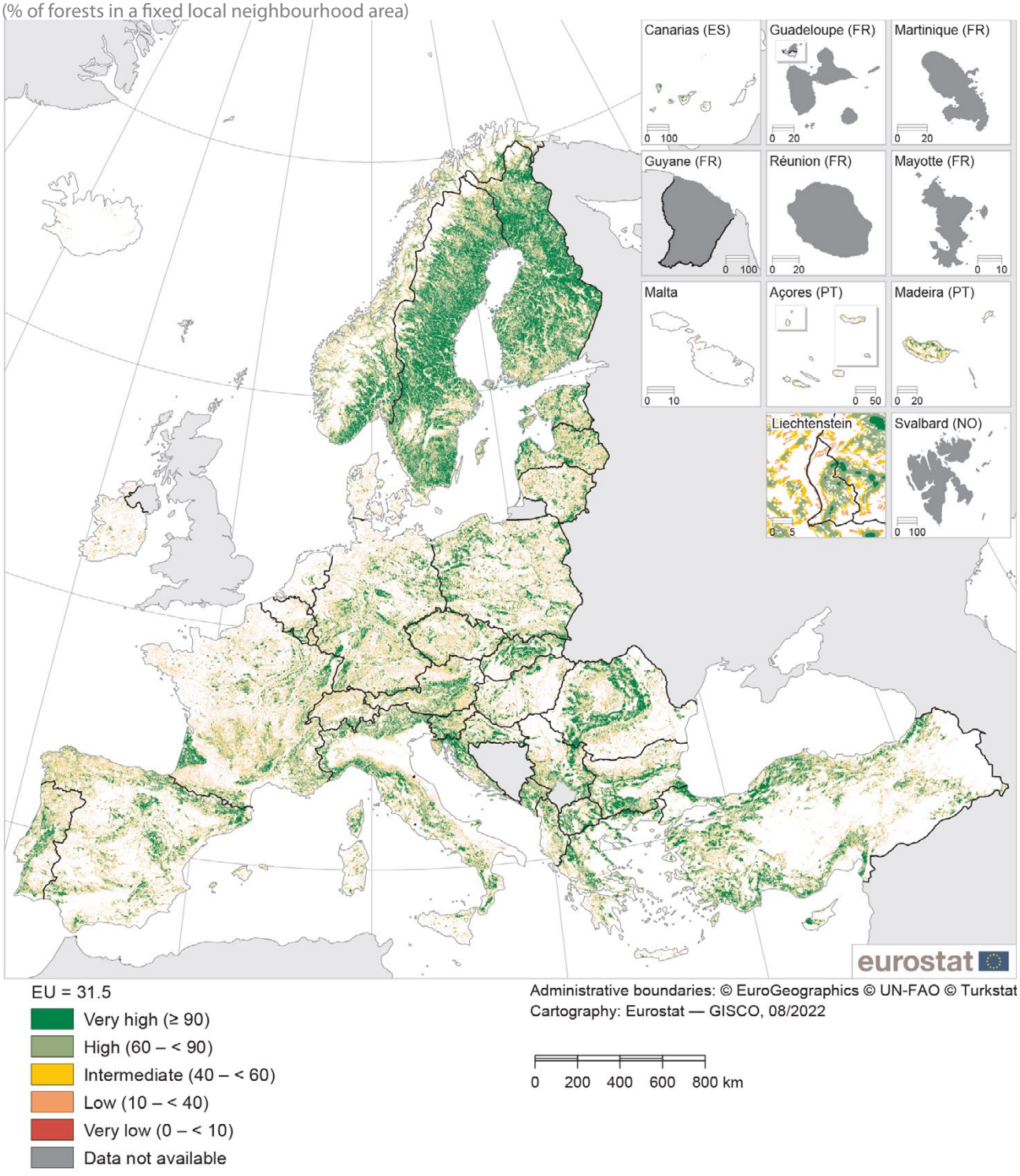
At the other end of the range, forests and other wooded land covered less than one tenth of the total area in 10 NUTS level 2 regions. These regions with single-digit shares were concentrated in lowland regions of the EU: six regions in the Netherlands, two regions in northern Belgium, and two predominantly urban regions in northern Germany. The lowest proportions of forests and other wooded land were recorded in the German region of Bremen (1.9 %) and the Dutch regions of Groningen (2.4 %) and Zeeland (1.5 %). These reflect, at least to some degree, the pressure on land use from population density and competing economic activities, as well as limits of administrative regional boundaries (such as in the case of Bremen).

Urban growth and other man-made/artificial elements – such as roads, pathways and fences – have led to natural habitats becoming increasingly fragmented. Forest fragmentation is generally considered as a major challenge for biodiversity: it may lead to the isolation and loss of species and degraded habitats. Nevertheless, the introduction of man-made elements such as roads may help the environment in some cases, for example to hinder the spread of forest fires or invasive alien species.

Map 12.4 shows the degree of forest connectivity in 2018 for a fixed, local observation scale of 529 hectares centred over each forest location. Connectivity is measured by forest area density, which is the proportion of forest area within the local observation area, expressed on a scale from 0–100 % (indicating increasing degrees of connectivity) and then grouped into five different connectivity ranges. Across the EU, some 31 % of the total forest area was classified as interior (in other words, very highly connected with a forest area density of at least 90 %). These very highly connected forest areas were particularly concentrated in the most remote parts of Finland and Sweden, and also included several regions in eastern EU Member States, for example, in Romania and Slovakia. An analysis by NUTS level 2 regions reveals that there were three regions where more than half of the total forest area was categorised as highly connected – Norra Mellansverige, Mellersta Norrland and Pohjois- ja Itä-Suomi – the same three that had the largest areas of forest and other wooded land in the EU.

At the other end of the range, a considerably lower share of the EU's forest area was classified as fragmented, with 12 % categorised as either patchy or rare (with a forest area density of less than 40 %). Particularly fragmented forest areas were found across Belgium, Denmark, Malta and the Netherlands, where forests were often characterised by mosaic patterns interspersed with other land uses; in Germany and France forest areas with a relatively high degree of forest fragmentation were also quite common. An analysis by NUTS level 2 regions reveals that there were 23 regions where more than half of the total forest area was categorised as patchy or rare. All of the forest area in Malta and Ciudad Autonoma de Melilla (Spain) was categorised as fragmented, while this was also the case for at least four fifths of the total forest area in Groningen, Zuid-Holland (both the Netherlands), Prov. Oost-Vlaanderen, Prov. West-Vlaanderen (both Belgium) and Bremen in Germany.

Map 12.4: Forest connectivity, 2018
(% of forests in a fixed local neighbourhood area)



Note: forest area density (FAD) is defined as the proportion of all forest pixels within a fixed local neighbourhood area (529 hectares).
Source: Corine landcover (CLC), Joint Research Centre (JRC), European Commission

Soil

Soil is a vital resource that provides a range of ecosystem services and an important factor in mitigating climate change, as it has the potential to store carbon. However, this capacity is heavily dependent on how land is used: natural habitats tend to act as carbon sinks. Changes in land cover and certain land use practices may lead to carbon losses. For example, deforestation, the conversion of grassland to cropland, draining peatlands, and intensive agriculture have been shown to lower the organic carbon content of soils. Additionally, when soils are sealed by urban or industrial developments there can be a total loss of carbon.

Soil also plays a key role in relation to biodiversity and the agricultural sector. The European Commission adopted an *EU Soil Strategy for 2030 – Reaping the benefits of healthy soils for people, food, nature and climate* (COM(2021) 699 final) in November 2021. It sets out a framework to protect and restore soils, while ensuring that they are used sustainably, with a long-term vision to achieve good soil health by 2050. The FAO is coordinating global initiatives on recarbonising global soils focusing on how soils can help to combat climate change.

Organic carbon is found in soil-dwelling flora and fauna, plant and animal remains at various stages of decomposition, and humus (a stable form of decomposed matter). The amount of carbon in a soil sample is expressed in terms of its mass, for example as grams of carbon per kilogram of soil. The concentration of organic carbon in most soils is generally around 2–5 %, but can be lower (for example in deserts) or higher (generally in natural grasslands). Soils with more than 20 % carbon are referred to as organic soils, better able to purify and absorb water, and provide plants with optimal rooting conditions. By contrast, soils with relatively low levels of organic carbon have less resilience to extreme weather events such as storms and droughts. Erosional processes such as rain splash, overland flow/sheet wash and rill formation can lead to the breakdown of soil structure and associated losses of soil carbon, or the potential loss of fertile topsoil, which may in turn have negative impacts on habitats and biodiversity.

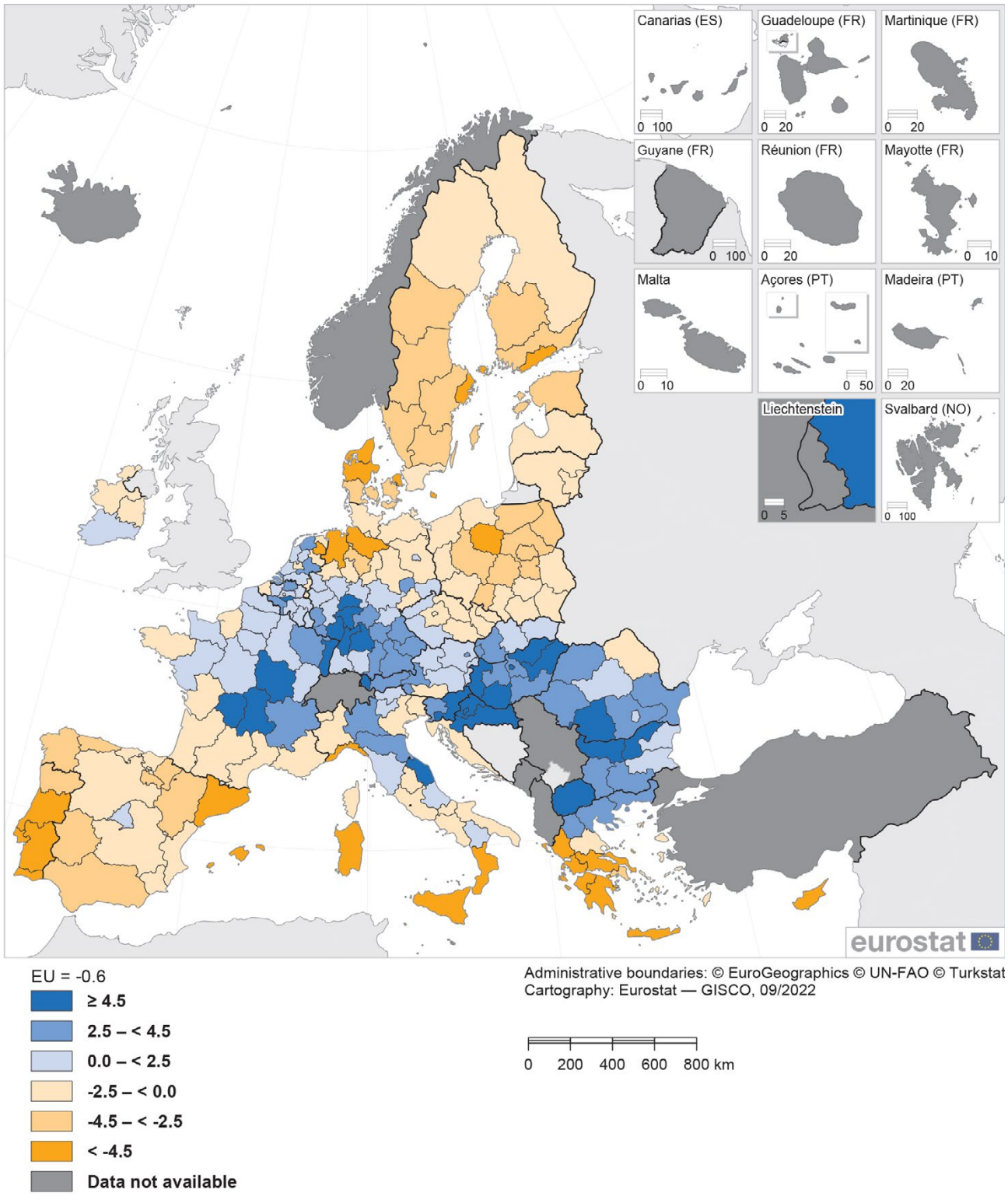
The indicator presented in Map 12.5 is based on laboratory measurements of soil samples collected in a harmonised manner from all over the EU as part of the LUCAS survey. The samples were generally taken covering a depth of 20 cm. The results have been used to model, at spatial scale, changes in soil organic carbon stocks for agricultural grasslands and croplands between 2009 and 2018 (note the information presented excludes forest areas and regions above 1 000 metres above sea level); negative values indicate a loss of organic carbon, which is considered as environmental degradation.

The highest overall levels of soil organic carbon stocks were located in northern and western regions of the EU, for example in the relatively wet and cool regions of Ireland, Finland and Sweden that are characterised by carbon-rich peatlands. The lowest levels were generally concentrated in drier and warmer regions, for example, southern regions around the Mediterranean or in upland regions characterised by relatively low levels of vegetation.

Changes in soil organic carbon stocks generally occur at a slow pace: organic carbon stocks in the EU's agricultural soils fell 0.6 % between 2009 and 2018. A fall in carbon stocks was observed in more than half of the NUTS level 2 regions for which data are available, with decreasing carbon stocks in 122 out of 231 regions (as shown by regions shaded in yellow). Map 12.5 shows that the most rapid falls in organic carbon stocks – at least 4.5 % (as shown by the darkest shade of yellow) – were principally concentrated in Mediterranean regions, as well as in the capital regions of the Nordic Member States. The largest reductions were recorded in the Greek regions of Dytiki Elláda and Kriti, the Spanish region of Illes Balears, and Cyprus, with declines in soil organic carbon stocks between 2009 and 2018 of 9 %.

By contrast, there were 107 regions where soil organic carbon stocks increased between 2009 and 2018 (as shown by the three shades of blue). These regions were quite diverse: some regions are composed of plains where the principal land use was for crops, such as in Hungary; others are hilly, such as Alsace in France or Vorarlberg in Austria; and some are urban – although it should be noted that in the latter only a relatively small part of the overall area is covered by agricultural croplands and grasslands.

Map 12.5: Overall change in soil organic carbon stock for agricultural soils, 2009–2018
(%, based on grams of carbon per kg of soil, by NUTS 2 regions)



Note: the indicator shows the changes in soil organic carbon stocks for grasslands and croplands between 2009 and 2018 covering a depth of 20 cm. Negative values indicate environmental degradation. Changes in soil organic carbon stocks generally occur slowly.

Source: Eurostat (LUCAS soil survey) and Joint Research Centre (JRC), European Commission. Ad hoc data extraction

Air pollution

Air pollution has the potential to harm both human health and the environment. It concerns the release into or the presence in the air of pollutants (particles or gases) and may be anthropogenic or of natural origin. Human-induced activities can lead to a considerable deterioration in air quality, for example, through agriculture, industrial processes (including electricity generation), as well as the burning of any solid fuel – whether of fossil or biogenic origin – and the generation or treatment of waste. Naturally occurring air pollution can result, among other sources, from volcanic eruptions, desert dust or forest fires.

Although air quality in the EU has generally improved in recent decades, some urban populations remain exposed to high concentrations of air pollutants, for example, as a result of residential combustion, industrial and transport activities. Air pollution can cause serious illnesses as fine particulate matter can be carried deep into the lungs where it can cause inflammation. Some of the most common causes of premature death attributed to air pollution include heart disease, stroke, lung disease, lung cancer, and asthma; note these illnesses also have an associated economic cost through lost working days and healthcare expenditure.

Fine particulate matter covers particles with a diameter of 2.5 micrometres or less (otherwise referred to as $PM_{2.5}$). The World Health Organization (WHO) established new global air quality guidelines to protect public health in September 2021: 5 µg/m^3 for $PM_{2.5}$, measured as an annual mean, reflecting new scientific evidence showing that air pollution harms human health even at relatively low concentrations. The EU's annual limit value is currently set at 25 µg/m^3, although the European Commission is in the process of revising the Ambient Air Quality Directives to, among others, align EU standards more closely to the WHO air quality guidelines.

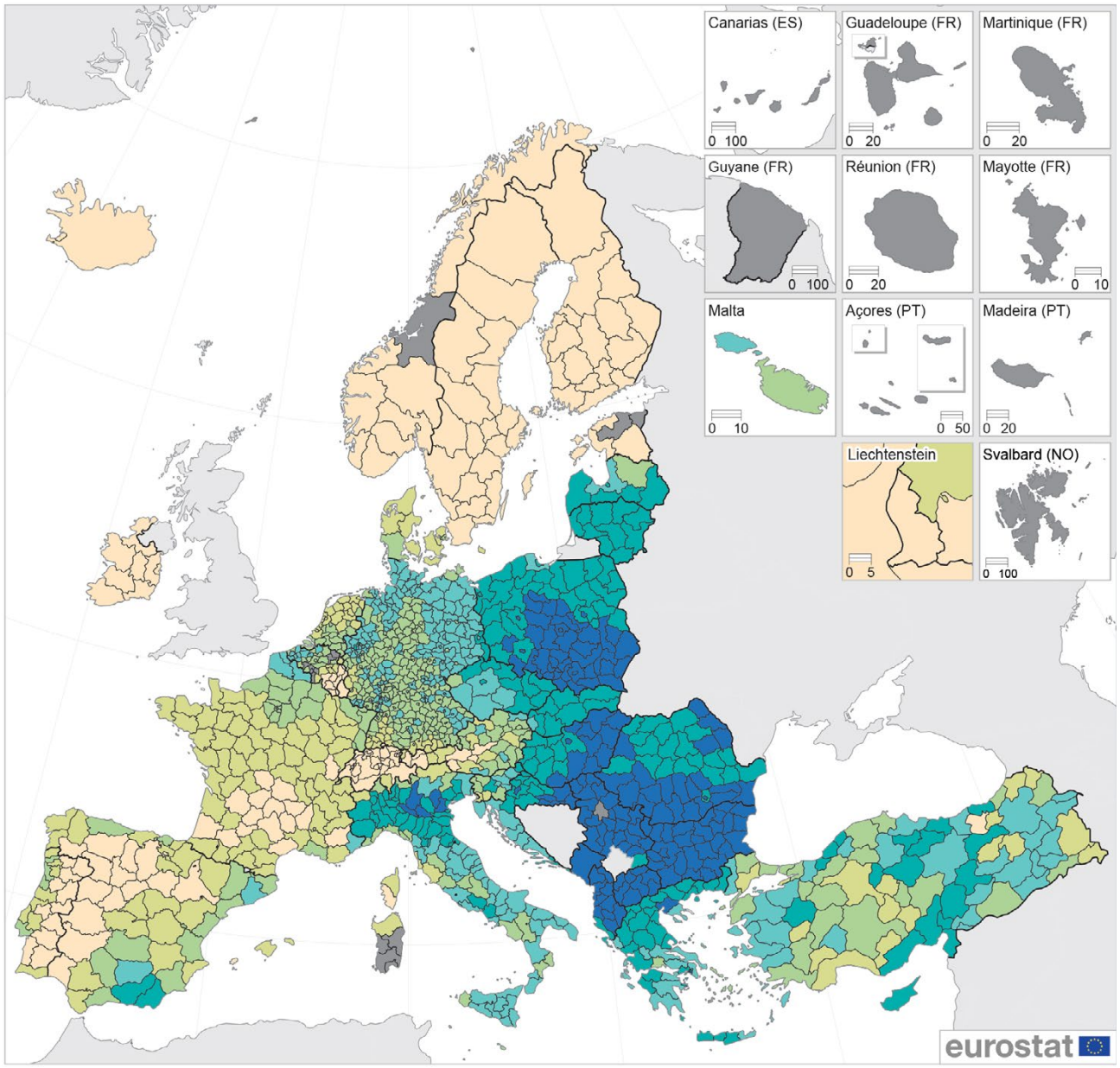
In 2019, the highest exposures (expressed as population-weighted concentration) to fine particulate matter ($PM_{2.5}$) were recorded in eastern and southern regions of the EU, principally across Bulgaria, Greece, Croatia, northern Italy, Poland and Romania. There were two NUTS level 3 regions where exposure levels were above 25.0 µg/m^3 – the EU's annual limit value – both were in southern Poland; Miasto Kraków (28.0 µg/m^3) and Katowicki (25.5 µg/m^3) in areas characterised by heavy industry. At the other end of the range, there were 32 regions where exposure levels were equal to or below the WHO's new air quality guideline level of 5.0 µg/m^3; the vast majority of these were in remote regions of Finland and Sweden, the only exceptions being Kesk-Eesti in Estonia, Lozère in France, Terras de Trás-os-Montes and Beira Baixa (both in Portugal).

The EEA estimates that 307 000 premature deaths were caused in the EU by fine particulate matter in 2019 and that more than half of these could be avoided if the EU had air pollution levels that were in line with the WHO's new guidelines. To tackle air pollution and achieve the EU's zero pollution vision for 2050, the European Commission has set an intermediate target to reduce premature deaths from exposure to particulate matter by at least 55 % by 2030 (as compared with 2005) and is preparing the revision of its air quality standards to align them more closely with the recommendations of the World Health Organization. Unsurprisingly, the highest counts of premature deaths associated with fine particulate matter were often in some of the most populous (predominantly urban) regions; many of these were located in southern EU Member States. The highest count was in Barcelona in Spain (3 943 premature deaths), followed by the Italian regions of Milano (3 466) and Roma (3 118); in each of these, high anthropogenic emissions and meteorological conditions favour the accumulation of air pollutants in the atmosphere.

While the absolute number of premature deaths and years of life lost due to exposure to fine particulate matter was highest in some of the most populous regions of the EU, the most significant impacts of air pollution were observed in eastern regions of the EU (see Map 12.6). The years of life lost due to exposure to particulate matter was heavily skewed insofar as it was higher than the EU average (762 per 100 000 inhabitants) in 330 out of 1 139 NUTS level 3 regions for which data are available. There were 117 regions in the EU where the years of life lost due to exposure to fine particulate matter was at least 1 200 per 100 000 inhabitants (as shown by the darkest shade of blue). They were concentrated in eastern regions of the EU, in Bulgaria, Croatia, Hungary, Poland and Romania; this group also included three regions in Greece (two of which formed part of the capital, the third being Thessaloniki) and five regions in northern Italy (three in Lombardia and two in Veneto). The highest values in the EU were recorded in the Bulgarian region of Vidin (2 211 years of life lost per 100 000 inhabitants), followed by Miasto Kraków in Poland (1 951) and the Bulgarian capital region of Sofia (stolitsa) (1 930).

In 2019, there were 111 regions in the EU where the years of life lost due to exposure to fine particulate matter was less than 440 per 100 000 inhabitants (as shown by the lightest shade of yellow). These regions were concentrated in Finland and Sweden, where every region had a very low impact of air pollution on human health. The impact was also relatively modest in several predominantly rural regions, for example, in southern Belgium, various regions across Ireland, in western Spain, south-west France, western Austria and interior regions of Portugal. The lowest values were recorded in four remote, northern Swedish regions – Västernorrlands län, Jämtlands län, Västerbottens län and Norrbottens län – as well as the Finnish archipelago of Åland.

Map 12.6: Years of life lost due to exposure to fine particulate matter ($PM_{2.5}$), 2019
(per 100 000 inhabitants, by NUTS 3 regions)



Source: European Environment Agency (EEA) and Eurostat (online data code: demo_r_pjangrp3)

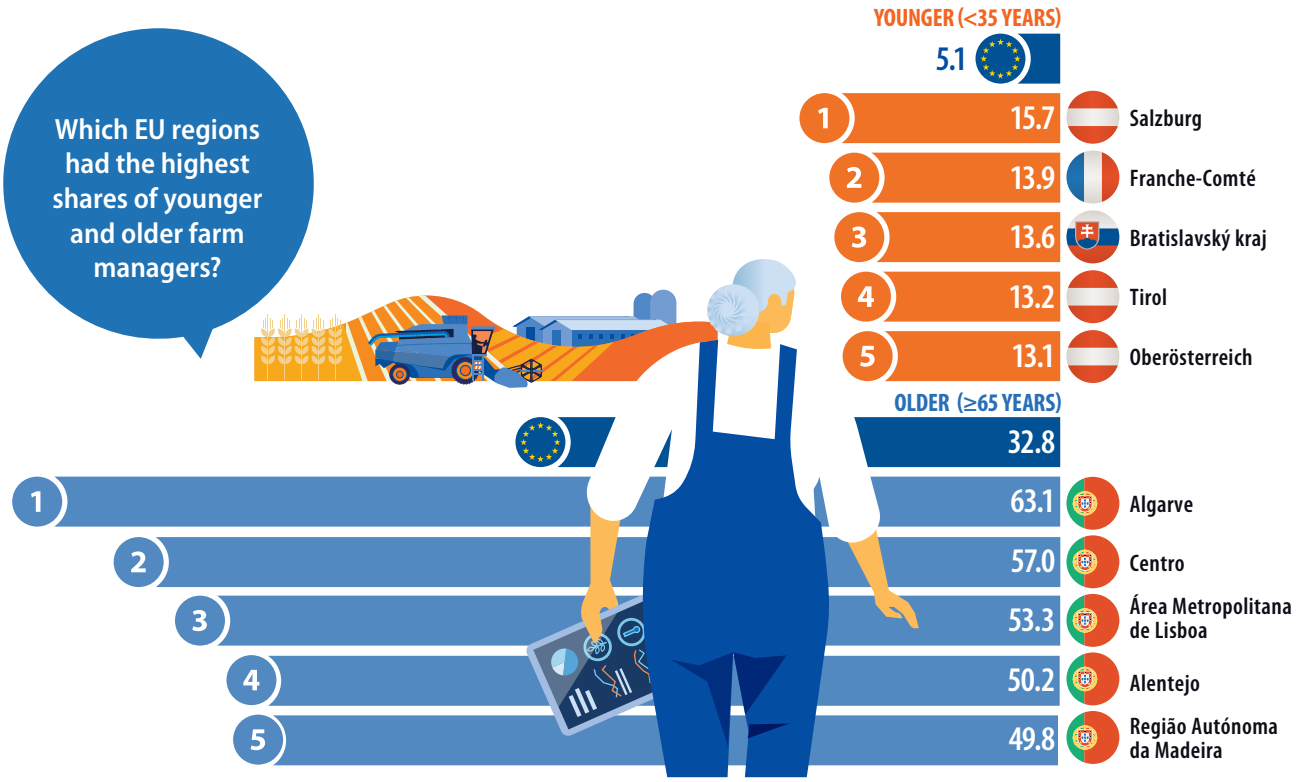
13. Agriculture

Agricultural products, food and culinary traditions are a major part of the European Union's (EU's) regional and cultural identity. This is, at least in part, due to a diverse range of natural environments, climates and farming practices that feed through into a wide array of agricultural products.

Around two fifths (38.2 %) of the EU's land is farmed: this underlines the important impact that farming can have on natural environments, natural resources and wildlife. Farmers in the EU are increasingly being encouraged to manage the countryside as a public good, so that the whole of society can benefit.

One of the characteristics of EU's farm managers presented here is their age. The EU is stepping up its efforts to encourage younger people into farming, by providing help to get their business off the ground with start-up grants, income support and benefits such as additional training. In 2016, three out of the five NUTS level 2 regions with the highest shares of younger farm managers (aged less than 35 years) were located in Austria. Salzburg (15.7 %) had the highest share – see the infographic – and was also the only region where organic farming accounted for more than half of the total utilised agricultural area. By contrast, there were four regions in Portugal where more than half of all farm managers were aged 65 years or over, with the highest percentage share in Algarve (63.1 %).

This chapter presents regional agricultural statistics focusing on three areas: the agricultural labour force, with a particular focus on younger farm managers; agricultural land use, the total area and the share of utilised agricultural area that is given over to permanent grassland and arable land; and economic accounts for agriculture – that provide an overall picture of the performance of agricultural activity – through the ratio of intermediate consumption to output and the share of total value added from agriculture.



(% of all farm managers, 2016)
Note: Ireland, Croatia and Lithuania, national data. Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (BE10), Praha (CZ01) and Berlin (DE30): younger farm managers, not available. Ciudad de Ceuta (ES63), Ciudad de Melilla (ES64), Mayotte (FRY5), Budapest (HU11), Pest (HU12), Warszawski stołeczny (PL91) and Mazowiecki regionalny (PL92): not available.

Source: Eurostat (online data code: ef_m_farmang)

Agricultural labour force

In 2016, there were 10.3 million farms in the EU; together they used 157 million hectares of land for agriculture. The EU's farm labour force was composed of 20.0 million persons. To take account of part-time and seasonal work, both of which are widespread in agriculture, labour input can be measured in annual work units (AWUs): one such unit corresponds to the input, measured in working time, of one person engaged in agricultural activities on a farm on a full-time basis over an entire year. On this basis, there were 9.0 million AWUs in the EU's labour force directly working on farms – be they farm owners/managers, family or non-family labour.

FARM MANAGERS

Farm managers are the people responsible for the normal daily financial and production routines of running a farm, such as what and how much to plant or rear and what labour, materials and equipment to employ. Often the farm manager is also the owner (otherwise referred to as the 'holder') of the farm but this need not be the case, especially when the farm has a separate legal identity.

The agriculture sector is characterised by slow generational renewal and a high average age of farm managers; these characteristics are widespread across most EU Member States, but particularly concentrated in some. Agriculture also takes many different forms across the EU: from large-scale, intensive farms that cover large swathes of land to very small, semi-subsistence holdings. There is often a difference in the ownership and management of these farms: the former may be owned by large enterprises that install professionally-trained managers, whereas the latter are more likely to be family-owned and run, often on a part-time basis. The vast majority of farms in the EU are very small and provide work for less than one full-time worker (an average 0.87 AWUs per farm). Many small farms are semi-subsistence farms, with farm managers continuing to work part-time long after normal retirement age, to provide in part for their own needs. Some farm holders may have difficulties in encouraging their offspring to take over family farms, as younger family members may have negative perceptions concerning careers in agriculture and prefer to look elsewhere for work in professions/occupations that provide more time for leisure and greater financial reward. Access to finance, land, capital and knowledge are also particular concerns for many young people considering working in agriculture.

Around 5 % of all farm managers in the EU were aged less than 35 years

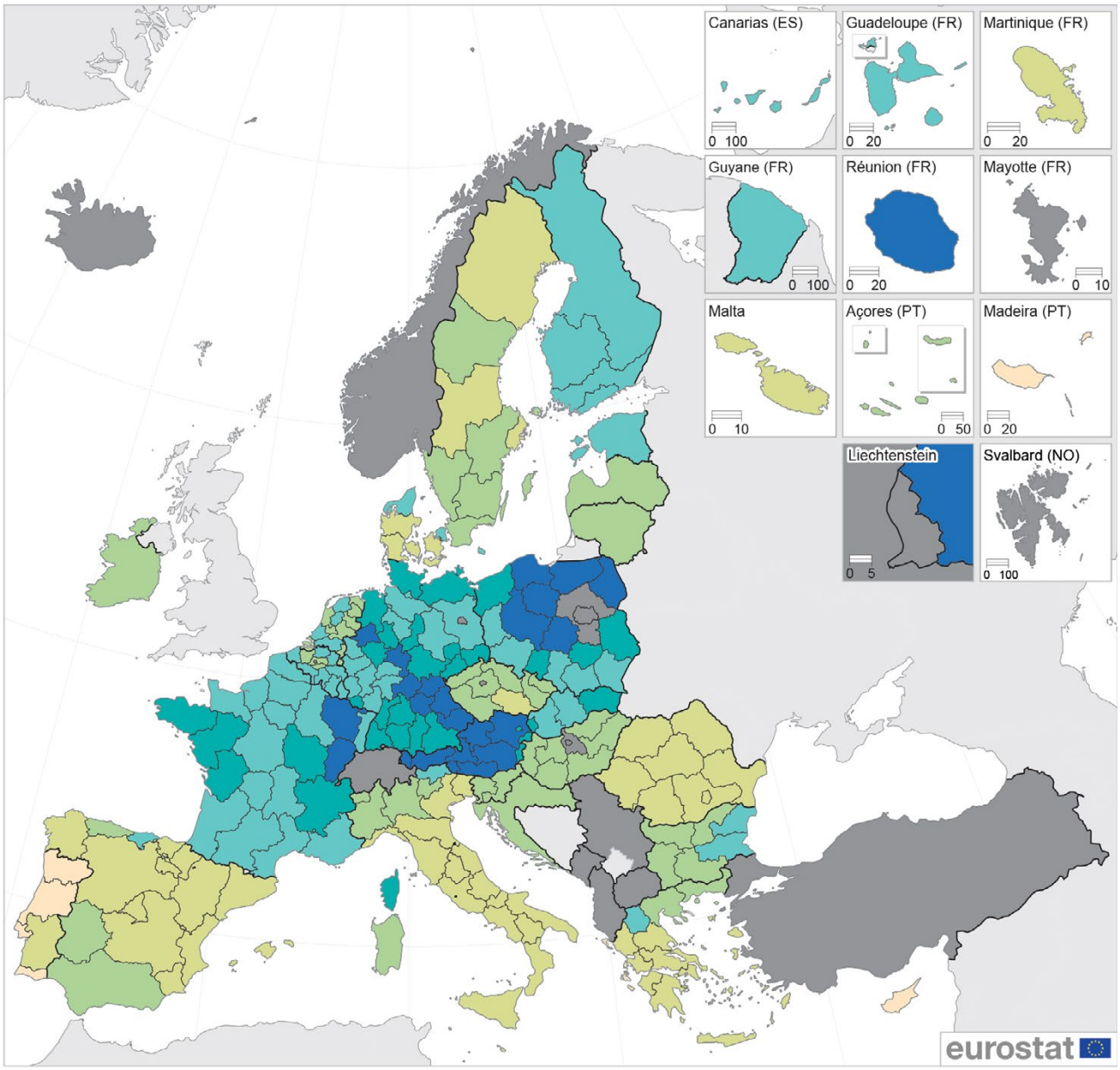
There were 528 000 younger farm managers — defined here as those aged less than 35 years — across the EU in 2016; note that the definition employed for younger farm managers is different to the general definition of youths that is utilised across most of this publication (people aged 16–29 years). Younger farm managers accounted for approximately 1 in 20 (or 5.1 %) of all farm managers in the EU. The share of younger farm managers was highest in Austria (12.2 %), while Slovakia (11.1 %) and Poland (10.2 %) were the only other EU Member States where younger farm managers accounted for a double-digit share. By contrast, younger farm managers accounted for less than 4.0 % of all farm managers in Finland, Spain, Malta, Greece, Romania and Denmark, and less than 2.0 % of all farm managers in Cyprus (1.3 %) and Portugal (1.9 %).

Although most of the EU population has settled into retirement by the age of 65, a relatively high share of farm managers continue to work beyond this age. In 2016, almost one third (32.8 %) of all farm managers in the EU were older farm managers – defined here as those aged 65 years or over. There were 3.4 million older farm managers in the EU, where the ratio of younger to older farm managers was approximately 1 : 6 (or 0.16).

Map 13.1 provides a more detailed analysis for the ratio of younger to older farm managers by NUTS level 2 regions; note that national data are presented for Ireland, Croatia and Lithuania in this section. The regional distribution of this ratio was heavily skewed, insofar as there were 162 regions with a ratio that was equal to or above the EU average of 0.16 in 2016, compared with 64 regions that had ratios below the EU average. This reflects, at least in part, the average size of farms, with very high numbers of relatively small farms concentrated in some southern and eastern regions of the EU.

In 2016, there were 34 regions across the EU where the ratio of younger to older farm managers was equal to or greater than 1.00 indicating that there were at least as many younger farm managers as there were older ones. Among these, there were 23 regions where the ratio of younger to older farm managers was equal to or greater than 1.20 (as shown by the darkest shade of blue in Map 13.1). They were concentrated in four EU Member States, principally in Germany, Austria (both seven regions) and Poland (six regions), while there were also three regions in France. The highest ratios of younger to older farm managers were recorded

Map 13.1: Ratio of younger to older farm managers, 2016
(by NUTS 2 regions)



Note: the map shows the ratio of younger farm managers (< 35 years) to older farm managers (≥ 65 years). Ireland, Croatia and Lithuania: national data.
Source: Eurostat (online data code: ef_m_farmang)

in Austria: Salzburg (3.94), Niederösterreich (2.14) and Oberösterreich (2.06) were the only NUTS level 2 regions where the number of younger farm managers was at least twice as high as the number of older farm managers. Note these figures reflect, at least to some degree, attitudes towards and the propensity of older farm managers to retire, with those aged 65 years or over accounting for less than 10.0 % of all farm managers in Finland (9.7 %), Germany (8.2 %) and Austria (7.3 %).

The infographic at the start of this chapter shows that close to one sixth (15.7 %) of all farm managers in Salzburg were aged less than 35 years. This was the highest share recorded across NUTS level 2 regions in 2016, followed by Franche-Comté in eastern France (13.9 %), Bratislavský kraj (the capital region of Slovakia; 13.6 %), and two other Austrian regions – Tirol (13.2 %) and Oberösterreich (13.1 %).

The ratio of younger to older farm managers was relatively low (less than 0.15) across most southern and several eastern regions of the EU in 2016 (as shown by the two lightest shades in Map 13.1). These included, among others, the vast majority of regions in Greece, Spain, Italy, Portugal and Romania, and the Mediterranean islands of Cyprus and Malta. This group also included three regions each from Denmark and Sweden as well as one region each from Czechia and France. There were seven regions in the EU where the ratio of younger to older farm managers was less than 0.05 (in other words, where for every younger farm manager there were more than 20 older farm managers). Five of these regions were in Portugal, where more than half (51.9 %) of all farm managers were aged 65 years or over. The lowest ratios (0.03) of younger to older farm managers were reported in the Portuguese regions of Algarve, Centro, Área Metropolitana de Lisboa and Região Autónoma da Madeira, and in Cyprus. The other two regions with a ratio of less than 0.05 were Ionia Nisia in Greece and Norte in Portugal.

TRAINED FARM MANAGERS

Aside from their vital role of providing inputs for food processing, the EU's farm managers are increasingly being asked to adapt their farming practices in relation to a range of subjects, such as animal welfare, protection of natural habitats and landscapes and other environmental aspects. To do so, farm managers and their workforces will likely need to reskill, among other things, to use emerging digital technologies, become data analysts and rural innovators.

A farm manager is considered to have full agricultural training if they have taken and completed a training course for the equivalent of at least two years full-time training after the end of compulsory education. The course – in agriculture, horticulture, viticulture, silviculture, pisciculture, veterinary science, agricultural technology or an associated subject – should be at an agricultural college, university or other institute of higher education.

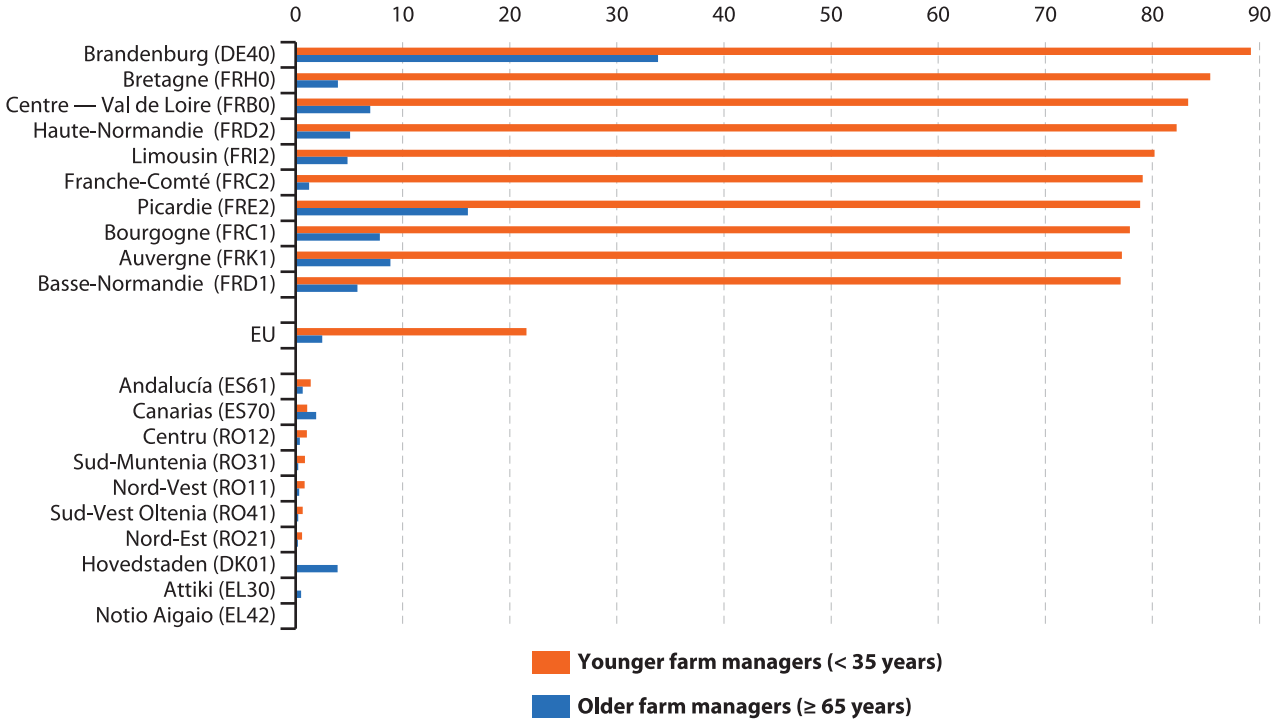
In 2016, of the 10.3 million farm managers in the EU, some 916 000 (or 8.9 %) had received full agricultural training. In other words, the overwhelming majority of farm managers had not received training in a higher education establishment. There were however considerable differences between EU Member States. For example, a majority (52.8 %) of farm managers in Luxembourg had completed full agricultural training, while this share was also higher than one third in Czechia (38.7 %) and France (34.9 %). By contrast, fully trained farm managers accounted for no more than 2.5 % of all farm managers in seven southern and eastern EU Member States (which were characterised by high shares of older farm managers): Portugal, Croatia, Spain, Malta, Greece, Cyprus and Romania (where the lowest share, 0.4 %, was recorded).

Younger farm managers are much more likely to be fully trained than older farm managers

In 2016, slightly more than one fifth (21.6 %) of the EU's younger farm managers (aged less than 35 years) had completed full agricultural training. The share of trained farm managers progressively falls as a function of age, with very few farm managers aged 65 years or over having completed full agricultural training (2.5 %). Agricultural training is likely, among other consequences, to have an influence on the environmental impact of farming (for example, a higher proportion of younger farm managers implement organic practices – see below for more details).

Figure 13.1 presents the NUTS level 2 regions that had the highest and lowest shares of trained younger farm managers; it also shows the equivalent share of trained older farm managers. There were 31 regions (out of the 204 for which data are available; national data for Ireland, Croatia and Lithuania), where a majority of younger farm managers in 2016 had received full agricultural training. They were mainly concentrated in France, although this group also included five regions in Germany, single regions from Czechia, Poland and Italy, as well as Luxembourg. At the top of the ranking, there was one German and four French regions where more than four out of every five younger farm managers had completed full agricultural training: Brandenburg (89.2 %), Bretagne (85.4 %), Centre — Val de Loire (83.3 %), Haute-Normandie (82.3 %) and Limousin (80.2 %). One of the most striking aspects of the top half of Figure 13.1 is the contrast between the shares of younger and older farm managers who were fully trained; it was common to find that the proportion of younger farm managers who had received full

Figure 13.1: Trained farm managers, 2016
(% of farm managers having completed full agricultural training, selected NUTS 2 regions)



Note: the figure shows the regions with the highest and lowest shares ranked on the share for younger farm managers. Ireland, Croatia and Lithuania: national data. Partial or no information for several regions (too many to document).

Source: Eurostat (online data code: ef_mp_training)

agricultural training was at least 10 times as high as the share recorded among older farm managers.

At the other end of the range, there were 50 NUTS level 2 regions across the EU where less than 10.0 % of all younger farm managers were fully trained. These regions were concentrated in southern and eastern regions of the EU, principally in Greece, Spain, Croatia (national data), Cyprus, Hungary and Romania. Among Nordic Member States, there were three Danish regions and two Finnish regions where less than 10.0 % of all younger farm managers were fully trained.

FARM MANAGERS IMPLEMENTING ORGANIC PRACTICES

Consumers are increasingly aware of the provenance of their food and of farming methods: this may explain, at least in part, why a growing proportion of EU farmers implement organic farming methods. In 2016, the EU's organic agricultural area covered 11.4 million hectares, which corresponded to a 7.1 % share of the total utilised agricultural area. Note the organic area includes the agricultural area fully converted and the agricultural area that is under conversion. Fresher national (rather than regional) data are available and indicate further growth in organic farming across the EU, as its share of the utilised agricultural area rose during four consecutive years to 9.1 % in 2020.

Across the EU, 6.6 % of younger farm managers (aged less than 35 years) implemented organic farming practices in 2016, which was more than twice as high as the corresponding share (2.9 %) for older farm manager (aged 65 years or over). As well as consumer demand, agricultural training is likely to have an influence on the implementation of organic farming methods.
Figure 13.2 shows those regions with the highest and lowest shares of younger farm managers implementing organic practices; it also shows the equivalent share for older farm managers. There were three NUTS level 2 regions (out of the 225 for which data are available; national data for Ireland, Croatia and Lithuania) where at least half of all younger farm managers implemented organic practices: Moravskoslezsko (55.6 %) and Severozápad (50.0 %) in Czechia and Salzburg (51.5 %) in Austria. Two more regions in Czechia – Jihozápad and Střední Morava – as well as Molise in Italy were the only other regions in the EU to report that more than one third of younger farm managers implemented organic practices.

Most of the EU Member States had at least one region with a relatively high share of younger farm managers implementing organic practices in 2016. However,

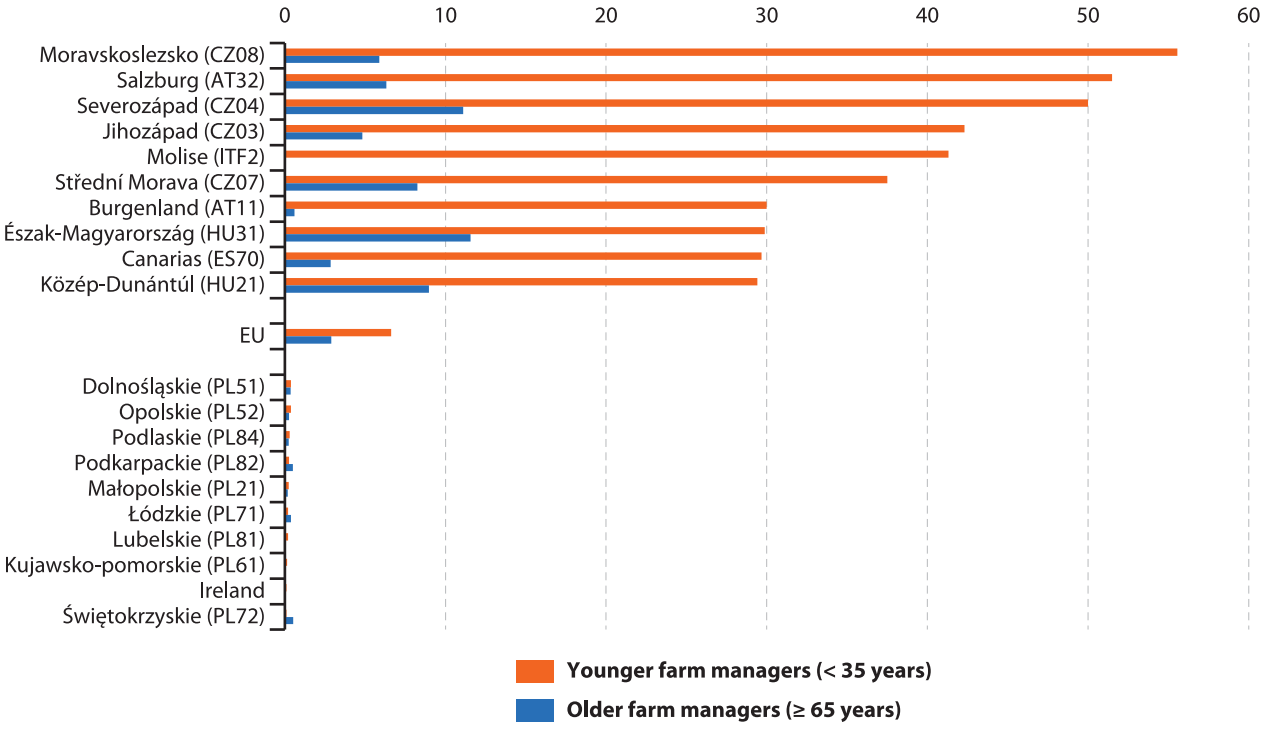
there were often considerable intra-regional differences in the adoption of organic farming practices ([1]), for example:

- there were three regions in the southern half of Belgium where 13.3–21.4 % of younger farm managers implemented organic practices (the highest share being in Prov. Luxembourg), whereas the shares recorded in the remaining Belgian regions were close to or below the EU average;
- Canarias in Spain had a high share (29.7 %) of younger farm managers implementing organic practices, with Principado de Asturias the only other region in Spain to record a double-digit share (10.4 %);
- the share of younger farm managers implementing organic practices in the southern Italian region of Molise (41.3 %) was considerably higher than in the neighbouring regions of Puglia (7.5 %), Campania (5.5 %) or Abruzzo (2.9 %).

At the other end of the range, there were 20 NUTS level 2 regions where no younger farm managers were implementing organic practices (these are not shown in Figure 13.2). Every region of Denmark, Poland, Portugal, Romania and Slovenia had a single-digit share of younger farm managers implementing organic practices in 2016; this was also the case in Ireland, Croatia and Lithuania (where only national data are available) and in Cyprus, Latvia, Luxembourg and Malta.

([1]) Aside from different regional patterns of youth engagement, the adoption of organic farming practices may reflect, among others, some types of farming/agricultural areas being easier to convert and/or incentives being offered to some farmers to convert their land when it is around nature zones / protected areas.

Figure 13.2: Farm managers implementing organic practices, 2016
(% of farm managers, selected NUTS 2 regions)



Note: the figure shows the regions with the highest and lowest shares ranked on the share for younger farm managers (excluding 20 regions where there were no younger farm managers implementing organic practices). Organic farming includes the agricultural areas that are fully converted and agricultural areas that are under conversion. Ireland, Croatia and Lithuania: national data. Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (BE10), Praha (CZ01), Berlin (DE30), Bremen (DE50), Ciudad de Ceuta (ES63), Ciudad de Melilla (ES64), Mayotte (FRY5), Budapest (HU11), Pest (HU12), Warszawski stołeczny (PL91) and Mazowiecki regionalny (PL92): partial data or not available.

Source: Eurostat (Farm structure survey)

Agricultural land use

Almost two fifths of the EU's area was accounted for by agricultural land

The EU is a considerable land mass with a diverse range of landscapes covering 4.1 million km^2. Agricultural land use is the most common form of primary land use, closely followed by forestry. In 2020, the utilised agricultural area of the EU – predominantly composed of arable land, grassland and permanent crops – accounted for 39.5 % of the EU's land area.

PERMANENT GRASSLAND

Permanent grassland can be found across most of the EU: it is prominent in those areas where livestock is the most popular farming system, or where the land is considered unsuitable for cultivation. Permanent grassland is land that is used for several consecutive years (normally five years or more) to grow herbaceous fodder, forage or energy purpose crops that can be used for grazing, mown for silage and hay, or used for renewable energy production; this land does not form part of farm crop rotation. Permanent grasslands can be extensively or intensively grazed: if farmed using low inputs, they have the potential to, among other results, provide a habitat for various forms of wildlife, maintain healthy and carbon-rich soils that are protected from erosion, produce high-quality forage for livestock.

In 2020, the EU's total utilised agricultural area was 162.2 million hectares (equivalent to 1.62 million km^2). The total area given over to permanent grassland in the EU was 50.7 million hectares. The size of the circles in Map 13.2 denotes the area of permanent grassland in each region ([2]). The largest areas of permanent grassland for NUTS level 1 regions were concentrated in Ireland, north-west Romania and a band of regions running from the west coast of the Iberian peninsula through the southern half of France to the Alps. Ireland and Centro in Spain had 4.1 million hectares and 3.8 million hectares of permanent grassland; these were, by far, the largest areas, accounting for 8.0 % and 7.4 % respectively of the EU total. The third largest area of permanent grassland was in Macroregiunea Unu in Romania (2.1 million hectares).

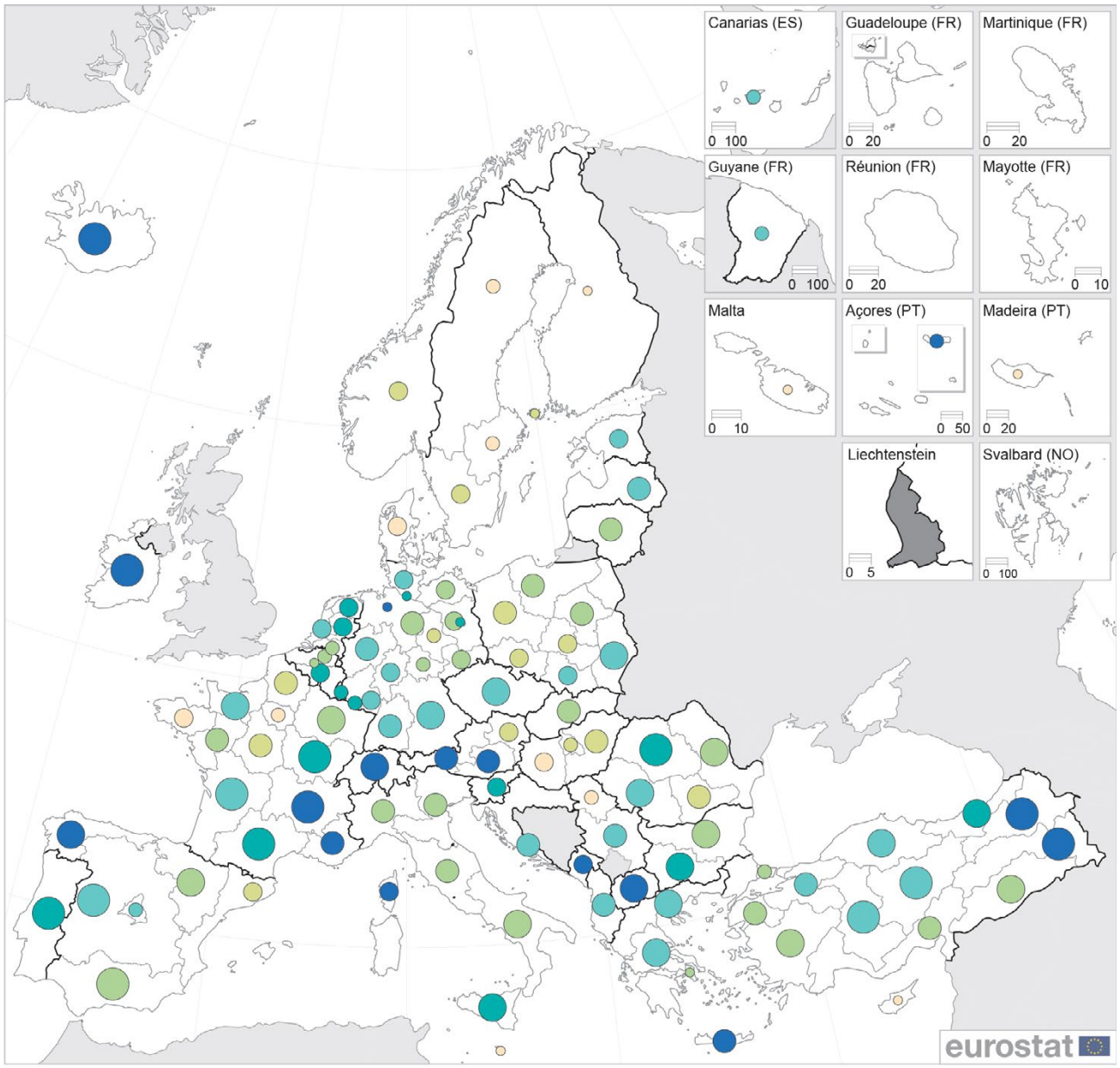
Almost one third (31.3 %) of the EU's utilised agricultural area was given over to permanent grassland in 2020. Map 13.2 also shows – through the use of colour – the relative importance of permanent grassland in terms of its share of the utilised agricultural area in each of the NUTS level 1 regions. The regional distribution of permanent grassland was slightly skewed, insofar as 40 out of the 92 regions for which data are available recorded a share that was above the EU average.

There were 10 NUTS level 1 regions where permanent grassland accounted for at least 58.5 % of the utilised agricultural area in 2020 (as shown by the darkest shade of blue in the map). These regions were located in western and southern EU Member States, reflecting climatic, soil and topographical conditions that have given rise to a range of farming practices that are based around livestock products. Ireland, Noroeste (Spain), Auvergne-Rhône-Alpes (France), Südösterreich, Westösterreich (both Austria) and Região Autónoma dos Açores (Portugal) are characterised by lush, green pastures, whereas Nisia Aigaiou, Kriti (Greece), Corse and parts of Provence-Alpes-Côte d'Azur (both France) have more arid conditions.

The highest share of utilised agricultural area given over to permanent grassland was recorded in Ireland (90.1 %), underlining that Irish agriculture is largely concentrated on cattle or sheep grazing for the production of milk or meat. The island region of Corse in France had the second highest share, as permanent grassland accounted for 89.7 % of its utilised agricultural area; livestock farming in this region is characterised by meat production from cattle as well as milk and cheese production from sheep and goats.

([2]) Note that, to some degree, these absolute values for the areas being farmed reflect the size of the underlying administrative areas of different EU regions.

Map 13.2: Permanent grassland, 2020
(by NUTS 1 regions)



(as % of utilised agricultural area)
EU = 31.3

- ≥ 58.5
- 42.0 – < 58.5
- 27.5 – < 42.0
- 19.0 – < 27.5
- 12.0 – < 19.0
- < 12.0
- Data not available

(1 000 hectares)
EU = 50 725

- ≥ 1 200
- 700 – < 1 200
- 325 – < 700
- 175 – < 325
- 20 – < 175
- < 20

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 07/2022

0 200 400 600 800 km

Source: Eurostat (online data code: apro_cpshr)

ARABLE LAND

Arable land is land that is worked (ploughed or tilled) regularly, generally under a system of crop rotation. It includes land that is used for the production of a wide range of crops for human and animal consumption including cereals, dry pulses and protein crops, root crops, industrial crops (like oilseeds), plants harvested green and vegetables; note this category excludes permanent crops like fruits, grapes, or olives.

Over time, arable farmers have generally adopted more intensive farming practices as they strive for higher yields. However, potential land savings that could have been made from these efficiency gains have, to some degree, been offset by population growth and shifts in dietary patterns. As such, the global area under crops has continued to expand, often preceded by deforestation, with land clearing contributing to global greenhouse gas emissions and biodiversity loss.

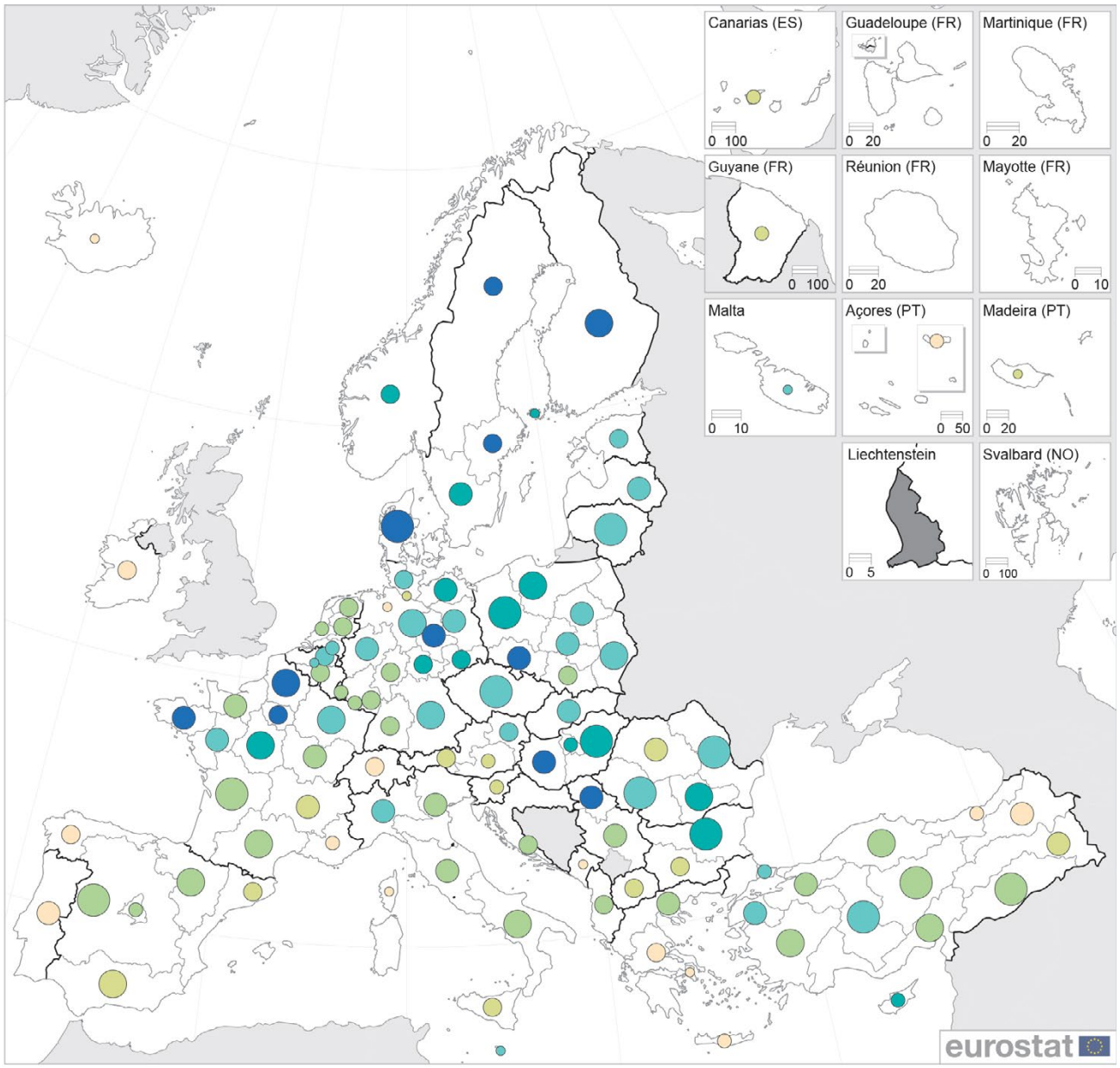
In 2020, some 98.8 million hectares or 60.9 % of the EU's total utilised agricultural area was given over to arable land. The regional distribution of arable land was slightly skewed, insofar as 50 out of the 92 regions for which data are available recorded a share that was above the EU average.

There were 10 NUTS level 1 regions with at least 2.24 million hectares of arable land in 2020 (as shown by the largest circles in Map 13.3); they were principally concentrated in eastern EU Member States. The largest area of arable land was in the Spanish region of Centro (6.6 million hectares, or 6.6 % of the EU total), followed by the eastern Romanian region of Macroregiunea Doi (3.0 million hectares) and the Bulgarian region of Severna i Yugoiztochna Bulgaria (2.9 million hectares) ([3]). The remaining seven regions included Nouvelle-Aquitaine (France), Makroregion północno-zachodni (Poland), Macroregiunea Patru (Romania), Alföld és Észak (Hungary), as well as Czechia, Denmark and Lithuania.

Arable land accounts for a majority of the utilised agricultural area in most of the EU Member States. The relative importance of arable farming was particularly high in Manner-Suomi (Finland), Ile-de-France (the capital region of France) and Denmark; these were the only NUTS level 1 regions where arable land accounted for at least 90.0 % of the utilised agricultural area. There were seven other regions where the share of arable land was at least 84.0 % (as shown by the darkest shade of blue in Map 13.3): Norra Sverige, Östra Sverige (both Sweden), Bretagne, Hauts-de-France (both France), Dunántúl (Hungary), Makroregion południowo-zachodni (Poland) and Sachsen-Anhalt (Germany).

([3]) As noted above, these high absolute values may reflect, at least to some degree, the underlying administrative areas of different EU regions.

Map 13.3: Arable land, 2020
(by NUTS 1 regions)



Note: includes arable land for crops such as cereals, dry pulses, root crops, industrial crops (like oilseeds), plants harvested green from arable land and vegetables, as well as fallow land. Excludes land for permanent crops like fruits, grapes, or olives.

Source: Eurostat (online data code: apro_cpshr)

Economic accounts for agriculture

Agriculture is an economic activity. The economic accounts for agriculture provide an overall picture of the performance of agricultural activity regardless of the 'industry' ([4]) in which it originated.

INTERMEDIATE CONSUMPTION

At the start of the production process, agricultural holdings generally have to make purchases of goods and services that are used as inputs; among other things, they buy items such as fuel, seeds, fertilisers, plant protection products, animal feedingstuffs or veterinary services. The expenditure on these non-labour inputs ([5]) is termed 'intermediate consumption'. Across the EU, intermediate consumption of agriculture was valued at €238.3 billion in 2019. This was equivalent to 59.2 % of the gross value of agricultural output

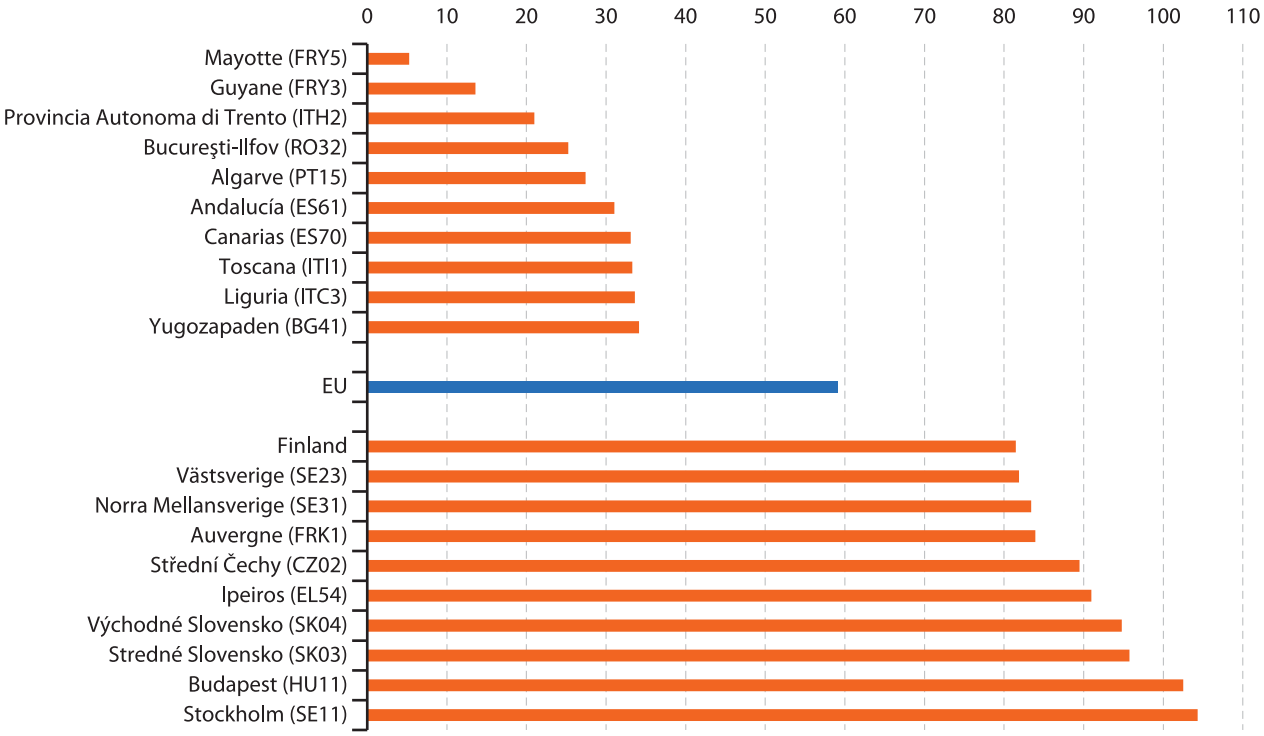
Figure 13.3 shows the ratio of intermediate consumption to output within the agricultural industry for selected NUTS level 2 regions. Excluding the atypical cases of the French outermost regions of Mayotte and Guyane, most of the regions with relatively low ratios of intermediate consumption to output in 2019 were concentrated in southern or eastern region of the EU. There were five NUTS level 2 regions where intermediate consumption represented between one quarter and one third of output: the capital region of Bucureşti-Ilfov in Romania, Algarve in Portugal, Andalucía and Canarias in Spain, and Toscana in Italy. This ratio was even lower in the aforementioned outermost French regions and in the northern Italian region of Provincia Autonoma di Trento (21.0 %). The relatively low level of intermediate consumption in these regions likely reflects the nature of their agricultural industries, with relatively small (often semi-subsistence) farm holdings predominating, whereby farms operate with little capital and are labour intensive.

In 2019, there were two capital regions – Stockholm in Sweden and Budapest in Hungary – where this ratio was greater than 100 %, in other words, where intermediate consumption was higher than output; note that agriculture accounts for a tiny proportion of overall economic activity in these regions – see Map 13.4. Such high ratios are not sustainable in the long-term. The ratio of intermediate consumption to output was also very high in two Slovak regions – Stredné Slovensko (95.8 %) and Východné Slovensko (94.8 %) – while Ipeiros in Greece (91.0 %; 2018 data) was the only other region to record a ratio of more than 90 %.

([4]) Since, according to ESA 2010, an industry comprises a group of units which carry out as their principal activity the same or similar types of activity, the definition of the agricultural industry in the EAA depends on the identification of the characteristic activities and units in that industry. The resultant selection of characteristic agricultural activities and units may lead to some differences between the EAA agricultural industry accounts and the national accounts. [Regulation (EC) 138/2004 Annex I. paragraph 1.19].

([5]) Excluding fixed assets whose consumption is recorded as fixed capital consumption. [Regulation (EC) 138/2004 Annex I. paragraph 2.089].

Figure 13.3: Ratio of intermediate consumption to output in agriculture, 2019
(%, selected NUTS 2 regions)



Note: the figure shows the regions with the lowest and highest shares. Belgium: NUTS level 1. Croatia, Lithuania, Poland, Slovenia and Finland: national data. Greece: 2018. Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest (BE1) and Praha (CZ01): not available. Ciudad de Ceuta (ES63) and Ciudad de Melilla (ES64): no agricultural activity.

Source: Eurostat (online data codes: agr_r_accts and aact_eaa01)

GROSS VALUE ADDED FROM AGRICULTURE

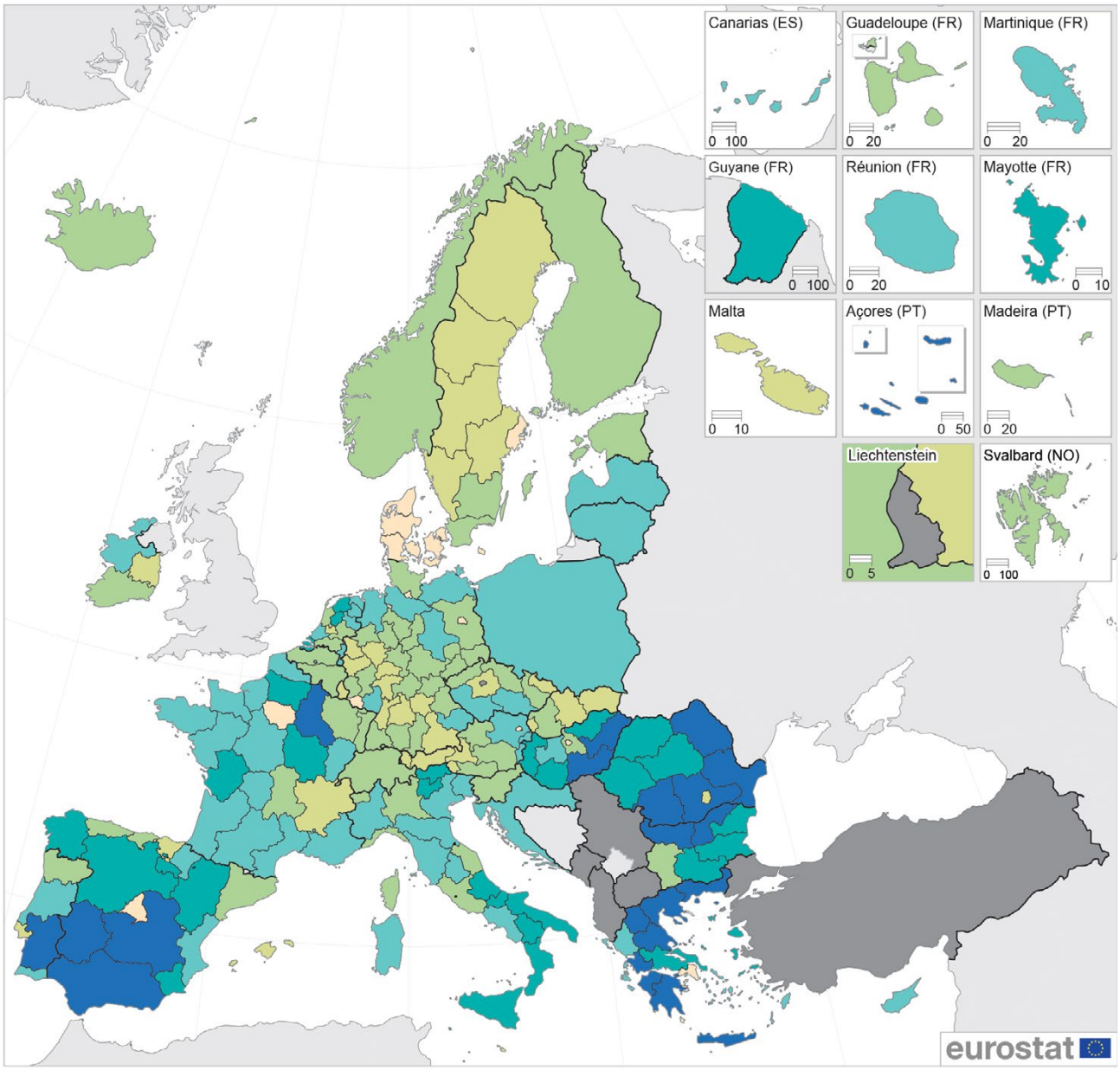
The gross value added of the 10.3 million farms active in the EU together was €180.7 billion in 2019. To put this into context, this was 1.4 % of the value added from all activities. Value added is the difference between the value of output and intermediate consumption, adjusted for taxes less subsidies on products.

Map 13.4 shows that agriculture's contribution to regional value added was generally quite low. However, there were a number of principally rural regions where its economic importance was higher; these were concentrated in southern and eastern regions of the EU. In some cases, these were characterised by fertile plains ideal for growing crops.

In 2019, there were 21 NUTS level 2 regions (note that the statistics presented in this section relate to NUTS level 1 for Belgium, while national data are shown for Croatia, Lithuania, Poland, Slovenia and Finland) where gross value added from agriculture accounted for at least 6.0 % of total economic performance (as shown by the darkest shade of blue). The highest shares were recorded in two Greek regions – Thessalia (12.4 %) and Peloponnisos (11.4 %) – and Severozapaden in Bulgaria (12.2 %); they were the only three regions to report that agriculture had a double-digit share of regional economic performance. The next highest shares were in the southern Portuguese region of Alentejo (9.1 %) and two (other) mainland regions of Greece: Dytiki Elláda (8.7 %) and Dytiki Makedonia (8.4 %). Note that Champagne-Ardenne in France – which is a major producer, among other products, of cereals, sugar beet, grapes and vegetables – was the only region from western or northern EU Member States to be present within this group; its agricultural industry contributed 7.5 % to regional gross value added.

The economic importance of agriculture was relatively low in most capital regions of the EU, where land is at a premium and service industries tend to predominate; this reflects, at least to some degree, the administrative boundaries that are used to demarcate regions. In the capital regions of Germany, Hungary, Austria and Sweden, gross value added from agriculture accounted for less than 0.1 % of economic activity in 2019; this was also the case for the German region of Bremen.

Map 13.4: Gross value added from agriculture, 2019
(% of the economy's gross value added, by NUTS 2 regions)



Note: Belgium, NUTS level 1. Croatia, Lithuania, Poland, Slovenia, Finland, Norway and Switzerland: national data. Greece and Switzerland: 2018.
Source: Eurostat (online data codes: agr_r_accts, nama_10r_3gva and aact_eaa01)

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