# Regional Innovation Scoreboard 2019

Innovation

# Regional **Innovation**
# Scoreboard 2019

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# Executive summary

This 9th edition of the Regional Innovation Scoreboard (RIS) provides a comparative assessment of performance of innovation systems across 238 regions of 23 EU Member States, Norway, Serbia, and Switzerland. In addition, Cyprus, Estonia, Latvia, Luxembourg and Malta are included at the country level, as in these countries NUTS 1 and NUTS 2 levels are identical to the country territory.

The RIS accompanies the European Innovation Scoreboard (EIS), which assesses the performance of national innovation systems. Where the EIS provides an annual benchmark of the innovation performance of Member States, as well as other European countries and regional neighbours, regional innovation benchmarks are less frequent and less detailed due to a general lack of innovation data at the regional level. The Regional Innovation Scoreboard addresses this gap by providing statistical facts on regions' innovation performance.

## Regional performance groups

Similar to the EIS, where countries are classified into four innovation performance groups, Europe's regions have been classified into similar groups of regional Innovation Leaders (38 regions), regional Strong Innovators (73 regions), regional Moderate Innovators (97 regions), and regional Modest Innovators (30 regions). A more detailed breakdown of these performance groups is obtained by splitting each group into a top one-third (assigned with a '+'), middle one-third, and bottom one-third (assigned with a '-') regions (shown on the map below). The most innovative regions will be 'Innovation Leaders +', and the least innovative regions will be 'Modest – Innovators'. Five countries have regions in more than two different performance groups, and 13 countries have regions in four or more different performance sub-groups.

## The most innovative regions are typically in the most innovative countries

The Innovation Leaders perform well on all indicators, in particular on those indicators measuring the performance of their research system and business innovation. All Regional Innovation Leaders belong to countries identified as Innovation Leaders or as Strong Innovators in the European Innovation Scoreboard, and almost all Regional Moderate and Modest Innovators belong to countries identified as Moderate and Modest Innovators in the European Innovation Scoreboard. However, regional 'pockets of excellence' can be identified in some Moderate Innovator countries (for instance, *Praha (Prague)* in Czechia, *Kriti (Crete)* in Greece, and *Friuli-Venezia Giulia* in Italy).

## Rank results revealed: Helsinki-Uusimaa most innovative region in the EU

The most innovative region in Europe is *Zürich* in Switzerland, followed by *Ticino* (Switzerland). *Helsinki-Uusimaa* (Finland) is the most innovative region in the EU and can be found in third place overall, followed by *Stockholm* (Sweden) ranked fourth and *Hovedstaden* (Denmark) in fifth place.

## For most regions, innovation performance has improved over time

Innovation performance has shown a net improvement in 159 regions during the nine-year observation period in the RIS. The share of regions with positive performance change is highest for the Moderate Innovators (80%) and lowest for the Modest Innovators (45%). Performance has increased for all regions in Austria, Belgium, Finland, Italy, Lithuania, the Netherlands, Norway, Portugal, Serbia and the United Kingdom. Performance has decreased for 79 regions including all regions in Romania and Slovenia, and for most regions in Bulgaria, Denmark, Germany and Switzerland.

## Steady performance among top regions and convergence of others

Over time, there has been a process of convergence in regional performance with decreasing performance differences between regions, in particular due to declining performance gaps between the Innovation Leaders, Strong Innovators and Moderate Innovators, but with increasing performance gaps for the Modest Innovators. There have been relatively few fluctuations in the top-25 best performing regions since 2011, with 17 regions consistently being in this group during the period. Of the top-25 regions in 2019, seven regions come from each of Switzerland and Germany, four from Sweden, two each from the Netherlands and Norway, and one each from Denmark, Finland and the United Kingdom.

## RIS methodology

The RIS 2019 replicates the EIS methodology used at national level to measure performance of regional systems of innovation. The RIS 2019 uses data for 238 regions across Europe for 17 of the 27 indicators used in the EIS 2019. Compared to the RIS 2017, the number of indicators has decreased as no recent regional data for the share of medium and high-tech product exports are available. Data are available for 2017 for six indicators, 2016 for 10 indicators and 2015 for one indicator. Regional coverage has improved for Bulgaria (from 2 to 6 regions) as NUTS 2 data have become available for more indicators. A revision of the NUTS classification has also changed the number of regions for France (from 9 to 14), Hungary (from 7 to 8), Ireland (from 2 to 3), Lithuania (from 0 to 2) and Poland (from 16 to 17).
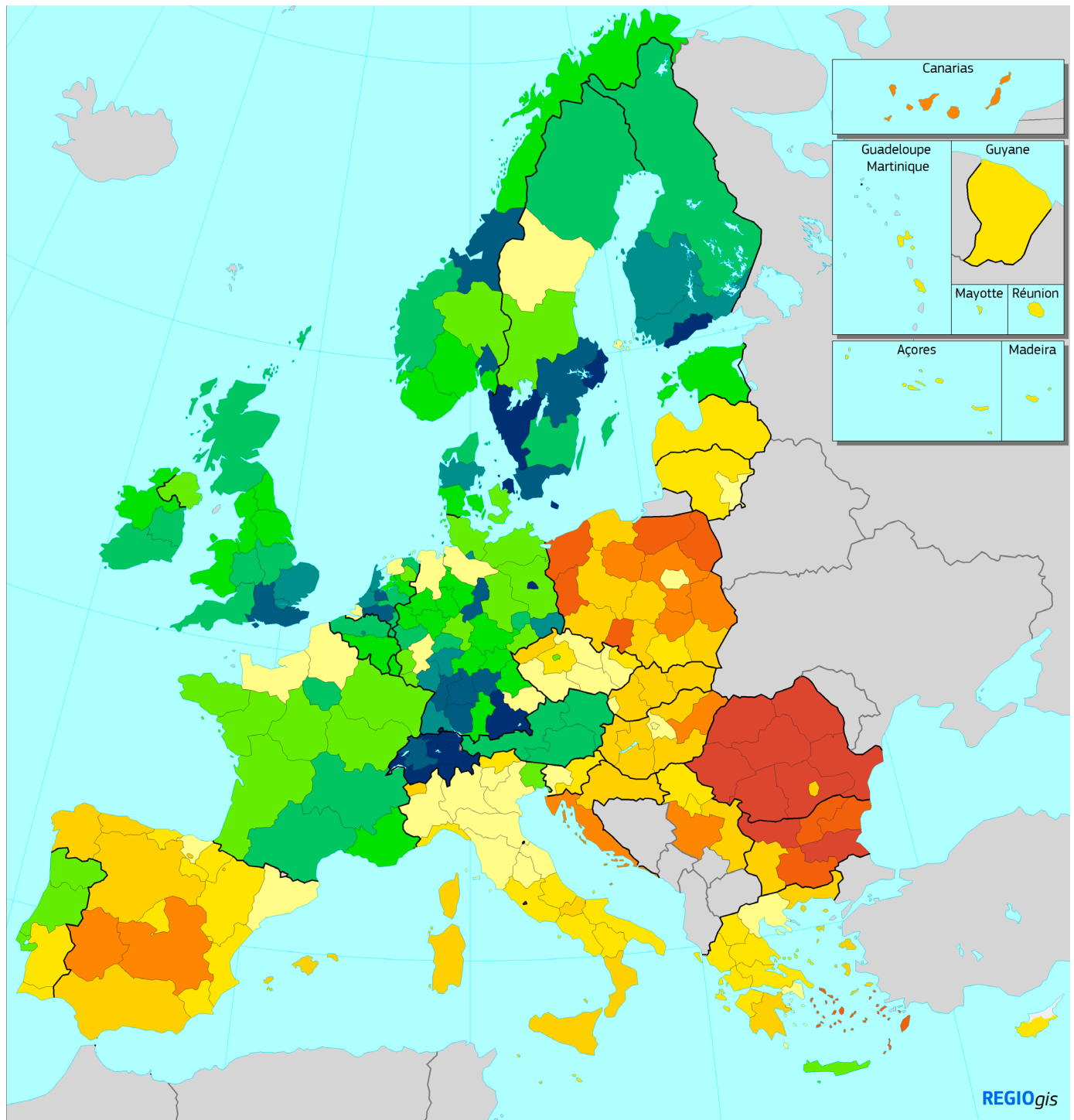
**Regional performance groups**

- Modest −
- Modest
- Modest +
- Moderate −
- Moderate
- Moderate +
- Strong −
- Strong
- Strong +
- Leader −
- Leader
- Leader +

Source: European Commission – Regional Innovation Scoreboard 2019

REGIO*gis*

Canarias

Guadeloupe
Martinique

Guyane

Mayotte | Réunion

Açores | Madeira

*For Cyprus, Estonia, Latvia, Luxembourg and Malta, performance group membership is identical to that in the EIS 2019 report. For these countries, the corresponding colour codes for middle one-third regions have been used.*

# 1. Introduction

The 2019 Regional Innovation Scoreboard (RIS) is a regional extension of the 2019 European Innovation Scoreboard (EIS). The EIS provides a comparative assessment of the performance of innovation systems at the country level of the EU Member States, other European countries and regional neighbours. Innovation performance is measured using a composite indicator – the Summary Innovation Index – which summarises the performance based on 27 indicators. These indicators are grouped into four main types – Framework conditions, Investments, Innovation activities, and Impacts – and 10 innovation dimensions. The EIS measurement framework is presented in **Table 1**.

## Table 1: Measurement framework of the 2019 European Innovation Scoreboard

FRAMEWORK CONDITIONS
Human resources
      1.1.1 New doctorate graduates
      1.1.2 Population aged 25-34 with tertiary education
      1.1.3 Lifelong learning
Attractive research systems
      1.2.1 International scientific co-publications
      1.2.2 Top-10% most cited publications
      1.2.3 Foreign doctorate students
Innovation-friendly environment
      1.3.1 Broadband penetration
      1.3.2 Opportunity-driven entrepreneurship
INVESTMENTS
Finance and support
      2.1.1 R&D expenditure in the public sector
      2.1.2 Venture capital expenditures
Firm investments
      2.2.1 R&D expenditure in the business sector
      2.2.2 Non-R&D innovation expenditures
      2.2.3 Enterprises providing training to develop or upgrade ICT skills of their personnel
INNOVATION ACTIVITIES
Innovators
      3.1.1 SMEs with product or process innovations
      3.1.2 SMEs with marketing or organisational innovations
      3.1.3 SMEs innovating in-house
Linkages
      3.2.1 Innovative SMEs collaborating with others
      3.2.2 Public-private co-publications
      3.2.3 Private co-funding of public R&D expenditures
Intellectual assets
      3.3.1 PCT patent applications
      3.3.2 Trademark applications
      3.3.3 Design applications
IMPACTS
Employment impacts
      4.1.1 Employment in knowledge-intensive activities
      4.1.2 Employment fast-growing enterprises of innovative sectors
Sales impacts
      4.2.1 Medium and high tech product exports
      4.2.2 Knowledge-intensive services exports
      4.2.3 Sales of new-to-market and new-to-firm innovations

Regions are important engines of economic development and measuring innovation performance at the regional level has become ever more important. Regional Systems of Innovation have become the focus of many academic studies and policy reports.[1] Economic literature has identified three stylized facts: 1) innovation is not uniformly distributed across regions, 2) innovation tends to be spatially concentrated over time, and 3) even regions with similar innovation capacity have different economic growth patterns. However, attempts to monitor Regional Systems of Innovation and regions' innovation performance are severely hindered by a lack of regional innovation data.

The RIS addresses this gap and provides statistical facts on regions' innovation performance. Regional innovation performance is measured using a composite indicator – the Regional Innovation Index (RII) – which summarizes the performance on 17 indicators. The RIS 2019 implements the measurement framework of the EIS 2017. Compared to the RIS 2017, regional data availability has decreased as regional data for the indicator measuring the share of medium and high-tech products exports have become too old and the indicator is therefore no longer used.

Section 2 discusses the availability of regional data, the indicators that are used for constructing the Regional Innovation Index, and the regions which are included in the RIS 2019. Section 2 also discusses the indicators that will be included in the regional profiles to identify structural differences between regions. **Annex 4** provides an example of a regional profile for Brussels. Profiles for all 238 regions are available on the RIS website: http://ec.europa.eu/growth/industry/innovation/facts-figures/regional_en.

Section 3 presents results for the Regional Innovation Index and group membership in four distinct regional innovation performance groups. Section 3 also discusses performance trends over time. Section 4 shows performance maps and the best performing regions for each indicator. Section 5 discusses the full methodology for calculating the Regional Innovation Index and for imputing missing data.

The years used in the titles of the RIS reports refer to the years in which the respective editions were published, i.e. RIS 2017, RIS 2016, RIS 2014, RIS 2012, RIS 2009 and RIS 2006. For the RIS 2019, most recent data refer to 2017 for six indicators, 2016 for 10 indicators, and 2015 for one indicator. A reference to the most recent performance year (RII2019) in this report should thus be interpreted as referring to data about three years older than the 2019 reference year.

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[1]   Annex 6 in the RIS 2014 report provides a more detailed discussion of regional systems of innovation: https://publications.europa.eu/en/publication-detail/-/publication/69a64699-18d7-40b9-8f92-1db3226cd2ec/language-en/format-PDF/source-97833730

# 2. RIS indicators, regions and data availability

This chapter discusses the indicators used in the Regional Innovation Scoreboard 2019 (section 2.1), the regional coverage (section 2.2), regional data availability (section 2.3), and the indicators selected for the regional profiles to highlight possible structural differences between regions (section 2.4).

## 2.1 Indicators

In the RIS, regional innovation performance should ideally be measured using the full measurement framework of the European Innovation Scoreboard (EIS), i.e. using regional data for the same indicators applied to measure innovation performance at the country level. However, for many indicators used in the EIS, regional data are not available.

The RIS is limited to using regional data for 17 of the 27 indicators used in the EIS (**Table 2**). For several indicators, slightly different definitions have been applied, as regional data would not be available if the definitions were the same as in the EIS:

• For Population with completed tertiary education, the RIS uses data for the age group 30-34. The indicator in the EIS covers the broader age group 25-34. Tabulated regional data for this age group are not available from Eurostat, so the same age group is used as in the RIS 2017;

• For two indicators using data from the Community Innovation Survey (CIS) – Non-R&D innovation expenditures and Sales of new-to-market and new-to-firm innovations – the data refer only to SMEs and not to all companies;[2]

• For PCT patent applications, regional data have been extracted from the OECD's REGPAT database;

• For Trademark applications, only EU trademark applications have been used, for which the data have been calculated by Science Metrix. The EIS uses the aggregate of both EUIPO and WIPO (Madrid Protocol) applications, but regional data for the latter are not available;

• For Design applications, the EIS uses data on individual design applications, for which regional data are not available. The RIS uses data on design applications, where a design application can include more than one individual design application. Data for regional design applications have been calculated by Science Metrix;

• For Employment in knowledge-intensive activities, regional data are also not available, and instead Employment in medium-high and high-tech manufacturing and knowledge-intensive services is used.

The indicators are explained in more detail in **Annex 1**.

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[2] Regional Community Innovation Survey (CIS) data are not publicly available and have been made available explicitly for the Regional Innovation Scoreboard by national statistical offices. The CIS assigns the innovation activities of multi-establishment enterprises to the region where the head office is located. There is a risk that regions without head offices score lower on the CIS indicators, as some of the activities in these regions are assigned to those regions with head offices. To minimize this risk, the regional CIS data excludes large firms (which are more likely to have multiple establishments in different regions) and focuses on SMEs only. More details are provided in the RIS 2019 Methodology Report.

### Table 2: A comparison of the indicators included in the European Innovation Scoreboard and the Regional Innovation Scoreboard

| | EIS 2019 | RIS 2019 |
|---|---|---|
| **FRAMEWORK CONDITIONS** | | |
| Human resources | Doctorate graduates per 1000 population aged 25-34 | No regional data |
| | Percentage of population aged 25-34 having completed tertiary education | Smaller age group 30-34 |
| | Life-long learning, the share of population aged 25-64 enrolled in education or training aimed at improving knowledge, skills and competences | Identical |
| Attractive research systems | International scientific co-publications per million population | Identical |
| | Scientific publications among the top-10% most cited publications worldwide as percentage of total scientific publications of the country | Identical |
| | Foreign doctorate students as percentage of all doctorate students | No regional data |
| Innovation-friendly environment | Broadband penetration (Share of enterprises with a maximum contracted download speed of the fastest fixed internet connection of at least 100 Mb/s) | No regional data |
| | Opportunity-driven entrepreneurship | No regional data |
| **INVESTMENTS** | | |
| Finance and support | R&D expenditure in the public sector as percentage of GDP | Identical |
| | Venture capital expenditure as percentage of GDP | No regional data |
| Firm investments | R&D expenditure in the business sector as percentage of GDP | Identical |
| | Non-R&D innovation expenditures as percentage of total turnover | For SMEs only |
| **INNOVATION ACTIVITIES** | | |
| Innovators | SMEs introducing product or process innovations as percentage of SMEs | Identical |
| | SMEs introducing marketing or organisational innovations as percentage of SMEs | Identical |
| | SMEs innovating in-house as percentage of SMEs | Identical |
| Linkages | Innovative SMEs collaborating with others as percentage of SMEs | Identical |
| | Public-private co-publications per million population | Identical |
| | Share of private co-funding of public R&D expenditures | No regional data |
| Intellectual assets | PCT patent applications per billion GDP* | Identical |
| | Trademark applications per billion GDP* | European trademark applications |
| | Individual design applications per billion GDP* | European Design applications |
| **IMPACTS** | | |
| Employment impacts | Employment in knowledge-intensive activities (manufacturing and services) as percentage of total employment | Employment in medium-high and high-tech manufacturing and knowledge-intensive services |
| | Employment in fast-growing firms of innovative sectors | No regional data |
| Sales impacts | Medium and high-tech product exports as percentage of total product exports | No regional data |
| | Knowledge-intensive services exports as percentage of total service exports | No regional data |
| | Sales of new-to-market and new-to-firm innovations as percentage of total turnover | For SMEs only |

\* GDP in Purchasing Power standards

## 2.2 Regional coverage

The Regional Innovation Scoreboard covers 238 regions in 23 EU Member States, Norway, Serbia and Switzerland at different NUTS levels.[3] The NUTS classification (Nomenclature of territorial units for statistics) is a hierarchical system for dividing the economic territory of the EU, which distinguishes between three levels: NUTS 1 captures major socio-economic regions, NUTS 2 captures basic regions for the application of regional policies, and NUTS 3 captures small regions for specific diagnoses.

Depending on differences in regional data availability, the RIS covers 32 NUTS 1 level regions and 206 NUTS 2 level regions (**Table 3**, NUTS 1 regions in countries covered at the NUTS 2 level are also counted as NUTS 2 regions). In addition, the EU Member States Cyprus, Estonia, Latvia, Lithuania, Luxembourg, and Malta are included at the country level, as in these countries NUTS 1 and NUTS 2 levels are identical to the country territory.

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[3] For Serbia, official NUTS codes are not available as Eurostat and Serbia have not yet agreed on statistical regions for the country. In this report, the following unofficial codes will be used: RS11 for Belgrade, RS12 for Vojvodina, RS21 for Šumadija and Western Serbia, and RS22 for Southern and Eastern Serbia.

For the countries included at the country level, their performance levels relative to the EU28 scores from the EIS 2019 have been used.

With some countries only being covered at the NUTS 1 level, there can be significant differences in the average size of regions. For instance, the average population of a NUTS 1 region in France (total population of almost 67 million) is 4.8 million, whereas it is 2.9 million for an average NUTS 2 region in Italy (total population of almost 60.5 million). The average unit of regional innovation performance analysis is 1.66 times larger in France than in Italy. These differences in unit size have implications for the variation of performance scores within countries. In general, a higher number of regions will lead to larger differences between regions in the same country.

## Table 3: NUTS 1 and NUTS 2 regions included in RIS 2019 by country

| COUNTRY | | NUMBER OF REGIONS AT NUTS LEVEL | | AVERAGE POPULATION SIZE (2018) | REGIONS (NUTS CODE) | |
| --- | --- | --- | --- | --- | --- | --- |
| | | 1 | 2 | | | |
| BE | Belgium | 3 | | 3,799,500 | Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest (BE1) | Vlaams Gewest (BE2) Région Wallonne (BE3) |
| BG | Bulgaria | | 6 | 1,175,000 | Severozapaden (BG31) Severen tsentralen (BG32) Severoiztochen (BG33) | Yugoiztochen (BG34) Yugozapaden (BG41) Yuzhen tsentralen (BG42) |
| CZ | Czechia | | 8 | 1,326,300 | Praha (CZ01) Strední Cechy (CZ02) Jihozápad (CZ03) Severozápad (CZ04) | Severovýchod (CZ05) Jihovýchod (CZ06) Strední Morava (CZ07) Moravskoslezsko (CZ08) |
| DK | Denmark | | 5 | 1,156,200 | Hovedstaden (DK01) Sjælland (DK02) Syddanmark (DK03) | Midtjylland (DK04) Nordjylland (DK05) |
| DE | Germany | | 38 | 2,178,700 | Stuttgart (DE11) Karlsruhe (DE12) Freiburg (DE13) Tübingen (DE14) Oberbayern (DE21) Niederbayern (DE22) Oberpfalz (DE23) Oberfranken (DE24) Mittelfranken (DE25) Unterfranken (DE26) Schwaben (DE27) Berlin (DE30) Brandenburg (DE40) Bremen (DE50) Hamburg (DE60) Darmstadt (DE71) Gießen (DE72) Kassel (DE73) Mecklenburg-Vorpommern (DE80) | Braunschweig (DE91) Hannover (DE92) Lüneburg (DE93) Weser-Ems (DE94) Düsseldorf (DEA1) Köln (DEA2) Münster (DEA3) Detmold (DEA4) Arnsberg (DEA5) Koblenz (DEB1) Trier (DEB2) Rheinhessen-Pfalz (DEB3) Saarland (DEC0) Dresden (DED2) Chemnitz (DED4) Leipzig (DED5) Sachsen-Anhalt (DEE0) Schleswig-Holstein (DEF0) Thüringen (DEG0) |
| IE | Ireland | | 3 | 1,610,100 | Northern and Western (IE04) Southern (IE05) | Eastern and Midland (IE06) |
| EL | Greece | | 13 | 826,200 | Anatoliki Makedonia, Thraki (EL51) Kentriki Makedonia (EL52) Dytiki Makedonia (EL53) Ipeiros (EL54) Thessalia (EL61) Ionia Nisia (EL62) | Dytiki Ellada (EL63) Sterea Ellada (EL64) Peloponnisos (EL65) Attiki (EL30) Voreio Aigaio (EL41) Notio Aigaio (EL42) Kriti (EL43) |
| ES | Spain | | 19 | 2,445,000 | Galicia (ES11) Principado de Asturias (ES12) Cantabria (ES13) País Vasco (ES21) Comunidad Foral de Navarra (ES22) La Rioja (ES23) Aragón (ES24) Comunidad de Madrid (ES30) Castilla y León (ES41) Castilla-la Mancha (ES42) | Extremadura (ES43) Cataluña (ES51) Comunidad Valenciana (ES52) Illes Balears (ES53) Andalucía (ES61) Región de Murcia (ES62) Ciudad Autónoma de Ceuta (ES63) Ciudad Autónoma de Melilla (ES64) Canarias (ES70) |

**Table 3: NUTS 1 and NUTS 2 regions included in RIS 2019 by country**

| COUNTRY | | NUMBER OF REGIONS AT NUTS LEVEL 1 | NUMBER OF REGIONS AT NUTS LEVEL 2 | AVERAGE POPULATION SIZE (2018) | REGIONS (NUTS CODE) | |
|---|---|---|---|---|---|---|
| FR | France | 14 | | 4,780,400 | Île de France (FR1) Centre – Val de Loire (FRB) Bourgogne – Franche-Comté (FRC) Normandie (FRD) Nord-Pas de Calais – Picardie (FRE) Alsace – Champagne-Ardenne – Lorraine (FRF) Pays de la Loire (FRG) Bretagne (FRH) | Aquitaine – Limousin – Poitou-Charentes (FRI) Languedoc-Roussillon – Midi-Pyrénées (FRJ) Auvergne – Rhône-Alpes (FRK) Provence-Alpes-Côte d'Azur (FRL) Corse (FRM) RUP FR – Régions ultrapériphériques françaises (FRY) |
| HR | Croatia | | 2 | 2,052,700 | Jadranska Hrvatska (HR03) | Kontinentalna Hrvatska (HR04) |
| IT | Italy | | 21 | 2,880,200 | Piemonte (ITC1) Valle d'Aosta/Vallée d'Aoste (ITC2) Liguria (ITC3) Lombardia (ITC4) Provincia Autonoma Bolzano/Bozen (ITH1) Provincia Autonoma Trento (ITH2) Veneto (ITH3) Friuli-Venezia Giulia (ITH4) Emilia-Romagna (ITH5) Toscana (ITI1) Umbria (ITI2) | Marche (ITI3) Lazio (ITI4) Abruzzo (ITF1) Molise (ITF2) Campania (ITF3) Puglia (ITF4) Basilicata (ITF5) Calabria (ITF6) Sicilia (ITG1) Sardegna (ITG2) |
| LT | Lithuania | | 2 | 1,404,500 | Sostinės regionas (LT01) | Vidurio ir vakarų Lietuvos regionas (LT02) |
| HU | Hungary | | 8 | 1,222,300 | Budapest (HU11) Pest (HU12) Közép-Dunántúl (HU21) Nyugat-Dunántúl (HU22) | Dél-Dunántúl (HU23) Észak-Magyarország (HU31) Észak-Alföld (HU32) Dél-Alföld (HU33) |
| NL | Netherlands | | 12 | 1,431,800 | Groningen (NL11) Friesland (NL12) Drenthe (NL13) Overijssel (NL21) Gelderland (NL22) Flevoland (NL23) | Utrecht (NL31) Noord-Holland (NL32) Zuid-Holland (NL33) Zeeland (NL34) Noord-Brabant (NL41) Limburg (NL42) |
| AT | Austria | 3 | | 2,940,800 | Ostösterreich (AT1) Südösterreich (AT2) | Westösterreich (AT3) |
| PL | Poland | | 17 | 2,233,900 | Małopolskie (PL21) Śląskie (PL22) Wielkopolskie (PL41) Zachodniopomorskie (PL42) Lubuskie (PL43) Dolnośląskie (PL51) Opolskie (PL52) Kujawsko-Pomorskie (PL61) Warmińsko-Mazurskie (PL62) | Pomorskie (PL63) Łódzkie (PL71) Świętokrzyskie (PL72) Lubelskie (PL81) Podkarpackie (PL82) Podlaskie (PL84) Warszawski stoleczny (PL91) Mazowiecki regionalny (PL92) |
| PT | Portugal | | 7 | 1,470,100 | Norte (PT11) Algarve (PT15) Centro (PT16) Lisboa (PT17) | Alentejo (PT18) Região Autónoma dos Açores (PT20) Região Autónoma da Madeira (PT30) |
| RO | Romania | | 8 | 2,441,300 | Nord-Vest (RO11) Centru (RO12) Nord-Est (RO21) Sud-Est (RO22) | Sud – Muntenia (RO31) Bucuresti - Ilfov (RO32) Sud-Vest Oltenia (RO41) Vest (RO42) |
| SI | Slovenia | | 2 | 1,033,400 | Vzhodna Slovenija (SI03) | Zahodna Slovenija (SI04) |
| SK | Slovakia | | 4 | 1,360,800 | Bratislavský kraj (SK01) Západné Slovensko (SK02) | Stredné Slovensko (SK03) Východné Slovensko (SK04) |
| FI | Finland | | 5 | 1,102,600 | Helsinki-Uusimaa (FI1B) Etelä-Suomi (FI1C) Länsi-Suomi (FI19) | Pohjois- ja Itä-Suomi (FI1D) Åland (FI20) |

| | COUNTRY | NUMBER OF REGIONS AT NUTS LEVEL | | AVERAGE POPULATION SIZE (2018) | REGIONS (NUTS CODE) | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | | | |
| SE | Sweden | | 8 | 1,265,000 | Stockholm (SE11) | Västsverige (SE23) |
| | | | | | Östra Mellansverige (SE12) | Norra Mellansverige (SE31) |
| | | | | | Småland med öarna (SE21) | Mellersta Norrland (SE32) |
| | | | | | Sydsverige (SE22) | Övre Norrland (SE33) |
| UK | United Kingdom | 12 | | 5,522,800 | North East (UKC) | London (UKI) |
| | | | | | North West (UKD) | South East (UKJ) |
| | | | | | Yorkshire and The Humber (UKE) | South West (UKK) |
| | | | | | East Midlands (UKF) | Wales (UKL) |
| | | | | | West Midlands (UKG) | Scotland (UKM) |
| | | | | | East of England (UKH) | Northern Ireland (UKN) |
| NO | Norway | | 7 | 756,500 | Oslo og Akershus (NO01) | Vestlandet (NO05) |
| | | | | | Hedmark og Oppland (NO02) | Trøndelag (NO06) |
| | | | | | Sør-Østlandet (NO03) | Nord-Norge (NO07) |
| | | | | | Agder og Rogaland (NO04) | |
| CH | Switzerland | | 7 | 1,212,000 | Région lémanique (CH01) | Ostschweiz (CH05) |
| | | | | | Espace Mittelland (CH02) | Zentralschweiz (CH06) |
| | | | | | Nordwestschweiz (CH03) | Ticino (CH07) |
| | | | | | Zürich (CH04) | |
| RS | Serbia[4] | | 4 | 1,750,400 | Belgrade (RS11) | Šumadija and Western Serbia (RS21) |
| | | | | | Vojvodina (RS12) | Southern and Eastern Serbia (RS22) |

Table 3: NUTS 1 and NUTS 2 regions included in RIS 2019 by country

## 2.3 Regional data availability

Regional innovation data for five indicators are directly available from Eurostat. For Population aged 30-34 having completed tertiary education, Lifelong learning, R&D expenditures in the public sector, R&D expenditures in the business sector, and Employment in medium-high/high tech manufacturing and knowledge-intensive services, regional data can be extracted from Eurostat's online regional database. Regional patent data have been extracted from the OECD's REGPAT database. For the six indicators using Community Innovation Survey (CIS) data, regional data are not directly available from Eurostat, and a special data request has been made to National Statistical Offices to obtain regional CIS data. For the three indicators using bibliometric data, regional data have been made available by CWTS (Leiden University) as part of a contract with the European Commission (DG Research and Innovation). For Trademark applications and Design applications, regional data have been made available by Science Metrix as part of a contract with the European Commission (DG Research and Innovation).

### Regional CIS data request

To collect regional CIS data, data requests were made by Eurostat in 2018 to National Statistical Offices of most Member States, excluding those countries for which NUTS 1 and NUTS 2 levels are identical to the country territory, or countries for which national CIS samples are too small to allow them to deliver reliable regional-level data, and to Norway, Serbia, and Switzerland. Eurostat was able to share regional CIS 2016 data for 25 countries (Austria, Belgium, Bulgaria, Croatia, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom) for the following indicators:

- Non-R&D innovation expenditure by SMEs (share of turnover in SMEs);

- SMEs innovating in-house (share of all SMEs);

- Innovative SMEs collaborating with others (share of all SMEs);

- SMEs with product or process innovation (share of all SMEs);

- SMEs with marketing or organisational innovations (share of all SMEs);

- Sales of new-to-market and new-to-firm innovations by SMEs (share of turnover in SMEs).

Regional CIS data are not publicly available and have been made explicitly available for the Regional Innovation Scoreboard by national statistical offices. The CIS assigns the innovation activities of multi-establishment enterprises to the region where the head office is located. There is a risk that regions without head offices score lower on the CIS indicators as some of the activities in these regions are assigned to those regions with head offices, and to minimise this risk, the regional CIS data excludes large firms (which are more likely to have multiple establishments in different regions) and focuses on SMEs only. More details are available in the RIS 2019 Methodology Report.

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4    The NUTS codes for Serbia are not official codes but are used for ease of reference in the RIS 2019 and for producing the regional maps.

## Timeliness of regional data

For the RIS 2019, most recent data refer to 2017 for six indicators (Population aged 30-34 with tertiary education, Lifelong learning, Public-private co-publications, Trademark applications, Design applications, and Employment in medium-high/high-tech manufacturing and knowledge-intensive services), 2016 for 10 indicators (International scientific co-publications, R&D expenditures in the public sector, R&D expenditures in the business sector, Non-R&D innovation expenditures, SMEs with product or process innovations, SMEs with marketing or organisational innovations, SMEs innovating in-house, Innovative SMEs collaborating with others, PCT patent applications, and Sales of new-to-market and new-to-firm innovations), and 2015 for one indicator (Most-cited scientific publications).

Following the availability of the most recent data, the RIS 2019 presents a Regional Innovation Index (RII) for five reference years:

- RII2019 using regional CIS 2016 data and the most recent data available at 17 April 2019;

- RII2017 using data two years less timely than those used for the RII2019 (including regional CIS 2014 data);

- RII2015 using data four years less timely than those used for the RII2019 (including regional CIS 2012 data);

- RII2013 using data six years less timely than those used for the RII2019 (including regional CIS 2010 data);

- RII2011 using data eight years less timely than those used for the RII2019 (including regional CIS 2008 data).

### Table 4: Regional data availability by indicator

| | Data availability most recent year |
|---|---|
| Lifelong learning | 100% |
| International scientific co-publications | 100% |
| Most-cited scientific publications | 100% |
| Population having completed tertiary education | 99.2% |
| Public-private co-publications | 95.4% |
| Trademark applications | 95.4% |
| SMEs with product or process innovations | 95.0% |
| SMEs with marketing or organisational innovations | 95.0% |
| Innovative SMEs collaborating with others | 95.0% |
| Sales of new-to-market and new-to-firm innovations in SMEs | 95.0% |
| Employment in medium/high-tech manufacturing and knowledge-intensive services | 92.9% |
| Design applications | 92.4% |
| Non-R&D innovation expenditures in SMEs | 92.0% |
| SMEs innovating in-house | 92.0% |
| PCT patent applications | 91.2% |
| All indicators | 90.9% |
| R&D expenditures in the public sector | 62.1% |
| R&D expenditures in the business sector | 49.2% |

## Data availability by indicator and country

For the most recent year, data availability is 90.9%, i.e. regional data are available for 3,676 out of a maximum of 4,046 observations. Data availability differs by indicator, with highest data availability for Lifelong learning, International scientific co-publications and Most-cited scientific publications (**Table 4**). Data availability is below average for Public and Business R&D expenditures.

There are large differences in regional data availability across countries. Data availability is perfect at 100% for eight countries, very good at 95% or more for another four countries, and good at 90% or more for three more countries (**Table 5**). Data availability is between 80% and 90% for seven countries. Data availability for Ireland, Norway and Switzerland is at 75% or just above. For Ireland below-average data availability is explained by a change from two regions using the NUTS 2013 classification to three regions using the NUTS 2016 classification. Not for all indicators data are already available for these 3 new regions. For Norway and Switzerland no 2017 data are available for both Public and Business R&D expenditures. For the Netherlands data availability is low as regional CIS 2016 data are not available.

## Imputations for missing data

The full RIS 2019 database contains 20,230 data cells (238 regions, 17 indicators, and 5 years). An exact percentage for overall data availability has not been calculated, as for older years the database includes both real data and data already imputed in previous versions of the Regional Innovation Scoreboard. To improve data availability, several imputation techniques have been used to provide estimates for all missing data. Chapter 3 on the RIS methodology provides more details on the imputation techniques. Data availability after imputation improves to 98.9% with data missing for only 225 observations. For some regions, data could not be imputed. Data availability is 100% for almost all countries, except for:

- Finland (95.3%): data missing for 4 indicators for *Åland* (FI20);

- France (98.7%): data mussing for 2 regions (FRM and FRY);

- Greece (95.9%): incomplete data for 7 regions;

- Ireland (94.1%) no data for patent applications for all regions;

- Italy (99.7%): data missing for Employment in medium-high/high tech manufacturing and knowledge-intensive services for *Valle d'Aosta/Vallée d'Aoste* (ITC2);

- Poland (99.3%): data missing for Employment in medium/high tech manufacturing and knowledge-intensive services for two regions (PL43 and PL52);

- Portugal (95.8%): data missing for three regions (PT15, PT20 and PT30);

- Serbia (94.1%): data missing for PCT patent applications for all regions;

- Spain (97.8%): data missing for 3 regions (ES63, ES64 and ES70);

- Switzerland (95.1%): data missing for Non-R&D innovation expenditure for all regions.

### Table 5: Regional data availability by country

| | | Data availability most recent year | | | Data availability most recent year |
|---|---|---|---|---|---|
| BG | Bulgaria | 100% | PL | Poland | 93.1% |
| HR | Croatia | 100% | | All regions | 90.9% |
| CZ | Czechia | 100% | AT | Austria | 88.2% |
| DK | Denmark | 100% | BE | Belgium | 88.2% |
| SK | Slovakia | 100% | SE | Sweden | 88.2% |
| SI | Slovenia | 100% | RS | Serbia | 86.8% |
| RO | Romania | 100% | FR | France | 87.0% |
| UK | United Kingdom | 100% | LT | Lithuania | 82.4% |
| IT | Italy | 99.7% | EL | Greece | 80.5% |
| ES | Spain | 96.3% | IE | Ireland | 76.5% |
| FI | Finland | 95.3% | NO | Norway | 76.5% |
| PT | Portugal | 95.0% | CH | Switzerland | 76.5% |
| DE | Germany | 94.1% | NL | Netherlands | 52.9% |
| HU | Hungary | 94.1% | | | |

## 2.4 Structural differences

The RIS 2017 introduced structural data in the regional profiles to help users to better understand the impact of structural differences on observed scores. Brief analyses of structural differences by region will be performed in the regional profiles. The RIS 2019 includes data for the same set of structural indicators in the regional profiles.

Important are differences in economic structures, with differences in the share of industry in GDP an important factor that could explain why regions performance is better or worse on indicators like business R&D expenditures, EPO patent applications and innovative enterprises. The regional profiles include for each region, if data are available from Eurostat, data on the composition of regional employment, using average employment shares for the years 2014-2018, for the following industries: Agriculture & Mining, Manufacturing, Utilities & Construction, Services, and Public administration.

Enterprise characteristics are important for explaining differences in R&D spending and innovation activities. Regional data on the average number of employees in an enterprise are used to measure differences in enterprise size effects across regions.

Densely populated areas are also more likely to be more innovative for several reasons. First, with people and enterprises being at closer distance, knowledge diffuses more easily. Second, in urbanised areas there tends to be a concentration of government and educational services. These provide better training opportunities and employ above-average shares of highly educated people. Structural data also include indicators measuring the size of the regional economy, including two indicators measuring GDP per capita, both in Euros and in purchasing power standards[5], which are a better measure for interpreting real income differences between regions.

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[5]  The purchasing power standard (PPS), is an artificial currency unit. Theoretically, one PPS can buy the same amount of goods and services in each country. However, price differences across borders mean that different amounts of national currency units are needed for the same goods and services depending on the country. PPS are derived by dividing any economic aggregate of a country in national currency by its respective purchasing power parities.

# 3. Regional innovation performance

## 3.1 Regional performance groups

Europe's regions are grouped into four innovation performance groups according to their performance on the Regional Innovation Index relative to that of the EU. The thresholds in relative performance are the same as those used in the European Innovation Scoreboard:

- The first group of Innovation Leaders includes 38 regions with performance more than 20% above the EU average.

- The second group of Strong Innovators includes 73 regions with performance between 90% and 120% of the EU average.

- The third group of Moderate Innovators includes 97 regions with performance between 50% and 90% of the EU average.

- The fourth group of Modest Innovators includes 30 regions with performance below 50% of the EU average.

### Higher performance groups score better on individual indicators

The most innovative regions, on average, perform best on most indicators as shown in the radar graph below (**Figure 1**), where the line for the Modest Innovators is largely embedded within the line for the Moderate Innovators, which is largely embedded within the line for the Strong Innovators. The line for the Innovation Leaders shows that these regions, on average, have the highest performance on 15 indicators, except on Non-R&D innovation

expenditures and SMEs collaborating with others, where the Strong Innovators have the highest average performance (**Figure 1** and **Table 6**).[6] The Innovation Leaders perform particularly well, with average performance levels 40% or more above the EU average, on Lifelong learning (191%), Public-private co-publications (172%) and PCT patent applications (149%).

The Strong Innovators perform close to average (between 20% below or 20% above the EU average) on almost all indicators, except for Lifelong learning (127%), SMEs collaborating with others (126%) and Trademark applications (76%). Performance is also relatively high on SMEs with product or process innovations (117%), SMEs with marketing or organisational innovations (116%), and SMEs innovating in-house (117%).

The Moderate Innovators perform below the EU average on almost all indicators, except for Non-R&D innovation expenditures (108%). Performance is below 70% of the EU average for Public R&D expenditures (69%), International scientific co-publications (68%), Most-cited publication (68%), Trademark applications (68%), Lifelong learning (67%), Design applications (66%), Business R&D expenditures (56%), Public-private co-publications (46%) and PCT patent applications (42%).

The Modest Innovators perform below the EU average on all indicators, in particular on PCT patent applications (17%), Public-private co-publications (18%), Lifelong learning (26%) and Innovative SMEs collaborating with others (26%).

### Figure 1: Average indicator scores by regional performance group
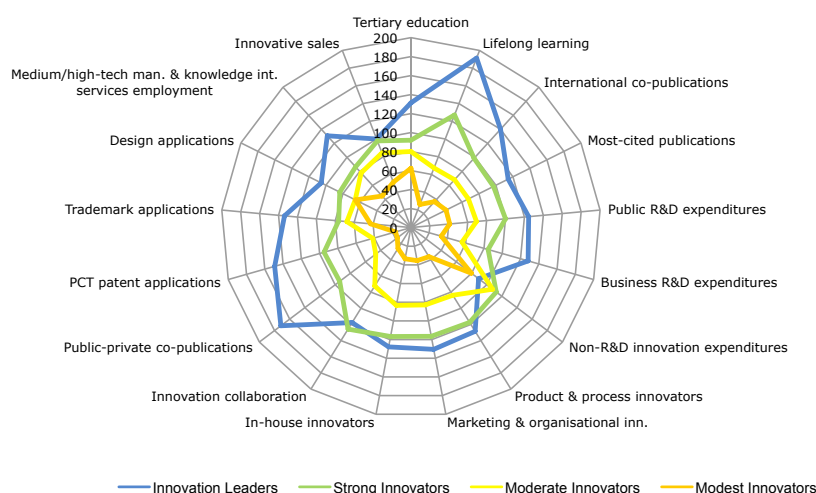


*Average scores for each performance group relative to the EU average (=100). Scores calculated excluding countries for which regions do not exist (Cyprus, Estonia, Latvia, Luxembourg and Malta). Scores have been corrected, since the average of the unweighted group averages is either above or below 100 for all indicators.[7] The correction makes sure that this average is equal to the EU average of 100. Full details are provided in the RIS 2019 Methodology Report*

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6   The strong performance of both Moderate and Modest Innovators on Non-R&D innovation expenditures reflects the fact that in less innovative countries it is more common for enterprises to innovate by purchasing advanced machinery and equipment and knowledge developed elsewhere, than to invest in own R&D activities, which are typically more expensive and at higher risk of failing to result in a useful product or process innovation.

7   For several indicators, average performance scores for all four groups are either below or close to 100, whereas one would expect to see more scores above 100 as the EU average is the average of all regions and performance groups. However, for several reasons the EU average seems to be too high for some indicators. The most important explanation is that where the EU average is a weighted average with larger regions/countries having a larger contribution to this average than smaller regions/countries, the average group performance scores are unweighted averages with equal contributions for all regions, irrespective if these are larger NUTS 1 or smaller NUTS 2 regions. Another explanation is that the EU also includes the performance of Cyprus, Estonia, Latvia, Luxembourg and Malta, whereas these countries are not included in the regional performance groups.

Despite the variation in regional performance within countries, regional performance groups largely match the corresponding EIS country performance groups. All regional Innovation Leaders belong to countries identified as Innovation Leaders or Strong Innovators in the EIS 2019. All regional Innovation Leaders belong to 10 countries. Most regional Strong Innovators belong to EIS Innovation Leader and Strong Innovator countries, only 6 regional Strong Innovators belong to EIS Moderate Innovator country (of which 3 in Portugal). Most regional Moderate Innovators belong to EIS Moderate Innovator countries (almost 85% of the regions in this regional innovation performance group). All regional Modest Innovators belong to

EIS Moderate Innovator and Modest Innovator countries. Regional 'pockets of excellence' can be identified in some Moderate Innovator countries: *Praha (Prague)* in Czechia, *Kriti (Crete)* in Greece, and *Friuli-Venezia Giulia* in Italy. At the same time, some regions in EIS Innovation Leader and Strong Innovator countries perform in 'lower' performance groups (for instance, *Niederbayern, Lüneburg, Weser-Ems* and *Koblenz* in Germany, *Åland* in Finland, *Normandie, Nord-Pas de Calais-Picard, Corse* and *Régions ultrapériphériques françaises* in France, *Friesland* and *Zeeland* in the Netherlands, and *Norra Mellansverige* and *Mellersta Norrland* in Sweden).

## Table 6: Average indicator scores by regional performance group

|  | Innovation Leaders | Strong Innovators | Moderate Innovators | Modest Innovators |
|---|---|---|---|---|
| Population having completed tertiary education | 131 | 92 | 80 | 62 |
| Lifelong learning | 191 | 127 | 67 | 28 |
| International scientific co-publications | 140 | 99 | 68 | 37 |
| Most-cited scientific publications | 114 | 97 | 68 | 41 |
| R&D expenditures in the public sector | 125 | 100 | 69 | 41 |
| R&D expenditures in the business sector | 128 | 84 | 56 | 33 |
| Non-R&D innovation expenditures | 89 | 113 | 108 | 80 |
| SMEs with product or process innovations | 128 | 117 | 84 | 36 |
| SMEs with marketing or organisational innovations | 130 | 116 | 83 | 35 |
| SMEs innovating in-house | 128 | 117 | 83 | 33 |
| Innovative SMEs collaborating with others | 118 | 126 | 72 | 26 |
| Public-private co-publications | 172 | 94 | 46 | 18 |
| PCT patent applications | 149 | 95 | 42 | 17 |
| Trademark applications | 134 | 76 | 68 | 43 |
| Design applications | 106 | 84 | 66 | 65 |
| Employment in medium/high tech manufacturing and knowledge-intensive services | 131 | 86 | 78 | 45 |
| Sales of new-to-market/new-to-firm innovations (SMEs) | 100 | 98 | 84 | 51 |

*Average scores for each performance group relative to the EU average (=100). Scores calculated excluding countries for which regions do not exist and regional data are not available (Cyprus, Estonia, Latvia, Luxembourg and Malta). Scores have been corrected as the average of the unweighted group averages is either above or below 100 for all indicators. The correction makes sure that this average is equal to the EU average of 100, full details are provided in the RIS 2019 Methodology Report.*

### Providing more detail: defining 12 performance sub-groups

For most countries, there is limited variation in regional performance groups. Only in Finland, Germany, Greece, the Netherlands and Sweden, there are three different regional performance groups (**Table 7**). In 15 countries, there are two different regional performance groups, and in Austria, Ireland, Lithuania, Slovenia, Slovakia and Switzerland, all regions are in the same performance group.

The RIS 2017 introduced three subgroups within each performance group to allow for more diversity at the regional level: the top one-third regions (+), the middle one-third regions and the bottom one-third regions (-). The same subgroups have also been used for the RIS 2019.

A geographical map of the regional performance subgroups is shown in **Figure 2**:

- Innovation Leaders are shown using three shades of blue, with the darkest blue showing the Innovation Leaders + and the lightest blue the Innovation Leaders -.

- Strong Innovators are shown using three shades of green, with the darkest green showing the Strong + Innovators and the lightest green the Strong - Innovators.

- Moderate Innovators are shown using three shades of yellow, with the lightest yellow showing the Moderate + Innovators and the darkest yellow the Moderate - Innovators.

- Modest Innovators are shown using three shades of orange, with the lightest orange showing the Modest + Innovators and the darkest orange the Modest - Innovators.

Most of the Innovation Leaders and Strong Innovators are in the former EU15 countries in North-West Europe. Most of the Moderate Innovators and Modest Innovators are in newer Member States and former EU15 countries in the South of Europe.

## Figure 2: Regional performance groups
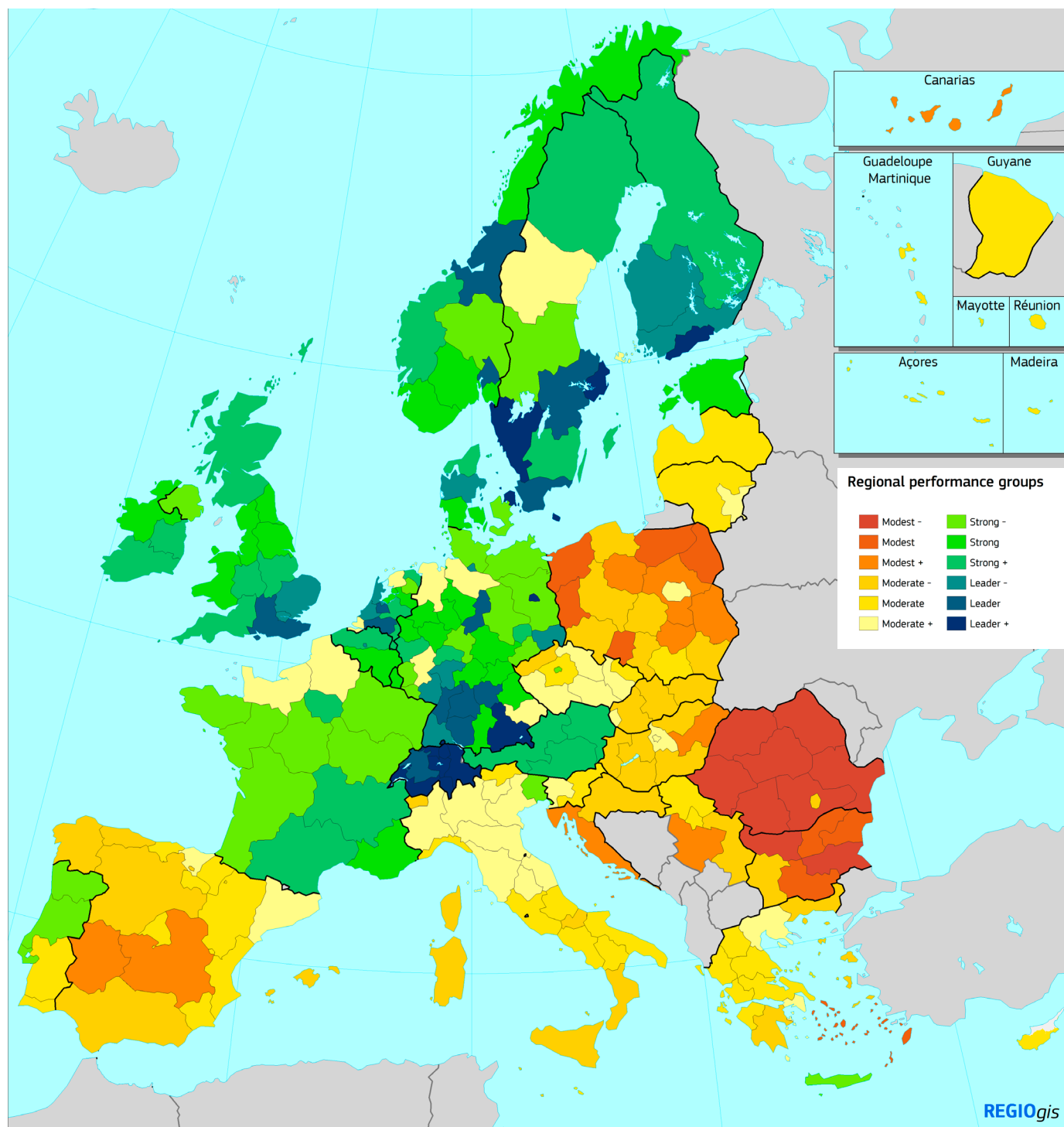


*For Cyprus, Estonia, Latvia, Luxembourg and Malta, performance group membership is identical to that in the EIS 2019 report. For these countries, the corresponding colour codes for middle one-third regions have been used.*

At the level of subgroups, there is more diversity in performance of regional innovation systems within countries. In Germany, there are seven different subgroups, with the Strong Innovators the largest subgroup. In France, Spain and the Netherlands there are six different subgroups, in Denmark, Greece, Poland, Sweden and the United Kingdom there are five different subgroups, and in Czechia, Finland, Italy and Norway there are four different subgroups. **Table 7** shows that capital regions, which include the larger metropolitan capital areas, tend to perform better than other regions in the same country. For instance, in Czechia, *Praha* (CZ01) is a Strong Innovator, while all other regions are Moderate Innovators.

### Table 7: Occurrence of regional performance groups by country

| | Performance group EIS 2019 | Regional Innovation Leaders | | | Regional Strong Innovators | | | Regional Moderate Innovators | | | Regional Modest Innovators | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | + | | – | + | | – | + | | – | + | | – |
| | | **12** | **13** | **13** | **24** | **24** | **25** | **32** | **32** | **33** | **10** | **10** | **10** |
| Switzerland | Innovation Leader | 6 | 1 | | | | | | | | | | |
| Sweden | Innovation Leader | 2 | 2 | | 2 | | 1 | 1 | | | | | |
| Finland | Innovation Leader | 1 | | 2 | 1 | | | 1 | | | | | |
| Denmark | Innovation Leader | 1 | | 1 | 1 | 1 | 1 | | | | | | |
| Netherlands | Innovation Leader | | 2 | 2 | 3 | 2 | 1 | 2 | | | | | |
| *Luxembourg* | *Strong Innovator* | | | | | | | | | | | | |
| Belgium | Strong Innovator | | | 1 | 1 | 1 | | | | | | | |
| United Kingdom | Strong Innovator | | 1 | 2 | 4 | 4 | 1 | | | | | | |
| Norway | Strong Innovator | | 2 | | 1 | 3 | 1 | | | | | | |
| Germany | Strong Innovator | 2 | 5 | 5 | 3 | 11 | 8 | 4 | | | | | |
| Austria | Strong Innovator | | | | 3 | | | | | | | | |
| Ireland | Strong Innovator | | | | 2 | 1 | | | | | | | |
| France | Strong Innovator | | | | 3 | 1 | 6 | 2 | 1 | 1 | | | |
| *Estonia* | *Strong Innovator* | | | | | | | | | | | | |
| Portugal | Moderate Innovator | | | | | | 3 | | 4 | | | | |
| Czechia | Moderate Innovator | | | | | | 1 | 4 | 2 | 1 | | | |
| Slovenia | Moderate Innovator | | | | | | | 1 | 1 | | | | |
| *Cyprus* | *Moderate Innovator* | | | | | | | | | | | | |
| *Malta* | *Moderate Innovator* | | | | | | | | | | | | |
| Italy | Moderate Innovator | | | | | | 1 | 8 | 7 | 5 | | | |
| Spain | Moderate Innovator | | | | | | | 2 | 7 | 5 | 3 | 1 | 1 |
| Greece | Moderate Innovator | | | | | | 1 | 2 | 6 | 3 | | 1 | |
| Lithuania | Moderate Innovator | | | | | | | 1 | 1 | | | | |
| Slovakia | Moderate Innovator | | | | | | | 1 | | 3 | | | |
| Hungary | Moderate Innovator | | | | | | | 2 | | 5 | 1 | | |
| *Latvia* | *Moderate Innovator* | | | | | | | | | | | | |
| Serbia | Moderate Innovator | | | | | | | | 2 | 1 | 1 | | |
| Poland | Moderate Innovator | | | | | | | 1 | 1 | 6 | 4 | 5 | |
| Croatia | Moderate Innovator | | | | | | | | | 1 | 1 | | |
| Bulgaria | Modest Innovator | | | | | | | | | 1 | | 3 | 2 |
| Romania | Modest Innovator | | | | | | | | | 1 | | | 7 |

*Countries ordered by their performance score in the European Innovation Scoreboard 2019.*

## 3.2 Ranking of regions

The most innovative region in the EU is *Helsinki-Uusimaa* (FI1B) in Finland, followed by *Stockholm* (SE11) in Sweden and *Hovedstaden* (DK01) in Denmark (**Table 8**). The overall most innovative region in 2019 is *Zürich* (CH04). Of the top-5 regions two are from Switzerland and three from the EU. Of the top-10 regions five are from Switzerland and five from the EU. *Zürich* was also the overall most innovative region in 2011 and 2017, *Hovedstaden* (DK01) was the overall most innovative region in 2013 and 2015.

Seven out of the top-25 regions in 2019 are from Switzerland and Germany, four from Sweden, two from the Netherlands and Norway, and one from Denmark, Finland and the United Kingdom. The top-25 regions for all years are from one of these eight countries, no other country is represented in the top-25 in these years. There have been some fluctuations in the top-25 over time with 'only' 17 regions in the top-25 in all years (these regions are highlighted with a *).

### Table 8: Top-25 Regional Innovation Leaders

|   | 2011 (RII 2011) | 2013 (RII 2013) | 2015 (RII 2015) | 2017 (RII 2017) | 2019 (RII 2019) | RII 2019 |
|---|---|---|---|---|---|---|
| 1 | Zürich (CH04)* | Hovedstaden (DK01)* | Hovedstaden (DK01)* | Zürich (CH04)* | Zürich (CH04)* | 160.1 |
| 2 | Nordwestschweiz (CH03)* | Zürich (CH04)* | Zürich (CH04)* | Stockholm (SE11)* | Ticino (CH07)* | 156.8 |
| 3 | Hovedstaden (DK01)* | Stockholm (SE11)* | Nordwestschweiz (CH03)* | Nordwestschweiz (CH03)* | Helsinki-Uusimaa (FI1B)* | 156.0 |
| 4 | Stockholm (SE11)* | Nordwestschweiz (CH03)* | Stockholm (SE11)* | Hovedstaden (DK01)* | Stockholm (SE11)* | 153.8 |
| 5 | Zentralschweiz (CH06)* | Oberbayern (DE21)* | Västsverige (SE23)* | Sydsverige (SE22)* | Hovedstaden (DK01)* | 151.0 |
| 6 | Sydsverige (SE22)* | Helsinki-Uusimaa (FI1B)* | Sydsverige (SE22)* | Zentralschweiz (CH06)* | Ostschweiz (CH05)* | 150.2 |
| 7 | Oberbayern (DE21)* | Sydsverige (SE22)* | Helsinki-Uusimaa (FI1B)* | Helsinki-Uusimaa (FI1B)* | Nordwestschweiz (CH03)* | 149.6 |
| 8 | Karlsruhe (DE12)* | Zentralschweiz (CH06)* | Oberbayern (DE21)* | Ticino (CH07)* | Zentralschweiz (CH06)* | 146.1 |
| 9 | Helsinki-Uusimaa (FI1B)* | Karlsruhe (DE12)* | Karlsruhe (DE12)* | Ostschweiz (CH05)* | Berlin (DE30)* | 145.4 |
| 10 | Tübingen (DE14) | Östra Mellansverige (SE12)* | Zentralschweiz (CH06)* | Oberbayern (DE21*) | Région lémanique (CH01)* | 140.7 |
| 11 | Région lémanique (CH01)* | Västsverige (SE23)* | Région lémanique (CH01)* | Région lémanique (CH01)* | Oberbayern (DE21)* | 140.4 |
| 12 | Ticino (CH07)* | Ticino (CH07)* | Ostschweiz (CH05)* | Västsverige (SE23)* | Västsverige (SE23)* | 138.8 |
| 13 | Östra Mellansverige (SE12)* | Tübingen (DE14) | Berlin (DE30)* | Trøndelag (NO06) | Sydsverige (SE22)* | 137.0 |
| 14 | Ostschweiz (CH05)* | Ostschweiz (CH05)* | Ticino (CH07)* | Tübingen (DE14) | Karlsruhe (DE12)* | 136.9 |
| 15 | Stuttgart (DE11)* | Mittelfranken (DE25)* | Stuttgart (DE11)* | Berlin (DE30)* | Trøndelag (NO06) | 136.8 |
| 16 | Västsverige (SE23)* | Région lémanique (CH01)* | Rheinhessen-Pfalz (DEB3) | Karlsruhe (DE12)* | Oslo og Akershus (NO01) | 135.6 |
| 17 | Rheinhessen-Pfalz (DEB3) | Stuttgart (DE11)* | Tübingen (DE14) | Östra Mellansverige (SE12)* | Espace Mittelland (CH02) | 134.8 |
| 18 | Freiburg (DE13) | Rheinhessen-Pfalz (DEB3) | Freiburg (DE13) | South East (UKJ) | Utrecht (NL31) | 134.8 |
| 19 | Mittelfranken (DE25)* | Berlin (DE30)* | Östra Mellansverige (SE12)* | Utrecht (NL31) | Tübingen (DE14) | 132.9 |
| 20 | Berlin (DE30)* | Freiburg (DE13) | Midtjylland (DK04) | Stuttgart (DE11)* | Östra Mellansverige (SE12)* | 131.9 |
| 21 | Midtjylland (DK04) | Midtjylland (DK04) | Utrecht (NL31) | Midtjylland (DK04) | Braunschweig (DE91) | 130.8 |
| 22 | Espace Mittelland (CH02) | Darmstadt (DE71) | Noord-Brabant (NL41) | Oslo og Akershus (NO01) | South East (UKJ) | 129.9 |
| 23 | Darmstadt (DE71) | Noord-Brabant (NL41) | Trøndelag (NO06) | Espace Mittelland (CH02) | Stuttgart (DE11)* | 129.5 |
| 24 | Unterfranken (DE26) | Utrecht (NL31) | Mittelfranken (DE25)* | London (UKI) | Noord-Brabant (NL41) | 129.1 |
| 25 | Köln (DEA2) | Braunschweig (DE91) | Espace Mittelland (CH02) | Mittelfranken (DE25)* | Mittelfranken (DE25)* | 127.5 |

The top-ranking region of the Strong Innovators group is *Westösterreich* (AT3) in Austria (**Table 9**). *Vlaams Gewest* (BE2) in Belgium ranks second and *South West* (UKK) in the United Kingdom ranks third. All of the top-10 regions in the Strong Innovators group perform at least 15% above the EU average.

*Mellersta Norrland* (SE32) in Sweden is the top-ranking region of the Moderate Innovators group, with a performance of more than 89% of the EU average. *Emilia-Romagna* (ITH5) in Italy ranks second and *Bratislavský kraj* (SK01) in Slovakia ranks third.

Of the Modest Innovators group, *Észak-Alföld* (HU32) in Hungary ranks first with a performance of almost 50% of the EU average. *Šumadija* and *Western Serbia* (RS21) in Serbia ranks second, and *Mazowiecki regionalny* (PL92) in Poland ranks third.

### Table 9: Top-10 Regions by regional performance groups

| Top-10 Strong Innovators | | | Top-10 Moderate Innovators | | | Top-10 Modest Innovators | | |
|---|---|---|---|---|---|---|---|---|
| Rank | Region | RII 2019 | Rank | Region | RII 2019 | Rank | Region | RII 2019 |
| 1 | Westösterreich (AT3) | 119.9 | 1 | Mellersta Norrland (SE32) | 89.4 | 1 | Észak-Alföld (HU32) | 49.7 |
| 2 | Vlaams Gewest (BE2) | 119.4 | 2 | Emilia-Romagna (ITH5) | 89.1 | 2 | Šumadija and Western Serbia (RS21) | 48.9 |
| 3 | South West (UKK) | 119.1 | 3 | Bratislavský kraj (SK01) | 88.5 | 3 | Mazowiecki regionalny (PL92) | 47.0 |
| 4 | Gelderland (NL22) | 118.8 | 4 | Koblenz (DEB1) | 87.7 | 4 | Lubelskie (PL81) | 46.2 |
| 5 | Limburg (NL42) | 118.2 | 5 | Niederbayern (DE22) | 87.4 | 5 | Swietokrzyskie (PL72) | 46.1 |
| 6 | Köln (DEA2) | 117.4 | 6 | Zahodna Slovenija (SI04) | 86.7 | 6 | Kujawsko-Pomorskie (PL61) | 46.0 |
| 7 | Pohjois- ja Itä-Suomi (FI1D) | 117.4 | 7 | Lombardia (ITC4) | 86.6 | 7 | Jadranska Hrvatska (HR03) | 45.0 |
| 8 | Vestlandet (NO05) | 117.3 | 8 | Sostinės regionas (LT01) | 86.4 | 8 | Castilla-la Mancha (ES42) | 44.7 |
| 9 | Île de France (FR1) | 116.5 | 9 | Zeeland (NL34) | 86.3 | 9 | Extremadura (ES43) | 43.4 |
| 10 | Südösterreich (AT2) | 116.2 | 10 | Normandie (FRD) | 85.4 | 10 | Podlaskie (PL84) | 43.3 |

## 3.3 Differences in regional performance within countries

This section summarizes for each country the performance of the regions within that country. For each country, a map is included showing the location of the regions in that country. Regions including the country's capital city are highlighted in bold.

**BELGIUM**
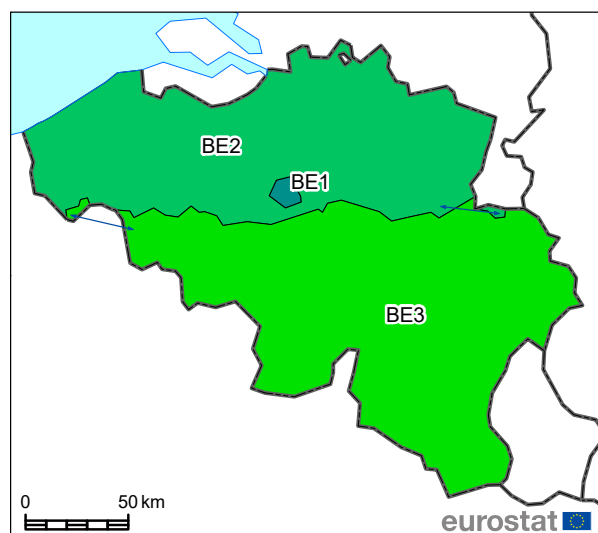


| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| **BE1** | **Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest** | 121.9 | 35 | Leader - | 13.5 |
| BE2 | Vlaams Gewest | 119.4 | 40 | Strong + | 2.2 |
| BE3 | Région Wallonne | 101.6 | 84 | Strong | 5.6 |

_RII_: performance in 2019 relative to that of the EU in 2019. _Rank_: rank performance in 2019 across all regions. _Group_: respective performance group. _Change_: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.

Belgium is a Strong Innovator and includes three regions.

_Région de Bruxelles-Capitale_ (BE1), or Brussels-Capital Region, is an Innovation Leader -. _Vlaams Gewest_ (BE2), or the Flemish Region occupying the northern part of Belgium, is a Strong + Innovator. _Région Wallonne_ (BE3), or the Walloon Region occupying the southern part of Belgium, is a Strong Innovator. For all three regions, performance has increased over time, and most strongly for _Région de Bruxelles-Capitale_ (BE1).

**BULGARIA**



| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| BG31 | Severozapaden | 31.2 | 231 | Modest - | -3.0 |
| BG32 | Severen tsentralen | 38.4 | 225 | Modest | 1.0 |
| BG33 | Severoiztochen | 37.3 | 227 | Modest | -1.3 |
| BG34 | Yugoiztochen | 35.7 | 229 | Modest - | -1.5 |
| **BG41** | **Yugozapaden** | 54.2 | 192 | Moderate - | 2.5 |
| BG42 | Yuzhen tsentralen | 37.6 | 226 | Modest | -0.9 |

_RII_: performance in 2019 relative to that of the EU in 2019. _Rank_: rank performance in 2019 across all regions. _Group_: respective performance group. _Change_: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.

Bulgaria is a Modest Innovator and includes six regions.

_Yugozapaden_ (BG41), the capital region, is the only Moderate Innovator, all other regions are Modest Innovators. Innovation performance has increased for two regions, _Yugozapaden_ (BG41) and _Severen tsentralen_ (BG32), and performance has decreased for the other four regions.

**CZECHIA**



| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| **CZ01** | **Praha** | 98.9 | 87 | Strong - | 1.0 |
| CZ02 | Strední Cechy | 75.9 | 144 | Moderate | -6.7 |
| CZ03 | Jihozápad | 78.7 | 137 | Moderate + | 2.5 |
| CZ04 | Severozápad | 57.4 | 182 | Moderate - | -1.0 |
| CZ05 | Severovýchod | 84.7 | 124 | Moderate + | -1.7 |
| CZ06 | Jihovýchod | 81.2 | 129 | Moderate + | -0.5 |
| CZ07 | Strední Morava | 76.5 | 142 | Moderate + | 0.9 |
| CZ08 | Moravskoslezsko | 75.2 | 146 | Moderate | 8.7 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Czechia is a Moderate Innovator and includes eight regions.

*Praha* (CZ01), the capital region, is a Strong – Innovator, performing very close to the average performance of the EU. All other regions are Moderate Innovators; four regions –*Jihozápad* (CZ03), *Severovýchod* (CZ05), *Jihovýchod* (CZ06) and *Strední Morava* (CZ07), are Moderate + Innovators, the other three regions are Moderate Innovators. For four regions, performance has increased, most strongly for *Moravskoslezsko* (CZ08), and for four regions, performance has decreased.

**DENMARK**



| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| **DK01** | **Hovedstaden** | 151.0 | 5 | Leader + | -6.2 |
| DK02 | Sjælland | 93.7 | 98 | Strong - | -21.2 |
| DK03 | Syddanmark | 100.5 | 86 | Strong | -9.0 |
| DK04 | Midtjylland | 127.3 | 26 | Leader - | -2.2 |
| DK05 | Nordjylland | 111.6 | 59 | Strong + | 2.5 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Denmark is an Innovation Leader and includes five regions.

All five regions belong to different performance subgroups. *Hovedstaden* (DK01), the capital region, is an Innovation Leader +, and is the fifth most innovative region of all European regions. *Midtjylland* (DK04) is an Innovation Leader -. *Nordjylland* (DK05) is a Strong + Innovator, *Syddanmark* (DK03) is a Strong Innovator and *Sjælland* (DK02) is a Strong – Innovator.

Performance has declined for four regions, most strongly for *Sjælland* (DK02). Performance has only increased for *Nordjylland* (DK05).

**GERMANY**
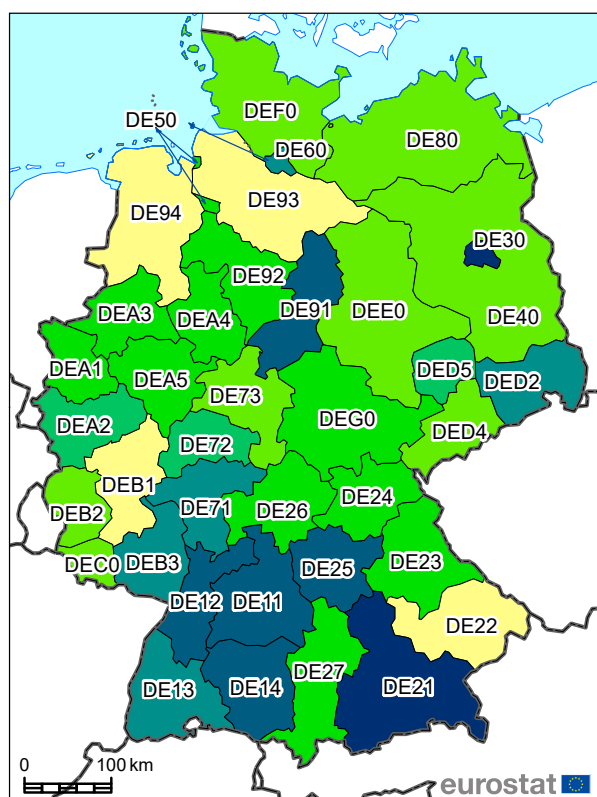


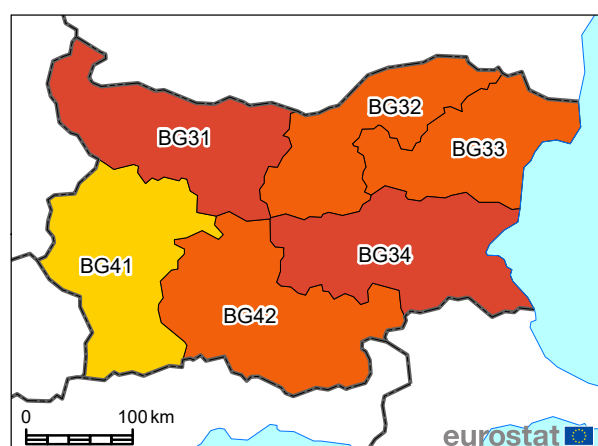| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| DE11 | Stuttgart | 129.5 | 23 | Leader | -7.5 |
| DE12 | Karlsruhe | 136.9 | 14 | Leader | -8.9 |
| DE13 | Freiburg | 123.5 | 29 | Leader - | -10.9 |
| DE14 | Tübingen | 132.9 | 19 | Leader | -9.2 |
| DE21 | Oberbayern | 140.4 | 11 | Leader + | -6.5 |
| DE22 | Niederbayern | 87.4 | 116 | Moderate | -9.7 |
| DE23 | Oberpfalz | 105.3 | 73 | Strong | -18.2 |
| DE24 | Oberfranken | 107.0 | 68 | Strong | -16.5 |
| DE25 | Mittelfranken | 127.5 | 25 | Leader | -5.2 |
| DE26 | Unterfranken | 109.1 | 65 | Strong | -15.3 |
| DE27 | Schwaben | 103.9 | 77 | Strong | -9.0 |
| **DE30** | **Berlin** | 145.4 | 9 | Leader + | 15.7 |
| DE40 | Brandenburg | 96.7 | 91 | Strong - | 0.5 |
| DE50 | Bremen | 109.3 | 64 | Strong | -3.2 |
| DE60 | Hamburg | 122.4 | 33 | Leader - | 4.3 |
| DE71 | Darmstadt | 122.8 | 32 | Leader - | -2.5 |
| DE72 | Gießen | 115.1 | 51 | Strong + | -2.2 |
| DE73 | Kassel | 91.2 | 107 | Strong - | -4.6 |
| DE80 | Mecklenburg-Vorpommern | 92.7 | 101 | Strong - | 2.8 |
| DE91 | Braunschweig | 130.8 | 21 | Leader | 9.6 |
| DE92 | Hannover | 103.5 | 79 | Strong | -9.7 |
| DE93 | Lüneburg | 85.3 | 122 | Moderate | -8.9 |
| DE94 | Weser-Ems | 75.9 | 143 | Moderate | -14.3 |
| DEA1 | Düsseldorf | 103.0 | 80 | Strong | -10.8 |
| DEA2 | Köln | 117.4 | 44 | Strong + | -6.1 |
| DEA3 | Münster | 102.6 | 82 | Strong | -5.8 |
| DEA4 | Detmold | 105.8 | 71 | Strong | -5.6 |
| DEA5 | Arnsberg | 101.2 | 85 | Strong | -12.1 |
| DEB1 | Koblenz | 87.7 | 115 | Moderate | -12.6 |
| DEB2 | Trier | 98.1 | 88 | Strong - | 3.4 |
| DEB3 | Rheinhessen-Pfalz | 126.5 | 27 | Leader - | -7.8 |
| DEC0 | Saarland | 97.1 | 90 | Strong - | -9.9 |
| DED2 | Dresden | 121.9 | 34 | Leader - | -1.3 |
| DED4 | Chemnitz | 98.0 | 89 | Strong - | 10.0 |
| DED5 | Leipzig | 111.8 | 58 | Strong + | 11.9 |
| DEE0 | Sachsen-Anhalt | 90.2 | 111 | Strong - | -2.4 |
| DEF0 | Schleswig-Holstein | 93.4 | 99 | Strong - | -9.8 |
| DEG0 | Thüringen | 104.6 | 75 | Strong | -3.6 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Germany is a Strong Innovator and includes 38 regions.

The South of Germany is, on average, more innovative than the West, North or East. The most innovative region is the capital region *Berlin* (DE30), followed by *Oberbayern* (DE21), *Karlsruhe* (DE12), *Tübingen* (DE14), *Braunschweig* (DE91), *Stuttgart* (DE11) and *Mittelfranken* (DE25). In total there are 12 Innovation Leaders, 22 Strong Innovators and 4 Moderate Innovators.

Performance has increased for 8 regions, most notably for *Berlin* (DE30), *Leipzig* (DED5), *Chemnitz* (DED4) and *Braunschweig* (DE91).

Performance has decreased for 30 regions, and most strongly for *Oberpfalz* (DE23), *Oberfranken* (DE24), *Unterfranken* (DE26), *Weser-Ems* (DE94), *Koblenz* (DEB1), *Arnsberg* (DEA5), *Freiburg* (DE13) and *Düsseldorf* (DEA1).

**IRELAND**
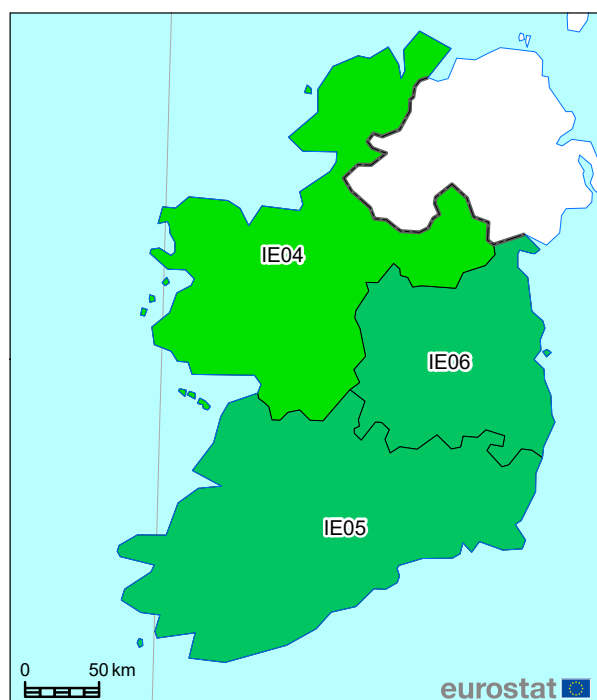


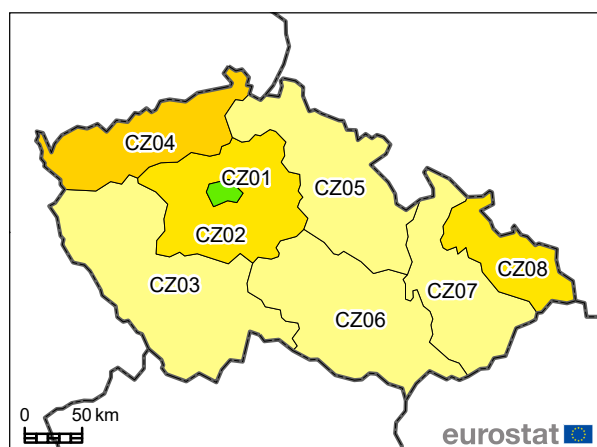| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| IE04 | Northern and Western | 104.0 | 76 | Strong | 4.6 |
| IE05 | Southern | 111.3 | 61 | Strong + | 3.3 |
| **IE06** | **Eastern and Midland** | 110.5 | 62 | Strong + | -0.6 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Ireland is a Strong Innovator and includes three regions.

All three regions are Strong Innovators, with *Southern* (IE05) and *Eastern* and *Midland* (IE06) both being Strong + Innovators. Performance has increased in *Northern* and *Western* (IE04) and *Southern* (IE05).

**GREECE**



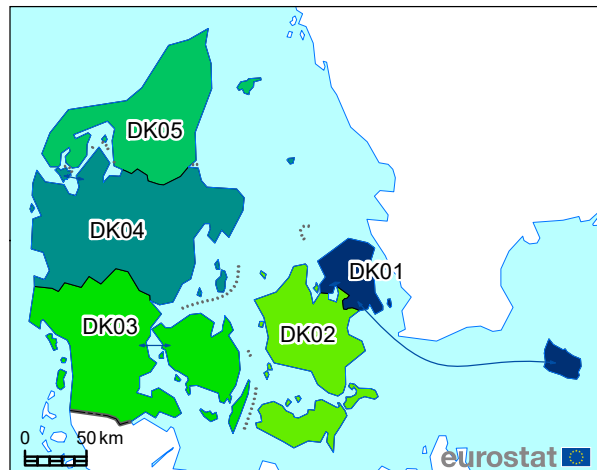| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| EL51 | Anatoliki Makedonia, Thraki | 57.2 | 183 | Moderate - | 14.8 |
| EL52 | Kentriki Makedonia | 79.4 | 135 | Moderate + | 21.3 |
| EL53 | Dytiki Makedonia | 70.9 | 151 | Moderate | 23.1 |
| EL54 | Ipeiros | 65.9 | 163 | Moderate | 12.5 |
| EL61 | Thessalia | 68.4 | 158 | Moderate | 17.0 |
| EL62 | Ionia Nisia | 59.1 | 175 | Moderate | 22.8 |
| EL63 | Dytiki Ellada | 73.8 | 150 | Moderate | 17.8 |
| EL64 | Sterea Ellada | 60.2 | 174 | Moderate | 9.9 |
| EL65 | Peloponnisos | 55.9 | 190 | Moderate - | 7.6 |
| **EL30** | **Attiki** | 82.4 | 126 | Moderate + | 19.2 |
| EL41 | Voreio Aigaio | 56.0 | 188 | Moderate - | 19.0 |
| EL42 | Notio Aigaio | 38.5 | 224 | Modest | -12.3 |
| EL43 | Kriti | 94.4 | 95 | Strong - | 30.1 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Greece is a Moderate Innovator and includes 13 regions.

*Kriti* (EL43) is the only Strong Innovator and the most innovative Greek region. Most other regions are Moderate Innovators, with *Attiki* (EL30) and *Kentriki Makedonia* (EL52) being Moderate + Innovators. *Notio Aigaio* EL42) is the only Modest Innovator.

Performance has increased for almost all regions, and most strongly for *Kriti* (EL43), *Dytiki Makedonia* (EL53) and *Ionia Nisia* (EL62). Performance has declined for only one region, *Notio Aigaio* (EL42).

**SPAIN**
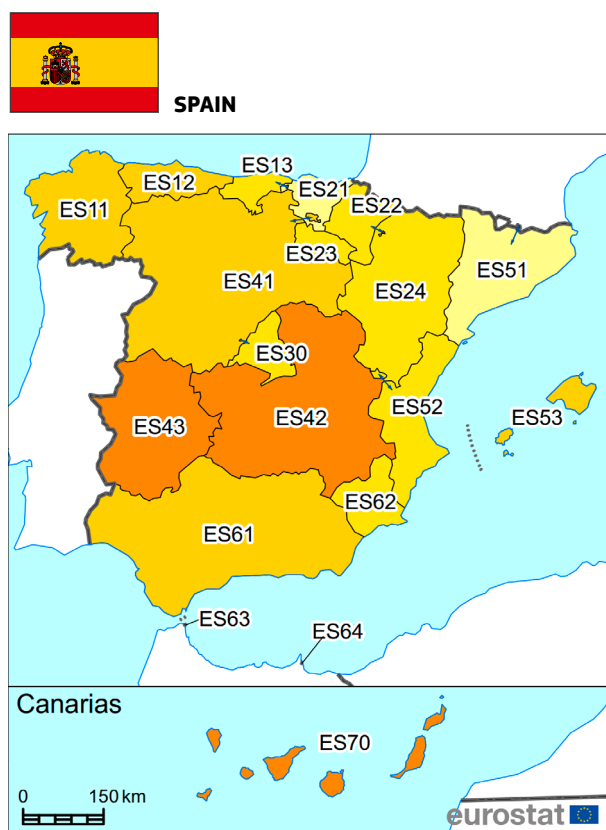


| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| ES11 | Galicia | 55.7 | 190 | Moderate + | 2.5 |
| ES12 | Principado de Asturias | 58.4 | 178 | Moderate - | 2.9 |
| ES13 | Cantabria | 60.2 | 173 | Moderate | 8.4 |
| ES21 | País Vasco | 79.8 | 132 | Moderate + | 8.8 |
| ES22 | Comunidad Foral de Navarra | 75.5 | 145 | Moderate | 2.8 |
| ES23 | La Rioja | 67.5 | 161 | Moderate | 4.1 |
| ES24 | Aragón | 64.7 | 166 | Moderate | 4.9 |
| **ES30** | **Comunidad de Madrid** | 74.0 | 149 | Moderate | 4.1 |
| ES41 | Castilla y León | 51.6 | 201 | Moderate - | -3.6 |
| ES42 | Castilla-la Mancha | 44.7 | 217 | Modest + | -1.4 |
| ES43 | Extremadura | 43.4 | 218 | Modest + | -1.4 |
| ES51 | Cataluña | 77.6 | 140 | Moderate + | 5.0 |
| ES52 | Comunidad Valenciana | 69.3 | 157 | Moderate | 7.3 |
| ES53 | Illes Balears | 52.3 | 197 | Moderate - | 5.0 |
| ES61 | Andalucía | 51.0 | 205 | Moderate - | 2.0 |
| ES62 | Región de Murcia | 59.0 | 176 | Moderate | 8.7 |
| ES63 | Ciudad Autónoma de Ceuta | 26.0 | 234 | Modest - | 2.1 |
| ES64 | Ciudad Autónoma de Melilla | 38.9 | 223 | Modest | 14.9 |
| ES70 | Canarias | 46.1 | 214 | Modest + | 3.6 |

RII: *performance in 2019 relative to that of the EU in 2019.* Rank: *rank performance in 2019 across all regions.* Group: *respective performance group.* Change: *performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Spain is a Moderate Innovator and includes 19 regions.

Regional performance differences are high with the best performing region, *País Vasco* (ES21), performing three times as well as the lowest performing region, *Ciudad Autónoma de Ceuta* (ES63). Most Spanish regions are Moderate Innovators and five regions are Modest Innovators. Performance has increased for 16 regions, and most strongly for *Ciudad Autónoma de Melilla* (ES64).
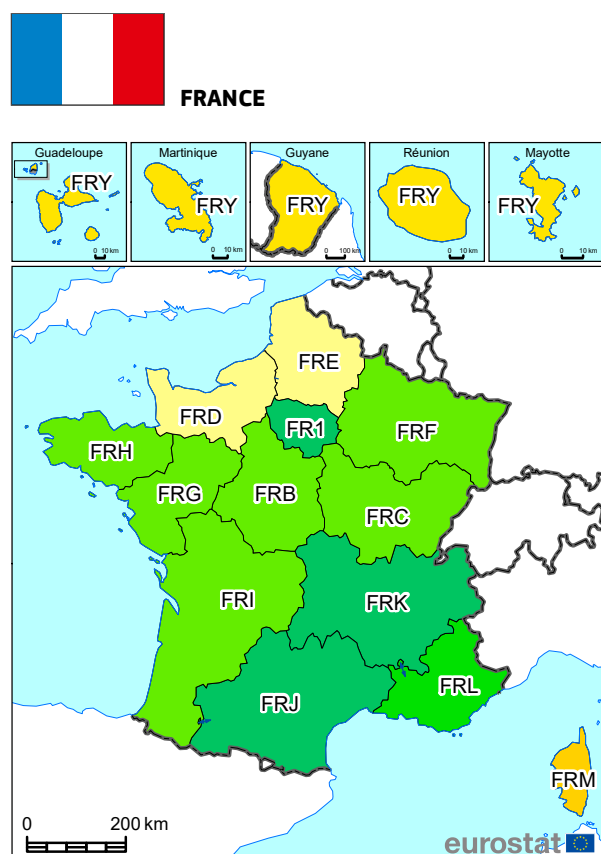
**FRANCE**



| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| **FR1** | **Île de France** | 116.5 | 47 | Strong + | -3.3 |
| FRB | Centre – Val de Loire | 91.1 | 109 | Strong - | -1.4 |
| FRC | Bourgogne – Franche-Comté | 92.5 | 103 | Strong - | -1.8 |
| FRD | Normandie | 85.4 | 121 | Moderate + | -1.4 |
| FRE | Nord-Pas de Calais – Picardie | 79.6 | 133 | Moderate + | -2.7 |
| FRF | Alsace – Champagne-Ardenne | 91.5 | 106 | Strong - | -2.9 |
| FRG | Pays de la Loire | 93.9 | 96 | Strong - | 6.2 |
| FRH | Bretagne | 95.9 | 92 | Strong - | 2.0 |
| FRI | Aquitaine – Limousin – Poitou- | 93.9 | 97 | Strong - | 1.5 |
| FRJ | Languedoc-Roussillon – Midi- | 113.3 | 55 | Strong + | -0.9 |
| FRK | Auvergne – Rhône-Alpes | 115.4 | 50 | Strong + | 3.8 |
| FRL | Provence-Alpes-Côte d'Azur | 102.5 | 83 | Strong | 2.4 |
| FRM | Corse | 54.1 | 193 | Moderate - | 9.3 |
| FRY | Régions ultrapéri¬phériques | 60.6 | 172 | Moderate | 10.8 |

RII: *performance in 2019 relative to that of the EU in 2019.* Rank: *rank performance in 2019 across all regions.* Group: *respective performance group.* Change: *performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

France is a Strong Innovator and includes 14 regions.

*Île de France* (FR1), the capital region, *Languedoc-Roussillon – Midi-Pyrénées* (FRJ) and *Auvergne – Rhône-Alpes* (FRK) are all Strong + Innovators. *Provence-Alpes-Côte d'Azur* (FRL) is a Strong Innovator and six more regions are Strong – Innovators Four regions are Moderate Innovators, with weakest performance in *Corse* (FRM) and *Régions ultrapéri-phériques françaises* (FRY).

Performance has improved for seven regions, and strongest in *Régions ultrapéri-phériques françaises* (FRY) and *Corse* (FRM). Performance has decreased in seven regions, most notably in *Île de France* (FR1), *Alsace – Champagne-Ardenne – Lorraine* (FRF) and *Nord-Pas de Calais – Picardie* (FRE).

**CROATIA**
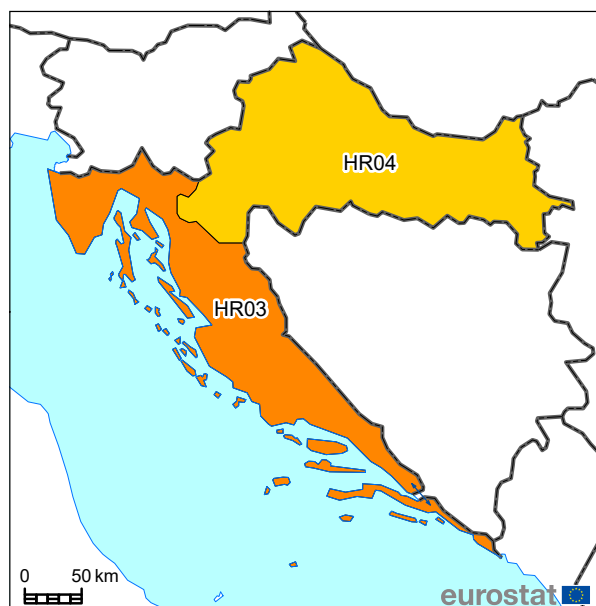


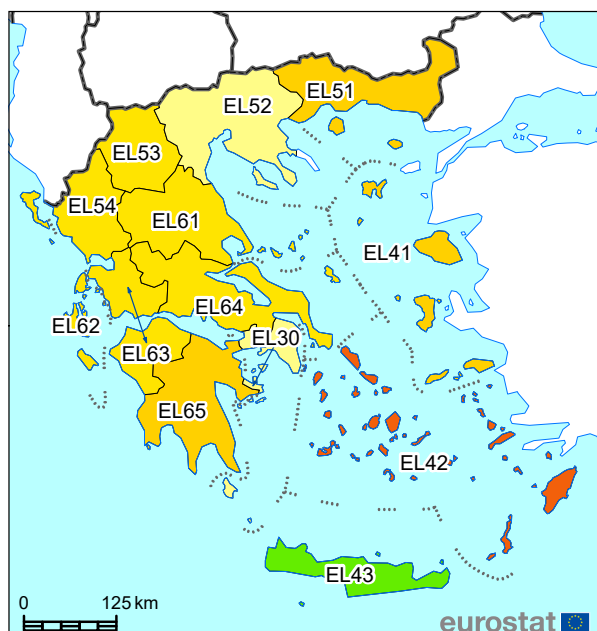| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| HR03 | Jadranska Hrvatska | 45.0 | 216 | Modest + | -3.2 |
| **HR04** | **Kontinentalna Hrvatska** | 58.5 | 177 | Moderate | 1.7 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Croatia is a Moderate Innovator and includes two regions.

*Kontinentalna Hrvatska* (HR03), the capital region, is a Moderate Innovator, and performance has increased. *Jadranska Hrvatska* (HR04) is a Modest + Innovator, and performance has decreased.

**ITALY**



| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| ITC1 | Piemonte | 79.8 | 131 | Moderate + | 5.6 |
| ITC2 | Valle d'Aosta/ Vallée d'Aoste | 57.1 | 184 | Moderate - | 2.6 |
| ITC3 | Liguria | 67.7 | 160 | Moderate | 8.9 |
| ITC4 | Lombardia | 86.6 | 118 | Moderate + | 8.0 |
| ITH1 | Provincia Autonoma Bolzano/ Bozen | 68.0 | 159 | Moderate | 3.1 |
| ITH2 | Provincia Autonoma Trento | 82.1 | 127 | Moderate + | 11.0 |
| ITH3 | Veneto | 84.9 | 123 | Moderate + | 7.7 |
| ITH4 | Friuli-Venezia Giulia | 92.6 | 102 | Strong - | 7.7 |
| ITH5 | Emilia-Romagna | 89.1 | 113 | Moderate + | 11.1 |
| ITI1 | Toscana | 79.1 | 136 | Moderate + | 11.1 |
| ITI2 | Umbria | 79.5 | 134 | Moderate + | 12.4 |
| ITI3 | Marche | 81.2 | 128 | Moderate + | 12.9 |
| **ITI4** | **Lazio** | 74.3 | 147 | Moderate | 1.4 |
| ITF1 | Abruzzo | 69.8 | 156 | Moderate | 15.3 |
| ITF2 | Molise | 57.4 | 181 | Moderate - | 12.5 |
| ITF3 | Campania | 63.3 | 168 | Moderate | 11.3 |
| ITF4 | Puglia | 61.2 | 171 | Moderate | 5.3 |
| ITF5 | Basilicata | 62.7 | 169 | Moderate | 15.0 |
| ITF6 | Calabria | 51.1 | 203 | Moderate - | 7.6 |
| ITG1 | Sicilia | 56.5 | 187 | Moderate - | 6.7 |
| ITG2 | Sardegna | 51.1 | 204 | Moderate - | 0.3 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Italy is a Moderate Innovator and includes 21 regions.

Regional performance differences are high in Italy with the best performing region, *Friuli-Venezia Giulia* (ITH4), performing 80% higher than the lowest performing regions, *Sicilia* (ITG1) and *Sardegna* (ITG2). *Friuli-Venezia Giulia* (ITH4) is the only Strong Innovator, all other regions are Moderate Innovators. Innovation performance is higher in more northern regions as compared to more southern regions.

For all regions, performance has improved, most notably for *Abruzzo* (ITF1) and *Basilicata* (ITF5).

**LITHUANIA**
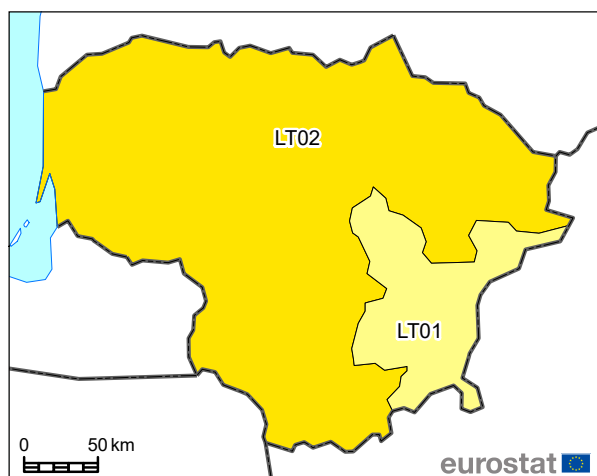
| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| **LT01** | **Sostinės regionas** | 86.4 | 119 | Moderate + | 25.5 |
| LT02 | Vidurio ir vakarų Lietuvos regionas | 65.4 | 165 | Moderate | 18.5 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Lithuania is a Moderate Innovator and includes two regions.

Both are also Moderate Innovators. *Sostinės regionas* (LT01), the capital region, is the most innovative region. Performance has increased strongly for both regions.

**HUNGARY**
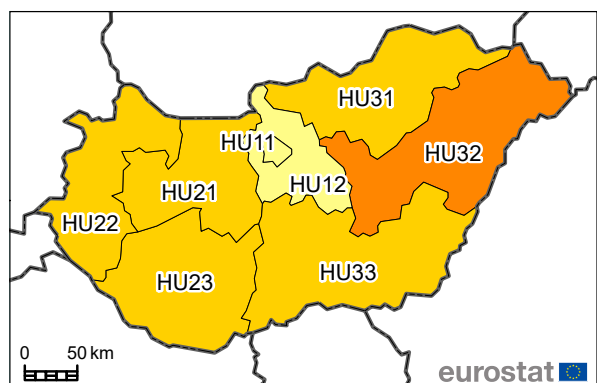
| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| **HU11** | **Budapest** | 80.6 | 130 | Moderate + | -1.2 |
| HU12 | Pest | 77.8 | 139 | Moderate + | 6.3 |
| HU21 | Közép-Dunántúl | 51.0 | 206 | Moderate - | -6.3 |
| HU22 | Nyugat-Dunántúl | 52.6 | 195 | Moderate - | -5.0 |
| HU23 | Dél-Dunántúl | 50.9 | 207 | Moderate - | 2.8 |
| HU31 | Észak-Magyarország | 50.7 | 208 | Moderate - | 5.5 |
| HU32 | Észak-Alföld | 49.7 | 210 | Modest + | 1.2 |
| HU33 | Dél-Alföld | 52.1 | 198 | Moderate - | 1.1 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Hungary is a Moderate Innovator and includes eight regions.

Seven regions are also Moderate Innovators, only *Észak-Alföld* (HU32) is a Modest Innovator. *Budapest* (HU11), the capital region, is the most innovative region, and one of two Moderate + Innovators. Performance has increased for five regions and most strongly for *Pest* (HU12) and *Észak-Magyarország* (HU31).

Performance has decreased for three regions.

**NETHERLANDS**
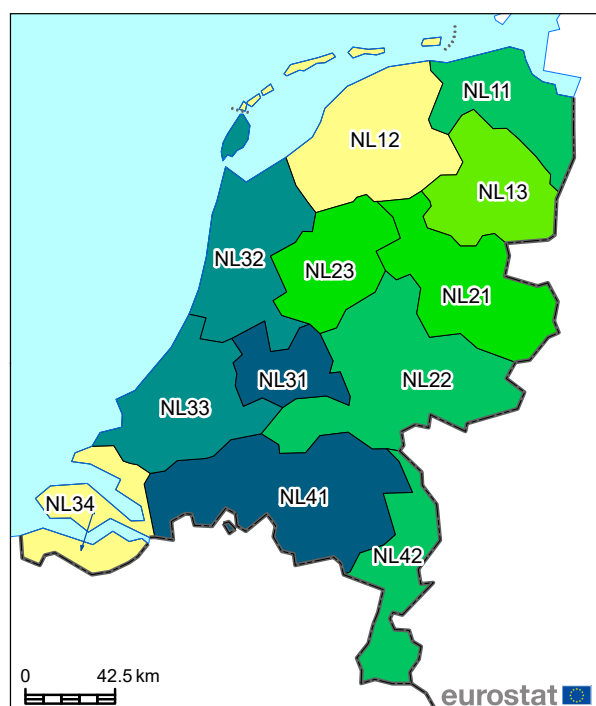


| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| NL11 | Groningen | 113.3 | 54 | Strong + | 11.4 |
| NL12 | Friesland | 83.8 | 125 | Moderate + | 3.9 |
| NL13 | Drenthe | 95.8 | 93 | Strong - | 18.7 |
| NL21 | Overijssel | 109.4 | 63 | Strong | 5.1 |
| NL22 | Gelderland | 118.8 | 42 | Strong + | 9.0 |
| NL23 | Flevoland | 104.8 | 74 | Strong | 2.2 |
| NL31 | Utrecht | 134.8 | 18 | Leader | 14.3 |
| **NL32** | **Noord-Holland** | 123.0 | 31 | Leader - | 9.8 |
| NL33 | Zuid-Holland | 121.5 | 37 | Leader - | 10.2 |
| NL34 | Zeeland | 86.3 | 120 | Moderate + | 2.1 |
| NL41 | Noord-Brabant | 129.1 | 24 | Leader | 6.4 |
| NL42 | Limburg | 118.2 | 43 | Strong + | 11.8 |

_RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011._

The Netherlands is an Innovation Leader and includes 12 regions.

_Utrecht_ (NL31) and _Noord-Brabant_ (NL42) are Innovation Leaders, and both regions are also among the top-25 most innovative regions in Europe. Two more regions are Innovation Leaders -, five regions are Strong Innovators, and _Friesland_ (NL12) _Zeeland_ (NL34) being the weakest innovating region.

Performance has increased for all regions, most notably for _Drenthe_ (NL13) and _Utrecht_ (NL31).

**AUSTRIA**
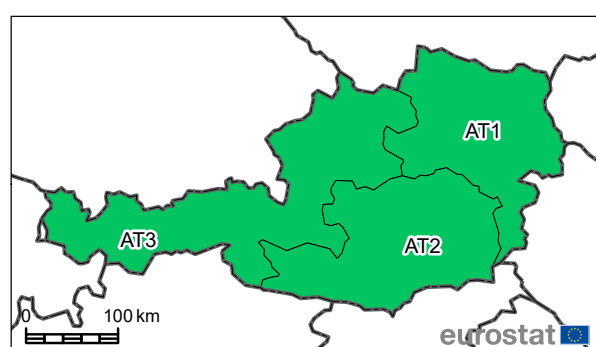


| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| **AT1** | **Ostösterreich** | 114.8 | 52 | Strong + | 6.1 |
| AT2 | Südösterreich | 116.2 | 48 | Strong + | 9.2 |
| AT3 | Westösterreich | 119.9 | 39 | Strong + | 15.0 |

_RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011._

Austria is a Strong Innovator and includes three regions which are all Strong + Innovators.

Innovation performance is highest in _Westösterreich_ (AT3). Performance has increased for all regions, most strongly for _Westösterreich_ (AT3).

**POLAND**
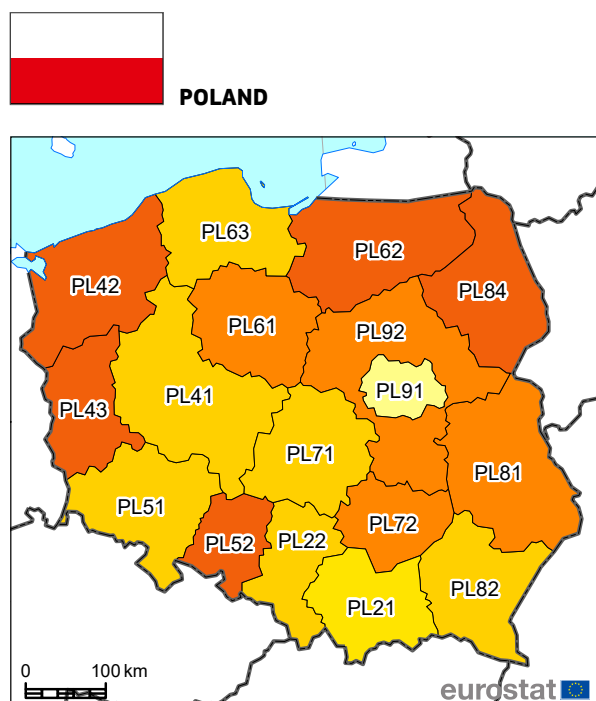


| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| PL21 | Malopolskie | 70.1 | 155 | Moderate | 16.7 |
| PL22 | Slaskie | 51.4 | 202 | Moderate - | 4.5 |
| PL41 | Wielkopolskie | 53.0 | 194 | Moderate - | 4.0 |
| PL42 | Zachodniopomorskie | 43.1 | 220 | Modest | 7.7 |
| PL43 | Lubuskie | 41.0 | 222 | Modest | 0.9 |
| PL51 | Dolnoslaskie | 57.0 | 186 | Moderate - | 4.8 |
| PL52 | Opolskie | 41.2 | 221 | Modest | 2.5 |
| PL61 | Kujawsko-Pomorskie | 46.0 | 215 | Modest + | 2.3 |
| PL62 | Warminsko-Mazurskie | 37.0 | 228 | Modest | -4.6 |
| PL63 | Pomorskie | 57.7 | 180 | Moderate - | 5.3 |
| PL71 | Lódzkie | 52.4 | 196 | Moderate - | 6.3 |
| PL72 | Swietokrzyskie | 46.1 | 214 | Modest + | 6.2 |
| PL81 | Lubelskie | 46.2 | 213 | Modest + | 5.8 |
| PL82 | Podkarpackie | 58.3 | 179 | Moderate - | 14.0 |
| PL84 | Podlaskie | 43.3 | 219 | Modest | 7.2 |
| **PL91** | **Warszawski stoleczny** | 78.7 | 138 | Moderate + | 0.2 |
| PL92 | Mazowiecki regionalny | 47.0 | 212 | Modest + | 0.2 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Poland is a Moderate Innovator and includes 17 regions.

*Warszawski stoleczny* (PL91), the capital region, is the most innovative region, and the only Moderate + Innovator. Seven more regions are Moderate Innovators, and nine regions are Modest Innovators.

Performance has increased all regions, except for *Warminsko-Mazurskie* (PL62) where performance has declined. Performance has increased most in *Malopolskie* (PL21) and *Podkarpackie* (PL82).

**PORTUGAL**
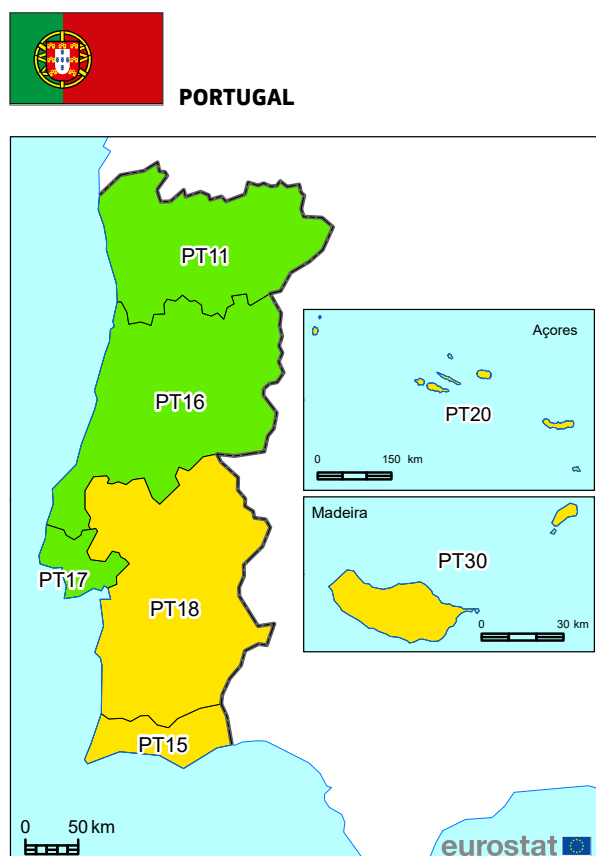


| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| PT11 | Norte | 92.7 | 100 | Strong - | 13.8 |
| PT15 | Algarve | 74.1 | 148 | Moderate | 2.7 |
| PT16 | Centro | 91.6 | 105 | Strong - | 8.9 |
| **PT17** | **Lisboa** | 94.6 | 94 | Strong - | 5.7 |
| PT18 | Alentejo | 70.6 | 152 | Moderate | 5.1 |
| PT20 | Região Autónoma dos Açores | 63.5 | 167 | Moderate | 3.4 |
| PT30 | Região Autónoma da Madeira | 70.4 | 154 | Moderate | 16.3 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Portugal is a Moderate Innovator and includes seven regions.

Three regions are Strong – Innovators and four regions are Moderate innovators. *Lisboa* (PT17), the capital region, is the most innovative region. Performance has improved for all regions, most strongly for *Região Autónoma da Madeira* (PT30) and *Norte* (PT11).

**ROMANIA**



| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| RO11 | Nord-Vest | 29.7 | 232 | Modest - | -9.8 |
| RO12 | Centru | 27.3 | 233 | Modest - | -10.8 |
| RO21 | Nord-Est | 21.5 | 236 | Modest - | -19.0 |
| RO22 | Sud-Est | 22.1 | 235 | Modest - | -19.5 |
| RO31 | Sud – Muntenia | 18.4 | 237 | Modest - | -16.8 |
| **RO32** | **Bucuresti – Ilfov** | 51.6 | 200 | Moderate - | -7.9 |
| RO41 | Sud-Vest Oltenia | 14.3 | 238 | Modest - | -16.4 |
| RO42 | Vest | 32.8 | 230 | Modest - | -5.7 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Romania is a Modest Innovator and includes eight regions.

Regional performance differences are high in Romania with the best performing region, *Bucuresti – Ilfov* (RO32), performing more than 3.6 times as well as the lowest performing region, *Sud-Vest Oltenia* (RO41). All Romanian regions are Modest – Innovators, only *Bucuresti – Ilfov* (RO41) is a Moderate – Innovator. Performance has declined strongly for all regions.

**SLOVENIA**



| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| SI03 | Vzhodna Slovenija | 70.6 | 153 | Moderate | -13.6 |
| **SI04** | **Zahodna Slovenija** | 87.3 | 117 | Moderate + | -15.2 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Slovenia is a Moderate Innovator and includes two regions.

*Zahodna Slovenija* (SI04) is a Moderate + Innovator, *Vzhodna Slovenija* (SI03) is a Moderate + Innovator. Performance has decreased strongly for both regions.

**SLOVAKIA**



| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| **SK01** | **Bratislavský kraj** | 88.5 | 114 | Moderate + | 3.5 |
| SK02 | Západné Slovensko | 56.0 | 189 | Moderate - | 2.8 |
| SK03 | Stredné Slovensko | 52.0 | 199 | Moderate - | -5.1 |
| SK04 | Východné Slovensko | 57.1 | 185 | Moderate - | 6.6 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Slovakia is a Moderate Innovator and includes four regions.

*Bratislavský kraj* (SK01), the capital region, is a Moderate + Innovator and the most innovative region in Slovakia. The other three regions are Moderate - Innovators.

Performance has increased strongly for three regions and decreased for one region: *Stredné Slovensko* (SK03).

**FINLAND**
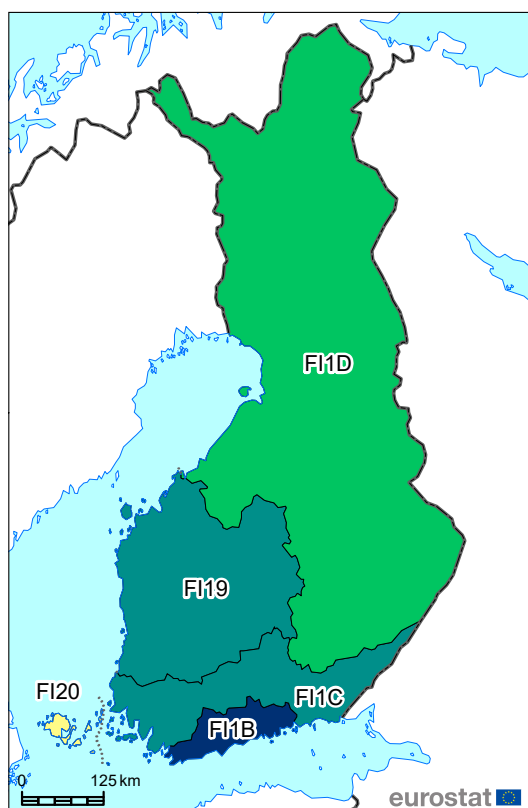


| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| **FI1B** | **Helsinki-Uusimaa** | 156.0 | 3 | Leader + | 12.8 |
| FI1C | Etelä-Suomi | 120.8 | 38 | Leader - | 10.3 |
| FI19 | Länsi-Suomi | 124.5 | 28 | Leader - | 2.9 |
| FI1D | Pohjois- ja Itä-Suomi | 117.4 | 45 | Strong + | 10.7 |
| FI20 | Åland | 76.7 | 141 | Moderate + | -1.2 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Finland is an Innovation Leader and includes five regions.

The three southernmost regions are all Innovation Leaders. *Helsinki-Uusimaa* (FI1B) is an Innovation Leader +, *Etelä-Suomi* (FI1C) and *Länsi-Suomi* (FI19) are both Innovation Leader -. *Pohjois- ja Itä-Suomi* (FI1D) is a Strong + Innovator and *Åland* (FI20) is a Moderate + Innovator.

Performance has increased for four regions, most strongly for *Helsinki-Uusimaa* (FI1B). Performance has declined for *Åland* (FI20).

**SWEDEN**
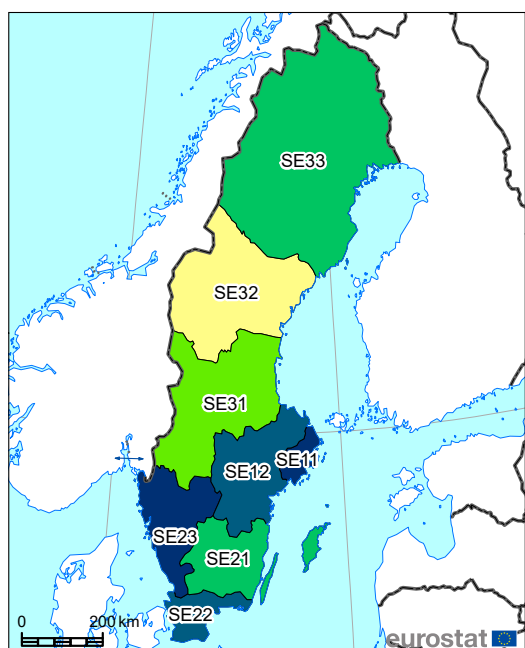


| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| **SE11** | **Stockholm** | 153.8 | 4 | Leader + | 0.1 |
| SE12 | Östra Mellansverige | 131.9 | 20 | Leader | -7.5 |
| SE21 | Småland med öarna | 111.6 | 60 | Strong + | 2.3 |
| SE22 | Sydsverige | 137.0 | 13 | Leader | -12.3 |
| SE23 | Västsverige | 138.8 | 12 | Leader + | 2.9 |
| SE31 | Norra Mellansverige | 90.8 | 110 | Strong - | 0.7 |
| SE32 | Mellersta Norrland | 89.4 | 112 | Moderate + | -6.4 |
| SE33 | Övre Norrland | 114.6 | 53 | Strong + | -5.1 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Sweden is an Innovation Leader and includes eight regions.

*Stockholm* (SE11), the capital region, is an Innovation Leader + and the most innovative region. *Sydsverige* (SE22) and *Västsverige* (SE23) are also Innovation Leaders +. *Östra Mellansverige* (SE12) is an Innovation leader. The other four regions are either Strong or Moderate Innovators. Performance has increased for four regions. Performance has decreased for four regions, most notably for *Sydsverige* (SE22).

## UNITED KINGDOM
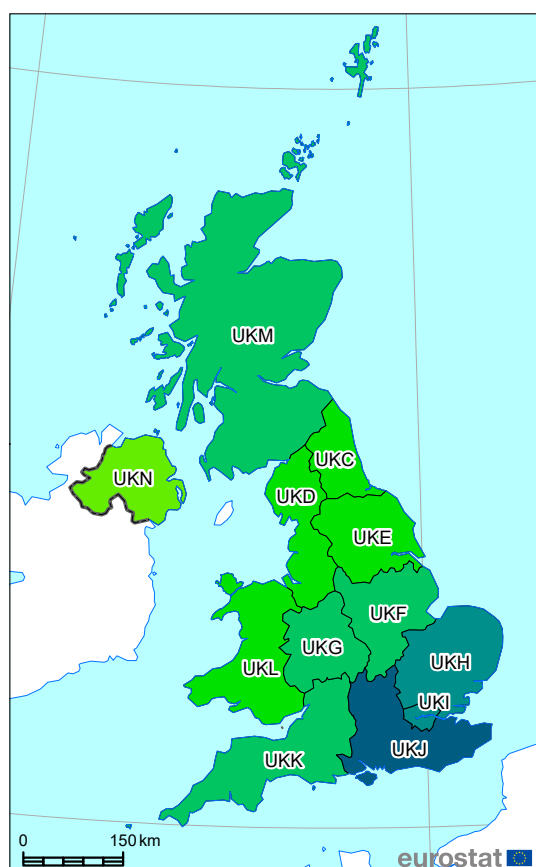


| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| UKC | North East | 103.6 | 78 | Strong | 11.5 |
| UKD | North West | 105.8 | 72 | Strong | 5.8 |
| UKE | Yorkshire and The Humber | 107.5 | 67 | Strong | 16.4 |
| UKF | East Midlands | 112.2 | 57 | Strong + | 7.8 |
| UKG | West Midlands | 115.6 | 49 | Strong + | 22.5 |
| UKH | East of England | 123.2 | 30 | Leader - | 3.7 |
| **UKI** | **London** | 121.6 | 36 | Leader - | 10.6 |
| UKJ | South East | 129.9 | 22 | Leader | 14.0 |
| UKK | South West | 119.1 | 41 | Strong + | 10.6 |
| UKL | Wales | 106.3 | 69 | Strong | 16.6 |
| UKM | Scotland | 113.0 | 56 | Strong + | 10.8 |
| UKN | Northern Ireland | 92.3 | 104 | Strong - | 16.1 |

_RII_: performance in 2019 relative to that of the EU in 2019. _Rank_: rank performance in 2019 across all regions. _Group_: respective performance group. _Change_: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.

The United Kingdom is a Strong Innovator and includes 12 regions.

Three regions are Innovation Leaders, the other nine regions are Strong Innovators. The most innovative region is _South East_ (UKJ). Performance has increased for all regions, most strongly for _West Midlands_ (UKG), _Wales_ (UKL) and _Yorkshire and the Humber_ (UKE).

## NORWAY
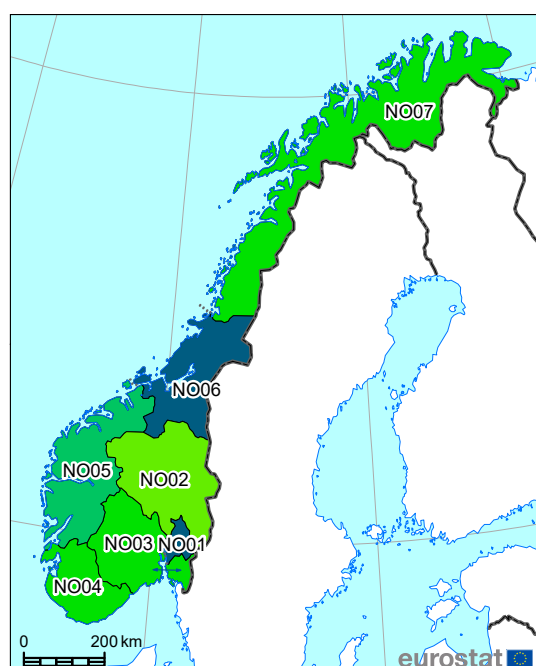


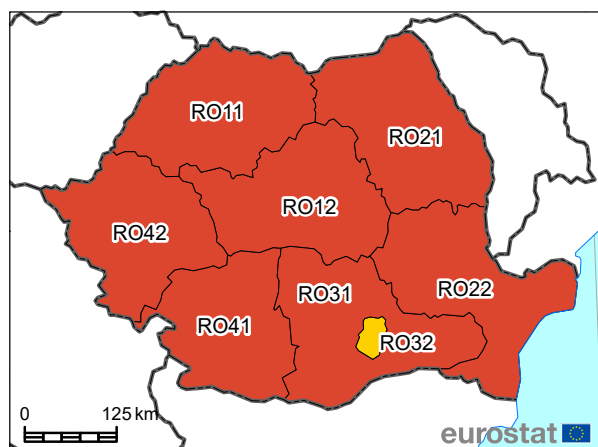| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| **NO01** | **Oslo og Akershus** | 135.6 | 16 | Leader | 17.0 |
| NO02 | Hedmark og Oppland | 91.2 | 108 | Strong - | 22.1 |
| NO03 | Sør-Østlandet | 103.0 | 81 | Strong | 18.1 |
| NO04 | Agder og Rogaland | 108.8 | 66 | Strong | 18.1 |
| NO05 | Vestlandet | 117.3 | 46 | Strong + | 18.5 |
| NO06 | Trøndelag | 136.8 | 15 | Leader | 18.2 |
| NO07 | Nord-Norge | 106.0 | 70 | Strong | 34.2 |

_RII_: performance in 2019 relative to that of the EU in 2019. _Rank_: rank performance in 2019 across all regions. _Group_: respective performance group. _Change_: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.

Norway is a Strong Innovator and includes seven regions.

_Trøndelag_ (NO06) and _Oslo og Akershus_ (NO01), the capital region, are both Innovation Leaders and within the top-25 of most innovative European regions. The other regions are all Strong Innovators.

Performance has increased for all regions, most notably for _Nord-Norge_ (NO07). These strong increases can be attributed to higher performance on the indicators using CIS data.

**SWITZERLAND**
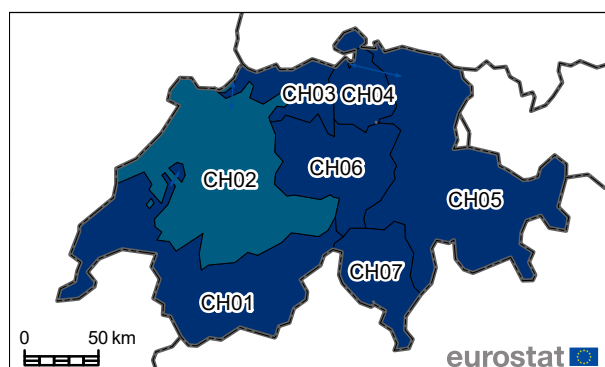


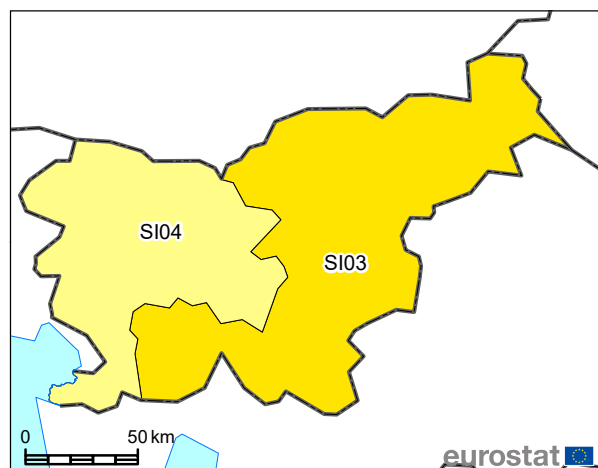| NUTS | Region | RII | Rank | Group | Change |
|------|--------|-----|------|-------|--------|
| CH01 | Région lémanique | 140.7 | 10 | Leader + | -0.4 |
| **CH02** | **Espace Mittelland** | 134.8 | 17 | Leader | 6.0 |
| CH03 | Nordwestschweiz | 149.6 | 7 | Leader + | -9.0 |
| CH04 | Zürich | 160.1 | 1 | Leader + | -6.5 |
| CH05 | Ostschweiz | 150.2 | 6 | Leader + | 14.1 |
| CH06 | Zentralschweiz | 146.1 | 8 | Leader + | -3.5 |
| CH07 | Ticino | 156.8 | 2 | Leader + | 17.5 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

Switzerland is an Innovation Leader and includes seven regions.

Six Swiss regions are Innovation Leaders +, performing more than 40% above the EU average. The most innovative region is *Zürich* (CH04), performing 60% above the EU average. All regions are within the top-20 of most innovative European regions, and five regions are within the top-10.

Performance has increased for three regions, most notably for *Ticino* (CH07) and *Ostschweiz* (CH05). Performance has decreased for four regions, most notably for *Nordwestschweiz* (CH03).



**SERBIA**



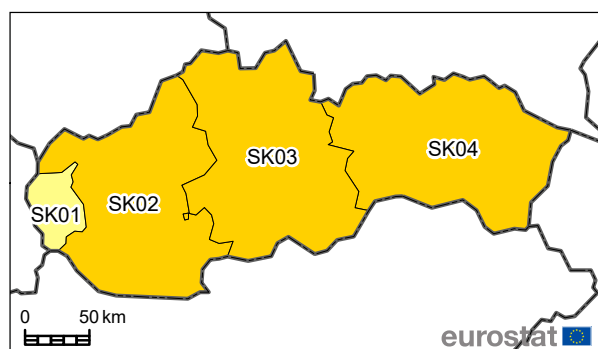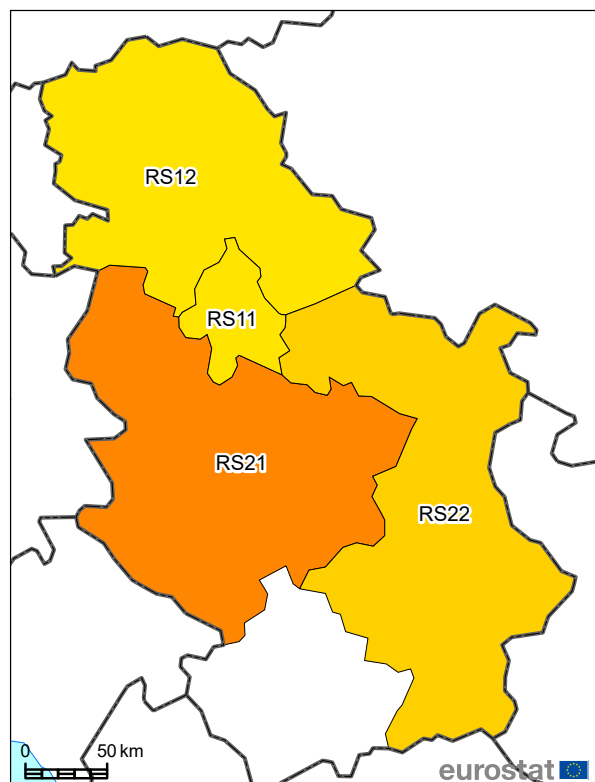| NUTS § | Region | RII | Rank | Group | Change |
|--------|--------|-----|------|-------|--------|
| **RS11** | **Belgrade** | 65.6 | 164 | Moderate | 17.9 |
| RS12 | Vojvodina | 62.2 | 170 | Moderate | 21.6 |
| RS21 | Šumadija and Western Serbia | 48.9 | 211 | Modest + | 11.1 |
| RS22 | Southern and Eastern Serbia | 50.6 | 209 | Moderate - | 16.4 |

*RII: performance in 2019 relative to that of the EU in 2019. Rank: rank performance in 2019 across all regions. Group: respective performance group. Change: performance change over time calculated as the difference between the performance in 2019 (RII2019) relative to that of the EU in 2011 and performance in 2011 (RII2011) relative to that of the EU in 2011.*

*§ For Serbia, official NUTS codes are not available, as Eurostat and Serbia have not yet agreed on statistical regions for the country. This report uses the unofficial codes as shown in the table.*

Serbia is a Moderate Innovator and includes four regions.

Three regions are Moderate Innovators, with *Belgrade* (RS11) and *Vojvodina* (RS12) the most innovative regions. *Šumadija* and *Western Serbia* (RS21) is a Modest + Innovator.

Performance has increased strongly for all regions, most notably for *Vojvodina* (RS12).

## 3.4 Performance changes over time

Performance of regional innovation systems changes over time. Comparing performance between 2011 (RII2011) and 2019 (RII 2019), 159 regions have improved their performance on regional innovation, and for 79 regions performance has worsened (**Table 10**). Where on average performance has increased for 67% of the regions, for the Innovation Leaders this share is 55%. For the Strong Innovators this share is 64%, for the Moderate Innovators it is 80%, and for the Modest Innovators it is 45%. The share of regions with increasing performance is larger than the share of regions with decreasing performance. The average rate of increase for such regions is 8.9%, which is above the corresponding average rate of decrease of 7.0%. Over time, there has been a process of convergence in regional performance with decreasing performance differences between regions. The spread in regional innovation performance, as measured by sigma convergence, has decreased over time.

Performance has increased for all regions in Austria, Belgium, Italy, Lithuania, the Netherlands, Norway, Portugal, Serbia and the United Kingdom, and for 50% or more of the regions in Croatia, Czechia, Finland, France, Greece, Hungary, Ireland, Poland, Slovakia, Spain and Sweden. Performance has decreased for all regions in Romania and Slovenia, and for more than 50% of regions in Bulgaria, Denmark, Germany and Switzerland.

Performance changes over time are visualised in **Figure 3** using colour codes for eight different categories of performance change. Performance has increased in all green coloured regions, with darker shades of green showing higher degrees of performance increases. Performance has decreased in all purple coloured regions, with darker shades of purple showing higher levels of performance decreases.

Performance has increased very strongly by more than 15% for 31 regions and has increased strongly between 5% and 10% for 41 regions (**Table 11**). For 29 regions, performance has declined strongly between –10% and –5%, and for 18 regions, performance has declined very strongly by more than 10%.

Performance changes over time are largely driven by strong average increases for International scientific co-publications and Trademark applications, but there are no general patterns across the regions as changes in indicator performance differ strongly between the regions. For the three groups of regions with declining performance however, lagging performance can partly be attributed to declining performance on the indicators using innovation survey data.

| | All regions | Innovation Leaders | Strong Innovators | Moderate Innovators | Modest Innovators |
|---|---|---|---|---|---|
| **Table 10: Performance change over time by regional performance group** | | | | | |
| Performance increase | 159 | 21 | 47 | 78 | 13 |
| Performance decrease | 79 | 17 | 26 | 20 | 16 |
| | 238 | 38 | 73 | 98 | 29 |

| Decrease | Regions | Increase | Regions |
|---|---|---|---|
| **Table 11: Performance change over time by regional performance group** | | | |
| Below –10% | 18 | Between 0% and 2.5% | 26 |
| Between –10% and –5% | 29 | Between 2.5% and 5% | 30 |
| Between –5% and 0% | 32 | Between 5% and 10% | 41 |
| | | Between 10% and 15% | 31 |
| | | Above 15% | 31 |

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8   Sigma-convergence occurs when the spread in innovation performance across a group of regions falls over time. This spread in convergence is measured by the ratio of the standard deviation and the average performance of all regions. For the year measured by the RII 2011, the spread was 0.399, for the year measured by the RII 2015, the spread was 0.405 or a 1.6% increase, for the year measured by the RII 2019, the spread was 0.374, a decrease compared to both the RII 2015 and RII 2011.

**Figure 3: Innovation performance change 2011–2019**



## Innovation performance change 2011–2019

%

- < -10
- -10 - -2.5
- -2.5 - 0
- 0 - 2.5
- 2.5 - 5
- 5 - 10
- 10 - 15
- > 15

Source: European Commission – Regional Innovation Scoreboard 2019

# 4. Performance maps per indicator

For each of the indicators used in the RIS 2019, regional performance is shown in geographical maps. Regions are grouped according to their performance relative to the EU average using the same thresholds applied in Section 3 of this report. For each indicator, the top-40 best performing regions are listed.[9]

The distribution of relative performance scores varies strongly across indicators. For instance, almost 80 regions perform above 120% of the EU average on SMEs with marketing or organizational innovations or SMEs innovating in-house (**Table 12**). By contrast, more than 80 regions perform below 50% of the EU average on Public-private co-publications and Trademark applications. These differences reflect the fact that most indicator scores are not symmetrically distributed with equal shares of regions having high and low scores.

### Table 12: Number of regions in different performance groups per indicator

| | Performance above 120% of EU | Performance between 90% and 120% of EU | Performance between 50% and 90% of EU | Performance below 50% of EU |
|---|---|---|---|---|
| **RII2019** | **38** | **73** | **97** | **30** |
| Population having completed tertiary education[1] | 58 | 62 | 74 | 42 |
| Lifelong learning | 70 | 26 | 86 | 56 |
| International scientific co-publications | 50 | 55 | 88 | 45 |
| Top 10% most-cited publications | 26 | 83 | 74 | 55 |
| R&D expenditure in the public sector | 42 | 59 | 96 | 41 |
| R&D expenditure in the business sector | 31 | 51 | 90 | 66 |
| Non-R&D innovation expenditure[4] | 89 | 68 | 61 | 13 |
| SMEs with product or process innovations | 71 | 88 | 36 | 43 |
| SMEs with marketing or organisational innovations | 78 | 65 | 55 | 40 |
| SMEs innovating in-house | 79 | 82 | 27 | 50 |
| Innovative SMEs collaborating with others | 65 | 39 | 59 | 75 |
| Public-private co-publications | 52 | 38 | 62 | 86 |
| PCT patent applications[4] | 50 | 34 | 52 | 95 |
| Trademark applications[2] | 48 | 42 | 63 | 82 |
| Design applications[3] | 45 | 45 | 80 | 62 |
| Employment in medium-high/high-tech manufacturing and knowledge-intensive services[5] | 55 | 59 | 74 | 33 |
| Sales of new-to-market and new-to-firm innovations | 24 | 77 | 110 | 27 |

1 Data missing for two regions;
2 Data missing for three regions;
3 Data missing for six regions;
4 Data missing for seven regions;
5 Data missing for 15 regions.

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9  Cyprus, Estonia, Latvia, Luxembourg and Malta, are excluded from the top-40 listings, although they might score highly on some indicators.

## Percentage population aged 30-34 having completed tertiary education
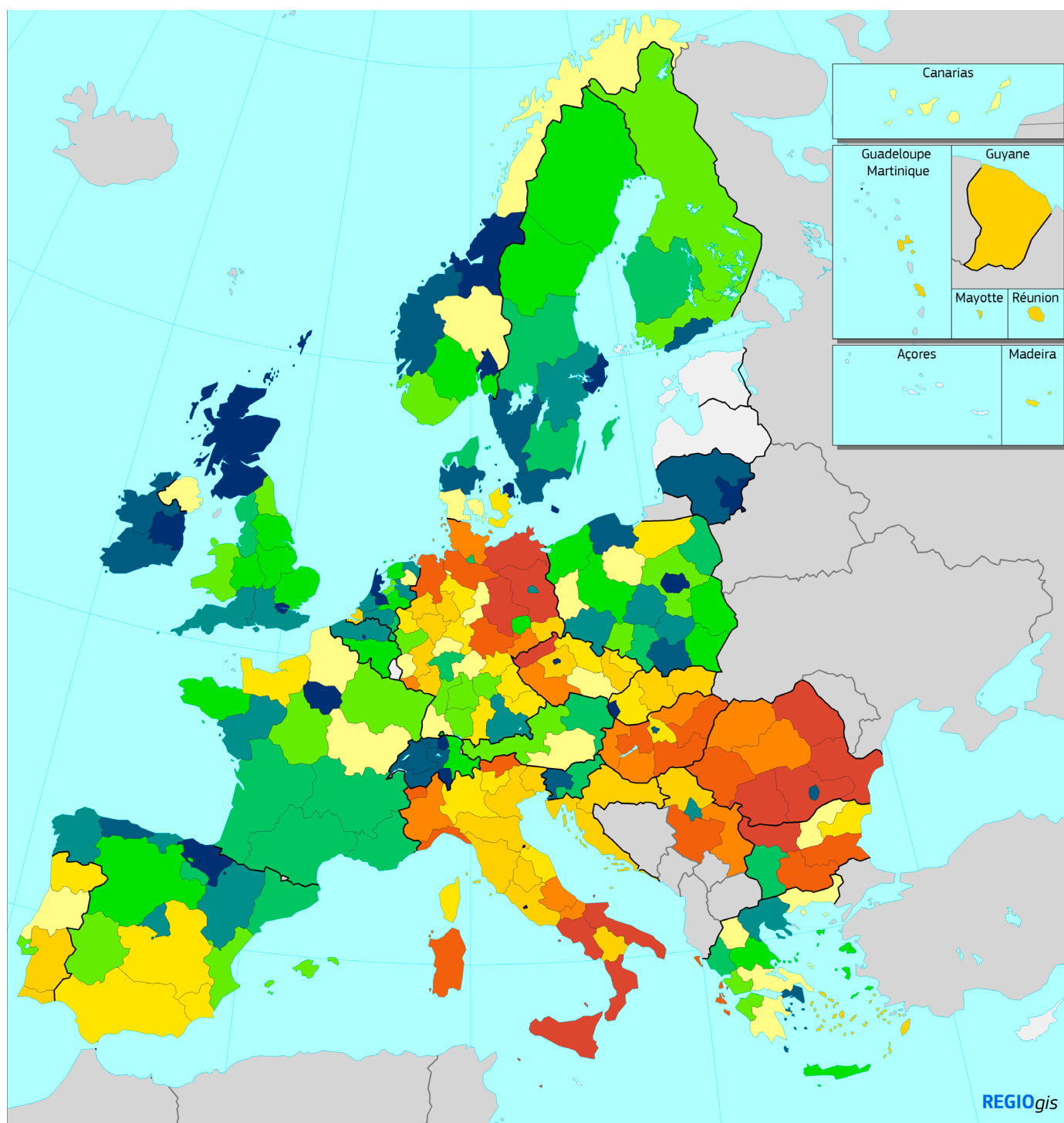


Canarias

Guadeloupe
Martinique

Guyane

Mayotte   Réunion

Açores

Madeira

REGIO*gis*

## Percentage of population aged 30-34 having completed tertiary education

- Bottom one-third low performers
- Middle one-third low performers
- Top one-third low performers
- Bottom one-third moderate performers
- Middle one-third moderate performers
- Top one-third moderate performers

- Bottom one-third strong performers
- Middle one-third strong performers
- Top one-third strong performers
- Bottom one-third high performers
- Middle one-third high performers
- Top one-third high performers
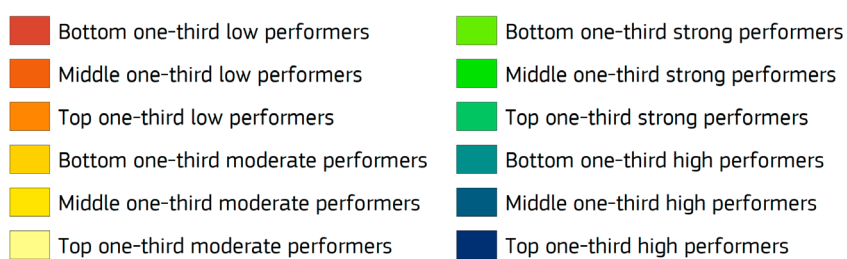
## Percentage population aged 30-34 having completed tertiary education

Tertiary education is not uniformly spread within each country. For instance, Tertiary education is below the EU average for most regions in Germany. For only three German regions, it is above the EU average. Tertiary education is relatively weak in Croatia, Czechia, Hungary, Italy, Portugal, Romania and Slovakia. In many countries, performance is highest in capital regions, a direct result of above-average shares of employment in both public and private services, which typically employ more people with a tertiary degree.

The top 40 best performing regions are shown on the right. Most regions belonging to the top 10 comprise of capital city regions, which are *Sostinės regionas* (LT01), *Warszawski stoleczny* (PL91), *London* (UKI), *Hovedstaden* (DK01), *Oslo og Akershus* (NO01), *Stockholm* (SE11), *Bratislavský kraj* (SK01) and *Praha* (CZ01).

Eastern European capital city-regions perform very well, given *Warszawski stoleczny* (PL91) in Poland and *Sostinės regionas* (LT01) in Lithuania, both scoring 117.6% above the EU average.

### *Definition of the indicator*

*Numerator: Number of persons in age class with some form of post-secondary education*

*Denominator: The reference population is all age classes between 30 and 34 years inclusive*

*Rationale: This is a general indicator of the supply of advanced skills. It is not limited to science and technical fields, because the adoption of innovations in many areas, including the service sectors, depends on a wide range of skills. The indicator focuses on a narrow share of the population aged 30 to 34 and will relatively quickly reflect changes in educational policies leading to more tertiary graduates.*

*Missing data: Região Autónoma dos Açores (PT20) and Aland (FI20).*

## Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 * the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*

|  | Region |  |
|---|---|---|
| 1 | Warszawski stoleczny (PL91) | 217.6* |
|  | Sostinės regionas (LT01) | 217.6* |
| 3 | London (UKI) | 202.0 |
| 4 | Zürich (CH04) | 196.5 |
| 5 | Hovedstaden (DK01) | 187.5 |
| 6 | Oslo og Akershus (NO01) | 187.1 |
| 7 | Stockholm (SE11) | 185.9 |
| 8 | Bratislavský kraj (SK01) | 183.2 |
| 9 | Utrecht (NL31) | 178.9 |
| 10 | Praha (CZ01) | 177.7 |
| 11 | Île de France (FR1) | 176.6 |
| 12 | Eastern and Midland (IE06) | 170.3 |
| 13 | Scotland (UKM) | 168.8 |
| 14 | Noord-Holland (NL32) | 163.3 |
| 15 | País Vasco (ES21) | 159.4 |
| 16 | Ticino (CH07) | 157.4 |
| 17 | Région de Bruxelles-Capitale (BE1) | 156.6 |
| 18 | Trøndelag (NO06) | 155.9 |
| 19 | Comunidad Foral de Navarra (ES22) | 155.5 |
| 20 | Zentralschweiz (CH06) | 152.3 |
| 21 | Région lémanique (CH01) | 151.2 |
| 22 | Sydsverige (SE22) | 149.6 |
| 23 | Helsinki-Uusimaa (FI1B) | 149.2 |
| 24 | Northern and Western (IE04) | 147.7 |
| 25 | Bucuresti - Ilfov (RO32) | 146.1 |
| 26 | Budapest (HU11) | 144.9 |
| 27 | Vidurio ir vakarų Lietuvos regionas (LT02) | 144.5 |
| 28 | Vestlandet (NO05) | 143.0 |
| 29 | Principado de Asturias (ES12) | 142.2 |
| 30 | Zahodna Slovenija (SI04) | 141.0 |
| 31 | Attiki (EL30) | 140.6 |
|  | Espace Mittelland (CH02) | 140.6 |
| 33 | Västsverige (SE23) | 139.8 |
| 34 | Southern (IE05) | 138.3 |
| 35 | Malopolskie (PL21) | 135.5 |
| 36 | Midtjylland (DK04) | 134.4 |
|  | Nordwestschweiz (CH03) | 134.4 |
|  | Pomorskie (PL63) | 134.4 |
| 39 | Oberbayern (DE21) | 132.8 |
| 40 | Pays de la Loire (FRG) | 132.4 |

* Regions ordered based on their scores before removing statistical outliers.

## Percentage population aged 25-64 participating in lifelong learning



Canarias

Guadeloupe
Martinique

Guyane

Mayotte | Réunion

Açores

Madeira

REGIO*gis*
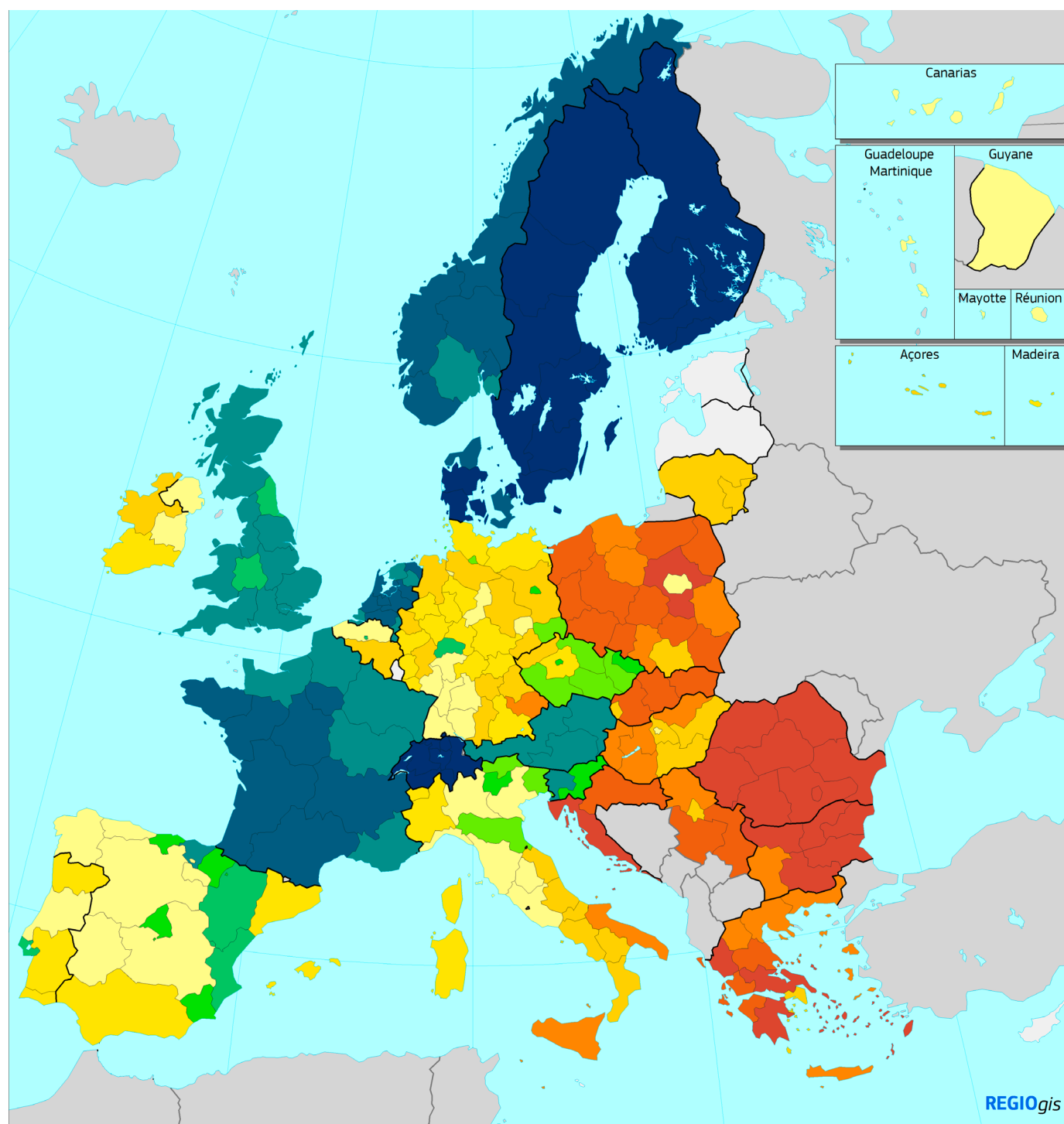
## Percentage of population aged 25-64 involved in lifelong learning

- Bottom one-third low performers
- Middle one-third low performers
- Top one-third low performers
- Bottom one-third moderate performers
- Middle one-third moderate performers
- Top one-third moderate performers
- Bottom one-third strong performers
- Middle one-third strong performers
- Top one-third strong performers
- Bottom one-third high performers
- Middle one-third high performers
- Top one-third high performers
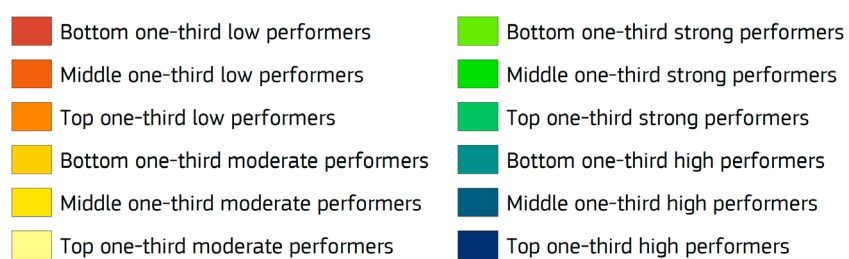
## Percentage population aged 25-64 participating in lifelong learning

Lifelong learning is less spread within countries but more across countries. Particularly regions in Northern Europe – Denmark, Norway, Sweden, and Finland are in the group of high performers. In Central and Western Europe, regions in the UK, the Netherlands, France, Switzerland and Austria score high on lifelong learning. Participation in lifelong learning is more dispersed in other countries. *País Vasco* (ES21) in Spain for instance belongs to the bottom one-third high performers, whereas *Cataluña* (ES51) and *Andalucía* (ES61) are middle one-third moderate performers. Other regions in Spain have been ranked as top one-third moderate performers, middle and top one-third strong performers.

The top 40 best performing regions are shown on the right. Swiss and Swedish regions dominate the top 20. All regions in both Switzerland and Sweden score equal to or above 148.5% of the EU average. A large score gap is observed between the top 2 – *Zürich* (CH04) and *Zentralschweiz* (CH03), having an equal to or more than 218.4% above EU average -, and the middle and bottom top 5 – *Nordwestschweiz* (CH03), *Stockholm* (SE11), and *Sydsverige* (SE22), scoring an equal to or below 203.9% above EU average.

### Definition of the indicator

*Numerator: Number of persons in private households aged between 25 and 64 years who have participated in the four weeks preceding the interview, in any education or training, whether or not relevant to the respondent's current or possible future job.*

*Denominator: Total population aged between 25 and 64 years.*

*Rationale: Lifelong learning encompasses all purposeful learning activity, whether formal, non-formal or informal, undertaken on an ongoing basis with the aim of improving knowledge, skills and competence. The intention or aim to learn is the critical point that distinguishes these activities from non-learning activities, such as cultural or sporting activities.*

## Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 \* the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*

| | Region | |
|---|---|---|
| 1 | Zürich (CH04) | 320.7 |
| 2 | Zentralschweiz (CH06) | 318.4 |
| 3 | Nordwestschweiz (CH03) | 303.9 |
| 4 | Stockholm (SE11) | 301.0 |
| | Sydsverige (SE22) | 301.0 |
| 6 | Västsverige (SE23) | 298.1 |
| 7 | Espace Mittelland (CH02) | 293.2 |
| | Östra Mellansverige (SE12) | 293.2 |
| 9 | Hovedstaden (DK01) | 291.3 |
| 10 | Helsinki-Uusimaa (FI1B) | 289.3 |
| 11 | Ostschweiz (CH05) | 287.4 |
| 12 | Småland med öarna (SE21) | 265.0 |
| 13 | Norra Mellansverige (SE31) | 264.1 |
| 14 | Région lémanique (CH01) | 262.1 |
| 15 | Övre Norrland (SE33) | 261.2 |
| 16 | Mellersta Norrland (SE32) | 258.3 |
| 17 | Länsi-Suomi (FI19) | 250.5 |
| 18 | Ticino (CH07) | 248.5 |
| 19 | Etelä-Suomi (FI1C) | 247.6 |
| | Midtjylland (DK04) | 247.6 |
| 21 | Pohjois- ja Itä-Suomi (FI1D) | 240.8 |
| 22 | Syddanmark (DK03) | 235.0 |
| 23 | Åland (FI20) | 232.0 |
| 24 | Sjælland (DK02) | 229.1 |
| 25 | Nordjylland (DK05) | 226.2 |
| 26 | Auvergne - Rhône-Alpes (FRK) | 223.3 |
| 27 | Oslo og Akershus (NO01) | 212.6 |
| 28 | Utrecht (NL31) | 205.8 |
| 29 | Pays de la Loire (FRG) | 203.9 |
| 30 | Groningen (NL11) | 202.9 |
| | Languedoc-Roussillon – Midi-Pyrénées (FRJ) | 202.9 |
| 32 | Trøndelag (NO06) | 195.1 |
| 33 | Bretagne (FRH) | 194.2 |
| 34 | Noord-Holland (NL32) | 192.2 |
| 35 | Nord-Norge (NO07) | 188.3 |
| 36 | Zuid-Holland (NL33) | 186.4 |
| 37 | Aquitaine - Limousin – Poitou-Charentes (FRI) | 185.4 |
| 38 | Vestlandet (NO05) | 184.5 |
| 39 | Gelderland (NL22) | 180.6 |
| 40 | Flevoland (NL23) | 179.6 |

## International scientific co-publications per million population
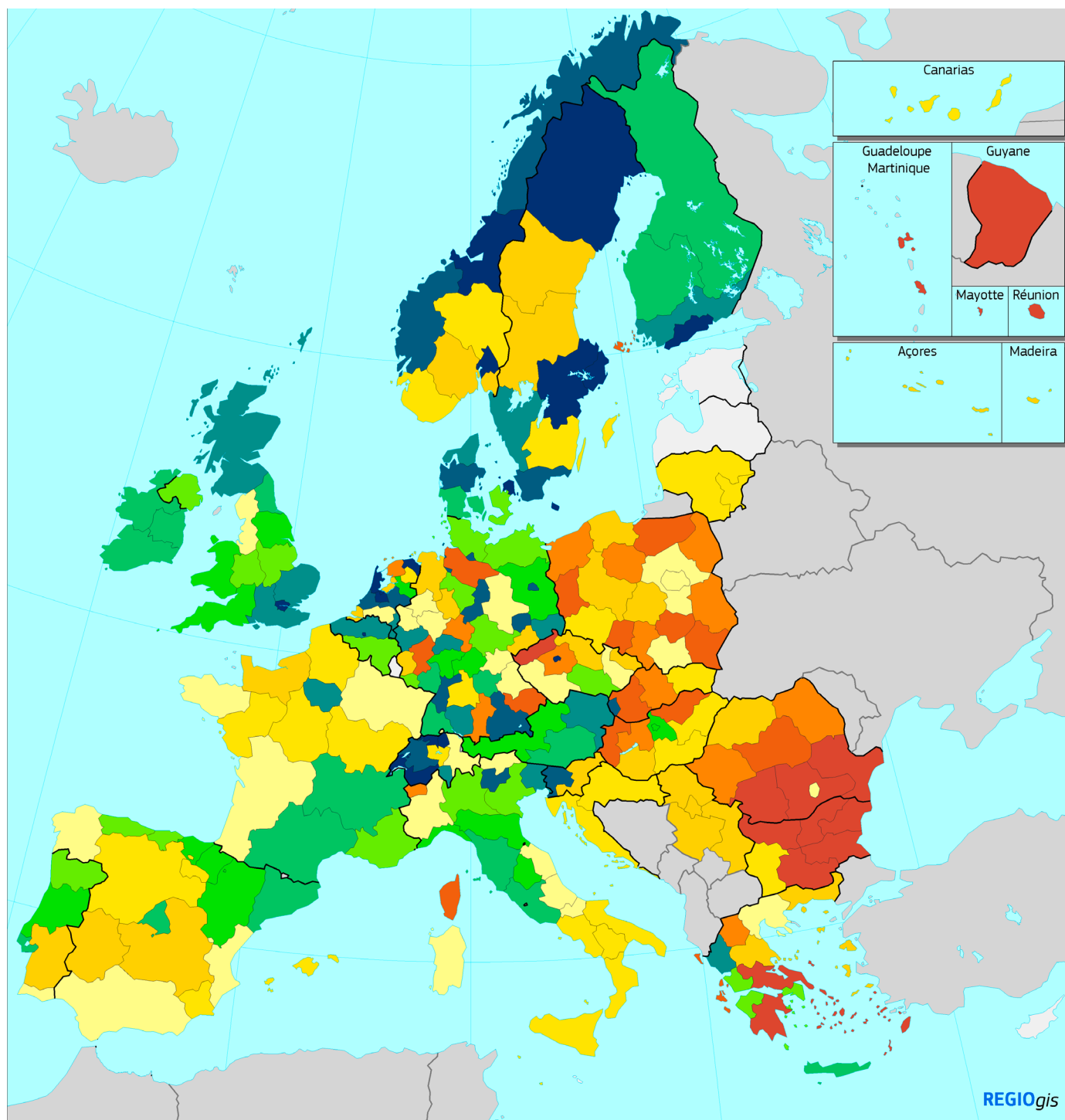


Canarias

Guadeloupe
Martinique

Guyane

Mayotte | Réunion

Açores

Madeira

REGIO*gis*

## International scientific co-publications per million population

- Bottom one-third low performers
- Middle one-third low performers
- Top one-third low performers
- Bottom one-third moderate performers
- Middle one-third moderate performers
- Top one-third moderate performers
- Bottom one-third strong performers
- Middle one-third strong performers
- Top one-third strong performers
- Bottom one-third high performers
- Middle one-third high performers
- Top one-third high performers

## International scientific co-publications per million population

Regional performance on International scientific co-publication shows a large degree of variation within countries. Germany, Greece and the Netherlands have the highest degree of variety, as German regions are ranked as middle one-third low performers to middle one-third high performers, Greek regions as bottom one-third low performers to bottom one-third high performers, and Dutch regions as top one-third low performers to top one-third high performers. However, a couple of countries, including Ireland and Croatia, show no regional variety. All regions in Ireland – *Northern and Western* (IE04), *Southern* (IE05), and *Eastern and Midland* (IE06) – belong to the top one-third performers. Similarly, *Jadranska Hrvatska* (HR03) and *Kontinentalna Hrvatska* (HR04) in Croatia are both middle one-third moderate performers.

The top 40 best performing regions are shown on the right. Capital city-regions dominate the top 40, although the best three performing regions are non-capital city regions. Strong regional performance is linked to the presence of universities which are more frequent and of larger size in metropolitan areas.

### *Definition of the indicator*

*Numerator: Number of scientific publications with at least one co-author based abroad.*

*Denominator: Total population.*

*Rationale: International scientific co-publications are a proxy for the quality of scientific research as collaboration increases scientific productivity.*

## Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 \* the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*

| | Region | |
|---|---|---|
| 1 | Zürich (CH04) | 174.5* |
| | Région lémanique (CH01) | 174.5* |
| | Groningen (NL11) | 174.5* |
| | Hovedstaden (DK01) | 174.5* |
| | Nordwestschweiz (CH03) | 174.5* |
| | Trøndelag (NO06) | 174.5* |
| | Oslo og Akershus (NO01) | 174.5* |
| | Utrecht (NL31) | 174.5* |
| | Stockholm (SE11) | 174.5* |
| | Övre Norrland (SE33) | 174.5* |
| | Région de Bruxelles-Capitale (BE1) | 174.5* |
| | Praha (CZ01) | 174.5* |
| | Östra Mellansverige (SE12) | 174.5* |
| 14 | Helsinki-Uusimaa (FI1B) | 166.1 |
| 15 | Noord-Holland (NL32) | 159.5 |
| 16 | London (UKI) | 159.2 |
| 17 | Gelderland (NL22) | 155.1 |
| 18 | Karlsruhe (DE12) | 153.7 |
| 19 | Sydsverige (SE22) | 152.2 |
| 20 | Vestlandet (NO05) | 149.5 |
| 21 | Nord-Norge (NO07) | 149.2 |
| 22 | Midtjylland (DK04) | 148.9 |
| 23 | Provincia Autonoma Trento (ITH2) | 148.7 |
| 24 | Bremen (DE50) | 147.3 |
| 25 | Zuid-Holland (NL33) | 147.2 |
| 26 | Bratislavský kraj (SK01) | 144.3 |
| 27 | Zahodna Slovenija (SI04) | 144.1 |
| 28 | Berlin (DE30) | 143.5 |
| 29 | Espace Mittelland (CH02) | 143.3 |
| 30 | Leipzig (DED5) | 142.7 |
| 31 | Braunschweig (DE91) | 141.8 |
| 32 | Hamburg (DE60) | 141.2 |
| 33 | Oberbayern (DE21) | 138.2 |
| 34 | Dresden (DED2) | 137.8 |
| 35 | Limburg (NL42) | 137.6 |
| 36 | Scotland (UKM) | 137.5 |
| 37 | Friuli-Venezia Giulia (ITH4) | 136.3 |
| 38 | Etelä-Suomi (FI1C) | 136.1 |
| 39 | Ostösterreich (AT1) | 135.3 |
| | South East (UKJ) | 135.3 |

\* Regions ordered based on their scores before removing statistical outliers.

### Scientific publications among the top-10% most cited publications worldwide as percentage of total scientific publications of the region



Canarias

Guadeloupe
Martinique

Guyane

Mayotte | Réunion

Açores

Madeira

REGIO*gis*

## Scientific publications among the top-10% most cited publications worldwide as percentage of total scientific publications of the region

- Bottom one-third low performers
- Middle one-third low performers
- Top one-third low performers
- Bottom one-third moderate performers
- Middle one-third moderate performers
- Top one-third moderate performers
- Bottom one-third strong performers
- Middle one-third strong performers
- Top one-third strong performers
- Bottom one-third high performers
- Middle one-third high performers
- Top one-third high performers

## Scientific publications among the top-10% most cited publications worldwide as percentage of total scientific publications of the region

Scientific publications among the top-10 % most cited are less spread within countries but more across countries. Many regions in Northern, Western and Central European countries – Denmark, Norway, Sweden, Finland, Ireland, France, Germany, Belgium, and Austria respectively – are ranked as bottom, middle and top one-third strong performers. A notable exception to this trend are the United Kingdom, Switzerland and the Netherlands, where the majority of regions consist of bottom, middle and top one-third high performers. While there might be a relatively small variety among regions in many European countries, Greek regions show the highest level of variety with regard to the top-10% most cited publications. *Dytiki Makedonia* (EL53) is a middle one-third high performer, whereas *Sterea Ellada* (EL64) is a middle one-third low performer.

The top 40 best performing regions are shown on the right. A comparison between the top 10 and top 20 shows that the United Kingdom is strongly represented in both rankings, as four out of 12 UK regions are in the top 10 and seven out of 12 in the top 20. Swiss and Dutch regions have high scores as well and comprise, together with UK regions, the top 10. *Madeira* (PT30), a Portuguese autonomous region, scores 38.7% above EU average and ranks seventh, which makes it the only Southern European region represented in the top 10.

### Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 \* the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*

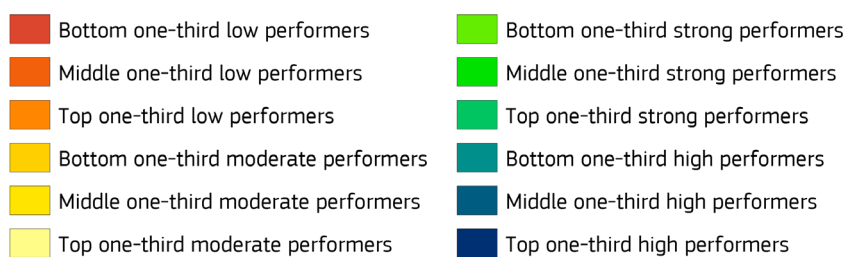| | Region | |
|---|---|---|
| 1 | East of England (UKH) | 163.0 |
| 2 | Zürich (CH04) | 155.8 |
| 3 | London (UKI) | 150.8 |
| 4 | Nordwestschweiz (CH03) | 140.5 |
| 5 | South East (UKJ) | 140.3 |
| 6 | Région lémanique (CH01) | 139.5 |
| 7 | Região Autónoma da Madeira (PT30) | 138.7 |
| 8 | Noord-Holland (NL32) | 138.2 |
| 9 | Utrecht (NL31) | 137.6 |
| 10 | South West (UKK) | 136.6 |
| 11 | Gelderland (NL22) | 136.1 |
| 12 | West Midlands (UKG) | 135.1 |
| 13 | Valle d'Aosta/Vallée d'Aoste (ITC2) | 134.6 |
| 14 | Dytiki Makedonia (EL53) | 132.4 |
| 15 | Scotland (UKM) | 130.4 |
| 16 | Groningen (NL11) | 128.2 |
| 17 | Overijssel (NL21) | 127.7 |
| 18 | Zuid-Holland (NL33) | 126.9 |
| 19 | Brandenburg (DE40) | 126.7 |
| 20 | North East (UKC) | 125.9 |
| 21 | North West (UKD) | 125.3 |
| 22 | Hovedstaden (DK01) | 123.4 |
| 23 | Ostschweiz (CH05) | 122.8 |
| 24 | Yorkshire and The Humber (UKE) | 122.4 |
| 25 | Oberbayern (DE21) | 121.4 |
| 26 | Limburg (NL42) | 120.9 |
| 27 | Vlaams Gewest (BE2) | 119.7 |
| 28 | Noord-Brabant (NL41) | 118.6 |
| 29 | Flevoland (NL23) | 117.7 |
| 30 | Régions ultrapériphériques françaises (FRY) | 117.6 |
| 31 | Drenthe (NL13) | 117.2 |
| 32 | Provincia Autonoma Bolzano/Bozen (ITH1) | 117.0 |
| 33 | Västsverige (SE23) | 116.5 |
| 34 | Provincia Autonoma Trento (ITH2) | 116.0 |
| 35 | Sjælland (DK02) | 116.0 |
| 36 | Karlsruhe (DE12) | 115.4 |
| 37 | Stockholm (SE11) | 114.9 |
| 38 | Wales (UKL) | 114.8 |
| 39 | East Midlands (UKF) | 114.6 |
| 40 | Midtjylland (DK04) | 113.9 |

***Definition of the indicator***

*Numerator: Number of scientific publications among the top 10 % most cited publication worldwide.*

*Denominator: Total number of scientific publications.*

*Rationale: The indicator is a measure for the efficiency of the research system as highly cited publications are assumed to be of higher quality. There could be a bias towards small or English-speaking countries given the coverage of Scopus' publication data.*

R&D expenditure in the public sector as percentage of GDP
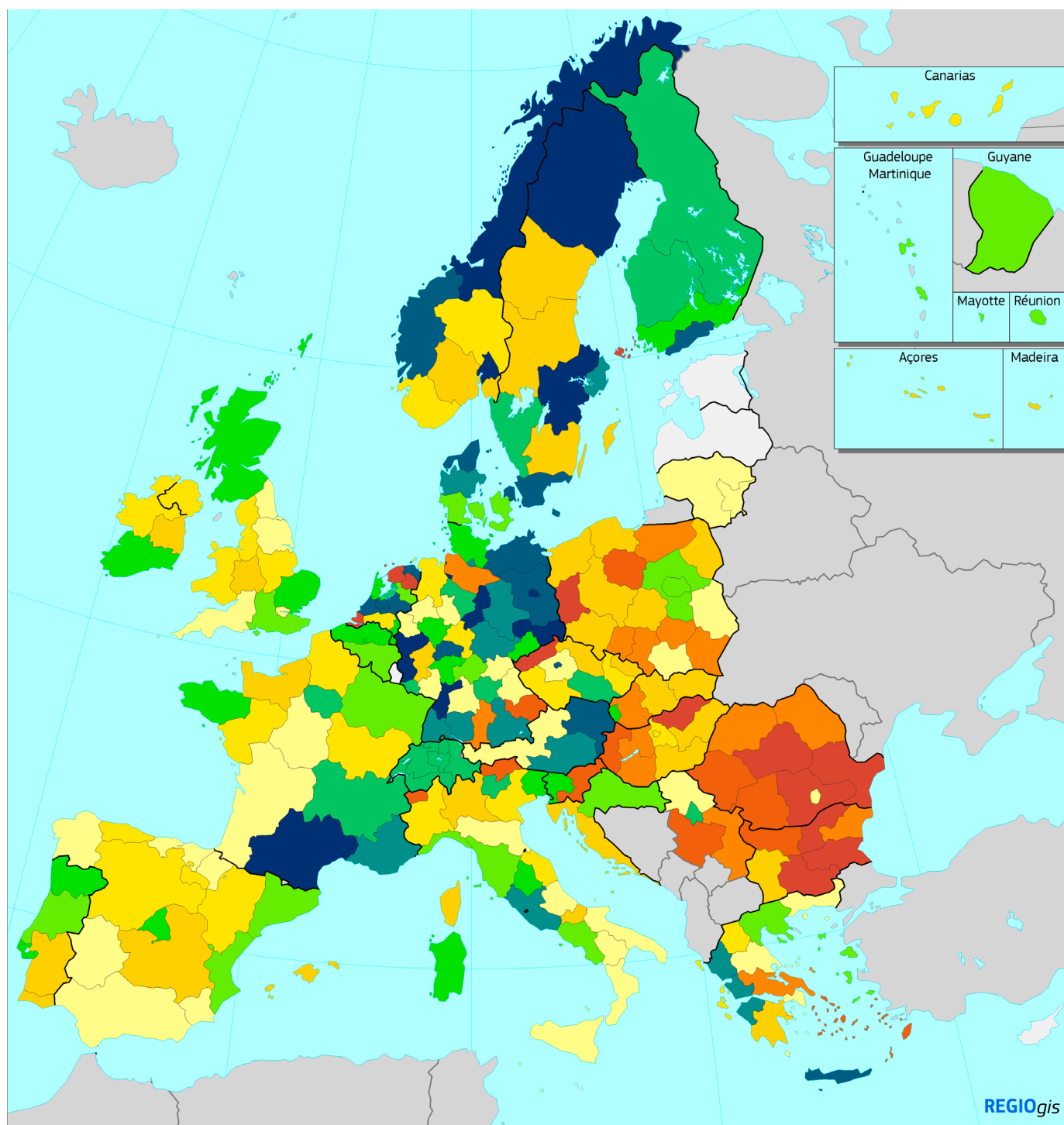


## R&D expenditure in the public sector as percentage of GDP

- Bottom one-third low performers
- Middle one-third low performers
- Top one-third low performers
- Bottom one-third moderate performers
- Middle one-third moderate performers
- Top one-third moderate performers
- Bottom one-third strong performers
- Middle one-third strong performers
- Top one-third strong performers
- Bottom one-third high performers
- Middle one-third high performers
- Top one-third high performers
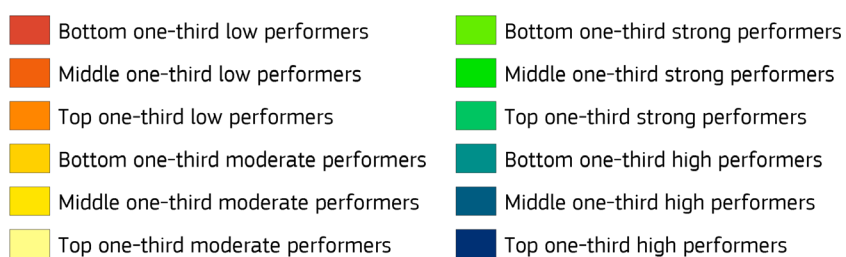
## R&D expenditure in the public sector as percentage of GDP

High public R&D expenditure is observed in capital regions, but also in non-capital regions. Public R&D expenditures are particularly high in several regions in Germany, but also in France, Austria, Denmark, the Netherlands, Greece, Norway and Sweden. Positive outliers are seen in a couple of Eastern European countries, including *Warszawski stoleczny* (PL91) and *Mazowiecki regionalny* (PL92) in Poland, which rank both as bottom one-third strong performers. *Praha* (CZ01) in Czechia belongs to the top one-third high performers. Other Eastern European regions that do well are *Jihovýchod* (CZ06) in Czechia and *Belgrade* (RS11) in Serbia, as they are considered to be top one-third strong performers.

The top 40 best performing regions are shown on the right. German regions dominate the top 10, since seven out of ten regions are German. Two Norwegian regions - *Trøndelag* (NO06) and *Oslo og Akershus* (NO01), and one Swedish region - *Övre Norrland* (SE33) – managed to get into the top 10 as well.

### Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 * the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*

|    | Region | |
|----|--------|-------|
| 1  | Trier (DEB2) | 175.1* |
|    | Braunschweig (DE91) | 175.1* |
|    | Trøndelag (NO06) | 175.1* |
|    | Dresden (DED2) | 175.1* |
|    | Övre Norrland (SE33) | 175.1* |
|    | Berlin (DE30) | 175.1* |
| 7  | Bremen (DE50) | 168.4 |
| 8  | Köln (DEA2) | 163.2 |
| 9  | Oslo og Akershus (NO01) | 161.2 |
| 10 | Karlsruhe (DE12) | 158.9 |
| 11 | Leipzig (DED5) | 157.8 |
| 12 | Östra Mellansverige (SE12) | 157.6 |
| 13 | Nord-Norge (NO07) | 154.2 |
| 14 | Languedoc-Roussillon – Midi-Pyrénées (FRJ) | 153.8 |
| 15 | Hovedstaden (DK01) | 152.3 |
| 16 | Groningen (NL11) | 150.1 |
| 17 | Utrecht (NL31) | 146.8 |
| 18 | Praha (CZ01) | 144.7 |
| 19 | Kriti (EL43) | 140.9 |
| 20 | Ostösterreich (AT1) | 137.9 |
| 21 | Sydsverige (SE22) | 137.6 |
| 22 | Mecklenburg-Vorpommern (DE80) | 137.5 |
| 23 | Vestlandet (NO05) | 136.0 |
| 24 | Gießen (DE72) | 131.2 |
| 25 | Helsinki-Uusimaa (FI1B) | 130.5 |
| 26 | Gelderland (NL22) | 129.7 |
| 27 | Zuid-Holland (NL33) | 128.8 |
| 28 | Brandenburg (DE40) | 128.5 |
|    | Nordjylland (DK05) | 128.5 |
| 30 | Midtjylland (DK04) | 127.9 |
|    | Sachsen-Anhalt (DEE0) | 127.9 |
| 32 | Oberbayern (DE21) | 127.2 |
| 33 | Thüringen (DEG0) | 125.9 |
| 34 | Dytiki Ellada (EL63) | 124.7 |
|    | Ipeiros (EL54) | 124.7 |
| 36 | Südösterreich (AT2) | 123.5 |
| 37 | Freiburg (DE13) | 123.2 |
| 38 | Hamburg (DE60) | 122.5 |
| 39 | Lazio (ITI4) | 121.8 |
| 40 | Provence-Alpes-Côte d'Azur (FRL) | 121.1 |

* Regions ordered based on their scores before removing statistical outliers.

### Definition of the indicator

*Numerator*: All R&D expenditures in the government sector (GOVERD) and the higher education sector (HERD).

*Denominator*: Regional Gross Domestic Product.

*Rationale*: R&D expenditure represents one of the major drivers of economic growth in a knowledge-based economy. As such, trends in the R&D expenditure indicator provide key indications of the future competitiveness and wealth of a region. R&D spending is essential for making the transition to a knowledge-based economy as well as for improving production technologies and stimulating growth.

## R&D expenditure in the business sector as percentage of GDP



**R&D expenditure in the business sector as percentage of GDP**

- Bottom one-third low performers
- Middle one-third low performers
- Top one-third low performers
- Bottom one-third moderate performers
- Middle one-third moderate performers
- Top one-third moderate performers
- Bottom one-third strong performers
- Middle one-third strong performers
- Top one-third strong performers
- Bottom one-third high performers
- Middle one-third high performers
- Top one-third high performers

## R&D expenditure in the business sector as percentage of GDP

Regions belonging to the top one-third performing group in Business R&D expenditures are located in just a few countries: Austria, Denmark, Germany, Norway and Sweden. Other regions in the group of high performers include all Swiss regions and all Belgian regions except *Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest* (BE1). Many regions classified as strong performers are to be found in France, the Netherlands, Slovenia and the United Kingdom. However, Czechia, Hungary, Ireland, Italy, Poland and Spain have a few outliers belonging to the strong performers group as well.

The top 40 best performing regions are shown on the right. Six German regions – *Stuttgart* (DE11), *Braunschweig* (DE91), *Tübingen* (DE14), *Oberbayern* (DE21), *Karlsruhe* (DE12), *Rheinhessen-Pfalz* (DEB3) – make up the majority of the top 10. Swiss regions are overrepresented in the top 20. All Swiss regions score approximately one-third higher than the EU average.

### Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 * the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*

| | Region | |
|---|---|---|
| 1 | Braunschweig (DE91) | 169.3* |
| | Stuttgart (DE11) | 169.3* |
| | Südösterreich (AT2) | 169.3* |
| 4 | Tübingen (DE14) | 168.9 |
| 5 | Hovedstaden (DK01) | 166.9 |
| 6 | Oberbayern (DE21) | 162.4 |
| 7 | Trøndelag (NO06) | 155.3 |
| 8 | Västsverige (SE23) | 152.5 |
| 9 | Karlsruhe (DE12) | 151.8 |
| 10 | Rheinhessen-Pfalz (DEB3) | 150.7 |
| 11 | Stockholm (SE11) | 149.2 |
| 12 | Mittelfranken (DE25) | 148.5 |
| 13 | Noord-Brabant (NL41) | 146.0 |
| 14 | East of England (UKH) | 144.4 |
| 15 | Darmstadt (DE71) | 139.1 |
| 16 | Région lémanique (CH01) | 136.7 |
| 17 | Espace Mittelland (CH02) | 136.7 |
| 18 | Nordwestschweiz (CH03) | 136.7 |
| 19 | Zürich (CH04) | 136.7 |
| 20 | Ostschweiz (CH05) | 136.7 |
| 21 | Zentralschweiz (CH06) | 136.7 |
| 22 | Ticino (CH07) | 136.7 |
| 23 | Östra Mellansverige (SE12) | 135.8 |
| 24 | Helsinki-Uusimaa (FI1B) | 135.2 |
| 25 | Languedoc-Roussillon - Midi-Pyrénées (FRJ) | 132.0 |
| 26 | Westösterreich (AT3) | 128.6 |
| 27 | Sydsverige (SE22) | 125.7 |
| 28 | Île de France (FR1) | 124.1 |
| 29 | Région Wallonne (BE3) | 123.3 |
| 30 | Vlaams Gewest (BE2) | 122.6 |
| 31 | Dresden (DED2) | 120.7 |
| 32 | Auvergne - Rhône-Alpes (FRK) | 118.0 |
| 33 | Piemonte (ITC1) | 116.9 |
| 34 | Länsi-Suomi (FI19) | 114.4 |
| 35 | Freiburg (DE13) | 113.1 |
| 36 | Malopolskie (PL21) | 112.6 |
| 37 | Ostösterreich (AT1) | 112.2 |
| 38 | West Midlands (UKG) | 111.2 |
| 39 | Zahodna Slovenija (SI04) | 110.8 |
| 40 | South East (UKJ) | 110.8 |

\* Regions ordered based on their scores before removing statistical outliers.

***Definition of the indicator***

*Numerator: All R&D expenditures in the business sector (BERD).*

*Denominator: Regional Gross Domestic Product.*

*Rationale: The indicator captures the formal creation of new knowledge within firms. It is particularly important in the science-based sector (pharmaceuticals, chemicals and some areas of electronics), where most new knowledge is created in or near R&D laboratories.*
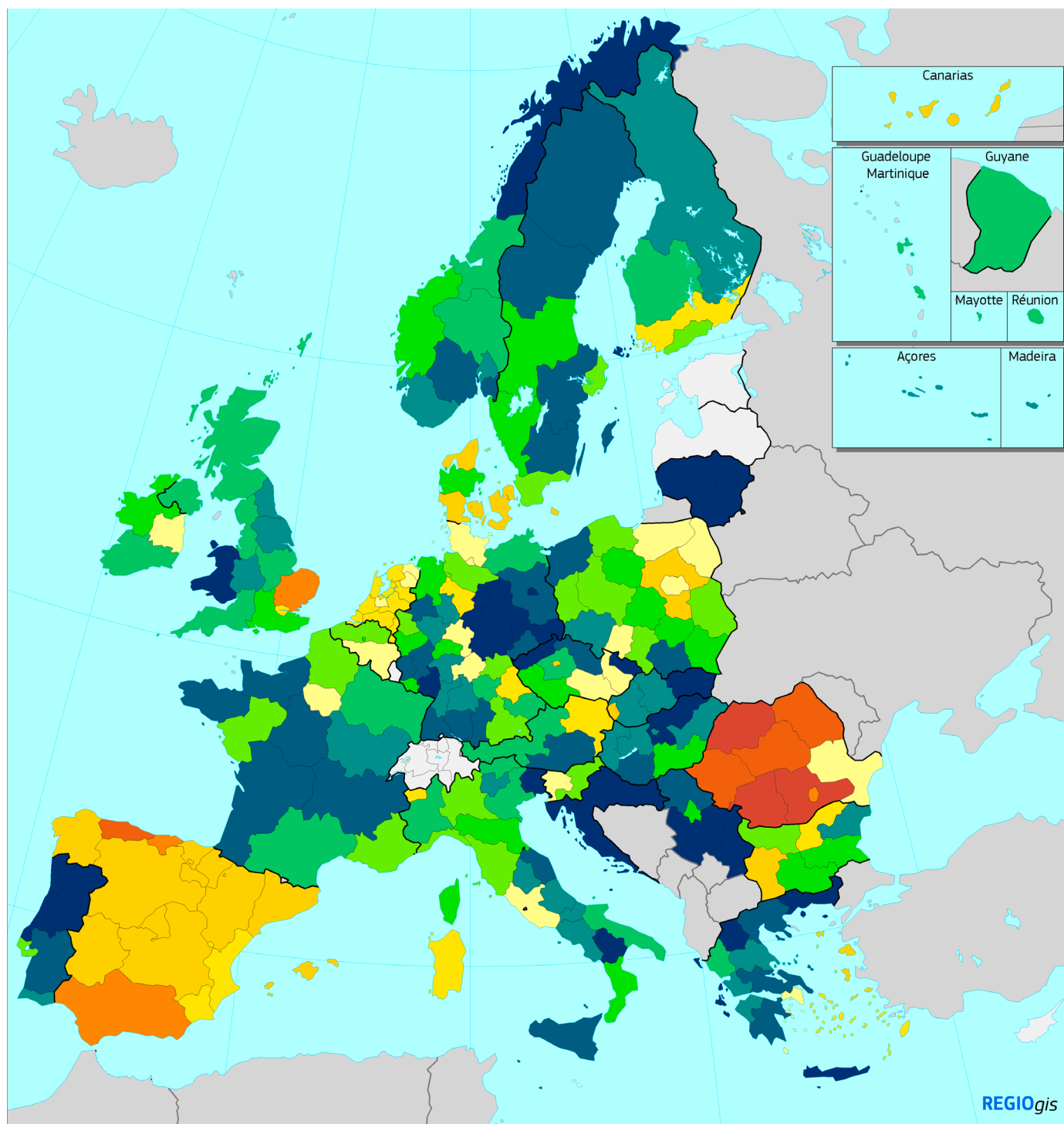
## Non-R&D innovation expenditures in SMEs as percentage of turnover



**Non-R&D innovation expenditures in SMEs as percentage of turnover**

- Bottom one-third low performers
- Middle one-third low performers
- Top one-third low performers
- Bottom one-third moderate performers
- Middle one-third moderate performers
- Top one-third moderate performers
- Bottom one-third strong performers
- Middle one-third strong performers
- Top one-third strong performers
- Bottom one-third high performers
- Middle one-third high performers
- Top one-third high performers

REGIOgis
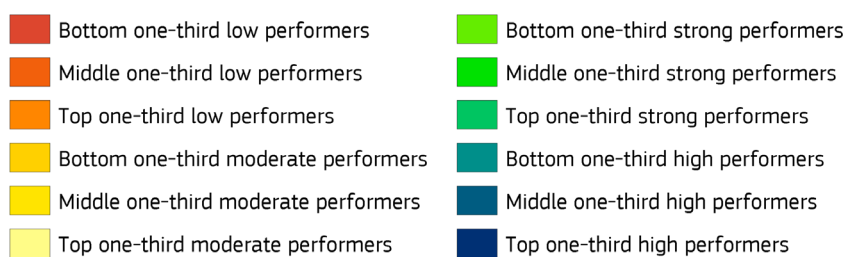
## Non-R&D innovation expenditures in SMEs as percentage of turnover

Regions with a high share of non-R&D innovation expenditures in SMEs are dispersed across the whole of Europe. Virtually every country has at least one high performing region except for Spain, the Netherlands and Romania. All regions in both Croatia and Lithuania are ranked as top one-third high performers. The majority of regions in Greece, Hungary, Portugal, Serbia and Slovakia comprise of bottom, middle and top one-third high performers. Half and just more than half of French, German, Italian, Norwegian, Swedish and UK regions are ranked in the high performers category, which shows that overall, countries with a smaller regional NUTS division tend to perform better on non-R&D innovation expenditures than countries with a large regional NUTS division.

The top 40 best performing regions are shown on the right. While the top 10 is primarily represented by Greek and Eastern European regions, the top 20 mainly consists of German and Eastern European regions. Nevertheless, *Wales* (UKL) is ranked as first due to its score, which is roughly more than twice the percentage of the European average.

### *Definition of the indicator*

*Numerator: Sum of total innovation expenditure for SMEs, excluding intramural and extramural R&D expenditures.*

*Denominator: Total turnover for SMEs.*

*Rationale: This indicator measures non-R&D innovation expenditure as percentage of total turnover. Several of the components of innovation expenditure, such as investment in equipment and machinery and the acquisition of patents and licenses, measure the diffusion of new production technology and ideas.*
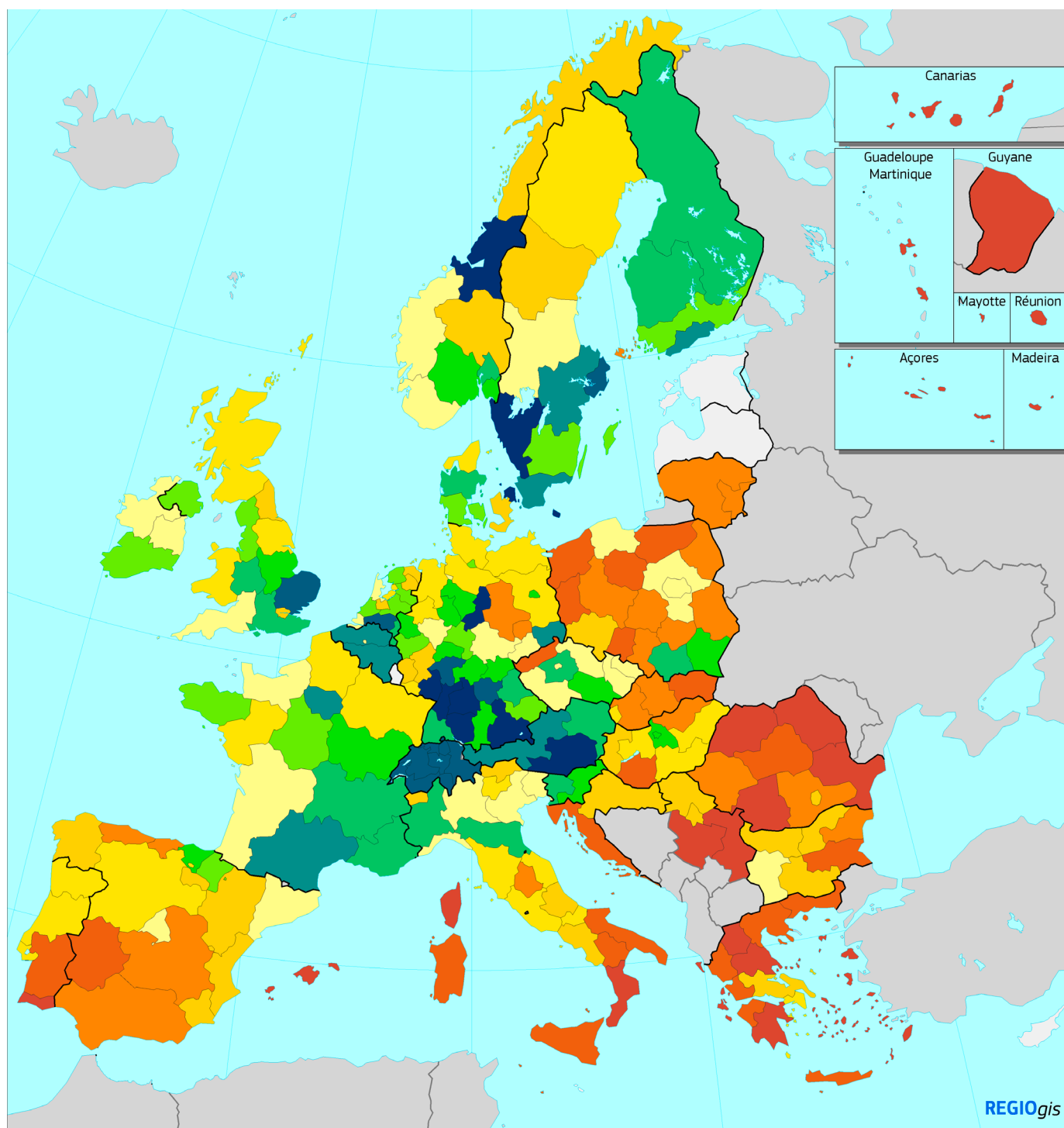
*Missing data: all seven Swiss regions.*

## Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 \* the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*

| | Region | |
|---|---|---|
| 1 | Wales (UKL) | 202.1 |
| 2 | Sostinės regionas (LT01) | 201.4 |
| 3 | Jadranska Hrvatska (HR03) | 195.8 |
| 4 | Pest (HU12) | 192.7 |
| 5 | Anatoliki Makedonia, Thraki (EL51) | 190.8 |
| 6 | Kriti (EL43) | 190.0 |
| 7 | Ionia Nisia (EL62) | 189.8 |
| 8 | Nord-Norge (NO07) | 187.5 |
| 9 | Východné Slovensko (SK04) | 186.3 |
| 10 | Severozápad (CZ04) | 183.7 |
| 11 | Braunschweig (DE91) | 182.4 |
| 12 | Kontinentalna Hrvatska (HR04) | 177.9 |
| 13 | Észak-Magyarország (HU31) | 175.6 |
| 14 | Vidurio ir vakarų Lietuvos regionas (LT02) | 175.5 |
| 15 | Rheinhessen-Pfalz (DEB3) | 172.6 |
| 16 | Norte (PT11) | 167.8 |
| 17 | Sachsen-Anhalt (DEE0) | 167.4 |
| 18 | Berlin (DE30) | 165.6 |
| 19 | Thüringen (DEG0) | 163.8 |
| 20 | Southern and Eastern Serbia (RS22) | 162.1 |
| 21 | Centro (PT16) | 160.6 |
| 22 | Åland (FI20) | 159.9 |
| 23 | Leipzig (DED5) | 159.3 |
| 24 | Dytiki Makedonia (EL53) | 159.2 |
| 25 | Dresden (DED2) | 157.0 |
| 26 | Moravskoslezsko (CZ08) | 155.4 |
| | Šumadija and Western Serbia (RS21) | 155.4 |
| 28 | Basilicata (ITF5) | 155.2 |
| 29 | Friuli-Venezia Giulia (ITH4) | 154.3 |
| 30 | Trier (DEB2) | 153.0 |
| 31 | Kentriki Makedonia (EL52) | 150.7 |
| 32 | Brandenburg (DE40) | 150.5 |
| 33 | Centre - Val de Loire (FRB) | 150.1 |
| 34 | Freiburg (DE13) | 148.9 |
| 35 | Alentejo (PT18) | 148.6 |
| 36 | Chemnitz (DED4) | 147.8 |
| | Småland med öarna (SE21) | 147.8 |
| 38 | Sør-Østlandet (NO03) | 146.7 |
| 39 | Peloponnisos (EL65) | 146.6 |
| 40 | Schwaben (DE27) | 144.3 |

## SMEs introducing product or process innovations as percentage of SMEs
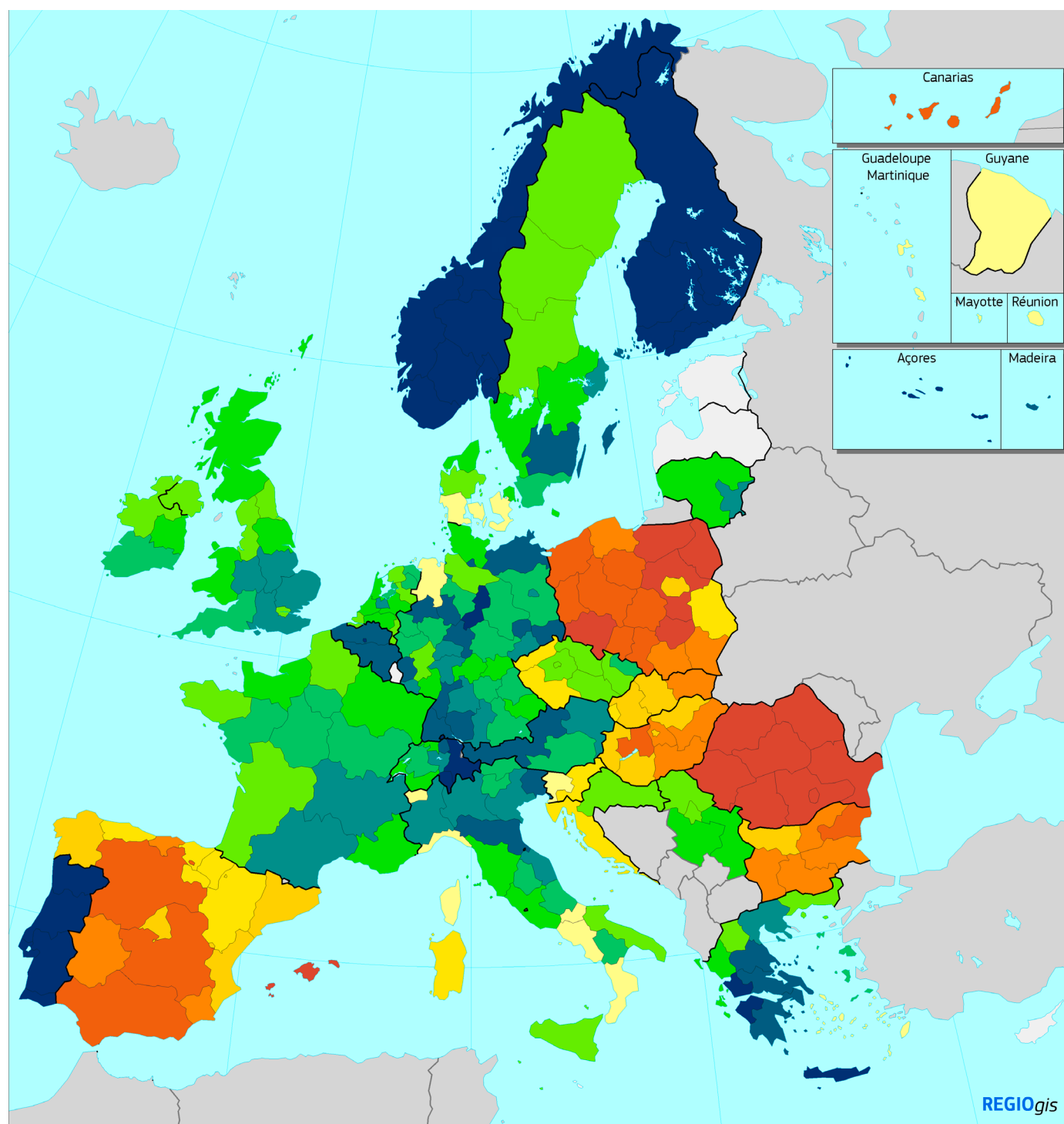


Canarias

Guadeloupe
Martinique     Guyane

Mayotte   Réunion

Açores     Madeira

REGIO*gis*

## SMEs introducing product or process innovations as percentage of SMEs

| | |
|---|---|
| ■ Bottom one-third low performers | ■ Bottom one-third strong performers |
| ■ Middle one-third low performers | ■ Middle one-third strong performers |
| ■ Top one-third low performers | ■ Top one-third strong performers |
| ■ Bottom one-third moderate performers | ■ Bottom one-third high performers |
| ■ Middle one-third moderate performers | ■ Middle one-third high performers |
| ■ Top one-third moderate performers | ■ Top one-third high performers |

## SMEs introducing product or process innovations as percentage of SMEs

In most countries, there is little variation in regional performance in the share of SMEs that introduced a product or process innovation. Norway, Portugal and Sweden perform very well compared to other European countries, given the fact that all regions in these countries are top one-third high performers. Another example of a high performing country is Belgium, whose regions - *Région de Bruxelles-Capitale* (BE1), *Vlaams Gewest* (BE2), *Région Wallonne* (BE3) – are either middle or top one-third high performers. Many countries – Austria, France, Lithuania, the Netherlands, Sweden, Switzerland and the United Kingdom, show a mix of strong and high performing regions, whereas others – Germany, Greece and Italy – have a few outlying top one-third moderate performing region together with strong and high performing regions.

The top 40 best performing regions are shown on the right. All Norwegian and five out of six Portuguese regions comprise the top 20. The first-ranked region - *Hedmark og Oppland* (NO02) in Norway – scores 81.8 percent above the EU average, as opposed to *Åland* (FI20) in Finland, which is ranked 40th and scores 34.4 percent above the EU average.

## Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 \* the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*

|  | Region |  |
|---|---|---|
| 1 | Hedmark og Oppland (NO02) | 181.8 |
| 2 | Ticino (CH07) | 178.7 |
| 3 | Algarve (PT15) | 176.7 |
| 4 | Lisboa (PT17) | 173.3 |
| 5 | Centro (PT16) | 172.3 |
| 6 | Oslo og Akershus (NO01) | 170.3 |
| 7 | Etelä-Suomi (FI1C) | 168.0 |
| 8 | Agder og Rogaland (NO04) | 165.3 |
| 9 | Alentejo (PT18) | 163.4 |
| 10 | Trøndelag (NO06) | 162.5 |
| 11 | Região Autónoma dos Açores (PT20) | 161.5 |
| 12 | Helsinki-Uusimaa (FI1B) | 161.2 |
| 13 | Ostschweiz (CH05) | 157.5 |
|  | Sør-Østlandet (NO03) | 157.5 |
| 15 | Norte (PT11) | 156.8 |
| 16 | Braunschweig (DE91) | 155.2 |
| 17 | Kriti (EL43) | 153.8 |
| 18 | Vestlandet (NO05) | 153.2 |
| 19 | Nord-Norge (NO07) | 153.0 |
| 20 | Pohjois- ja Itä-Suomi (FI1D) | 148.8 |
| 21 | Région de Bruxelles-Capitale (BE1) | 148.7 |
| 22 | Länsi-Suomi (FI19) | 148.6 |
| 23 | Dytiki Ellada (EL63) | 145.8 |
| 24 | Região Autónoma da Madeira (PT30) | 145.2 |
| 25 | Tübingen (DE14) | 142.9 |
| 26 | Zürich (CH04) | 142.1 |
| 27 | Westösterreich (AT3) | 141.6 |
| 28 | Trier (DEB2) | 140.0 |
| 29 | Leipzig (DED5) | 139.1 |
| 30 | Emilia-Romagna (ITH5) | 138.8 |
| 31 | Münster (DEA3) | 138.6 |
|  | Peloponnisos (EL65) | 138.6 |
| 33 | Vlaams Gewest (BE2) | 138.1 |
| 34 | Hamburg (DE60) | 137.3 |
| 35 | Karlsruhe (DE12) | 136.5 |
| 36 | Detmold (DEA4) | 135.6 |
| 37 | Mecklenburg-Vorpommern (DE80) | 134.8 |
|  | Région Wallonne (BE3) | 134.8 |
| 39 | Freiburg (DE13) | 134.5 |
| 40 | Åland (FI20) | 134.4 |

***Definition of the indicator***

*Numerator: Number of SMEs that introduced a new product or a new process to one of their markets.*

*Denominator: Total number of SMEs.*

*Rationale: Technological innovation as measured by the introduction of new products (goods or services) and processes is key to innovation in manufacturing activities. Higher shares of technological innovators should reflect a higher level of innovation activities.*

SMEs introducing marketing or organisational innovations as percentage of SMEs
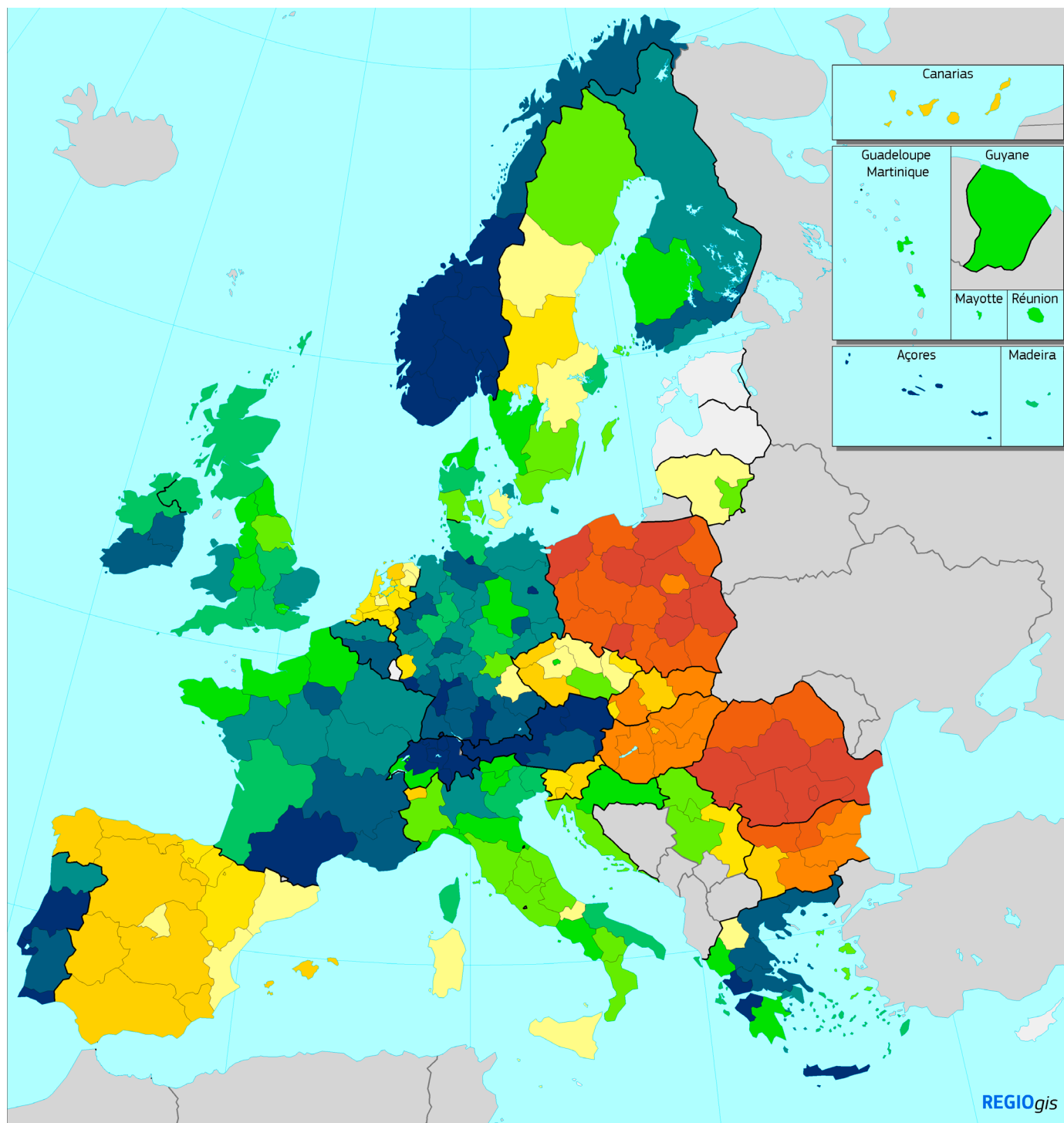


Canarias

Guadeloupe
Martinique

Guyane

Mayotte   Réunion

Açores                    Madeira

REGIO*gis*

## SMEs introducing marketing or organisational innovations as percentage of SMEs

Bottom one-third low performers

Middle one-third low performers

Top one-third low performers

Bottom one-third moderate performers

Middle one-third moderate performers

Top one-third moderate performers

Bottom one-third strong performers

Middle one-third strong performers

Top one-third strong performers

Bottom one-third high performers

Middle one-third high performers

Top one-third high performers
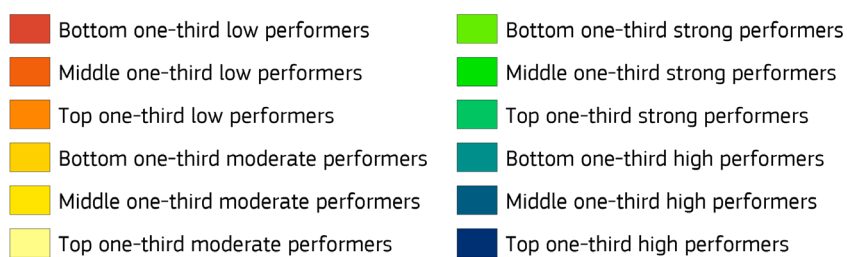
## SMEs introducing marketing or organisational innovations as percentage of SMEs

In most countries, there is little variation in regional performance in the share of SMEs that introduced a marketing or organizational innovation. Therefore, there are not that many differences observed within most countries. Regions with a strong or high performance are mostly found in Austria, Belgium, Croatia, Finland, France, Germany, Greece, Ireland, Italy, Norway, Portugal and Switzerland. Regions that predominantly belong to the moderate and low performing group can be found in Bulgaria, Czechia, Hungary, the Netherlands, Poland, Romania, Slovakia, Slovenia and Spain. Performance in Sweden is rather diverse, with *West Sweden* (SE0A) and *Stockholm* (SE01) belonging to middle one-third strong performers, and *North Middle Sweden* (SE06) to the middle one-third moderate performers.

The top 40 best performing regions are shown on the right. Norway and Switzerland dominate the top 10, as five out of seven Swiss regions and four out of seven Norwegians regions comprise the top-10. A large percentage gap is observed between the first rank – *Ticino* (CH07) – and the second rank – *Espace Mittelland* (CH02) –, as the former is double the EU average, and the latter is more than 80% above the EU average.

### Definition of the indicator

*Numerator: Number of SMEs that introduced a new marketing innovation and/or organizational innovation to one of their markets.*

*Denominator: Total number of SMEs.*

*Rationale: Many firms, in particular in the service sectors, innovate through non-technological forms of innovation. Examples of these are organizational innovations. This indicator tries to capture the extent to which SMEs innovate through non-technological innovation.*
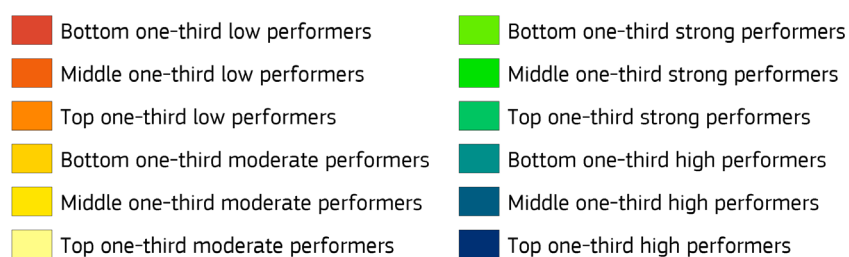
## Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 * the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*

| | Region | |
|---|---|---|
| 1 | Ticino (CH07) | 207.5 |
| 2 | Espace Mittelland (CH02) | 184.8 |
| 3 | Ostschweiz (CH05) | 180.2 |
| 4 | Zürich (CH04) | 179.5 |
| 5 | Hedmark og Oppland (NO02) | 167.4 |
| 6 | Trøndelag (NO06) | 167.0 |
| 7 | Oslo og Akershus (NO01) | 162.5 |
| 8 | Agder og Rogaland (NO04) | 158.0 |
| 9 | Zentralschweiz (CH06) | 155.7 |
| 10 | Algarve (PT15) | 154.8 |
| 11 | Schwaben (DE27) | 153.8 |
| 12 | Hamburg (DE60) | 152.3 |
| 13 | Lisboa (PT17) | 150.2 |
| 14 | Região Autónoma dos Açores (PT20) | 149.6 |
| 15 | Berlin (DE30) | 149.4 |
| 16 | Kriti (EL43) | 147.0 |
| 17 | Ostösterreich (AT1) | 144.7 |
| 18 | Languedoc-Roussillon – Midi-Pyrénées (FRJ) | 144.3 |
| 19 | Sør-Østlandet (NO03) | 144.2 |
| 20 | Dytiki Ellada (EL63) | 143.9 |
| 21 | Nordwestschweiz (CH03) | 143.7 |
| | Saarland (DEC0) | 143.7 |
| | Vestlandet (NO05) | 143.7 |
| 24 | Karlsruhe (DE12) | 143.3 |
| 25 | Centro (PT16) | 143.1 |
| | Westösterreich (AT3) | 143.1 |
| 27 | Southern (IE05) | 142.8 |
| 28 | Südösterreich (AT2) | 141.3 |
| 29 | Thessalia (EL61) | 141.1 |
| 30 | Lüneburg (DE93) | 140.7 |
| 31 | Eastern and Midland (IE06) | 140.0 |
| 32 | Anatoliki Makedonia, Thraki (EL51) | 139.8 |
| 33 | Freiburg (DE13) | 139.5 |
| 34 | Provence-Alpes-Côte d'Azur (FRL) | 139.1 |
| 35 | Leipzig (DED5) | 138.7 |
| 36 | Etelä-Suomi (FI1C) | 138.6 |
| 37 | Gießen (DE72) | 137.7 |
| 38 | Auvergne – Rhône-Alpes (FRK) | 137.5 |
| 39 | Kentriki Makedonia (EL52) | 137.0 |
| 40 | Tübingen (DE14) | 136.8 |

## SMEs innovating in-house as percentage of SMEs



Canarias

Guadeloupe
Martinique

Guyane

Mayotte    Réunion

Açores

Madeira

REGIO*gis*

## SMEs innovating in-house as percentage of SMEs

- ■ Bottom one-third low performers
- ■ Middle one-third low performers
- ■ Top one-third low performers
- ■ Bottom one-third moderate performers
- ■ Middle one-third moderate performers
- ■ Top one-third moderate performers

- ■ Bottom one-third strong performers
- ■ Middle one-third strong performers
- ■ Top one-third strong performers
- ■ Bottom one-third high performers
- ■ Middle one-third high performers
- ■ Top one-third high performers
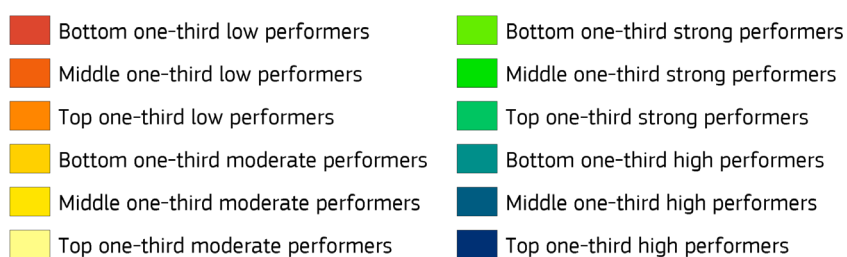
## SMEs innovating in-house as percentage of SMEs

Regional performance on SMEs innovating in-house is less spread within countries but more across countries. Strong and high performing regions are mostly located in Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, the Netherlands, Norway, Portugal, Sweden, Switzerland and the United Kingdom. Moderate and low performing regions are located mostly in Bulgaria, Croatia, Hungary, Poland, Romania, Slovakia, Spain, and the United Kingdom. Large differences in regional performance within countries observed in Germany and Czechia.

The top 40 best performing regions are shown on the right. Portuguese regions are well represented with six regions in the top 10. Other countries with a good representation in the top 40 include Finland, Germany and Italy. *Ticino* (CH07) is the overall best performing region.

### Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 * the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*

|  | Region |  |
|---|---|---|
| 1 | Ticino (CH07) | 202.4 |
| 2 | Algarve (PT15) | 190.7 |
| 3 | Centro (PT16) | 178.3 |
| 4 | Lisboa (PT17) | 177.3 |
| 5 | Região Autónoma dos Açores (PT20) | 170.9 |
| 6 | Alentejo (PT18) | 170.6 |
| 7 | Etelä-Suomi (FI1C) | 170.1 |
| 8 | Braunschweig (DE91) | 168.3 |
| 9 | Kriti (EL43) | 162.5 |
| 10 | Norte (PT11) | 162.4 |
| 11 | Helsinki-Uusimaa (FI1B) | 160.2 |
| 12 | Pohjois- ja Itä-Suomi (FI1D) | 156.1 |
| 13 | Emilia-Romagna (ITH5) | 153.6 |
| 14 | Hedmark og Oppland (NO02) | 152.3 |
| 15 | Tübingen (DE14) | 150.7 |
| 16 | Länsi-Suomi (FI19) | 148.9 |
| 17 | Münster (DEA3) | 147.8 |
| 18 | Dytiki Ellada (EL63) | 146.5 |
| 19 | Région de Bruxelles-Capitale (BE1) | 146.0 |
| 20 | Região Autónoma da Madeira (PT30) | 145.6 |
| 21 | Oslo og Akershus (NO01) | 145.2 |
| 22 | Hovedstaden (DK01) | 144.2 |
| 23 | Friuli-Venezia Giulia (ITH4) | 143.8 |
| 24 | Detmold (DEA4) | 143.1 |
| 25 | Hamburg (DE60) | 142.7 |
| 26 | Agder og Rogaland (NO04) | 142.4 |
| 27 | Sterea Ellada (EL64) | 142.3 |
| 28 | Kassel (DE73) | 141.5 |
| 29 | Nordjylland (DK05) | 140.8 |
| 30 | Midtjylland (DK04) | 139.8 |
|  | Piemonte (ITC1) | 139.8 |
| 32 | Lombardia (ITC4) | 139.0 |
| 33 | Westösterreich (AT3) | 137.7 |
| 34 | Leipzig (DED5) | 137.4 |
| 35 | Marche (ITI3) | 137.2 |
| 36 | Berlin (DE30) | 136.8 |
| 37 | Gießen (DE72) | 136.4 |
| 38 | Karlsruhe (DE12) | 136.3 |
| 39 | Veneto (ITH3) | 136.1 |
| 40 | South East (UKJ) | 136.0 |

***Definition of the indicator***

*Numerator: Number of SMEs with in-house innovation activities. Innovative firms with in-house innovation activities have introduced a new product or new process either in-house or in combination with other firms. The indicator does not include new products or processes developed by other firms.*

*Denominator: Total number of SMEs*

*Rationale: This indicator measures the degree to which SMEs that have introduced any new or significantly improved products or production processes have innovated in-house. The indicator is limited to SMEs, because almost all large firms innovate*

## Innovative SMEs collaborating with others as percentage of SMEs
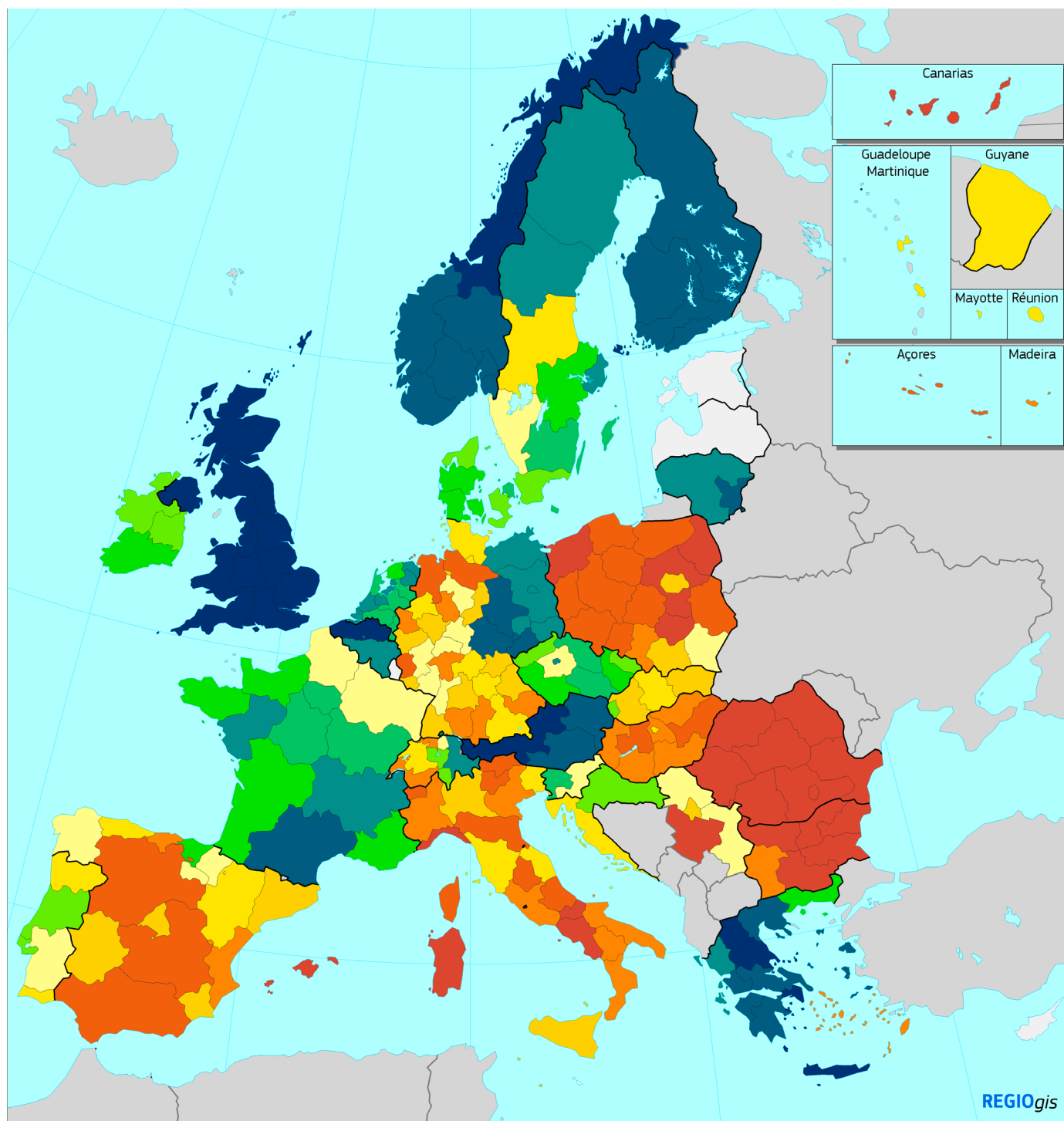


Canarias

Guadeloupe
Martinique          Guyane

Mayotte    Réunion

Açores            Madeira

**REGIO**gis

## Innovative SMEs collaborating with others as percentage of SMEs

- Bottom one-third low performers
- Middle one-third low performers
- Top one-third low performers
- Bottom one-third moderate performers
- Middle one-third moderate performers
- Top one-third moderate performers
- Bottom one-third strong performers
- Middle one-third strong performers
- Top one-third strong performers
- Bottom one-third high performers
- Middle one-third high performers
- Top one-third high performers
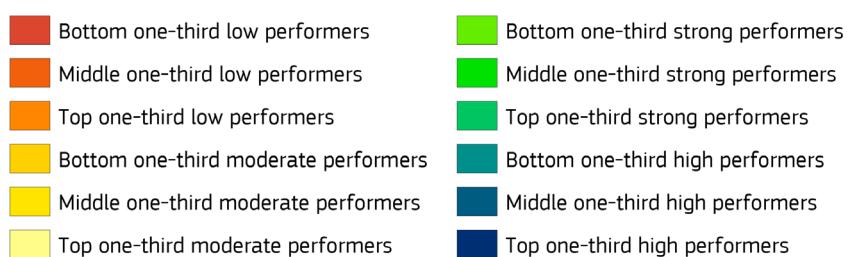
## Innovative SMEs collaborating with others as percentage of SMEs

Regional performance on SMEs with innovation co-operation activities is widely spread across different EU regions. Regions from the United Kingdom stand out in performance on this indicator with all 12 regions in the top 20 best performers. Other strong and high performing regions are located in Austria, Belgium, Finland, Greece, Lithuania and Norway. Moderate and low performing regions are located mostly in Bulgaria, Hungary, Italy, Poland, Romania, Slovakia and Spain. Large differences in regional performance within countries are observed in France, Sweden and Germany, with the latter regions in the North-East performing better compared to regions in the West.

The top 40 best performing regions are shown on the right. The list is dominated by regions in Greece, Norway and the United Kingdom. *South East* (UKJ) ranks first, followed by two more regions from the United Kingdom.

### Definition of the indicator

*Numerator: Number of SMEs with innovation co-operation activities. Firms with co-operation activities are those that have had any co-operation agreements on innovation activities with other enterprises or institutions.*

*Denominator: Total number of SMEs*

*Rationale: This indicator measures the degree to which SMEs are involved in innovation co-operation. Complex innovations often depend on companies' ability to draw on diverse sources of information and knowledge, or to collaborate on the development of an innovation. This indicator measures the flow of knowledge between public research institutions and firms, and between firms and other firms. The indicator is limited to SMEs, because almost all large firms are involved in innovation co-operation.*

## Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 \* the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*

| | Region | |
|---|---|---|
| 1 | South East (UKJ) | 248.5* |
| | West Midlands (UKG) | 248.5* |
| | East of England (UKH) | 248.5* |
| | Kriti (EL43) | 248.5* |
| | South West (UKK) | 248.5* |
| | Scotland (UKM) | 248.5* |
| | Yorkshire and The Humber (UKE) | 248.5* |
| | Trøndelag (NO06) | 248.5* |
| 9 | East Midlands (UKF) | 243.6 |
| 10 | Wales (UKL) | 240.5 |
| 11 | North East (UKC) | 234.7 |
| 12 | North West (UKD) | 233.3 |
| 13 | Thessalia (EL61) | 229.1 |
| 14 | London (UKI) | 221.4 |
| 15 | Westösterreich (AT3) | 212.7 |
| 16 | Åland (FI20) | 208.2 |
| 17 | Dytiki Makedonia (EL53) | 205.0 |
| 18 | Nord-Norge (NO07) | 204.5 |
| 19 | Vlaams Gewest (BE2) | 204.4 |
| 20 | Northern Ireland (UKN) | 203.7 |
| 21 | Attiki (EL30) | 201.0 |
| 22 | Helsinki-Uusimaa (FI1B) | 200.0 |
| 23 | Dytiki Ellada (EL63) | 199.1 |
| 24 | Agder og Rogaland (NO04) | 196.8 |
| 25 | Kentriki Makedonia (EL52) | 195.8 |
| 26 | Vestlandet (NO05) | 191.2 |
| 27 | Région de Bruxelles-Capitale (BE1) | 185.8 |
| 28 | Peloponnisos (EL65) | 179.7 |
| 29 | Etelä-Suomi (FI1C) | 179.3 |
| 30 | Südösterreich (AT2) | 176.6 |
| 31 | Voreio Aigaio (EL41) | 174.2 |
| 32 | Pohjois- ja Itä-Suomi (FI1D) | 173.0 |
| 33 | Länsi-Suomi (FI19) | 172.9 |
| 34 | Sør-Østlandet (NO03) | 171.9 |
| 35 | Ostösterreich (AT1) | 169.3 |
| 36 | Sostinės regionas (LT01) | 168.8 |
| 37 | Oslo og Akershus (NO01) | 163.0 |
| 38 | Hedmark og Oppland (NO02) | 162.3 |
| 39 | Chemnitz (DED4) | 154.4 |
| 40 | Thüringen (DEG0) | 151.9 |

\* Regions ordered based on their scores before removing statistical outliers.

## Public-private co-publications per million population



REGIO*gis*

## Public-private co-publications per million population

- ⬛ (red) Bottom one-third low performers
- ⬛ (orange-red) Middle one-third low performers
- ⬛ (orange) Top one-third low performers
- ⬛ (gold) Bottom one-third moderate performers
- ⬛ (yellow) Middle one-third moderate performers
- ⬛ (pale yellow) Top one-third moderate performers
- ⬛ (light green) Bottom one-third strong performers
- ⬛ (green) Middle one-third strong performers
- ⬛ (teal green) Top one-third strong performers
- ⬛ (teal) Bottom one-third high performers
- ⬛ (dark teal) Middle one-third high performers
- ⬛ (navy) Top one-third high performers

## Public-private co-publications per million population

Performance on public-private co-publications is strongly affected by the presence of a university or research institute in the region. Capital regions also score well on this indicator. This also explains the widely spread performance within countries. In total 148 regions belong to either the low or moderate performing group. There are just a few High and Strong performing countries in which variety is not wide spread such as Austria, Belgium and Switzerland. Comparatively, regions in Western and Northern Europe perform better on this indicator than regions in Eastern and Southern Europe. With a few exceptions such as *Zahodna Slovenija* (SI04), *Budapest* (HU11), *Pest* (HU12), *Praha* (CZ01) and *Comunidad de Madrid* (ES30).

The top 40 best performing regions are shown on the right. The top-40 is dominated by regions in Switzerland, of which six out of seven regions are represented in the top 40, and Germany with 11 out of 38 regions. *Nordwestschweiz* (CH03)) is the overall best performing region, followed by *Hovedstaden* (DK01) and *Västsverige* (SE23).

### Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 * the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*

| | Region | |
|---|---|---|
| 1 | Nordwestschweiz (CH03) | 244.9 |
| | Hovedstaden (DK01) | 244.9 |
| | Västsverige (SE23) | 244.9 |
| 4 | Zürich (CH04) | 242.0 |
| 5 | Région lémanique (CH01) | 240.7 |
| 6 | Utrecht (NL31) | 231.7 |
| 7 | East of England (UKH) | 212.5 |
| 8 | Stockholm (SE11) | 205.1 |
| 9 | Rheinhessen-Pfalz (DEB3) | 205.0 |
| 10 | Zentralschweiz (CH06) | 201.4 |
| 11 | Trøndelag (NO06) | 197.4 |
| 12 | Oberbayern (DE21) | 193.6 |
| 13 | Noord-Brabant (NL41) | 191.1 |
| 14 | Helsinki-Uusimaa (FI1B) | 188.7 |
| 15 | Bremen (DE50) | 181.0 |
| 16 | Oslo og Akershus (NO01) | 180.1 |
| 17 | Östra Mellansverige (SE12) | 178.9 |
| 18 | Darmstadt (DE71) | 170.8 |
| 19 | Zuid-Holland (NL33) | 170.5 |
| 20 | Berlin (DE30) | 169.4 |
| 21 | Mittelfranken (DE25) | 165.2 |
| 22 | Freiburg (DE13) | 157.5 |
| 23 | South East (UKJ) | 156.2 |
| 24 | Hamburg (DE60) | 154.7 |
| 25 | Braunschweig (DE91) | 154.6 |
| 26 | Südösterreich (AT2) | 151.9 |
| 27 | Karlsruhe (DE12) | 151.8 |
| 28 | Vlaams Gewest (BE2) | 148.6 |
| 29 | Noord-Holland (NL32) | 147.4 |
| 30 | Région de Bruxelles-Capitale (BE1) | 146.6 |
| 31 | Länsi-Suomi (FI19) | 145.8 |
| 32 | Agder og Rogaland (NO04) | 142.9 |
| | Ostösterreich (AT1) | 142.9 |
| 34 | Espace Mittelland (CH02) | 142.7 |
| 35 | Sydsverige (SE22) | 139.6 |
| 36 | Île de France (FR1) | 139.5 |
| 37 | Vestlandet (NO05) | 139.0 |
| 38 | Ticino (CH07) | 137.9 |
| 39 | London (UKI) | 136.8 |
| 40 | Köln (DEA2) | 134.3 |

***Definition of the indicator***

*Numerator: Number of public-private co-authored research publications. The definition of the "private sector" excludes the private medical and health sector. Publications are assigned to the country/countries in which the business companies or other private sector organisations are located.*

*Denominator: Total population*

*Rationale: This indicator captures public-private research linkages and active collaboration activities between business sector researchers and public sector researchers resulting in academic publications.*

## PCT patent applications per billion regional GDP



Canarias

Guadeloupe
Martinique     Guyane

Mayotte | Réunion

Açores     Madeira

REGIO*gis*

### PCT patent applications per billion regional GDP

- Bottom one-third low performers
- Middle one-third low performers
- Top one-third low performers
- Bottom one-third moderate performers
- Middle one-third moderate performers
- Top one-third moderate performers

- Bottom one-third strong performers
- Middle one-third strong performers
- Top one-third strong performers
- Bottom one-third high performers
- Middle one-third high performers
- Top one-third high performers

## PCT patent applications per billion regional GDP

There are strong geographical performance differences in PCT patent applications. Regions in Denmark, Finland, Germany, the Netherlands and Sweden are amongst the top one-third high performing group. Most of the Eastern European regions, and regions in Portugal, Spain, and the South of Italy perform relatively weak on PCT patent applications. In total 95 regions belong to the low performing group.

Performance is spread in the Netherlands, with *Noord-Brabant* (NL41), ranking first overall as a top one-third high performing region, and *Overijssel* (NL21), as the lowest performing region in the Netherlands belonging to the top one-third low performing group. Performance is also spread in France, Germany, Italy and Norway, which all have regions in the High performing group as well as in the Low performing group.

The top 40 best performing regions are shown on the right. The top 40 is dominated by regions in Germany, for which 18 out of 38 regions are represented. Sweden and Switzerland are both also well represented with five regions each.

***Definition of the indicator***

*Numerator: Number of patents applied for at the European Patent Office (EPO), by year of filing. The regional distribution of the patent applications is assigned according to the address of the inventor.*

*Denominator: Gross Domestic Product in Purchasing Power Standard*

*Rationale: The capacity of firms to develop new products determines their competitive advantage. One indicator of the rate of new product innovation is the number of patents. This indicator measures the number of patent applications at the European Patent Office.*

*Missing data: Ciudad Autónoma de Ceuta (ES63), Ciudad Autónoma de Melilla (ES64), Canarias (ES70), Belgrade (RS11), Vojvodina (RS12), Šumadija and Western Serbia (RS21), and Southern and Eastern Serbia (RS22).*

## Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 \* the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*

|  | Region |  |
|---|---|---|
| 1 | Noord-Brabant (NL41) | 234.1* |
|  | Oberpfalz (DE23) | 234.1* |
|  | Sydsverige (SE22) | 234.1* |
| 4 | Stockholm (SE11) | 213.9 |
| 5 | Stuttgart (DE11) | 212.3 |
| 6 | Mittelfranken (DE25) | 211.5 |
| 7 | Helsinki-Uusimaa (FI1B) | 205.2 |
| 8 | Oberbayern (DE21) | 192.1 |
| 9 | Östra Mellansverige (SE12) | 182.1 |
| 10 | Nordwestschweiz (CH03) | 179.3 |
| 11 | Karlsruhe (DE12) | 178.6 |
| 12 | Rheinhessen-Pfalz (DEB3) | 176.2 |
| 13 | Tübingen (DE14) | 176.0 |
| 14 | Région lémanique (CH01) | 174.8 |
| 15 | Trøndelag (NO06) | 174.6 |
| 16 | Hovedstaden (DK01) | 170.1 |
| 17 | Freiburg (DE13) | 169.2 |
| 18 | Limburg (NL42) | 168.4 |
| 19 | Unterfranken (DE26) | 167.6 |
| 20 | Länsi-Suomi (FI19) | 164.7 |
|  | Oberfranken (DE24) | 164.7 |
| 22 | Auvergne - Rhône-Alpes (FRK) | 161.7 |
| 23 | Västsverige (SE23) | 156.8 |
| 24 | Zürich (CH04) | 148.6 |
| 25 | Darmstadt (DE71) | 147.1 |
| 26 | Midtjylland (DK04) | 146.7 |
| 27 | Westösterreich (AT3) | 146.5 |
| 28 | Schwaben (DE27) | 146.4 |
| 29 | East of England (UKH) | 142.9 |
| 30 | Småland med öarna (SE21) | 140.2 |
| 31 | Agder og Rogaland (NO04) | 136.8 |
| 32 | Hannover (DE92) | 133.0 |
| 33 | Köln (DEA2) | 132.0 |
|  | Niederbayern (DE22) | 132.0 |
| 35 | Ostschweiz (CH05) | 131.9 |
| 36 | Nordjylland (DK05) | 131.5 |
| 37 | Düsseldorf (DEA1) | 130.9 |
| 38 | Braunschweig (DE91) | 130.6 |
|  | Gießen (DE72) | 130.6 |
| 40 | Zentralschweiz (CH06) | 130.0 |

\* Regions ordered based on their scores before removing statistical outliers.

## Trademark applications per billion regional GDP



REGIO*gis*

## Trademark applications per billion regional GDP

- ■ Bottom one-third low performers
- ■ Middle one-third low performers
- ■ Top one-third low performers
- ■ Bottom one-third moderate performers
- ■ Middle one-third moderate performers
- ■ Top one-third moderate performers
- ■ Bottom one-third strong performers
- ■ Middle one-third strong performers
- ■ Top one-third strong performers
- ■ Bottom one-third high performers
- ■ Middle one-third high performers
- ■ Top one-third high performers

## Trademark applications per billion regional GDP

Performance on trademark applications is widely spread across Europe and within countries. Performance is relatively strong in Austria, Denmark and Switzerland. Other countries with high performing regions include, Belgium, Bulgaria, Finland, Germany, Italy, Lithuania, the Netherlands Poland, Portugal, Slovenia, Spain, Sweden and the United Kingdom.

Regional differences in Spain are rather high, with the best performing region, *La Rioja* (ES23), being the overall third-best leading region, and the lowest performing region, *Principado de Asturias* (ES12), being part of the top one-third low performers. Large differences in regional performance groups within one country are also observed in Bulgaria, Germany, Italy, Poland, Portugal, Sweden and the United Kingdom. Performance is also higher in capital regions compared to other regions in most countries.

The top 40 best performing regions are shown on the right. In total 16 countries are represented in the top 40 with some notable Eastern European regions such as *Yugozapaden* (BG41), *Sostinés regionas* (LT01) and *Warszawski stoleczny* (PL91). *Zentralschweiz* (CH06) and *Ticino* (CH07) are the two best performing regions.

### Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 \* the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*

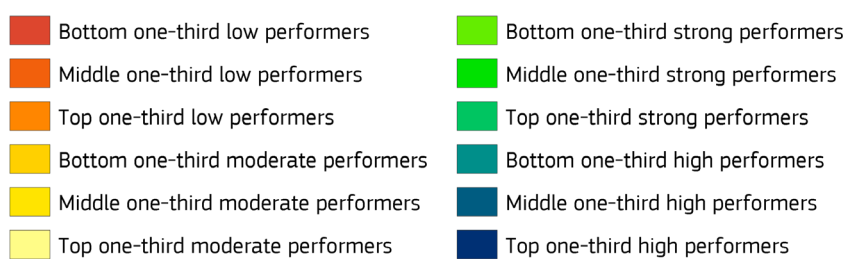| | Region | |
|---|---|---|
| 1 | Zentralschweiz (CH06) | 225.7* |
| | Ticino (CH07) | 225.7* |
| | La Rioja (ES23) | 225.7* |
| 4 | Helsinki-Uusimaa (FI1B) | 224.8 |
| 5 | Stockholm (SE11) | 215.3 |
| 6 | Berlin (DE30) | 208.1 |
| 7 | Illes Balears (ES53) | 198.3 |
| 8 | Hovedstaden (DK01) | 197.2 |
| 9 | Comunidad Valenciana (ES52) | 193.1 |
| 10 | Sydsverige (SE22) | 186.5 |
| 11 | Cataluña (ES51) | 178.8 |
| 12 | Hamburg (DE60) | 174.3 |
| 13 | Oberbayern (DE21) | 173.9 |
| 14 | Midtjylland (DK04) | 172.9 |
| 15 | Westösterreich (AT3) | 168.1 |
| 16 | Région lémanique (CH01) | 167.9 |
| 17 | Región de Murcia (ES62) | 166.0 |
| 18 | Ostösterreich (AT1) | 163.3 |
| 19 | Norte (PT11) | 157.7 |
| 20 | Västsverige (SE23) | 155.9 |
| 21 | Veneto (ITH3) | 151.8 |
| 22 | Noord-Holland (NL32) | 151.3 |
| 23 | Nordwestschweiz (CH03) | 147.5 |
| 24 | Flevoland (NL23) | 144.1 |
| 25 | Provincia Autonoma Bolzano/Bozen (ITH1) | 143.6 |
| 26 | Noord-Brabant (NL41) | 142.9 |
| 27 | Yugozapaden (BG41) | 141.2 |
| 28 | London (UKI) | 141.1 |
| 29 | Ostschweiz (CH05) | 139.7 |
| 30 | Comunidad de Madrid (ES30) | 139.2 |
| 31 | Région de Bruxelles-Capitale (BE1) | 134.2 |
| 32 | Marche (ITI3) | 132.5 |
| 33 | Lombardia (ITC4) | 131.9 |
| 34 | Sostinés regionas (LT01) | 131.3 |
| 35 | SI04 – Zahodna Slovenija (SI04) | 130.6 |
| 36 | Warszawski stoleczny (PL91) | 130.0 |
| 37 | Emilia-Romagna (ITH5) | 129.4 |
| 38 | Südösterreich (AT2) | 129.1 |
| 39 | Syddanmark (DK03) | 128.8 |
| 40 | Düsseldorf (DEA1) | 126.2 |

*** Regions ordered based on their scores before removing statistical outliers.**

***Definition of the indicator***

*Numerator: Number of trademarks applied for at EUIPO*

*Denominator: Gross Domestic Product in Purchasing Power Standard*

*Rationale: Trademarks are an important innovation indicator, especially for the service sector. The Community trademark gives its proprietor a uniform right applicable in all Member States of the European Union through a single procedure which simplifies trademark policies at European level. It fulfils the three essential functions of a trademark: it identifies the origin of goods and services, guarantees consistent quality through evidence of the company's commitment vis-à-vis the consumer, and is a form of communication, a basis for publicity and advertising.*

*Missing data: Canarias (ES70), RUP FR – Régions ultrapériphériques françaises (FRY), and Aland (FI20).*

## Design applications per billion regional GDP



Canarias

Guadeloupe
Martinique          Guyane

Mayotte | Réunion

Açores              Madeira

REGIO*gis*

## Design applications per billion regional GDP

- Bottom one-third low performers
- Middle one-third low performers
- Top one-third low performers
- Bottom one-third moderate performers
- Middle one-third moderate performers
- Top one-third moderate performers
- Bottom one-third strong performers
- Middle one-third strong performers
- Top one-third strong performers
- Bottom one-third high performers
- Middle one-third high performers
- Top one-third high performers

## Design applications per billion regional GDP

Performance on design applications is widely spread across Europe and within countries. Most regions belong to the low and moderate performance groups, 147 in total. High performing regions are found mostly in Austria, Czechia, Denmark, Germany, Italy, the Netherlands and Poland. All countries except Denmark have low and moderate performing regions. Croatia, Greece, Lithuania, Norway, Romania and Slovakia have high shares of low performing regions. Large differences within countries are observed in Germany, Italy, the Netherlands, Spain and the United Kingdom which all have at least one region in the high performing group and one region in the low performing group.

The top 40 best performing regions are shown on the right. In total 13 countries are represented in the top 40. Germany is well represented in the top 40 with 13 regions as well as Italy with five, Poland with four and Czechia with three regions. *Umbria* (ITI2) is the best performing region, followed by *Jihozápad* (CZ03) and *Ostschweiz* (CH05).
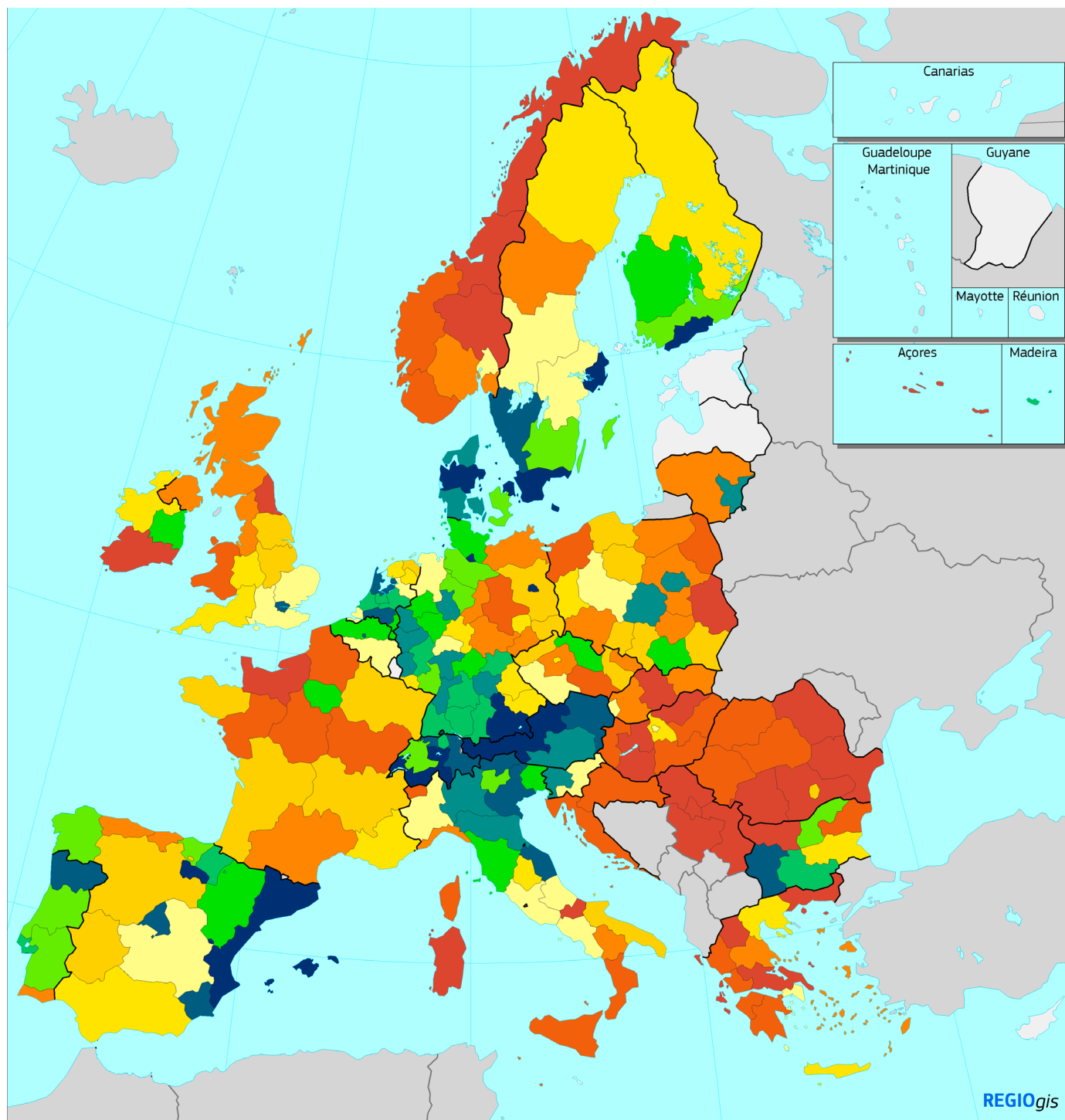
### Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 * the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*

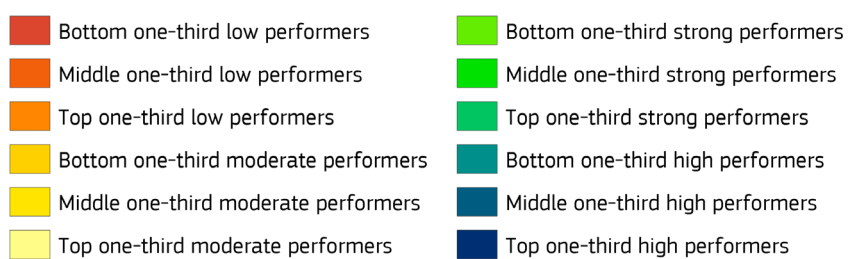| | Region | |
|---|---|---|
| 1 | Umbria (ITI2) | 204.1* |
| | Jihozápad (CZ03) | 204.1* |
| | Ostschweiz (CH05) | 204.1* |
| 4 | Arnsberg (DEA5) | 193.5 |
| 5 | Detmold (DEA4) | 193.4 |
| 6 | Marche (ITI3) | 183.4 |
| 7 | Stuttgart (DE11) | 175.5 |
| 8 | Veneto (ITH3) | 175.2 |
| 9 | Mittelfranken (DE25) | 168.5 |
| 10 | Westösterreich (AT3) | 163.6 |
| 11 | Wielkopolskie (PL41) | 162.5 |
| 12 | Friuli-Venezia Giulia (ITH4) | 161.6 |
| 13 | Oberbayern (DE21) | 157.4 |
| 14 | Hovedstaden (DK01) | 151.5 |
| 15 | Småland med öarna (SE21) | 151.1 |
| 16 | Emilia-Romagna (ITH5) | 148.3 |
| 17 | Midtjylland (DK04) | 147.6 |
| 18 | Oberfranken (DE24) | 147.1 |
| 19 | Noord-Brabant (NL41) | 146.2 |
| 20 | Severoiztochen (BG33) | 145.8 |
| 21 | Comunidad Valenciana (ES52) | 143.5 |
| 22 | Drenthe (NL13) | 141.6 |
| 23 | Severovýchod (CZ05) | 140.5 |
| 24 | Berlin (DE30) | 136.8 |
| 25 | Norte (PT11) | 135.8 |
| 26 | Rheinhessen-Pfalz (DEB3) | 132.3 |
| 27 | Nordjylland (DK05) | 132.0 |
| 28 | Zentralschweiz (CH06) | 131.2 |
| 29 | Düsseldorf (DEA1) | 131.0 |
| 30 | Severen tsentralen (BG32) | 130.7 |
| 31 | Hamburg (DE60) | 130.6 |
| 32 | Lubuskie (PL43) | 130.5 |
| 33 | Malopolskie (PL21) | 129.6 |
| 34 | Schleswig-Holstein (DEF) | 128.3 |
| 35 | Kujawsko-Pomorskie (PL61) | 127.7 |
| 36 | Oberpfalz (DE23) | 127.4 |
| 37 | Koblenz (DEB1) | 127.2 |
| 38 | Hannover (DE92) | 126.3 |
| 39 | South West (UKK) | 125.8 |
| 40 | Strední Morava (CZ07) | 123.6 |

*\* Regions ordered based on their scores before removing statistical outliers.*

### Definition of the indicator

*Numerator: Number of designs applied for at EUIPO*

*Denominator: Gross Domestic Product in Purchasing Power Standard*

*Rationale: A design is the outward appearance of a product or part of it resulting from the lines, contours, colours, shape, texture, materials and/or its ornamentation. A product can be any industrial or handicraft item including packaging, graphic symbols and typographic typefaces but excluding computer programs. It also includes products that are composed of multiple components, which may be disassembled and reassembled. Community design protection is directly enforceable in each Member State and it provides both the option of an unregistered and a registered Community design right for one area encompassing all Member States.*

*Missing data: Ipeiros (EL54), Ionia Nisia (EL62), Canarias (ES70), RUP FR – Régions ultrapériphériques françaises (FRY), Região Autónoma dos Açores (PT20), and Aland (FI20).*

## Employment in medium–high/high tech manufacturing and knowledge–intensive services as percentage of total workforce



### Employment in medium–high/high–tech manufacturing and knowledge–intensive services as percentage of total workforce

- 🟥 Bottom one-third low performers
- 🟧 Middle one-third low performers
- 🟧 Top one-third low performers
- 🟨 Bottom one-third moderate performers
- 🟨 Middle one-third moderate performers
- 🟨 Top one-third moderate performers
- 🟩 Bottom one-third strong performers
- 🟩 Middle one-third strong performers
- 🟩 Top one-third strong performers
- 🟦 Bottom one-third high performers
- 🟦 Middle one-third high performers
- 🟦 Top one-third high performers

## Employment in medium-high/high tech manufacturing and knowledge-intensive services as percentage of total workforce

Employment in medium-high and high-tech manufacturing and knowledge-intensive services is high in 55 regions in Europe and 33 regions belong to the low performing group. There are 17 countries with at least one region that is part of the high performers group. High shares of high performing regions are mostly observed in Czechia, Germany, Hungary, Italy, Switzerland and Sweden. Large differences within countries are observed in Italy, Norway, Poland, Spain and Romania which all have at least one region in the high performing group and one region in the low performing group.

The top 40 best performing regions are shown on the right. *Stuttgart* (DE11), *Vest* (RO42) and *Stockholm* (SE11) are the three best performing regions. In total 15 countries are represented in the top 40. Germany is well represented in the top 40 with 13 regions as well as Czechia with six regions. Eastern European regions are also represented in the top 40 such as, *Vest* (RO42) and *Bucuresti - Ilfov* (RO32), *Bratislavský kraj* (SK01) and *Západné Slovensko* (SK02).

### Definition of the indicator

*Numerator: Number of employed persons in the medium-high and high-tech manufacturing sectors*

*Denominator: Total workforce including all manufacturing and service sectors*

*Rationale: The share of employment in high technology manufacturing sectors is an indicator of the manufacturing economy that is based on continual innovation through creative, inventive activity. Knowledge-intensive services can be provided directly to consumers, such as telecommunications, and provide inputs to the innovative activities of other firms in all sectors of the economy. The latter can increase productivity throughout the economy and support the diffusion of a range of innovations, in particular those based on ICT.*

*Missing data: Dytiki Makedonia (EL53), Ipeiros (EL54), Ionia Nisia (EL62), Sterea Ellada (EL64), Voreio Aigaio (EL41), Notio Aigaio (EL42), Kriti (EL43), Ciudad Autónoma de Ceuta (ES63), Ciudad Autónoma de Melilla (ES64), Corse (FRM), Valle d'Aosta/Vallée d'Aoste (IT@C2), Lubuskie (PL43), Opolskie (PL52), Algarve (PT15), Região Autónoma dos Açores (PT20), Região Autónoma da Madeira (PT30), Åland (FI20).*

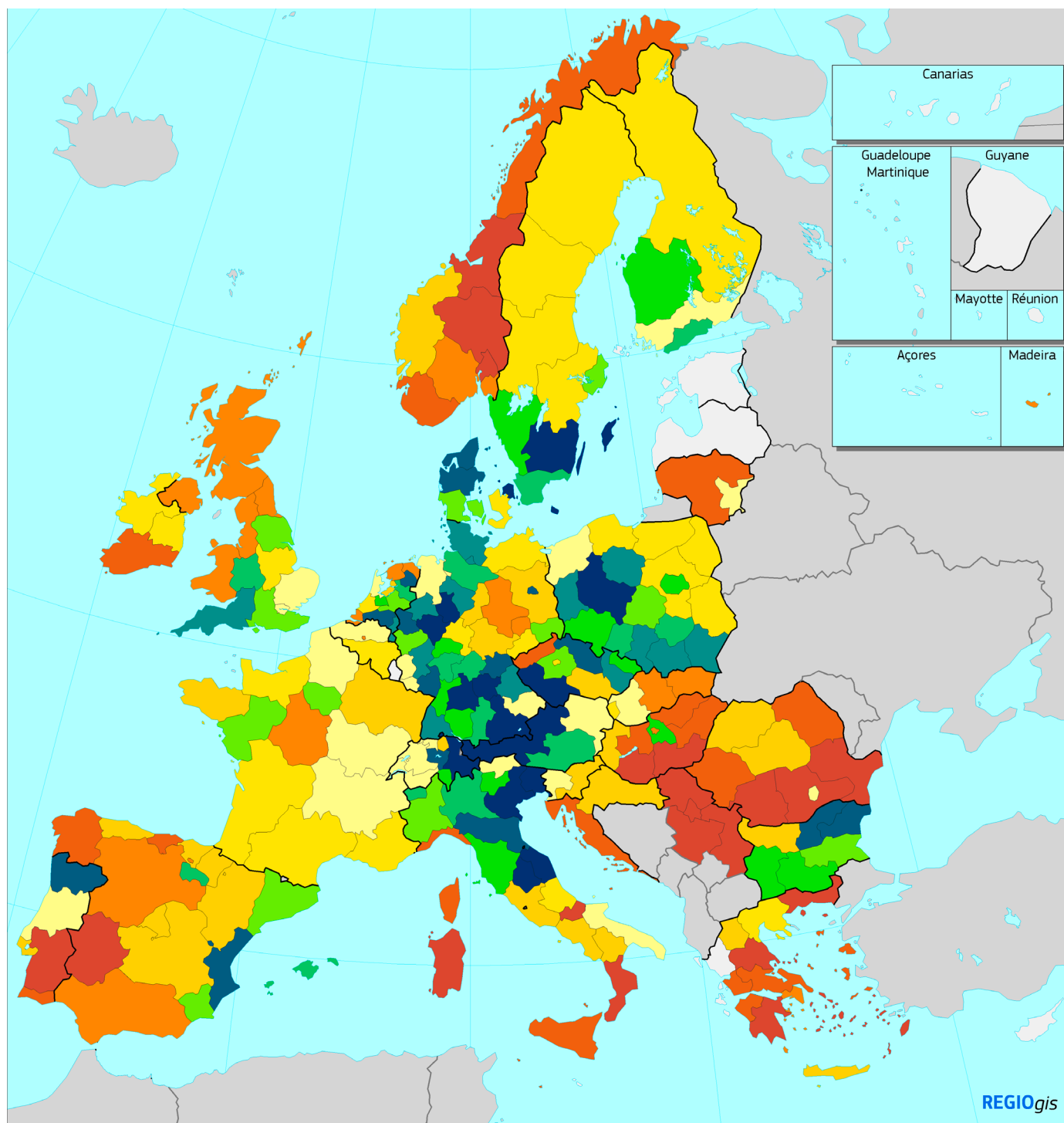## Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 * the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*
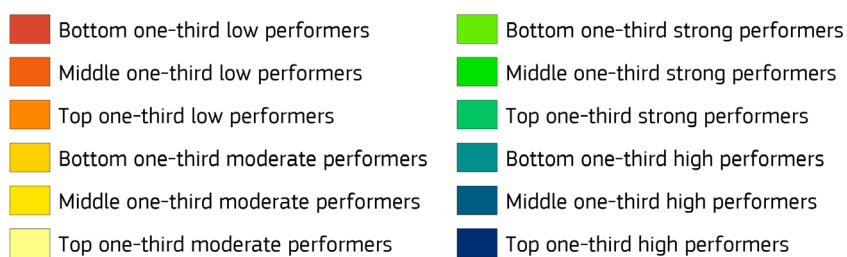
| | Region | |
|---|---|---|
| 1 | Stuttgart (DE11) | 199.5 |
| 2 | Vest (RO42) | 187.3 |
| 3 | Stockholm (SE11) | 186.4 |
| 4 | Bratislavský kraj (SK01) | 182.4 |
| 5 | Oberbayern (DE21) | 179.9 |
| 6 | Tübingen (DE14) | 166.1 |
| 7 | Braunschweig (DE91) | 162.8 |
| 8 | Helsinki-Uusimaa (FI1B) | 161.2 |
| 9 | Karlsruhe (DE12) | 160.4 |
| | Praha (CZ01) | 160.4 |
| 11 | London (UKI) | 156.3 |
| 12 | Budapest (HU11) | 155.5 |
| | Warszawski stoleczny (PL91) | 155.5 |
| 14 | Strední Cechy (CZ02) | 153.8 |
| 15 | Severovýchod (CZ05) | 153.0 |
| 16 | Západné Slovensko (SK02) | 151.4 |
| | Zürich (CH04) | 151.4 |
| 18 | Oberpfalz (DE23) | 149.7 |
| 19 | Közép-Dunántúl (HU21) | 148.9 |
| 20 | Hamburg (DE60) | 148.1 |
| 21 | Lombardia (ITC4) | 147.3 |
| | Nyugat-Dunántúl (HU22) | 147.3 |
| 23 | Darmstadt (DE71) | 144.0 |
| | Schwaben (DE27) | 144.0 |
| 25 | Comunidad de Madrid (ES3) | 143.2 |
| 26 | Rheinhessen-Pfalz (DEB3) | 142.4 |
| 27 | Bucuresti - Ilfov (RO32) | 140.8 |
| | Niederbayern (DE22) | 140.8 |
| | Nordwestschweiz (CH03) | 140.8 |
| 30 | Västsverige (SE23) | 140.0 |
| 31 | Jihozápad (CZ03) | 139.1 |
| 32 | Berlin (DE30) | 138.3 |
| | Île de France (FR1) | 138.3 |
| | Unterfranken (DE26) | 138.3 |
| 35 | Moravskoslezsko (CZ08) | 135.9 |
| 36 | Piemonte (ITC1) | 135.1 |
| 37 | Zahodna Slovenija (SI04) | 134.3 |
| 38 | Eastern and Midland (IE06) | 131.8 |
| 39 | Dolnoslaskie (PL51) | 131.0 |
| 40 | Jihovýchod (CZ06) | 130.2 |

Sales of new-to-market and new-to-firm innovations in SMEs as percentage of turnover
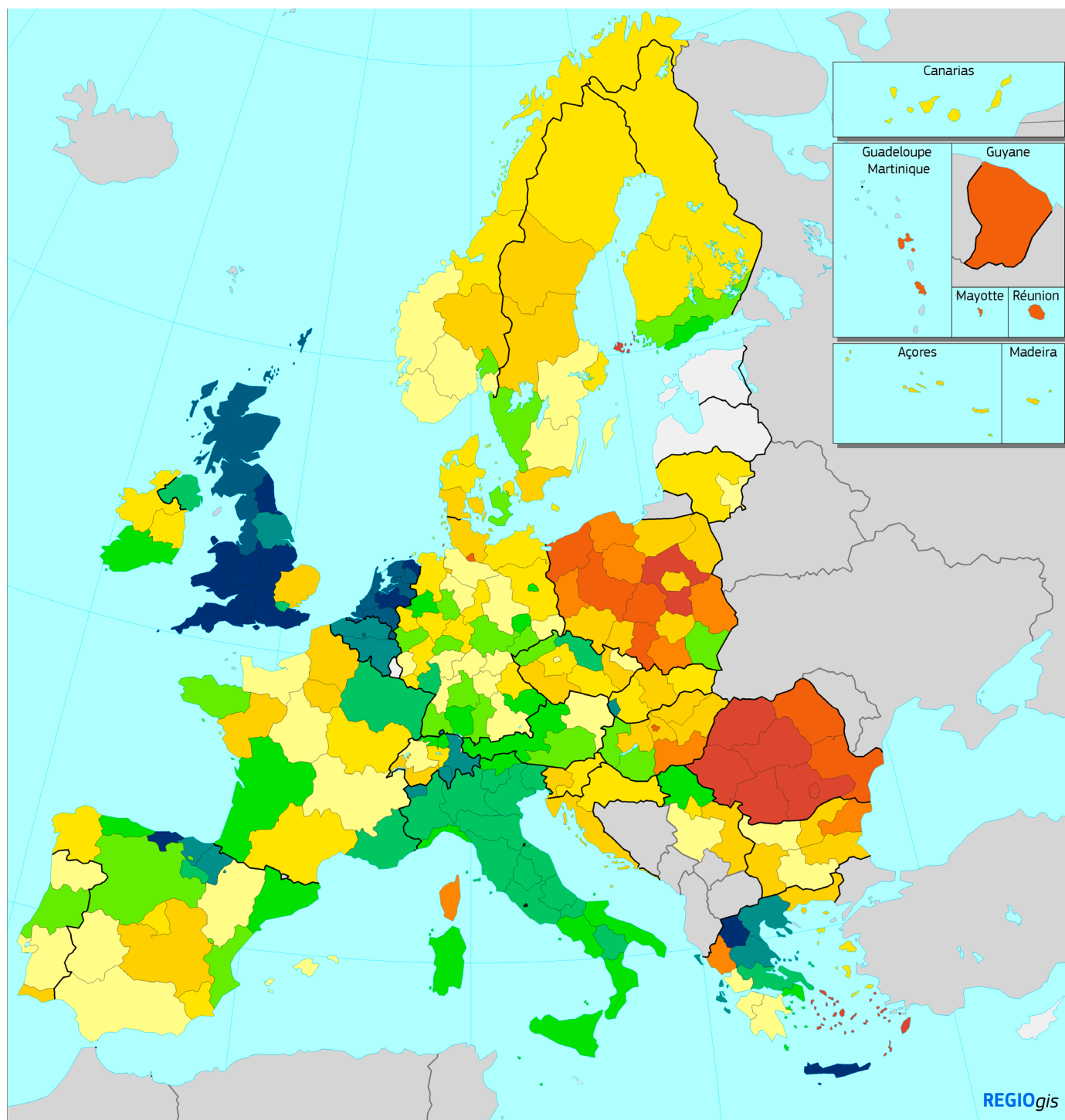


REGIO*gis*

## Sales of new-to-market and new-to-firm innovations in SMEs as percentage of turnover

- Bottom one-third low performers
- Middle one-third low performers
- Top one-third low performers
- Bottom one-third moderate performers
- Middle one-third moderate performers
- Top one-third moderate performers
- Bottom one-third strong performers
- Middle one-third strong performers
- Top one-third strong performers
- Bottom one-third high performers
- Middle one-third high performers
- Top one-third high performers
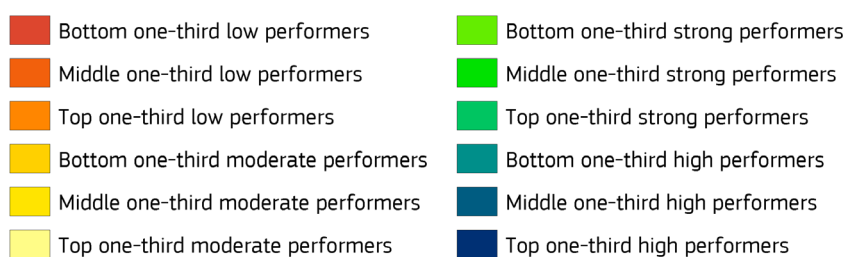
## Sales of new-to-market and new-to-firm innovations in SMEs as percentage of turnover

Performance is less spread within countries but more across countries. High shares of high performing regions are observed in Belgium and the United Kingdom. There is very little variance in performance amongst Italian regions with regions belonging to either the middle one-third strong performers or top one-third strong performers. Performance is widely spread in Greece with *Kriti* (EL43) being the overall top performing region on this indicator and *Notio Aigaio* (EL42) belonging to the bottom one-third low performers. In total, 110 regions perform at a moderate level, and just 24 regions belong to the high performing group.

The top 40 best performing regions are shown on the right. All the regions in Belgium are included in the top 40. Italy is also well represented with 12 regions, the United Kingdom with 10 regions, and Greece with five regions.

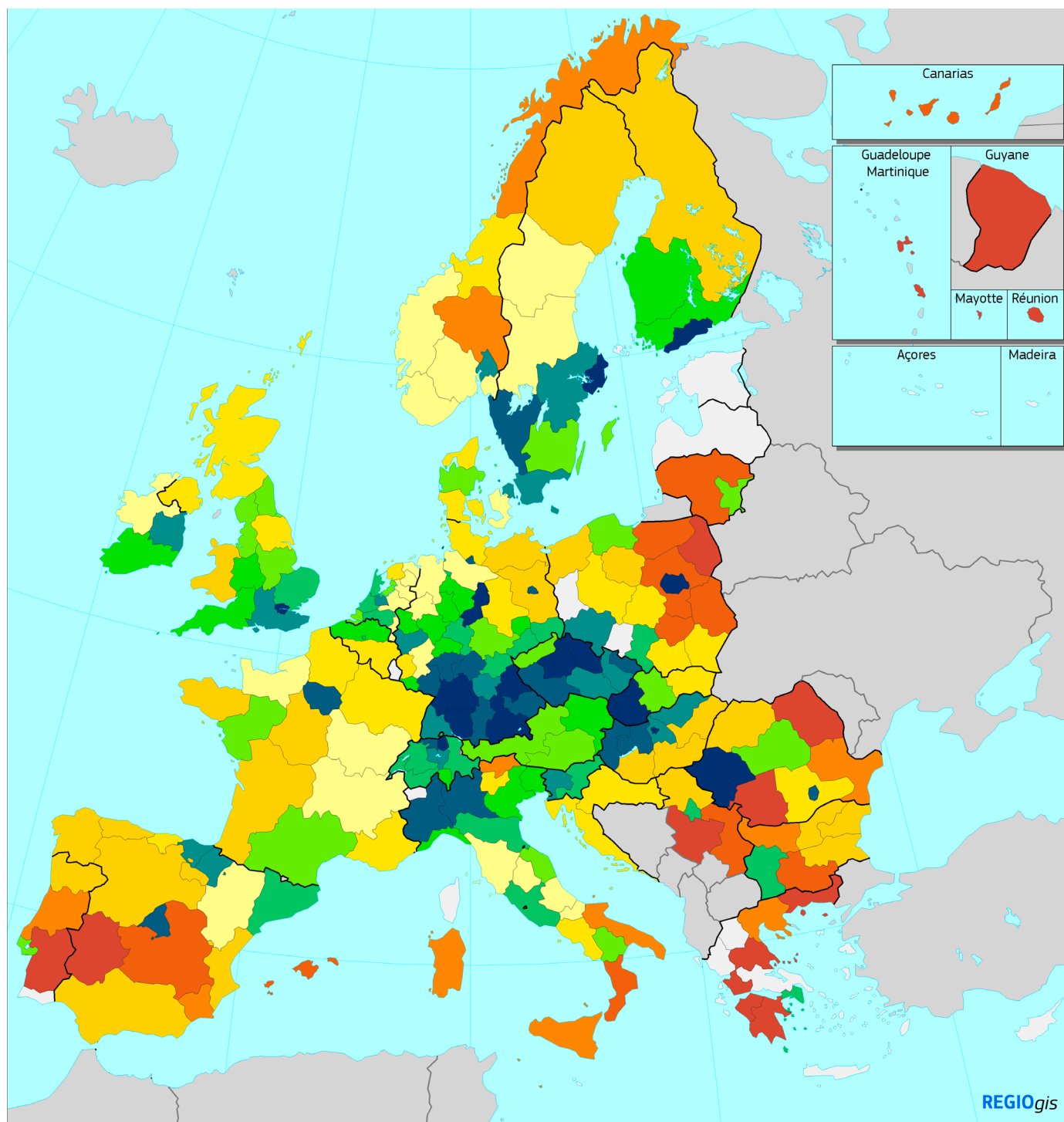### Top 40 regions

*Most recent performance relative to that of the EU (=100), calculated as 100 * the normalised score of the region divided by that of the EU, after correcting for statistical outliers and normalising the data*
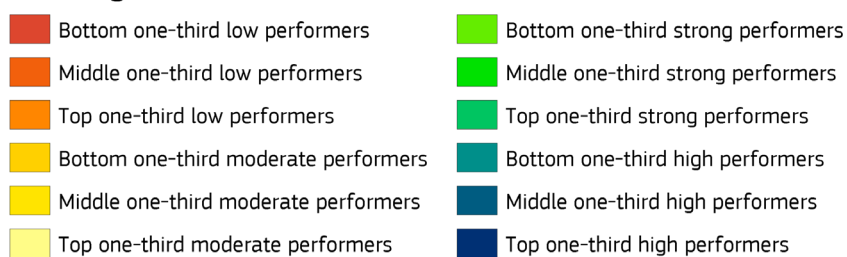
|  | Region |  |
|---|---|---|
| 1 | East Midlands (UKF) | 166.0* |
|  | Wales (UKL) | 166.0* |
|  | South West (UKK) | 166.0* |
|  | South East (UKJ) | 166.0* |
|  | West Midlands (UKG) | 166.0* |
|  | North East (UKC) | 166.0* |
|  | Kriti (EL43) | 166.0* |
| 8 | Dytiki Makedonia (EL53) | 162.6 |
| 9 | Cantabria (ES13) | 161.4 |
| 10 | Scotland (UKM) | 160.3 |
| 11 | Région de Bruxelles-Capitale (BE1) | 159.6 |
| 12 | North West (UKD) | 155.0 |
| 13 | Ostschweiz (CH05) | 151.5 |
| 14 | País Vasco (ES21) | 138.4 |
| 15 | Vlaams Gewest (BE2) | 130.6 |
| 16 | Thessalia (EL61) | 129.9 |
|  | Yorkshire and The Humber (UKE) | 129.9 |
| 18 | Comunidad Foral de Navarra (ES22) | 129.0 |
| 19 | Valle d'Aosta/Vallée d'Aoste (ITC2) | 128.1 |
| 20 | Bratislavský kraj (SK01) | 128.0 |
| 21 | Ionia Nisia (EL62) | 127.6 |
| 22 | Région Wallonne (BE3) | 127.5 |
| 23 | Ticino (CH07) | 127.4 |
| 24 | Kentriki Makedonia (EL52) | 126.3 |
| 25 | London (UKI) | 119.9 |
| 26 | Piemonte (ITC1) | 118.8 |
| 27 | Abruzzo (ITF1) | 114.9 |
| 28 | Marche (ITI3) | 114.7 |
| 29 | Basilicata (ITF5) | 114.3 |
| 30 | Toscana (ITI1) | 113.9 |
| 31 | Molise (ITF2) | 113.6 |
| 32 | Veneto (ITH3) | 113.3 |
| 33 | Lombardia (ITC4) | 113.2 |
| 34 | Emilia-Romagna (ITH5) | 112.9 |
| 35 | Friuli-Venezia Giulia (ITH4) | 112.7 |
| 36 | La Rioja (ES23) | 112.6 |
| 37 | Utrecht (NL31) | 111.4 |
| 38 | Rheinhessen-Pfalz (DEB3) | 110.8 |
| 39 | Lazio (ITI4) | 110.2 |
| 40 | Alsace - Champagne-Ardenne - Lorraine (FRF) | 108.8 |

* Regions ordered based on their scores before removing statistical outliers.

***Definition of the indicator***

*Numerator: Sum of total turnover of new or significantly improved products for SMEs*

*Denominator: Total turnover for SMEs*

*Rationale: This indicator measures the turnover of new or significantly improved products and includes both products which are only new to the firm and products which are also new to the market. The indicator thus captures both the creation of state-of-the-art technologies (new to market products) and the diffusion of these technologies (new to firm products).*

# 5. RIS methodology

## 5.1 Missing data: imputations

For 238 regions and 17 indicators, full data availability would require data for 4,046 data cells for the most recent year. For the most recent year, 9.1% of the data are not available. For the full five years including data for five waves of the CIS, full data availability would require data for 20,230 data cells. For several indicators, regional data are missing for several years or even for the entire period considered. To increase data availability, a regionalisation technique has been used in previous versions of the RIS for the indicators using CIS data, followed by a set of imputation techniques for the remaining missing CIS data and the indicators not using CIS data. With regional CIS 2016 data having made available by almost all countries, the regionalisation technique has not been used for the CIS 2016.

### 5.1.1 CIS regionalisation technique

Whenever CIS data are missing for all regions, while the national-level aggregate for the country is available, a CIS "regionalisation" technique has been applied using country and regional-level data on employment and number of firms at the two-digit industry level, assuming that industry intensities at the country level also hold at the regional level. We explain the method for regionalising the CIS data by using the share of firms with product and process innovations as an example:

- Step 1: Calculate for each country Y the share of firms with product and process innovations for each industry I using the CIS 2016 country level data: PI_Y_I

- Step 2: Identify the employment share of industry I for region R: EMPL_R_I

- Step 3: Calculate the estimate for the share of firms with product and process innovations by multiplying EMPL_R_I with PI_Y_I: PI_EMPL_R_I

- Step 4: Identify the share of local units (enterprises) of industry I for region R: ENTR_R_I

- Step 5: Calculate the estimate for the share of firms with product and process innovations by multiplying ENTR_R_I with PI_Y_I: PI_ENTR_R_I

- Step 6: Calculate the average of PI_EMPL_R_I and PI_ENTR_R_I as the estimate for the regional share of product and process innovators: PI_R_I

### 5.1.2 General imputation techniques

The following techniques will be applied in the order as shown below.

1. <u>At the country level</u>, if data for both the previous and the following year are available, first the average of both years will be used $X_C^T = (X_C^{T-1} + X_C^{T+1}) / 2$, then, if the previous step is not possible, that of the previous year $X_C^T = X_C^{T-1}$, and finally, if the previous step is not possible, that of the following year $X_C^T = X_C^{T+1}$, where C denotes the country, T the current year, T-1 the previous year, and T+1 the following year. If data are not available for the previous and following year, missing data will not be imputed.

2. If regional data are available for the previous year, the ratio between the corresponding NUTS level and that at a higher aggregate level (NUTS 1 for NUTS 2 regions, country level for NUTS 1 regions) for the previous year is multiplied with the current value at the higher aggregate level: $X_R^T = (X_R^{T-1} / X_C^{T-1}) * X_C^T$, where R denotes the region, C the country (as the higher aggregate level), T the current year, and T-1 the previous year.

3. If regional data for the previous year are not available, the same procedure as in step 2 will be applied using the ratio between the corresponding NUTS level and that at a higher aggregate level (NUTS 1 for NUTS 2 regions, country level for NUTS 1 regions) for the following year: $X_R^T = (X_R^{T+1} / X_C^{T+1}) * X_C^T$, where R denotes the region, C the country (as the higher aggregate level), T the current year, and T+1 the following year.

4. If there are no regional data for neither the previous nor the following year, the higher-level aggregate will be used (NUTS 1 for NUTS 2 regions, country level for NUTS 1 regions), first that for the current year, and, if not available, that for the previous year, otherwise that for the following year: $X_R^T = X_C^T$ or $X_R^T = X_C^{T-1}$ or $X_R^T = X_C^{T+1}$, where R denotes the region, C the country (as the higher aggregate level), t the current year, T-1 the previous year, and T+1 the following year.

5. If no regional and no country-level data are available for the current, previous or following year, missing data will not be imputed.

## 5.2 Composite indicators

### 5.2.1 Normalising data

For the calculation of composite indicators, the individual indicators should ideally follow a normal distribution, but indicators have an asymmetrical or skewed data distribution (where most regions show low performance levels and a few regions show exceptionally high performance). Data have been transformed using a square root transformation if the degree of skewness of the raw data, a measure of the asymmetry of the distribution of the data, exceeds 1, such that the skewness of the transformed data is below 1. For the following indicators the degree of skewness was above one and data have been transformed: Lifelong learning, International scientific co-publications, R&D expenditures in the public sector, R&D expenditures in the business sector, Non-R&D innovation expenditures, Public-private co-publications, PCT patent applications, Design applications, and Sales of new-to-market and new-to-firm innovations.

Following this transformation, the data are normalised using the min-max procedure. The minimum score observed for all regions across all five observations is subtracted from the respective transformed score, which is then divided by the difference between the maximum and minimum scores observed for all regions across all five observations. The maximum normalised score is equal to 1 and the minimum normalised score is equal to 0.

### 5.2.2 Regional Innovation Index

Average innovation performance is measured using composite indicators. The Regional Innovation Index (RII) is calculated as the unweighted average of the normalised scores of the 17 indicators.

A comparison of the Regional Innovation Index at the country level with the Summary Innovation Index in the European Innovation Scoreboard (EIS) shows that, due to using a more restricted set of indicators in the RIS, countries' performance relative to the EU average in the RIS is different from that in the EIS. The following correction is therefore applied to the composite indicator scores:

1. Calculate the ratios of the EIS 2019 Summary Innovation Index at country level with that of the EU: EIS_index_CTR / EIS_index_EU;

2. Calculate the ratios of the RIS 2019 Regional Innovation Index at country level with that of the EU: RIS_index_CTR / RIS_index_EU;

3. Calculate the correction factor by dividing the ratios 1) and 2).

These country correction factors are then multiplied with the RII for each region in the corresponding country to obtain final RII scores. Relative performance scores are calculated by dividing the RII of the region by that of the EU and multiplying by 100. For trend performance, RIIs for all years are divided by that of the EU in 2011.

## 5.3 Performance group membership

For determining performance group membership, the RIS adopts the classification scheme used in the EIS. Innovation Leaders are all regions with a relative performance more than 20% above the EU average in 2019; Strong Innovators are all regions with a relative performance between 90% and 120% of the EU average in 20197; Moderate Innovators are all regions with a relative performance between 50% and 90% of the EU average in 2019; Modest Innovators are all regions with a relative performance below 50% of the EU average in 2019.

# Annex 1: RIS indicators

| Percentage population aged 30-34 having completed tertiary education | |
|---|---|
| Numerator | Number of persons in age class with some form of post-secondary education |
| Denominator | Total population between 30 and 34 years |
| Rationale | This is a general indicator of the supply of advanced skills. It is not limited to science and technical fields, because the adoption of innovations in many areas, including the service sectors, depends on a wide range of skills. The indicator focuses on a narrow share of the population aged 30 to 34 and will relatively quickly reflect changes in educational policies leading to more tertiary graduates. |
| Included in EIS | No, proxy for EIS indicator measuring share of population aged 25-34 having completed tertiary education |
| Data source | Eurostat, regional statistics |
| Data availability | NUTS 2: 2009, 2011, 2013, 2015, 2017 |

| Percentage population aged 25-64 participating in lifelong learning | |
|---|---|
| Numerator | Number of persons in private households aged between 25 and 64 years who have participated in the four weeks preceding the interview, in any education or training, whether or not relevant to the respondent's current or possible future job |
| Denominator | Total population aged between 25 and 64 years |
| Rationale | Lifelong learning encompasses all purposeful learning activity, whether formal, non-formal or informal, undertaken on an ongoing basis with the aim of improving knowledge, skills and competence. The intention or aim to learn is the critical point that distinguishes these activities from non-learning activities, such as cultural or sporting activities. |
| Included in EIS | Yes |
| Data source | Eurostat, regional statistics |
| Data availability | NUTS 2: 2009, 2011, 2013, 2015, 2017 |

| International scientific co-publications per million population | |
|---|---|
| Numerator | Number of scientific publications with at least one co-author based abroad |
| Denominator | Total population |
| Rationale | International scientific co-publications are a proxy for the quality of scientific research as collaboration increases scientific productivity. |
| Included in EIS | Yes |
| Data source | Numerator: Web of Science. Data provided by CWTS (Leiden University) as part of a contract to DG Research and Innovation.<br>Denominator: Eurostat |
| Data availability | NUTS 2: 2008, 2010, 2012, 2014, 2016 |

| Scientific publications among the top-10% most cited publications worldwide as percentage of total scientific publications of the region | |
|---|---|
| Numerator | Number of scientific publications among the top-10% most cited publications worldwide |
| Denominator | Total number of scientific publications |
| Rationale | The indicator is a measure for the efficiency of the research system as highly cited publications are assumed to be of higher quality. There could be a bias towards small or English-speaking countries given the coverage of Scopus' publication data. |
| Included in EIS | Yes |
| Data source | Web of Science. Data provided by CWTS (Leiden University) as part of a contract to DG Research and Innovation |
| Data availability | NUTS 2: 2007, 2009, 2011, 2013, 2015 |

| R&D expenditures in the public sector as percentage of GDP | |
|---|---|
| Numerator | All R&D expenditures in the government sector (GOVERD) and the higher education sector (HERD) |
| Denominator | Regional Gross Domestic Product |
| Rationale | R&D expenditure represents one of the major drivers of economic growth in a knowledge-based economy. Trends in the R&D expenditure indicator provide key indications of the future competitiveness and wealth of a region. R&D spending is essential for making the transition to a knowledge-based economy as well as for improving production technologies and stimulating growth. |
| Included in EIS | Yes |
| Data source | Eurostat, regional statistics |
| Data availability | NUTS 2: 2008, 2010, 2012, 2014, 2016 |

| R&D expenditures in the business sector as percentage of GDP | |
|---|---|
| Numerator | All R&D expenditures in the business sector (BERD) |
| Denominator | Regional Gross Domestic Product |
| Rationale | The indicator captures the formal creation of new knowledge within firms. It is particularly important in the science-based sector (pharmaceuticals, chemicals and some areas of electronics), where most new knowledge is created in or near R&D laboratories. |
| Included in EIS | Yes |
| Data source | Eurostat, regional statistics |
| Data availability | NUTS 2: 2008, 2010, 2012, 2014, 2016 |

| Non-R&D innovation expenditures in SMEs as percentage of turnover | |
|---|---|
| Numerator | Sum of total innovation expenditure for SMEs, excluding intramural and extramural R&D expenditures |
| Denominator | Total turnover for SMEs |
| Rationale | This indicator measures non-R&D innovation expenditure as percentage of total turnover. Several of the components of innovation expenditure, such as investment in equipment and machinery and the acquisition of patents and licenses, measure the diffusion of new production technology and ideas. |
| Included in EIS | No, proxy for EIS indicator including all enterprises |
| Data source | Community Innovation Survey: Eurostat and National Statistical Offices |
| Data availability | NUTS 1 and 2 for different countries for CIS 2008, CIS 2010, CIS 2012, CIS 2014, CIS 2016 |

| SMEs introducing product or process innovations as percentage of SMEs | |
|---|---|
| Numerator | Number of SMEs that introduced a new product or a new process to one of their markets |
| Denominator | Total number of SMEs |
| Rationale | Technological innovation as measured by the introduction of new products (goods or services) and processes is key to innovation in manufacturing activities. Higher shares of technological innovators should reflect a higher level of innovation activities. |
| Included in EIS | Yes |
| Data source | Community Innovation Survey: Eurostat and National Statistical Offices |
| Data availability | NUTS 1 and 2 for different countries for CIS 2008, CIS 2010, CIS 2012, CIS 2014, CIS 2016 |

| SMEs introducing marketing or organisational innovations as percentage of SMEs | |
|---|---|
| Numerator | Number of SMEs that introduced a new marketing innovation and/or organisational innovation to one of their markets |
| Denominator | Total number of SMEs |
| Rationale | Many firms, in particular in the service sectors, innovate through non-technological forms of innovation. Examples of these are organisational innovations. This indicator tries to capture the extent to which SMEs innovate through non-technological innovation. |
| Included in EIS | Yes |
| Data source | Community Innovation Survey: Eurostat and National Statistical Offices |
| Data availability | NUTS 1 and 2 for different countries for CIS 2008, CIS 2010, CIS 2012, CIS 2014, CIS 2016 |

| SMEs innovating in-house as percentage of SMEs | |
|---|---|
| Numerator | Number of SMEs with in-house innovation activities. Innovative firms with in-house innovation activities have introduced a new product or new process either in-house or in combination with other firms. The indicator does not include new products or processes developed by other firms. |
| Denominator | Total number of SMEs |
| Rationale | This indicator measures the degree to which SMEs that have introduced any new or significantly improved products or production processes have innovated in-house. The indicator is limited to SMEs, because almost all large firms innovate. |
| Included in EIS | Yes |
| Data source | Community Innovation Survey: Eurostat and National Statistical Offices |
| Data availability | NUTS 1 and 2 for different countries for CIS 2008, CIS 2010, CIS 2012, CIS 2014, CIS 2016 |

| Innovative SMEs collaborating with others as percentage of SMEs | |
|---|---|
| Numerator | Number of SMEs with innovation co-operation activities. Firms with co-operation activities are those that have had any co-operation agreements on innovation activities with other enterprises or institutions. |
| Denominator | Total number of SMEs |
| Rationale | This indicator measures the degree to which SMEs are involved in innovation co-operation. Complex innovations often depend on companies' ability to draw on diverse sources of information and knowledge, or to collaborate on the development of an innovation. The indicator measures the flow of knowledge between public research institutions and firms, and between firms and other firms. The indicator is limited to SMEs, because almost all large firms are involved in innovation co-operation. |
| Included in EIS | Yes |
| Data source | Community Innovation Survey: Eurostat and National Statistical Offices |
| Data availability | NUTS 1 and 2 for different countries for CIS 2008, CIS 2010, CIS 2012, CIS 2014, CIS 2016 |

| Public-private co-publications per million population | |
|---|---|
| Numerator | Number of public-private co-authored research publications. The definition of the "private sector" excludes the private medical and health sector. Publications are assigned to the country/countries in which the business companies or other private sector organisations are located. |
| Denominator | Total population |
| Rationale | This indicator captures public-private research linkages and active collaboration activities between business sector researchers and public sector researchers resulting in academic publications. |
| Included in EIS | Yes |
| Data source | Numerator: Web of Science. Data provided by CWTS (Leiden University) as part of a contract to DG Research and Innovation<br>Denominator: Eurostat |
| Data availability | NUTS 2: 2009, 2011, 2013, 2015, 2017 |

| EPO patent applications per billion regional GDP | |
|---|---|
| Numerator | Number of patents applied for at the European Patent Office (EPO), by year of filing. The regional distribution of the patent applications is assigned according to the address of the inventor. |
| Denominator | Gross Domestic Product in Purchasing Power Standard |
| Rationale | The capacity of firms to develop new products determines their competitive advantage. One indicator of the rate of new product innovation is the number of patent applications. |
| Included in EIS | Yes |
| Data source | Numerator: OECD, REGPAT. Denominator: Eurostat |
| Data availability | NUTS 2: 2008, 2010, 2012, 2014, 2016 |

| Trademark applications per billion regional GDP | |
|---|---|
| Numerator | Number of trademarks applied for at EUIPO |
| Denominator | Gross Domestic Product in Purchasing Power Standard |
| Rationale | Trademarks are an important innovation indicator, especially for the service sector. The Community trademark gives its proprietor a uniform right applicable in all Member States of the European Union through a single procedure which simplifies trademark policies at European level. It fulfils the three essential functions of a trademark: it identifies the origin of goods and services, guarantees consistent quality through evidence of the company's commitment vis-à-vis the consumer, and is a form of communication, a basis for publicity and advertising. |
| Included in EIS | No, proxy for EIS indicator covering both EUIPO and WIPO (Madrid Protocol) applications |
| Data source | Numerator: European Union Intellectual Property Office (EUIPO). Data provided by Science Metrix as part of a contract to DG Research and Innovation<br>Denominator: Eurostat |
| Data availability | NUTS 2: 2009, 2011, 2013, 2015, 2017 |

| Design applications per billion regional GDP | |
|---|---|
| Numerator | Number of designs applied for at EUIPO |
| Denominator | Gross Domestic Product in Purchasing Power Standard |
| Rationale | A design is the outward appearance of a product or part of it resulting from the lines, contours, colours, shape, texture, materials and/or its ornamentation. A product can be any industrial or handicraft item including packaging, graphic symbols and typographic typefaces but excluding computer programs. It also includes products that are composed of multiple components, which may be disassembled and reassembled. Community design protection is directly enforceable in each Member State and it provides both the option of an unregistered and a registered Community design right for one area encompassing all Member States. |
| Included in EIS | No, proxy for EIS indicator covering individual design applications |
| Data source | Numerator: European Union Intellectual Property Office (EUIPO). Data provided by Science Metrix as part of a contract to DG Research and Innovation.<br>Denominator: Eurostat |
| Data availability | NUTS 2: 2009, 2011, 2013, 2015, 2017 |

| Employment in medium-high/high tech manufacturing and knowledge-intensive services as percentage of total workforce | |
|---|---|
| Numerator | Number of employed persons in the medium-high and high tech manufacturing sectors include Chemicals (NACE 24), Machinery (NACE 29), Office equipment (NACE 30), Electrical equipment (NACE 31), Telecommunications and related equipment (NACE 32), Precision instruments (NACE 33), Automobiles (NACE 34) and Aerospace and other transport (NACE 35). Number of employed persons in the knowledge-intensive services sectors include Water transport (NACE 61), Air transport (NACE 62), Post and telecommunications (NACE 64), Financial intermediation (NACE 65), Insurance and pension funding (NACE 66), Activities auxiliary to financial intermediation (NACE 67), Real estate activities (NACE 70), Renting of machinery and equipment (NACE 71), Computer and related activities (NACE 72), Research and development (NACE73), and Other business activities (NACE 74). |
| Denominator | Total workforce including all manufacturing and service sectors |
| Rationale | The share of employment in high technology manufacturing sectors is an indicator of the manufacturing economy that is based on continual innovation through creative, inventive activity. The use of total employment gives a better indicator than using the share of manufacturing employment alone, since the latter will be affected by the relative decline of manufacturing in some countries.<br>Knowledge-intensive services can be provided directly to consumers, such as telecommunications, and provide inputs to the innovative activities of other firms in all sectors of the economy. The latter can increase productivity throughout the economy and support the diffusion of a range of innovations, in particular those based on ICT. |
| Included in EIS | No, proxy for EIS indicator on employment in knowledge-intensive activities |
| Data source | Eurostat |
| Data availability | NUTS 2: 2009, 2011, 2013, 2015, 2017 |

| Sales of new-to-market and new-to-firm innovations in SMEs as percentage of turnover | |
|---|---|
| Numerator | Sum of total turnover of new or significantly improved products for SMEs |
| Denominator | Total turnover for SMEs |
| Rationale | This indicator measures the turnover of new or significantly improved products and includes both products which are only new to the firm and products which are also new to the market. The indicator thus captures both the creation of state-of-the-art technologies (new to market products) and the diffusion of these technologies (new to firm products). |
| Included in EIS | No, proxy for EIS indicator including all enterprises |
| Data source | Community Innovation Survey: Eurostat and National Statistical Offices |
| Data availability | NUTS 1 and 2 for different countries for CIS 2008, CIS 2010, CIS 2012, CIS 2014, CIS 2016 |

# Annex 2: Regional innovation performance groups

| | | "2011" - score relative to EU 2011 | "2019" - score relative to EU 2011 | "2019" - score relative to EU 2019 | Performance group |
|---|---|---|---|---|---|
| EU28 | EU28 | 100.0 | 104.7 | 100.0 | |
| BE | Belgium | | | | |
| BE1 | Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest | 114.2 | 127.7 | 121.9 | Leader - |
| BE2 | Vlaams Gewest | 122.9 | 125.1 | 119.4 | Strong + |
| BE3 | Région Wallonne | 100.7 | 106.3 | 101.6 | Strong |
| BG | Bulgaria | | | | |
| BG31 | Severozapaden | 35.6 | 32.6 | 31.2 | Modest - |
| BG32 | Severen tsentralen | 39.2 | 40.2 | 38.4 | Modest |
| BG33 | Severoiztochen | 40.4 | 39.1 | 37.3 | Modest |
| BG34 | Yugoiztochen | 38.9 | 37.4 | 35.7 | Modest - |
| BG41 | Yugozapaden | 54.3 | 56.8 | 54.2 | Moderate - |
| BG42 | Yuzhen tsentralen | 40.3 | 39.4 | 37.6 | Modest |
| CZ | Czechia | | | | |
| CZ01 | Praha | 102.6 | 103.6 | 98.9 | Strong - |
| CZ02 | Střední Čechy | 86.2 | 79.5 | 75.9 | Moderate |
| CZ03 | Jihozápad | 80.0 | 82.4 | 78.7 | Moderate + |
| CZ04 | Severozápad | 61.0 | 60.1 | 57.4 | Moderate - |
| CZ05 | Severovýchod | 90.4 | 88.7 | 84.7 | Moderate + |
| CZ06 | Jihovýchod | 85.5 | 85.0 | 81.2 | Moderate + |
| CZ07 | Střední Morava | 79.3 | 80.1 | 76.5 | Moderate + |
| CZ08 | Moravskoslezsko | 70.1 | 78.7 | 75.2 | Moderate |
| DK | Denmark | | | | |
| DK01 | Hovedstaden | 164.3 | 158.1 | 151.0 | Leader + |
| DK02 | Sjælland | 119.4 | 98.1 | 93.7 | Strong - |
| DK03 | Syddanmark | 114.3 | 105.2 | 100.5 | Strong |
| DK04 | Midtjylland | 135.5 | 133.3 | 127.3 | Leader - |
| DK05 | Nordjylland | 114.3 | 116.9 | 111.6 | Strong + |
| DE | Germany | | | | |
| DE11 | Stuttgart | 143.1 | 135.6 | 129.5 | Leader |
| DE12 | Karlsruhe | 152.3 | 143.3 | 136.9 | Leader |
| DE13 | Freiburg | 140.3 | 129.3 | 123.5 | Leader - |
| DE14 | Tübingen | 148.3 | 139.1 | 132.9 | Leader |
| DE21 | Oberbayern | 153.6 | 147.1 | 140.4 | Leader + |
| DE22 | Niederbayern | 101.2 | 91.5 | 87.4 | Moderate + |
| DE23 | Oberpfalz | 128.5 | 110.3 | 105.3 | Strong |
| DE24 | Oberfranken | 128.5 | 112.1 | 107.0 | Strong |
| DE25 | Mittelfranken | 138.7 | 133.5 | 127.5 | Leader |
| DE26 | Unterfranken | 129.5 | 114.2 | 109.1 | Strong |
| DE27 | Schwaben | 117.8 | 108.8 | 103.9 | Strong |
| DE30 | Berlin | 136.6 | 152.3 | 145.4 | Leader + |
| DE40 | Brandenburg | 100.8 | 101.3 | 96.7 | Strong - |
| DE50 | Bremen | 117.6 | 114.5 | 109.3 | Strong |
| DE60 | Hamburg | 123.8 | 128.1 | 122.4 | Leader - |
| DE71 | Darmstadt | 131.1 | 128.6 | 122.8 | Leader - |

| | | "2011" – score relative to EU 2011 | "2019" – score relative to EU 2011 | "2019" – score relative to EU 2019 | Performance group |
|------|-----------------------------|-------|-------|-------|-------------|
| DE72 | Gießen | 122.7 | 120.6 | 115.1 | Strong + |
| DE73 | Kassel | 100.1 | 95.5 | 91.2 | Strong - |
| DE80 | Mecklenburg-Vorpommern | 94.2 | 97.1 | 92.7 | Strong - |
| DE91 | Braunschweig | 127.4 | 137.0 | 130.8 | Leader |
| DE92 | Hannover | 118.1 | 108.4 | 103.5 | Strong |
| DE93 | Lüneburg | 98.2 | 89.3 | 85.3 | Moderate + |
| DE94 | Weser-Ems | 93.8 | 79.5 | 75.9 | Moderate + |
| DEA1 | Düsseldorf | 118.7 | 107.9 | 103.0 | Strong |
| DEA2 | Köln | 129.1 | 123.0 | 117.4 | Strong + |
| DEA3 | Münster | 113.2 | 107.4 | 102.6 | Strong |
| DEA4 | Detmold | 116.4 | 110.8 | 105.8 | Strong |
| DEA5 | Arnsberg | 118.1 | 106.0 | 101.2 | Strong |
| DEB1 | Koblenz | 104.4 | 91.9 | 87.7 | Moderate + |
| DEB2 | Trier | 99.3 | 102.7 | 98.1 | Strong - |
| DEB3 | Rheinhessen-Pfalz | 140.3 | 132.5 | 126.5 | Leader - |
| DEC0 | Saarland | 111.6 | 101.7 | 97.1 | Strong - |
| DED2 | Dresden | 129.0 | 127.7 | 121.9 | Leader - |
| DED4 | Chemnitz | 92.6 | 102.6 | 98.0 | Strong - |
| DED5 | Leipzig | 105.1 | 117.1 | 111.8 | Strong + |
| DEE0 | Sachsen-Anhalt | 96.8 | 94.4 | 90.2 | Strong - |
| DEF0 | Schleswig-Holstein | 107.6 | 97.8 | 93.4 | Strong - |
| DEG0 | Thüringen | 113.1 | 109.5 | 104.6 | Strong |
| EE | Estonia | | | | |
| IE | Ireland | | | | |
| IE04 | Northern and Western | 104.4 | 108.9 | 104.0 | Strong |
| IE05 | Southern | 113.3 | 116.6 | 111.3 | Strong + |
| IE06 | Eastern and Midland | 116.3 | 115.7 | 110.5 | Strong + |
| EL | Greece | | | | |
| EL51 | Anatoliki Makedonia, Thraki | 45.1 | 59.9 | 57.2 | Moderate - |
| EL52 | Kentriki Makedonia | 61.8 | 83.1 | 79.4 | Moderate + |
| EL53 | Dytiki Makedonia | 51.2 | 74.3 | 70.9 | Moderate |
| EL54 | Ipeiros | 56.5 | 69.0 | 65.9 | Moderate |
| EL61 | Thessalia | 54.6 | 71.6 | 68.4 | Moderate |
| EL62 | Ionia Nisia | 39.1 | 61.9 | 59.1 | Moderate |
| EL63 | Dytiki Ellada | 59.5 | 77.3 | 73.8 | Moderate |
| EL64 | Sterea Ellada | 53.1 | 63.0 | 60.2 | Moderate |
| EL65 | Peloponnisos | 50.9 | 58.5 | 55.9 | Moderate - |
| EL30 | Attiki | 67.1 | 86.3 | 82.4 | Moderate + |
| EL41 | Voreio Aigaio | 39.7 | 58.7 | 56.0 | Moderate - |
| EL42 | Notio Aigaio | 52.6 | 40.3 | 38.5 | Modest |
| EL43 | Kriti | 68.8 | 98.9 | 94.4 | Strong - |
| ES | Spain | | | | |
| ES11 | Galicia | 55.8 | 58.3 | 55.7 | Moderate - |
| ES12 | Principado de Asturias | 58.2 | 61.1 | 58.4 | Moderate - |
| ES13 | Cantabria | 54.6 | 63.1 | 60.2 | Moderate |
| ES21 | País Vasco | 74.8 | 83.6 | 79.8 | Moderate + |
| ES22 | Comunidad Foral de Navarra | 76.2 | 79.0 | 75.5 | Moderate |
| ES23 | La Rioja | 66.6 | 70.6 | 67.5 | Moderate |
| ES24 | Aragón | 62.9 | 67.7 | 64.7 | Moderate |

| | | "2011" – score relative to EU 2011 | "2019" – score relative to EU 2011 | "2019" – score relative to EU 2019 | Performance group |
|---|---|---|---|---|---|
| ES30 | Comunidad de Madrid | 73.4 | 77.5 | 74.0 | Moderate |
| ES41 | Castilla y León | 57.7 | 54.1 | 51.6 | Moderate - |
| ES42 | Castilla-la Mancha | 48.2 | 46.8 | 44.7 | Modest + |
| ES43 | Extremadura | 46.9 | 45.4 | 43.4 | Modest + |
| ES51 | Cataluña | 76.3 | 81.2 | 77.6 | Moderate + |
| ES52 | Comunidad Valenciana | 65.2 | 72.5 | 69.3 | Moderate |
| ES53 | Illes Balears | 49.8 | 54.8 | 52.3 | Moderate - |
| ES61 | Andalucía | 51.4 | 53.4 | 51.0 | Moderate - |
| ES62 | Región de Murcia | 53.1 | 61.8 | 59.0 | Moderate |
| ES63 | Ciudad Autónoma de Ceuta | 25.1 | 27.2 | 26.0 | Modest - |
| ES64 | Ciudad Autónoma de Melilla | 25.8 | 40.7 | 38.9 | Modest |
| ES70 | Canarias | 44.6 | 48.2 | 46.1 | Modest + |
| FR | France | | | | |
| FR1 | Île de France | 125.3 | 122.0 | 116.5 | Strong + |
| FRB | Centre – Val de Loire | 96.8 | 95.4 | 91.1 | Strong - |
| FRC | Bourgogne – Franche-Comté | 98.7 | 96.9 | 92.5 | Strong - |
| FRD | Normandie | 90.8 | 89.4 | 85.4 | Moderate + |
| FRE | Nord-Pas de Calais – Picardie | 86.0 | 83.4 | 79.6 | Moderate + |
| FRF | Alsace – Champagne-Ardenne – Lorraine | 98.7 | 95.9 | 91.5 | Strong - |
| FRG | Pays de la Loire | 92.1 | 98.4 | 93.9 | Strong - |
| FRH | Bretagne | 98.4 | 100.4 | 95.9 | Strong - |
| FRI | Aquitaine – Limousin – Poitou-Charentes | 96.8 | 98.3 | 93.9 | Strong - |
| FRJ | Languedoc-Roussillon – Midi-Pyrénées | 119.6 | 118.7 | 113.3 | Strong + |
| FRK | Auvergne – Rhône-Alpes | 117.1 | 120.8 | 115.4 | Strong + |
| FRL | Provence-Alpes-Côte d'Azur | 104.9 | 107.3 | 102.5 | Strong |
| FRM | Corse | 47.3 | 56.7 | 54.1 | Moderate - |
| FRY | Régions ultrapériphériques françaises | 52.7 | 63.5 | 60.6 | Moderate |
| HR | Croatia | | | | |
| HR03 | Jadranska Hrvatska | 50.3 | 47.1 | 45.0 | Modest + |
| HR04 | Kontinentalna Hrvatska | 59.5 | 61.2 | 58.5 | Moderate - |
| IT | Italy | | | | |
| ITC1 | Piemonte | 78.0 | 83.6 | 79.8 | Moderate + |
| ITC2 | Valle d'Aosta/Vallée d'Aoste | 57.2 | 59.8 | 57.1 | Moderate - |
| ITC3 | Liguria | 62.0 | 70.8 | 67.7 | Moderate |
| ITC4 | Lombardia | 82.7 | 90.7 | 86.6 | Moderate + |
| ITH1 | Provincia Autonoma Bolzano/Bozen | 68.2 | 71.2 | 68.0 | Moderate |
| ITH2 | Provincia Autonoma Trento | 75.0 | 86.0 | 82.1 | Moderate + |
| ITH3 | Veneto | 81.2 | 88.9 | 84.9 | Moderate + |
| ITH4 | Friuli-Venezia Giulia | 89.3 | 97.0 | 92.6 | Strong - |
| ITH5 | Emilia-Romagna | 82.2 | 93.3 | 89.1 | Moderate + |
| ITI1 | Toscana | 71.8 | 82.8 | 79.1 | Moderate + |
| ITI2 | Umbria | 70.9 | 83.3 | 79.5 | Moderate + |
| ITI3 | Marche | 72.1 | 85.0 | 81.2 | Moderate + |
| ITI4 | Lazio | 76.4 | 77.8 | 74.3 | Moderate |
| ITF1 | Abruzzo | 57.7 | 73.1 | 69.8 | Moderate |
| ITF2 | Molise | 47.6 | 60.1 | 57.4 | Moderate - |
| ITF3 | Campania | 55.0 | 66.2 | 63.3 | Moderate |
| ITF4 | Puglia | 58.7 | 64.1 | 61.2 | Moderate |

| | | "2011" – score relative to EU 2011 | "2019" – score relative to EU 2011 | "2019" – score relative to EU 2019 | Performance group |
|---|---|---|---|---|---|
| ITF5 | Basilicata | 50.7 | 65.7 | 62.7 | Moderate |
| ITF6 | Calabria | 46.0 | 53.6 | 51.1 | Moderate – |
| ITG1 | Sicilia | 52.4 | 59.2 | 56.5 | Moderate – |
| ITG2 | Sardegna | 53.2 | 53.5 | 51.1 | Moderate – |
| CY | Cyprus | | | | |
| LV | Latvia | | | | |
| LT | Lithuania | | | | |
| LT01 | Sostinės regionas | 65.0 | 90.5 | 86.4 | Moderate + |
| LT02 | Vidurio ir vakarų Lietuvos regionas | 50.0 | 68.4 | 65.4 | Moderate |
| LU | Luxembourg | | | | |
| HU | Hungary | | | | |
| HU11 | Budapest | 85.6 | 84.4 | 80.6 | Moderate + |
| HU12 | Pest | 75.2 | 81.5 | 77.8 | Moderate + |
| HU21 | Közép-Dunántúl | 59.7 | 53.4 | 51.0 | Moderate – |
| HU22 | Nyugat-Dunántúl | 60.1 | 55.1 | 52.6 | Moderate – |
| HU23 | Dél-Dunántúl | 50.5 | 53.3 | 50.9 | Moderate – |
| HU31 | Észak-Magyarország | 47.6 | 53.1 | 50.7 | Moderate – |
| HU32 | Észak-Alföld | 50.8 | 52.0 | 49.7 | Modest + |
| HU33 | Dél-Alföld | 53.4 | 54.5 | 52.1 | Moderate – |
| MT | Malta | | | | |
| NL | Netherlands | | | | |
| NL11 | Groningen | 107.3 | 118.7 | 113.3 | Strong + |
| NL12 | Friesland | 83.9 | 87.7 | 83.8 | Moderate + |
| NL13 | Drenthe | 81.6 | 100.4 | 95.8 | Strong – |
| NL21 | Overijssel | 109.5 | 114.6 | 109.4 | Strong |
| NL22 | Gelderland | 115.3 | 124.4 | 118.8 | Strong + |
| NL23 | Flevoland | 107.5 | 109.7 | 104.8 | Strong |
| NL31 | Utrecht | 126.9 | 141.2 | 134.8 | Leader |
| NL32 | Noord-Holland | 119.0 | 128.7 | 123.0 | Leader – |
| NL33 | Zuid-Holland | 117.0 | 127.2 | 121.5 | Leader – |
| NL34 | Zeeland | 88.3 | 90.4 | 86.3 | Moderate + |
| NL41 | Noord-Brabant | 128.7 | 135.2 | 129.1 | Leader |
| NL42 | Limburg | 111.9 | 123.7 | 118.2 | Strong + |
| AT | Austria | | | | |
| AT1 | Ostösterreich | 114.2 | 120.2 | 114.8 | Strong + |
| AT2 | Südösterreich | 112.5 | 121.7 | 116.2 | Strong + |
| AT3 | Westösterreich | 110.5 | 125.5 | 119.9 | Strong + |
| PL | Poland | | | | |
| PL21 | Malopolskie | 56.7 | 73.4 | 70.1 | Moderate |
| PL22 | Slaskie | 49.3 | 53.8 | 51.4 | Moderate – |
| PL41 | Wielkopolskie | 51.5 | 55.5 | 53.0 | Moderate – |
| PL42 | Zachodniopomorskie | 37.4 | 45.1 | 43.1 | Modest |
| PL43 | Lubuskie | 42.0 | 42.9 | 41.0 | Modest |
| PL51 | Dolnoslaskie | 54.9 | 59.7 | 57.0 | Moderate – |
| PL52 | Opolskie | 40.7 | 43.2 | 41.2 | Modest |
| PL61 | Kujawsko-Pomorskie | 45.9 | 48.2 | 46.0 | Modest + |
| PL62 | Warminsko-Mazurskie | 43.3 | 38.7 | 37.0 | Modest |
| PL63 | Pomorskie | 55.0 | 60.4 | 57.7 | Moderate – |
| PL71 | Lódzkie | 48.6 | 54.9 | 52.4 | Moderate – |

| | | "2011" – score relative to EU 2011 | "2019" – score relative to EU 2011 | "2019" – score relative to EU 2019 | Performance group |
|---|---|---|---|---|---|
| PL72 | Swietokrzyskie | 42.1 | 48.3 | 46.1 | Modest + |
| PL81 | Lubelskie | 42.5 | 48.4 | 46.2 | Modest + |
| PL82 | Podkarpackie | 47.0 | 61.0 | 58.3 | Moderate - |
| PL84 | Podlaskie | 38.2 | 45.4 | 43.3 | Modest |
| PL91 | Warszawski stoleczny | 82.2 | 82.4 | 78.7 | Moderate + |
| PL92 | Mazowiecki regionalny | 49.0 | 49.2 | 47.0 | Modest + |
| PT | Portugal | | | | |
| PT11 | Norte | 83.3 | 97.1 | 92.7 | Strong - |
| PT15 | Algarve | 74.9 | 77.6 | 74.1 | Moderate |
| PT16 | Centro | 87.1 | 96.0 | 91.6 | Strong - |
| PT17 | Lisboa | 93.4 | 99.1 | 94.6 | Strong - |
| PT18 | Alentejo | 68.9 | 73.9 | 70.6 | Moderate |
| PT20 | Região Autónoma dos Açores | 63.1 | 66.5 | 63.5 | Moderate |
| PT30 | Região Autónoma da Madeira | 57.5 | 73.7 | 70.4 | Moderate |
| RO | Romania | | | | |
| RO11 | Nord-Vest | 40.8 | 31.1 | 29.7 | Modest - |
| RO12 | Centru | 39.4 | 28.6 | 27.3 | Modest - |
| RO21 | Nord-Est | 41.5 | 22.5 | 21.5 | Modest - |
| RO22 | Sud-Est | 42.7 | 23.1 | 22.1 | Modest - |
| RO31 | Sud – Muntenia | 36.1 | 19.3 | 18.4 | Modest - |
| RO32 | Bucuresti – Ilfov | 62.0 | 54.1 | 51.6 | Moderate - |
| RO41 | Sud-Vest Oltenia | 31.4 | 15.0 | 14.3 | Modest - |
| RO42 | Vest | 40.0 | 34.3 | 32.8 | Modest - |
| SI | Slovenia | | | | |
| SI03 | Vzhodna Slovenija | 87.5 | 73.9 | 70.6 | Moderate |
| SI04 | Zahodna Slovenija | 106.0 | 90.8 | 86.7 | Moderate + |
| SK | Slovakia | | | | |
| SK01 | Bratislavský kraj | 89.2 | 92.6 | 88.5 | Moderate + |
| SK02 | Západné Slovensko | 55.8 | 58.6 | 56.0 | Moderate - |
| SK03 | Stredné Slovensko | 59.6 | 54.5 | 52.0 | Moderate - |
| SK04 | Východné Slovensko | 53.1 | 59.7 | 57.1 | Moderate - |
| FI | Finland | | | | |
| FI1B | Helsinki-Uusimaa | 150.6 | 163.4 | 156.0 | Leader + |
| FI1C | Etelä-Suomi | 116.2 | 126.5 | 120.8 | Leader - |
| FI19 | Länsi-Suomi | 127.5 | 130.4 | 124.5 | Leader - |
| FI1D | Pohjois- ja Itä-Suomi | 112.3 | 122.9 | 117.4 | Strong + |
| FI20 | Åland | 81.5 | 80.4 | 76.7 | Moderate + |
| SE | Sweden | | | | |
| SE11 | Stockholm | 160.9 | 161.1 | 153.8 | Leader + |
| SE12 | Östra Mellansverige | 145.6 | 138.1 | 131.9 | Leader |
| SE21 | Småland med öarna | 114.6 | 116.8 | 111.6 | Strong + |
| SE22 | Sydsverige | 155.7 | 143.4 | 137.0 | Leader |
| SE23 | Västsverige | 142.5 | 145.4 | 138.8 | Leader + |
| SE31 | Norra Mellansverige | 94.4 | 95.0 | 90.8 | Strong - |
| SE32 | Mellersta Norrland | 100.1 | 93.7 | 89.4 | Moderate + |
| SE33 | Övre Norrland | 125.2 | 120.0 | 114.6 | Strong + |
| UK | United Kingdom | | | | |
| UKC | North East | 97.0 | 108.5 | 103.6 | Strong |
| UKD | North West | 105.0 | 110.8 | 105.8 | Strong |

| | | "2011" – score relative to EU 2011 | "2019" – score relative to EU 2011 | "2019" – score relative to EU 2019 | Performance group |
|---|---|---|---|---|---|
| UKE | Yorkshire and The Humber | 96.2 | 112.6 | 107.5 | Strong |
| UKF | East Midlands | 109.7 | 117.5 | 112.2 | Strong + |
| UKG | West Midlands | 98.5 | 121.1 | 115.6 | Strong + |
| UKH | East of England | 125.3 | 129.0 | 123.2 | Leader − |
| UKI | London | 116.8 | 127.4 | 121.6 | Leader − |
| UKJ | South East | 122.0 | 136.0 | 129.9 | Leader |
| UKK | South West | 114.1 | 124.7 | 119.1 | Strong + |
| UKL | Wales | 94.7 | 111.3 | 106.3 | Strong |
| UKM | Scotland | 107.5 | 118.3 | 113.0 | Strong + |
| UKN0 | Northern Ireland | 80.6 | 96.7 | 92.3 | Strong − |
| NO | Norway | | | | |
| NO01 | Oslo og Akershus | 125.0 | 141.9 | 135.6 | Leader |
| NO02 | Hedmark og Oppland | 73.4 | 95.5 | 91.2 | Strong − |
| NO03 | Sør-Østlandet | 89.7 | 107.8 | 103.0 | Strong |
| NO04 | Agder og Rogaland | 95.8 | 113.9 | 108.8 | Strong |
| NO05 | Vestlandet | 104.3 | 122.8 | 117.3 | Strong + |
| NO06 | Trøndelag | 125.1 | 143.2 | 136.8 | Leader |
| NO07 | Nord-Norge | 76.8 | 110.9 | 106.0 | Strong |
| CH | Switzerland | | | | |
| CH01 | Région lémanique | 147.7 | 147.3 | 140.7 | Leader + |
| CH02 | Espace Mittelland | 135.2 | 141.2 | 134.8 | Leader |
| CH03 | Nordwestschweiz | 165.6 | 156.6 | 149.6 | Leader + |
| CH04 | Zürich | 174.1 | 167.6 | 160.1 | Leader + |
| CH05 | Ostschweiz | 143.1 | 157.3 | 150.2 | Leader + |
| CH06 | Zentralschweiz | 156.5 | 152.9 | 146.1 | Leader + |
| CH07 | Ticino | 146.7 | 164.2 | 156.8 | Leader + |
| RS | Serbia | | | | |
| RS11 | Belgrade | 50.8 | 68.7 | 65.6 | Moderate |
| RS12 | Vojvodina | 43.5 | 65.2 | 62.2 | Moderate |
| RS21 | Šumadija and Western Serbia | 40.2 | 51.2 | 48.9 | Modest + |
| RS22 | Southern and Eastern Serbia | 36.6 | 53.0 | 50.6 | Moderate − |

# Annex 3: RIS normalised database

This annex gives the normalised scores for all indicators for the most recent year. Scores relative to EU average are not shown as these would allow recalculating confidential regional CIS data.

| | | Population with tertiary education | Lifelong learning | Scientific co-publications | Most-cited publications | R&D expenditure public sector | R&D expenditure business sector | Non-R&D innovation expenditures | Product or process innovators | Marketing or organisational innovators |
|---|---|---|---|---|---|---|---|---|---|---|
| EU28 | EU28 | | | | | | | | | |
| BE | Belgium | | | | | | | | | |
| BE1 | Région de Bruxelles-Capitale | 0.720 | 0.363 | 1.000 | 0.527 | 0.612 | 0.518 | 0.508 | 0.732 | 0.637 |
| BE2 | Vlaams Gewest | 0.576 | 0.245 | 0.769 | 0.648 | 0.621 | 0.724 | 0.499 | 0.680 | 0.586 |
| BE3 | Région Wallonne | 0.478 | 0.185 | 0.523 | 0.506 | 0.520 | 0.728 | 0.443 | 0.664 | 0.623 |
| BG | Bulgaria | | | | | | | | | |
| BG31 | Severozapaden | 0.083 | 0.018 | 0.049 | 0.220 | 0.156 | 0.299 | 0.476 | 0.249 | 0.150 |
| BG32 | Severen tsentralen | 0.373 | 0.036 | 0.086 | 0.188 | 0.057 | 0.299 | 0.367 | 0.220 | 0.161 |
| BG33 | Severoiztochen | 0.364 | 0.024 | 0.152 | 0.153 | 0.244 | 0.276 | 0.602 | 0.165 | 0.162 |
| BG34 | Yugoiztochen | 0.151 | 0.036 | 0.114 | 0.259 | 0.113 | 0.213 | 0.502 | 0.237 | 0.170 |
| BG41 | Yugozapaden | 0.544 | 0.103 | 0.435 | 0.173 | 0.378 | 0.454 | 0.316 | 0.246 | 0.241 |
| BG42 | Yuzhen tsentralen | 0.151 | 0.024 | 0.151 | 0.177 | 0.143 | 0.307 | 0.505 | 0.220 | 0.169 |
| CZ | Czechia | | | | | | | | | |
| CZ01 | Praha | 0.817 | 0.324 | 1.000 | 0.297 | 0.827 | 0.495 | 0.314 | 0.495 | 0.524 |
| CZ02 | Střední Čechy | 0.271 | 0.224 | 0.259 | 0.457 | 0.446 | 0.646 | 0.569 | 0.494 | 0.406 |
| CZ03 | Jihozápad | 0.214 | 0.294 | 0.461 | 0.418 | 0.410 | 0.481 | 0.517 | 0.354 | 0.303 |
| CZ04 | Severozápad | 0.099 | 0.188 | 0.145 | 0.368 | 0.097 | 0.224 | 0.909 | 0.356 | 0.325 |
| CZ05 | Severovýchod | 0.300 | 0.282 | 0.302 | 0.198 | 0.305 | 0.509 | 0.673 | 0.498 | 0.397 |
| CZ06 | Jihovýchod | 0.393 | 0.294 | 0.539 | 0.337 | 0.642 | 0.623 | 0.414 | 0.498 | 0.425 |
| CZ07 | Střední Morava | 0.269 | 0.285 | 0.444 | 0.357 | 0.397 | 0.460 | 0.405 | 0.488 | 0.394 |
| CZ08 | Moravskoslezsko | 0.332 | 0.321 | 0.297 | 0.184 | 0.335 | 0.454 | 0.769 | 0.543 | 0.373 |
| DK | Denmark | | | | | | | | | |
| DK01 | Hovedstaden | 0.862 | 0.908 | 1.000 | 0.667 | 0.869 | 0.985 | 0.314 | 0.516 | 0.590 |
| DK02 | Sjælland | 0.323 | 0.714 | 0.556 | 0.628 | 0.542 | 0.348 | 0.330 | 0.413 | 0.380 |
| DK03 | Syddanmark | 0.402 | 0.733 | 0.676 | 0.559 | 0.552 | 0.546 | 0.282 | 0.403 | 0.427 |
| DK04 | Midtjylland | 0.618 | 0.772 | 0.853 | 0.616 | 0.730 | 0.635 | 0.513 | 0.494 | 0.540 |
| DK05 | Nordjylland | 0.515 | 0.705 | 0.766 | 0.577 | 0.734 | 0.416 | 0.250 | 0.513 | 0.505 |
| DE | Germany | | | | | | | | | |
| DE11 | Stuttgart | 0.447 | 0.266 | 0.389 | 0.575 | 0.458 | 1.000 | 0.599 | 0.640 | 0.618 |
| DE12 | Karlsruhe | 0.449 | 0.272 | 0.881 | 0.624 | 0.907 | 0.897 | 0.641 | 0.672 | 0.671 |
| DE13 | Freiburg | 0.368 | 0.257 | 0.639 | 0.542 | 0.703 | 0.668 | 0.737 | 0.662 | 0.653 |
| DE14 | Tübingen | 0.420 | 0.269 | 0.760 | 0.536 | 0.688 | 0.997 | 0.699 | 0.704 | 0.640 |
| DE21 | Oberbayern | 0.610 | 0.239 | 0.792 | 0.657 | 0.726 | 0.959 | 0.455 | 0.561 | 0.622 |
| DE22 | Niederbayern | 0.298 | 0.142 | 0.196 | 0.320 | 0.225 | 0.542 | 0.565 | 0.516 | 0.621 |
| DE23 | Oberpfalz | 0.305 | 0.194 | 0.491 | 0.512 | 0.469 | 0.640 | 0.390 | 0.552 | 0.394 |
| DE24 | Oberfranken | 0.305 | 0.233 | 0.472 | 0.593 | 0.496 | 0.601 | 0.476 | 0.524 | 0.438 |
| DE25 | Mittelfranken | 0.420 | 0.203 | 0.623 | 0.592 | 0.684 | 0.877 | 0.547 | 0.550 | 0.611 |
| DE26 | Unterfranken | 0.373 | 0.242 | 0.595 | 0.566 | 0.547 | 0.626 | 0.407 | 0.503 | 0.610 |
| DE27 | Schwaben | 0.293 | 0.176 | 0.266 | 0.340 | 0.253 | 0.608 | 0.714 | 0.602 | 0.720 |
| DE30 | Berlin | 0.594 | 0.309 | 0.822 | 0.569 | 1.000 | 0.619 | 0.819 | 0.651 | 0.699 |
| DE40 | Brandenburg | 0.119 | 0.182 | 0.611 | 0.685 | 0.734 | 0.380 | 0.745 | 0.562 | 0.576 |
| DE50 | Bremen | 0.390 | 0.279 | 0.844 | 0.455 | 0.962 | 0.510 | 0.461 | 0.600 | 0.545 |

| | | Popula-tion with tertiary education | Lifelong learning | Scientific co-publi-cations | Most-cit-ed publi-cations | R&D ex-penditure public sector | R&D ex-penditure business sector | Non-R&D innovation expendi-tures | Product or process innovators | Marketing or organi-sational innova-tors |
|---|---|---|---|---|---|---|---|---|---|---|
| DE60 | Hamburg | 0.508 | 0.297 | 0.809 | 0.511 | 0.699 | 0.572 | 0.443 | 0.676 | 0.713 |
| DE71 | Darmstadt | 0.519 | 0.269 | 0.573 | 0.546 | 0.580 | 0.821 | 0.600 | 0.642 | 0.616 |
| DE72 | Gießen | 0.402 | 0.342 | 0.744 | 0.515 | 0.749 | 0.601 | 0.544 | 0.608 | 0.644 |
| DE73 | Kassel | 0.307 | 0.242 | 0.284 | 0.463 | 0.416 | 0.555 | 0.444 | 0.655 | 0.570 |
| DE80 | Mecklenburg-Vorpommern | 0.101 | 0.236 | 0.559 | 0.458 | 0.785 | 0.380 | 0.556 | 0.664 | 0.608 |
| DE91 | Braunschweig | 0.377 | 0.279 | 0.813 | 0.596 | 1.000 | 1.000 | 0.903 | 0.764 | 0.612 |
| DE92 | Hannover | 0.320 | 0.224 | 0.558 | 0.406 | 0.680 | 0.619 | 0.361 | 0.535 | 0.562 |
| DE93 | Lüneburg | 0.151 | 0.191 | 0.195 | 0.611 | 0.244 | 0.437 | 0.472 | 0.496 | 0.659 |
| DE94 | Weser-Ems | 0.165 | 0.167 | 0.308 | 0.414 | 0.397 | 0.380 | 0.516 | 0.404 | 0.572 |
| DEA1 | Düsseldorf | 0.318 | 0.203 | 0.454 | 0.595 | 0.446 | 0.584 | 0.451 | 0.532 | 0.624 |
| DEA2 | Köln | 0.424 | 0.242 | 0.739 | 0.587 | 0.932 | 0.539 | 0.534 | 0.549 | 0.607 |
| DEA3 | Münster | 0.244 | 0.227 | 0.440 | 0.523 | 0.501 | 0.380 | 0.660 | 0.682 | 0.636 |
| DEA4 | Detmold | 0.232 | 0.212 | 0.348 | 0.503 | 0.446 | 0.617 | 0.602 | 0.668 | 0.545 |
| DEA5 | Arnsberg | 0.241 | 0.239 | 0.450 | 0.434 | 0.571 | 0.505 | 0.646 | 0.539 | 0.534 |
| DEB1 | Koblenz | 0.246 | 0.206 | 0.203 | 0.384 | 0.297 | 0.343 | 0.677 | 0.501 | 0.603 |
| DEB2 | Trier | 0.391 | 0.215 | 0.301 | 0.441 | 1.000 | 0.359 | 0.757 | 0.689 | 0.366 |
| DEB3 | Rheinhessen-Pfalz | 0.269 | 0.245 | 0.666 | 0.595 | 0.446 | 0.890 | 0.854 | 0.509 | 0.624 |
| DEC0 | Saarland | 0.206 | 0.212 | 0.545 | 0.434 | 0.647 | 0.394 | 0.515 | 0.632 | 0.673 |
| DED2 | Dresden | 0.277 | 0.285 | 0.790 | 0.536 | 1.000 | 0.713 | 0.777 | 0.660 | 0.588 |
| DED4 | Chemnitz | 0.215 | 0.194 | 0.337 | 0.380 | 0.630 | 0.496 | 0.731 | 0.618 | 0.563 |
| DED5 | Leipzig | 0.478 | 0.275 | 0.818 | 0.523 | 0.901 | 0.284 | 0.788 | 0.685 | 0.649 |
| DEE0 | Sachsen-Anhalt | 0.095 | 0.200 | 0.493 | 0.443 | 0.730 | 0.289 | 0.829 | 0.541 | 0.525 |
| DEF0 | Schleswig-Holstein | 0.212 | 0.239 | 0.529 | 0.530 | 0.585 | 0.437 | 0.402 | 0.506 | 0.538 |
| DEG0 | Thüringen | 0.199 | 0.242 | 0.551 | 0.579 | 0.719 | 0.493 | 0.811 | 0.558 | 0.548 |
| EE | Estonia | | | | | | | | | |
| IE | Ireland | | | | | | | | | |
| IE04 | Northern and Western | 0.679 | 0.209 | 0.618 | 0.580 | 0.384 | 0.460 | 0.519 | 0.493 | 0.553 |
| IE05 | Southern | 0.636 | 0.239 | 0.618 | 0.580 | 0.571 | 0.555 | 0.589 | 0.589 | 0.669 |
| IE06 | Eastern and Midland | 0.783 | 0.279 | 0.618 | 0.580 | 0.356 | 0.445 | 0.432 | 0.529 | 0.655 |
| EL | Greece | | | | | | | | | |
| EL51 | Anatoliki Makedonia, Thraki | 0.408 | 0.151 | 0.309 | 0.341 | 0.502 | 0.133 | 0.944 | 0.497 | 0.654 |
| EL52 | Kentriki Makedonia | 0.580 | 0.103 | 0.480 | 0.451 | 0.535 | 0.207 | 0.746 | 0.637 | 0.641 |
| EL53 | Dytiki Makedonia | 0.395 | 0.139 | 0.236 | 0.716 | 0.398 | 0.095 | 0.788 | 0.444 | 0.412 |
| EL54 | Ipeiros | 0.499 | 0.039 | 0.707 | 0.458 | 0.712 | 0.143 | 0.561 | 0.516 | 0.515 |
| EL61 | Thessalia | 0.497 | 0.058 | 0.351 | 0.395 | 0.512 | 0.063 | 0.615 | 0.660 | 0.661 |
| EL62 | Ionia Nisia | 0.156 | 0.058 | 0.180 | 0.230 | 0.431 | 0.063 | 0.939 | 0.510 | 0.531 |
| EL63 | Dytiki Ellada | 0.447 | 0.088 | 0.554 | 0.355 | 0.712 | 0.222 | 0.595 | 0.718 | 0.674 |
| EL64 | Sterea Ellada | 0.388 | 0.024 | 0.155 | 0.238 | 0.246 | 0.328 | 0.656 | 0.662 | 0.621 |
| EL65 | Peloponnisos | 0.399 | 0.033 | 0.148 | 0.255 | 0.368 | 0.080 | 0.725 | 0.683 | 0.502 |
| EL30 | Attiki | 0.646 | 0.182 | 0.540 | 0.396 | 0.493 | 0.419 | 0.441 | 0.651 | 0.613 |
| EL41 | Voreio Aigaio | 0.463 | 0.094 | 0.290 | 0.319 | 0.553 | 0.080 | 0.315 | 0.557 | 0.483 |
| EL42 | Notio Aigaio | 0.269 | 0.027 | 0.092 | 0.423 | 0.237 | 0.028 | 0.373 | 0.406 | 0.560 |
| EL43 | Kriti | 0.452 | 0.097 | 0.653 | 0.579 | 0.805 | 0.164 | 0.940 | 0.758 | 0.688 |
| ES | Spain | | | | | | | | | |
| ES11 | Galicia | 0.562 | 0.266 | 0.477 | 0.394 | 0.446 | 0.307 | 0.259 | 0.252 | 0.310 |
| ES12 | Principado de Asturias | 0.654 | 0.254 | 0.520 | 0.447 | 0.416 | 0.276 | 0.218 | 0.308 | 0.290 |
| ES13 | Cantabria | 0.607 | 0.306 | 0.547 | 0.435 | 0.491 | 0.251 | 0.234 | 0.218 | 0.281 |

| | | Popula-tion with tertiary education | Lifelong learning | Scientific co-publi-cations | Most-cit-ed publi-cations | R&D ex-penditure public sector | R&D ex-penditure business sector | Non-R&D innovation expendi-tures | Product or process innovators | Marketing or organi-sational innova-tors |
|---|---|---|---|---|---|---|---|---|---|---|
| ES21 | País Vasco | 0.733 | 0.381 | 0.588 | 0.489 | 0.458 | 0.612 | 0.335 | 0.350 | 0.349 |
| ES22 | Comunidad Foral de Navarra | 0.715 | 0.321 | 0.583 | 0.460 | 0.480 | 0.533 | 0.274 | 0.352 | 0.341 |
| ES23 | La Rioja | 0.548 | 0.279 | 0.417 | 0.428 | 0.440 | 0.303 | 0.252 | 0.353 | 0.315 |
| ES24 | Aragón | 0.593 | 0.348 | 0.565 | 0.442 | 0.434 | 0.332 | 0.267 | 0.305 | 0.336 |
| ES30 | Comunidad de Madrid | 0.605 | 0.330 | 0.673 | 0.454 | 0.580 | 0.489 | 0.248 | 0.256 | 0.391 |
| ES41 | Castilla y León | 0.452 | 0.279 | 0.402 | 0.354 | 0.440 | 0.399 | 0.317 | 0.203 | 0.276 |
| ES42 | Castilla-la Mancha | 0.354 | 0.260 | 0.303 | 0.327 | 0.288 | 0.276 | 0.248 | 0.201 | 0.248 |
| ES43 | Extremadura | 0.422 | 0.263 | 0.310 | 0.236 | 0.463 | 0.137 | 0.274 | 0.232 | 0.301 |
| ES51 | Cataluña | 0.548 | 0.215 | 0.660 | 0.542 | 0.532 | 0.457 | 0.291 | 0.290 | 0.403 |
| ES52 | Comunidad Valenciana | 0.445 | 0.333 | 0.491 | 0.404 | 0.517 | 0.307 | 0.342 | 0.248 | 0.392 |
| ES53 | Illes Balears | 0.447 | 0.242 | 0.411 | 0.481 | 0.320 | 0.100 | 0.255 | 0.125 | 0.235 |
| ES61 | Andalucía | 0.334 | 0.242 | 0.439 | 0.402 | 0.512 | 0.276 | 0.229 | 0.189 | 0.323 |
| ES62 | Región de Murcia | 0.321 | 0.330 | 0.433 | 0.372 | 0.474 | 0.312 | 0.356 | 0.225 | 0.311 |
| ES63 | Ciudad Autónoma de Ceuta | 0.226 | 0.275 | 0.137 | 0.000 | 0.104 | 0.007 | 0.000 | 0.025 | 0.105 |
| ES64 | Ciudad Autónoma de Melilla | 0.343 | 0.351 | 0.122 | 0.380 | 0.168 | 0.046 | 0.086 | 0.198 | 0.334 |
| ES70 | Canarias | 0.366 | 0.260 | 0.424 | 0.340 | 0.410 | 0.110 | 0.273 | 0.200 | 0.300 |
| FR | France | | | | | | | | | |
| FR1 | Île de France | 0.812 | 0.524 | 0.723 | 0.556 | 0.651 | 0.733 | 0.413 | 0.573 | 0.638 |
| FRB | Centre - Val de Loire | 0.415 | 0.539 | 0.378 | 0.502 | 0.458 | 0.551 | 0.743 | 0.543 | 0.595 |
| FRC | Bourgogne - Franche-Comté | 0.384 | 0.512 | 0.382 | 0.542 | 0.396 | 0.585 | 0.632 | 0.581 | 0.583 |
| FRD | Normandie | 0.309 | 0.481 | 0.329 | 0.463 | 0.367 | 0.516 | 0.695 | 0.507 | 0.504 |
| FRE | Nord-Pas de Calais - Picardie | 0.377 | 0.466 | 0.383 | 0.453 | 0.418 | 0.403 | 0.452 | 0.479 | 0.509 |
| FRF | Alsace - Champagne-Ardenne - Lorraine | 0.422 | 0.497 | 0.493 | 0.520 | 0.535 | 0.410 | 0.592 | 0.521 | 0.589 |
| FRG | Pays de la Loire | 0.609 | 0.636 | 0.425 | 0.497 | 0.434 | 0.445 | 0.483 | 0.548 | 0.604 |
| FRH | Bretagne | 0.454 | 0.605 | 0.493 | 0.516 | 0.608 | 0.569 | 0.672 | 0.468 | 0.511 |
| FRI | Aquitaine - Limousin - Poitou-Charentes | 0.530 | 0.578 | 0.441 | 0.540 | 0.482 | 0.453 | 0.682 | 0.499 | 0.548 |
| FRJ | Languedoc-Roussillon - Midi-Pyrénées | 0.512 | 0.633 | 0.631 | 0.557 | 0.878 | 0.780 | 0.573 | 0.613 | 0.675 |
| FRK | Auvergne - Rhône-Alpes | 0.539 | 0.696 | 0.622 | 0.543 | 0.659 | 0.697 | 0.703 | 0.608 | 0.643 |
| FRL | Provence–Alpes–Côte d'Azur | 0.510 | 0.466 | 0.563 | 0.545 | 0.692 | 0.635 | 0.487 | 0.528 | 0.651 |
| FRM | Corse | 0.320 | 0.221 | 0.194 | 0.496 | 0.313 | 0.064 | 0.510 | 0.412 | 0.528 |
| FRY | Régions ultra¬périphériques françaises | 0.259 | 0.272 | 0.097 | 0.636 | 0.537 | 0.089 | 0.555 | 0.387 | 0.507 |
| HR | Croatia | | | | | | | | | |
| HR03 | Jadranska Hrvatska | 0.250 | 0.039 | 0.360 | 0.184 | 0.305 | 0.137 | 0.969 | 0.333 | 0.444 |
| HR04 | Kontinentalna Hrvatska | 0.262 | 0.061 | 0.427 | 0.207 | 0.517 | 0.360 | 0.881 | 0.484 | 0.515 |
| IT | Italy | | | | | | | | | |
| ITC1 | Piemonte | 0.217 | 0.221 | 0.468 | 0.475 | 0.404 | 0.691 | 0.584 | 0.618 | 0.460 |
| ITC2 | Valle d'Aosta/Vallée d'Aoste | 0.196 | 0.230 | 0.283 | 0.728 | 0.181 | 0.316 | 0.374 | 0.369 | 0.296 |
| ITC3 | Liguria | 0.169 | 0.263 | 0.604 | 0.535 | 0.532 | 0.486 | 0.453 | 0.432 | 0.516 |
| ITC4 | Lombardia | 0.348 | 0.245 | 0.535 | 0.567 | 0.328 | 0.495 | 0.481 | 0.636 | 0.573 |
| ITH1 | Provincia Autonoma Bolzano/Bozen | 0.185 | 0.288 | 0.437 | 0.633 | 0.214 | 0.320 | 0.564 | 0.540 | 0.526 |
| ITH2 | Provincia Autonoma Trento | 0.347 | 0.327 | 0.852 | 0.628 | 0.680 | 0.378 | 0.599 | 0.566 | 0.506 |
| ITH3 | Veneto | 0.239 | 0.257 | 0.516 | 0.487 | 0.397 | 0.478 | 0.569 | 0.648 | 0.539 |
| ITH4 | Friuli-Venezia Giulia | 0.259 | 0.300 | 0.781 | 0.515 | 0.580 | 0.463 | 0.764 | 0.661 | 0.553 |

| | | Population with tertiary education | Lifelong learning | Scientific co-publications | Most-cited publications | R&D expenditure public sector | R&D expenditure business sector | Non-R&D innovation expenditures | Product or process innovators | Marketing or organisational innovators |
|---|---|---|---|---|---|---|---|---|---|---|
| ITH5 | Emilia-Romagna | 0.280 | 0.285 | 0.608 | 0.472 | 0.458 | 0.628 | 0.507 | 0.683 | 0.521 |
| ITI1 | Toscana | 0.251 | 0.254 | 0.649 | 0.510 | 0.522 | 0.419 | 0.495 | 0.526 | 0.441 |
| ITI2 | Umbria | 0.277 | 0.254 | 0.590 | 0.583 | 0.566 | 0.285 | 0.620 | 0.581 | 0.471 |
| ITI3 | Marche | 0.336 | 0.206 | 0.440 | 0.386 | 0.404 | 0.396 | 0.671 | 0.609 | 0.468 |
| ITI4 | Lazio | 0.284 | 0.254 | 0.638 | 0.468 | 0.696 | 0.406 | 0.408 | 0.529 | 0.484 |
| ITF1 | Abruzzo | 0.206 | 0.167 | 0.499 | 0.506 | 0.501 | 0.324 | 0.649 | 0.555 | 0.491 |
| ITF2 | Molise | 0.212 | 0.197 | 0.451 | 0.405 | 0.371 | 0.412 | 0.632 | 0.440 | 0.417 |
| ITF3 | Campania | 0.127 | 0.173 | 0.431 | 0.541 | 0.552 | 0.348 | 0.615 | 0.425 | 0.498 |
| ITF4 | Puglia | 0.142 | 0.142 | 0.385 | 0.496 | 0.485 | 0.246 | 0.591 | 0.463 | 0.528 |
| ITF5 | Basilicata | 0.268 | 0.200 | 0.413 | 0.326 | 0.446 | 0.153 | 0.768 | 0.545 | 0.429 |
| ITF6 | Calabria | 0.115 | 0.163 | 0.374 | 0.535 | 0.458 | 0.128 | 0.531 | 0.421 | 0.442 |
| ITG1 | Sicilia | 0.086 | 0.136 | 0.387 | 0.477 | 0.480 | 0.235 | 0.649 | 0.447 | 0.420 |
| ITG2 | Sardegna | 0.167 | 0.239 | 0.465 | 0.359 | 0.580 | 0.145 | 0.347 | 0.367 | 0.408 |
| CY | Cyprus | | | | | | | | | |
| LV | Latvia | | | | | | | | | |
| LT | Lithuania | | | | | | | | | |
| LT01 | Sostinės regionas | 1.000 | 0.157 | 0.352 | 0.198 | 0.501 | 0.251 | 0.997 | 0.613 | 0.482 |
| LT02 | Vidurio ir vakarų Lietuvos regionas | 0.664 | 0.160 | 0.352 | 0.198 | 0.501 | 0.251 | 0.869 | 0.503 | 0.411 |
| LU | Luxembourg | | | | | | | | | |
| HU | Hungary | | | | | | | | | |
| HU11 | Budapest | 0.666 | 0.257 | 0.569 | 0.334 | 0.428 | 0.595 | 0.642 | 0.297 | 0.286 |
| HU12 | Pest | 0.329 | 0.167 | 0.569 | 0.334 | 0.428 | 0.595 | 0.954 | 0.226 | 0.208 |
| HU21 | Közép-Dunántúl | 0.153 | 0.133 | 0.235 | 0.467 | 0.244 | 0.406 | 0.609 | 0.188 | 0.170 |
| HU22 | Nyugat-Dunántúl | 0.224 | 0.124 | 0.199 | 0.189 | 0.214 | 0.307 | 0.623 | 0.250 | 0.226 |
| HU23 | Dél-Dunántúl | 0.228 | 0.127 | 0.321 | 0.167 | 0.271 | 0.175 | 0.688 | 0.250 | 0.200 |
| HU31 | Észak-Magyarország | 0.223 | 0.109 | 0.163 | 0.285 | 0.113 | 0.261 | 0.869 | 0.264 | 0.227 |
| HU32 | Észak-Alföld | 0.181 | 0.188 | 0.380 | 0.248 | 0.313 | 0.399 | 0.645 | 0.224 | 0.196 |
| HU33 | Dél-Alföld | 0.203 | 0.170 | 0.396 | 0.257 | 0.364 | 0.396 | 0.506 | 0.245 | 0.227 |
| MT | Malta | | | | | | | | | |
| NL | Netherlands | | | | | | | | | |
| NL11 | Groningen | 0.594 | 0.633 | 1.000 | 0.693 | 0.857 | 0.316 | 0.400 | 0.568 | 0.388 |
| NL12 | Friesland | 0.463 | 0.478 | 0.255 | 0.470 | 0.054 | 0.549 | 0.352 | 0.466 | 0.311 |
| NL13 | Drenthe | 0.400 | 0.472 | 0.406 | 0.634 | 0.151 | 0.329 | 0.395 | 0.568 | 0.389 |
| NL21 | Overijssel | 0.575 | 0.527 | 0.582 | 0.691 | 0.542 | 0.575 | 0.359 | 0.499 | 0.337 |
| NL22 | Gelderland | 0.497 | 0.563 | 0.889 | 0.736 | 0.741 | 0.545 | 0.383 | 0.518 | 0.349 |
| NL23 | Flevoland | 0.445 | 0.560 | 0.314 | 0.637 | 0.634 | 0.439 | 0.381 | 0.543 | 0.374 |
| NL31 | Utrecht | 0.822 | 0.642 | 1.000 | 0.744 | 0.838 | 0.363 | 0.409 | 0.595 | 0.410 |
| NL32 | Noord-Holland | 0.751 | 0.599 | 0.914 | 0.747 | 0.630 | 0.459 | 0.368 | 0.517 | 0.364 |
| NL33 | Zuid-Holland | 0.603 | 0.581 | 0.844 | 0.687 | 0.736 | 0.540 | 0.382 | 0.528 | 0.360 |
| NL34 | Zeeland | 0.260 | 0.442 | 0.322 | 0.595 | 0.151 | 0.488 | 0.357 | 0.498 | 0.335 |
| NL41 | Noord-Brabant | 0.560 | 0.524 | 0.514 | 0.642 | 0.428 | 0.862 | 0.365 | 0.509 | 0.343 |
| NL42 | Limburg | 0.512 | 0.497 | 0.789 | 0.654 | 0.579 | 0.644 | 0.357 | 0.494 | 0.330 |
| AT | Austria | | | | | | | | | |
| AT1 | Ostösterreich | 0.551 | 0.509 | 0.775 | 0.569 | 0.788 | 0.663 | 0.386 | 0.630 | 0.677 |
| AT2 | Südösterreich | 0.404 | 0.421 | 0.629 | 0.443 | 0.705 | 1.000 | 0.701 | 0.580 | 0.661 |
| AT3 | Westösterreich | 0.422 | 0.421 | 0.575 | 0.488 | 0.496 | 0.760 | 0.592 | 0.697 | 0.670 |

| | | Popula-tion with tertiary education | Lifelong learning | Scientific co-publi-cations | Most-cit-ed publi-cations | R&D ex-penditure public sector | R&D ex-penditure business sector | Non-R&D innovation expendi-tures | Product or process innovators | Marketing or organi-sational innova-tors |
|---|---|---|---|---|---|---|---|---|---|---|
| PL | Poland | | | | | | | | | |
| PL21 | Malopolskie | 0.623 | 0.157 | 0.461 | 0.247 | 0.474 | 0.665 | 0.669 | 0.223 | 0.123 |
| PL22 | Slaskie | 0.549 | 0.118 | 0.240 | 0.182 | 0.253 | 0.280 | 0.449 | 0.200 | 0.124 |
| PL41 | Wielkopolskie | 0.487 | 0.067 | 0.301 | 0.241 | 0.335 | 0.261 | 0.469 | 0.191 | 0.115 |
| PL42 | Zachodniopomorskie | 0.485 | 0.067 | 0.224 | 0.180 | 0.335 | 0.160 | 0.684 | 0.163 | 0.087 |
| PL43 | Lubuskie | 0.372 | 0.045 | 0.186 | 0.215 | 0.129 | 0.153 | 0.467 | 0.178 | 0.131 |
| PL51 | Dolnoslaskie | 0.576 | 0.082 | 0.362 | 0.256 | 0.297 | 0.328 | 0.606 | 0.161 | 0.108 |
| PL52 | Opolskie | 0.447 | 0.082 | 0.187 | 0.160 | 0.253 | 0.188 | 0.404 | 0.167 | 0.074 |
| PL61 | Kujawsko-Pomorskie | 0.382 | 0.097 | 0.247 | 0.266 | 0.193 | 0.219 | 0.539 | 0.188 | 0.092 |
| PL62 | Warminsko-Mazurskie | 0.361 | 0.054 | 0.215 | 0.239 | 0.263 | 0.160 | 0.431 | 0.126 | 0.047 |
| PL63 | Pomorskie | 0.618 | 0.142 | 0.322 | 0.263 | 0.371 | 0.451 | 0.476 | 0.230 | 0.145 |
| PL71 | Lódzkie | 0.553 | 0.067 | 0.300 | 0.214 | 0.306 | 0.286 | 0.531 | 0.168 | 0.112 |
| PL72 | Swietokrzyskie | 0.566 | 0.070 | 0.170 | 0.255 | 0.276 | 0.286 | 0.529 | 0.140 | 0.072 |
| PL81 | Lubelskie | 0.470 | 0.112 | 0.264 | 0.210 | 0.468 | 0.280 | 0.490 | 0.300 | 0.088 |
| PL82 | Podkarpackie | 0.490 | 0.045 | 0.176 | 0.178 | 0.271 | 0.580 | 0.527 | 0.232 | 0.147 |
| PL84 | Podlaskie | 0.551 | 0.085 | 0.265 | 0.249 | 0.364 | 0.260 | 0.408 | 0.139 | 0.130 |
| PL91 | Warszawski stoleczny | 1.000 | 0.260 | 0.467 | 0.259 | 0.526 | 0.507 | 0.421 | 0.285 | 0.220 |
| PL92 | Mazowiecki regionalny | 0.449 | 0.039 | 0.467 | 0.259 | 0.526 | 0.507 | 0.300 | 0.135 | 0.080 |
| PT | Portugal | | | | | | | | | |
| PT11 | Norte | 0.300 | 0.239 | 0.533 | 0.428 | 0.566 | 0.412 | 0.831 | 0.772 | 0.574 |
| PT15 | Algarve | 0.273 | 0.242 | 0.506 | 0.333 | 0.350 | 0.089 | 0.630 | 0.870 | 0.725 |
| PT16 | Centro | 0.395 | 0.275 | 0.579 | 0.477 | 0.527 | 0.402 | 0.795 | 0.848 | 0.670 |
| PT17 | Lisboa | 0.427 | 0.369 | 0.680 | 0.427 | 0.621 | 0.438 | 0.484 | 0.853 | 0.703 |
| PT18 | Alentejo | 0.235 | 0.239 | 0.333 | 0.238 | 0.328 | 0.241 | 0.735 | 0.804 | 0.629 |
| PT20 | Região Autónoma dos Açores | -- | 0.160 | 0.347 | 0.241 | 0.328 | 0.032 | 0.643 | 0.795 | 0.700 |
| PT30 | Região Autónoma da Madeira | 0.293 | 0.227 | 0.321 | 0.750 | 0.305 | 0.100 | 0.617 | 0.715 | 0.559 |
| RO | Romania | | | | | | | | | |
| RO11 | Nord-Vest | 0.219 | 0.015 | 0.336 | 0.247 | 0.253 | 0.110 | 0.180 | 0.078 | 0.139 |
| RO12 | Centru | 0.221 | 0.015 | 0.208 | 0.146 | 0.078 | 0.246 | 0.184 | 0.043 | 0.049 |
| RO21 | Nord-Est | 0.074 | 0.015 | 0.221 | 0.220 | 0.253 | 0.064 | 0.217 | 0.045 | 0.126 |
| RO22 | Sud-Est | 0.041 | 0.000 | 0.109 | 0.213 | 0.143 | 0.009 | 0.411 | 0.144 | 0.103 |
| RO31 | Sud - Muntenia | 0.027 | 0.024 | 0.062 | 0.179 | 0.097 | 0.276 | 0.142 | 0.022 | 0.020 |
| RO32 | Bucuresti – Ilfov | 0.672 | 0.021 | 0.503 | 0.212 | 0.469 | 0.356 | 0.227 | 0.062 | 0.077 |
| RO41 | Sud-Vest Oltenia | 0.131 | 0.003 | 0.121 | 0.160 | 0.204 | 0.032 | 0.064 | 0.031 | 0.000 |
| RO42 | Vest | 0.183 | 0.015 | 0.274 | 0.284 | 0.193 | 0.276 | 0.180 | 0.022 | 0.077 |
| SI | Slovenia | | | | | | | | | |
| SI03 | Vzhodna Slovenija | 0.510 | 0.303 | 0.317 | 0.394 | 0.156 | 0.607 | 0.469 | 0.340 | 0.327 |
| SI04 | Zahodna Slovenija | 0.648 | 0.394 | 0.826 | 0.417 | 0.621 | 0.654 | 0.437 | 0.394 | 0.369 |
| SK | Slovakia | | | | | | | | | |
| SK01 | Bratislavský kraj | 0.842 | 0.157 | 0.827 | 0.295 | 0.590 | 0.406 | 0.342 | 0.317 | 0.339 |
| SK02 | Západné Slovensko | 0.307 | 0.079 | 0.206 | 0.197 | 0.271 | 0.266 | 0.640 | 0.252 | 0.199 |
| SK03 | Stredné Slovensko | 0.282 | 0.061 | 0.246 | 0.224 | 0.350 | 0.261 | 0.626 | 0.296 | 0.261 |
| SK04 | Východné Slovensko | 0.264 | 0.082 | 0.364 | 0.277 | 0.343 | 0.219 | 0.922 | 0.241 | 0.230 |
| FI | Finland | | | | | | | | | |
| FI1B | Helsinki-Uusimaa | 0.686 | 0.902 | 0.952 | 0.541 | 0.745 | 0.799 | 0.476 | 0.794 | 0.578 |
| FI1C | Etelä-Suomi | 0.431 | 0.772 | 0.780 | 0.538 | 0.585 | 0.543 | 0.347 | 0.827 | 0.649 |
| FI19 | Länsi-Suomi | 0.526 | 0.781 | 0.624 | 0.415 | 0.634 | 0.676 | 0.565 | 0.732 | 0.526 |

| | | Popula-tion with tertiary education | Lifelong learning | Scientific co-publi-cations | Most-cit-ed publi-cations | R&D ex-penditure public sector | R&D ex-penditure business sector | Non-R&D innovation expendi-tures | Product or process innovators | Marketing or organi-sational innova-tors |
|---|---|---|---|---|---|---|---|---|---|---|
| FI1D | Pohjois- ja Itä-Suomi | 0.426 | 0.751 | 0.679 | 0.512 | 0.684 | 0.641 | 0.623 | 0.733 | 0.581 |
| FI20 | Åland | -- | 0.724 | 0.181 | 0.000 | 0.078 | 0.251 | 0.791 | 0.662 | 0.424 |
| SE | Sweden | | | | | | | | | |
| SE11 | Stockholm | 0.855 | 0.939 | 1.000 | 0.621 | 0.687 | 0.881 | 0.456 | 0.591 | 0.534 |
| SE12 | Östra Mellansverige | 0.571 | 0.914 | 1.000 | 0.536 | 0.900 | 0.802 | 0.695 | 0.510 | 0.394 |
| SE21 | Småland med öarna | 0.503 | 0.826 | 0.373 | 0.487 | 0.307 | 0.579 | 0.731 | 0.658 | 0.497 |
| SE22 | Sydsverige | 0.688 | 0.939 | 0.872 | 0.587 | 0.786 | 0.742 | 0.470 | 0.534 | 0.473 |
| SE23 | Västsverige | 0.643 | 0.929 | 0.739 | 0.630 | 0.650 | 0.901 | 0.545 | 0.523 | 0.509 |
| SE31 | Norra Mellansverige | 0.542 | 0.823 | 0.313 | 0.349 | 0.299 | 0.525 | 0.499 | 0.483 | 0.341 |
| SE32 | Mellersta Norrland | 0.465 | 0.805 | 0.324 | 0.256 | 0.322 | 0.340 | 0.650 | 0.484 | 0.402 |
| SE33 | Övre Norrland | 0.497 | 0.814 | 1.000 | 0.488 | 1.000 | 0.406 | 0.670 | 0.495 | 0.437 |
| UK | United Kingdom | | | | | | | | | |
| UKC | North East | 0.445 | 0.357 | 0.648 | 0.681 | 0.474 | 0.356 | 0.605 | 0.481 | 0.512 |
| UKD | North Wes | 0.528 | 0.406 | 0.499 | 0.678 | 0.440 | 0.571 | 0.587 | 0.479 | 0.518 |
| UKE | Yorkshire and The Humber | 0.481 | 0.424 | 0.612 | 0.662 | 0.480 | 0.381 | 0.606 | 0.530 | 0.471 |
| UKF | East Midlands | 0.494 | 0.400 | 0.551 | 0.620 | 0.404 | 0.623 | 0.559 | 0.591 | 0.551 |
| UKG | West Midlands | 0.458 | 0.342 | 0.536 | 0.731 | 0.378 | 0.657 | 0.596 | 0.622 | 0.510 |
| UKH | East of England | 0.465 | 0.381 | 0.745 | 0.881 | 0.608 | 0.853 | 0.246 | 0.630 | 0.578 |
| UKI | London | 0.928 | 0.460 | 0.912 | 0.815 | 0.485 | 0.344 | 0.387 | 0.450 | 0.519 |
| UKJ | South East | 0.600 | 0.466 | 0.775 | 0.759 | 0.552 | 0.654 | 0.500 | 0.642 | 0.546 |
| UKK | South West | 0.575 | 0.478 | 0.597 | 0.739 | 0.446 | 0.520 | 0.582 | 0.542 | 0.542 |
| UKL | Wales | 0.447 | 0.406 | 0.576 | 0.621 | 0.428 | 0.399 | 1.000 | 0.511 | 0.564 |
| UKM | Scotland | 0.776 | 0.406 | 0.788 | 0.705 | 0.625 | 0.419 | 0.558 | 0.506 | 0.535 |
| UKN | Northern Ireland | 0.377 | 0.275 | 0.547 | 0.595 | 0.416 | 0.546 | 0.569 | 0.487 | 0.540 |
| NO | Norway | | | | | | | | | |
| N001 | Oslo og Akershus | 0.860 | 0.663 | 1.000 | 0.511 | 0.921 | 0.652 | 0.604 | 0.839 | 0.761 |
| N002 | Hedmark og Oppland | 0.399 | 0.545 | 0.366 | 0.439 | 0.379 | 0.335 | 0.570 | 0.895 | 0.784 |
| N003 | Sør-Østlandet | 0.483 | 0.521 | 0.290 | 0.469 | 0.357 | 0.595 | 0.726 | 0.775 | 0.675 |
| N004 | Agder og Rogaland | 0.435 | 0.542 | 0.430 | 0.510 | 0.386 | 0.469 | 0.646 | 0.814 | 0.740 |
| N005 | Vestlandet | 0.657 | 0.575 | 0.857 | 0.510 | 0.776 | 0.451 | 0.501 | 0.755 | 0.672 |
| N006 | Trøndelag | 0.716 | 0.609 | 1.000 | 0.541 | 1.000 | 0.917 | 0.569 | 0.800 | 0.782 |
| N007 | Nord-Norge | 0.390 | 0.587 | 0.855 | 0.399 | 0.881 | 0.335 | 0.928 | 0.753 | 0.627 |
| CH | Switzerland | | | | | | | | | |
| CH01 | Région lémanique | 0.695 | 0.817 | 1.000 | 0.754 | 0.676 | 0.807 | -- | 0.509 | 0.527 |
| CH02 | Espace Mittelland | 0.646 | 0.914 | 0.821 | 0.562 | 0.676 | 0.807 | -- | 0.589 | 0.865 |
| CH03 | Nordwestschweiz | 0.618 | 0.948 | 1.000 | 0.760 | 0.676 | 0.807 | -- | 0.525 | 0.673 |
| CH04 | Zürich | 0.903 | 1.000 | 1.000 | 0.842 | 0.676 | 0.807 | -- | 0.700 | 0.840 |
| CH05 | Ostschweiz | 0.479 | 0.896 | 0.472 | 0.664 | 0.676 | 0.807 | -- | 0.776 | 0.843 |
| CH06 | Zentralschweiz | 0.700 | 0.993 | 0.425 | 0.565 | 0.676 | 0.807 | -- | 0.607 | 0.729 |
| CH07 | Ticino | 0.724 | 0.775 | 0.702 | 0.479 | 0.676 | 0.807 | -- | 0.880 | 0.971 |
| RS | Serbia | | | | | | | | | |
| RS11 | Belgrade | 0.562 | 0.170 | 0.323 | 0.192 | 0.648 | 0.336 | 0.537 | 0.484 | 0.434 |
| RS12 | Vojvodina | 0.230 | 0.127 | 0.323 | 0.192 | 0.472 | 0.307 | 0.704 | 0.486 | 0.474 |
| RS21 | Šumadija and Western Serbia | 0.178 | 0.076 | 0.323 | 0.192 | 0.174 | 0.043 | 0.769 | 0.523 | 0.494 |
| RS22 | Southern and Eastern Serbia | 0.223 | 0.082 | 0.323 | 0.192 | 0.251 | 0.092 | 0.802 | 0.510 | 0.365 |

| | | SMEs innovating in-house | Innovative SMEs col-laborating with others | Public-private co-publications | PCT patent applications | Trademark applications | Design applications | Employment MHT manu-facturing & knowledge-intensive services | Sales of new-to-market and new-to-firm innovations |
|---|---|---|---|---|---|---|---|---|---|
| EU28 | EU28 | | | | | | | | |
| BE | Belgium | | | | | | | | |
| BE1 | Région de Bruxelles-Capitale | | | | | | | | |
| BE2 | Vlaams Gewest | 0.627 | 0.823 | 0.607 | 0.443 | 0.463 | 0.413 | 0.513 | 0.787 |
| BE3 | Région Wallonne | 0.627 | 0.539 | 0.489 | 0.372 | 0.357 | 0.334 | 0.370 | 0.768 |
| BG | Bulgaria | | | | | | | | |
| BG31 | Severozapaden | 0.238 | 0.072 | 0.061 | 0.051 | 0.123 | 0.263 | 0.248 | 0.535 |
| BG32 | Severen tsentralen | 0.211 | 0.093 | 0.038 | 0.188 | 0.403 | 0.640 | 0.289 | 0.404 |
| BG33 | Severoiztochen | 0.150 | 0.067 | 0.080 | 0.059 | 0.166 | 0.714 | 0.301 | 0.257 |
| BG34 | Yugoiztochen | 0.215 | 0.086 | 0.117 | 0.059 | 0.301 | 0.451 | 0.338 | 0.411 |
| BG41 | Yugozapaden | 0.232 | 0.169 | 0.155 | 0.157 | 0.626 | 0.491 | 0.591 | 0.417 |
| BG42 | Yuzhen tsentralen | 0.209 | 0.087 | 0.066 | 0.051 | 0.493 | 0.504 | 0.215 | 0.503 |
| CZ | Czechia | | | | | | | | |
| CZ01 | Praha | 0.519 | 0.497 | 0.513 | 0.168 | 0.296 | 0.385 | 0.804 | 0.535 |
| CZ02 | Strední Cechy | 0.499 | 0.305 | 0.111 | 0.239 | 0.179 | 0.462 | 0.771 | 0.421 |
| CZ03 | Jihozápad | 0.350 | 0.415 | 0.201 | 0.152 | 0.327 | 1.000 | 0.697 | 0.414 |
| CZ04 | Severozápad | 0.339 | 0.385 | 0.149 | 0.137 | 0.235 | 0.120 | 0.468 | 0.563 |
| CZ05 | Severovýchod | 0.526 | 0.453 | 0.330 | 0.221 | 0.442 | 0.688 | 0.767 | 0.651 |
| CZ06 | Jihovýchod | 0.524 | 0.459 | 0.335 | 0.167 | 0.167 | 0.306 | 0.652 | 0.453 |
| CZ07 | Strední Morava | 0.509 | 0.432 | 0.296 | 0.191 | 0.231 | 0.606 | 0.632 | 0.417 |
| CZ08 | Moravskoslezsko | 0.538 | 0.394 | 0.117 | 0.148 | 0.194 | 0.488 | 0.681 | 0.529 |
| DK | Denmark | | | | | | | | |
| DK01 | Hovedstaden | 0.695 | 0.470 | 1.000 | 0.726 | 0.874 | 0.742 | 0.632 | 0.471 |
| DK02 | Sjælland | 0.495 | 0.404 | 0.387 | 0.378 | 0.421 | 0.355 | 0.411 | 0.563 |
| DK03 | Syddanmark | 0.565 | 0.420 | 0.375 | 0.496 | 0.571 | 0.484 | 0.358 | 0.351 |
| DK04 | Midtjylland | 0.674 | 0.441 | 0.492 | 0.626 | 0.766 | 0.723 | 0.452 | 0.446 |
| DK05 | Nordjylland | 0.679 | 0.384 | 0.485 | 0.562 | 0.551 | 0.647 | 0.358 | 0.464 |
| DE | Germany | | | | | | | | |
| DE11 | Stuttgart | 0.653 | 0.230 | 0.480 | 0.907 | 0.495 | 0.860 | 1.000 | 0.565 |
| DE12 | Karlsruhe | 0.657 | 0.326 | 0.620 | 0.763 | 0.551 | 0.496 | 0.804 | 0.531 |
| DE13 | Freiburg | 0.654 | 0.220 | 0.643 | 0.723 | 0.482 | 0.590 | 0.624 | 0.544 |
| DE14 | Tübingen | 0.726 | 0.197 | 0.541 | 0.752 | 0.529 | 0.540 | 0.832 | 0.614 |
| DE21 | Oberbayern | 0.572 | 0.258 | 0.791 | 0.821 | 0.771 | 0.771 | 0.902 | 0.535 |
| DE22 | Niederbayern | 0.565 | 0.158 | 0.101 | 0.564 | 0.313 | 0.413 | 0.705 | 0.629 |
| DE23 | Oberpfalz | 0.527 | 0.223 | 0.474 | 1.000 | 0.303 | 0.624 | 0.750 | 0.430 |
| DE24 | Oberfranken | 0.473 | 0.246 | 0.523 | 0.704 | 0.512 | 0.721 | 0.575 | 0.523 |
| DE25 | Mittelfranken | 0.551 | 0.256 | 0.675 | 0.903 | 0.553 | 0.825 | 0.624 | 0.531 |
| DE26 | Unterfranken | 0.492 | 0.271 | 0.401 | 0.716 | 0.464 | 0.579 | 0.693 | 0.490 |
| DE27 | Schwaben | 0.624 | 0.182 | 0.374 | 0.626 | 0.504 | 0.582 | 0.722 | 0.583 |
| DE30 | Berlin | 0.659 | 0.593 | 0.692 | 0.522 | 0.922 | 0.670 | 0.693 | 0.600 |
| DE40 | Brandenburg | 0.495 | 0.504 | 0.322 | 0.384 | 0.253 | 0.277 | 0.329 | 0.446 |
| DE50 | Bremen | 0.581 | 0.217 | 0.739 | 0.232 | 0.424 | 0.436 | 0.546 | 0.374 |
| DE60 | Hamburg | 0.688 | 0.273 | 0.632 | 0.395 | 0.772 | 0.640 | 0.742 | 0.250 |
| DE71 | Darmstadt | 0.638 | 0.191 | 0.697 | 0.628 | 0.539 | 0.569 | 0.722 | 0.503 |
| DE72 | Gießen | 0.657 | 0.333 | 0.392 | 0.558 | 0.364 | 0.501 | 0.517 | 0.579 |
| DE73 | Kassel | 0.682 | 0.280 | 0.266 | 0.328 | 0.316 | 0.311 | 0.575 | 0.477 |

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|---|---|---|---|---|---|---|---|---|---|
| DE80 | Mecklenburg-Vorpommern | 0.636 | 0.537 | 0.297 | 0.219 | 0.213 | 0.334 | 0.252 | 0.452 |
| DE91 | Braunschweig | 0.811 | 0.207 | 0.631 | 0.558 | 0.221 | 0.260 | 0.816 | 0.438 |
| DE92 | Hannover | 0.580 | 0.285 | 0.420 | 0.568 | 0.422 | 0.619 | 0.493 | 0.489 |
| DE93 | Lüneburg | 0.505 | 0.137 | 0.209 | 0.439 | 0.407 | 0.574 | 0.444 | 0.533 |
| DE94 | Weser-Ems | 0.377 | 0.139 | 0.131 | 0.352 | 0.364 | 0.397 | 0.428 | 0.458 |
| DEA1 | Düsseldorf | 0.501 | 0.151 | 0.513 | 0.559 | 0.559 | 0.642 | 0.530 | 0.437 |
| DEA2 | Köln | 0.555 | 0.224 | 0.548 | 0.564 | 0.558 | 0.465 | 0.603 | 0.565 |
| DEA3 | Münster | 0.712 | 0.264 | 0.248 | 0.437 | 0.458 | 0.605 | 0.436 | 0.609 |
| DEA4 | Detmold | 0.689 | 0.171 | 0.233 | 0.520 | 0.551 | 0.948 | 0.489 | 0.548 |
| DEA5 | Arnsberg | 0.501 | 0.213 | 0.272 | 0.444 | 0.425 | 0.948 | 0.513 | 0.480 |
| DEB1 | Koblenz | 0.477 | 0.343 | 0.182 | 0.436 | 0.512 | 0.623 | 0.428 | 0.436 |
| DEB2 | Trier | 0.645 | 0.138 | 0.153 | 0.412 | 0.542 | 0.416 | 0.370 | 0.514 |
| DEB3 | Rheinhessen-Pfalz | 0.523 | 0.294 | 0.837 | 0.753 | 0.413 | 0.648 | 0.714 | 0.668 |
| DEC0 | Saarland | 0.625 | 0.242 | 0.409 | 0.453 | 0.303 | 0.395 | 0.522 | 0.431 |
| DED2 | Dresden | 0.638 | 0.589 | 0.393 | 0.530 | 0.279 | 0.468 | 0.546 | 0.520 |
| DED4 | Chemnitz | 0.590 | 0.621 | 0.277 | 0.360 | 0.204 | 0.388 | 0.558 | 0.544 |
| DED5 | Leipzig | 0.662 | 0.589 | 0.245 | 0.259 | 0.302 | 0.192 | 0.530 | 0.609 |
| DEE0 | Sachsen-Anhalt | 0.540 | 0.601 | 0.356 | 0.213 | 0.148 | 0.231 | 0.362 | 0.493 |
| DEF0 | Schleswig-Holstein | 0.478 | 0.253 | 0.353 | 0.462 | 0.474 | 0.628 | 0.395 | 0.321 |
| DEG0 | Thüringen | 0.522 | 0.611 | 0.393 | 0.478 | 0.215 | 0.295 | 0.464 | 0.542 |
| EE | Estonia | | | | | | | | |
| IE | Ireland | | | | | | | | |
| IE04 | Northern and Western | 0.528 | 0.381 | 0.430 | 0.258 | 0.315 | 0.323 | 0.423 | 0.483 |
| IE05 | Southern | 0.612 | 0.434 | 0.430 | 0.258 | 0.135 | 0.138 | 0.517 | 0.603 |
| IE06 | Eastern and Midland | 0.522 | 0.377 | 0.430 | 0.258 | 0.426 | 0.334 | 0.661 | 0.427 |
| EL | Greece | | | | | | | | |
| EL51 | Anatoliki Makedonia, Thraki | 0.466 | 0.449 | 0.000 | 0.041 | 0.080 | 0.071 | 0.121 | 0.416 |
| EL52 | Kentriki Makedonia | 0.644 | 0.788 | 0.170 | 0.092 | 0.325 | 0.360 | 0.235 | 0.761 |
| EL53 | Dytiki Makedonia | 0.465 | 0.825 | 0.170 | 0.102 | 0.076 | 0.280 | -- | 0.979 |
| EL54 | Ipeiros | 0.504 | 0.563 | 0.000 | 0.047 | 0.144 | -- | -- | 0.269 |
| EL61 | Thessalia | 0.652 | 0.922 | 0.000 | 0.105 | 0.221 | 0.058 | 0.126 | 0.783 |
| EL62 | Ionia Nisia | 0.536 | 0.543 | 0.000 | 0.092 | 0.056 | -- | -- | 0.769 |
| EL63 | Dytiki Ellada | 0.706 | 0.801 | 0.325 | 0.059 | 0.166 | 0.139 | 0.105 | 0.541 |
| EL64 | Sterea Ellada | 0.686 | 0.596 | 0.000 | 0.046 | 0.095 | 0.146 | -- | 0.645 |
| EL65 | Peloponnisos | 0.644 | 0.723 | 0.000 | 0.042 | 0.154 | 0.064 | 0.105 | 0.536 |
| EL30 | Attiki | 0.633 | 0.809 | 0.295 | 0.152 | 0.362 | 0.234 | 0.575 | 0.607 |
| EL41 | Voreio Aigaio | 0.454 | 0.701 | 0.000 | 0.060 | 0.181 | 0.127 | -- | 0.472 |
| EL42 | Notio Aigaio | 0.423 | 0.188 | 0.000 | 0.069 | 0.202 | 0.071 | -- | 0.168 |
| EL43 | Kriti | 0.783 | 1.000 | 0.000 | 0.171 | 0.323 | 0.269 | -- | 1.000 |
| ES | Spain | | | | | | | | |
| ES11 | Galicia | 0.220 | 0.325 | 0.149 | 0.123 | 0.402 | 0.168 | 0.325 | 0.455 |
| ES12 | Principado de Asturias | 0.276 | 0.276 | 0.215 | 0.129 | 0.195 | 0.298 | 0.329 | 0.599 |
| ES13 | Cantabria | 0.200 | 0.186 | 0.227 | 0.226 | 0.202 | 0.150 | 0.350 | 0.972 |
| ES21 | País Vasco | 0.346 | 0.444 | 0.328 | 0.248 | 0.419 | 0.271 | 0.611 | 0.834 |
| ES22 | Comunidad Foral de Navarra | 0.342 | 0.300 | 0.168 | 0.294 | 0.502 | 0.276 | 0.652 | 0.777 |
| ES23 | La Rioja | 0.334 | 0.321 | 0.000 | 0.105 | 1.000 | 0.563 | 0.252 | 0.678 |

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|---|---|---|---|---|---|---|---|---|---|
| ES24 | Aragón | 0.275 | 0.263 | 0.261 | 0.277 | 0.424 | 0.255 | 0.415 | 0.521 |
| ES30 | Comunidad de Madrid | 0.215 | 0.216 | 0.481 | 0.235 | 0.617 | 0.264 | 0.718 | 0.456 |
| ES41 | Castilla y León | 0.176 | 0.132 | 0.140 | 0.126 | 0.255 | 0.208 | 0.309 | 0.575 |
| ES42 | Castilla-la Mancha | 0.177 | 0.119 | 0.163 | 0.107 | 0.367 | 0.295 | 0.219 | 0.412 |
| ES43 | Extremadura | 0.178 | 0.229 | 0.129 | 0.122 | 0.242 | 0.087 | 0.109 | 0.500 |
| ES51 | Cataluña | 0.261 | 0.204 | 0.397 | 0.351 | 0.792 | 0.451 | 0.583 | 0.599 |
| ES52 | Comunidad Valenciana | 0.220 | 0.190 | 0.188 | 0.254 | 0.855 | 0.703 | 0.313 | 0.565 |
| ES53 | Illes Balears | 0.094 | 0.062 | 0.072 | 0.086 | 0.879 | 0.560 | 0.227 | 0.512 |
| ES61 | Andalucía | 0.155 | 0.132 | 0.231 | 0.212 | 0.311 | 0.218 | 0.256 | 0.524 |
| ES62 | Región de Murcia | 0.194 | 0.220 | 0.143 | 0.214 | 0.735 | 0.453 | 0.235 | 0.434 |
| ES63 | Ciudad Autónoma de Ceuta | 0.030 | 0.270 | 0.000 | -- | 0.284 | 0.388 | -- | 0.384 |
| ES64 | Ciudad Autónoma de Melilla | 0.187 | 0.064 | 0.266 | -- | 0.087 | 0.169 | -- | 0.548 |
| ES70 | Canarias | 0.149 | 0.059 | 0.175 | -- | -- | -- | 0.182 | 0.456 |
| FR | France | | | | | | | | |
| FR1 | Île de France | 0.581 | 0.480 | 0.569 | 0.531 | 0.446 | 0.475 | 0.693 | 0.360 |
| FRB | Centre - Val de Loire | 0.513 | 0.453 | 0.336 | 0.430 | 0.137 | 0.231 | 0.309 | 0.502 |
| FRC | Bourgogne - Franche-Comté | 0.554 | 0.452 | 0.284 | 0.402 | 0.161 | 0.409 | 0.411 | 0.478 |
| FRD | Normandie | 0.464 | 0.442 | 0.269 | 0.396 | 0.115 | 0.331 | 0.428 | 0.535 |
| FRE | Nord-Pas de Calais - Picardie | 0.463 | 0.337 | 0.300 | 0.364 | 0.155 | 0.392 | 0.358 | 0.361 |
| FRF | Alsace - Champagne-Ardenne - Lorraine | 0.500 | 0.345 | 0.349 | 0.371 | 0.230 | 0.272 | 0.366 | 0.655 |
| FRG | Pays de la Loire | 0.541 | 0.497 | 0.361 | 0.322 | 0.155 | 0.451 | 0.452 | 0.407 |
| FRH | Bretagne | 0.472 | 0.412 | 0.377 | 0.520 | 0.229 | 0.265 | 0.313 | 0.543 |
| FRI | Aquitaine - Limousin - Poitou-Charentes | 0.482 | 0.422 | 0.356 | 0.337 | 0.257 | 0.333 | 0.325 | 0.596 |
| FRJ | Languedoc-Roussillon - Midi-Pyrénées | 0.603 | 0.605 | 0.467 | 0.416 | 0.213 | 0.388 | 0.460 | 0.487 |
| FRK | Auvergne - Rhône-Alpes | 0.607 | 0.534 | 0.490 | 0.691 | 0.251 | 0.430 | 0.448 | 0.504 |
| FRL | Provence-Alpes-Côte d'Azur | 0.529 | 0.439 | 0.414 | 0.430 | 0.311 | 0.336 | 0.403 | 0.646 |
| FRM | Corse | 0.346 | 0.124 | 0.088 | 0.074 | 0.148 | 0.159 | -- | 0.271 |
| FRY | Régions ultra¬périphériques françaises | 0.365 | 0.271 | 0.048 | 0.071 | -- | -- | 0.149 | 0.235 |
| HR | Croatia | | | | | | | | |
| HR03 | Jadranska Hrvatska | 0.309 | 0.249 | 0.123 | 0.111 | 0.140 | 0.147 | 0.366 | 0.341 |
| HR04 | Kontinentalna Hrvatska | 0.461 | 0.365 | 0.314 | 0.120 | 0.164 | 0.290 | 0.387 | 0.434 |
| IT | Italy | | | | | | | | |
| ITC1 | Piemonte | 0.673 | 0.166 | 0.285 | 0.369 | 0.342 | 0.441 | 0.677 | 0.716 |
| ITC2 | Valle d'Aosta/Vallée d'Aoste | 0.387 | 0.136 | 0.000 | 0.275 | 0.156 | 0.554 | -- | 0.772 |
| ITC3 | Liguria | 0.450 | 0.099 | 0.260 | 0.279 | 0.220 | 0.171 | 0.505 | 0.641 |
| ITC4 | Lombardia | 0.670 | 0.235 | 0.421 | 0.350 | 0.584 | 0.583 | 0.738 | 0.682 |
| ITH1 | Provincia Autonoma Bolzano/Bozen | 0.512 | 0.146 | 0.189 | 0.195 | 0.636 | 0.410 | 0.231 | 0.628 |
| ITH2 | Provincia Autonoma Trento | 0.580 | 0.131 | 0.241 | 0.264 | 0.413 | 0.494 | 0.370 | 0.655 |
| ITH3 | Veneto | 0.656 | 0.161 | 0.247 | 0.370 | 0.673 | 0.858 | 0.526 | 0.683 |
| ITH4 | Friuli-Venezia Giulia | 0.693 | 0.248 | 0.392 | 0.432 | 0.428 | 0.792 | 0.517 | 0.679 |
| ITH5 | Emilia-Romagna | 0.740 | 0.144 | 0.351 | 0.460 | 0.573 | 0.727 | 0.595 | 0.680 |
| ITI1 | Toscana | 0.564 | 0.256 | 0.379 | 0.383 | 0.473 | 0.512 | 0.411 | 0.686 |
| ITI2 | Umbria | 0.596 | 0.126 | 0.251 | 0.216 | 0.296 | 1.000 | 0.415 | 0.650 |

| | | SMEs innovating in-house | Innovative SMEs collaborating with others | Public-private co-publications | PCT patent applications | Trademark applications | Design applications | Employment MHT manufacturing & knowledge-intensive services | Sales of new-to-market and new-to-firm innovations |
|---|---|---|---|---|---|---|---|---|---|
| ITI3 | Marche | 0.661 | 0.274 | 0.191 | 0.256 | 0.587 | 0.898 | 0.464 | 0.691 |
| ITI4 | Lazio | 0.540 | 0.196 | 0.347 | 0.175 | 0.364 | 0.274 | 0.538 | 0.664 |
| ITF1 | Abruzzo | 0.596 | 0.122 | 0.194 | 0.184 | 0.349 | 0.360 | 0.428 | 0.692 |
| ITF2 | Molise | 0.474 | 0.063 | 0.142 | 0.122 | 0.111 | 0.048 | 0.432 | 0.684 |
| ITF3 | Campania | 0.460 | 0.101 | 0.160 | 0.143 | 0.336 | 0.250 | 0.383 | 0.643 |
| ITF4 | Puglia | 0.496 | 0.178 | 0.152 | 0.143 | 0.249 | 0.409 | 0.248 | 0.628 |
| ITF5 | Basilicata | 0.575 | 0.158 | 0.105 | 0.129 | 0.186 | 0.269 | 0.477 | 0.689 |
| ITF6 | Calabria | 0.464 | 0.195 | 0.080 | 0.121 | 0.150 | 0.037 | 0.191 | 0.596 |
| ITG1 | Sicilia | 0.474 | 0.233 | 0.274 | 0.108 | 0.145 | 0.127 | 0.240 | 0.606 |
| ITG2 | Sardegna | 0.395 | 0.088 | 0.246 | 0.111 | 0.108 | 0.117 | 0.248 | 0.603 |
| CY | Cyprus | | | | | | | | |
| LV | Latvia | | | | | | | | |
| LT | Lithuania | | | | | | | | |
| LT01 | Sostinės regionas | 0.582 | 0.679 | 0.125 | 0.083 | 0.582 | 0.417 | 0.477 | 0.525 |
| LT02 | Vidurio ir vakarų Lietuvos regionas | 0.496 | 0.508 | 0.125 | 0.083 | 0.215 | 0.125 | 0.174 | 0.431 |
| LU | Luxembourg | | | | | | | | |
| HU | Hungary | | | | | | | | |
| HU11 | Budapest | 0.272 | 0.277 | 0.525 | 0.288 | 0.365 | 0.213 | 0.779 | 0.247 |
| HU12 | Pest | 0.197 | 0.149 | 0.525 | 0.288 | 0.309 | 0.532 | 0.616 | 0.375 |
| HU21 | Közép-Dunántúl | 0.158 | 0.106 | 0.164 | 0.135 | 0.084 | 0.139 | 0.746 | 0.322 |
| HU22 | Nyugat-Dunántúl | 0.216 | 0.170 | 0.000 | 0.131 | 0.149 | 0.278 | 0.738 | 0.557 |
| HU23 | Dél-Dunántúl | 0.240 | 0.192 | 0.356 | 0.187 | 0.080 | 0.110 | 0.297 | 0.563 |
| HU31 | Észak-Magyarország | 0.246 | 0.195 | 0.079 | 0.110 | 0.113 | 0.141 | 0.640 | 0.393 |
| HU32 | Észak-Alföld | 0.210 | 0.134 | 0.155 | 0.117 | 0.168 | 0.153 | 0.301 | 0.330 |
| HU33 | Dél-Alföld | 0.209 | 0.168 | 0.368 | 0.227 | 0.139 | 0.081 | 0.297 | 0.299 |
| MT | Malta | | | | | | | | |
| NL | Netherlands | | | | | | | | |
| NL11 | Groningen | 0.437 | 0.530 | 0.419 | 0.321 | 0.239 | 0.221 | 0.403 | 0.655 |
| NL12 | Friesland | 0.437 | 0.431 | 0.216 | 0.342 | 0.321 | 0.242 | 0.342 | 0.601 |
| NL13 | Drenthe | 0.437 | 0.536 | 0.313 | 0.244 | 0.297 | 0.694 | 0.407 | 0.612 |
| NL21 | Overijssel | 0.437 | 0.464 | 0.522 | 0.349 | 0.342 | 0.551 | 0.428 | 0.594 |
| NL22 | Gelderland | 0.437 | 0.478 | 0.517 | 0.417 | 0.511 | 0.483 | 0.419 | 0.620 |
| NL23 | Flevoland | 0.437 | 0.483 | 0.344 | 0.365 | 0.639 | 0.306 | 0.481 | 0.612 |
| NL31 | Utrecht | 0.437 | 0.523 | 0.946 | 0.386 | 0.517 | 0.488 | 0.607 | 0.671 |
| NL32 | Noord-Holland | 0.437 | 0.450 | 0.602 | 0.324 | 0.670 | 0.421 | 0.587 | 0.603 |
| NL33 | Zuid-Holland | 0.437 | 0.487 | 0.696 | 0.438 | 0.476 | 0.371 | 0.542 | 0.613 |
| NL34 | Zeeland | 0.437 | 0.497 | 0.251 | 0.327 | 0.329 | 0.185 | 0.456 | 0.602 |
| NL41 | Noord-Brabant | 0.437 | 0.472 | 0.780 | 1.000 | 0.633 | 0.716 | 0.542 | 0.603 |
| NL42 | Limburg | 0.437 | 0.467 | 0.544 | 0.719 | 0.442 | 0.600 | 0.415 | 0.590 |
| AT | Austria | | | | | | | | |
| AT1 | Ostösterreich | 0.594 | 0.681 | 0.583 | 0.426 | 0.724 | 0.408 | 0.517 | 0.491 |
| AT2 | Südösterreich | 0.528 | 0.711 | 0.620 | 0.545 | 0.572 | 0.543 | 0.460 | 0.570 |
| AT3 | Westösterreich | 0.663 | 0.856 | 0.548 | 0.626 | 0.745 | 0.801 | 0.460 | 0.589 |
| PL | Poland | | | | | | | | |
| PL21 | Malopolskie | 0.200 | 0.205 | 0.193 | 0.208 | 0.445 | 0.635 | 0.399 | 0.297 |

| | | SMEs innovating in-house | Innovative SMEs collaborating with others | Public-private co-publications | PCT patent applications | Trademark applications | Design applications | Employment MHT manufacturing & knowledge-intensive services | Sales of new-to-market and new-to-firm innovations |
|---|---|---|---|---|---|---|---|---|---|
| PL22 | Slaskie | 0.193 | 0.153 | 0.130 | 0.103 | 0.225 | 0.591 | 0.538 | 0.231 |
| PL41 | Wielkopolskie | 0.178 | 0.111 | 0.063 | 0.117 | 0.352 | 0.796 | 0.366 | 0.255 |
| PL42 | Zachodniopomorskie | 0.151 | 0.102 | 0.000 | 0.082 | 0.143 | 0.419 | 0.297 | 0.245 |
| PL43 | Lubuskie | 0.173 | 0.119 | 0.000 | 0.055 | 0.302 | 0.639 | -- | 0.260 |
| PL51 | Dolnoslaskie | 0.159 | 0.120 | 0.190 | 0.138 | 0.211 | 0.505 | 0.656 | 0.305 |
| PL52 | Opolskie | 0.145 | 0.111 | 0.000 | 0.077 | 0.250 | 0.579 | -- | 0.321 |
| PL61 | Kujawsko-Pomorskie | 0.159 | 0.125 | 0.000 | 0.088 | 0.258 | 0.626 | 0.309 | 0.300 |
| PL62 | Warminsko-Mazurskie | 0.116 | 0.111 | 0.000 | 0.058 | 0.174 | 0.362 | 0.215 | 0.348 |
| PL63 | Pomorskie | 0.190 | 0.126 | 0.220 | 0.170 | 0.285 | 0.381 | 0.460 | 0.266 |
| PL71 | Lódzkie | 0.165 | 0.107 | 0.118 | 0.103 | 0.538 | 0.467 | 0.395 | 0.224 |
| PL72 | Swietokrzyskie | 0.146 | 0.095 | 0.075 | 0.089 | 0.177 | 0.569 | 0.185 | 0.396 |
| PL81 | Lubelskie | 0.225 | 0.121 | 0.081 | 0.113 | 0.102 | 0.336 | 0.174 | 0.264 |
| PL82 | Podkarpackie | 0.223 | 0.310 | 0.058 | 0.122 | 0.274 | 0.604 | 0.354 | 0.582 |
| PL84 | Podlaskie | 0.127 | 0.104 | 0.077 | 0.039 | 0.154 | 0.383 | 0.154 | 0.356 |
| PL91 | Warszawski stoleczny | 0.258 | 0.201 | 0.249 | 0.140 | 0.576 | 0.487 | 0.779 | 0.348 |
| PL92 | Mazowiecki regionalny | 0.109 | 0.073 | 0.249 | 0.140 | 0.173 | 0.336 | 0.186 | 0.144 |
| PT | Portugal | | | | | | | | |
| PT11 | Norte | 0.783 | 0.269 | 0.174 | 0.172 | 0.699 | 0.665 | 0.334 | 0.540 |
| PT15 | Algarve | 0.919 | 0.277 | 0.313 | 0.063 | 0.207 | 0.129 | -- | 0.311 |
| PT16 | Centro | 0.859 | 0.406 | 0.212 | 0.150 | 0.406 | 0.399 | 0.231 | 0.563 |
| PT17 | Lisboa | 0.854 | 0.408 | 0.319 | 0.126 | 0.483 | 0.268 | 0.473 | 0.529 |
| PT18 | Alentejo | 0.822 | 0.338 | 0.142 | 0.130 | 0.400 | 0.088 | 0.119 | 0.492 |
| PT20 | Região Autónoma dos Açores | 0.824 | 0.106 | 0.000 | 0.080 | 0.083 | -- | -- | 0.338 |
| PT30 | Região Autónoma da Madeira | 0.702 | 0.146 | 0.000 | 0.071 | 0.521 | 0.239 | -- | 0.362 |
| RO | Romania | | | | | | | | |
| RO11 | Nord-Vest | 0.087 | 0.079 | 0.071 | 0.067 | 0.168 | 0.252 | 0.280 | 0.110 |
| RO12 | Centru | 0.049 | 0.012 | 0.105 | 0.065 | 0.139 | 0.298 | 0.460 | 0.160 |
| RO21 | Nord-Est | 0.043 | 0.054 | 0.045 | 0.050 | 0.110 | 0.157 | 0.064 | 0.196 |
| RO22 | Sud-Est | 0.151 | 0.030 | 0.051 | 0.045 | 0.043 | 0.035 | 0.235 | 0.243 |
| RO31 | Sud - Muntenia | 0.019 | 0.016 | 0.046 | 0.059 | 0.068 | 0.107 | 0.379 | 0.130 |
| RO32 | Bucuresti - Ilfov | 0.059 | 0.074 | 0.323 | 0.088 | 0.265 | 0.438 | 0.705 | 0.138 |
| RO41 | Sud-Vest Oltenia | 0.036 | 0.075 | 0.000 | 0.044 | 0.073 | 0.075 | 0.168 | 0.082 |
| RO42 | Vest | 0.022 | 0.034 | 0.000 | 0.081 | 0.138 | 0.179 | 0.938 | 0.083 |
| SI | Slovenia | | | | | | | | |
| SI03 | Vzhodna Slovenija | 0.329 | 0.361 | 0.413 | 0.548 | 0.379 | 0.307 | 0.599 | 0.461 |
| SI04 | Zahodna Slovenija | 0.374 | 0.459 | 0.542 | 0.206 | 0.578 | 0.440 | 0.673 | 0.348 |
| SK | Slovakia | | | | | | | | |
| SK01 | Bratislavský kraj | 0.303 | 0.374 | 0.386 | 0.114 | 0.378 | 0.339 | 0.914 | 0.771 |
| SK02 | Západné Slovensko | 0.246 | 0.235 | 0.080 | 0.117 | 0.191 | 0.390 | 0.759 | 0.433 |
| SK03 | Stredné Slovensko | 0.285 | 0.267 | 0.059 | 0.070 | 0.137 | 0.223 | 0.481 | 0.399 |
| SK04 | Východné Slovensko | 0.212 | 0.222 | 0.268 | 0.092 | 0.174 | 0.228 | 0.399 | 0.428 |
| FI | Finland | | | | | | | | |
| FI1B | Helsinki-Uusimaa | 0.772 | 0.805 | 0.771 | 0.877 | 0.996 | 0.549 | 0.808 | 0.628 |
| FI1C | Etelä-Suomi | 0.820 | 0.721 | 0.410 | 0.489 | 0.423 | 0.412 | 0.489 | 0.575 |
| FI19 | Länsi-Suomi | 0.718 | 0.696 | 0.595 | 0.703 | 0.459 | 0.525 | 0.493 | 0.446 |
| FI1D | Pohjois- ja Itä-Suomi | 0.752 | 0.696 | 0.446 | 0.551 | 0.324 | 0.347 | 0.338 | 0.456 |

| | | SMEs innovating in-house | Innovative SMEs collaborating with others | Public-private co-publications | PCT patent applications | Trademark applications | Design applications | Employment MHT manufacturing & knowledge-intensive services | Sales of new-to-market and new-to-firm innovations |
|---|---|---|---|---|---|---|---|---|---|
| FI20 | Åland | 0.625 | 0.838 | 0.000 | 0.083 | -- | -- | -- | 0.110 |
| SE | Sweden | | | | | | | | |
| SE11 | Stockholm | 0.594 | 0.563 | 0.838 | 0.914 | 0.954 | 0.482 | 0.934 | 0.469 |
| SE12 | Östra Mellansverige | 0.461 | 0.428 | 0.730 | 0.778 | 0.344 | 0.352 | 0.628 | 0.514 |
| SE21 | Småland med öarna | 0.582 | 0.462 | 0.212 | 0.599 | 0.408 | 0.740 | 0.456 | 0.510 |
| SE22 | Sydsverige | 0.507 | 0.409 | 0.570 | 1.000 | 0.826 | 0.553 | 0.603 | 0.407 |
| SE23 | Västsverige | 0.528 | 0.347 | 1.000 | 0.670 | 0.691 | 0.532 | 0.701 | 0.576 |
| SE31 | Norra Mellansverige | 0.464 | 0.275 | 0.346 | 0.526 | 0.347 | 0.347 | 0.432 | 0.354 |
| SE32 | Mellersta Norrland | 0.469 | 0.579 | 0.260 | 0.421 | 0.221 | 0.321 | 0.436 | 0.403 |
| SE33 | Övre Norrland | 0.523 | 0.561 | 0.470 | 0.409 | 0.313 | 0.325 | 0.305 | 0.462 |
| UK | United Kingdom | | | | | | | | |
| UKC | North East | 0.492 | 0.944 | 0.280 | 0.467 | 0.114 | 0.238 | 0.460 | 1.000 |
| UKD | North Wes | 0.489 | 0.939 | 0.470 | 0.352 | 0.204 | 0.189 | 0.452 | 0.934 |
| UKE | Yorkshire and The Humber | 0.542 | 1.000 | 0.431 | 0.360 | 0.282 | 0.459 | 0.370 | 0.783 |
| UKF | East Midlands | 0.604 | 0.980 | 0.470 | 0.357 | 0.254 | 0.325 | 0.481 | 1.000 |
| UKG | West Midlands | 0.628 | 1.000 | 0.314 | 0.445 | 0.304 | 0.541 | 0.485 | 1.000 |
| UKH | East of England | 0.637 | 1.000 | 0.868 | 0.610 | 0.357 | 0.392 | 0.538 | 0.380 |
| UKI | London | 0.453 | 0.891 | 0.558 | 0.270 | 0.625 | 0.439 | 0.783 | 0.722 |
| UKJ | South East | 0.655 | 1.000 | 0.638 | 0.473 | 0.378 | 0.444 | 0.640 | 1.000 |
| UKK | South West | 0.543 | 1.000 | 0.384 | 0.484 | 0.295 | 0.616 | 0.489 | 1.000 |
| UKL | Wales | 0.522 | 0.968 | 0.313 | 0.313 | 0.158 | 0.210 | 0.338 | 1.000 |
| UKM | Scotland | 0.517 | 1.000 | 0.355 | 0.399 | 0.208 | 0.187 | 0.379 | 0.966 |
| UKN | Northern Ireland | 0.498 | 0.820 | 0.276 | 0.232 | 0.191 | 0.207 | 0.403 | 0.645 |
| NO | Norway | | | | | | | | |
| NO001 | Oslo og Akershus | 0.700 | 0.656 | 0.735 | 0.405 | 0.362 | 0.116 | 0.644 | 0.576 |
| NO002 | Hedmark og Oppland | 0.734 | 0.653 | 0.341 | 0.171 | 0.108 | 0.073 | 0.231 | 0.376 |
| NO003 | Sør-Østlandet | 0.644 | 0.692 | 0.377 | 0.426 | 0.172 | 0.206 | 0.440 | 0.509 |
| NO004 | Agder og Rogaland | 0.686 | 0.792 | 0.584 | 0.584 | 0.153 | 0.130 | 0.419 | 0.514 |
| NO005 | Vestlandet | 0.627 | 0.769 | 0.568 | 0.411 | 0.165 | 0.298 | 0.432 | 0.494 |
| NO006 | Trøndelag | 0.653 | 1.000 | 0.806 | 0.746 | 0.074 | 0.117 | 0.346 | 0.428 |
| NO007 | Nord-Norge | 0.625 | 0.823 | 0.282 | 0.183 | 0.099 | 0.173 | 0.231 | 0.429 |
| CH | Switzerland | | | | | | | | |
| CH01 | Région lémanique | 0.461 | 0.176 | 0.983 | 0.747 | 0.744 | 0.401 | 0.558 | 0.303 |
| CH02 | Espace Mittelland | 0.586 | 0.276 | 0.583 | 0.491 | 0.419 | 0.432 | 0.575 | 0.494 |
| CH03 | Nordwestschweiz | 0.518 | 0.146 | 1.000 | 0.766 | 0.654 | 0.422 | 0.705 | 0.584 |
| CH04 | Zürich | 0.636 | 0.361 | 0.988 | 0.635 | 0.526 | 0.272 | 0.759 | 0.615 |
| CH05 | Ostschweiz | 0.633 | 0.501 | 0.426 | 0.564 | 0.619 | 1.000 | 0.579 | 0.913 |
| CH06 | Zentralschweiz | 0.511 | 0.386 | 0.822 | 0.555 | 1.000 | 0.643 | 0.652 | 0.474 |
| CH07 | Ticino | 0.975 | 0.403 | 0.563 | 0.550 | 1.000 | 0.524 | 0.526 | 0.768 |
| RS | Serbia | | | | | | | | |
| RS11 | Belgrade | 0.342 | 0.220 | 0.136 | -- | 0.085 | 0.024 | 0.558 | 0.451 |
| RS12 | Vojvodina | 0.327 | 0.340 | 0.136 | -- | 0.048 | 0.091 | 0.338 | 0.623 |
| RS21 | Šumadija and Western Serbia | 0.379 | 0.102 | 0.136 | -- | 0.043 | 0.044 | 0.101 | 0.527 |
| RS22 | Southern and Eastern Serbia | 0.333 | 0.285 | 0.136 | -- | 0.071 | 0.040 | 0.191 | 0.347 |

# Annex 4: Regional profiles

This annex shows an example of a regional profile. Final profiles for all regions will look slightly different and are available on the RIS website:

http://ec.europa.eu/growth/industry/innovation/facts-figures/regional_en

## Région de Bruxelles–Capitale / Brussels Hoofdstedelijk Gewest (BE1)

| | Data | Nor-malised score | Relative to | |
|---|---|---|---|---|
| | | | BE | EU |
| Tertiary education | 54.4 | 0.720 | 127 | 157 |
| Lifelong learning | 12.6 | 0.363 | 152 | 117 |
| International scientific co-publications | 3146 | 1.000 | 136 | 174 |
| Most-cited scientific publications | 0.108 | 0.527 | 87 | 97 |
| R&D expenditures public sector | 0.78 | 0.612 | 102 | 107 |
| R&D expenditures business sector | 1.05 | 0.518 | 75 | 88 |
| Non-R&D innovation expenditures | ± | 0.508 | ± | ± |
| Product/process innovations | ± | 0.732 | ± | ± |
| Marketing/ org. innovations | ± | 0.637 | ± | ± |
| SMEs innovating in-house | ± | 0.704 | ± | ± |
| Innovative SMEs collaborating | ± | 0.748 | ± | ± |
| Public-private co-publications | 88.0 | 0.599 | 105 | 147 |
| EPO patent applications | 2.29 | 0.217 | 55 | 51 |
| Trademark applications | 8.38 | 0.595 | 128 | 134 |
| Design applications | 1.11 | 0.236 | 64 | 48 |
| Employment MHT manuf./KIS services | 16.7 | 0.558 | 117 | 111 |
| Sales new-to-market/firm innovations | ± | 0.962 | ± | ± |
| Average score | -- | 0.602 | -- | -- |
| Country EIS-RIS correction factor | -- | 0.984 | -- | -- |
| *Regional Innovation Index 2019* | -- | 0.592 | -- | -- |
| RII 2019 (same year) | -- | -- | | 121.9 |
| RII 2019 (cf. to EU 2011) | -- | -- | -- | 127.7 |
| Regional Innovation Index 2011 | -- | 0.530 | -- | -- |
| RII 2011 (same year) | -- | -- | 98.1 | 114.2 |
| RII - change between 2011 and 2019 | -- | 13.5 | -- | -- |
| RII - change between 2011 and 2017 | -- | 1.2 | -- | -- |

*± Relative-to-EU scores are not shown as these would allow recalculating confidential regional CIS data.*

The Brussels region is a **Strong + Innovator**.

The table on the left shows the normalised scores per indicator and relative results compared to the country and the EU. The table also shows the RII in 2019 compared to that of the country and the EU in 2019, the RII in 2019 to that of the EU in 2011, and performance change over time. The radar graph shows relative strengths compared to Belgium (red line) and the EU (blue line), highlighting relative strengths and weaknesses. The table below shows data highlighting structural differences. For instance, Brussels is a highly densely populated area with higher employment shares in services and public administration.

| | BE1 | BE | EU |
|---|---|---|---|
| Share of employment in: | | | |
| Agriculture & Mining (A-B) | 0.0 | 1.2 | 4.6 |
| Manufacturing (C) | 4.9 | 12.7 | 15.4 |
| Utilities & Construction (D-F) | 7.5 | 8.4 | 8.2 |
| Services (G-N) | 72.6 | 68.2 | 64.1 |
| Public administration (O-U) | 14.8 | 9.4 | 7.0 |
| Average employed persons per enterprise (firm size), 2015-2016 | 4.4 | 4.4 | 5.5 |
| GDP per capita (PPS), 2017 | 58,700 | 35,000 | 30,000 |
| GDP per capita growth (PPS), 2013-2017 | 0.83 | 2.19 | 2.86 |
| Population density, 2017 | 7422 | 374 | 118 |
| Urbanisation, 2018 | 100.0 | 88.1 | 76.0 |
| Population size, 2018 (000s) | 1,210 | 11,400 | 512,380 |
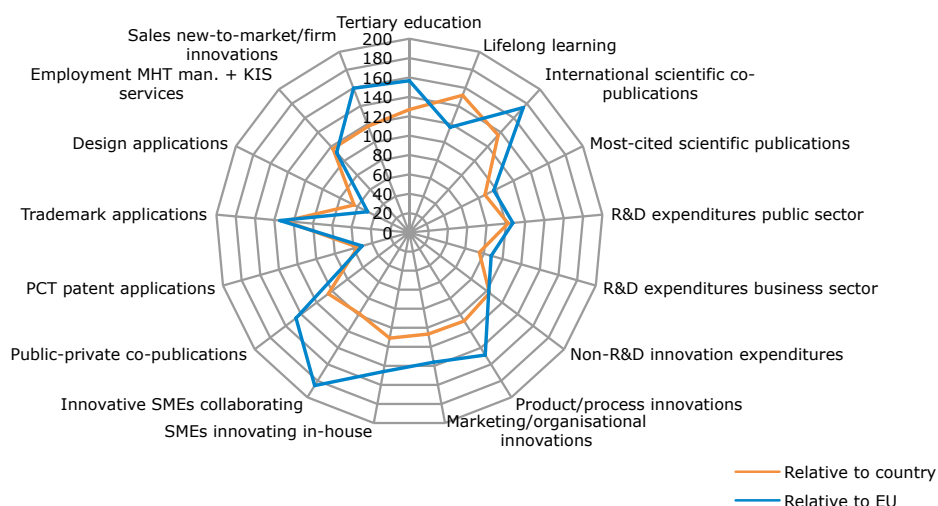
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Regional **Innovation Scoreboard** 2019

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