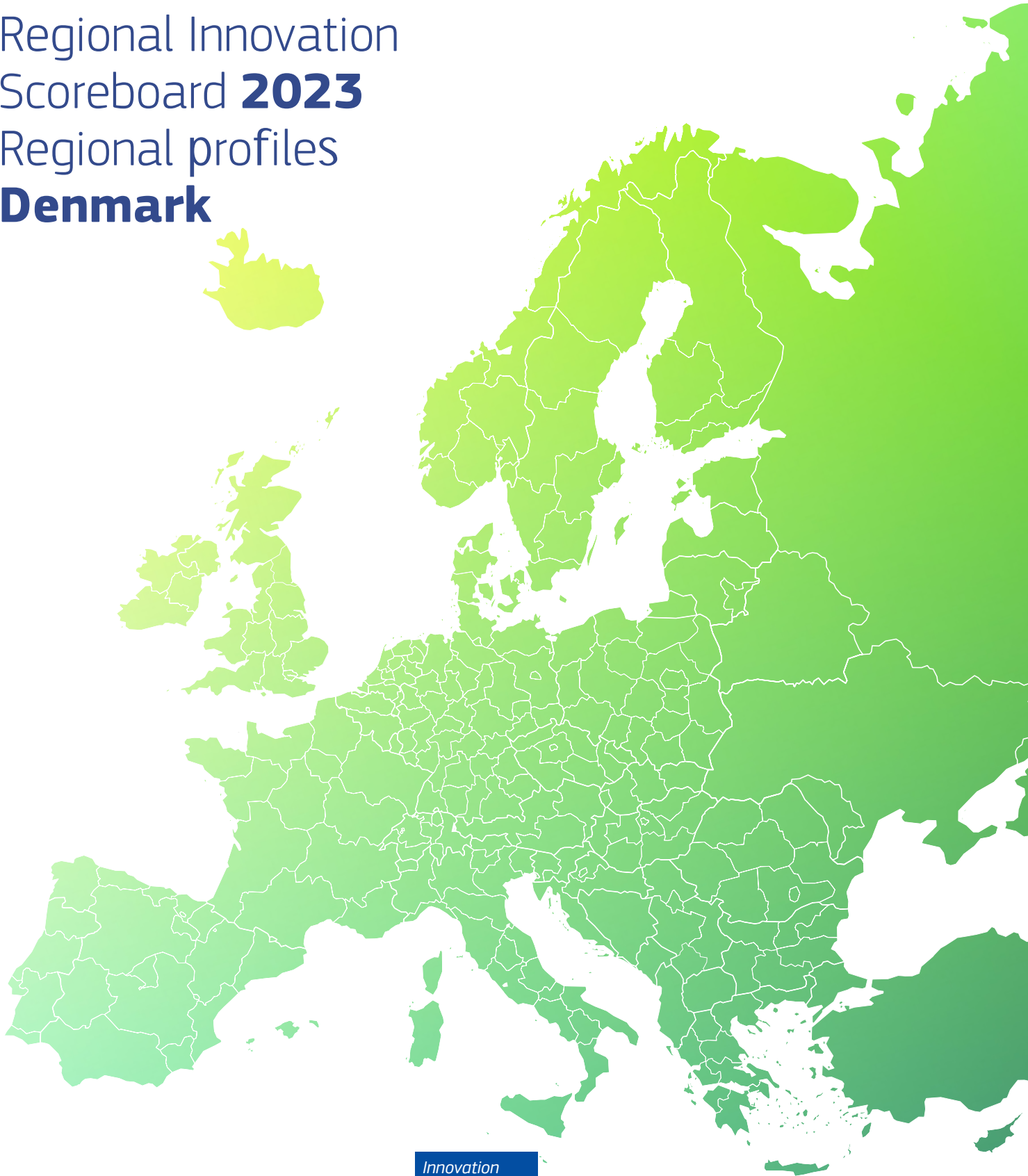




European
Commission

Regional Innovation Scoreboard **2023** Regional profiles **Denmark**



Innovation

Regional Innovation Scoreboard 2023 – Regional profiles Denmark

European Commission

Directorate-General for Research and Innovation

Directorate G – Common Policy Centre

Unit G.1 – Common R&I Strategy & Foresight Service

Contact Alexandr Hobza, Chief Economist and Head of Unit G.1
Athina Karvounaraki
Alexis Stevenson

Email RTD-STATISTICS@ec.europa.eu
RTD-PUBLICATIONS@ec.europa.eu

Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs

Directorate A – Strategy and Economic Analysis

Unit A.1 – Chief Economist

Contact Román Arjona, Chief Economist and Head of Unit A.1
Xosé-Luís Varela-Irimia

Email GROW-A1@ec.europa.eu

European Commission

B-1049 Brussels

Manuscript completed in June 2023.

This document has been prepared for the European Commission; however it reflects the views only of the authors, and the European Commission shall not be liable for any consequence stemming from the reuse.

© European Union, 2023



The reuse policy of European Commission documents is implemented by Commission Decision 2011/833/EU of 12 December 2011 on the reuse of Commission documents (OJ L 330, 14.12.2011, p. 39). Unless otherwise noted, the reuse of this document is authorised under a Creative Commons Attribution 4.0 International (CC BY 4.0) licence (<https://creativecommons.org/licenses/by/4.0/>). This means that reuse is allowed provided appropriate credit is given and any changes are indicated.

For any use or reproduction of elements that are not owned by the European Union, permission may need to be sought directly from the respective rightsholders.

Regional Innovation Scoreboard 2023

Regional profiles Denmark

The report was prepared by

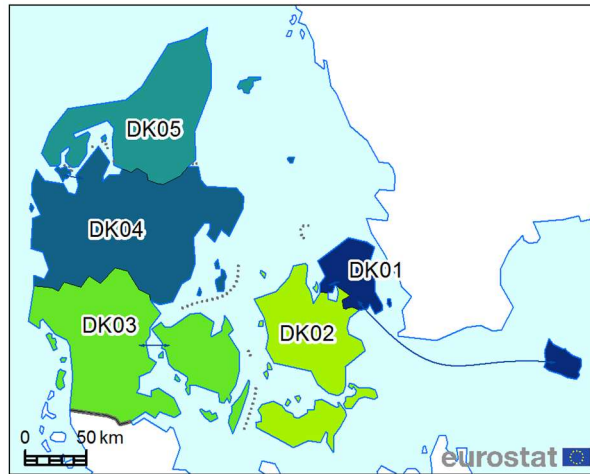
Hugo Hollanders

(Maastricht University – UNU-MERIT)

as part of the European Innovation Scoreboard project

for the European Commission, Directorate-General for Research and Innovation under

Framework Contract N° 2018/RTD/A2/OP/PP-07001-2018 Lot 2 (EDAR)



Map administrative boundaries: ©EuroGeographics ©UN-FAO ©Turkstat

NUTS	Region	RII	Rank	Group	Change
DK	Denmark	137.6	--	Innovation Leader	16.0
DK01	Hovedstaden	156.3	1	Innovation Leader +	10.7
DK02	Sjælland	105.2	87	Strong Innovator -	7.3
DK03	Syddanmark	112.9	63	Strong Innovator	10.4
DK04	Midtjylland	140.7	8	Innovation Leader	17.3
DK05	Nordjylland	129.6	26	Innovation Leader -	29.2

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 most innovative region of Europe. *Midtjylland* (DK04) is an Innovation Leader, *Nordjylland* (DK05) is an Innovation Leader -, *Syddanmark* (DK03) is a Strong Innovator and *Sjælland* (DK02) is a Strong Innovator -.

Performance has increased for all regions, and most strongly for *Nordjylland* (DK05). For four regions performance has increased at a higher rate than that of the EU (8.5).

Hovedstaden (DK01)

	Data	Normalised score	Relative to	
			DK	EU
Tertiary education	63.2	1.000	140	190
Lifelong learning	25.9	0.943	117	254
International scientific co-publications	6168	1.000	113	326
Most-cited scientific publications	1284.7	0.747	103	137
Above average digital skills	38.2	0.738	103	157
R&D expenditures public sector	1.49	0.827	118	145
R&D expenditures business sector	3.09	0.965	130	143
Non-R&D innovation expenditures	±	0.342	89	85
Innovation expenditures per person employed	±	0.731	100	121
Employed ICT specialists	9.6	1.000	149	190
Product innovators	±	0.719	109	129
Business process innovators	±	0.823	117	127
Innovative SMEs collaborating	±	0.628	107	129
Public-private co-publications	1460.4	1.000	114	255
PCT patent applications	6.32	0.860	104	140
Trademark applications	10.70	0.726	114	146
Design applications	7.86	0.816	102	141
Employment knowledge-intensive activities	21.0	0.796	150	140
Employment innovative enterprises	±	0.559	100	97
Sales of innovative products	±	0.525	109	109
Air emissions by fine particulates	8.1	0.755	97	126
Average normalised score	--	0.786	--	--
Country EIS-RIS correction factor	--	1.089	--	--
Regional Innovation Index (RII) 2023	--	0.856	--	--
Performance 2023 relative to EU in 2023	--	--	113.6	156.3
Performance 2023 relative to EU in 2016	--	--	--	169.5
Regional Innovation Index (RII) 2016	--	0.802	--	--
Performance 2016 relative to EU in 2016	--	--	119.2	158.9
Performance change over time	--	--	-5.6	10.7

± Scores are not shown as these would allow recalculating confidential regional CIS data.

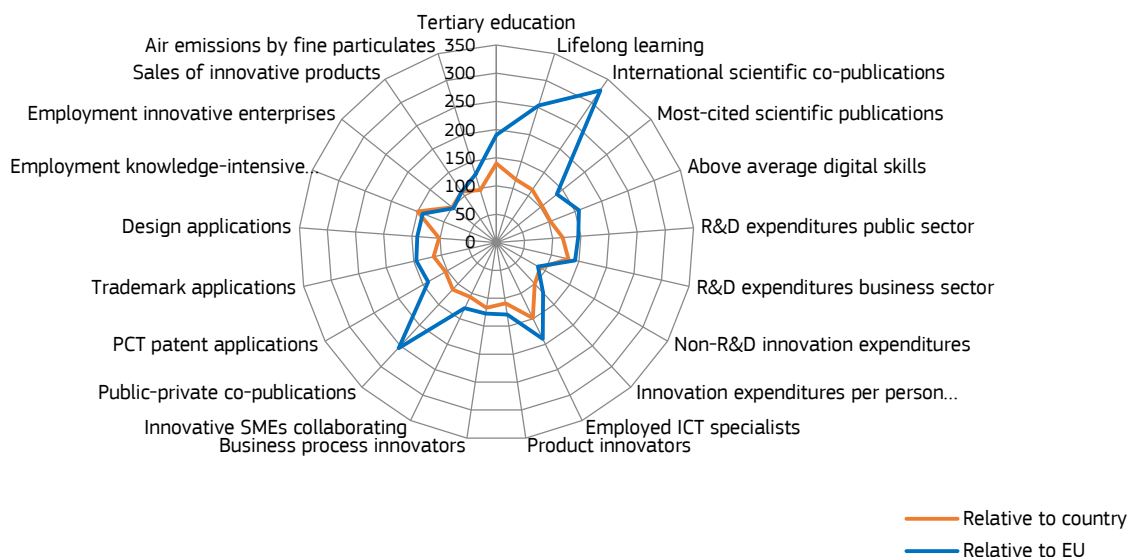
Hovedstaden (DK01) is an Innovation Leader +. Innovation performance has increased over time (10.7%).

The first 21 rows and two data columns in the table on the left show the values and the normalised scores per indicator. The last two data columns show relative performance of the normalised scores compared to Denmark and the EU. The next 7 rows show the calculation of the Regional Innovation Index (RII), the RII relative to both Denmark (113.6) and the EU (156.3) in 2023, the RII in 2023 relative to the EU in 2016 (169.5), and the RII in 2016 relative to both Denmark (119.2) and the EU in 2016 (158.9). The last row shows performance change between 2016 and 2023 compared to Denmark (-5.6%) and to the EU (10.7%).

The radar graph shows relative strengths compared to Denmark (orange line) and the EU (blue line), showing relative strengths (e.g. International scientific co-publications) and weaknesses (e.g. Non-R&D innovation expenditures).

The table below shows data highlighting possible structural differences, e.g. Population density (above EU average) and Employment in Agriculture & Mining (below EU average).

	DK01	DK	EU
Share of employment in:			
Agriculture & Mining (A-B)	0.6	2.3	4.4
Manufacturing (C)	7.2	11.3	16.4
Utilities & Construction (D-F)	5.2	7.5	8.3
Services (G-N)	80.1	73.5	63.7
Public administration (O-U)	6.9	5.4	7.2
Average number of employed persons per enterprise	8.8	7.4	5.1
GDP per capita (PPS)	57,700	43,000	32,400
GDP per capita growth (PPS)	4.1	3.1	2.5
Population density	725	136	106
Urbanisation	90.9	61.2	75.8
Population size (000s)	1,860	5,840	447,210



Sjælland (DK02)

	Data	Normalised score	Relative to	
			DK	EU
Tertiary education	32.0	0.322	45	61
Lifelong learning	20.4	0.735	91	198
International scientific co-publications	1420	0.342	39	112
Most-cited scientific publications	1039.2	0.584	81	107
Above average digital skills	36.9	0.709	98	151
R&D expenditures public sector	0.60	0.485	69	85
R&D expenditures business sector	0.66	0.446	60	66
Non-R&D innovation expenditures	±	0.360	94	89
Innovation expenditures per person employed	±	0.731	100	121
Employed ICT specialists	3.2	0.361	54	69
Product innovators	±	0.560	85	100
Business process innovators	±	0.480	68	74
Innovative SMEs collaborating	±	0.543	92	111
Public-private co-publications	320.1	0.596	68	152
PCT patent applications	2.83	0.576	70	94
Trademark applications	4.53	0.306	48	61
Design applications	3.42	0.538	67	93
Employment knowledge-intensive activities	12.2	0.379	71	67
Employment innovative enterprises	±	0.559	100	97
Sales of innovative products	±	0.722	150	150
Air emissions by fine particulates	7.7	0.774	100	129
Average normalised score	--	0.529	--	--
Country EIS-RIS correction factor	--	1.089	--	--
Regional Innovation Index (RII) 2023	--	0.576	--	--
Performance 2023 relative to EU in 2023	--	--	76.5	105.2
Performance 2023 relative to EU in 2016	--	--	--	114.1
Regional Innovation Index (RII) 2016	--	0.539	--	--
Performance 2016 relative to EU in 2016	--	--	80.2	106.8
Performance change over time	--	--	-3.7	7.3

± Scores are not shown as these would allow recalculating confidential regional CIS data.

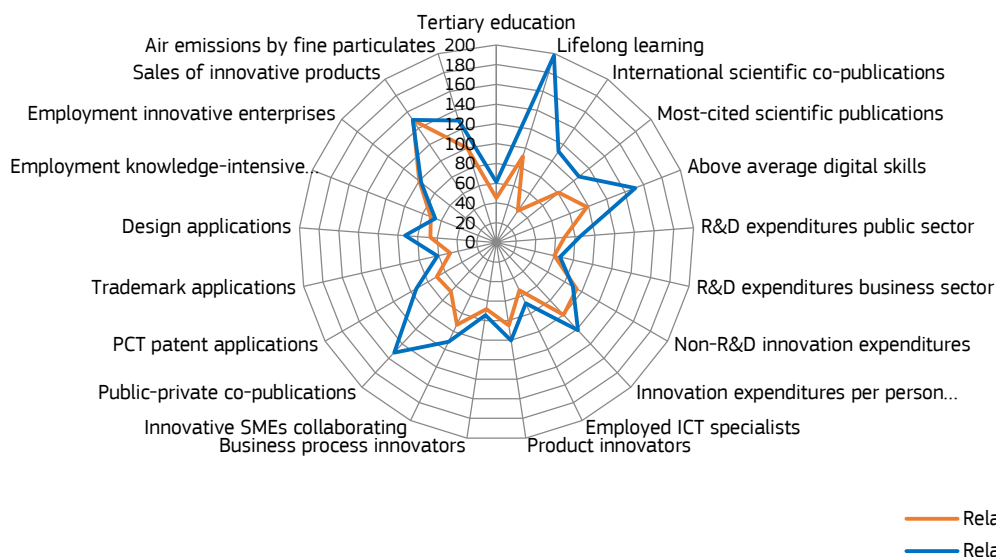
Sjælland (DK02) is a Strong Innovator -. Innovation performance has increased over time (7.3%).

The first 21 rows and two data columns in the table on the left show the values and the normalised scores per indicator. The last two data columns show relative performance of the normalised scores compared to Denmark and the EU. The next 7 rows show the calculation of the Regional Innovation Index (RII), the RII relative to both Denmark (76.5) and the EU (105.2) in 2023, the RII in 2023 relative to the EU in 2016 (114.1), and the RII in 2016 relative to both Denmark (80.2) and the EU in 2016 (106.8). The last row shows performance change between 2016 and 2023 compared to Denmark (-3.7%) and to the EU (7.3%).

The radar graph shows relative strengths compared to Denmark (orange line) and the EU (blue line), showing relative strengths (e.g. Lifelong learning) and weaknesses (e.g. Tertiary education).

The table below shows data highlighting possible structural differences, e.g. Employment in Utilities & Construction (above EU average) and Urbanisation (below EU average).

	DK02	DK	EU
Share of employment in:			
Agriculture & Mining (A-B)	2.2	2.3	4.4
Manufacturing (C)	9.7	11.3	16.4
Utilities & Construction (D-F)	10.5	7.5	8.3
Services (G-N)	72.6	73.5	63.7
Public administration (O-U)	5.0	5.4	7.2
Average number of employed persons per enterprise	4.7	7.4	5.1
GDP per capita (PPS)	28,800	43,000	32,400
GDP per capita growth (PPS)	2.6	3.1	2.5
Population density	116	136	106
Urbanisation	41.2	61.2	75.8
Population size (000s)	840	5,840	447,210



Syddanmark (DK03)

	Data	Normalised score	Relative to	
			DK	EU
Tertiary education	40.2	0.503	70	96
Lifelong learning	19.3	0.693	86	187
International scientific co-publications	2490	0.602	68	196
Most-cited scientific publications	1119.2	0.637	88	117
Above average digital skills	36.6	0.701	97	149
R&D expenditures public sector	0.50	0.434	62	76
R&D expenditures business sector	0.97	0.541	73	80
Non-R&D innovation expenditures	±	0.307	80	76
Innovation expenditures per person employed	±	0.731	100	121
Employed ICT specialists	2.8	0.308	46	59
Product innovators	±	0.545	83	98
Business process innovators	±	0.558	79	86
Innovative SMEs collaborating	±	0.563	96	116
Public-private co-publications	428.2	0.690	78	176
PCT patent applications	5.25	0.784	95	127
Trademark applications	8.78	0.596	93	119
Design applications	6.09	0.718	90	124
Employment knowledge-intensive activities	12.2	0.379	71	67
Employment innovative enterprises	±	0.559	100	97
Sales of innovative products	±	0.313	65	65
Air emissions by fine particulates	8.0	0.757	98	126
Average normalised score	--	0.568	--	--
Country EIS-RIS correction factor	--	1.089	--	--
Regional Innovation Index (RII) 2023	--	0.618	--	--
Performance 2023 relative to EU in 2023	--	--	82.0	112.9
Performance 2023 relative to EU in 2016	--	--	--	122.5
Regional Innovation Index (RII) 2016	--	0.566	--	--
Performance 2016 relative to EU in 2016	--	--	84.1	112.1
Performance change over time	--	--	-2.1	10.4

± Scores are not shown as these would allow recalculating confidential regional CIS data.

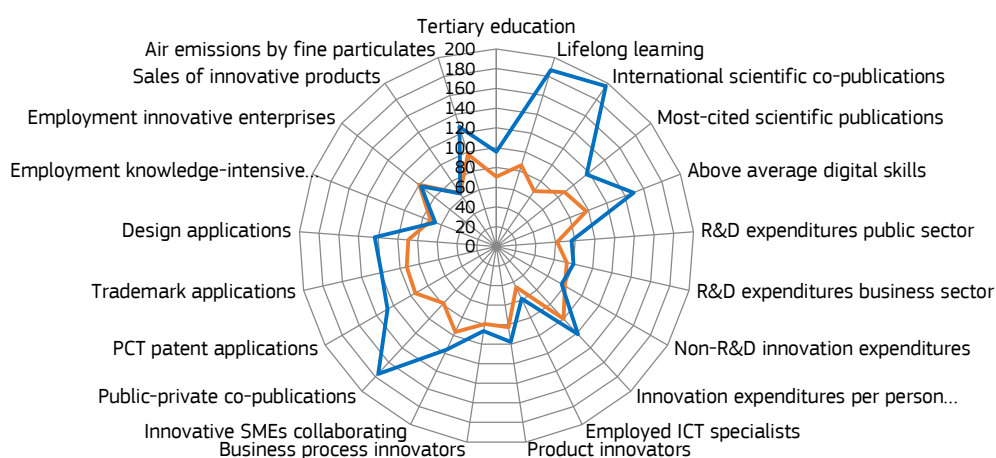
Syddanmark (DK03) is a Strong Innovator. Innovation performance has increased over time (10.4%).

The first 21 rows and two data columns in the table on the left show the values and the normalised scores per indicator. The last two data columns show relative performance of the normalised scores compared to Denmark and the EU. The next 7 rows show the calculation of the Regional Innovation Index (RII), the RII relative to both Denmark (82) and the EU (112.9) in 2023, the RII in 2023 relative to the EU in 2016 (122.5), and the RII in 2016 relative to both Denmark (84.1) and the EU in 2016 (112.1). The last row shows performance change between 2016 and 2023 compared to Denmark (-2.1%) and to the EU (10.4%).

The radar graph shows relative strengths compared to Denmark (orange line) and the EU (blue line), showing relative strengths (e.g. International scientific co-publications) and weaknesses (e.g. Employed ICT specialists).

The table below shows data highlighting possible structural differences, e.g. Average employed persons per enterprise (above EU average) and Employment in Public administration (below EU average).

	DK03	DK	EU
Share of employment in:			
Agriculture & Mining (A-B)	3.5	2.3	4.4
Manufacturing (C)	14.3	11.3	16.4
Utilities & Construction (D-F)	8.3	7.5	8.3
Services (G-N)	69.6	73.5	63.7
Public administration (O-U)	4.3	5.4	7.2
Average number of employed persons per enterprise	6.9	7.4	5.1
GDP per capita (PPS)	37,700	43,000	32,400
GDP per capita growth (PPS)	2.8	3.1	2.5
Population density	100	136	106
Urbanisation	53.4	61.2	75.8
Population size (000s)	1,220	5,840	447,210



— Relative to country
— Relative to EU

Midtjylland (DK04)

	Data	Normalised score	Relative to	
			DK	EU
Tertiary education	48.6	0.690	97	131
Lifelong learning	22.0	0.795	99	214
International scientific co-publications	4484	1.000	113	326
Most-cited scientific publications	1215.2	0.701	97	128
Above average digital skills	37.7	0.728	101	155
R&D expenditures public sector	0.95	0.639	91	112
R&D expenditures business sector	1.39	0.647	87	96
Non-R&D innovation expenditures	±	0.560	146	138
Innovation expenditures per person employed	±	0.731	100	121
Employed ICT specialists	4.6	0.542	81	103
Product innovators	±	0.686	104	123
Business process innovators	±	0.742	105	115
Innovative SMEs collaborating	±	0.591	101	121
Public-private co-publications	785.5	0.934	106	238
PCT patent applications	6.24	0.855	103	139
Trademark applications	10.84	0.736	115	148
Design applications	11.09	0.969	121	167
Employment knowledge-intensive activities	14.4	0.483	91	85
Employment innovative enterprises	±	0.559	100	97
Sales of innovative products	±	0.476	99	99
Air emissions by fine particulates	7.3	0.794	102	133
Average normalised score	--	0.708	--	--
Country EIS-RIS correction factor	--	1.089	--	--
Regional Innovation Index (RII) 2023	--	0.771	--	--
Performance 2023 relative to EU in 2023	--	--	102.3	140.7
Performance 2023 relative to EU in 2016	--	--	--	152.7
Regional Innovation Index (RII) 2016	--	0.683	--	--
Performance 2016 relative to EU in 2016	--	--	101.6	135.3
Performance change over time	--	--	0.7	17.3

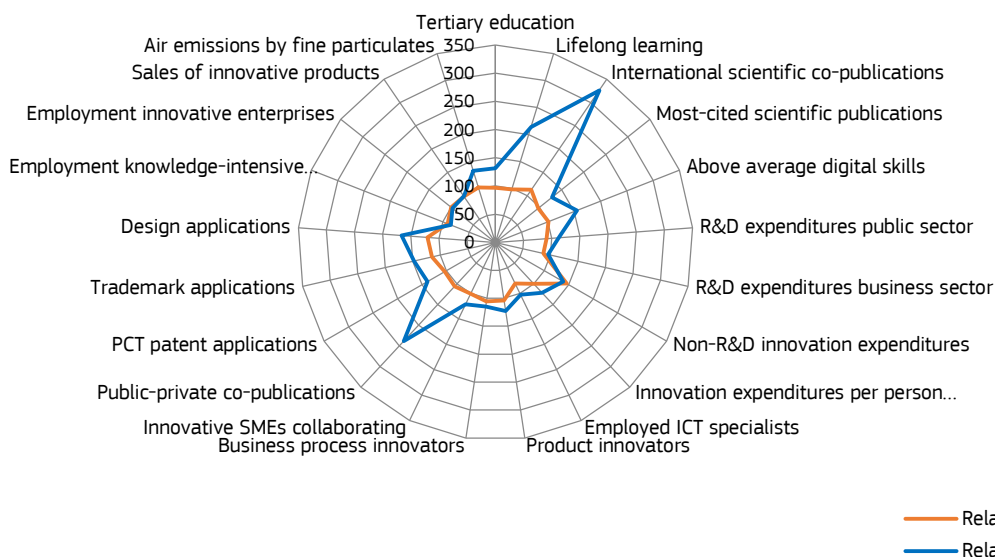
± Scores are not shown as these would allow recalculating confidential regional CIS data.

Midtjylland (DK04) is an Innovation Leader. Innovation performance has increased over time (17.3%).

The first 21 rows and two data columns in the table on the left show the values and the normalised scores per indicator. The last two data columns show relative performance of the normalised scores compared to Denmark and the EU. The next 7 rows show the calculation of the Regional Innovation Index (RII), the RII relative to both Denmark (102.3) and the EU (140.7) in 2023, the RII in 2023 relative to the EU in 2016 (152.7), and the RII in 2016 relative to both Denmark (101.6) and the EU in 2016 (135.3). The last row shows performance change between 2016 and 2023 compared to Denmark (0.7%) and to the EU (17.3%).

The radar graph shows relative strengths compared to Denmark (orange line) and the EU (blue line), showing relative strengths (e.g. International scientific co-publications) and weaknesses (e.g. Employment knowledge-intensive activities). The table below shows data highlighting possible structural differences, e.g. Average employed persons per enterprise (above EU average) and Employment in Public administration (below EU average).

	DK04	DK	EU
Share of employment in:			
Agriculture & Mining (A-B)	3.0	2.3	4.4
Manufacturing (C)	14.0	11.3	16.4
Utilities & Construction (D-F)	7.6	7.5	8.3
Services (G-N)	71.2	73.5	63.7
Public administration (O-U)	4.2	5.4	7.2
Average number of employed persons per enterprise	7.7	7.4	5.1
GDP per capita (PPS)	39,000	43,000	32,400
GDP per capita growth (PPS)	3.0	3.1	2.5
Population density	102	136	106
Urbanisation	51.2	61.2	75.8
Population size (000s)	1,330	5,840	447,210



Nordjylland (DK05)

	Data	Normalised score	Relative to	
			DK	EU
Tertiary education	42.1	0.545	76	104
Lifelong learning	19.9	0.716	89	193
International scientific co-publications	4282	1.000	113	326
Most-cited scientific publications	1474.5	0.873	121	160
Above average digital skills	36.1	0.691	96	147
R&D expenditures public sector	1.54	0.843	120	148
R&D expenditures business sector	0.42	0.356	48	53
Non-R&D innovation expenditures	±	0.273	71	67
Innovation expenditures per person employed	±	0.731	100	121
Employed ICT specialists	2.9	0.317	47	60
Product innovators	±	0.715	108	128
Business process innovators	±	0.685	97	106
Innovative SMEs collaborating	±	0.515	88	106
Public-private co-publications	878.8	0.988	112	252
PCT patent applications	7.97	0.966	117	157
Trademark applications	7.17	0.486	76	97
Design applications	6.57	0.746	93	129
Employment knowledge-intensive activities	11.1	0.327	62	58
Employment innovative enterprises	±	0.559	100	97
Sales of innovative products	±	0.511	106	106
Air emissions by fine particulates	6.4	0.837	108	140
Average normalised score	--	0.651	--	--
Country EIS-RIS correction factor	--	1.089	--	--
Regional Innovation Index (RII) 2023	--	0.710	--	--
Performance 2023 relative to EU in 2023	--	--	94.2	129.6
Performance 2023 relative to EU in 2016	--	--	--	140.5
Regional Innovation Index (RII) 2016	--	0.562	--	--
Performance 2016 relative to EU in 2016	--	--	83.5	111.3
Performance change over time	--	--	10.6	29.2

± Scores are not shown as these would allow recalculating confidential regional CIS data.

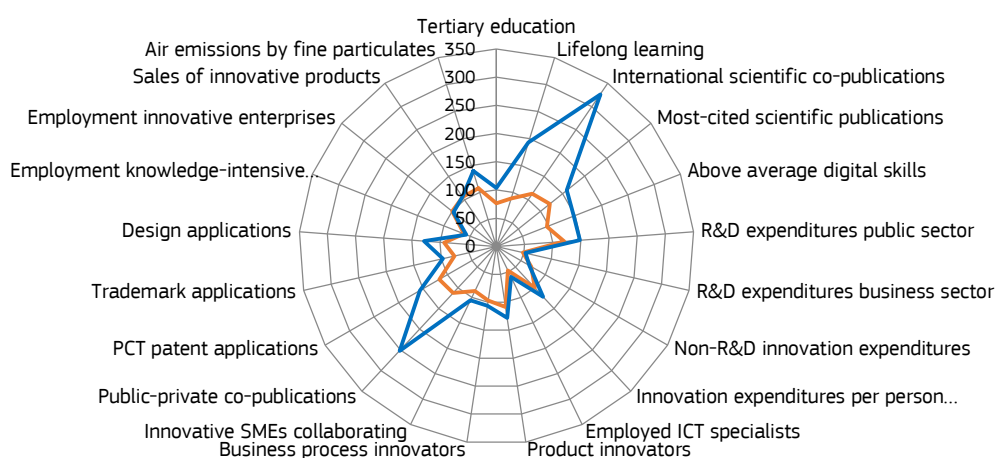
Nordjylland (DK05) is an Innovation Leader -. Innovation performance has increased over time (29.2%).

The first 21 rows and two data columns in the table on the left show the values and the normalised scores per indicator. The last two data columns show relative performance of the normalised scores compared to Denmark and the EU. The next 7 rows show the calculation of the Regional Innovation Index (RII), the RII relative to both Denmark (94.2) and the EU (129.6) in 2023, the RII in 2023 relative to the EU in 2016 (140.5), and the RII in 2016 relative to both Denmark (83.5) and the EU in 2016 (111.3). The last row shows performance change between 2016 and 2023 compared to Denmark (10.6%) and to the EU (29.2%).

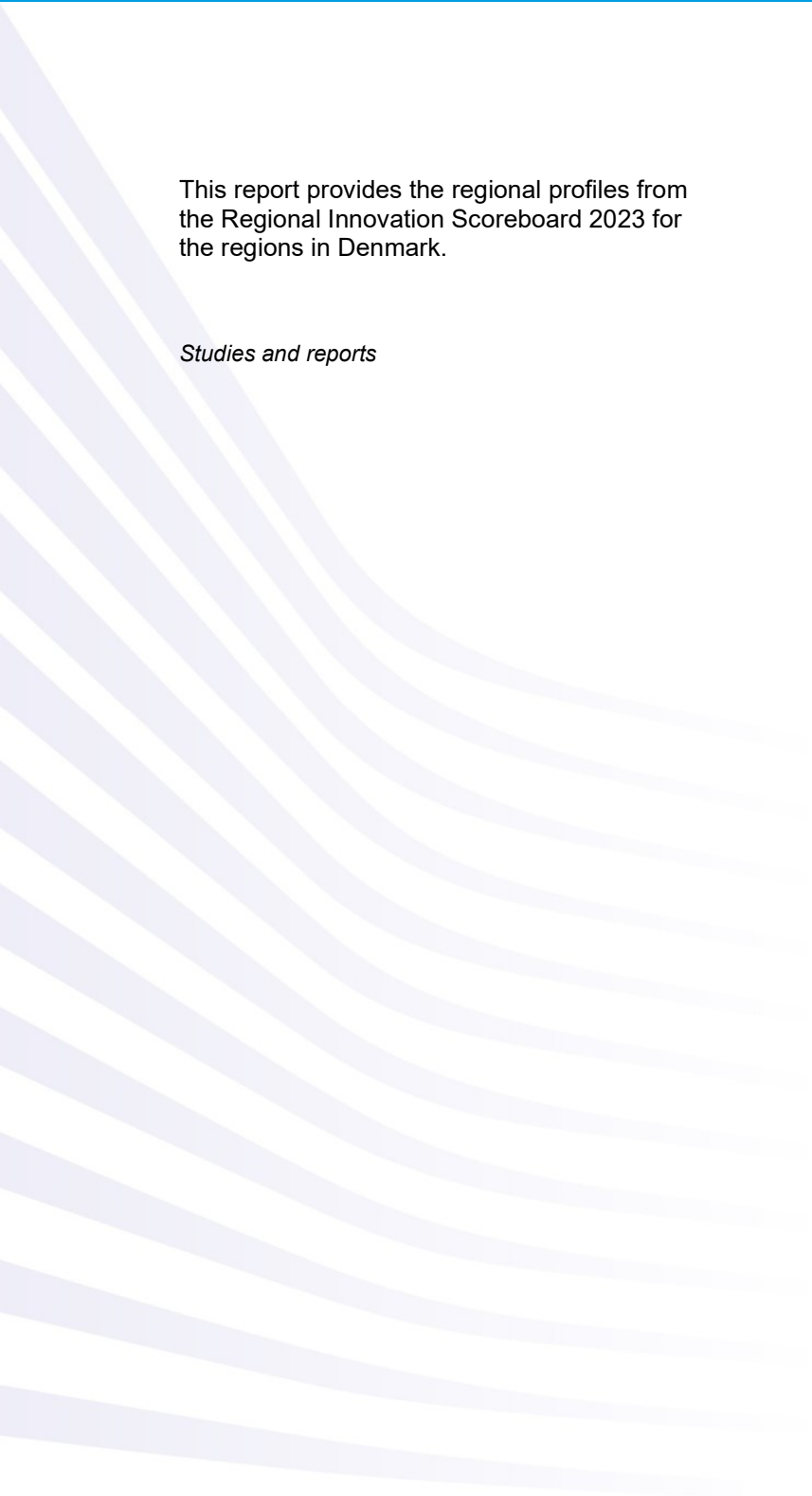

The radar graph shows relative strengths compared to Denmark (orange line) and the EU (blue line), showing relative strengths (e.g. International scientific co-publications) and weaknesses (e.g. R&D expenditures business sector).

The table below shows data highlighting possible structural differences, e.g. Employment in Utilities & Construction (above EU average) and GDP per capita growth (below EU average).

	DK05	DK	EU
Share of employment in:			
Agriculture & Mining (A-B)	3.8	2.3	4.4
Manufacturing (C)	14.6	11.3	16.4
Utilities & Construction (D-F)	9.1	7.5	8.3
Services (G-N)	66.1	73.5	63.7
Public administration (O-U)	6.4	5.4	7.2
Average number of employed persons per enterprise	6.1	7.4	5.1
GDP per capita (PPS)	34,100	43,000	32,400
GDP per capita growth (PPS)	1.4	3.1	2.5
Population density	75	136	106
Urbanisation	42.6	61.2	75.8
Population size (000s)	590	5,840	447,210



— Relative to country
— Relative to EU



This report provides the regional profiles from the Regional Innovation Scoreboard 2023 for the regions in Denmark.

Studies and reports