

Impact of scientific publications in regions

Scientific publications and the analysis of citations across regions are commonly used as indicators of the progress of science in countries and possible collaborations among researchers in different regions. Worldwide scientific publications are concentrated in a few countries. The top five countries, United States, China, United Kingdom, Germany and Japan, account for almost 60% of the publications in 2010. When considering the number of publications per capita, Switzerland and the Scandinavian countries rank among the highest ones (Figure 2.54). Scientific publications show high regional disparities, with in general, one or two

regions leading the production as is the case for the regions of Inner London West (United Kingdom) and Basel-Stadt (Switzerland) (Figure 2.54).

The 40 regions with the highest number of publications (corresponding to 2% of the regions where data are available) accounted for more than one-third of the publications in 2010. Almost half of these top publishing regions are in the United States (Table 2.55). Chinese regions, however, have experienced the highest growth in the number of publications in the period 2000-10, with an annual average growth rate of 28% compared to an average 0.3% rate in the other top regions.

The quality of scientific production can be further analysed with the share of publication that has appeared in the top quartile journals. More than 80% of the publications of the United States regions of San Diego-Carlsbad-San Marcos and Boston-Worcester-Manchester appeared in top journals (Table 2.55). The impact of publications is evaluated through the number of citations they receive (the so called citation impact). In Table 2.55, the normalised impact by region is relative to the average of the 40 top regions. In 2010, the United States region of San Jose-San Francisco-Oakland had a normalised citation impact of 1.4, which means that the publications produced in this region were cited 40% more than the average publication.

Definition

The OECD *Scopus Database* contains records on worldwide publications and citations. Scopus covers documents where the author is identical to the researcher in charge of the presented findings. Serial documents (journals, trade journals, book series and conference materials) with ISSNs (International Standard Serial Numbers) are collected in the *Scopus Database*.

The regionalisation of the *Scopus Database* consists in assigning addresses to TL3 regions, work done by the OECD Science, Technology and Industry Directorate. Not all records in the database can be successfully matched with a TL3 region, in general due to missing information or spelling errors. Nevertheless, the matching ratio is generally higher than 95%, except for Australia, Canada (lower than 90%) and Mexico (80%).

Following a common practice we define a (*citable*) publication as an article, review or conference paper included in the *Scopus database*.

The number of publications produced in top quartile journals refers to publications appearing in the most cited (top quartile) journals.

The number of citations is defined as the number of times the publication was cited by other articles included in the *Scopus database*.

The normalised citation impact is defined as the ratio between the quotient of citations (number of citations divided by the number of publications) in a region and the quotient of citations for the 40 regions with the highest number of publications worldwide. It measures the relative performance of a region.

Source

OECD calculations, based on Scopus custom data, Elsevier, version 5.2012, June 2013.

Reference years and territorial level

2010; TL3

TL2 regions in Brazil, China, India, the Russian Federation and South Africa.

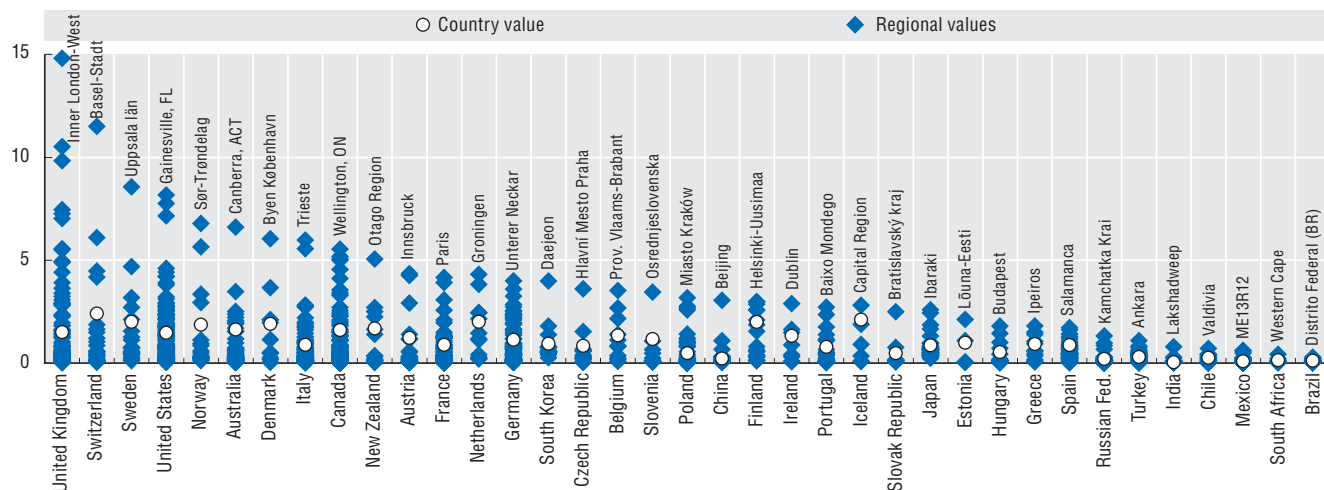
Further information

OECD (2013) STI Scoreboard. Science, Technology and Industry Scoreboard 2013, Innovation for Growth, <http://www.oecd-ilibrary.org/citeas/10.1787/888932315602>.

Figure notes

Information on data for Israel:
<http://dx.doi.org/10.1787/888932315602>.

2.54. Range in TL3 regional scientific publications per thousand population, highest region and country average, 2010



StatLink <http://dx.doi.org/10.1787/888932913950>

2.55. Scientific production and scientific impact in the 40 TL3 regions with the highest number of citable publications, 2010

	No. of citable publications in top quartile journal	No. of citable publications per 1 000 population	Publication annual average growth 2010/2000 (%)	Share of publication in top quartile journal (%)	Normalised citation impact
(US) Boston-Worcester-Manchester – MA-NH	26 812	3.23	2	79	1.32
(CN) Beijing	25 479	1.30	22	64	0.59
(US) Washington-Baltimore-N. Virginia – DC-MD-VA-WV	24 171	2.40	0	78	1.16
(US) New York-Newark-Bridgeport – NY-NJ-CT-PA	22 004	0.95	-2	75	1.15
(US) San Jose-San Francisco-Oakland – CA	19 169	1.95	1	80	1.40
(US) Los Angeles-Long Beach-Riverside – CA	16 664	0.84	1	77	1.15
(JP) Tokyo	13 404	1.02	-2	74	0.75
(UK) Inner London – West	12 529	11.15	0	72	1.06
(CN) Shanghai	11 838	0.51	23	69	0.63
(KR) Seoul	11 688	1.16	10	71	0.62
(CN) Jiangsu	10 051	0.13	40	60	0.53
(US) Chicago-Naperville-Michigan City – IL-IN-WI	9 836	0.94	0	76	1.13
(US) Philadelphia-Camden-Vineland – PA-NJ-DE-MD	9 387	1.33	0	73	1.08
(US) Detroit-Warren-Flint – MI	9 087	1.33	1	74	0.98
(US) Houston-Baytown-Huntsville – TX	8 986	1.30	1	75	1.07
(US) Rochester-Batavia-Seneca Falls – NY	8 455	5.51	3	78	1.27
(US) Raleigh-Durham-Cary – NC	7 918	2.42	1	76	1.14
(US) Atlanta-Sandy Springs-Gainesville – GA-AL	7 387	0.99	1	73	1.04
(US) Minneapolis-St. Paul-St. Cloud – MN-WI	6 757	1.27	1	75	1.07
(FR) Paris	6 736	3.00	-3	76	1.08
(CA) Toronto	6 731	2.48	4	72	1.04
(US) San Diego-Carlsbad-San Marcos – CA	6 473	2.09	0	81	1.28
(US) Denver-Aurora-Boulder – CO	6 377	1.54	0	76	1.06
(NL) South-Netherlands	6 334	1.81	2	78	1.13
(ES) Madrid	6 226	0.98	0	74	0.83
(US) Seattle-Tacoma-Olympia – WA	6 201	1.31	0	76	1.29
(DE) Munich	6 058	2.28	-1	79	1.24
(AU) Melbourne – VIC	6 058	1.50	4	70	0.90
(AU) Sydney – NSW	6 057	1.33	3	66	0.79
(CN) Guangdong	5 966	0.06	42	65	0.62
(CN) Zhejiang	5 853	0.11	45	65	0.54
(CN) Hubei	5 763	0.10	36	63	0.54
(JP) Osaka	5 422	0.61	-3	78	0.76
(BR) São Paulo	5 395	0.13	1	59	0.55
(ES) Barcelona	5 334	1.00	2	75	0.99
(NL) North-Netherlands	5 297	1.98	2	77	1.15
(UK) Oxfordshire	5 296	8.22	1	79	1.26
(DE) Berlin	5 204	1.51	-1	74	0.95
(IT) Rome	5 166	1.24	0	75	0.94
(US) Indianapolis-Anderson-Columbus – IN	5 014	1.46	1	71	0.97

StatLink <http://dx.doi.org/10.1787/888932915926>



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