CHAPTER 5

Academic Research and Development

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APPENDIX TABLE 5-1

Total and federally financed higher education R&D expenditures, by type of R&D: FYs 1953–2016

(Millions of dollars)

Fiscal year	Total higher education R&D expenditures					Federally financed higher education R&D expenditures				
	All R&D expenditures[a]	Basic research		Applied R&D		All federally financed R&D expenditures	Basic research		Applied R&D	
		Amount	Percent	Amount	Percent		Amount	Percent	Amount	Percent
Total S&E[a]										
1953	255	110	43.1	145	56.9	138	na	na	na	na
1954	290	136	46.9	154	53.1	160	na	na	na	na
1955	312	159	51.0	153	49.0	169	na	na	na	na
1956	372	200	53.8	172	46.2	213	na	na	na	na
1957	410	240	58.5	170	41.5	229	na	na	na	na
1958	456	281	61.6	175	38.4	254	na	na	na	na
1959	526	343	65.2	183	34.8	306	na	na	na	na
1960	646	433	67.0	213	33.0	405	na	na	na	na
1961	763	536	70.2	227	29.8	500	na	na	na	na
1962	904	659	72.9	245	27.1	613	na	na	na	na
1963	1,081	814	75.3	267	24.7	760	na	na	na	na
1964	1,275	1,003	78.7	272	21.3	917	na	na	na	na
1965	1,474	1,138	77.2	336	22.8	1,073	na	na	na	na

Fiscal year	Total higher education R&D expenditures					Federally financed higher education R&D expenditures				
	All R&D expenditures[a]	Basic research		Applied R&D		All federally financed R&D expenditures	Basic research		Applied R&D	
		Amount	Percent	Amount	Percent		Amount	Percent	Amount	Percent
1966	1,715	1,303	76.0	412	24.0	1,261	na	na	na	na
1967	1,921	1,457	75.8	464	24.2	1,409	na	na	na	na
1968	2,149	1,650	76.8	499	23.2	1,572	na	na	na	na
1969	2,225	1,711	76.9	514	23.1	1,600	na	na	na	na
1970	2,335	1,796	76.9	539	23.1	1,647	na	na	na	na
1971	2,500	1,914	76.6	586	23.4	1,724	na	na	na	na
1972	2,630	2,022	76.9	608	23.1	1,795	1,420	79.1	375	20.9
1973	2,884	2,053	71.2	831	28.8	1,985	1,454	73.2	531	26.8
1974	3,023	2,154	71.3	869	28.7	2,032	1,523	74.9	509	25.1
1975	3,409	2,410	70.7	999	29.3	2,288	1,695	74.1	593	25.9
1976	3,729	2,549	68.4	1,180	31.6	2,512	1,841	73.3	671	26.7
1977	4,067	2,800	68.8	1,267	31.2	2,726	2,007	73.6	720	26.4
1978[b]	4,625	na	na	na	na	3,059	na	na	na	na
1979	5,366	3,619	67.4	1,747	32.6	3,598	2,577	71.6	1,022	28.4
1980	6,063	4,036	66.6	2,026	33.4	4,098	2,861	69.8	1,237	30.2
1981	6,847	4,594	67.1	2,253	32.9	4,571	3,260	71.3	1,311	28.7
1982	7,324	4,879	66.6	2,445	33.4	4,768	3,402	71.3	1,367	28.7

Fiscal year	Total higher education R&D expenditures					Federally financed higher education R&D expenditures				
	All R&D expenditures[a]	Basic research		Applied R&D		All federally financed R&D expenditures	Basic research		Applied R&D	
		Amount	Percent	Amount	Percent		Amount	Percent	Amount	Percent
1983	7,882	5,303	67.3	2,579	32.7	4,989	3,547	71.1	1,442	28.9
1984	8,620	5,733	66.5	2,887	33.5	5,431	3,830	70.5	1,601	29.5
1985	9,687	6,556	67.7	3,131	32.3	6,064	4,343	71.6	1,722	28.4
1986	10,928	7,492	68.6	3,435	31.4	6,712	4,868	72.5	1,844	27.5
1987	12,153	8,393	69.1	3,760	30.9	7,343	5,375	73.2	1,968	26.8
1988	13,463	8,894	66.1	4,569	33.9	8,193	5,678	69.3	2,515	30.7
1989	14,979	9,793	65.4	5,186	34.6	8,993	6,195	68.9	2,797	31.1
1990	16,290	10,645	65.3	5,645	34.7	9,640	6,649	69.0	2,991	31.0
1991	17,589	11,607	66.0	5,982	34.0	10,238	7,128	69.6	3,110	30.4
1992	18,821	12,516	66.5	6,305	33.5	11,095	7,718	69.6	3,377	30.4
1993	19,954	13,303	66.7	6,651	33.3	11,960	8,398	70.2	3,562	29.8
1994	21,035	13,989	66.5	7,046	33.5	12,654	8,878	70.2	3,775	29.8
1995	22,179	14,812	66.8	7,367	33.2	13,337	9,399	70.5	3,938	29.5
1996	23,055	15,481	67.1	7,574	32.9	13,847	9,868	71.3	3,978	28.7
1997	24,380	16,602	68.1	7,778	31.9	14,321	10,316	72.0	4,006	28.0
1998	25,867	19,058	73.7	6,810	26.3	15,159	11,862	78.2	3,298	21.8
1999	27,544	20,450	74.2	7,094	25.8	16,112	12,746	79.1	3,365	20.9

Fiscal year	Total higher education R&D expenditures					Federally financed higher education R&D expenditures				
	All R&D expenditures[a]	Basic research		Applied R&D		All federally financed R&D expenditures	Basic research		Applied R&D	
		Amount	Percent	Amount	Percent		Amount	Percent	Amount	Percent
2000	30,084	22,547	74.9	7,537	25.1	17,548	13,936	79.4	3,611	20.6
2001	32,801	24,392	74.4	8,409	25.6	19,227	15,038	78.2	4,188	21.8
2002	36,383	27,363	75.2	9,019	24.8	21,856	17,262	79.0	4,593	21.0
2003	40,077	30,105	75.1	9,973	24.9	24,753	19,627	79.3	5,126	20.7
2004	43,238	31,957	73.9	11,281	26.1	27,627	21,353	77.3	6,274	22.7
2005	45,774	34,353	75.0	11,421	25.0	29,187	22,885	78.4	6,302	21.6
2006	47,759	36,082	75.5	11,677	24.5	30,132	23,697	78.6	6,434	21.4
2007	49,495	37,726	76.2	11,769	23.8	30,430	24,001	78.9	6,429	21.1
2008	51,872	39,322	75.8	12,550	24.2	31,272	24,430	78.1	6,842	21.9
2009	54,863	40,913	74.6	13,950	25.4	32,576	25,025	76.8	7,551	23.2
Total S&E and non-S&E[a]										
2010	61,287	40,416	65.9	20,870	34.1	37,478	25,400	67.8	12,078	32.2
2011	65,274	42,809	65.6	22,465	34.4	40,768	27,331	67.0	13,437	33.0
2012	65,729	42,402	64.5	23,327	35.5	40,142	26,469	65.9	13,673	34.1
2013	67,013	43,305	64.6	23,708	35.4	39,446	26,072	66.1	13,374	33.9
2014	67,197	42,989	64.0	24,207	36.0	37,960	24,905	65.6	13,055	34.4
2015	68,567	43,866	64.0	24,701	36.0	37,849	24,945	65.9	12,903	34.1

Fiscal year	Total higher education R&D expenditures					Federally financed higher education R&D expenditures				
	All R&D expenditures[a]	Basic research		Applied R&D		All federally financed R&D expenditures	Basic research		Applied R&D	
		Amount	Percent	Amount	Percent		Amount	Percent	Amount	Percent
2016	71,833	45,102	62.8	26,732	37.2	38,794	24,945	64.3	13,849	35.7

na = not applicable; separate data for federally financed basic research, applied research, and development were not collected for these years.

[a] Totals for FYs 1953–2009 represent R&D expenditures in S&E fields only. Beginning in FY 2010, totals and type of R&D data include R&D expenditures in S&E fields and non-S&E fields.

[b] FY 1978 data are estimated based on data collected from doctorate-granting institutions only.

Note(s)

The type of R&D estimation procedure was revised for FY 1998 and later years; hence, these data are not directly comparable with data for FY 1997 and earlier years. Before FY 2010, R&D expenditures by type of R&D were based on percentage estimates of basic research provided by universities and colleges. Beginning in FY 2010, institutions were asked for dollar amounts of federally funded and nonfederally funded R&D expenditures for basic research, applied research, and development. Detail may not add to total because of rounding.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey (HERD). See Figure 5-2.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-2

Sources of R&D funding for public and private academic institutions: Selected years, FYs 1990–2016

(Millions of dollars and percent distribution)

Fiscal year and source of funds	All institutions		Public institutions		Private institutions	
	Amount (current $millions)	Percent distribution	Amount (current $millions)	Percent distribution	Amount (current $millions)	Percent distribution
1990						
All sources	16,290	100.0	10,764	100.0	5,525	100.0
Federal government	9,640	59.2	5,626	52.3	4,014	72.7
State and local government	1,324	8.1	1,191	11.1	133	2.4
Business	1,127	6.9	733	6.8	394	7.1
Academic institutions[a]	3,006	18.5	2,508	23.3	498	9.0
Other	1,191	7.3	706	6.6	485	8.8
2000						
All sources	30,084	100.0	20,521	100.0	9,564	100.0
Federal government	17,548	58.3	10,660	51.9	6,888	72.0
State and local government	2,200	7.3	2,005	9.8	195	2.0
Business	2,156	7.2	1,440	7.0	716	7.5
Academic institutions[a]	5,925	19.7	4,989	24.3	936	9.8

Fiscal year and source of funds	All institutions		Public institutions		Private institutions	
	Amount (current $millions)	Percent distribution	Amount (current $millions)	Percent distribution	Amount (current $millions)	Percent distribution
Other	2,255	7.5	1,426	7.0	829	8.7
2010						
All sources	61,287	100.0	41,267	100.0	20,020	100.0
Federal government	37,478	61.2	23,354	56.6	14,124	70.5
State and local government	3,887	6.3	3,420	8.3	467	2.3
Business	3,202	5.2	2,086	5.1	1,115	5.6
Academic institutions[a]	11,943	19.5	9,332	22.6	2,610	13.0
Other	4,777	7.8	3,074	7.4	1,704	8.5
2015						
All sources	68,567	100.0	45,429	100.0	23,138	100.0
Federal government	37,849	55.2	23,389	51.5	14,459	62.5
State and local government	3,855	5.6	3,492	7.7	363	1.6
Business	4,002	5.8	2,521	5.5	1,482	6.4
Academic institutions[a]	16,608	24.2	12,136	26.7	4,472	19.3
Other	6,253	9.1	3,891	8.6	2,362	10.2
2016						

Fiscal year and source of funds	All institutions		Public institutions		Private institutions	
	Amount (current $millions)	Percent distribution	Amount (current $millions)	Percent distribution	Amount (current $millions)	Percent distribution
All sources	71,833	100.0	47,148	100.0	24,685	100.0
Federal government	38,794	54.0	23,948	50.8	14,846	60.1
State and local government	4,025	5.6	3,691	7.8	334	1.4
Business	4,211	5.9	2,568	5.4	1,643	6.7
Academic institutions[a]	17,975	25.0	12,728	27.0	5,247	21.3
Other	6,829	9.5	4,214	8.9	2,615	10.6

[a] Academic institutions' funds exclude research funds spent from multipurpose accounts.

Note(s)

Detail for each funding source may not add to total of all sources because of rounding. Other includes nonprofit organizations and other organizations. Totals for FYs 1990 and 2000 represent R&D expenditures in S&E fields only. Beginning in FY 2010, totals include R&D expenditures in S&E fields and non-S&E fields.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey (HERD).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-3

Federally financed higher education R&D expenditures, by federal agency and field: FY 2016

(Thousands of dollars)

Field[a]	All federally financed R&D expenditures	DOD	DOE	HHS	NASA	NSF	USDA	Other[b]
All fields	38,793,542	5,312,956	1,770,809	20,658,827	1,491,911	5,114,206	1,208,710	3,236,123
Science	31,090,354	2,648,073	1,066,021	19,782,880	970,094	3,581,173	1,101,099	1,941,014
Computer and information sciences	1,442,771	604,318	58,150	80,198	16,327	590,084	3,496	90,198
Geosciences, atmospheric sciences, and ocean sciences	1,992,990	189,304	106,224	63,175	353,570	706,103	31,340	543,274
Atmospheric science and meteorology	513,275	37,474	26,824	1,781	136,884	92,425	3,799	214,088
Geological and earth sciences	605,706	25,904	58,235	9,169	163,906	257,077	12,633	78,782
Ocean sciences and marine sciences	665,121	106,674	6,439	9,310	36,833	292,679	1,611	211,575
Geosciences, atmospheric sciences, and ocean sciences nec	208,888	19,252	14,726	42,915	15,947	63,922	13,297	38,829
Life sciences	21,798,334	955,046	160,808	18,141,167	92,066	728,589	986,257	734,401
Agricultural sciences	976,912	13,606	28,449	65,943	9,080	85,002	624,919	149,913
Biological and biomedical sciences	7,707,943	264,868	82,039	6,428,829	38,942	512,275	186,304	194,686
Health sciences	12,098,295	594,786	16,200	11,061,478	37,114	60,005	66,019	262,693
Natural resources and conservation	315,559	53,708	18,622	6,445	5,688	45,846	96,670	88,580
Life sciences nec	699,625	28,078	15,498	578,472	1,242	25,461	12,345	38,529

Field[a]	All federally financed R&D expenditures	DOD	DOE	HHS	NASA	NSF	USDA	Other[b]
Mathematics and statistics	444,419	120,513	11,666	46,674	3,146	229,704	4,891	27,825
Physical sciences	3,286,816	525,167	701,257	518,848	468,651	979,998	6,159	86,736
Astronomy and astrophysics	418,147	9,933	9,686	620	294,358	94,380	32	9,138
Chemistry	1,097,719	150,657	130,043	447,291	13,096	331,876	3,653	21,103
Materials science	111,802	37,517	25,335	7,139	3,192	30,886	290	7,443
Physics	1,523,751	302,844	510,994	56,065	140,224	472,743	1,929	38,952
Physical sciences nec	135,397	24,216	25,199	7,733	17,781	50,113	255	10,100
Psychology	761,433	69,940	417	500,097	21,854	71,102	6,785	91,238
Social sciences	898,576	76,852	10,389	323,353	7,981	145,351	50,032	284,618
Anthropology	39,440	4,506	107	8,219	716	17,382	1,786	6,724
Economics	112,338	5,245	3,479	42,180	133	19,342	19,090	22,869
Political science and government	103,681	14,676	2,523	22,353	382	24,105	3,485	36,157
Sociology, demography, and population studies	269,371	20,424	1,431	118,689	328	33,936	11,516	83,047
Social sciences nec	373,746	32,001	2,849	131,912	6,422	50,586	14,155	135,821
Sciences nec	465,015	106,933	17,110	109,368	6,499	130,242	12,139	82,724
Engineering	6,583,476	2,607,806	697,799	656,987	512,511	1,270,147	66,402	771,824
Aerospace, aeronautical and astronautical	623,571	378,104	19,222	2,196	143,403	24,306	441	55,899
Bioengineering and biomedical	650,752	124,857	34,047	379,920	5,026	74,757	16,326	15,819

Field[a]	All federally financed R&D expenditures	DOD	DOE	HHS	NASA	NSF	USDA	Other[b]
Chemical	467,678	92,231	117,223	74,069	7,536	146,370	7,640	22,609
Civil	591,637	51,065	54,350	21,447	15,132	123,543	8,844	317,256
Electrical, electronic, and communications	1,742,632	938,617	102,036	58,233	120,942	411,522	1,163	110,119
Industrial and manufacturing	148,464	77,883	10,294	7,973	4,295	29,799	902	17,318
Mechanical	860,745	369,481	118,755	46,507	66,281	187,044	2,267	70,410
Metallurgical and materials	442,893	170,380	93,971	20,192	12,318	103,752	2,342	39,938
Engineering nec	1,055,104	405,188	147,901	46,450	137,578	169,054	26,477	122,456
Non-S&E fields[a]	1,119,712	57,077	6,989	218,960	9,306	262,886	41,209	523,285
Business management and business administration	71,124	13,556	2,243	2,799	963	18,236	1,285	32,042
Communications and communications technologies	36,732	2,669	42	16,052	190	7,548	1,779	8,452
Education	630,205	9,908	2,178	62,493	6,723	185,764	2,395	360,744
Humanities	54,957	6,489	599	9,079	357	14,745	184	23,504
Law	28,244	2,144	128	5,641	4	1,840	286	18,201
Social work	93,616	3,899	0	79,871	229	910	1,058	7,649
Visual and performing arts	10,342	240	370	2,738	61	2,132	211	4,590
Non-S&E nec	194,492	18,172	1,429	40,287	779	31,711	34,011	68,103

nec = not elsewhere classified.

DOD = Department of Defense; DOE = Department of Energy; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation; USDA = Department of Agriculture.

[a] As part of the reclassification of disciplines, some R&D field names have changed.

[b] Includes all other agencies reported.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey (HERD), FY 2016.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-4

Higher education R&D expenditures, by source of funds and field: FY 2016

(Thousands of dollars)

Field[a]	All R&D expenditures	Federal government	State and local government	Institutions[b]	Business	Nonprofit organizations	All other sources
All fields	71,833,308	38,793,542	4,025,280	17,974,962	4,210,563	4,614,800	2,214,161
Science	56,290,662	31,090,354	3,023,028	13,541,084	3,031,096	3,868,151	1,736,949
Computer and information sciences	2,077,884	1,442,771	49,502	399,965	90,288	59,588	35,770
Geosciences, atmospheric sciences, and ocean sciences	3,087,774	1,992,990	157,693	614,647	109,478	127,763	85,203
Atmospheric science and meteorology	626,518	513,275	18,416	68,923	6,319	7,660	11,925
Geological and earth sciences	999,351	605,706	47,334	226,541	51,237	32,557	35,976
Ocean sciences and marine sciences	1,097,864	665,121	59,874	241,440	32,896	69,841	28,692
Geosciences, atmospheric sciences, and ocean sciences nec	364,041	208,888	32,069	77,743	19,026	17,705	8,610
Life sciences	40,887,850	21,798,334	2,437,745	9,700,749	2,569,302	3,038,475	1,343,245
Agricultural sciences	3,293,092	976,912	873,403	1,031,049	166,341	134,067	111,320
Biological and biomedical sciences	13,048,981	7,707,943	554,094	2,983,417	552,727	958,620	292,180
Health sciences	22,393,716	12,098,295	813,806	5,025,036	1,802,695	1,832,951	820,933
Natural resources and conservation	689,725	315,559	115,681	193,967	14,949	30,632	18,937
Life sciences nec	1,462,336	699,625	80,761	467,280	32,590	82,205	99,875

Field[a]	All R&D expenditures	Federal government	State and local government	Institutions[b]	Business	Nonprofit organizations	All other sources
Mathematics and statistics	681,661	444,419	25,714	170,414	8,844	23,601	8,669
Physical sciences	4,893,565	3,286,816	93,518	1,044,829	139,153	200,852	128,397
Astronomy and astrophysics	622,008	418,147	1,839	122,375	4,578	34,443	40,626
Chemistry	1,775,071	1,097,719	48,331	421,143	82,673	82,956	42,249
Materials science	172,086	111,802	4,579	38,435	9,518	5,465	2,287
Physics	2,124,098	1,523,751	33,703	417,189	37,851	71,221	40,383
Physical sciences nec	200,302	135,397	5,066	45,687	4,533	6,767	2,852
Psychology	1,218,721	761,433	49,603	291,319	13,084	84,105	19,177
Social sciences	2,366,571	898,576	145,563	908,025	50,569	282,278	81,560
Anthropology	96,505	39,440	2,501	42,190	1,982	7,860	2,532
Economics	396,393	112,338	37,543	166,032	8,910	54,860	16,710
Political science and government	385,245	103,681	15,042	177,119	3,991	61,439	23,973
Sociology, demography, and population studies	504,594	269,371	27,602	135,118	8,213	52,471	11,819
Social sciences nec	983,834	373,746	62,875	387,566	27,473	105,648	26,526
Sciences nec	1,076,636	465,015	63,690	411,136	50,378	51,489	34,928
Engineering	11,381,727	6,583,476	699,032	2,335,527	1,055,444	359,441	348,807
Aerospace, aeronautical and astronautical	883,260	623,571	24,846	115,771	80,432	31,049	7,591
Bioengineering and biomedical	1,084,355	650,752	56,057	254,840	46,976	53,428	22,302

Field[a]	All R&D expenditures	Federal government	State and local government	Institutions[b]	Business	Nonprofit organizations	All other sources
Chemical	885,273	467,678	40,386	199,334	121,432	34,328	22,115
Civil	1,331,155	591,637	221,119	348,873	84,724	46,354	38,448
Electrical, electronic, and communications	2,517,147	1,742,632	51,270	416,262	167,403	55,818	83,762
Industrial and manufacturing	239,078	148,464	10,846	56,714	16,372	3,652	3,030
Mechanical	1,435,828	860,745	55,454	279,079	169,124	33,587	37,839
Metallurgical and materials	771,683	442,893	29,270	181,287	74,702	19,512	24,019
Engineering nec	2,233,948	1,055,104	209,784	483,367	294,279	81,713	109,701
Non-S&E fields[a]	4,160,919	1,119,712	303,220	2,098,351	124,023	387,208	128,405
Business management and business administration	649,856	71,124	24,306	424,700	51,615	44,262	33,849
Communications and communications technologies	168,861	36,732	6,316	96,493	3,544	21,318	4,458
Education	1,352,650	630,205	100,636	419,442	26,792	147,875	27,700
Humanities	435,079	54,957	11,134	294,087	3,621	52,003	19,277
Law	190,443	28,244	10,073	109,778	8,527	26,686	7,135
Social work	208,969	93,616	28,544	59,096	2,874	19,086	5,753
Visual and performing arts	142,445	10,342	16,367	99,765	2,016	8,892	5,063
Non-S&E nec	1,012,616	194,492	105,844	594,990	25,034	67,086	25,170

nec = not elsewhere classified.

[a] As part of the reclassification of disciplines, some R&D field names have changed.

[b] Academic institutions' funds exclude research funds spent from multipurpose accounts.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey (HERD), FY 2016.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-5

Higher education R&D expenditures, by field: FYs 2007–16

(Thousands of dollars)

Field[a]	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
All fields	51,590,017	54,113,750	57,288,415	61,286,610	65,274,393	65,729,007	67,013,138	67,196,537	68,566,890	71,833,308
Science	41,977,651	43,914,300	46,214,473	49,061,924	51,955,472	51,914,454	52,621,027	52,787,322	53,873,278	56,290,662
Computer and information sciences	1,430,660	1,471,454	1,600,447	1,638,047	1,742,486	1,822,319	2,068,518	1,928,474	1,962,827	2,077,884
Geosciences, atmospheric sciences, and ocean sciences	2,681,473	2,798,750	2,923,404	2,991,760	3,153,182	3,172,918	3,195,420	3,227,956	3,247,416	3,087,774
Atmospheric science and meteorology	446,184	423,055	416,826	429,354	481,275	476,729	493,460	501,639	573,932	626,518
Geological and earth sciences	910,886	950,631	1,019,429	1,083,993	1,142,644	1,168,945	1,163,783	1,159,333	1,113,619	999,351
Ocean sciences and marine sciences	992,484	1,051,136	1,077,634	1,021,856	1,049,629	1,025,396	1,051,383	1,071,419	1,050,173	1,097,864
Geosciences, atmospheric sciences, and ocean sciences nec	331,919	373,928	409,515	456,557	479,634	501,848	486,794	495,565	509,692	364,041
Life sciences	29,805,328	31,192,916	32,778,944	34,984,282	37,337,522	37,200,135	37,565,751	37,955,182	38,787,071	40,887,850
Agricultural sciences	2,913,260	2,995,518	3,055,512	3,011,149	3,116,840	3,300,098	3,352,448	3,390,039	3,480,029	3,293,092
Biological and biomedical sciences	9,207,593	9,760,099	10,146,059	10,946,424	11,855,468	11,611,632	11,681,425	11,704,653	11,702,462	13,048,981
Health sciences	16,553,616	17,254,161	18,229,453	19,268,159	20,398,377	20,330,413	20,454,602	20,710,804	21,304,898	22,393,716
Natural resources and conservation	na	na	na	na	na	na	na	na	na	689,725
Life sciences nec	1,130,859	1,183,138	1,347,920	1,758,550	1,966,837	1,957,992	2,077,276	2,149,686	2,299,682	1,462,336
Mathematics and statistics	573,070	619,854	546,915	592,184	640,460	674,445	670,802	657,927	641,083	681,661

Field[a]	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Physical sciences	3,863,269	3,931,833	4,282,795	4,621,772	4,768,816	4,709,977	4,646,742	4,616,378	4,659,279	4,893,565
Astronomy and astrophysics	467,604	539,112	578,406	573,229	583,847	706,544	558,781	567,101	626,652	622,008
Chemistry	1,460,415	1,486,721	1,582,562	1,748,465	1,783,604	1,748,885	1,703,899	1,724,061	1,757,423	1,775,071
Materials science	na	na	na	na	na	na	na	na	na	172,086
Physics	1,615,766	1,606,997	1,869,890	1,998,732	2,108,340	1,985,825	2,097,064	2,056,349	2,047,761	2,124,098
Physical sciences nec	319,484	299,003	251,937	301,346	293,025	268,723	286,998	268,867	227,443	200,302
Psychology	872,547	925,069	972,319	1,077,685	1,159,199	1,179,289	1,128,267	1,141,662	1,181,909	1,218,721
Social sciences	1,803,115	1,949,741	2,080,953	1,999,971	2,063,036	2,053,640	2,173,147	2,215,693	2,317,108	2,366,571
Anthropology	na	na	na	na	na	na	na	na	na	96,505
Economics	349,313	398,730	379,720	352,905	387,050	383,405	408,163	428,544	456,561	396,393
Political science and government	348,310	339,294	368,887	374,913	370,704	390,058	427,523	426,781	459,416	385,245
Sociology, demography, and population studies	397,748	403,226	408,444	419,918	433,498	461,011	482,293	505,026	524,763	504,594
Social sciences nec	707,744	808,491	923,902	852,235	871,784	819,166	855,168	855,342	876,368	983,834
Sciences nec	948,189	1,024,683	1,028,696	1,156,223	1,090,771	1,101,731	1,172,380	1,044,050	1,076,585	1,076,636
Engineering	7,517,262	7,957,504	8,648,525	9,325,722	10,032,590	10,284,111	10,733,918	10,976,774	11,072,232	11,381,727
Aerospace, aeronautical and astronautical	471,097	537,251	613,828	635,234	667,757	662,444	689,553	662,456	734,104	883,260
Bioengineering and biomedical	539,137	601,908	648,099	745,277	817,389	871,917	884,421	951,157	1,003,766	1,084,355
Chemical	598,944	655,603	695,842	821,163	913,905	903,613	910,413	907,697	915,204	885,273

Field[a]	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Civil	862,260	924,620	980,451	1,106,759	1,208,592	1,232,944	1,296,972	1,256,881	1,287,446	1,331,155
Electrical, electronic, and communications	1,636,983	1,704,953	1,844,482	2,050,292	2,206,894	2,311,665	2,408,824	2,479,789	2,492,317	2,517,147
Industrial and manufacturing	na	na	na	na	na	na	na	na	na	239,078
Mechanical	1,126,726	1,162,428	1,243,910	1,458,382	1,556,892	1,550,151	1,647,643	1,504,293	1,514,753	1,435,828
Metallurgical and materials	632,941	646,523	688,225	703,332	738,892	757,967	812,240	1,203,073	1,102,027	771,683
Engineering nec	1,649,174	1,724,218	1,933,688	1,805,283	1,922,269	1,993,410	2,083,852	2,011,428	2,022,615	2,233,948
Non-S&E fields[b]	2,095,104	2,241,946	2,425,417	2,898,964	3,286,331	3,530,442	3,658,193	3,432,441	3,621,380	4,160,919
Business management and business administration	276,280	329,931	343,916	370,005	400,371	443,084	476,106	482,937	569,811	649,856
Communications and communications technologies	90,832	89,203	107,484	130,393	153,741	159,929	148,901	166,910	168,525	168,861
Education	905,247	868,830	915,976	993,574	1,120,759	1,233,956	1,221,460	1,244,254	1,291,062	1,352,650
Humanities	241,683	246,713	255,289	260,338	313,022	339,633	386,753	402,244	430,210	435,079
Law	74,809	90,907	107,966	98,105	124,776	131,529	173,479	149,254	174,734	190,443
Social work	93,540	123,984	138,283	177,329	194,665	199,308	212,331	226,094	214,381	208,969
Visual and performing arts	46,155	59,285	72,867	68,709	77,353	84,612	87,768	95,822	100,656	142,445
Non-S&E nec	366,448	432,965	483,636	800,511	901,644	938,391	951,395	664,926	672,001	1,012,616

na = not applicable; separate data for natural resources and conservation, materials science, anthropology, and industrial and manufacturing engineering were not collected prior to FY 2016.

nec = not elsewhere classified.

[a] As part of the reclassification of disciplines, some R&D field names have changed.

[b] Before FY 2010, some institution totals for all fields of R&D expenditures may be lower-bound estimates because the National Science Foundation (NSF) did not attempt to estimate for nonresponse on non-S&E R&D expenditures before FY 2010.

Note(s)

R&D expenditure amounts in various fields may show increases or decreases from amounts reported in FY 2015 because of the reclassification of disciplines.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey (HERD).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-6

Higher education R&D expenditures at top 100 R&D-performing institutions, ranked by FY 2015 R&D expenditures: FYs 2007–16

(Thousands of dollars)

Rank	Institution	Institutional control	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	All institutions		51,590,017	54,113,750	57,288,415	61,286,610	65,274,393	65,729,007	67,013,138	67,196,537	68,566,890	71,833,308
1	Johns Hopkins U.[a]	Private	1,566,392	1,691,469	1,866,243	2,004,482	2,145,308	2,106,185	2,168,568	2,242,478	2,305,679	2,431,180
2	U. Michigan, Ann Arbor	Public	NA	NA	NA	1184445	1,279,123	1,322,711	1,375,117	1,349,262	1,369,278	1,436,448
3	U. Pennsylvania	Private	668105	740410	758159	836322	886,036	847,077	828,422	828,350	864,068	1,296,429
4	U. California, San Francisco	Public	842,840	885,182	947,697	935,509	995,226	1,032,673	1,042,841	1,084,031	1,126,620	1,294,261
5	U. Washington, Seattle	Public	NA	NA	NA	1,022,740	1,148,533	1,109,008	1,192,513	1,176,340	1,180,563	1,277,679
6	U. Wisconsin-Madison	Public	912,219	944,626	1,013,649	1,029,295	1,111,642	1,169,779	1,123,501	1,108,564	1,069,077	1,157,680
7	U. California, San Diego	Public	801,823	844,877	883,653	943,219	1,009,378	1,073,864	1,075,554	1,067,388	1,101,466	1,087,117
8	Harvard U.	Private	493,920	505,832	525,452	583,361	649,774	799,432	1,012,766	933,975	1,013,753	1,077,253
9	Stanford U.	Private	702,497	698,883	717,022	839,839	907,971	903,238	945,450	959,247	1,022,551	1,066,269
10	Duke U.	Private	783,784	769,893	807,652	983,289	1,022,207	1,009,911	992,821	1,036,813	1,036,698	1,055,778
11	U. North Carolina, Chapel Hill	Public	484,160	530,515	651,308	755,284	869,174	884,791	973,007	989,766	966,781	1,045,338
12	U. California, Los Angeles	Public	854,497	904,840	923,916	936,995	982,357	1,003,375	966,659	948,197	1,021,227	1,037,528
13	Cornell U.	Private	645,791	655,641	672,692	749,721	781,651	802,387	845,184	883,292	954,412	974,199

Rank	Institution	Institutional control	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
14	Massachusetts Institute of Technology	Private	637621	682058	759649	677138	723,610	824,130	900,524	908,017	930,719	946,159
15	U. Minnesota, Twin Cities	Public	NA	NA	NA	786,074	847,419	826,173	858,378	876,870	880,618	910,181
16	Texas A&M U., College Station and Health Science Center	Public	565,631	604,526	651,923	689,624	705,720	693,421	820,015	854,214	866,678	892,718
17	U. Pittsburgh, Pittsburgh	Public	564,994	599,800	629,088	822,491	899,386	866,638	872,736	856,806	861,205	889,793
18	Yale U.	Private	451,318	490,913	512,997	623,510	656,967	656,555	788,784	772,840	803,004	881,765
19	U. Texas M. D. Anderson Cancer Center	Public	496,539	558,503	578,788	599,529	663,279	685,814	718,096	794,980	833,406	852,095
20	Columbia U. in the City of New York	Private	545,996	548,704	604,660	807,235	878,900	889,487	889,188	890,642	868,159	837,312
21	Pennsylvania State U., University Park and Hershey Medical Center	Public	NA	NA	NA	770,449	794,846	797,679	837,880	800,773	791,031	825,561
22	Ohio State U.	Public	737324	726302	743591	755194	832,126	766,513	793,373	815,075	817,881	818,464
23	New York U.	Private	319,728	337,093	338,839	365,944	430,752	458,645	471,909	523,623	602,041	809,739
24	U. Florida	Public	635,956	632,680	644,241	681,548	739,931	696,985	695,063	708,526	739,522	791,294
25	Georgia Institute of Technology	Public	476,138	524,888	565,487	615,833	655,375	688,905	730,488	725,550	765,370	790,706
26	U. California, Berkeley	Public	570,252	620,374	682,568	694,049	707,945	730,348	727,002	744,343	788,505	774,255

Rank	Institution	Institutional control	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
27	U. California, Davis	Public	604,512	647,691	687,690	679,915	707,896	713,292	725,734	711,721	721,077	741,892
28	Washington U., Saint Louis	Private	575,846	566,378	630,141	695,974	725,039	706,410	684,847	664,752	694,069	741,115
29	Northwestern U.	Private	473,060	518,572	555,510	575,078	618,980	631,078	639,781	645,333	656,167	713,491
30	U. Southern California	Private	528,466	540,366	556,807	592,791	603,294	623,544	645,636	687,222	691,031	702,866
31	Vanderbilt U.	Private	415,750	444,873	455,835	504,959	566,031	560,466	571,603	683,890	647,816	640,842
32	Rutgers, State U. New Jersey, New Brunswick	Public	NA	NA	NA	428,432	432,306	434,901	493,320	644,116	628,613	630,212
33	U. Illinois, Urbana-Champaign	Public	492347	518333	581805	515133	545,669	583,754	743,487	621,733	639,817	625,180
34	U. Texas, Austin	Public	502,786	553,051	566,166	589,502	632,171	621,538	634,132	585,251	604,376	621,692
35	Emory U.	Private	412,503	463,317	459,067	529,453	547,316	565,766	575,943	558,600	585,210	614,527
36	Michigan State U.	Public	395,611	392,242	405,961	431,373	454,248	507,061	515,707	526,906	558,248	613,369
37	Purdue U., West Lafayette	Public	NA	NA	NA	548980	578,231	602,501	595,739	564,923	558,611	606,302
38	U. Arizona	Public	533,450	547,197	566,334	586,647	610,565	625,365	629,466	588,088	606,219	604,464
39	Baylor C. of Medicine	Private	438,280	449,301	449,031	447,874	466,061	474,700	508,799	496,314	520,220	572,527
40	Icahn School of Medicine at Mt. Sinai	Private	269,451	296,380	318,407	370,666	405,527	400,680	428,654	463,429	508,353	540,296
41	U. Maryland, College Park	Public	371,696	405,569	417,365	451,415	495,382	502,406	491,998	485,051	505,699	539,388
42	U. Alabama, Birmingham	Public	352,777	405,731	435,460	489,845	503,698	453,779	440,796	428,563	516,229	537,825

Rank	Institution	Institutional control	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
43	Virginia Polytechnic Institute and State U.	Public	370,805	375,773	399,433	398,169	450,058	454,417	496,169	513,149	504,282	521,773
44	Arizona State U.	Public	238,054	273,532	311,461	329,345	355,215	385,959	405,154	426,651	458,412	518,239
45	Indiana U., Bloomington	Public	NA	NA	NA	177520	184,096	184,486	197,897	206,039	485,076	508,766
46	U. South Florida, Tampa	Public	NA	NA	NA	385029	394,963	443,206	459,409	488,641	485,354	505,965
47	North Carolina State U.	Public	333,027	367,422	383,193	360,795	378,154	404,225	417,468	446,112	468,293	489,918
48	U. Iowa	Public	374,905	300,422	334,937	444,034	443,893	446,429	435,377	449,147	443,218	473,362
49	U. Colorado Boulder	Public	267,314	272,191	299,892	349,449	390,677	392,004	385,849	379,475	420,775	453,123
50	U. Colorado Denver and Anschutz Medical Campus	Public	264,739	269,805	364,659	389,461	417,587	431,977	409,443	411,020	410,081	443,705
51	U. Texas Southwestern Medical Center	Public	341,090	390,349	402,087	419,220	431,883	435,085	440,620	434,627	438,824	442,666
52	U. Cincinnati	Public	344,526	359,011	369,906	411,269	448,936	433,668	438,642	422,873	436,028	430,579
53	U. Chicago	Private	325,161	360,047	381,194	437,721	453,562	419,631	402,621	390,082	412,536	420,997
54	U. Georgia	Public	351,935	369,546	369,997	295,339	335,901	351,395	350,225	355,471	374,264	410,345
55	Case Western Reserve U.	Private	379,347	420,441	418,012	418,164	429,206	431,090	425,788	419,011	401,527	405,655
56	U. Virginia, Charlottesville	Public	NA	NA	NA	276,308	398,096	383,359	385,828	358,576	373,218	397,458
57	Boston U.	Private	253,899	259,045	284,507	352,817	355,916	334,496	368,281	367,328	388,336	395,921
58	U. Maryland, Baltimore	Public	358,851	379,407	359,542	374,036	409,665	433,228	429,315	411,268	397,695	393,876
59	SUNY, U. Buffalo	Public	323,417	339,575	349,423	349,670	353,172	360,226	387,863	386,562	382,935	389,569

Rank	Institution	Institutional control	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
60	California Institute of Technology	Private	287,343	274,671	345,400	362,172	377,514	379,713	347,105	367,182	374,424	371,060
61	Scripps Research Institute	Private	360,511	366,047	382,275	387,298	400,768	398,673	399,899	386,231	384,161	364,670
62	U. Miami	Private	212532	244067	250339	280671	323,486	365,301	344,757	345,805	331,036	358,441
63	U. Utah	Public	248,864	254,632	334,002	379,200	414,316	430,056	494,058	486,140	518,928	350,212
64	U. Kentucky	Public	348,835	345,355	360,254	359,944	372,932	360,776	339,764	328,239	331,705	349,661
65	Brown U.	Private	175,623	182,596	187,380	335,838	344,090	365,120	361,010	341,531	342,040	347,016
66	U. Rochester	Private	377,016	378,368	398,187	414,655	429,034	389,612	389,355	353,419	346,932	346,165
67	U. California, Irvine	Public	316,178	334,279	336,345	327,594	344,678	350,030	347,773	340,056	329,798	345,319
68	U. Illinois, Chicago	Public	344,815	339,704	347,118	362,939	380,828	388,625	367,848	347,888	354,560	337,296
69	Rockefeller U.	Private	233,917	247,505	252,478	265,750	272,491	292,896	298,474	316,368	323,932	335,136
70	Washington State U.	Public	213,262	283,086	301,080	304,352	320,510	335,930	341,082	326,414	333,134	334,082
71	Colorado State U., Fort Collins	Public	296,020	302,613	311,720	302,896	330,784	375,919	313,238	307,978	317,219	331,862
72	Oregon Health and Science U.	Public	287,430	301,396	309,675	314,990	334,324	305,530	308,767	314,802	326,915	331,524
73	Iowa State U.	Public	221,002	228,167	228,526	250,120	267,641	260,995	266,596	313,263	306,125	328,385
74	Carnegie Mellon U.	Private	198,139	210,988	217,687	222,790	242,882	255,933	271,277	251,222	242,004	319,168
75	SUNY, Polytechnic Institute	Public	na	na	na	na	na	na	na	412,851	295,313	316,680
76	Princeton U.	Private	198,945	204,489	212,510	242,570	263,335	275,666	269,908	293,274	279,851	305,147

Rank	Institution	Institutional control	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
77	U. Hawaii, Manoa	Public	266,447	271,835	290,707	303,085	318,316	312,311	326,750	324,342	316,497	304,476
78	Albert Einstein College of Medicine	Private	na	na	na	na	na	na	na	na	na	300,909
79	U. Kansas	Public	219,535	227,433	236,544	267,961	274,727	286,262	298,498	301,534	311,383	297,933
80	U. Nebraska, Lincoln	Public	229,496	244,869	251,195	224,135	235,296	253,321	266,507	278,299	284,438	294,856
81	Louisiana State U., Baton Rouge	Public	266,895	280,081	294,780	289,872	287,841	285,395	283,400	290,076	281,154	291,972
82	Florida State U.	Public	211,310	211,557	237,794	227,329	230,411	225,378	250,877	252,548	256,449	268,288
83	U. Connecticut	Public	233,774	233,246	232,944	237,908	253,792	256,854	242,251	258,056	259,397	265,522
84	Medical U. South Carolina	Public	184,624	189,369	216,778	224,632	213,346	236,586	245,451	242,594	243,534	260,098
85	U. Oklahoma, Norman and Health Sciences Center	Public	187,454	204,765	213,720	218,089	249,297	240,974	255,674	253,344	242,367	259,998
86	Uniformed Services U. of the Health Sciences	Public	71,307	106,179	192,268	134,126	175,365	143,250	164,232	262,489	361,173	256,203
87	Oregon State U.	Public	231,895	233,358	257,564	216,595	228,814	240,507	232,677	230,963	245,317	254,275
88	U. Massachusetts, Medical School	Public	157,469	178,614	204,033	232,039	262,714	256,090	245,923	241,869	250,338	253,099
89	U. Missouri, Columbia	Public	244,429	251,894	253,527	238,500	230,957	239,810	236,423	237,266	246,684	248,300
90	Temple U.	Public	90,773	99,815	111,421	124,528	134,533	138,318	224,087	224,101	227,468	246,392
91	U. Central Florida	Public	141,140	147,092	148,809	117,985	109,190	116,891	126,681	185,555	215,519	242,308

Rank	Institution	Institutional control	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
92	U. New Mexico	Public	181,734	202,694	205,831	211,771	220,565	220,360	227,703	228,849	232,271	239,550
93	Mississippi State U.	Public	211,271	219,017	225,426	231,675	226,070	233,197	206,424	209,729	226,359	239,446
94	U. Texas Health Science Center, Houston	Public	191,724	197,252	217,623	240,772	261,172	236,250	233,256	233,737	234,299	237,016
95	Dartmouth C.	Private	192,846	188,122	190,425	194,141	210,631	195,930	201,591	212,606	209,646	233,636
96	George Washington U.	Private	149,413	181,688	103,793	196,917	197,621	196,448	202,428	227,995	241,117	231,829
97	SUNY, Stony Brook U.	Public	268,541	190,712	189,299	204,728	211,356	219,744	225,712	211,631	220,580	230,621
98	U. California, Santa Barbara	Public	200,504	214,441	227,221	225,730	230,435	233,883	236,497	231,322	222,870	230,139
99	Virginia Commonwealth U.	Public	151,197	171,637	162,283	197,709	207,756	201,366	196,015	201,858	218,925	225,999
100	Wayne State U.	Public	238,738	253,604	257,207	254,492	259,895	227,070	224,331	218,435	213,878	221,537
-	All other surveyed institutions		17,095,939	17,932,937	18,999,151	14,858,610	15,776,650	15,624,191	15,391,409	14,702,790	14,564,229	15,021,976

na = not applicable; institution did not exist or did not exist as a separate entity. NA = not available; institution was not surveyed separately.

[a] Johns Hopkins University includes Applied Physics Laboratory, with $1,403,733 in total R&D expenditures in FY 2016.

Note(s)

Before FY 2010, some institution totals for all R&D expenditures may be lower-bound estimates because the National Science Foundation (NSF) did not attempt to estimate for nonresponse on non-S&E R&D expenditures before FY 2010. Institutions ranked are geographically separate campuses headed by a campus-level president or chancellor. Some campuses are part of large multicampus universities; some are part of state university systems.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey (HERD).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-7

Expenditures for academic R&D passed through to and received by subrecipients: FYs 2012–16

(Millions of current dollars)

Source of funds	Fiscal year	All R&D expenditures	Expenditures passed through			Expenditures received		
			All passed through	To educational subrecipients	To other subrecipients	All received	From higher education pass-through entities	From other pass-through entities
All R&D	2012	65,729	5,531	3,073	2,458	6,505	2,928	3,577
	Public	44,163	3,502	1,950	1,553	4,530	1,878	2,652
	Private	21,566	2,029	1,123	906	1,976	1,050	926
	2013	67,013	5,689	3,138	2,551	6,521	3,020	3,501
	Public	44,850	3,608	1,985	1,623	4,508	1,928	2,581
	Private	22,163	2,081	1,154	927	2,013	1,092	921
	2014	67,197	5,706	3,163	2,543	6,540	2,964	3,576
	Public	44,675	3,558	2,015	1,544	4,530	1,905	2,626
	Private	22,521	2,147	1,148	1,000	2,009	1,059	950
	2015	68,567	5,638	3,104	2,534	6,651	3,031	3,619
	Public	45,429	3,542	2,002	1,540	4,592	1,934	2,657
	Private	23,138	2,096	1,102	994	2,059	1,097	962
	2016	71,833	5,734	3,150	2,584	6,925	3,107	3,818
	Public	47,148	3,556	2,019	1,537	4,735	1,976	2,760
	Private	24,685	2,178	1,130	1,047	2,190	1,131	1,059

Source of funds	Fiscal year	All R&D expenditures	Expenditures passed through			Expenditures received		
			All passed through	To educational subrecipients	To other subrecipients	All received	From higher education pass-through entities	From other pass-through entities
Federally financed R&D	2012	40,142	4,819	2,752	2,067	5,726	2,693	3,033
	Public	25,110	3,068	1,727	1,341	3,947	1,719	2,229
	Private	15,032	1,751	1,024	727	1,778	975	804
	2013	39,446	4,968	2,834	2,134	5,721	2,784	2,937
	Public	24,689	3,172	1,778	1,394	3,923	1,781	2,142
	Private	14,757	1,796	1,056	740	1,798	1,003	795
	2014	37,960	4,891	2,829	2,062	5,566	2,718	2,848
	Public	23,496	3,079	1,780	1,299	3,786	1,751	2,034
	Private	14,464	1,811	1,048	763	1,780	966	814
	2015	37,849	4,805	2,759	2,046	5,595	2,760	2,835
	Public	23,389	3,040	1,753	1,286	3,788	1,768	2,020
	Private	14,459	1,765	1,006	759	1,807	991	815
	2016	38,794	4,871	2,796	2,075	5,646	2,812	2,835
	Public	23,948	3,045	1,774	1,271	3,813	1,786	2,027
	Private	14,846	1,826	1,022	804	1,833	1,026	807

Note(s)

Detail may not add to total because of rounding and because some institutions could not break out totals by type of entity.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey (HERD).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-8

Research space at academic institutions, by S&E field: FYs 2007–15

(Millions of net assignable square feet and percent change)

Field	2007	2009	2011	2013	2015
Millions of net assignable square feet					
All fields	187.9	196.1	202.2	211.8	214.7
Agricultural sciences	27.9	29.5	27.6	30.5	28.1
Biological and biomedical sciences	44.8	50.3	53.7	57.2	55.9
Computer and information sciences	4.8	5.2	5.0	4.3	4.6
Engineering	28.4	30.2	31.7	33.5	34.3
Geosciences, atmospheric sciences, and ocean sciences	8.4	8.0	7.8	7.8	8.1
Health sciences	37.0	36.3	36.7	38.0	39.2
Mathematics and statistics	1.6	1.5	1.5	1.7	1.8
Natural resources and conservation	na	na	na	na	3.5
Physical sciences	20.3	20.5	21.8	22.9	22.7
Psychology	4.9	5.2	5.5	5.5	5.5
Social sciences	6.0	5.5	5.7	5.7	6.0
Other sciences	3.7	3.9	5.2	4.8	4.9
Research animal space[a]	17.8	18.1	18.4	18.9	19.4
Change over previous period (%)					

Field	2007	2009	2011	2013	2015
All fields	1.5	4.4	3.1	4.7	1.4
Agricultural sciences	na	5.7	-6.4	10.5	na
Biological and biomedical sciences	na	12.3	6.8	6.5	-2.3
Computer and information sciences	na	8.3	-3.8	-14.0	7.0
Engineering	na	6.3	5.0	5.7	2.4
Geosciences, atmospheric sciences, and ocean sciences	na	-4.8	-2.5	0.0	3.8
Health sciences	na	-1.9	1.1	3.5	3.2
Mathematics and statistics	na	-6.2	0.0	13.3	5.9
Natural resources and conservation	na	na	na	na	na
Physical sciences	na	-3.3	1.0	6.3	-0.9
Psychology	na	6.1	5.8	0.0	0.0
Social sciences	na	-8.3	3.6	0.0	5.3
Other sciences	na	5.4	33.3	-7.7	2.1
Research animal space[a]	7.9	1.7	1.7	2.7	2.6
Share of total square feet (%)					
All fields	100.0	100.0	100.0	100.0	100.0
Agricultural sciences	14.8	15.0	13.6	14.4	13.1
Biological and biomedical sciences	23.8	25.7	26.6	27.0	26.0
Computer and information sciences	2.6	2.7	2.5	2.0	2.1

Field	2007	2009	2011	2013	2015
Engineering	15.1	15.4	15.7	15.8	16.0
Geosciences, atmospheric sciences, and ocean sciences	4.5	4.1	3.9	3.7	3.8
Health sciences	19.7	18.5	18.2	17.9	18.3
Mathematics and statistics	0.9	0.8	0.7	0.8	0.8
Natural resources and conservation	na	na	na	na	1.6
Physical sciences	10.8	10.5	10.8	10.8	10.6
Psychology	2.6	2.7	2.7	2.6	2.6
Social sciences	3.2	2.8	2.8	2.7	2.8
Other sciences	2.0	2.0	2.6	2.3	2.3
Research animal space[a]	na	na	na	na	na

na = not applicable; see notes.

[a] Research animal space is listed separately and is included in individual field totals.

Note(s)

S&E fields and their disciplines were revised in FY 2015. Specifically, "Agricultural sciences and natural resources sciences" has been split into "Agricultural sciences" and "Natural resources and conservation." Physical sciences and its subfields "Earth, atmospheric, and ocean sciences" and "Astronomy, chemistry, and physics" are now reported under "Geosciences, atmospheric sciences, and ocean sciences" and "Physical sciences," respectively. Data were not collected separately for "Natural resources and conservation" before the FY 2015 survey and are included in the "Agricultural sciences" field for earlier cycles. Detail may not add to total because of rounding.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, Survey of Science and Engineering Research Facilities.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-9

Source of funds for new construction of S&E research space at academic institutions, by year of project start and type of institution: FYs 2002–15

(Millions of current dollars)

Fiscal year of project start and type of institution	All sources	Government		Institutional funds and other sources[a]
		Federal	State and local	
2002–03	7,388.7	351.3	2,364.5	4,672.9
Doctorate granting	7,185.2	318.5	2,301.4	4,565.3
Public	5,213.8	278.5	2,183.6	2,751.7
Private	1,971.5	40.0	117.9	1,813.6
Nondoctorate granting	203.5	32.8	63.1	107.6
2004–05	6,030.3	450.2	1,341.6	4,238.5
Doctorate granting	5,767.3	417.1	1,204.8	4,145.5
Public	4,144.2	320.8	1,143.2	2,680.2
Private	1,623.1	96.3	61.6	1,465.2
Nondoctorate granting	263.0	33.1	136.9	93.1
2006–07	5,923.5	360.9	1,880.7	3,681.8
Doctorate granting	5,681.3	357.6	1,764.6	3,559.1
Public	3,693.8	139.4	1,619.5	1,934.8
Private	1,987.6	218.2	145.1	1,624.3
Nondoctorate granting	242.2	3.3	116.1	122.7

Fiscal year of project start and type of institution	All sources	Government		Institutional funds and other sources[a]
		Federal	State and local	
2008–09	7,336.0	212.0	2,679.8	4,444.1
Doctorate granting	7,012.4	201.8	2,498.5	4,312.0
Public	5,013.2	157.6	2,363.7	2,491.8
Private	1,999.2	44.2	134.8	1,820.2
Nondoctorate granting	323.6	10.2	181.3	132.1
2010–11	6,396.2	486.6	1,941.2	3,968.4
Doctorate granting	6,227.7	479.5	1,860.4	3,887.9
Public	5,495.9	395.1	1,763.3	3,337.5
Private	731.8	84.4	97.1	550.3
Nondoctorate granting	168.5	7.1	80.9	80.5
2012–13	5,432.5	313.5	1,437.8	3,681.2
Doctorate granting	5,211.1	306.8	1,328.7	3,575.6
Public	3,357.3	235.8	1,256.8	1,864.7
Private	1,853.8	71.0	72.0	1,710.8
Nondoctorate granting	221.4	6.7	109.1	105.6
2014–15	5,724.2	905.9	1,171.8	3,646.5
Doctorate granting	5,558.8	900.2	1,093.4	3,565.3
Public	3,591.7	736.6	1,059.3	1,795.8

Fiscal year of project start and type of institution	All sources	Government		Institutional funds and other sources[a]
		Federal	State and local	
Private	1,967.2	163.6	34.1	1,769.5
Nondoctorate granting	165.4	5.7	78.4	81.2

[a] Includes an institution's operating funds, endowments, private donations, tax-exempt bonds and other debt financing, and indirect costs recovered from federal and nonfederal sources.

Note(s)

Detail may not add to total because of rounding. Only construction projects costing more than $250,000 for a single field were reported for FYs 2002–15.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, Survey of Science and Engineering Research Facilities.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-10

Costs for repair and renovation of research space at academic institutions, by S&E field and time of repair and renovation: FYs 2014–17

(Millions of dollars)

Field	Started in FY 2014 or FY 2015	Planned to start in FY 2016 or FY 2017	Deferred projects	
			Included in institutional plan	Not included in institutional plan
All research space	4,133.4	3,902.5	4,850.1	3,966.5
Agricultural sciences	55.0	103.9	399.5	249.6
Biological and biomedical sciences	1,005.2	902.5	1,183.1	893.3
Computer and information sciences	42.5	41.5	79.1	92.2
Engineering	707.3	736.9	559.5	664.8
Geosciences, atmospheric sciences, and ocean sciences	150.4	108.6	249.2	181.0
Health sciences	1,023.9	884.7	982.9	781.1
Mathematics and statistics	52.5	22.5	58.1	62.5
Natural resources and conservation	43.0	20.5	61.2	13.1
Physical sciences	786.2	662.1	697.3	547.6
Psychology	113.1	99.6	246.0	147.8
Social sciences	134.8	187.2	262.5	269.6
Other sciences	19.4	132.4	71.7	63.6

Note(s)

Detail may not add to total because of rounding. Deferred projects are those that (1) are not funded and (2) are not scheduled for FY 2016 or FY 2017. Projects were excluded if they were for developing new programs or expanding current programs. S&E fields and their disciplines were revised in FY 2015. Specifically, "Agricultural sciences and natural resources sciences" has been split into "Agricultural sciences" and "National resources and conservation." Physical sciences and its subfields "Earth, atmospheric, and ocean sciences" and "Astronomy, chemistry, and physics" are now reported under "Geosciences, atmospheric sciences, and ocean sciences" and "Physical sciences," respectively.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, Survey of Science and Engineering Research Facilities.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-11

Source of funds for repair and renovation of S&E research space at academic institutions, by year of project start and type of institution: FYs 2002–15

(Millions of current dollars)

Year of project start and type of institution	All sources	Government		Institutional funds and other sources[a]
		Federal	State and local	
FYs 2002–03	2,211.8	136.9	497.8	1,577.2
Doctorate granting	2,087.3	111.9	463.9	1,511.4
Public	1,270.6	89.0	457.5	724.1
Private	816.7	22.9	6.4	787.4
Nondoctorate granting	124.6	25.0	33.9	65.7
FYs 2004–05	2,445.9	121.5	544.9	1,779.5
Doctorate granting	2,385.1	116.5	526.8	1,741.8
Public	1,335.2	76.0	502.5	756.7
Private	1,049.9	40.5	24.3	985.1
Nondoctorate granting	60.8	5.0	18.1	37.7
FYs 2006–07	3,361.6	133.8	657.0	2,570.8
Doctorate granting	3,276.2	126.8	609.4	2,540.0
Public	1,857.5	77.1	536.8	1,243.6
Private	1,418.7	49.7	72.6	1,296.4
Nondoctorate granting	85.4	6.9	47.7	30.8

Year of project start and type of institution	All sources	Government		Institutional funds and other sources[a]
		Federal	State and local	
FYs 2008–09	3,015.8	74.2	746.5	2,195.1
Doctorate granting	2,920.8	68.8	717.4	2,134.6
Public	1,587.1	57.3	678.7	851.2
Private	1,333.7	11.4	38.8	1,283.5
Nondoctorate granting	95.0	5.4	29.0	60.5
FYs 2010–11	3,508.9	270.9	854.5	2,383.5
Doctorate granting	3,377.8	236.4	797.1	2,344.3
Public	1,931.7	186.4	663.0	1,082.3
Private	1,446.1	50.0	134.1	1,262.0
Nondoctorate granting	131.1	34.4	57.4	39.2
FYs 2012–13	3,746.7	264.8	566.9	2,915.0
Doctorate granting	3,559.5	254.4	461.5	2,843.6
Public	1,838.5	129.4	419.3	1,289.7
Private	1,721.0	125.0	42.2	1,553.9
Nondoctorate granting	187.1	10.4	105.4	71.4
FYs 2014–15	4,133.4	61.7	502.8	3,569.0
Doctorate granting	4,043.9	58.0	458.5	3,527.4
Public	2,178.6	53.3	442.8	1,682.5

Year of project start and type of institution	All sources	Government		Institutional funds and other sources[a]
		Federal	State and local	
Private	1,865.3	4.7	15.7	1,844.9
Nondoctorate granting	89.5	3.7	44.3	41.5

[a] Includes an institution's operating funds, endowments, private donations, tax-exempt bonds and other debt financing, and indirect costs recovered from federal and nonfederal sources.

Note(s)

Detail may not add to total because of rounding. Only repair and renovation projects costing over $250,000 for a single field were reported for FYs 2002–15.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, Survey of Science and Engineering Research Facilities.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-12

Current fund expenditures for research equipment at academic institutions, by S&E field: FYs 2002–16

(Millions of dollars, millions of constant 2009 dollars, and percent distribution)

Field	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Current $millions															
All fields	1,703	1,820	1,895	1,880	1,826	1,824	1,874	1,947	2,114	2,199	1,982	2,210	1,991	2,070	2,131
Science	1,340	1,435	1,501	1,441	1,383	1,395	1,439	1,472	1,603	1,627	1,430	1,547	1,337	1,505	1,520
Computer and information sciences	101	99	105	72	70	75	80	90	65	91	73	273	70	88	97
Geosciences, atmospheric sciences, and ocean sciences	132	121	126	123	123	136	144	126	151	115	121	116	116	126	111
Atmospheric science and meteorology	15	18	20	26	34	31	27	17	24	21	20	18	22	20	21
Geological and earth sciences	33	42	43	44	35	36	39	47	52	47	53	47	52	50	42
Ocean sciences and marine sciences	74	50	41	40	44	62	70	52	58	32	29	39	32	46	39
Geosciences, atmospheric sciences, and ocean sciences nec	11	11	22	13	10	7	9	11	17	15	19	12	10	11	9
Life sciences	737	819	836	826	752	737	796	786	908	928	817	747	735	819	844
Agricultural sciences	72	78	79	72	75	79	103	81	81	74	85	79	84	90	89
Biological and biomedical sciences	297	337	348	326	302	272	303	299	396	393	334	313	310	333	365
Health sciences	339	371	376	378	337	340	355	367	390	413	358	317	297	325	338
Natural resources and conservation	na	na	na	na	na	na	na	na	na	na	na	na	na	na	11
Life sciences nec	29	33	34	50	37	46	35	40	42	47	39	39	45	71	42
Mathematics and statistics	10	8	8	9	9	9	9	9	8	7	7	7	6	6	9

Field	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Physical sciences	276	298	339	325	329	310	302	333	364	380	331	329	344	398	389
Astronomy and astrophysics	19	19	25	23	20	29	27	29	24	26	28	20	26	54	36
Chemistry	123	120	118	113	122	113	114	136	162	156	133	118	119	120	125
Materials science	na	na	na	na	na	na	na	na	na	na	na	na	na	na	10
Physics	122	139	160	159	153	143	136	149	154	180	156	166	185	206	203
Physical sciences nec	12	20	36	30	34	25	25	20	24	18	14	25	14	17	16
Psychology	19	23	18	15	18	14	15	24	17	17	21	14	16	14	15
Social sciences	18	19	16	19	14	20	22	26	15	16	11	12	11	10	12
Anthropology	na	na	na	na	na	na	na	na	na	na	na	na	na	na	1
Economics	2	3	2	2	2	2	2	1	1	2	1	3	2	2	4
Political science and government	2	2	2	2	1	1	1	2	1	1	1	1	0	1	1
Sociology, demography, and population studies	4	3	2	3	2	3	2	5	2	2	1	2	2	3	2
Social sciences nec	9	10	9	12	8	15	16	18	10	10	7	7	7	4	4
Sciences nec	47	49	54	53	67	95	71	76	76	74	50	49	39	45	42
Engineering	363	385	394	439	443	428	435	475	511	572	552	663	654	564	611
Aerospace, aeronautical, and astronautical	24	22	21	20	22	22	34	27	35	34	33	35	29	35	44
Bioengineering and biomedical	18	20	19	29	25	27	28	32	40	53	45	47	37	44	53
Chemical	30	32	55	37	39	37	39	48	53	56	54	59	47	46	46
Civil	43	31	34	29	27	29	32	35	38	51	42	61	33	31	31

Field	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Electrical, electronic, and communications	79	86	81	91	94	92	88	98	114	139	136	161	113	120	113
Industrial and manufacturing	na	na	na	na	na	na	na	na	na	na	na	na	na	na	7
Mechanical	54	55	55	76	84	75	76	77	100	85	84	110	75	77	72
Metallurgical and materials	41	61	38	51	54	54	52	58	51	52	60	63	242	116	50
Engineering nec	74	78	91	106	98	92	85	101	81	101	98	128	78	96	195
2009 constant $millions															
All fields	2,003	2,099	2,126	2,044	1,926	1,874	1,889	1,947	2,088	2,128	1,884	2,067	1,829	1,882	1,912
Science	1,576	1,655	1,684	1,566	1,458	1,434	1,450	1,472	1,584	1,575	1,359	1,447	1,228	1,369	1,364
Computer and information sciences	118	114	118	78	74	77	81	90	64	88	69	255	65	80	87
Geosciences, atmospheric sciences, and ocean sciences	155	140	141	134	130	139	146	126	150	111	115	109	106	115	100
Atmospheric science and meteorology	17	20	22	28	36	32	27	17	24	20	19	17	21	18	19
Geological and earth sciences	38	48	48	48	37	37	39	47	52	45	51	44	48	45	38
Ocean sciences and marine sciences	87	58	46	43	47	64	70	52	57	31	27	36	29	42	35
Geosciences, atmospheric sciences, and ocean sciences nec	13	13	24	14	10	7	9	11	17	15	18	12	9	10	8
Life sciences	867	944	939	897	793	757	802	786	897	898	776	699	676	744	758
Agricultural sciences	85	90	88	78	80	81	103	81	80	72	81	74	77	82	80
Biological and biomedical sciences	349	389	390	355	318	280	306	299	391	381	318	292	285	302	328
Health sciences	399	427	422	411	356	349	358	367	385	400	340	296	273	295	303
Natural resources and conservation	na	na	na	na	na	na	na	na	na	na	na	na	na	na	10

Field	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Life sciences nec	35	38	38	54	39	47	35	40	42	46	37	36	41	65	38
Mathematics and statistics	12	9	9	10	9	9	9	9	8	7	6	6	6	5	8
Physical sciences	324	344	380	353	348	319	304	333	360	368	315	308	316	361	349
Astronomy and astrophysics	23	22	28	25	21	30	27	29	24	25	27	18	24	49	32
Chemistry	144	138	132	123	128	116	115	136	160	151	127	110	109	109	112
Materials science	na	na	na	na	na	na	na	na	na	na	na	na	na	na	9
Physics	143	160	179	173	162	147	137	149	152	174	148	156	170	188	182
Physical sciences nec	15	23	41	33	36	26	25	20	24	18	13	24	13	15	14
Psychology	22	26	20	16	19	15	15	24	16	16	20	13	14	13	13
Social sciences	21	21	17	20	14	20	22	26	14	15	10	12	10	9	11
Anthropology	na	na	na	na	na	na	na	na	na	na	na	na	na	na	1
Economics	3	3	2	2	2	2	2	1	1	2	1	3	2	2	3
Political science and government	2	3	2	2	1	1	1	2	1	1	1	1	0	1	1
Sociology, demography, and population studies	4	4	3	3	2	3	2	5	2	2	1	2	2	3	2
Social sciences nec	11	12	11	13	9	15	16	18	10	10	7	6	6	4	4
Sciences nec	56	57	60	58	71	97	71	76	75	71	47	45	36	41	38
Engineering	427	444	442	477	468	440	439	475	505	553	525	620	601	513	548
Aerospace, aeronautical, and astronautical	28	26	24	22	23	23	35	27	35	33	32	33	27	32	39
Bioengineering and biomedical	21	23	21	32	26	28	29	32	39	51	43	44	34	40	47

Field	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Chemical	35	37	61	40	41	38	39	48	52	55	51	55	44	42	42
Civil	50	35	38	32	29	29	32	35	37	49	40	57	30	28	28
Electrical, electronic, and communications	93	99	91	99	99	95	89	98	113	135	130	150	104	109	101
Industrial and manufacturing	na	na	na	na	na	na	na	na	na	na	na	na	na	na	6
Mechanical	63	64	62	83	88	77	76	77	98	82	79	103	69	70	65
Metallurgical and materials	48	70	43	55	57	56	52	58	50	51	57	59	222	105	45
Engineering nec	88	89	102	115	104	94	86	101	80	98	93	120	71	87	175
Percent distribution															
All fields	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Science	78.7	78.9	79.2	76.6	75.7	76.5	76.8	75.6	75.8	74.0	72.1	70.0	67.1	72.7	71.3
Computer and information sciences	5.9	5.4	5.5	3.8	3.9	4.1	4.3	4.6	3.1	4.1	3.7	12.4	3.5	4.2	4.5
Geosciences, atmospheric sciences, and ocean sciences	7.7	6.7	6.6	6.5	6.8	7.4	7.7	6.5	7.2	5.2	6.1	5.3	5.8	6.1	5.2
Atmospheric science and meteorology	0.9	1.0	1.1	1.4	1.9	1.7	1.4	0.9	1.1	0.9	1.0	0.8	1.1	1.0	1.0
Geological and earth sciences	1.9	2.3	2.3	2.4	1.9	2.0	2.1	2.4	2.5	2.1	2.7	2.1	2.6	2.4	2.0
Ocean sciences and marine sciences	4.3	2.8	2.2	2.1	2.4	3.4	3.7	2.7	2.7	1.5	1.5	1.8	1.6	2.2	1.8
Geosciences, atmospheric sciences, and ocean sciences nec	0.6	0.6	1.1	0.7	0.5	0.4	0.5	0.6	0.8	0.7	1.0	0.6	0.5	0.5	0.4
Life sciences	43.3	45.0	44.1	43.9	41.2	40.4	42.5	40.4	43.0	42.2	41.2	33.8	36.9	39.6	39.6
Agricultural sciences	4.2	4.3	4.2	3.8	4.1	4.3	5.5	4.2	3.8	3.4	4.3	3.6	4.2	4.4	4.2
Biological and biomedical sciences	17.4	18.5	18.4	17.4	16.5	14.9	16.2	15.4	18.7	17.9	16.9	14.1	15.6	16.1	17.1

Field	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Health sciences	19.9	20.4	19.8	20.1	18.5	18.6	19.0	18.8	18.4	18.8	18.1	14.3	14.9	15.7	15.8
Natural resources and conservation	na	na	na	na	na	na	na	na	na	na	na	na	na	na	0.5
Life sciences nec	1.7	1.8	1.8	2.6	2.0	2.5	1.8	2.0	2.0	2.1	2.0	1.7	2.3	3.4	2.0
Mathematics and statistics	0.6	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.4
Physical sciences	16.2	16.4	17.9	17.3	18.0	17.0	16.1	17.1	17.2	17.3	16.7	14.9	17.3	19.2	18.3
Astronomy and astrophysics	1.1	1.0	1.3	1.2	1.1	1.6	1.4	1.5	1.1	1.2	1.4	0.9	1.3	2.6	1.7
Chemistry	7.2	6.6	6.2	6.0	6.7	6.2	6.1	7.0	7.7	7.1	6.7	5.3	6.0	5.8	5.8
Materials science	na	na	na	na	na	na	na	na	na	na	na	na	na	na	0.5
Physics	7.1	7.6	8.4	8.5	8.4	7.8	7.3	7.6	7.3	8.2	7.9	7.5	9.3	10.0	9.5
Physical sciences nec	0.7	1.1	1.9	1.6	1.9	1.4	1.3	1.0	1.1	0.8	0.7	1.1	0.7	0.8	0.7
Psychology	1.1	1.2	0.9	0.8	1.0	0.8	0.8	1.3	0.8	0.8	1.0	0.6	0.8	0.7	0.7
Social sciences	1.0	1.0	0.8	1.0	0.7	1.1	1.2	1.3	0.7	0.7	0.5	0.6	0.5	0.5	0.6
Anthropology	na	na	na	na	na	na	na	na	na	na	na	na	na	na	0.1
Economics	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2
Political science and government	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Sociology, demography, and population studies	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Social sciences nec	0.6	0.6	0.5	0.6	0.5	0.8	0.9	0.9	0.5	0.5	0.4	0.3	0.3	0.2	0.2
Sciences nec	2.8	2.7	2.8	2.8	3.7	5.2	3.8	3.9	3.6	3.3	2.5	2.2	1.9	2.2	2.0
Engineering	21.3	21.1	20.8	23.4	24.3	23.5	23.2	24.4	24.2	26.0	27.9	30.0	32.9	27.3	28.7

Field	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Aerospace, aeronautical, and astronautical	1.4	1.2	1.1	1.1	1.2	1.2	1.8	1.4	1.7	1.6	1.7	1.6	1.5	1.7	2.0
Bioengineering and biomedical	1.1	1.1	1.0	1.6	1.4	1.5	1.5	1.6	1.9	2.4	2.3	2.1	1.9	2.1	2.5
Chemical	1.8	1.8	2.9	2.0	2.1	2.0	2.1	2.5	2.5	2.6	2.7	2.7	2.4	2.2	2.2
Civil	2.5	1.7	1.8	1.5	1.5	1.6	1.7	1.8	1.8	2.3	2.1	2.8	1.6	1.5	1.5
Electrical, electronic, and communications	4.7	4.7	4.3	4.8	5.2	5.1	4.7	5.0	5.4	6.3	6.9	7.3	5.7	5.8	5.3
Industrial and manufacturing	na	na	na	na	na	na	na	na	na	na	na	na	na	na	0.3
Mechanical	3.2	3.0	2.9	4.1	4.6	4.1	4.0	4.0	4.7	3.9	4.2	5.0	3.8	3.7	3.4
Metallurgical and materials	2.4	3.4	2.0	2.7	3.0	3.0	2.8	3.0	2.4	2.4	3.0	2.9	12.2	5.6	2.4
Engineering nec	4.4	4.3	4.8	5.6	5.4	5.0	4.6	5.2	3.8	4.6	4.9	5.8	3.9	4.6	9.2

na = not applicable; separate data for natural resources and conservation, materials science, anthropology, and industrial and manufacturing engineering were not collected prior to FY 2016.

nec = not elsewhere classified.

Note(s)

Gross domestic product deflators come from the U.S. Bureau of Economic Analysis and are available at https://www.bea.gov/national, accessed February 2016. Because of rising capitalization thresholds, the dollar threshold for inclusion in the equipment category has changed over time. Generally, university equipment that costs less than $5,000 would be classified under the cost category of "supplies." Detail may not add to total because of rounding.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, Survey of Research and Development Expenditures at Universities and Colleges, and Higher Education Research and Development Survey (HERD).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-13

Federal share of current funding for research equipment at academic institutions, by S&E field: FYs 2002–16

(Percent)

Field	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
All S&E fields	59.0	63.3	61.9	62.6	59.6	58.0	56.4	54.4	63.5	63.4	56.8	55.5	45.0	47.2	44.9
Science	59.1	64.0	63.4	64.1	60.2	58.1	56.3	54.1	65.2	65.9	58.3	59.7	49.2	48.6	46.3
Computer and information sciences	73.8	83.3	80.5	79.3	72.5	70.1	78.2	76.3	71.0	73.4	67.6	86.4	68.8	75.1	54.1
Geosciences, atmospheric sciences, and ocean sciences	61.5	73.1	74.3	77.0	73.3	74.3	69.8	65.3	76.7	69.9	70.1	66.2	65.2	65.6	61.7
Atmospheric science and meteorology	75.9	80.5	80.1	88.3	87.7	87.7	84.6	75.0	82.7	79.0	83.6	83.9	79.6	80.9	85.2
Geological and earth sciences	58.2	61.8	67.1	67.6	64.1	64.4	53.6	61.2	68.3	66.4	68.2	63.3	60.2	56.4	49.0
Ocean sciences and marine sciences	61.5	81.2	79.5	79.0	68.4	74.8	74.7	66.6	80.2	66.2	60.4	63.3	66.2	74.0	67.1
Geosciences, atmospheric sciences, and ocean sciences nec	51.5	67.2	73.2	80.4	78.5	61.6	57.4	61.4	82.3	76.4	75.5	60.3	55.2	44.9	43.5
Life sciences	55.5	59.9	60.7	61.7	56.5	53.1	48.6	47.7	62.7	63.2	50.3	46.6	37.4	36.3	36.2
Agricultural sciences	29.8	40.4	39.5	42.5	36.1	30.1	27.4	27.8	30.8	38.5	34.0	31.1	24.0	25.9	23.3
Biological and biomedical sciences	59.5	63.8	63.2	62.5	59.5	56.0	53.7	56.4	70.9	67.8	54.1	52.6	43.0	40.5	41.1
Health sciences	58.3	61.2	62.7	66.4	58.2	53.7	49.6	44.9	61.7	62.9	50.0	44.7	36.9	38.1	35.6
Natural resources and conservation	na	na	na	na	na	na	na	na	na	na	na	na	na	na	35.7
Life sciences nec	45.5	51.3	60.9	47.9	58.1	71.0	56.2	48.5	56.4	66.2	57.2	45.8	28.0	21.7	25.3
Mathematics and statistics	66.6	71.4	72.9	75.4	69.2	74.8	68.7	63.4	66.5	64.7	68.7	68.7	51.1	55.3	50.7
Physical sciences	70.1	73.0	68.1	69.5	67.1	69.4	70.0	63.9	75.6	77.2	75.9	70.3	67.6	66.1	64.7

Field	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Astronomy and astrophysics	80.6	74.4	79.5	77.3	82.0	83.5	77.6	69.7	78.5	78.3	83.4	76.4	59.3	45.2	55.6
Chemistry	61.8	64.8	66.0	70.9	65.0	64.5	62.5	60.2	69.5	72.7	68.5	58.8	51.3	56.0	54.7
Materials science	na	na	na	na	na	na	na	na	na	na	na	na	na	na	45.2
Physics	76.5	78.7	71.4	73.1	73.0	76.2	78.8	66.1	81.6	81.6	80.9	77.7	79.8	78.0	73.6
Physical sciences nec	72.8	81.3	52.6	39.2	40.1	37.2	47.6	64.4	74.4	69.7	75.8	70.5	60.2	60.9	62.3
Psychology	70.7	74.1	71.7	63.1	68.5	61.1	58.6	60.4	70.6	73.5	69.1	38.7	46.8	57.1	51.3
Social sciences	35.3	42.9	41.1	35.3	34.1	54.5	57.9	66.9	45.8	48.9	46.1	41.5	29.6	25.4	23.3
Anthropology	na	na	na	na	na	na	na	na	na	na	na	na	na	na	43.9
Economics	36.7	56.2	34.5	39.7	29.7	39.9	37.7	22.5	44.9	31.7	49.3	71.4	28.7	7.7	8.4
Political science and government	21.4	51.0	71.8	56.9	54.2	49.2	30.9	41.3	50.9	41.2	46.5	40.7	37.0	24.1	13.0
Sociology, demography, and population studies	43.0	49.0	48.2	37.7	29.1	52.7	58.1	75.2	56.1	56.6	42.6	28.6	25.7	37.9	27.9
Social sciences nec	34.9	35.3	34.7	31.0	34.0	56.7	62.8	70.2	43.6	52.2	46.3	34.0	30.8	26.5	29.9
Sciences nec	18.1	19.5	20.1	25.6	32.5	25.9	30.3	24.6	20.2	28.3	27.2	32.2	33.3	18.9	25.8
Engineering	58.5	60.4	56.4	57.6	57.7	57.5	56.5	55.2	58.0	56.1	52.8	45.7	36.5	43.7	41.3
Aerospace, aeronautical, and astronautical	79.0	83.5	71.9	67.5	62.7	65.9	72.1	62.3	53.2	56.6	56.3	40.3	40.4	48.1	60.2
Bioengineering and biomedical	52.7	57.8	53.0	43.5	46.1	50.2	53.1	53.7	61.0	53.7	43.5	41.9	50.2	43.9	41.8
Chemical	55.2	55.7	32.4	53.9	57.7	50.9	46.6	44.6	50.0	55.0	45.8	31.1	41.3	45.8	44.7
Civil	59.1	60.7	60.9	58.0	46.1	47.7	49.5	40.8	43.2	39.0	37.1	29.4	36.1	41.3	35.4
Electrical, electronic, and communications	59.9	67.7	69.1	66.7	66.5	66.4	63.4	59.3	67.1	63.8	64.5	57.9	61.6	62.5	59.2

Field	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Industrial and manufacturing	na	na	na	na	na	na	na	na	na	na	na	na	na	na	69.2
Mechanical	63.5	69.1	65.9	69.7	77.8	72.3	61.9	64.8	55.9	61.5	58.1	53.5	51.6	53.5	45.2
Metallurgical and materials	53.2	45.8	65.1	66.1	58.3	65.2	61.7	54.8	58.8	55.7	52.1	45.1	13.8	20.1	49.0
Engineering nec	51.9	53.8	45.2	40.3	36.9	37.7	43.5	52.8	60.2	51.3	46.4	41.6	45.5	38.8	22.2

na = not applicable; separate data for natural resources and conservation, materials science, anthropology, and industrial and manufacturing engineering were not collected prior to FY 2016.

nec = not elsewhere classified.

Note(s)

Because of rising capitalization thresholds, the dollar threshold for inclusion in the equipment category has changed over time. Generally, university equipment that costs less than $5,000 would be classified under the cost category of "supplies."

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, Survey of Research and Development Expenditures at Universities and Colleges, and Higher Education Research and Development Survey (HERD).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-14

S&E doctorate holders employed in academia, by type of position and degree field: 1973–2015

(Thousands)

Position and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
All positions																			
All fields	118.0	145.4	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5	259.5	272.8	276.5	294.8	309.0	329.3
Physical sciences	25.5	29.2	30.0	29.9	32.2	32.8	33.6	33.7	35.0	35.7	37.5	38.7	38.6	39.9	39.6	39.9	43.7	44.9	48.4
Mathematics and statistics	9.7	11.7	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9	16.7	17.4	18.0	18.7	19.0	20.9
Computer and information sciences	NA	NA	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8	5.2	5.8	6.9	7.3	8.4	9.1
Life sciences	34.9	42.6	51.3	54.9	58.7	61.3	64.8	66.9	68.2	71.6	77.3	81.9	84.3	90.0	95.5	94.2	102.0	109.8	112.7
Psychology	12.2	16.2	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4	31.8	35.0	34.5	35.4	36.3	38.7
Social sciences	23.4	31.1	36.9	38.9	42.0	42.2	44.5	44.8	44.4	42.5	44.9	46.2	46.9	48.1	50.0	52.5	54.9	55.9	59.7
Engineering	12.4	14.8	16.1	18.1	19.9	21.2	22.9	22.8	23.1	23.8	26.6	25.5	26.6	27.8	29.6	30.4	32.8	34.7	39.7
All full-time faculty																			
All fields	103.3	125.6	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	174.1	179.8	182.4	190.6	193.1	199.1	206.8	214.4	227.7
Physical sciences	20.8	23.6	24.3	24.2	25.4	26.4	26.2	26.2	25.8	25.6	25.6	26.7	26.4	27.6	26.9	27.6	29.3	29.5	31.2
Mathematics and statistics	9.3	10.9	11.7	12.3	12.7	12.9	13.5	14.2	14.7	13.0	13.4	12.9	12.3	14.0	14.0	14.8	15.1	15.5	16.7
Computer and information sciences	NA	NA	0.3	0.4	0.7	0.9	1.3	1.8	2.3	2.8	2.9	3.2	3.3	4.2	4.9	5.7	5.8	6.4	7.1
Life sciences	29.5	34.9	40.9	43.5	45.6	48.1	49.3	51.1	50.8	52.8	53.5	56.1	58.3	61.7	62.8	63.5	66.7	70.6	70.8
Psychology	10.8	13.9	16.4	17.3	18.5	19.2	20.2	20.7	19.5	20.1	19.6	21.0	21.7	21.4	23.2	23.1	23.3	24.1	25.9

Position and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Social sciences	21.6	28.8	33.7	34.4	36.1	37.7	39.0	39.0	39.2	37.1	37.3	38.7	38.7	39.6	39.2	42.1	43.1	43.5	46.6
Engineering	11.3	13.5	14.7	16.4	17.9	19.3	20.2	20.1	20.1	20.0	21.2	20.9	21.6	21.9	22.1	22.7	23.4	25.0	29.2
Full-time professors																			
All fields	42.6	51.0	64.4	69.9	72.8	79.1	83.1	82.5	80.0	77.7	80.9	83.1	84.8	87.7	85.3	90.5	93.6	95.3	98.9
Physical sciences	9.0	10.8	13.1	13.9	14.6	15.5	15.5	14.8	14.2	13.9	13.8	14.2	14.0	14.3	13.3	14.0	15.0	14.6	15.0
Mathematics and statistics	3.2	3.9	5.0	5.6	6.1	6.5	6.9	6.7	7.1	6.6	6.9	6.6	6.6	7.2	6.9	7.3	7.3	7.3	7.9
Computer and information sciences	NA	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.7	0.8	1.2	1.6	1.9	2.2	2.6	2.6
Life sciences	12.3	13.9	17.0	19.3	19.6	21.7	22.5	22.9	21.2	22.5	22.5	23.3	24.5	25.7	25.6	26.6	28.1	29.5	28.3
Psychology	3.9	4.8	6.5	7.0	7.6	8.3	9.1	9.5	8.7	8.7	9.5	9.4	9.9	9.8	9.8	10.0	9.9	10.4	10.9
Social sciences	9.4	11.3	14.7	15.1	15.9	16.8	18.5	18.6	18.4	16.6	17.1	18.2	18.2	18.6	17.5	19.2	19.6	19.2	20.6
Engineering	4.7	6.4	8.0	9.0	9.2	10.4	10.6	9.9	10.3	9.1	10.7	10.6	10.7	10.9	10.6	11.7	11.5	11.7	13.5
Full-time associate professors																			
All fields	31.4	39.7	42.9	45.7	46.9	48.2	47.9	50.5	48.6	49.6	51.0	53.6	52.2	54.3	54.1	57.0	59.1	62.7	69.3
Physical sciences	6.2	7.2	6.6	6.3	6.3	6.1	5.8	6.3	6.4	6.1	6.5	6.6	6.7	6.9	6.9	7.0	7.4	7.6	8.3
Mathematics and statistics	2.8	3.7	4.0	4.1	4.0	4.1	4.0	5.1	4.4	4.0	3.9	4.1	3.6	4.0	3.8	4.3	4.2	4.4	5.1
Computer and information sciences	NA	0.0	0.0	0.1	0.1	0.3	0.4	0.8	0.7	1.4	1.4	1.4	1.6	1.7	1.6	1.9	2.1	2.3	2.6
Life sciences	8.6	10.7	12.5	13.4	14.1	14.1	14.0	14.6	14.6	14.7	15.8	17.3	16.7	17.7	18.1	18.2	19.1	20.3	21.4
Psychology	3.3	4.3	5.2	5.9	5.9	6.0	5.9	5.9	5.6	5.8	5.8	6.2	6.0	5.9	6.3	7.0	7.0	7.6	8.2
Social sciences	6.5	9.4	10.2	11.2	11.8	12.7	12.6	12.0	11.6	11.5	11.7	11.9	11.4	12.1	11.8	12.8	13.1	13.8	15.3

Position and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Engineering	4.0	4.4	4.4	4.7	4.7	4.9	5.3	5.9	5.3	6.2	5.8	6.0	6.1	5.9	5.6	5.9	6.2	6.8	8.3
Full-time junior faculty[a]																			
All fields	29.3	34.9	34.6	32.8	37.2	37.2	38.7	40.1	43.8	44.0	42.2	43.1	45.4	48.6	53.7	51.6	54.1	56.4	59.5
Physical sciences	5.6	5.7	4.6	4.0	4.6	4.7	4.8	5.0	5.2	5.6	5.3	5.9	5.7	6.4	6.7	6.6	6.9	7.3	7.9
Mathematics and statistics	3.3	3.3	2.6	2.5	2.7	2.4	2.6	2.4	3.2	2.4	2.6	2.2	2.1	2.8	3.3	3.2	3.6	3.8	3.7
Computer and information sciences	NA	NA	0.2	0.3	0.6	0.6	0.9	1.0	1.4	1.2	1.2	1.1	0.9	1.3	1.7	1.9	1.5	1.5	1.9
Life sciences	8.5	10.3	11.3	10.8	11.9	12.3	12.8	13.7	15.0	15.6	15.2	15.5	17.1	18.3	19.1	18.7	19.5	20.8	21.1
Psychology	3.6	4.8	4.8	4.5	5.0	4.9	5.2	5.4	5.2	5.5	4.3	5.4	5.8	5.7	7.1	6.1	6.4	6.1	6.8
Social sciences	5.7	8.2	8.8	8.1	8.4	8.2	7.9	8.4	9.3	9.0	8.5	8.6	9.1	8.9	9.9	10.1	10.4	10.5	10.7
Engineering	2.6	2.7	2.3	2.7	4.0	4.0	4.3	4.3	4.5	4.8	4.7	4.3	4.8	5.1	5.9	5.1	5.7	6.5	7.4
Other full-time positions[b]																			
All fields	7.6	8.8	12.6	13.4	18.1	16.4	19.2	20.2	22.2	23.9	29.1	31.9	34.8	39.9	40.6	43.9	48.2	55.8	62.6
Physical sciences	2.2	2.4	2.9	3.0	3.7	3.4	4.0	4.1	4.8	4.9	6.6	7.3	7.7	8.4	7.2	7.4	7.9	8.8	11.1
Mathematics and statistics	0.2	0.4	0.4	0.3	0.5	0.4	0.5	0.6	0.5	0.6	1.0	0.8	1.1	1.4	1.3	1.7	1.8	2.1	2.5
Computer and information sciences	NA	NA	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.6	0.6	0.9	1.0	1.5	1.4
Life sciences	2.5	2.8	4.0	4.6	6.2	6.0	6.7	7.2	7.7	8.4	9.8	11.2	12.3	14.2	15.5	16.2	18.4	22.2	25.0
Psychology	0.8	1.2	2.2	2.2	2.9	2.8	2.9	2.8	3.9	3.9	4.3	4.6	4.9	6.3	6.5	6.8	7.1	6.9	7.9
Social sciences	1.0	1.2	2.0	2.2	3.2	2.6	3.5	3.5	3.7	3.6	4.0	4.4	4.7	5.0	6.1	6.2	6.9	7.7	8.3
Engineering	0.8	0.8	1.1	1.1	1.5	1.1	1.5	1.8	1.5	2.1	3.2	3.0	3.6	3.9	3.3	4.7	5.1	6.3	6.5

Position and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Postdocs																			
All fields	4.2	7.6	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5	15.7	23.3	17.8	22.8	20.2	19.2
Physical sciences	1.8	2.4	2.1	1.6	2.1	2.3	2.7	2.2	3.5	4.4	3.8	3.4	3.0	2.6	3.9	3.3	4.6	4.0	3.3
Mathematics and statistics	0.0	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.0	0.5	0.5	0.6	0.8	0.5	1.0	0.5	0.7	0.4	0.5
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.3	0.2	0.3
Life sciences	1.9	4.0	5.2	5.1	5.2	5.6	6.8	6.4	8.2	9.2	10.8	11.7	11.0	10.0	12.8	10.3	12.2	11.9	11.7
Psychology	0.2	0.5	0.6	0.6	0.7	0.7	0.8	0.5	0.4	1.1	1.3	1.2	1.2	0.9	1.7	1.0	1.1	1.0	0.8
Social sciences	0.1	0.3	0.3	0.6	0.3	0.1	0.4	0.3	0.2	0.4	0.7	0.5	0.6	0.5	0.9	0.3	0.8	0.4	0.4
Engineering	0.2	0.4	0.2	0.3	0.2	0.5	0.6	0.5	1.0	1.2	1.7	1.1	0.9	1.1	3.0	2.1	3.1	2.4	2.2
Part-time positions[c]																			
All fields	2.9	3.4	4.0	6.0	6.5	5.7	6.2	7.4	5.9	5.5	8.9	8.2	9.0	13.3	15.7	15.6	17.0	18.5	19.8
Physical sciences	0.7	0.7	0.7	1.1	1.1	0.8	0.7	1.2	1.0	0.9	1.2	1.0	1.0	1.1	1.5	1.6	2.0	2.5	2.8
Mathematics and statistics	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.7	0.7	0.6	0.9	1.2	1.0	1.1	1.1	1.2
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.3	0.3	0.3
Life sciences	0.9	1.0	1.2	1.7	1.7	1.6	1.9	2.3	1.6	1.2	2.9	2.6	2.4	4.0	4.4	4.3	4.6	5.2	5.2
Psychology	0.4	0.6	0.8	1.0	1.0	1.0	1.0	1.2	1.2	1.1	1.1	1.3	1.8	3.2	3.6	3.7	3.8	4.2	4.1
Social sciences	0.7	0.8	1.0	1.6	2.2	1.8	1.7	2.0	1.3	1.3	2.6	2.2	2.7	3.1	3.7	4.0	4.0	4.2	4.4
Engineering	0.1	0.1	0.2	0.4	0.3	0.3	0.5	0.5	0.5	0.4	0.3	0.4	0.4	0.8	1.1	0.9	1.2	1.1	1.8

NA = not available.

[a] Full-time junior faculty includes assistant professors and instructors from 1973 to 1995; from 1997 to 2015, full-time junior faculty includes assistant professors.

[b] Other full-time positions include those such as research associates, adjunct positions, lecturers, and administrative positions from 1973 to 1995; from 1997 to 2015, other full-time positions also include instructors.

[c] Part-time positions exclude those employed part time because they are students or retired.

Note(s)

Detail may not add to total because of rounding. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, and university research institutes. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences. Numbers are rounded to the nearest 100.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2017) of the 1973–2015 Survey of Doctorate Recipients (SDR).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-15

S&E doctorate holders employed in academia, by type of position, sex, and degree field: 1973–2015

(Thousands)

Position, sex, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
All positions																			
Both sexes, all fields	118.0	145.5	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5	259.5	272.8	276.5	294.8	309.0	329.3
Physical sciences	25.5	29.2	30.0	29.9	32.2	32.8	33.6	33.7	35.0	35.7	37.5	38.7	38.6	39.9	39.6	39.9	43.7	44.9	48.4
Mathematics and statistics	9.7	11.7	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9	16.7	17.4	18.0	18.7	19.0	20.9
Computer and information sciences	NA	NA	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8	5.2	5.8	6.9	7.3	8.4	9.1
Life sciences	34.9	42.6	51.3	54.9	58.7	61.3	64.8	66.9	68.2	71.6	77.3	81.9	84.3	90.0	95.5	94.2	102.0	109.8	112.7
Psychology	12.2	16.2	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4	31.8	35.0	34.5	35.4	36.3	38.7
Social sciences	23.4	31.1	36.9	38.9	42.0	42.2	44.5	44.8	44.4	42.5	44.9	46.2	46.9	48.1	50.0	52.5	54.9	55.9	59.7
Engineering	12.4	14.8	16.1	18.1	19.9	21.2	22.9	22.8	23.1	23.8	26.6	25.5	26.6	27.8	29.6	30.4	32.8	34.7	39.7
Male, all fields	107.2	129.0	144.0	149.8	159.2	162.0	168.0	168.7	166.9	165.1	173.3	175.8	175.0	180.7	182.7	182.3	189.6	195.0	206.0
Physical sciences	24.0	27.4	27.8	27.7	29.8	30.0	30.5	30.8	31.4	31.4	32.4	33.4	32.8	33.7	32.3	32.1	34.4	34.5	36.9
Mathematics and statistics	9.0	10.8	11.3	11.8	12.3	12.5	13.0	13.9	13.7	12.8	13.5	12.9	12.6	13.8	14.1	14.1	14.4	14.6	15.7
Computer and information sciences	NA	NA	0.3	0.4	0.7	0.9	1.3	1.6	2.1	2.5	2.6	2.9	2.9	4.3	4.5	5.5	5.8	6.7	7.2
Life sciences	30.8	36.6	42.9	44.5	46.7	47.9	49.5	50.1	49.4	50.1	52.6	55.1	54.9	56.6	57.9	55.5	58.7	61.8	60.7
Psychology	10.0	12.6	14.9	15.1	16.0	16.2	16.5	16.0	14.7	14.7	15.4	15.6	15.7	15.6	16.0	15.6	15.6	15.2	16.4
Social sciences	21.0	26.9	30.9	32.3	34.3	33.9	35.1	34.6	33.4	31.3	31.9	32.4	31.7	32.0	31.9	33.1	33.4	33.3	36.4

Position, sex, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Engineering	12.3	14.7	15.9	17.8	19.5	20.6	22.2	21.8	22.1	22.3	24.8	23.4	24.3	24.8	26.0	26.3	27.3	28.9	32.8
Female, all fields	10.7	16.5	23.1	26.5	31.1	34.0	38.7	41.9	46.9	52.4	59.2	64.4	70.5	78.7	90.1	94.2	105.2	114.0	123.3
Physical sciences	1.4	1.7	2.1	2.2	2.5	2.8	3.1	3.0	3.6	4.4	5.1	5.3	5.8	6.1	7.3	7.8	9.3	10.4	11.5
Mathematics and statistics	0.6	0.9	1.1	1.1	1.3	1.4	1.5	1.4	1.7	1.8	2.1	2.2	2.3	2.9	3.3	3.9	4.3	4.5	5.2
Computer and information sciences	NA	NA	0.0	0.1	0.1	0.1	0.2	0.4	0.5	0.6	0.7	0.8	0.8	1.0	1.2	1.4	1.5	1.8	1.9
Life sciences	4.0	6.0	8.4	10.3	12.1	13.3	15.3	16.8	18.8	21.5	24.7	26.7	29.4	33.4	37.6	38.7	43.3	48.0	52.0
Psychology	2.2	3.6	5.2	5.9	7.1	7.6	8.5	9.2	10.3	11.5	11.9	13.4	14.7	16.2	19.0	18.9	19.8	21.1	22.3
Social sciences	2.4	4.2	6.0	6.5	7.7	8.3	9.4	10.2	10.9	11.2	13.0	13.8	15.2	16.2	18.2	19.5	21.5	22.6	23.4
Engineering	0.1	0.1	0.2	0.3	0.4	0.6	0.7	1.0	1.1	1.5	1.7	2.1	2.3	3.0	3.6	4.1	5.5	5.7	7.0
Full-time senior faculty[a]																			
Both sexes, all fields	74.0	90.7	107.3	115.6	119.7	127.3	131.0	133.0	128.6	127.3	131.9	136.7	136.9	142.0	139.4	147.5	152.8	158.0	168.2
Physical sciences	15.2	18.0	19.7	20.2	20.8	21.5	21.4	21.2	20.6	20.0	20.5	20.7	20.7	21.3	20.2	20.9	22.4	22.2	23.2
Mathematics and statistics	5.9	7.6	9.1	9.7	10.0	10.5	10.9	11.8	11.5	10.6	10.8	10.8	10.2	11.2	10.7	11.6	11.5	11.7	13.1
Computer and information sciences	NA	NA	0.0	0.1	0.1	0.3	0.4	0.9	0.9	1.7	1.7	2.1	2.4	2.9	3.2	3.8	4.2	4.9	5.3
Life sciences	21.0	24.6	29.6	32.6	33.7	35.8	36.4	37.4	35.8	37.2	38.3	40.6	41.2	43.4	43.7	44.8	47.2	49.8	49.7
Psychology	7.3	9.1	11.7	12.8	13.5	14.3	15.0	15.3	14.3	14.5	15.3	15.6	15.9	15.8	16.1	17.0	17.0	18.0	19.1
Social sciences	15.9	20.7	24.9	26.3	27.7	29.5	31.1	30.6	29.9	28.1	28.8	30.1	29.6	30.7	29.3	32.0	32.8	33.0	35.9
Engineering	8.7	10.7	12.4	13.7	13.9	15.3	15.9	15.8	15.7	15.3	16.6	16.6	16.8	16.8	16.2	17.6	17.7	18.5	21.8
Male, all fields	69.7	84.7	98.7	104.9	107.4	113.2	115.2	115.5	110.3	107.0	109.4	110.6	108.3	109.7	104.6	108.1	109.9	111.4	116.1

Position, sex, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Physical sciences	14.7	17.4	19.0	19.4	20.0	20.6	20.3	20.3	19.5	18.8	18.9	19.0	18.6	18.9	17.6	17.9	18.9	18.2	18.6
Mathematics and statistics	5.6	7.2	8.6	9.1	9.3	9.8	10.0	10.8	10.5	9.8	10.0	9.7	9.1	9.9	9.2	9.6	9.4	9.9	10.4
Computer and information sciences	NA	NA	0.0	0.1	0.1	0.3	0.4	0.8	0.8	1.4	1.3	1.6	2.0	2.4	2.6	3.1	3.5	3.9	4.3
Life sciences	19.5	22.7	26.9	29.1	29.4	31.0	31.0	31.4	29.3	29.3	30.0	31.1	30.4	30.9	30.4	30.2	31.0	32.2	30.4
Psychology	6.4	7.8	9.7	10.5	10.8	11.2	11.5	11.3	10.2	10.1	10.7	10.3	10.3	9.5	9.1	9.3	9.3	9.2	9.9
Social sciences	14.7	18.8	22.3	23.2	24.1	25.3	26.4	25.5	24.7	22.8	22.4	23.2	21.9	22.4	20.7	21.7	21.9	21.5	23.8
Engineering	8.7	10.7	12.2	13.6	13.7	15.1	15.7	15.4	15.3	14.8	16.1	15.8	15.9	15.7	15.0	16.3	16.0	16.5	18.8
Female, all fields	4.3	6.0	8.6	10.7	12.4	14.0	15.8	17.6	18.3	20.3	22.5	26.1	28.6	32.3	34.8	39.4	42.8	46.6	52.0
Physical sciences	0.5	0.6	0.7	0.8	0.9	1.0	1.1	0.9	1.1	1.2	1.5	1.9	2.1	2.4	2.7	3.1	3.6	4.0	4.6
Mathematics and statistics	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.0	0.8	0.8	1.1	1.1	1.3	1.4	1.9	2.1	1.8	2.7
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.5	0.4	0.5	0.6	0.6	0.7	0.9	1.0
Life sciences	1.5	1.9	2.7	3.5	4.3	4.8	5.4	6.1	6.5	7.8	8.3	9.5	10.8	12.5	13.3	14.6	16.2	17.5	19.3
Psychology	0.8	1.2	2.0	2.4	2.7	3.1	3.5	4.0	4.1	4.4	4.6	5.4	5.6	6.3	7.0	7.7	7.6	8.7	9.2
Social sciences	1.1	1.8	2.6	3.1	3.6	4.1	4.7	5.1	5.2	5.3	6.4	7.0	7.7	8.3	8.7	10.2	10.9	11.6	12.2
Engineering	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.4	0.3	0.5	0.5	0.8	0.9	1.1	1.2	1.3	1.7	2.0	3.0
Full-time junior faculty[b]																			
Both sexes, all fields	29.3	34.9	34.6	32.8	37.2	37.2	38.7	40.1	43.8	44.0	42.2	43.1	45.4	48.6	53.7	51.6	54.1	56.4	59.5
Physical sciences	5.6	5.7	4.6	4.0	4.6	4.7	4.8	5.0	5.2	5.6	5.3	5.9	5.7	6.4	6.7	6.6	6.9	7.3	7.9
Mathematics and statistics	3.3	3.3	2.6	2.5	2.7	2.4	2.6	2.4	3.2	2.4	2.6	2.2	2.1	2.8	3.3	3.2	3.6	3.8	3.7

Position, sex, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Computer and information sciences	NA	NA	0.2	0.3	0.6	0.6	0.9	1.0	1.4	1.2	1.2	1.1	0.9	1.3	1.7	1.9	1.5	1.5	1.9
Life sciences	8.5	10.3	11.3	10.8	11.9	12.3	12.8	13.7	15.0	15.6	15.2	15.5	17.1	18.3	19.1	18.7	19.5	20.8	21.1
Psychology	3.6	4.8	4.8	4.5	5.0	4.9	5.2	5.4	5.2	5.5	4.7	5.4	5.8	5.7	7.1	6.1	6.4	6.1	6.8
Social sciences	5.7	8.2	8.8	8.1	8.4	8.2	7.9	8.4	9.3	9.0	8.5	8.6	9.1	8.9	9.9	10.1	10.4	10.5	10.7
Engineering	2.6	2.7	2.3	2.7	4.0	4.0	4.3	4.3	4.5	4.8	4.7	4.3	4.8	5.1	5.9	5.1	5.7	6.5	7.4
Male, all fields	26.0	28.9	27.1	25.2	27.8	27.2	27.6	28.1	29.7	28.5	27.0	27.5	28.2	29.2	31.1	30.1	30.1	31.1	34.2
Physical sciences	5.2	5.2	4.1	3.5	3.9	4.1	4.1	4.1	4.2	4.1	3.9	4.5	4.2	4.9	4.9	4.8	4.9	5.3	5.6
Mathematics and statistics	3.1	2.9	2.2	2.2	2.3	2.0	2.2	2.2	2.7	2.0	2.0	1.6	1.5	2.0	2.3	2.3	2.5	2.4	2.3
Computer and information sciences	NA	NA	0.2	0.3	0.5	0.5	0.8	0.8	1.1	1.0	1.0	0.9	0.7	1.0	1.2	1.4	1.1	1.1	1.4
Life sciences	7.5	8.4	8.9	8.1	8.5	8.5	8.4	8.8	9.5	9.5	8.9	9.3	10.2	10.3	10.4	9.8	9.7	10.2	10.6
Psychology	2.7	3.3	3.0	2.6	2.7	2.7	2.9	3.0	2.3	2.4	1.8	2.4	2.3	2.3	2.6	2.4	2.2	2.0	2.5
Social sciences	5.0	6.5	6.5	5.9	6.0	5.6	5.2	5.3	5.9	5.5	5.3	5.1	5.2	4.5	5.0	5.6	5.7	5.4	5.9
Engineering	2.6	2.7	2.2	2.6	3.8	3.8	4.0	3.9	4.0	4.1	4.2	3.8	4.1	4.3	4.6	3.8	3.9	4.8	5.8
Female, all fields	3.3	6.0	7.5	7.7	9.4	10.0	11.2	12.0	14.1	15.6	15.2	15.6	17.2	19.3	22.6	21.5	23.9	25.3	25.3
Physical sciences	0.3	0.5	0.5	0.5	0.6	0.7	0.7	0.9	1.1	1.5	1.4	1.4	1.5	1.5	1.8	1.8	2.0	2.1	2.3
Mathematics and statistics	0.2	0.4	0.4	0.3	0.4	0.4	0.4	0.3	0.5	0.5	0.6	0.7	0.5	0.8	1.0	1.0	1.1	1.4	1.3
Computer and information sciences	NA	NA	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.2	0.3	0.2	0.2	0.3	0.4	0.5	0.4	0.3	0.5
Life sciences	1.1	1.9	2.4	2.7	3.4	3.8	4.5	4.9	5.5	6.1	6.3	6.2	6.9	8.0	8.7	8.9	9.8	10.6	10.5
Psychology	0.9	1.5	1.8	1.9	2.3	2.2	2.3	2.4	2.9	3.1	2.9	3.0	3.5	3.4	4.5	3.7	4.2	4.1	4.4

Position, sex, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Social sciences	0.8	1.7	2.3	2.1	2.4	2.6	2.7	3.0	3.4	3.5	3.2	3.5	3.9	4.4	4.9	4.4	4.7	5.2	4.8
Engineering	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.7	0.6	0.5	0.7	0.8	1.3	1.3	1.8	1.6	1.6
Other full-time positions[c]																			
Both sexes, all fields	7.6	8.8	12.6	13.4	18.1	16.4	19.2	20.2	22.2	23.9	29.1	31.9	34.8	39.9	40.6	43.9	48.2	55.8	62.6
Physical sciences	2.2	2.4	2.9	3.0	3.7	3.4	4.0	4.1	4.8	4.9	6.6	7.3	7.7	8.4	7.2	7.4	7.9	8.8	11.2
Mathematics and statistics	0.2	0.4	0.4	0.3	0.5	0.4	0.5	0.7	0.5	0.6	1.0	0.8	1.1	1.4	1.3	1.7	1.8	2.1	2.4
Computer and information sciences	NA	NA	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.7	0.6	0.9	1.0	1.5	1.3
Life sciences	2.5	2.8	4.0	4.6	6.2	6.0	6.7	7.2	7.7	8.4	9.8	11.2	12.3	14.2	15.5	16.2	18.4	22.2	25.0
Psychology	0.8	1.2	2.2	2.2	2.9	2.8	2.9	2.8	3.9	3.9	4.3	4.6	4.9	6.3	6.5	6.8	7.1	6.9	7.9
Social sciences	1.0	1.2	2.0	2.2	3.2	2.6	3.5	3.5	3.7	3.6	4.0	4.4	4.7	5.0	6.1	6.2	6.9	7.7	8.3
Engineering	0.8	0.8	1.1	1.1	1.5	1.1	1.5	1.8	1.5	2.1	3.2	3.0	3.6	3.9	3.3	4.7	5.1	6.3	6.5
Male, all fields	6.5	7.4	10.0	10.3	14.3	12.0	13.9	14.4	15.4	16.1	19.5	22.4	23.1	26.0	25.6	26.2	28.1	32.3	35.2
Physical sciences	2.1	2.2	2.6	2.7	3.4	2.9	3.5	3.6	4.2	4.1	5.6	6.4	6.6	7.1	5.9	5.6	5.9	6.5	8.5
Mathematics and statistics	0.1	0.4	0.3	0.2	0.4	0.5	0.4	0.5	0.4	0.4	0.8	0.7	0.9	1.0	0.9	1.2	1.1	1.3	1.8
Computer and information sciences	NA	NA	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.6	0.6	0.7	0.9	1.1	1.0
Life sciences	2.0	2.2	3.0	3.2	4.6	4.1	4.6	4.9	5.1	5.6	6.0	7.2	7.3	8.3	9.0	8.6	9.5	11.1	12.3
Psychology	0.7	0.9	1.4	1.4	1.8	1.6	1.5	1.2	1.9	1.7	1.9	2.2	2.1	2.6	2.8	2.6	2.7	2.5	2.4
Social sciences	0.8	0.9	1.6	1.7	2.5	1.8	2.4	2.4	2.2	2.1	2.2	2.7	2.7	3.1	3.5	3.3	3.7	4.3	4.1
Engineering	0.8	0.8	1.1	1.0	1.5	1.0	1.4	1.7	1.5	2.0	2.9	2.7	3.2	3.3	2.8	3.9	4.3	5.2	5.2

Position, sex, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Female, all fields	1.1	1.4	2.6	3.1	3.8	4.5	5.3	5.8	6.7	7.7	9.4	9.6	11.6	13.9	15.0	17.7	20.1	23.5	27.5
Physical sciences	0.1	0.2	0.3	0.3	0.3	0.5	0.5	0.5	0.6	0.8	1.0	0.8	1.1	1.3	1.4	1.6	2.0	2.3	2.6
Mathematics and statistics	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.2	0.3	0.3	0.5	0.7	0.7	0.7
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
Life sciences	0.6	0.6	1.0	1.3	1.6	1.8	2.1	2.4	2.6	2.8	3.7	4.1	5.0	5.9	6.5	7.6	8.9	11.0	12.9
Psychology	0.2	0.3	0.8	0.8	1.1	1.3	1.4	1.6	2.0	2.2	2.4	2.5	2.8	3.5	3.7	4.2	4.4	4.4	5.4
Social sciences	0.2	0.2	0.4	0.5	0.7	0.8	1.1	1.1	1.5	1.5	1.8	1.7	1.9	1.9	2.6	2.9	3.2	3.3	4.2
Engineering	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.3	0.4	0.6	0.5	0.8	0.7	0.9	1.5
Postdoctorates																			
Both sexes, all fields	4.2	7.6	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5	15.7	23.3	17.8	22.8	20.2	19.2
Physical sciences	1.8	2.4	2.1	1.6	2.1	2.3	2.7	2.2	3.5	4.4	3.8	3.4	3.0	2.6	3.9	3.3	4.6	4.0	3.3
Mathematics and statistics	0.0	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.0	0.5	0.5	0.6	0.8	0.5	1.0	0.5	0.7	0.4	0.5
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.3	0.2	0.3
Life sciences	1.9	3.9	5.2	5.1	5.3	5.4	6.8	6.3	8.2	9.1	10.8	11.6	11.0	10.0	12.8	10.3	12.2	11.9	11.7
Psychology	0.2	0.5	0.6	0.6	0.7	0.7	0.8	0.5	0.4	1.1	1.3	1.2	1.2	0.9	1.7	1.0	1.1	1.0	0.8
Social sciences	0.1	0.3	0.3	0.6	0.3	0.1	0.4	0.3	0.2	0.4	0.7	0.5	0.6	0.5	0.9	0.3	0.8	0.4	0.4
Engineering	0.2	0.4	0.2	0.3	0.2	0.5	0.6	0.5	1.0	1.2	1.7	1.1	0.9	1.1	3.0	2.1	3.1	2.4	2.2
Male, all fields	3.5	6.1	6.3	5.8	6.0	6.8	8.2	6.8	9.2	11.1	12.1	11.2	10.5	9.8	13.8	10.8	13.8	12.0	11.0
Physical sciences	1.6	2.1	1.8	1.4	1.7	1.9	2.2	1.8	2.9	3.7	3.0	2.7	2.3	2.1	2.9	2.5	3.4	2.8	2.3

Position, sex, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Mathematics and statistics	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.3	0.3	0.5	0.6	0.3	0.8	0.4	0.6	0.3	0.4
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.3
Life sciences	1.5	2.9	3.6	3.3	3.4	3.8	4.7	4.1	5.2	5.5	6.2	6.6	6.2	5.7	6.7	5.5	6.6	6.6	5.8
Psychology	0.1	0.4	0.5	0.3	0.4	0.3	0.4	0.3	0.1	0.3	0.6	0.2	0.4	0.4	0.5	0.4	0.4	0.2	0.3
Social sciences	0.1	0.2	0.1	0.4	0.2	0.1	0.2	0.2	0.1	0.2	0.5	0.3	0.3	0.3	0.4	0.1	0.4	0.2	0.2
Engineering	0.2	0.4	0.2	0.3	0.2	0.5	0.5	0.4	0.9	1.0	1.4	0.9	0.7	0.9	2.4	1.7	2.2	1.8	1.7
Female, all fields	0.6	1.6	2.2	2.5	2.6	2.6	3.3	3.0	4.1	5.7	6.8	7.3	6.9	6.0	9.5	7.0	8.9	8.2	8.2
Physical sciences	0.2	0.3	0.2	0.2	0.3	0.3	0.4	0.3	0.7	0.7	0.7	0.8	0.7	0.5	1.0	0.8	1.2	1.2	1.0
Mathematics and statistics	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	s	0.1	s	0.1
Life sciences	0.4	1.1	1.6	1.8	1.8	1.8	2.2	2.3	3.0	3.7	4.6	5.1	4.7	4.3	6.1	4.8	5.6	5.2	5.8
Psychology	0.0	0.1	0.2	0.2	0.3	0.4	0.5	0.3	0.3	0.7	0.8	0.9	0.8	0.5	1.1	0.6	0.7	0.8	0.5
Social sciences	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.5	0.2	0.5	0.2	0.2
Engineering	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.6	0.4	0.8	0.6	0.5
Part-time positions[d]																			
Both sexes, all fields	2.9	3.4	4.0	6.0	6.5	5.7	6.2	7.4	5.9	5.5	8.9	8.2	9.0	13.3	15.7	15.6	17.0	18.5	19.8
Physical sciences	0.7	0.7	0.7	1.1	1.1	0.8	0.7	1.2	1.0	0.9	1.2	1.0	1.0	1.1	1.5	1.6	2.0	2.5	2.8
Mathematics and statistics	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.7	0.7	0.6	0.9	1.2	1.0	1.1	1.1	1.2
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.3	0.3	0.3

Position, sex, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Life sciences	0.9	1.0	1.2	1.7	1.7	1.6	1.9	2.3	1.6	1.2	2.9	2.6	2.4	4.0	4.4	4.3	4.6	5.2	5.2
Psychology	0.4	0.6	0.8	1.0	1.0	1.0	1.0	1.2	1.2	1.1	1.1	1.3	1.8	3.2	3.6	3.7	3.8	4.2	4.1
Social sciences	0.7	0.8	1.0	1.6	2.2	1.8	1.7	2.0	1.3	1.3	2.6	2.2	2.7	3.1	3.7	4.0	4.0	4.2	4.4
Engineering	0.1	0.1	0.2	0.4	0.3	0.3	0.5	0.5	0.5	0.4	0.3	0.4	0.4	0.8	1.1	0.9	1.2	1.1	1.8
Male, all fields	1.5	1.8	1.9	3.5	3.6	2.7	3.1	3.8	2.3	2.4	4.4	3.4	3.8	6.1	7.6	7	7.6	8.0	9.5
Physical sciences	0.4	0.5	0.4	0.9	0.7	0.5	0.4	0.8	0.7	0.7	0.8	0.7	0.6	0.7	1.1	1.1	1.3	1.7	1.9
Mathematics and statistics	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.3	0.3	0.4	0.3	0.6	0.9	0.6	0.7	0.7	0.8
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	s	0.2	s	0.2
Life sciences	0.4	0.4	0.4	0.7	0.7	0.5	0.8	1.0	0.4	0.3	1.3	0.8	0.7	1.3	1.5	1.4	1.8	1.6	1.6
Psychology	0.1	0.2	0.3	0.4	0.4	0.4	0.3	0.2	0.1	0.1	0.3	0.3	0.3	0.8	0.9	1.0	1.0	1.2	1.3
Social sciences	0.4	0.4	0.5	1.1	1.4	1.0	0.8	1.2	0.5	0.7	1.4	1.0	1.4	1.7	2.2	2.3	1.8	2.0	2.4
Engineering	0.1	0.1	0.2	0.3	0.3	0.3	0.5	0.5	0.4	0.3	0.2	0.2	0.4	0.7	1.0	0.6	0.8	0.6	1.3
Female, all fields	1.4	1.6	2.1	2.5	2.9	3.0	3.1	3.5	3.6	3.1	4.5	4.9	5.1	7.3	8.1	8.6	9.4	10.5	10.3
Physical sciences	0.3	0.2	0.3	0.3	0.4	0.4	0.3	0.4	0.3	0.2	0.4	0.4	0.3	0.4	0.5	0.5	0.7	0.8	1.0
Mathematics and statistics	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.3	0.3	0.2	0.3	0.4	0.4	0.4	0.4
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	s	0.1	0.1	0.1
Life sciences	0.5	0.6	0.7	0.9	1.0	1.1	1.1	1.3	1.2	0.9	1.6	1.8	1.7	2.7	3.0	2.9	2.9	3.6	3.5
Psychology	0.3	0.4	0.5	0.6	0.7	0.7	0.7	0.9	1.1	1.0	0.8	1.0	1.5	2.4	2.8	2.7	2.8	3.0	2.8
Social sciences	0.3	0.3	0.5	0.5	0.9	0.8	0.8	0.8	0.8	0.7	1.2	1.2	1.3	1.4	1.5	1.7	2.2	2.2	2.0

Position, sex, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Engineering	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.3	0.3	0.5	0.4

NA = not available; s = suppressed for reasons of confidentiality and/or reliability.

[a] Full-time senior faculty includes full professors and associate professors.

[b] Full-time junior faculty includes assistant professors and instructors from 1973 to 1995; from 1997 to 2015, full-time junior faculty includes assistant professors.

[c] Other full-time positions include those such as research associates, adjunct positions, lecturers, and administrative positions from 1973 to 1995; from 1997 to 2015, other full-time positions also include instructors.

[d] Part-time positions exclude those employed part time because they are students or retired.

Note(s)

Detail may not add to total because of rounding. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, and university research institutes. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences. Numbers are rounded to the nearest 100.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2017) of the 1973–2015 Survey of Doctorate Recipients (SDR).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-16

S&E doctorate holders employed in academia, by type of position, race, ethnicity, and degree field: 1973–2015

(Thousands)

Position, race, ethnicity, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
All positions																			
All races and ethnicities, all fields	118.0	145.4	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5	259.5	272.8	276.5	294.8	309.0	329.3
Physical sciences	25.5	29.2	29.9	29.9	32.2	32.8	33.6	33.8	35.0	35.8	37.5	38.7	38.6	39.9	39.6	39.9	43.7	44.9	48.4
Mathematics and statistics	9.7	11.7	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9	16.7	17.3	18.0	18.7	19.0	20.9
Computer and information sciences	NA	NA	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8	5.2	5.8	6.9	7.3	8.4	9.1
Life sciences	34.9	42.6	51.3	54.8	58.7	61.2	64.8	66.9	68.2	71.6	77.3	81.9	84.3	90.0	95.5	94.2	102.0	109.8	112.7
Psychology	12.2	16.2	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4	31.8	35.0	34.5	35.4	36.3	38.7
Social sciences	23.4	31.1	36.9	38.8	41.9	42.1	44.5	44.8	44.4	42.5	44.9	46.2	46.9	48.1	50.1	52.5	54.9	55.9	59.7
Engineering	12.4	14.8	16.1	18.1	19.9	21.2	22.8	22.8	23.1	23.8	26.6	25.5	26.6	27.8	29.6	30.4	32.8	34.7	39.7
White, all fields	107.7	131.4	149.9	157.2	168.4	172.8	181.0	183.5	181.8	182.6	193.2	198.2	201.0	204.3	212.2	211.8	219.7	225.8	237.0
Physical sciences	23.0	26.1	26.6	26.4	28.3	28.5	29.2	29.5	29.3	29.5	31.0	32.3	32.0	32.1	31.4	31.5	33.5	33.8	35.6
Mathematics and statistics	8.8	10.6	11.0	11.5	11.9	12.2	12.6	13.0	12.9	12.0	12.6	12.3	12.1	13.0	13.1	13.6	13.7	13.6	15.1
Computer and information sciences	NA	NA	0.2	0.4	0.6	0.9	1.1	1.4	1.6	2.1	2.2	2.7	2.7	3.4	3.7	4.0	4.1	4.8	5.4
Life sciences	32.1	38.8	46.1	49.3	52.7	54.6	57.6	59.2	59.1	61.3	64.9	67.2	68.4	70.4	74.2	72.5	76.9	81.1	81.6
Psychology	11.6	15.2	18.8	19.6	21.3	22.0	23.2	23.2	22.9	23.6	24.4	25.5	26.6	27.1	29.5	28.7	28.6	28.9	30.6
Social sciences	21.4	28.2	33.1	34.7	37.2	37.5	39.4	39.1	38.6	36.5	38.0	38.9	39.0	39.1	40.7	41.7	43.0	42.6	45.8

Position, race, ethnicity, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Engineering	10.8	12.6	14.0	15.2	16.4	17.2	18.1	18.2	17.5	17.6	20.2	19.4	20.2	19.2	19.5	19.7	20.0	21.1	22.9
Asian or Pacific Islander, all fields	5.0	6.7	10.8	11.8	14.0	15.0	16.3	16.8	20.9	22.4	25.4	26.3	27.6	34.7	37.4	39.7	46.9	52.1	59.0
Physical sciences	1.2	1.5	2.1	2.4	2.9	3.1	3.1	2.8	4.2	4.6	4.6	4.6	4.5	5.5	5.6	5.7	7.0	7.6	9.3
Mathematics and statistics	0.4	0.5	0.9	1.0	1.1	1.1	1.3	1.6	1.9	1.8	2.2	2.1	2.0	2.8	3.0	3.2	3.7	4.0	4.4
Computer and information sciences	NA	NA	0.1	0.1	0.1	0.1	0.3	0.5	0.7	0.9	0.9	0.9	0.9	1.5	1.7	2.5	2.7	3.0	3.0
Life sciences	1.3	2.0	3.6	3.6	4.0	4.4	4.7	5.1	6.3	6.8	8.5	9.9	11.0	13.3	14.0	13.9	16.2	18.4	20.6
Psychology	0.1	0.2	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.7	0.8	0.9	1.1	1.4	1.6	2.0	2.2	2.8
Social sciences	1.0	1.2	2.0	2.0	2.5	2.2	2.4	2.6	2.7	2.8	3.2	3.5	3.6	4.1	3.9	4.5	5.2	6.1	6.1
Engineering	1.1	1.3	1.8	2.4	3.0	3.5	4.1	3.7	4.7	4.9	5.2	4.6	4.8	6.4	7.8	8.2	10.1	10.7	12.9
Underrepresented minority, all fields[a]	2.4	3.7	5.8	6.5	7.2	7.8	9.0	9.9	10.7	12.4	13.7	15.6	16.8	20.4	20.4	21.8	24.4	27.2	29.4
Physical sciences	0.5	0.6	1.0	1.0	1.0	1.1	1.2	1.3	1.5	1.6	1.9	1.8	2.0	2.3	2.2	2.3	2.7	3.0	2.9
Mathematics and statistics	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.5	0.7	0.8	0.7	0.8	0.8	1.0	1.0	1.1	1.2	1.4	1.4
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.6
Life sciences	0.8	1.2	1.5	1.7	1.8	2.1	2.4	2.6	2.7	3.5	3.9	4.7	4.9	6.2	6.4	6.6	7.6	8.7	9.4
Psychology	0.3	0.6	0.8	1.0	1.2	1.2	1.3	1.5	1.6	2.0	2.3	2.7	2.9	3.6	3.6	3.7	4.3	4.5	4.6
Social sciences	0.5	0.8	1.8	2.0	2.1	2.3	2.8	3.0	3.1	3.2	3.6	3.9	4.3	4.9	4.9	5.6	5.8	6.5	7.0
Engineering	0.2	0.3	0.3	0.5	0.5	0.5	0.7	0.9	0.9	1.2	1.2	1.5	1.6	2.1	2.0	2.1	2.4	2.6	3.6
Full-time faculty[b]																			
All races and ethnicities, all fields	103.3	125.6	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	172.9	178.2	180.9	190.6	193.1	199.1	206.9	214.4	227.7

Position, race, ethnicity, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Physical sciences	20.8	23.6	24.3	24.2	25.4	26.4	26.2	26.2	25.8	25.6	25.5	26.3	26.1	27.7	26.9	27.5	29.3	29.5	31.1
Mathematics and statistics	9.3	10.9	11.7	12.3	12.7	12.9	13.5	14.2	14.7	13.0	13.6	12.9	12.4	14.0	14.0	14.8	15.1	15.5	16.8
Computer and information sciences	NA	NA	0.3	0.4	0.7	0.9	1.3	1.8	2.3	2.8	2.9	3.2	3.3	4.2	4.9	5.6	5.7	6.4	7.1
Life sciences	29.5	34.9	40.9	43.5	45.6	48.1	49.3	51.1	50.8	52.8	53.6	56.1	58.3	61.7	62.8	63.5	66.7	70.6	70.8
Psychology	10.8	13.9	16.4	17.3	18.5	19.2	20.2	20.7	19.5	20.1	19.4	20.6	21.2	21.5	23.2	23.0	23.4	24.1	26.0
Social sciences	21.6	28.8	33.7	34.4	36.1	37.6	39.0	39.0	39.2	37.1	36.9	38.2	38.3	39.6	39.2	42.0	43.2	43.5	46.7
Engineering	11.3	13.5	14.7	16.4	17.9	19.3	20.2	20.1	20.1	20.0	21.2	20.7	21.5	21.9	22.1	22.7	23.4	25.0	29.2
White, all fields	94.9	114.3	128.1	133.4	139.7	146.2	149.8	151.8	148.7	147.1	146.8	150.8	151.1	153.5	155.3	156.5	158.7	161.5	168.9
Physical sciences	19.0	21.5	22.1	21.6	22.8	23.4	23.3	23.2	22.2	22.1	21.8	22.5	22.0	23.2	22.6	22.4	23.4	23.1	24.2
Mathematics and statistics	8.5	9.9	10.3	10.9	11.1	11.4	11.7	12.2	12.3	10.7	11.0	10.6	10.0	10.9	10.8	11.3	11.4	11.3	12.2
Computer and information sciences	NA	NA	0.2	0.3	0.5	0.7	1.0	1.3	1.5	1.9	2.0	2.3	2.2	2.6	2.9	3.2	3.2	3.5	4.3
Life sciences	27.5	32.1	37.2	39.7	41.3	43.3	44.4	46.0	45.1	46.7	47.1	48.8	49.9	50.5	51.5	51.0	52.6	54.7	54.5
Psychology	10.3	13.0	15.4	16.2	17.1	17.9	18.8	19.2	18.0	18.4	17.6	18.4	18.8	18.6	19.9	19.5	19.2	19.7	20.8
Social sciences	19.7	26.1	30.1	30.7	32.2	33.5	34.4	33.8	34.1	31.9	31.1	32.2	32.0	32.3	32.3	33.5	33.8	33.4	36.2
Engineering	10.0	11.6	12.7	14.0	14.8	15.9	16.2	16.2	15.6	15.3	16.4	15.8	16.2	15.2	15.3	15.4	15.0	15.8	16.7
Asian or Pacific Islander, all fields	4.0	5.0	8.4	9.1	10.9	11.7	12.3	12.6	14.8	14.5	15.8	16.3	17.7	21.4	21.8	25.0	28.5	32.4	36.8
Physical sciences	0.7	1.0	1.3	1.6	1.7	2.0	1.9	1.8	2.4	2.3	2.2	2.4	2.5	2.7	2.7	3.1	3.8	4.1	4.6
Mathematics and statistics	0.4	0.5	0.9	1.0	1.1	1.1	1.3	1.5	1.7	1.6	1.9	1.7	1.7	2.2	2.3	2.5	2.6	2.9	3.5
Computer and information sciences	NA	NA	0.0	0.1	0.1	0.1	0.3	0.5	0.7	0.8	0.8	0.7	0.8	1.3	1.5	2.0	2.2	2.3	2.4

Position, race, ethnicity, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Life sciences	0.9	1.2	2.3	2.4	2.8	3.1	3.0	3.0	3.7	3.5	3.7	4.4	5.3	6.5	6.5	7.3	8.4	9.6	10.0
Psychology	0.1	0.1	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.7	0.8	1.0	1.2	1.4	1.9
Social sciences	0.9	1.1	1.9	1.9	2.1	2.1	2.1	2.4	2.3	2.4	2.8	2.8	3.0	3.1	2.9	3.6	4.0	4.8	4.8
Engineering	0.9	1.1	1.7	1.9	2.7	3.0	3.4	3.1	3.7	3.6	3.8	3.7	3.9	4.9	5.0	5.5	6.4	7.2	9.5
Underrepresented minority, all fields[a]	2.0	3.2	5.0	5.4	5.8	6.3	7.4	8.4	8.6	9.8	10.3	11.1	12.0	13.4	13.9	15.3	17.2	17.9	19.6
Physical sciences	0.4	0.4	0.9	0.9	0.8	0.9	0.9	1.1	1.2	1.1	1.4	1.4	1.6	1.5	1.5	1.7	2.0	2.0	1.9
Mathematics and statistics	0.2	0.2	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.7	0.6	0.7	0.7	0.7	0.8	0.9	1.0	1.0	1.0
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.3	0.3	0.3	0.4	0.4
Life sciences	0.7	1.0	1.3	1.3	1.4	1.6	1.8	2.0	2.0	2.6	2.8	2.9	3.2	3.9	4.0	4.3	5.0	5.2	5.6
Psychology	0.2	0.5	0.6	0.7	0.9	0.9	1.0	1.1	1.1	1.3	1.3	1.7	1.8	1.8	2.1	2.2	2.5	2.6	2.8
Social sciences	0.4	0.8	1.6	1.7	1.8	2.0	2.5	2.8	2.8	2.8	3.0	3.1	3.2	3.6	3.6	4.3	4.7	4.9	5.1
Engineering	0.1	0.3	0.3	0.4	0.4	0.5	0.6	0.8	0.8	1.1	1.1	1.2	1.4	1.6	1.6	1.5	1.7	1.7	2.8
Postdocs																			
All races and ethnicities, all fields	4.2	7.6	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5	15.7	23.3	17.8	22.8	20.2	19.2
Physical sciences	1.8	2.4	2.1	1.6	2.1	2.3	2.7	2.2	3.5	4.4	3.8	3.4	3.0	2.6	3.9	3.3	4.6	4.0	3.3
Mathematics and statistics	0.0	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.0	0.5	0.5	0.6	0.8	0.5	1.0	0.5	0.7	0.4	0.5
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.3	0.2	0.3
Life sciences	1.9	4.0	5.2	5.1	5.2	5.6	6.8	6.4	8.2	9.2	10.8	11.7	11.0	10.0	12.8	10.3	12.2	11.9	11.7
Psychology	0.2	0.5	0.6	0.6	0.7	0.7	0.8	0.5	0.4	1.1	1.3	1.2	1.2	0.9	1.7	1.0	1.1	1.0	0.8

Position, race, ethnicity, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Social sciences	0.1	0.3	0.3	0.6	0.3	0.1	0.4	0.3	0.2	0.4	0.7	0.5	0.6	0.5	0.9	0.3	0.8	0.4	0.4
Engineering	0.2	0.4	0.2	0.3	0.2	0.5	0.6	0.5	1.0	1.2	1.7	1.1	0.9	1.1	3.0	2.1	3.1	2.4	2.2
White, all fields	3.6	6.2	6.9	6.8	7.1	7.4	9.0	7.1	9.1	11.2	12.5	11.9	11.4	9.9	13.4	10.3	12.5	10.6	10.1
Physical sciences	1.5	1.8	1.5	1.4	1.4	1.5	1.8	1.4	2.4	2.6	2.5	2.3	2.2	1.5	2.4	1.9	2.7	2.2	1.7
Mathematics and statistics	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.3	0.3	0.5	0.7	0.4	0.6	0.4	0.3	0.2	0.3
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	s	s	0.1	s	0.1
Life sciences	1.7	3.3	4.4	4.3	4.5	4.7	5.6	4.8	5.9	6.5	7.0	7.2	6.7	6.4	7.3	6.3	7.0	6.4	6.2
Psychology	0.1	0.4	0.6	0.5	0.7	0.6	0.8	0.4	0.3	0.9	1.1	0.9	1.0	0.7	1.3	0.8	0.7	0.7	0.5
Social sciences	0.1	0.3	0.3	0.5	0.3	0.1	0.3	0.2	0.1	0.3	0.6	0.3	0.4	0.3	0.6	0.2	0.6	0.2	0.2
Engineering	0.1	0.2	0.1	0.1	0.1	0.2	0.3	0.2	0.3	0.5	0.9	0.7	0.6	0.5	1.1	0.7	1.0	0.6	1.1
Asian or Pacific Islander, all fields	0.5	1.1	1.4	1.1	1.1	1.6	1.9	2.3	3.6	4.7	5.3	5.2	4.9	4.8	8.1	6.1	8.3	7.4	7.0
Physical sciences	0.2	0.4	0.6	0.2	0.5	0.6	0.7	0.7	1.0	1.5	1.2	1.1	0.8	0.9	1.3	1.2	1.7	1.4	1.3
Mathematics and statistics	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.3	0.1	0.2
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	s	0.2	0.2	s	0.2
Life sciences	0.2	0.5	0.8	0.6	0.6	0.6	0.9	1.3	1.9	2.2	3.2	3.6	3.6	3.0	4.4	3.0	4.0	4.0	4.1
Psychology	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1
Social sciences	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1
Engineering	0.0	0.1	0.1	0.2	0.1	0.2	0.3	0.3	0.7	0.7	0.7	0.2	0.3	0.5	1.7	1.3	1.8	1.5	1.0
Underrepresented minority, all fields[a]	0.1	0.2	0.2	0.4	0.4	0.4	0.6	0.4	0.6	0.9	1.1	1.5	1.1	1.1	1.7	1.3	1.6	2.1	1.7

Position, race, ethnicity, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Physical sciences	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2
Mathematics and statistics	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	s	s	0.1	s
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	s	s	s	s	S
Life sciences	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.4	0.5	0.6	0.8	0.6	0.6	1.0	0.8	0.9	1.3	1.2
Psychology	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1
Social sciences	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.1	s	*
Engineering	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.1	0.1	0.2	0.2	0.2	0.1
Other positions[c]																			
All races and ethnicities, all fields	10.5	12.2	16.6	19.4	24.6	22.1	25.4	27.6	28.1	29.4	41.1	43.5	47.3	53.2	56.4	59.5	65.1	74.4	82.4
Physical sciences	2.9	3.1	3.6	4.2	4.8	4.2	4.7	5.4	5.8	5.8	8.0	8.6	9.0	9.5	8.8	9.1	9.8	11.4	14.0
Mathematics and statistics	0.4	0.7	0.6	0.5	0.7	0.6	0.8	0.9	0.8	1.1	1.7	1.8	1.8	2.2	2.4	2.7	2.9	3.1	3.6
Computer and information sciences	NA	NA	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.3	0.4	0.5	1.0	0.8	1.0	1.3	1.8	1.7
Life sciences	3.4	3.7	5.2	6.3	7.8	7.6	8.7	9.5	9.2	9.6	13.2	14.5	15.5	18.3	19.9	20.5	23.1	27.3	30.2
Psychology	1.2	1.8	3.0	3.1	3.9	3.8	4.0	4.0	5.1	5.0	6.7	7.2	8.0	9.4	10.1	10.5	10.9	11.2	11.9
Social sciences	1.6	1.9	2.9	3.8	5.5	4.3	5.1	5.5	5.0	5.0	7.3	7.4	8.0	8.0	9.9	10.2	10.9	12	12.6
Engineering	0.9	0.9	1.3	1.4	1.8	1.4	2.0	2.2	2.0	2.5	3.7	3.7	4.3	4.8	4.5	5.6	6.3	7.3	8.3
White, all fields	9.3	10.9	15.0	17.0	21.6	19.3	22.2	24.6	24.0	24.3	34.2	35.6	38.5	41.3	43.5	45.0	48.5	53.7	58.0
Physical sciences	2.5	2.8	3.2	3.6	4.1	3.6	4.0	4.8	4.8	4.8	6.4	7.1	7.5	7.5	6.4	7.2	7.4	8.5	9.7
Mathematics and statistics	0.3	0.6	0.6	0.5	0.7	0.6	0.7	0.8	0.6	0.9	1.4	1.3	1.5	1.7	1.8	1.9	2.0	2.1	2.6

Position, race, ethnicity, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Computer and information sciences	NA	NA	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.3	0.4	0.5	0.8	0.8	0.8	0.8	1.3	1.0
Life sciences	3.0	3.3	4.5	5.3	6.9	6.6	7.5	8.4	8.1	8.1	11.1	11.6	12.1	13.6	15.4	15.2	17.3	20.0	20.9
Psychology	1.1	1.7	2.8	2.9	3.5	3.5	3.6	3.6	4.5	4.3	5.7	6.2	6.8	7.9	8.3	8.4	8.7	8.5	9.3
Social sciences	1.5	1.7	2.7	3.5	4.7	3.9	4.7	5.1	4.4	4.3	6.3	6.3	6.6	6.5	7.8	8.0	8.6	9.0	9.4
Engineering	0.7	0.8	1.2	1.1	1.6	1.1	1.6	1.8	1.6	1.8	2.9	2.9	3.4	3.4	3.0	3.6	4.0	4.7	5.1
Asian or Pacific Islander, all fields	0.6	0.6	1.0	1.6	2.0	1.8	2.0	1.9	2.5	3.2	4.4	4.9	5.0	7.2	7.5	8.6	10.1	12.3	15.2
Physical sciences	0.2	0.1	0.2	0.5	0.6	0.6	0.5	0.4	0.8	0.8	1.3	1.1	1.1	1.4	1.6	1.4	1.5	2.1	3.4
Mathematics and statistics	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.4	0.3	0.3	0.5	0.5	0.7	0.8	1.0	0.7
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.7	0.4
Life sciences	0.2	0.3	0.6	0.7	0.7	0.7	0.9	0.8	0.8	1.1	1.6	1.9	2.1	3.4	3.1	3.5	3.8	4.8	6.5
Psychology	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.4	0.5	0.6	0.6	0.8
Social sciences	0.0	0.1	0.1	0.1	0.4	0.2	0.2	0.2	0.3	0.3	0.4	0.6	0.5	0.8	0.8	0.8	1.0	1.2	1.2
Engineering	0.1	0.1	0.0	0.2	0.2	0.3	0.4	0.3	0.3	0.6	0.7	0.7	0.6	0.9	1.1	1.5	1.9	2.0	2.4
Underrepresented minority, all fields[a]	0.3	0.3	0.5	0.8	1.0	1.1	1.1	1.1	1.5	1.8	2.5	2.9	3.7	3.9	4.8	5.3	5.6	7.2	8.1
Physical sciences	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.4	0.4	0.3	0.5	0.5	0.4	0.5	0.7	0.8
Mathematics and statistics	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	s	0.1	0.1	0.2
Life sciences	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.5	0.9	1.1	1.1	1.4	1.5	1.7	2.2	2.6
Psychology	0.0	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.6	0.8	0.7	1.0	1.3	1.4	1.4	1.6	1.8	1.7

Position, race, ethnicity, and field	1973	1977	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Social sciences	0.0	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.3	0.3	0.5	0.6	0.9	0.8	1.2	1.3	1.0	1.6	1.9
Engineering	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.3	0.4	0.5	0.7	0.7

* = amount less than 0.05; NA = not available; s = suppressed for reasons of confidentiality and/or reliability.

[a] Underrepresented minority includes blacks or African Americans, Hispanics or Latinos, and American Indians or Alaska Natives. Total includes individuals reporting more than one race, who are not shown separately. Because of changes in the survey questionnaire, data on underrepresented minorities from 2003 to 2015 are not directly comparable with earlier years' data.

[b] Full-time faculty includes full professors, associate professors, assistant professors, and instructors from 1973 to 1995; from 1997 to 2015, full-time faculty includes full professors, associate professors, and assistant professors.

[c] Other positions include full-time positions such as research associates, adjunct positions, lecturers, and administrative positions, as well as part-time positions of all kinds. From 1997 to 2015, other positions also include instructors. Part-time positions exclude those employed part time because they are students or retired.

Note(s)

Detail may not add to total because of rounding. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, and university research institutes. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences. Numbers are rounded to the nearest 100.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2017) of the 1973–2015 Survey of Doctorate Recipients (SDR).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-17

S&E doctorate holders employed in academia, by type of position, degree field, and citizenship: 2015

(Thousands)

Position and field	All doctorate holders	Native-born U.S. citizens	Foreign born	
			Naturalized U.S. citizens	Noncitizens
All positions	329.3	232.0	53.7	43.6
Physical sciences	48.4	33.0	7.9	7.4
Mathematics and statistics	20.9	12.5	4.8	3.7
Computer and information sciences	9.1	4.4	2.1	2.6
Life sciences	112.7	83.5	14.8	14.4
Psychology	38.7	34.0	3.3	1.5
Social sciences	59.7	45.8	8.6	5.3
Engineering	39.7	18.7	12.3	8.7
Full-time faculty[a]	227.7	163.7	39.5	24.5
Physical sciences	31.1	22.4	5.1	3.5
Mathematics and statistics	16.8	10.0	3.9	2.8
Computer and information sciences	7.1	3.4	1.8	2.0
Life sciences	70.8	55.9	9.4	5.6
Psychology	26.0	22.8	2.3	0.9
Social sciences	46.7	35.8	6.8	4.1

Position and field	All doctorate holders	Native-born U.S. citizens	Foreign born	
			Naturalized U.S. citizens	Noncitizens
Engineering	29.2	13.4	10.3	5.5
Postdocs	19.2	9.4	1.7	8.0
Physical sciences	3.3	1.5	0.2	1.6
Mathematics and statistics	0.5	0.2	s	0.3
Computer and information sciences	0.3	*	s	0.2
Life sciences	11.7	6.1	1.1	4.4
Psychology	0.8	0.6	s	0.1
Social sciences	0.4	0.2	0.1	0.1
Engineering	2.2	0.7	0.2	1.4
Other positions[b]	82.4	58.9	12.5	11.1
Physical sciences	14.0	9.1	2.6	2.3
Mathematics and statistics	3.6	2.3	0.9	0.6
Computer and information sciences	1.7	1.0	0.3	0.4
Life sciences	30.2	21.5	4.3	4.4
Psychology	11.9	10.6	1.0	0.5
Social sciences	12.6	9.8	1.7	1.1
Engineering	8.3	4.6	1.8	1.8

* = amount less than 50; s = suppressed for reasons of confidentiality and/or reliability.

[a] Full-time faculty includes assistant professors, associate professors, and full professors.

[b] Other positions include full-time positions such as instructors, research associates, adjunct positions, lecturers, and administrative positions, as well as part-time positions of all kinds. Part-time positions exclude those employed part time because they are students or retired.

Note(s)

Detail may not add to total because of rounding. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical centers, and university research institutes. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences. Numbers are rounded to the nearest 100.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2017) of the 2015 Survey of Doctorate Recipients (SDR).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-18

Age distribution of S&E doctorate holders in full-time faculty positions at research universities and other academic institutions: 1973–2015

(Thousands and percent distribution)

Age and institution type	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Thousands																					
All universities and colleges	103.3	116.4	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	173.0	178.1	180.8	190.6	193.1	199.1	206.8	214.4	227.7
Research universities[a]	55.7	61.5	64.7	67.1	73.8	72.2	80.6	84.2	86.6	85.8	84.4	64.1	63.5	66.3	65.9	72.2	72.0	73.3	77.4	75.5	73.5
Other universities and colleges	47.6	54.9	61.0	64.1	68.2	76.2	76.2	80.2	83.2	87.3	88.1	107.3	109.5	111.8	114.9	118.4	121.1	125.8	129.4	138.9	154.2
Percent distribution																					
All universities and colleges, all ages (years)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Younger than 30	3.6	2.9	2.3	1.7	1.5	1.1	1.0	0.7	0.5	0.8	1.1	0.8	0.8	0.8	0.9	0.6	0.9	0.8	0.6	0.4	0.4
30–34	22.0	20.1	16.9	14.5	13.2	10.2	9.9	8.5	7.8	8.1	8.3	7.6	7.4	6.4	6.8	7.0	7.3	6.7	7.0	6.9	6.9
35–39	19.9	21.6	23.7	23.3	20.7	18.6	18.2	15.9	15.1	14.9	15.3	15.1	13.2	13.0	12.2	12.2	12.7	12.8	12.4	12.3	13.1
40–44	16.6	16.6	16.4	17.8	20.5	22.6	21.4	20.0	18.6	17.8	17.1	17.0	16.7	16.2	15.7	14.6	14.4	13.8	13.2	14.5	14.5
45–49	13.6	13.8	14.3	14.1	13.8	15.1	17.0	20.1	20.8	19.4	18.4	17.8	16.9	16.6	16.6	16.7	15.1	13.9	13.7	13.1	13.5
50–54	11.0	11.3	11.4	11.8	12.0	12.4	12.0	13.1	14.6	17.4	18.5	18.7	18.5	16.6	17.2	15.7	15.6	15.6	15.4	14.0	13.2
55–59	7.0	7.5	8.4	9.3	9.4	10.3	9.7	10.5	11.1	11.0	10.6	12.3	14.6	16.7	15.7	15.5	15.2	15.2	15.0	14.8	13.4
60–64	4.3	4.6	4.8	5.4	6.3	7.0	7.3	7.6	7.7	7.2	7.5	7.1	7.9	9.2	10.5	12.3	11.7	12.4	12.9	12.8	13.5
65–75	2.0	1.8	1.7	2.0	2.7	2.8	3.5	3.5	3.8	3.4	3.3	3.6	4.1	4.3	4.4	5.5	7.2	8.7	9.8	11.4	11.6
Research universities, all ages (years)[a]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Age and institution type	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Younger than 30	3.4	3.0	2.5	2.2	2.1	1.4	1.2	1.0	0.6	0.8	1.2	0.9	0.9	0.7	0.9	0.7	0.8	0.9	0.6	0.4	0.3
30–34	20.6	18.8	16.4	14.9	14.1	11.2	11.4	9.8	9.3	9.1	9.4	7.8	7.2	6.6	6.9	6.3	7.8	7.4	7.7	7.0	6.8
35–39	19.3	20.3	21.0	21.7	19.8	18.0	17.9	16.6	17.1	16.6	16.6	16.5	14.3	13.9	12.5	12.4	13.0	12.6	12.8	12.2	12.5
40–44	16.4	16.3	16.2	17.2	18.8	20.2	20.0	18.7	17.2	17.5	17.6	18.1	17.7	17.6	17.0	16.1	14.5	14.5	12.9	14.5	14.7
45–49	14.3	14.2	14.7	13.9	12.6	14.9	15.4	17.8	18.4	17.8	16.9	17.0	16.6	16.6	16.5	17.0	15.5	14.2	13.5	12.8	12.9
50–54	11.4	12.2	12.3	12.1	12.1	12.1	12.0	12.9	13.8	15.6	16.0	16.5	17.3	16.0	16.5	15.4	15.4	15.8	15.7	14.1	13.1
55–59	7.7	8.3	9.3	10.0	10.4	10.8	9.8	10.3	10.9	10.7	11.0	11.7	12.9	14.5	13.8	14.4	14.9	14.1	14.2	14.3	14.0
60–64	4.8	5.0	5.4	5.8	6.8	8.0	8.2	8.5	8.0	7.7	7.8	7.3	8.1	9.1	10.4	11.1	10.4	11.6	12.4	12.8	13.9
65–75	2.1	1.9	2.2	2.3	3.2	3.5	4.1	4.3	4.8	4.2	3.7	4.0	4.8	5.2	5.6	6.7	7.8	9.1	10.3	12.1	12.0
Other universities and colleges, all ages (years)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Younger than 30	3.8	2.8	2.1	1.2	0.9	0.8	0.8	0.4	0.4	0.8	0.9	0.7	0.7	0.9	0.9	0.5	0.9	0.7	0.6	0.4	0.4
30–34	23.6	21.4	17.5	14.1	12.2	9.4	8.2	7.1	6.3	7.1	7.3	7.4	7.5	6.3	6.7	7.3	7.0	6.5	6.6	6.9	6.9
35–39	20.7	23.0	26.5	25.1	21.6	19.1	18.5	15.2	13.1	13.1	14.1	13.9	12.5	12.5	12.0	12.1	12.6	12.8	12.2	12.3	13.4
40–44	16.8	17.0	16.6	18.4	22.3	24.9	22.8	21.3	20.1	18.1	16.7	16.0	16.1	15.4	14.9	13.7	14.3	13.5	13.4	14.5	14.4
45–49	12.8	13.3	13.9	14.3	15.0	15.2	18.8	22.5	23.4	20.9	19.9	18.6	17.1	16.7	16.7	16.6	14.9	13.8	13.7	13.2	13.9
50–54	10.5	10.3	10.4	11.6	11.8	12.7	12.0	13.4	15.4	19.2	20.8	20.6	19.1	17.0	17.7	15.8	15.8	15.5	15.2	13.9	13.4
55–59	6.2	6.5	7.5	8.5	8.4	9.8	9.6	10.8	11.2	11.3	10.2	12.8	15.5	18.2	16.7	16.2	15.4	16.0	15.5	15.1	13.2
60–64	3.6	4.2	4.2	5.1	5.8	5.9	6.3	6.6	7.4	6.8	7.1	7.0	7.8	9.2	10.6	13.0	12.4	12.9	13.2	12.8	13.2
65–75	1.8	1.6	1.2	1.7	2.0	2.2	2.9	2.6	2.7	2.7	3.0	3.2	3.7	3.7	3.8	4.8	6.9	8.5	9.4	11.0	11.3

[a] Research universities are 1994 Carnegie classification research I universities from 1973 to 2003. Research universities are 2005 Carnegie classification very high research activity universities from 2006 to 2015.

Note(s)

Full-time faculty includes full professors, associate professors, assistant professors, and instructors from 1973 to 1995; from 1997 to 2015, full-time faculty includes full professors, associate professors, and assistant professors. Detail may not add to total because of rounding. Numbers are rounded to the nearest 100.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2017) of the 1973–2015 Survey of Doctorate Recipients (SDR).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-19

S&E doctorate holders employed in academia, by research priority, type of position, and degree field: 1973–2015

(Thousands)

Research priority, position, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
All positions	118.0	145.4	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5	259.5	272.8	276.5	294.8	309.0	329.3
Physical sciences	25.5	29.2	28.8	29.9	29.9	32.2	32.8	33.6	33.8	35.0	35.8	37.5	38.7	38.6	39.9	39.6	39.9	43.7	44.9	48.4
Mathematics and statistics	9.7	11.7	12.2	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9	16.7	17.4	18.0	18.7	19.0	20.9
Computer and information sciences	NA	NA	0.1	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8	5.2	5.8	6.9	7.3	8.4	9.1
Life sciences	34.9	42.6	47.0	51.3	54.8	58.7	61.2	64.8	66.9	68.2	71.6	77.3	81.9	84.3	90.0	95.5	94.2	102.0	109.8	112.7
Psychology	12.2	16.2	17.7	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4	31.8	35.0	34.5	35.4	36.3	38.7
Social sciences	23.4	31.1	33.6	36.9	38.8	41.9	42.1	44.5	44.8	44.4	42.5	44.9	46.2	46.9	48.1	50.0	52.5	54.9	55.9	59.7
Engineering	12.4	14.8	15.8	16.1	18.1	19.9	21.2	22.8	22.8	23.1	23.8	26.6	25.5	26.6	27.8	29.6	30.4	32.8	34.7	39.7
Full-time faculty	103.3	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	172.9	178.2	180.9	190.6	193.1	199.1	206.9	214.4	227.7
Physical sciences	20.8	23.6	23.5	24.3	24.2	25.4	26.4	26.2	26.2	25.8	25.6	25.5	26.3	26.1	27.7	26.9	27.5	29.3	29.5	31.1
Mathematics and statistics	9.3	10.9	11.4	11.7	12.3	12.7	12.9	13.5	14.2	14.7	13.0	13.6	12.9	12.4	14.0	14.0	14.8	15.1	15.5	16.8
Computer and information sciences	NA	NA	0.1	0.3	0.4	0.7	0.9	1.3	1.8	2.3	2.8	2.9	3.2	3.3	4.2	4.9	5.6	5.7	6.4	7.1
Life sciences	29.5	34.9	37.3	40.9	43.5	45.6	48.1	49.3	51.1	50.8	52.8	53.6	56.1	58.3	61.7	62.8	63.5	66.7	70.5	70.8
Psychology	10.8	13.9	14.3	16.4	17.3	18.5	19.2	20.2	20.7	19.5	20.1	19.4	20.6	21.2	21.5	23.2	23.0	23.4	24.1	26.0
Social sciences	21.6	28.8	30.3	33.7	34.4	36.1	37.6	39.0	39.0	39.2	37.1	36.9	38.2	38.3	39.6	39.2	42.0	43.2	43.6	46.7
Engineering	11.3	13.5	14.3	14.7	16.4	17.9	19.3	20.2	20.1	20.1	20.0	21.2	20.7	21.5	21.9	22.1	22.7	23.4	25.0	29.2

Research priority, position, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Research as primary or secondary activity																				
All positions	82.3	85.0	90.0	100.7	104.7	115.2	144.0	151.6	156.6	150.1	153.5	164.7	168.1	172.5	179.3	183.7	187.1	198.2	201.7	220.8
Physical sciences	18.8	19.2	18.2	19.5	19.3	21.4	24.9	25.7	25.9	25.0	25.8	27.4	27.2	27.3	28.2	26.9	26.8	28.9	29.5	32.8
Mathematics and statistics	6.8	6.8	6.9	6.8	7.2	7.6	9.7	10.2	10.7	9.5	9.4	10.1	9.9	9.8	10.7	11.4	11.7	12.3	11.8	13.4
Computer and information sciences	NA	NA	0.1	0.3	0.4	0.6	1.0	1.3	1.7	2.0	2.4	2.4	2.6	2.6	3.9	4.1	4.8	5.1	5.7	6.4
Life sciences	26.0	28.7	32.1	37.1	38.3	41.4	48.8	51.8	53.3	51.8	53.8	57.9	60.8	63.1	65.6	66.7	66.4	71.4	74.2	78.3
Psychology	7.3	7.7	8.3	9.9	10.5	10.7	14.3	14.3	15.7	14.9	15.6	16.1	17.2	18.2	19.1	20.5	21.3	21.2	20.2	21.1
Social sciences	14.3	13.8	14.7	17.6	17.8	20.9	28.5	30.5	31.1	29.3	28.1	29.8	30.9	31.4	31.5	32.7	33.8	35.2	34.7	38.2
Engineering	9.0	8.9	9.8	9.5	11.2	12.5	16.8	17.6	18.2	17.5	18.5	20.9	19.4	20.2	20.3	21.4	22.3	24.1	25.6	30.5
Full-time faculty	72.0	71.6	74.1	83.8	86.9	95.1	121.4	125.8	131.4	121.7	121.6	124.8	126.3	130.4	135.2	133.7	138.6	142.6	144.4	159.6
Physical sciences	15.1	14.8	13.9	15.1	15.1	16.3	19.7	19.9	20.1	18.0	17.9	18.4	18.3	18.6	19.9	18.2	18.7	19.6	19.7	21.9
Mathematics and statistics	6.6	6.4	6.4	6.5	6.9	7.3	9.1	9.8	10.2	9.1	8.4	9.0	8.4	8.2	9.2	9.6	10.1	10.4	10.0	11.4
Computer and information sciences	NA	NA	s	0.2	0.3	0.5	0.8	1.2	1.6	1.8	2.2	2.3	2.3	2.3	3.3	3.6	4.1	4.1	4.5	5.3
Life sciences	21.8	22.9	24.7	28.7	29.6	31.9	38.3	39.0	41.0	38.4	39.5	40.3	41.4	43.5	45.1	44.3	44.5	46.1	47.8	49.9
Psychology	6.6	6.7	6.6	8.0	8.8	9.0	12.1	12.2	13.9	12.5	12.9	12.9	13.4	14.1	14.4	14.9	15.9	16.1	15.3	16.4
Social sciences	13.6	12.9	13.5	16.5	16.0	18.8	26.1	27.9	28.3	26.7	25.3	25.3	26.7	27.4	27.0	27.2	29	29.6	28.9	31.9
Engineering	8.2	8.0	8.9	8.8	10.2	11.4	15.2	15.7	16.2	15.1	15.5	16.5	15.6	16.5	16.2	15.8	16.4	16.9	18.1	22.9
Research as primary activity																				
All positions	27.8	37.0	41.3	46.5	48.9	55.9	66.5	72.2	73.9	80.2	83.0	88.6	91.4	93.8	102.9	108.2	107.9	117.5	120.7	133.7

Research priority, position, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Physical sciences	6.6	8.9	8.5	9.4	9.2	11.0	12.3	13.3	13.1	14.7	15.2	15.6	15.1	15.0	16.2	16.3	15.7	17.5	18.2	20.8
Mathematics and statistics	1.5	1.8	2.1	1.9	2.0	2.7	3.2	3.5	3.5	3.4	3.3	3.5	2.9	3.3	3.8	5.0	5.6	5.7	5.6	6.4
Computer and information sciences	NA	NA	0.0	0.1	0.2	0.4	0.7	0.8	1.1	0.9	1.0	1.1	1.1	1.3	1.9	2.0	2.6	2.8	3.1	3.9
Life sciences	12.8	16.6	19.7	23.2	24.3	27.1	31.5	33.8	34.5	36.0	37.7	40.5	43.2	43.7	46.4	47.0	45.3	49.7	51.0	54.4
Psychology	2.0	2.8	3.4	4.1	4.4	4.6	5.2	5.9	6.2	6.7	7.4	8.0	8.6	8.7	10.0	11.2	11.1	11.4	10.9	11.3
Social sciences	2.8	4.1	4.2	4.5	4.9	5.7	7.5	8.2	8.4	10.7	9.8	9.8	11.1	11.7	13.0	13.6	14.0	15.6	15.9	17.3
Engineering	2.1	2.9	3.4	3.3	3.9	4.4	6.2	6.9	7.2	7.9	8.7	10.1	9.4	10.1	11.6	13.1	13.6	15.0	16.0	19.6
Full-time faculty	19.8	25.8	28.1	31.8	33.6	39.5	48.6	51.6	53.8	56.8	56.6	56.9	58.9	61.2	70.4	70.2	71.7	75.0	77.4	88.7
Physical sciences	3.5	5.0	5.0	5.4	5.4	6.5	7.8	8.0	8.2	8.7	8.4	8.1	8.0	8.0	9.7	9.3	9.4	9.8	10.4	12.1
Mathematics and statistics	1.4	1.6	1.8	1.8	1.8	2.5	2.7	3.2	3.2	3.1	2.7	2.9	2.3	2.3	3.4	3.9	4.6	4.6	4.5	5.4
Computer and information sciences	NA	NA	0.0	0.1	0.1	0.3	0.5	0.7	1.0	0.7	0.9	0.9	0.9	1.1	1.6	1.7	2.1	2.1	2.4	3.1
Life sciences	9.3	11.4	13.1	15.5	16.5	18.6	22.3	22.6	23.8	24.1	24.7	25.1	26.1	26.9	29.4	27.8	27.1	28.2	29.1	31.0
Psychology	1.6	2.0	2.2	2.5	2.9	3.3	3.9	4.5	5.0	5.3	5.4	5.7	5.9	6.1	7.0	7.8	7.8	8.0	7.9	8.6
Social sciences	2.5	3.6	3.4	3.8	3.8	4.6	6.3	7.1	7.1	8.9	8.3	7.4	9.0	9.5	10.7	11.3	11.8	12.9	13.0	14.7
Engineering	1.5	2.3	2.6	2.7	3.0	3.7	5.0	5.4	5.5	6.0	6.3	6.6	6.6	7.4	8.6	8.5	8.9	9.4	10.1	13.8
Teaching as primary activity																				
All positions	73.3	82.2	83.8	95.9	97.7	101.0	99.3	100.9	103.4	98.3	100.2	105.4	108.6	109.0	105.9	109.4	114.0	120.6	124.8	133.7
Physical sciences	16.3	16.5	15.9	17.5	16.8	17.4	16.9	16.7	16.8	15.7	15.9	16.7	17.8	17.9	17.0	16.9	17.5	18.8	18.7	19.7
Mathematics and statistics	7.4	8.5	8.6	9.1	9.4	9.3	9.2	9.5	10.1	10.3	9.8	10.2	10.5	10.2	9.4	9.9	10.3	10.7	11.3	12.2

Research priority, position, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Computer and information sciences	NA	NA	0.1	0.2	0.3	0.3	0.3	0.6	0.7	1.4	1.8	1.8	2.1	1.9	2.5	3.0	3.2	3.8	4.0	3.6
Life sciences	16.6	18.1	18.1	20.5	21.1	20.9	20.1	20.3	20.9	20.2	21.8	23.4	25.1	25.7	25.2	27.6	28.2	30.6	33.9	35.0
Psychology	7.7	9.4	9.5	11.7	11.6	12.3	13.0	12.8	12.8	11.6	11.9	12.4	13.0	13.3	13.3	14.3	14.4	15.0	14.9	16.3
Social sciences	16.9	21.0	22.6	26.8	27.7	29.1	28.5	28.8	29.8	27.6	26.9	28.3	28.0	28.0	27.3	27.5	29.6	29.8	30.0	33.4
Engineering	8.4	8.7	9.1	10.1	10.8	11.7	11.3	12.2	12.2	11.6	12.1	12.6	12.1	11.9	11.2	10.2	10.8	11.9	11.9	13.5
Full-time faculty	69.9	78.4	79.7	92.1	91.9	94.9	93.6	93.9	96.7	91.4	91.9	92.1	95.0	93.8	89.9	88.4	93.5	96.7	98.2	101.9
Physical sciences	15.5	15.7	15.1	16.9	15.8	16.5	16.2	15.6	15.6	14.3	14.4	14.4	15.4	15.1	14.3	13.8	14.2	15.1	14.5	14.6
Mathematics and statistics	7.2	8.1	8.3	8.8	9.0	8.9	9.0	9.0	9.6	10.0	9.0	9.1	9.2	8.9	8.5	8.2	8.6	8.8	9.3	9.5
Computer and information sciences	NA	NA	0.1	0.2	0.3	0.3	0.3	0.5	0.7	1.3	1.7	1.6	2.0	1.7	2.2	2.5	2.8	3.2	3.4	3.0
Life sciences	15.7	17.1	17.1	19.6	19.6	19.5	18.7	18.7	19.1	18.4	19.8	20.0	21.6	21.8	21.0	21.8	23.1	24.4	26.1	26.3
Psychology	7.3	8.9	8.9	11.0	10.9	11.6	12.1	11.9	12.2	10.5	10.9	10.6	11.3	11.1	10.8	11.1	11.1	11.3	11.0	11.8
Social sciences	16.1	20.1	21.4	25.7	25.9	26.8	26.5	26.4	27.6	25.9	24.6	24.6	24.2	24.1	23.1	21.9	24.3	23.9	23.8	25.7
Engineering	8.1	8.5	8.9	10.0	10.4	11.2	11.0	11.7	11.8	11.0	11.5	11.7	11.4	10.8	9.9	8.9	9.4	10.0	10.1	11.1
Other primary activity																				
All positions	16.9	26.2	30.2	24.7	29.6	33.3	30.1	33.5	33.2	35.2	34.3	38.6	40.2	42.8	49.5	55.2	54.6	56.6	63.5	61.9
Physical sciences	2.6	3.8	4.4	3.0	3.8	3.8	3.5	3.6	3.8	4.6	4.6	5.2	5.8	5.8	7.2	6.5	6.7	7.4	8.0	7.9
Mathematics and statistics	0.8	1.4	1.6	1.3	1.6	1.6	1.4	1.5	1.6	1.8	1.5	1.8	1.7	1.4	2.2	2.5	2.1	2.3	2.1	2.3
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.5	0.5	0.5	0.8	0.8	1.1	0.8	1.4	1.5
Life sciences	5.5	8.0	9.3	7.6	9.4	10.6	9.7	10.7	11.5	12.0	12.2	13.4	13.6	14.8	17.6	20.9	20.8	21.6	24.9	23.3

Research priority, position, and field	1973	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Psychology	2.5	4.0	4.8	4.4	5.0	6.2	5.6	6.3	6.2	6.7	6.9	7.0	7.3	8.4	8.1	9.5	9.0	9.1	10.4	11.1
Social sciences	3.7	6.0	6.8	5.6	6.1	7.1	6.1	7.6	6.6	6.1	5.8	6.8	7.2	7.2	8.2	8.8	8.9	9.5	9.9	9.1
Engineering	1.9	3.1	3.3	2.7	3.5	3.8	3.7	3.7	3.4	3.7	3.0	3.8	4.0	4.7	5.5	6.2	5.9	6.0	6.8	6.7
Full-time faculty	13.6	21.3	23.4	18.0	22.9	22.5	22.2	24.2	22.6	24.1	22.9	23.9	24.2	26.0	30.3	34.6	33.9	35.1	38.8	37.1
Physical sciences	1.8	2.9	3.3	2.0	3.0	2.4	2.4	2.5	2.3	2.7	2.7	2.9	2.8	3.0	3.6	3.8	3.9	4.4	4.6	4.4
Mathematics and statistics	0.7	1.2	1.3	1.1	1.4	1.3	1.2	1.3	1.4	1.6	1.3	1.5	1.4	1.0	1.9	1.9	1.6	1.7	1.6	1.9
Computer and information sciences	NA	NA	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.3	0.5	0.7	0.4	0.6	1.1
Life sciences	4.5	6.4	7.1	5.8	7.4	7.4	7.2	7.9	8.2	8.3	8.3	8.5	8.5	9.6	11.3	13.2	13.3	14.0	15.3	13.5
Psychology	2.0	3.0	3.2	2.9	3.5	3.6	3.3	3.8	3.6	3.7	3.8	3.0	3.4	3.9	3.7	4.4	4.1	4.1	5.1	5.6
Social sciences	3.0	5.2	5.5	4.2	4.7	4.7	4.8	5.4	4.3	4.5	4.2	4.8	5.0	4.7	5.8	6.0	5.9	6.5	6.8	6.3
Engineering	1.6	2.7	2.8	2.0	2.9	2.9	3.3	3.1	2.7	3.1	2.2	2.8	2.7	3.3	3.5	4.7	4.4	3.9	4.7	4.3

NA = not available; s = suppressed for reasons of confidentiality and/or reliability.

Note(s)

Detail may not add to total because of rounding. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, and university research institutes, excluding those employed part time because they are students or retired. Full-time faculty includes full professors, associate professors, assistant professors, and instructors from 1973 to 1995; from 1997 to 2015, full-time faculty includes full professors, associate professors, and assistant professors. Research includes basic or applied research, development, or design. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences. Numbers are rounded to the nearest 100.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2017) of the 1973–2015 Survey of Doctorate Recipients (SDR).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-20

Early career S&E doctorate holders employed in academia, by Carnegie classification of institution, years since doctorate, and type of position: Selected years, 1997–2015

(Percent distribution)

Carnegie classification of institution	Year	1–3 years since doctorate				4–7 years since doctorate			
		Total	Full-time faculty	Postdocs	Other positions	Total	Full-time faculty	Postdocs	Other positions
All universities and colleges	1997	100.0	37.6	41.0	21.4	100.0	62.8	14.8	22.4
	1999	100.0	34.8	43.1	22.1	100.0	61.5	14.1	24.5
	2001	100.0	40.1	39.0	20.9	100.0	58.9	13.3	27.9
	2003	100.0	42.1	33.3	24.6	100.0	61.6	9.6	28.7
	2006	100.0	35.5	45.3	19.2	100.0	58.7	15.5	25.8
	2008	100.0	40.4	35.8	23.8	100.0	61.8	11.4	27.0
	2010	100.0	35.1	41.2	23.7	100.0	60.3	12.5	27.2
	2013	100.0	29.0	42.4	28.6	100.0	52.9	17.1	30.0
	2015	100.0	36.3	35.0	28.7	100.0	51.6	15.5	32.9
Very high research universities	1997	100.0	21.3	58.9	19.9	100.0	48.4	23.2	28.4
	1999	100.0	18.6	62.1	19.3	100.0	47.8	23.3	28.9
	2001	100.0	23.2	55.6	21.1	100.0	43.5	23.6	32.9
	2003	100.0	24.0	50.6	25.3	100.0	47.8	17.4	34.8
	2006	100.0	19.0	64.7	16.3	100.0	44.3	25.3	30.4

Carnegie classification of institution	Year	1–3 years since doctorate				4–7 years since doctorate			
		Total	Full-time faculty	Postdocs	Other positions	Total	Full-time faculty	Postdocs	Other positions
	2008	100.0	24.0	54.5	21.6	100.0	46.9	20.0	33.1
	2010	100.0	20.7	61.1	18.2	100.0	49.0	20.0	31.0
	2013	100.0	15.5	63.6	20.9	100.0	36.7	31.4	31.9
	2015	100.0	20.9	57.3	21.8	100.0	37.1	29.6	33.3
Other universities and colleges	1997	100.0	55.6	20.7	23.7	100.0	75.8	6.3	17.9
	1999	100.0	55.8	19.2	25.0	100.0	74.1	5.0	20.9
	2001	100.0	61.9	17.5	20.6	100.0	72.2	3.5	24.2
	2003	100.0	63.3	12.9	23.7	100.0	73.5	2.7	23.7
	2006	100.0	58.4	17.5	24.1	100.0	74.1	4.2	21.7
	2008	100.0	60.8	12.8	25.7	100.0	74.4	3.5	22.0
	2010	100.0	55.4	14.0	30.6	100.0	72.2	4.6	23.2
	2013	100.0	44.7	17.5	37.9	100.0	66.0	4.1	29.9
	2015	100.0	48.8	15.7	35.4	100.0	60.5	6.6	32.9

Note(s)

Detail may not add to total because of rounding. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, or university research institutes, excluding those employed part time because they are students or retired. Full-time faculty includes full professors, associate professors, and assistant professors. Other positions include full-time positions such as research associates, adjunct positions, instructors, lecturers, administrative positions, and part-time positions of all kinds. Institutions are designated by the 2005 Carnegie classification code. For information on these institutional categories, see the Carnegie Classification of Institutions of Higher Education, http://carnegieclassifications.iu.edu/downloads.php, accessed 13 February 2017.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2017) of the 1997–2015 Survey of Doctorate Recipients (SDR).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-21

S&E doctorate holders employed in academia with federal support, by degree field, research activity, and type of position: 1973–2015

(Percent)

Field, research activity, and position	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
All fields	44.5	40.5	39.7	38.2	35.5	39.8	31.4	46.5	47.9	48.5	36.1	39.4	38.6	45.7	45.1	45.9	46.9	44.5	45.1	44.2	41.0
Research as primary or secondary activity	51.9	48.9	52.3	51.8	50.8	55.9	44.5	56.1	58.1	57.8	46.4	50.0	48.2	56.6	56.4	56.7	58.1	55.5	56.2	56.5	52.0
Full-time faculty	42.0	39.6	38.2	36.2	38.8	41.7	34.3	45.6	46.6	48.0	32.9	35.7	34.9	43.2	43.6	44.9	46.5	43.7	44.7	43.5	40.3
Other full-time positions	60.2	58.8	68.1	58.3	58.5	59.4	49.8	60.6	60.9	58.8	42.5	43.1	46.7	48.9	47.2	46.3	43.6	43.5	41.9	42.8	41.9
Postdoctorates	87.7	86.3	86.0	82.1	86.3	82.2	78.5	82.1	83.5	84.5	83.1	80.1	74.1	80.3	74.3	78.1	70.7	71.9	73.2	77.7	70.3
Physical sciences	47.3	44.0	43.8	42.8	42.1	46.5	38.2	54.1	57.9	57.0	45.7	49.3	48.6	57.0	55.3	56.5	56.4	53.6	53.9	53.0	51.9
Research as primary or secondary activity	56.2	54.1	56.2	57.0	59.0	63.3	52.5	66.2	69.6	68.9	58.6	62.3	59.6	70.1	68.3	69.2	70.0	67.2	67.0	68.8	65.9
Full-time faculty	42.2	38.7	38.3	37.4	37.1	42.6	33.2	49.5	53.7	53.5	38.7	42.9	42.1	53.2	51.7	55.0	55.1	54.2	52.8	52.2	51.7
Other full-time positions	67.0	61.4	62.8	68.3	59.1	64.8	58.1	71.2	70.1	69.1	60.6	57.0	63.6	65.8	59.7	58.8	58.2	51.4	50.7	51.8	53.8
Postdoctorates	90.3	87.4	86.3	81.9	82.5	81.9	75.4	87.9	84.6	81.2	82.0	85.3	81.2	81.3	83.0	78.8	75.7	66.7	78.3	80.0	72.7
Mathematics and statistics	26.9	19.1	19.0	21.7	21.3	30.1	21.5	31.1	33.5	34.5	18.8	22.3	20.9	29.1	31.9	31.1	34.8	31.7	34.1	30.5	26.8
Research as primary or secondary activity	32.4	23.6	25.0	27.0	27.0	41.3	26.4	36.9	40.8	40.6	24.8	27.0	26.9	35.3	41.7	38.6	43.4	38.5	42.2	40.7	36.6
Full-time faculty	26.8	18.8	18.0	20.4	21.0	29.9	21.4	30.4	32.8	34.0	18.3	21.1	19.3	27.7	30.1	31.9	34.8	31.8	35.3	30.8	28.1
Other full-time positions	33.6	33.5	46.9	54.6	30.1	43.4	29.1	47.8	52.8	67.2	40.6	34.6	40.0	37.5	54.5	23.1	25.0	29.4	25.0	25.0	23.8
Postdoctorates	48.8	35.8	55.1	43.2	56.3	66.3	48.5	34.4	53.4	80.4	s	45.3	35.6	54.7	61.9	65.9	64.2	60.0	57.1	75.0	60.0
Computer and information sciences	NA	NA	NA	34.8	29.7	44.6	45.0	61.7	52.4	49.4	39.9	43.2	41.1	55.6	47.2	48.9	44.0	43.5	50.7	51.2	45.1

Field, research activity, and position	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Research as primary or secondary activity	NA	NA	NA	34.8	26.9	44.9	36.1	55.6	52.8	54.3	41.1	46.0	46.3	59.3	57.9	54.9	53.8	54.2	61.4	59.6	54.7
Full-time faculty	NA	NA	NA	25.0	26.6	38.1	38.0	58.1	52.8	48.2	37.7	40.7	37.9	54.5	48.5	50.0	44.9	44.6	51.7	51.5	46.6
Other full-time positions	NA	NA	NA	s	25.0	67.9	80.6	79.7	47.1	67.7	59.1	62.9	50.0	66.7	33.3	50.0	42.9	44.4	50.0	42.9	36.4
Postdoctorates	NA	NA	NA	57.1	100.0	100.0	s	88.2	100.0	s	100.0	78.0	97.2	100.0	100.0	95.8	97.9	50.0	66.7	50.0	66.7
Life sciences	59.3	58.9	58.1	55.3	59.6	60.0	53.5	65.3	65.1	65.5	52.2	52.5	51.0	57.9	56.6	57.2	58.0	56.6	56.6	54.9	51.1
Research as primary or secondary activity	65.8	64.2	66.8	65.2	63.3	68.3	57.8	72.3	73.1	72.0	62.7	63.6	61.6	69.5	67.9	68.0	69.4	69.3	68.7	68.7	63.6
Full-time faculty	57.1	56.4	54.9	51.4	55.6	57.8	50.5	63.4	62.1	63.7	48.6	49.0	47.8	55.2	56.3	57.0	58.4	56.1	56.1	54.5	50.5
Other full-time positions	68.1	70.9	72.1	64.8	68.5	68.5	58.4	71.0	74.1	67.2	45.8	46.3	47.4	50.0	46.3	46.9	50.0	51.2	50.3	49.5	47.1
Postdoctorates	88.8	87.7	88.4	84.6	86.0	82.6	78.3	82.1	86.8	84.4	84.1	81.9	77.7	82.6	77.6	81.3	71.5	77.7	78.7	80.7	75.2
Psychology	37.5	36.1	33.2	32.6	32.7	30.1	25.9	31.2	35.5	34.7	25.7	27.6	27.4	32.9	34.3	34.7	36.5	31.9	33.3	31.7	27.1
Research as primary or secondary activity	45.4	41.7	41.9	42.7	41.9	42.6	36.6	39.8	46.6	43.5	37.0	39.5	40.5	46.5	48.1	48.2	52.2	43.2	46.6	44.6	39.3
Full-time faculty	36.4	34.1	30.6	28.3	27.5	27.3	23.6	28.3	34.0	32.9	25.2	25.1	25.3	31.6	33.6	34.5	37.5	33.9	36.5	34.8	27.8
Other full-time positions	48.1	41.6	65.4	46.3	52.3	40.3	32.7	37.1	39.6	36.3	23.8	30.7	30.2	32.6	38.8	35.2	29.8	25.0	23.0	22.2	25.0
Postdoctorates	84.9	86.4	82.5	86.8	92.0	84.2	70.8	88.1	66.3	95.8	71.7	71.4	71.8	71.8	59.2	69.0	69.4	60.0	81.8	80.0	62.5
Social sciences	25.5	23.7	23.3	20.4	21.8	23.7	17.2	27.2	27.7	28.4	14.2	16.1	15.2	22.9	21.5	21.8	23.1	20.6	19.7	19.7	17.3
Research as primary or secondary activity	29.5	26.8	30.6	29.4	25.5	31.4	20.4	30.0	31.1	31.2	17.3	20.9	17.7	27.2	26.5	27.1	28.9	25.7	24.4	24.2	20.9
Full-time faculty	25.2	23.7	22.6	19.0	21.2	22.5	16.2	27.1	27.4	27.8	13.4	15.4	14.6	22.5	21.1	22.1	23.9	20.0	20.6	20.0	17.2
Other full-time positions	36.3	31.6	35.3	37.3	32.7	34.0	26.6	36.2	33.8	32.7	22.1	22.6	22.5	27.3	26.1	25.6	24.5	22.6	20.3	21.9	20.5
Postdoctorates	57.6	54.6	54.7	84.9	47.9	64.6	54.7	27.4	57.6	52.5	88.1	68.5	33.9	65.0	35.8	42.9	22.9	33.3	25.0	50.0	50.0

Field, research activity, and position	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2006	2008	2010	2013	2015
Engineering	53.5	50.6	51.1	49.1	51.0	54.7	43.0	57.1	56.3	63.2	42.6	49.9	49.7	56.9	56.8	57.4	58.7	58.6	58.2	57.6	54.7
Research as primary or secondary activity	58.4	57.3	60.5	57.5	59.2	61.5	45.0	63.1	63.8	68.3	49.5	57.9	55.4	62.5	64.1	64.7	67.3	67.3	66.7	66.8	62.0
Full-time faculty	52.5	49.9	49.3	49.5	49.8	54.7	42.2	56.0	55.2	62.9	40.9	48.4	47.2	55.1	56.7	56.8	58.6	57.7	59.5	57.3	56.5
Other full-time positions	65.5	67.3	86.6	53.0	60.7	63.1	44.3	76.4	71.2	66.8	59.5	56.7	65.6	63.3	58.3	62.2	51.9	61.7	55.8	59.6	54.2
Postdoctorates	84.7	84.3	74.7	51.1	98.9	82.7	91.4	74.8	76.0	90.0	65.7	72.7	62.1	80.4	56.8	73.8	76.8	71.4	61.3	66.7	54.5

NA = not available; s = suppressed for reasons of confidentiality and/or reliability.

Note(s)

Data for 1985 and 1993–97 are not comparable with data for other years and understate the degree of federal support. In 1985 and 1993–97, the federal support question asked whether work performed during the week of 15 April was supported by the government; in other years, the question pertained to work conducted over the course of an entire year. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, or university research institutes. Full-time faculty includes full professors, associate professors, assistant professors, and instructors from 1973 to 1995; from 1997 to 2015, full-time faculty includes full professors, associate professors, and assistant professors. Research includes basic or applied research, development, and design. Total includes part-time employment not shown separately but excludes those employed part time because they are students or retired. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2017) of the 1973–2015 Survey of Doctorate Recipients (SDR).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-22

S&E doctorate holders and full-time faculty with federal support, by degree field and Carnegie classification of employer: 2015

(Percent)

Position and field	All academic institutions	Research universities (very high research activity)	Research universities (high research activity)	Doctoral/ research universities	Master's-granting universities	Baccalaureate colleges	Medical schools	Other universities and colleges
All S&E doctorate holders employed in academic institutions	41.0	60.2	41.4	22.5	16.0	16.6	61.9	32.8
Physical sciences	51.9	73.5	66.0	41.7	26.9	22.0	66.7	38.0
Mathematics and statistics	26.8	50.8	26.9	14.3	9.3	16.0	100.0	15.6
Computer and information sciences	45.1	70.6	33.3	20.0	20.0	25.0	s	35.0
Life sciences	51.1	67.2	51.0	28.6	21.3	22.6	63.1	41.3
Psychology	27.1	50.0	33.3	12.0	9.2	15.6	38.5	18.2
Social sciences	17.3	28.3	19.7	10.3	7.8	6.7	50.0	14.4
Engineering	54.7	69.1	47.3	40.0	26.8	21.4	71.4	49.4
Full-time faculty[a]	40.3	61.5	42.1	24.0	16.3	16.8	60.7	35.4
Physical sciences	51.7	78.8	67.5	44.4	26.8	22.2	75.0	40.5
Mathematics and statistics	28.1	54.3	27.3	14.3	7.7	17.4	100.0	21.2

Position and field	All academic institutions	Research universities (very high research activity)	Research universities (high research activity)	Doctoral/ research universities	Master's-granting universities	Baccalaureate colleges	Medical schools	Other universities and colleges
Computer and information sciences	46.6	76.0	36.4	25.0	21.4	33.3	s	40.0
Life sciences	50.5	69.5	52.6	31.8	21.4	22.7	61.5	44.0
Psychology	27.8	52.8	33.3	16.7	9.7	11.5	44.4	20.4
Social sciences	17.2	28.4	19.4	12.5	6.9	7.7	66.7	14.4
Engineering	56.5	73.3	50.0	41.7	28.6	25.0	80.0	54.5

s = suppressed for reasons of confidentiality and/or reliability.

[a] Full-time faculty includes professors, associate professors, and assistant professors, excluding adjuncts.

Note(s)

Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, or university research institutes, excluding those employed part time because they are students or retired. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences. Institutions are designated by the 2005 Carnegie classification code. For information on these institutional categories, see the Carnegie Classification of Institutions of Higher Education, http://carnegieclassifications.iu.edu/, accessed 17 February 2017.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2017) of the 2015 Survey of Doctorate Recipients (SDR).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-23

S&E doctorate holders with federal support, by Carnegie classification of institution, race, ethnicity, and sex: 2015

(Percent)

All S&E doctorate holders with federal support	Research universities (very high research activity)	Research universities (high research activity)	Doctoral/ research universities	Master's-granting universities	Baccalaureate colleges	Medical schools
Asian or Pacific Islander						
Males	64.6	46.8	35.3	15.0	8.3	77.8
Females	55.0	36.8	20.0	16.7	28.6	64.7
Underrepresented minority[a]						
Males	51.0	42.1	28.6	21.4	23.1	50.0
Females	47.2	33.3	14.3	20.8	20.0	44.4
White						
Males	64.0	43.8	25.0	16.4	16.5	62.5
Females	55.3	36.7	14.7	13.8	15.7	57.9

[a] Underrepresented minority includes blacks or African Americans, Hispanics or Latinos, and American Indians or Alaska Natives.

Note(s)

Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, or university research institutes, excluding those employed part time because they are students or retired. Institutions are designated by the 2005 Carnegie classification code. For information on these institutional categories, see the Carnegie Classification of Institutions of Higher Education, http://carnegieclassifications.iu.edu/, accessed 17 February 2017.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2017) of the 2015 Survey of Doctorate Recipients (SDR).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-24

Early career S&E doctorate holders employed in academia with federal support, by degree field, years since doctorate, and type of position: 1973–2015

(Percent)

Field and year	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full-time positions	Postdocs	All positions	Full-time faculty	Other full-time positions	Postdocs
All fields								
1973	44.1	32.9	72.5	87.1	47.1	42.3	55.3	80.8
1975	44.2	31.1	58.3	87.8	42.5	40.0	66.2	83.2
1977	44.5	28.8	61.2	87.0	42.2	37.8	71.6	85.3
1979	47.2	29.6	58.9	86.6	43.0	37.4	67.3	83.1
1981	51.0	30.8	63.1	87.9	46.5	41.2	64.8	86.9
1983	50.2	33.7	59.0	86.1	50.1	45.3	68.1	84.8
1985	43.2	23.9	59.3	79.1	42.4	36.2	63.3	81.0
1987	53.3	36.7	56.1	82.0	54.8	49.7	71.6	84.2
1989	57.2	38.7	58.7	84.7	57.8	53.5	70.0	89.1
1991	53.6	38.3	56.6	83.8	57.4	53.4	66.6	88.7
1993	43.5	20.8	43.7	80.7	41.1	34.0	46.8	87.3
1995	47.0	23.2	40.1	78.5	43.9	36.1	52.0	86.0
1997	45.2	20.2	39.5	74.8	41.9	33.7	49.6	78.5
1999	52.5	28.1	45.7	79.0	47.4	41.4	46.6	83.3

Field and year	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full-time positions	Postdocs	All positions	Full-time faculty	Other full-time positions	Postdocs
2001	48.2	29.2	43.2	73.6	46.1	39.8	50.7	78.6
2003	48.2	31.3	43.4	77.7	47.5	42.3	55.3	81.1
2006	49.1	30.1	46.8	68.6	47.2	41.7	46.5	76.0
2008	46.4	26.9	48.3	70.6	43.1	37.9	44.3	75.0
2010	47.6	27.5	41.0	72.3	46.0	41.8	47.3	77.6
2013	48.2	22.4	36.7	76.8	46.5	38.8	47.9	78.5
2015	43.5	23.5	40.4	72.3	42.2	34.8	45.0	71.8
Physical sciences								
1973	58.4	31.2	78.3	88.5	44.8	39.5	72.1	98.5
1975	64.1	27.9	60.7	93.2	43.8	36.6	77.3	85.1
1977	63.2	28.9	95.7	88.5	51.6	40.5	77.5	92.4
1979	59.1	25.5	73.7	84.7	52.0	39.0	72.1	91.7
1981	69.3	25.2	94.3	88.1	57.9	49.4	84.5	97.9
1983	70.4	33.8	82.7	88.2	66.2	56.3	85.3	84.8
1985	64.3	18.7	86.6	84.6	50.8	35.7	78.7	91.4
1987	80.9	66.7	69.9	90.2	68.7	56.0	97.1	93.1
1989	77.9	49.2	82.1	88.0	72.4	61.9	89.0	90.6
1991	69.9	44.1	78.8	87.2	67.2	55.1	88.5	100.0

Field and year	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full-time positions	Postdocs	All positions	Full-time faculty	Other full-time positions	Postdocs
1993	63.1	21.3	64.9	84.5	58.2	43.9	70.0	94.5
1995	62.8	21.0	41.9	84.1	53.9	37.8	60.2	86.7
1997	65.1	37.5	66.7	77.8	53.4	41.2	67.9	96.5
1999	67.5	44.4	60.0	83.3	57.0	46.7	65.5	89.4
2001	64.9	40.0	57.1	80.0	54.1	39.4	73.9	83.7
2003	62.5	40.0	66.7	78.9	54.8	50.6	63.1	70.2
2006	66.7	40.0	50.0	78.6	57.6	52.8	64.2	72.2
2008	56.8	36.4	62.5	65.2	52.8	48.4	58.3	75.0
2010	59.3	27.3	37.5	76.5	53.3	41.7	66.7	80.0
2013	59.4	s	37.5	80.0	51.4	37.5	56.3	83.3
2015	53.3	33.3	50.0	68.8	50.0	41.2	54.5	71.4
Mathematics and statistics								
1973	17.5	16.3	58.5	38.7	29.0	29.4	15.4	100.0
1975	14.5	13.0	37.6	28.3	18.9	18.5	31.8	57.9
1977	16.2	12.2	45.9	56.4	19.2	17.6	44.0	52.2
1979	24.8	22.5	52.9	42.5	32.3	30.2	64.9	46.9
1981	10.8	9.5	s	44.1	29.7	27.6	62.7	81.5
1983	31.8	29.8	s	73.4	39.8	39.8	51.3	100.0

Field and year	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full-time positions	Postdocs	All positions	Full-time faculty	Other full-time positions	Postdocs
1985	14.7	14.1	s	34.6	27.0	26.8	s	100.0
1987	15.6	7.4	s	37.6	34.9	35.5	7.3	s
1989	29.1	24.9	s	52.4	39.0	39.1	s	100.0
1991	39.8	35.8	54.9	80.4	28.3	28.6	s	s
1993	15.7	14.8	0.0	100.0	15.2	14.0	100.0	s
1995	17.7	13.4	0.0	40.0	25.6	19.6	s	70.6
1997	12.5	s	s	33.3	15.0	12.5	s	s
1999	33.3	16.7	s	75.0	33.3	31.3	s	s
2001	37.5	12.5	s	50.0	41.2	38.5	50.0	s
2003	33.3	20.0	s	66.7	34.8	36.8	s	s
2006	33.3	25.0	s	62.5	30.4	27.8	s	50.0
2008	26.3	18.2	25.0	50.0	28.6	29.4	100.0	s
2010	35.0	25.0	s	60.0	40.0	45.0	s	s
2013	38.5	16.7	66.7	66.7	34.5	33.3	33.3	100.0
2015	26.7	14.3	25.0	66.7	27.6	25.0	40.0	s
Computer and information sciences								
1973	NA	NA	NA	NA	NA	NA	NA	NA
1975	NA	NA	NA	NA	NA	NA	NA	NA

Field and year	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full-time positions	Postdocs	All positions	Full-time faculty	Other full-time positions	Postdocs
1977	NA	NA	NA	NA	NA	NA	NA	NA
1979	34.8	25.0	s	57.1	s	s	s	s
1981	27.7	24.1	25.0	100.0	52.4	52.4	s	s
1983	45.7	35.1	60.0	100.0	43.5	40.4	92.3	s
1985	54.1	46.4	77.2	s	36.7	31.0	100.0	s
1987	47.2	46.3	42.0	100.0	73.2	66.3	100.0	s
1989	33.0	29.3	50.0	100.0	70.8	78.0	35.7	100.0
1991	23.1	23.1	25.1	s	66.2	63.9	100.0	100.0
1993	44.7	39.5	100.0	100.0	30.7	30.9	27.3	100.0
1995	38.2	31.4	61.1	75.9	38.1	38.3	23.9	s
1997	37.5	40.0	s	100.0	36.4	40.0	s	s
1999	50.0	50.0	s	s	58.3	54.5	s	s
2001	33.3	25.0	s	s	50.0	57.1	s	s
2003	44.4	28.6	s	s	42.9	40.0	66.7	s
2006	33.3	33.3	s	100.0	42.9	45.5	50.0	s
2008	38.5	33.3	100.0	50.0	50.0	45.5	33.3	s
2010	30.8	12.5	s	66.7	62.5	58.3	66.7	s
2013	37.5	s	s	s	55.6	58.3	100.0	s

Field and year	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full-time positions	Postdocs	All positions	Full-time faculty	Other full-time positions	Postdocs
2015	40.0	28.6	50.0	100.0	55.6	66.7	25.0	s
Life sciences								
1973	60.8	48.3	77.0	89.0	59.7	57.3	75.1	89.2
1975	61.8	46.4	72.5	87.6	60.1	57.6	76.2	87.5
1977	61.6	38.1	70.4	88.9	59.6	56.6	73.3	90.2
1979	65.9	40.6	75.8	85.9	57.3	51.4	76.5	84.2
1981	71.8	51.7	76.5	88.1	64.0	58.8	70.8	85.7
1983	68.2	52.8	65.1	84.7	67.1	64.5	72.6	83.7
1985	59.6	34.1	67.2	78.9	61.1	55.6	72.3	81.7
1987	70.2	53.5	73.8	82.1	71.4	68.3	81.0	83.0
1989	74.5	50.2	79.3	89.1	71.9	67.5	79.1	89.3
1991	68.1	49.9	60.0	83.0	70.6	66.8	79.2	86.3
1993	61.2	32.2	44.8	81.9	55.7	46.4	52.0	86.7
1995	58.5	30.3	35.3	80.3	54.0	43.9	47.4	87.4
1997	58.3	24.0	42.9	78.5	52.3	42.4	48.4	78.8
1999	64.7	32.0	50.0	81.4	57.2	47.2	49.3	83.0
2001	59.3	35.7	37.5	76.9	56.4	48.9	49.5	78.8
2003	62.7	39.4	45.0	81.7	57.3	50.3	56.9	83.0

Field and year	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full-time positions	Postdocs	All positions	Full-time faculty	Other full-time positions	Postdocs
2006	55.6	32.3	52.9	67.1	57.5	49.7	49.6	77.0
2008	60.0	33.3	54.5	75.8	54.4	44.2	57.6	82.8
2010	60.6	37.1	48.0	76.6	54.5	47.1	51.4	78.4
2013	62.4	31.3	43.8	80.4	57.2	45.5	54.9	82.8
2015	57.8	35.0	45.5	81.4	51.2	36.7	49.2	75.4
Psychology								
1973	34.3	28.5	59.7	95.3	37.8	36.9	52.1	71.4
1975	35.0	25.5	53.7	88.5	35.3	34.9	32.8	71.2
1977	35.3	26.8	71.7	86.0	31.5	27.9	60.5	73.0
1979	35.2	22.5	22.2	95.5	39.3	31.4	76.5	87.6
1981	46.5	33.2	41.6	93.4	34.7	28.6	54.5	88.2
1983	31.2	19.8	34.2	89.3	32.3	28.2	37.1	87.2
1985	30.6	15.6	44.5	70.1	29.2	26.2	38.7	72.5
1987	37.5	28.5	28.8	82.7	33.2	25.6	40.3	97.9
1989	41.7	34.6	36.1	64.9	36.1	36.7	33.1	63.1
1991	35.9	23.9	24.3	100.0	38.8	38.6	24.8	86.9
1993	21.6	12.0	27.5	61.6	23.2	24.6	15.5	48.2
1995	33.5	17.5	40.6	63.5	26.1	21.8	36.0	82.1

Field and year	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full-time positions	Postdocs	All positions	Full-time faculty	Other full-time positions	Postdocs
1997	35.3	21.4	25.0	75.0	30.2	22.2	37.5	75.0
1999	32.4	20.0	25.0	62.5	35.4	35.7	27.3	100.0
2001	35.1	22.2	33.3	66.7	34.7	31.0	54.5	s
2003	30.8	26.7	36.4	57.1	37.0	34.3	41.7	100.0
2006	45.2	37.5	33.3	64.3	35.5	36.1	23.1	66.7
2008	35.0	29.4	27.3	62.5	26.8	27.3	20.0	50.0
2010	37.8	35.3	22.2	85.7	33.3	33.3	28.6	66.7
2013	36.8	14.3	25.0	66.7	29.3	33.3	25.0	100.0
2015	29.2	10.0	33.3	80.0	30.5	32.4	29.4	50.0
Social sciences								
1973	24.7	23.7	53.7	23.9	29.0	28.7	34.1	93.1
1975	23.1	22.5	29.0	61.7	26.2	26.2	42.4	39.2
1977	24.8	24.2	12.3	61.4	24.6	23.2	56.3	48.0
1979	26.6	22.8	37.6	97.5	20.8	19.2	52.2	70.8
1981	20.4	16.3	48.7	56.0	24.3	24.3	25.2	60.0
1983	28.2	23.6	49.0	77.9	28.1	23.6	57.5	93.8
1985	15.6	12.3	27.8	44.4	19.3	15.7	51.0	41.0
1987	22.5	20.9	34.5	21.4	29.9	27.7	54.0	s

Field and year	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full-time positions	Postdocs	All positions	Full-time faculty	Other full-time positions	Postdocs
1989	25.6	24.7	24.3	41.9	33.2	31.6	51.4	83.9
1991	21.7	19.5	38.8	31.7	36.6	33.8	44.2	100.0
1993	11.2	7.2	25.4	88.2	14.9	14.4	21.9	100.0
1995	15.9	10.7	28.8	80.8	17.8	16.0	41.8	49.8
1997	14.0	12.1	28.6	25.0	16.9	15.2	28.6	s
1999	22.0	15.4	25.0	66.7	22.4	22.6	25.0	s
2001	19.6	19.4	20.0	33.3	21.1	20.4	27.3	s
2003	18.9	15.8	28.6	33.3	22.2	23.6	22.2	s
2006	18.9	15.6	28.6	33.3	21.6	22.8	20.0	s
2008	17.3	13.2	28.6	50.0	20.0	20.3	21.4	s
2010	15.3	12.8	14.3	33.3	18.8	18.3	25.0	s
2013	13.5	13.6	12.5	50.0	17.4	18.6	18.2	s
2015	18.4	12.0	28.6	33.3	15.9	14.8	21.4	s
Engineering								
1973	50.8	45.2	74.2	87.1	50.7	49.9	78.6	s
1975	53.7	48.9	65.8	83.8	54.4	53.1	82.3	s
1977	55.2	47.2	84.8	72.9	52.9	52.3	64.8	64.9
1979	55.5	48.5	71.9	99.4	55.1	58.8	33.8	16.9

Field and year	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full-time positions	Postdocs	All positions	Full-time faculty	Other full-time positions	Postdocs
1981	54.4	43.2	100.0	100.0	65.6	61.9	83.9	s
1983	47.1	36.7	58.2	98.3	64.3	62.2	99.0	s
1985	43.9	37.8	66.1	94.5	47.6	46.3	66.4	s
1987	53.3	43.7	79.2	75.7	65.5	64.2	97.6	100.0
1989	56.0	48.9	71.9	73.3	70.8	68.6	91.8	100.0
1991	66.6	62.1	67.7	89.9	73.2	73.0	79.7	s
1993	43.4	32.1	65.1	68.7	51.2	49.4	65.9	70.3
1995	51.1	38.5	50.3	72.6	62.1	60.3	72.5	86.5
1997	51.6	37.5	60.0	63.6	52.3	48.5	50.0	66.7
1999	59.3	36.4	80.0	77.8	53.8	56.7	50.0	100.0
2001	55.6	50.0	80.0	57.1	57.9	57.1	44.4	s
2003	55.9	47.1	66.7	77.8	63.6	61.3	63.6	100.0
2006	59.6	42.1	50.0	75.0	64.4	62.1	57.1	83.3
2008	56.4	37.5	71.4	71.4	60.8	57.6	66.7	66.7
2010	52.9	41.2	62.5	62.5	64.3	67.6	63.6	80.0
2013	48.4	25.0	42.9	64.3	61.4	60.5	62.5	75.0
2015	44.8	40.0	50.0	50.0	51.4	50.0	56.3	55.6

NA = not available; s = suppressed for reasons of confidentiality and/or reliability.

Note(s)

Data for 1985 and 1993–97 are not comparable with other years and understate the degree of federal support. In 1985 and 1993–97, the federal support question asked whether work performed during the week of 15 April was supported by the government; in other years, the question pertained to work conducted over the course of an entire year. Because of larger sample sizes, estimates of federal support are more accurate for life sciences than for other fields, especially mathematics and statistics and computer and information sciences. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, and university research institutes. Full-time faculty includes full professors, associate professors, assistant professors, and instructors from 1973 to 1995; from 1997 to 2015, full-time faculty includes full professors, associate professors, and assistant professors. Other full-time positions include those such as research associates, adjunct positions, lecturers, and administrative positions. Total excludes those employed part time because they are students or retired. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, special tabulations (2017) of the 1973–2015 Survey of Doctorate Recipients (SDR).

Science and Engineering Indicators 2018

APPENDIX TABLE 5-25

Fields and subfields of S&E publications data

(List)

Fields and subfields
Engineering
Aerospace engineering
Biomedical engineering
Chemical engineering
Civil engineering
Electrical engineering
General engineering
Industrial engineering
Materials engineering
Mechanical engineering
Metals and metallurgy
Nuclear technology
Operations research and management
Miscellaneous engineering and technology
Astronomy
Chemistry

Fields and subfields
Analytical chemistry
Applied chemistry
General chemistry
Inorganic and nuclear chemistry
Organic chemistry
Physical chemistry
Polymers
Physics
Acoustics
Applied physics
Chemical physics
Fluids and plasmas
General physics
Nuclear and particle physics
Optics
Solid state physics
Miscellaneous physics
Geosciences
Earth and planetary sciences

Fields and subfields
Environmental sciences
Geology
Marine biology and hydrobiology
Meteorology and atmospheric sciences
Oceanography and limnology
Mathematics
Applied mathematics
General mathematics
Probability and statistics
Miscellaneous mathematics
Computer sciences
Agricultural sciences
Agricultural and food sciences
Dairy and animal sciences
Biological sciences
Anatomy and morphology
Biochemistry and molecular biology
Biophysics
Botany

Fields and subfields
Cell biology, cytology, and histology
Ecology
Entomology
General biology
General biomedical research
General zoology
Genetics and heredity
Immunology
Microbiology
Nutrition and dietetics
Parasitology
Pathology
Pharmacology
Physiology
Virology
Miscellaneous biology
Miscellaneous biomedical research
Miscellaneous zoology
Medical sciences

Fields and subfields
Addictive diseases
Allergy
Anesthesiology
Arthritis and rheumatism
Cancer
Cardiovascular system
Dentistry
Dermatology and venereal disease
Embryology
Endocrinology
Environmental and occupational health
Fertility
Gastroenterology
General and internal medicine
Geriatrics
Hematology
Microscopy
Nephrology
Neurology and neurosurgery

Fields and subfields
Obstetrics and gynecology
Ophthalmology
Orthopedics
Otorhinolaryngology
Pediatrics
Pharmacy
Psychiatry
Public health
Radiology and nuclear medicine
Respiratory system
Surgery
Tropical medicine
Urology
Veterinary medicine
Miscellaneous clinical medicine
Other life sciences
Health policy and services
Nursing
Rehabilitation

Fields and subfields
Speech and language pathology and audiology
Psychology
Behavioral and comparative psychology
Clinical psychology
Developmental and child psychology
Experimental psychology
General psychology
Human factors
Psychoanalysis
Social psychology
Miscellaneous psychology
Social sciences
Anthropology and archaeology
Area studies
Criminology
Demography
Economics
General social sciences
Geography and regional sciences

Fields and subfields
Gerontology and aging
International relations
Planning and urban studies
Political science and public administration
Science studies
Social studies of medicine
Sociology
Miscellaneous social sciences

Source(s)

SRI International; Science-Metrix; National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), https://ncsesdata.nsf.gov/webcaspar/.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-26

Regions, countries, or economies in S&E publications data

(Regions, countries, or economies)

North America	Central America and Caribbean	South America	EU	Other Europe	Middle East	Africa	Asia
Canada	Antigua and Barbuda	Argentina	Austria	Albania	Armenia	Algeria	Afghanistan
Greenland	Bahamas, The	Bolivia	Belgium	Andorra	Azerbaijan	Angola	Bangladesh
Mexico	Barbados	Brazil	Bulgaria	Belarus	Bahrain	Benin	Bhutan
Puerto Rico	Belize	Chile	Croatia	Bosnia and Herzegovina	Gaza Strip	Botswana	Brunei
United States	Costa Rica	Colombia	Cyprus	Holy See (Vatican City)	Georgia	Burkina Faso	Burma
	Cuba	Ecuador	Czech Republic	Iceland	Iran	Burundi	Cambodia
	Dominica	Guyana	Denmark	Kosovo	Iraq	Cameroon	China
	Dominican Republic	Paraguay	Estonia	Liechtenstein	Israel	Cape Verde	India
	El Salvador	Peru	Finland	Macedonia	Jordan	Central African Republic	Indonesia
	Grenada	Suriname	France	Moldova	Kuwait	Chad	Japan
	Guatemala	Uruguay	Germany	Monaco	Lebanon	Comoros	Kazakhstan
	Haiti	Venezuela	Greece	Montenegro[a]	Oman	Congo, Democratic Republic of the	Kyrgyzstan
	Honduras		Hungary	Norway	Qatar	Congo, Republic of the	Laos
	Jamaica		Ireland	Russia	Saudi Arabia	Côte d'Ivoire	Malaysia
	Nicaragua		Italy	San Marino	Syria	Djibouti	Maldives

North America	Central America and Caribbean	South America	EU	Other Europe	Middle East	Africa	Asia
	Panama		Latvia	Serbia[a]	United Arab Emirates	Egypt	Mongolia
	Saint Kitts and Nevis		Lithuania	Serbia and Montenegro[b]	West Bank	Equatorial Guinea	Nepal
	Saint Lucia		Luxembourg	Switzerland	Yemen	Eritrea	North Korea
	Saint Vincent and the Grenadines		Malta	Turkey		Ethiopia	Pakistan
	Trinidad and Tobago		Netherlands	Ukraine		Gabon	Papua New Guinea
			Poland			Gambia, The	Philippines
			Portugal			Ghana	Singapore
			Romania			Guinea	South Korea
			Slovakia			Guinea-Bissau	Sri Lanka
			Slovenia			Kenya	Taiwan
			Spain			Lesotho	Tajikistan
			Sweden			Liberia	Thailand
			United Kingdom			Libya	Timor-Leste
						Madagascar	Turkmenistan
						Malawi	Uzbekistan
						Mali	Vietnam
						Mauritania	

North America	Central America and Caribbean	South America	EU	Other Europe	Middle East	Africa	Asia
						Mauritius	
						Morocco	
						Mozambique	
						Namibia	
						Niger	
						Nigeria	
						Rwanda	
						São Tomé and Príncipe	
						Senegal	
						Seychelles	
						Sierra Leone	
						Somalia	
						South Africa	
						South Sudan	
						Sudan	
						Swaziland	
						Tanzania	
						Togo	
						Tunisia	

North America	Central America and Caribbean	South America	EU	Other Europe	Middle East	Africa	Asia
						Uganda	
						Western Sahara	
						Zambia	
						Zimbabwe	

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-27

S&E articles in all fields combined, by region, country, or economy: 2003–16

(Number)

Region, country, or economy	Region, country, or economy economic status	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	-	1,192,446.0	1,309,104.0	1,481,643.0	1,567,422.0	1,661,634.0	1,752,431.0	1,861,148.0	1,958,948.0	2,070,735.0	2,137,315.0	2,217,046.0	2,300,684.0	2,305,909.0	2,295,608.0
North America	-	366,071.7	396,720.5	435,091.4	441,710.1	451,285.7	455,841.9	465,172.7	478,045.1	494,841.5	505,215.2	509,326.6	516,379.8	504,153.0	480,895.9
Canada	Developed	37,695.5	41,624.3	47,087.7	49,258.8	52,326.3	53,416.3	55,541.0	56,734.1	57,925.7	60,130.9	60,611.1	61,539.4	60,496.4	57,355.8
Greenland	Developed	8.8	23.5	16.4	14.4	15.5	15.9	12.8	21.4	18.8	26.3	33.8	22.9	32.2	25.5
Mexico	Developing	6,601.5	7,198.8	8,286.0	9,322.0	9,492.1	10,476.3	10,747.8	11,436.3	11,959.0	12,746.5	13,469.6	14,587.8	14,485.4	14,529.4
United States	Developed	321,765.9	347,873.9	379,701.3	383,114.9	389,451.8	391,933.4	398,871.1	409,853.3	424,938.0	432,311.5	435,212.0	440,229.7	429,139.0	408,985.3
Central America and Caribbean	-	1,883.4	2,009.3	2,262.5	2,690.2	2,649.7	2,815.5	3,070.9	3,041.7	3,323.4	3,384.6	3,309.9	3,398.5	3,102.1	2,855.0
Antigua and Barbuda	Developing	1.8	0.7	1.8	1.6	4.3	6.3	3.8	2.2	0.8	2.5	1.9	2.5	3.9	7.8
Bahamas, The	Developing	5.2	3.0	7.4	5.9	11.1	6.0	9.7	8.8	10.9	7.9	16.9	12.3	12.3	14.4
Barbados	Developing	41.0	48.4	37.1	44.3	46.5	45.9	34.2	27.7	35.4	47.6	43.5	40.7	49.6	48.4
Belize	Developing	4.8	4.5	5.8	4.9	2.4	3.6	9.3	11.0	3.4	9.0	9.6	5.2	7.0	5.5
Costa Rica	Developing	152.4	219.1	219.1	222.4	228.7	249.5	260.7	261.2	270.3	315.9	285.8	365.8	354.5	376.7
Cuba	Developing	767.1	803.4	938.5	1,228.5	1,130.0	1,174.7	1,397.1	1,315.9	1,588.8	1,539.7	1,571.1	1,482.9	1,341.0	1,044.7
Dominica	Developing	4.6	2.4	5.3	4.2	2.9	5.2	5.0	8.5	6.9	10.8	11.3	10.1	9.5	7.7

Region, country, or economy	Region, country, or economy economic status	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Dominican Republic	Developing	13.5	14.0	16.9	16.9	18.2	18.2	15.5	18.1	20.5	25.9	38.9	40.6	35.3	30.1
El Salvador	Developing	5.4	18.0	14.7	18.2	14.5	20.9	16.0	18.7	17.8	19.4	14.7	19.9	21.8	28.5
Grenada	Developing	5.7	5.6	5.7	14.1	20.4	23.8	19.5	15.6	26.7	28.1	35.8	55.5	31.5	34.3
Guatemala	Developing	26.6	28.7	50.9	38.1	36.9	38.7	64.7	54.8	48.4	74.6	84.2	72.5	86.0	85.1
Haiti	Developing	5.8	7.5	7.2	15.1	10.8	7.3	11.8	13.3	17.1	16.5	29.0	38.3	33.8	30.1
Honduras	Developing	10.8	14.3	15.2	13.4	12.0	16.7	16.4	24.1	18.9	25.6	19.8	27.7	31.4	33.0
Jamaica	Developing	142.1	156.7	135.8	141.2	173.4	208.6	204.8	187.8	215.5	223.8	195.9	160.1	144.5	134.8
Nicaragua	Developing	13.8	17.2	20.4	32.1	22.6	32.7	29.1	33.5	32.9	34.4	28.6	37.0	26.6	35.6
Panama	Developing	62.9	68.8	79.1	83.1	101.2	115.6	119.3	119.8	131.8	155.1	160.2	170.6	161.5	159.3
Puerto Rico	Developing	496.7	462.4	527.9	662.6	639.6	671.2	639.7	705.2	631.2	624.3	577.6	621.3	585.8	566.0
Saint Kitts and Nevis	Developing	0.2	0.7	2.0	1.9	2.0	4.2	2.8	4.7	4.3	9.3	13.1	13.2	15.3	20.8
Saint Lucia	Developing	0.8	0.6	2.4	3.4	2.0	0.7	0.0	2.8	5.0	1.3	2.7	0.2	2.8	4.7
Saint Vincent and the Grenadines	Developing	1.8	0.4	1.3	0.7	1.5	0.0	1.1	0.5	0.1	1.4	2.2	0.7	0.8	2.3
Trinidad and Tobago	Developing	120.5	133.0	168.1	137.6	168.5	165.8	210.4	207.5	236.8	211.3	167.0	221.5	147.2	185.2
South America	-	25,875.0	28,943.9	32,447.4	40,482.9	44,184.6	50,940.4	55,308.1	59,510.5	63,517.4	69,790.8	72,401.5	77,457.7	77,750.4	79,115.1
Argentina	Developing	4,588.4	4,700.7	5,009.2	5,599.8	5,755.0	6,356.5	7,017.4	7,472.5	7,961.9	8,205.1	8,268.5	8,955.3	8,719.7	8,648.2
Bolivia	Developing	49.4	44.1	58.4	68.8	82.0	95.2	85.1	78.1	86.8	86.8	92.1	94.5	85.3	95.1

Region, country, or economy	Region, country, or economy economic status	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Brazil	Developing	16,752.4	19,375.9	21,869.7	28,159.8	31,066.2	35,532.3	38,547.2	41,754.9	44,585.8	49,184.2	51,136.2	53,667.3	53,492.3	53,606.6
Chile	Developing	2,063.5	2,284.4	2,513.5	3,122.3	3,401.0	3,909.1	4,162.5	4,314.1	4,718.3	5,256.0	5,358.3	6,182.4	6,515.1	6,745.9
Colombia	Developing	676.4	810.6	964.8	1,367.8	1,571.5	2,378.6	2,684.1	3,141.0	3,461.3	4,136.7	4,662.6	5,292.6	5,520.5	6,120.5
Ecuador	Developing	96.1	91.5	126.2	123.4	140.9	152.0	181.9	190.0	168.6	253.5	270.2	409.1	666.0	1,096.1
Guyana	Developing	7.1	11.5	18.2	10.1	13.0	12.1	10.2	20.6	9.7	12.4	11.7	12.1	8.8	13.7
Paraguay	Developing	14.8	27.3	28.8	29.1	31.1	32.3	35.1	36.2	56.2	57.9	61.0	67.7	97.5	96.4
Peru	Developing	204.0	207.9	235.2	294.4	315.9	365.1	420.4	474.7	572.3	602.3	681.9	761.0	910.2	1,007.6
Suriname	Developing	3.4	5.3	5.8	5.2	5.8	5.1	4.5	6.7	4.2	9.5	15.8	5.9	13.5	21.3
Uruguay	Developing	281.5	306.3	351.4	358.9	382.7	446.1	487.6	522.6	598.6	596.2	600.3	761.6	696.3	809.0
Venezuela	Developing	1,137.9	1,078.4	1,266.1	1,343.2	1,419.5	1,656.0	1,672.0	1,499.2	1,293.6	1,390.3	1,242.8	1,248.0	1,025.2	854.9
Europe	-	461,282.3	492,030.1	543,427.2	563,060.5	594,234.5	619,480.3	649,812.5	668,896.5	700,312.6	731,643.3	751,859.2	772,862.0	769,694.4	754,696.6
EU	-	388,657.0	414,985.2	459,901.2	480,818.3	506,962.8	528,948.9	553,592.6	568,066.4	593,001.6	619,018.4	632,208.9	646,622.7	635,063.2	613,774.4
Austria	Developed	7,749.6	8,065.7	8,903.4	9,155.2	9,882.7	10,334.3	10,941.2	11,214.8	11,824.8	12,358.5	12,557.6	12,900.5	12,936.7	12,366.4
Belgium	Developed	10,811.8	11,552.8	12,871.1	13,035.8	13,798.4	14,481.3	15,055.4	15,409.4	16,087.9	16,971.3	17,225.6	17,499.2	16,851.8	16,393.7
Bulgaria	Developed	1,688.9	1,794.9	2,020.2	1,928.2	2,483.3	2,356.5	2,552.0	2,599.1	2,554.0	2,733.0	2,753.4	2,744.4	2,605.3	2,558.7
Croatia	Developed	2,464.9	2,577.3	3,160.0	3,124.0	3,758.0	3,976.4	4,410.3	4,421.2	4,965.7	4,813.5	4,701.8	4,473.8	4,398.1	4,056.0
Cyprus	Developed	154.3	217.7	275.3	316.3	373.5	463.4	575.6	633.6	677.6	758.8	934.7	867.9	891.8	972.9
Czech Republic	Developed	6,374.8	7,000.4	8,016.2	8,838.7	9,988.0	10,649.1	11,197.6	12,673.8	13,544.7	13,948.9	14,401.9	15,675.0	16,873.4	15,963.1

Region, country, or economy	Region, country, or economy economic status	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Denmark	Developed	7,279.6	7,751.3	8,312.6	8,536.3	9,023.1	9,283.4	9,843.7	10,395.9	11,590.0	12,675.1	13,053.1	14,022.0	14,052.6	13,470.7
Estonia	Developed	555.3	625.1	715.5	853.7	1,014.9	1,118.0	1,128.0	1,407.1	1,381.7	1,475.0	1,506.4	1,675.2	1,604.2	1,481.7
Finland	Developed	7,792.3	8,500.7	9,037.7	9,204.0	9,413.7	9,579.8	9,921.3	9,976.6	10,345.3	10,488.1	10,824.1	11,220.0	10,752.7	10,545.1
France	Developed	51,757.8	54,775.8	59,581.4	62,448.0	64,476.8	67,209.2	69,380.8	70,177.1	72,035.5	74,413.7	75,266.0	75,017.4	72,224.4	69,430.8
Germany	Developed	70,447.7	74,144.7	82,968.9	84,434.4	88,424.9	91,159.6	95,033.3	97,179.4	100,879.4	105,373.5	105,377.5	109,262.0	105,754.9	103,121.9
Greece	Developed	6,680.5	7,780.4	9,248.9	10,684.0	11,041.0	11,774.1	12,118.0	11,954.3	11,967.4	11,980.5	11,923.4	11,752.7	11,195.8	10,725.4
Hungary	Developed	4,500.2	4,796.0	5,542.0	5,530.3	5,884.6	6,408.5	6,029.9	5,870.6	6,419.3	6,570.6	6,468.0	6,858.9	6,566.3	6,207.6
Ireland	Developed	3,069.3	3,824.8	4,742.8	4,857.3	5,520.7	5,786.7	6,437.4	7,035.7	7,433.1	7,182.9	7,261.8	7,374.5	6,852.3	6,834.4
Italy	Developed	41,207.1	43,636.6	47,357.3	50,159.4	53,837.1	55,940.8	58,398.7	58,805.7	60,842.3	65,276.2	68,768.3	70,780.7	70,814.2	69,125.2
Latvia	Developed	258.4	281.0	435.3	366.5	474.3	585.3	681.7	767.1	1,274.3	1,194.4	1,235.3	1,162.3	1,476.1	1,256.8
Lithuania	Developed	826.5	1,182.9	1,476.8	1,676.7	1,578.5	2,493.0	2,264.8	2,345.5	2,456.6	2,310.5	2,319.2	2,471.7	2,460.5	2,181.2
Luxembourg	Developed	86.7	141.7	142.2	198.4	211.1	309.7	389.0	461.3	586.8	595.6	772.2	865.7	797.9	817.9
Malta	Developed	77.9	62.9	77.1	81.5	109.4	177.0	157.7	184.5	201.5	250.5	265.3	297.3	302.2	320.4
Netherlands	Developed	19,565.0	21,238.1	23,860.9	24,460.6	25,627.5	26,534.5	28,684.2	29,226.9	30,227.6	31,501.2	32,017.2	32,354.9	31,068.9	29,949.0
Poland	Developed	15,948.1	17,967.9	19,830.2	21,267.4	21,568.8	23,376.1	23,470.8	24,551.5	25,857.5	28,115.0	30,064.1	31,779.4	32,766.5	32,977.9
Portugal	Developed	4,507.6	5,109.3	5,887.8	7,136.2	7,623.6	8,655.6	9,573.0	10,625.1	11,989.2	13,102.6	14,112.4	14,666.0	14,581.9	13,773.2
Romania	Developed	2,601.4	2,730.1	3,460.7	3,522.9	5,170.0	7,367.8	9,550.1	11,010.2	10,906.2	11,061.6	11,177.0	10,800.6	11,527.3	10,193.5
Slovakia	Developed	2,136.1	2,303.5	2,548.8	2,644.4	2,800.2	3,332.5	3,164.3	3,638.3	3,899.5	4,261.9	4,616.6	5,135.9	5,205.7	5,359.4

Region, country, or economy	Region, country, or economy economic status	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Slovenia	Developed	2,074.4	1,894.4	2,334.9	2,392.7	2,754.2	3,006.9	3,221.1	3,246.6	3,780.4	3,707.9	3,726.1	3,788.5	3,631.6	3,406.7
Spain	Developed	28,887.2	31,479.4	35,673.9	39,270.5	42,014.7	43,958.6	47,326.9	49,035.6	52,355.1	55,108.1	55,736.4	57,075.8	54,794.2	52,820.7
Sweden	Developed	14,553.8	15,235.3	16,426.1	16,633.8	16,757.4	16,630.1	17,328.3	17,730.5	18,438.5	19,422.4	20,092.6	21,130.1	20,668.9	19,937.1
United Kingdom	Developed	74,599.8	78,314.4	84,993.1	88,060.9	91,352.4	92,000.6	94,757.4	95,488.8	98,479.6	101,367.0	103,051.0	102,970.6	101,407.0	97,526.9
Other Europe	-	72,625.3	77,044.9	83,526.0	82,242.2	87,271.7	90,531.4	96,219.9	100,830.1	107,311.0	112,624.9	119,650.3	126,239.2	134,631.2	140,922.2
Albania	Developing	23.9	22.0	26.2	32.6	40.3	51.9	76.8	140.8	165.2	214.1	359.5	360.7	269.0	191.4
Andorra	Developing	4.1	1.3	4.8	5.0	6.2	1.7	2.6	1.2	1.0	3.6	5.9	5.4	7.4	7.9
Belarus	Developing	1,177.7	1,196.1	1,291.6	1,159.5	1,293.3	1,037.8	1,171.7	1,056.6	1,099.4	1,015.2	1,040.6	1,053.0	970.4	936.7
Bosnia and Herzegovina	Developing	123.7	175.6	250.6	223.2	243.1	372.6	406.9	494.5	542.6	572.9	494.5	477.8	524.6	508.5
Holy See (Vatican City)	Developed	0.0	2.4	0.5	0.3	0.4	1.5	2.1	2.3	1.8	2.7	2.9	3.1	4.1	1.7
Iceland	Developed	258.5	300.0	354.7	361.6	364.4	431.3	497.1	567.5	553.3	636.3	594.7	589.5	611.7	651.8
Kosovo	Developing	0.0	0.0	0.0	0.0	0.0	52.1	95.0	120.0	106.5	116.6	127.6	125.6	133.3	189.0
Liechtenstein	Developed	14.5	23.8	33.6	34.4	24.6	39.0	25.2	40.2	41.2	34.1	31.3	38.9	30.3	35.4
Macedonia	Developing	144.3	226.7	238.9	219.9	284.2	293.9	355.9	346.1	434.3	496.1	505.6	556.7	576.4	483.1
Moldova	Developing	155.1	121.9	203.7	143.5	147.0	164.8	199.3	172.3	203.2	231.0	231.0	239.3	193.6	295.4
Monaco	Developing	25.7	37.8	36.5	34.3	30.1	35.4	41.8	40.9	49.0	30.4	36.5	40.2	41.1	39.7
Montenegro[a]	Developing	na	na	na	na	64.0	66.0	67.3	106.8	133.7	162.1	198.8	219.3	206.0	257.8

Region, country, or economy	Region, country, or economy economic status	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Norway	Developed	5,118.6	5,608.6	6,655.6	7,093.3	7,674.3	7,948.0	8,751.0	9,056.1	9,759.8	10,357.5	10,352.6	10,703.8	10,471.1	10,725.7
Russia	Developing	32,329.5	32,149.9	33,091.8	29,368.9	30,319.7	31,854.4	32,620.2	33,960.8	36,157.3	36,252.6	39,714.7	44,994.7	53,060.6	59,133.5
San Marino	Developing	0.2	0.6	1.3	0.7	2.9	4.8	1.2	1.3	2.3	5.9	7.0	5.1	7.5	7.5
Serbia[a]	Developing	na	na	na	na	2,843.1	3,096.6	3,710.7	4,120.9	4,919.6	6,076.6	5,472.3	5,233.2	5,072.3	5,052.4
Serbia and Montenegro[b]	Developing	1,433.8	1,719.4	2,189.9	2,336.5	na	na	na	na	na	na	na	na	na	na
Switzerland	Developed	12,848.2	13,992.8	15,384.7	16,385.4	16,922.5	17,438.0	18,094.8	18,944.0	19,932.9	21,200.9	21,877.8	22,502.0	21,884.1	21,127.6
Turkey	Developing	13,353.6	15,830.5	17,840.9	19,546.7	21,523.0	21,735.0	24,447.0	25,584.0	26,808.3	28,500.5	31,146.9	31,673.7	33,113.0	33,902.2
Ukraine	Developing	5,614.0	5,635.6	5,920.7	5,296.3	5,488.6	5,906.6	5,653.3	6,073.7	6,399.5	6,715.9	7,449.9	7,417.1	7,454.8	7,374.7
Middle East	-	18,966.3	21,161.3	24,085.8	28,304.2	32,173.4	36,813.8	41,760.8	47,676.3	56,608.5	59,561.4	62,891.4	67,288.0	68,844.3	73,817.0
Armenia	Developing	311.9	342.2	390.0	360.3	400.5	394.5	446.5	494.3	618.6	550.5	552.0	559.1	531.4	521.0
Azerbaijan	Developing	266.1	350.5	351.0	288.4	417.9	475.0	616.2	605.3	645.9	684.0	481.1	399.6	420.9	480.3
Bahrain	Developing	126.5	136.7	159.0	185.2	172.2	165.6	186.6	205.0	185.2	160.3	236.1	223.6	172.6	210.6
Gaza Strip	Developing	36.7	47.9	40.8	47.8	69.7	62.0	70.3	60.4	88.0	85.6	97.3	97.5	81.1	69.0
Georgia	Developing	216.6	269.2	377.0	357.5	307.4	350.1	406.6	346.4	463.2	441.4	473.4	486.1	492.0	579.4
Iran	Developing	3,768.4	5,017.1	7,102.8	10,072.5	13,202.9	16,841.7	20,594.4	25,208.6	31,419.4	32,195.1	33,761.3	36,310.9	36,748.6	40,974.5
Iraq	Developing	116.0	90.7	139.5	244.5	231.7	304.3	361.8	554.8	653.7	843.3	853.4	865.5	897.3	1,227.3
Israel	Developed	9,676.4	10,237.0	10,398.4	11,040.4	11,238.9	11,366.8	11,270.8	11,014.4	11,414.9	11,916.3	11,749.8	12,265.8	12,216.4	11,892.7

Region, country, or economy	Region, country, or economy economic status	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Jordan	Developing	657.9	740.9	794.5	954.3	1,086.1	1,224.8	1,294.1	1,452.8	1,464.7	1,444.9	1,520.6	1,471.8	1,509.8	1,651.8
Kuwait	Developing	512.7	544.5	620.5	646.4	711.4	756.8	776.5	748.6	800.2	830.6	878.7	794.4	874.0	738.6
Lebanon	Developing	459.9	481.9	552.6	635.0	652.5	717.7	762.6	790.4	888.0	1,023.3	1,096.3	1,219.5	1,278.1	1,397.9
Oman	Developing	288.2	300.5	317.3	332.1	392.7	383.4	426.2	477.3	598.8	587.5	667.3	705.8	774.1	795.0
Qatar	Developing	105.9	135.3	168.8	184.4	244.1	279.8	330.3	408.7	471.1	623.9	808.2	1,106.6	1,180.1	1,310.7
Saudi Arabia	Developing	1,719.2	1,710.7	1,734.0	1,898.0	2,011.6	2,222.4	2,836.4	3,621.3	4,957.5	5,982.5	7,410.5	8,410.8	8,885.0	9,231.9
Syria	Developing	101.2	129.2	140.9	128.9	153.8	200.1	162.2	228.4	268.9	302.8	265.9	245.1	270.3	273.2
United Arab Emirates	Developing	522.6	537.8	698.1	810.4	756.1	917.8	1,024.7	1,229.3	1,427.8	1,645.5	1,775.6	1,819.0	2,261.6	2,180.9
West Bank	Developing	48.4	48.3	55.1	64.3	79.0	92.9	113.5	130.2	132.9	131.8	134.1	158.9	144.9	171.1
Yemen	Developing	31.8	40.9	45.3	53.9	45.0	58.0	81.1	99.9	109.8	112.1	129.9	148.1	106.1	111.2
Africa	-	14,043.3	15,807.4	17,089.9	19,435.1	21,506.0	23,547.8	27,717.6	30,363.7	33,719.9	36,978.7	40,459.0	44,664.9	45,367.0	48,919.8
Algeria	Developing	629.8	836.9	932.6	1,287.5	1,405.7	1,742.0	2,126.3	2,137.4	2,461.0	3,063.4	3,538.9	3,679.5	4,102.8	4,447.1
Angola	Developing	4.3	8.2	9.9	13.3	9.9	9.9	14.0	15.2	17.8	22.4	24.1	35.7	32.9	39.1
Benin	Developing	47.2	61.1	55.6	75.0	87.1	92.4	122.0	108.9	132.8	146.1	181.3	181.6	189.2	167.3
Botswana	Developing	114.1	121.2	115.3	178.6	139.2	151.0	134.9	154.2	160.5	156.6	180.9	200.0	167.4	226.6
Burkina Faso	Developing	76.6	72.1	69.6	101.0	112.9	120.4	136.8	130.9	153.3	209.3	183.5	201.9	219.8	221.8
Burundi	Developing	4.5	5.0	2.8	4.6	5.5	2.5	3.8	12.5	8.5	10.7	16.3	14.9	12.2	10.7
Cameroon	Developing	196.9	216.8	275.9	314.6	343.5	328.5	359.4	377.6	438.0	459.4	526.5	618.4	635.3	670.1

Region, country, or economy	Region, country, or economy economic status	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Cape Verde	Developing	2.4	1.6	0.4	4.1	2.7	2.1	4.9	3.6	2.4	4.0	9.2	8.2	9.6	8.1
Central African Republic	Developing	9.2	8.6	9.6	13.4	8.3	9.5	10.1	14.3	13.3	10.5	11.8	18.7	13.6	28.9
Chad	Developing	5.0	8.7	7.6	10.7	5.2	6.9	9.3	6.0	8.4	6.2	7.3	8.7	12.4	11.5
Comoros	Developing	0.3	1.2	0.9	0.2	2.6	0.7	0.8	2.2	3.9	1.6	13.9	1.5	2.5	4.6
Congo, Democratic Republic of the	Developing	16.8	15.5	26.8	25.6	36.0	39.1	42.9	54.9	50.0	78.9	84.3	120.0	131.3	112.8
Congo, Republic of the	Developing	32.4	35.3	42.1	42.3	41.8	45.3	38.8	47.6	49.6	54.9	60.7	76.2	65.9	77.8
Côte d'Ivoire	Developing	92.1	108.8	101.7	99.4	129.2	170.6	155.3	155.8	183.8	192.0	164.8	186.5	194.2	177.5
Djibouti	Developing	1.3	1.9	2.7	1.9	2.3	2.8	8.1	6.9	4.2	6.6	7.8	7.5	5.8	4.1
Egypt	Developing	3,296.1	3,549.3	3,600.0	3,958.3	4,512.1	4,918.8	6,105.2	6,665.5	7,426.6	8,514.4	8,949.2	9,311.2	9,830.6	10,807.0
Equatorial Guinea	Developing	1.2	4.1	1.5	3.7	3.8	2.4	4.8	4.0	2.2	2.8	2.3	2.2	5.1	7.4
Eritrea	Developing	15.2	11.7	12.8	17.4	16.5	10.0	7.0	11.7	13.3	5.2	10.6	7.5	9.7	8.5
Ethiopia	Developing	209.6	202.5	220.5	272.0	309.1	342.9	413.0	451.1	513.5	710.6	842.4	1,025.0	1,020.8	1,121.0
Gabon	Developing	28.6	33.3	43.1	42.6	34.1	42.9	50.4	43.7	57.3	52.0	50.6	60.1	60.3	59.2
Gambia, The	Developing	30.7	37.4	36.0	46.1	36.2	41.7	40.2	44.7	33.8	37.3	45.1	49.2	42.7	46.5
Ghana	Developing	145.9	175.3	191.1	195.1	249.0	269.2	336.2	367.3	439.3	549.5	603.7	662.2	794.8	982.1
Guinea	Developing	5.1	10.6	7.0	18.9	15.1	11.8	12.0	11.4	11.2	11.6	11.3	23.8	27.3	38.0
Guinea-Bissau	Developing	8.0	9.6	9.4	5.7	12.1	7.3	8.3	5.8	10.4	12.8	12.0	17.9	10.3	11.5

Region, country, or economy	Region, country, or economy economic status	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Kenya	Developing	409.2	439.3	456.3	490.4	566.0	592.6	678.8	701.2	805.0	804.1	919.6	978.2	950.8	987.1
Lesotho	Developing	5.4	5.9	4.7	10.8	9.6	11.1	8.1	8.1	8.3	18.3	14.0	8.9	19.1	22.8
Liberia	Developing	1.3	0.6	1.3	4.7	2.8	2.4	4.7	3.4	8.3	9.8	9.0	11.8	16.6	16.6
Libya	Developing	55.3	62.2	76.6	92.0	109.9	129.0	229.4	301.9	126.9	158.5	218.5	199.0	172.0	138.7
Madagascar	Developing	65.2	50.0	56.2	62.4	104.2	81.5	86.2	81.2	98.0	93.2	118.0	122.0	120.4	102.8
Malawi	Developing	77.8	77.2	81.9	85.0	130.1	136.2	111.9	142.3	166.8	171.6	159.7	186.9	197.0	203.1
Mali	Developing	36.9	33.7	39.7	63.6	67.8	67.5	73.0	79.0	88.1	87.2	65.1	73.6	70.2	87.3
Mauritania	Developing	4.9	6.4	10.5	7.3	9.0	5.0	7.3	6.6	13.3	12.7	16.2	12.8	13.8	19.7
Mauritius	Developing	47.4	55.7	66.8	61.0	59.1	70.2	79.4	87.8	63.5	108.4	120.3	122.6	121.5	156.0
Morocco	Developing	921.3	951.6	917.1	983.5	1,043.4	1,214.3	1,470.0	1,659.5	2,007.5	2,298.1	2,506.2	3,175.5	3,156.6	4,062.5
Mozambique	Developing	24.9	30.4	35.8	43.3	40.5	49.0	58.0	45.8	73.9	60.6	67.9	85.3	102.6	100.6
Namibia	Developing	39.9	31.0	50.3	34.7	38.3	36.0	33.2	39.0	46.9	66.0	86.1	94.8	99.4	107.7
Niger	Developing	22.1	22.5	22.2	29.8	29.2	26.9	55.5	66.1	31.9	32.0	32.7	49.6	56.1	56.1
Nigeria	Developing	1,222.5	1,456.7	1,660.5	2,049.7	2,297.2	2,328.3	3,001.9	3,458.1	3,783.5	3,582.1	3,809.3	3,994.7	3,742.8	3,821.6
Rwanda	Developing	4.7	9.1	7.3	18.0	19.7	25.8	33.6	55.6	53.2	58.1	87.9	88.2	105.2	115.3
São Tomé and Príncipe	Developing	1.9	0.6	0.3	1.0	1.3	0.0	1.3	2.2	0.0	0.5	1.2	0.7	1.4	0.9
Senegal	Developing	198.8	173.4	207.4	171.6	207.6	208.1	188.0	203.4	284.3	287.3	299.0	332.9	371.2	353.0
Seychelles	Developing	9.6	5.0	4.9	9.0	12.3	10.7	6.6	11.8	9.9	9.8	15.9	9.6	19.0	12.4

Region, country, or economy	Region, country, or economy economic status	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Sierra Leone	Developing	2.8	5.4	6.0	5.1	5.0	7.9	9.1	12.2	11.1	14.8	15.0	21.7	34.3	48.2
Somalia	Developing	1.8	1.1	0.0	1.0	0.0	1.1	2.8	3.2	2.9	1.4	6.3	6.2	4.5	3.3
South Africa	Developing	4,226.6	4,809.3	5,146.4	5,636.5	5,907.4	6,403.7	7,062.6	7,651.6	8,533.0	9,341.5	10,251.0	11,991.5	11,417.8	11,881.2
South Sudan	Developing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	2.4	9.8	5.8	5.1	2.5
Sudan	Developing	85.6	104.3	100.9	108.3	140.6	169.5	227.4	258.1	298.4	270.4	359.2	242.5	255.2	368.8
Swaziland	Developing	11.7	12.7	19.1	16.9	11.4	19.1	28.2	37.2	31.5	30.4	33.2	33.8	35.0	31.0
Tanzania	Developing	161.6	182.4	210.6	266.6	287.6	281.3	302.6	368.7	415.3	396.4	407.7	548.0	547.0	539.2
Togo	Developing	26.2	22.1	26.0	28.9	32.2	42.3	42.4	48.4	48.9	47.5	64.2	81.3	78.0	76.3
Tunisia	Developing	1,066.0	1,355.6	1,701.4	1,980.2	2,345.8	2,790.6	3,277.7	3,552.9	3,824.9	3,924.2	4,387.6	4,697.4	5,025.9	5,265.6
Uganda	Developing	127.6	194.0	215.1	208.4	272.6	250.6	306.0	400.9	432.6	464.0	496.0	536.7	607.2	572.9
Western Sahara	Developing	0.0	1.0	0.0	0.0	0.0	1.0	1.5	0.3	0.0	0.3	0.0	0.0	2.0	0.0
Zambia	Developing	46.9	43.8	60.8	69.2	66.9	93.5	75.6	89.2	104.3	110.3	120.8	139.2	154.3	179.3
Zimbabwe	Developing	164.0	127.6	129.0	163.9	168.7	122.0	110.4	154.8	151.1	197.7	223.2	295.4	268.4	298.0
Asia	-	263,943.5	312,074.1	381,321.8	423,173.5	462,541.8	509,132.0	564,669.3	612,546.3	655,450.8	664,609.3	708,248.7	753,224.1	773,830.8	793,150.1
Afghanistan	Developing	7.3	5.8	9.4	10.2	14.5	12.5	23.3	33.9	42.7	35.0	27.3	33.3	23.5	80.4
Bangladesh	Developing	573.5	532.1	610.8	719.4	1,005.8	1,119.3	1,248.3	1,497.8	1,521.5	2,052.9	2,019.4	2,361.5	2,194.9	2,546.1
Bhutan	Developing	3.7	8.4	5.5	15.9	8.1	6.1	12.1	17.2	17.3	18.0	29.3	27.8	23.9	40.2
Brunei	Developing	34.8	29.3	30.3	33.9	42.6	42.4	46.3	47.7	79.4	107.3	126.1	185.9	177.5	216.9

Region, country, or economy	Region, country, or economy economic status	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Burma	Developing	12.5	14.4	51.1	29.7	38.2	58.4	87.6	56.0	96.4	42.9	36.7	46.6	76.4	110.8
Cambodia	Developing	25.3	35.7	36.6	47.5	50.7	54.7	61.6	58.9	72.0	75.8	85.7	94.3	111.4	116.9
China	Developing	86,621.4	119,754.6	164,747.4	189,759.8	215,700.4	249,972.9	290,330.2	316,915.3	334,045.0	332,082.1	362,972.9	393,962.7	411,268.1	426,165.3
India	Developing	26,797.1	28,930.1	33,215.8	38,590.3	43,624.9	48,794.2	54,667.1	62,790.2	75,337.3	82,182.2	88,942.4	100,574.8	106,663.4	110,319.6
Indonesia	Developing	359.7	447.4	545.3	619.0	613.8	678.0	1,014.0	1,344.6	1,821.4	2,027.8	2,776.3	3,465.2	5,071.5	7,728.7
Japan	Developed	97,235.2	100,403.7	109,662.2	110,502.8	108,760.8	106,897.5	108,237.4	108,292.4	110,570.0	109,424.5	109,257.9	106,154.6	99,812.4	96,536.2
Kazakhstan	Developing	238.8	228.9	241.2	215.1	213.8	226.8	270.4	324.4	382.7	478.9	1,014.9	1,065.5	1,259.3	1,563.8
Kyrgyzstan	Developing	20.2	30.2	43.1	50.0	37.4	51.4	33.8	34.2	49.9	49.2	62.7	55.9	50.9	100.8
Laos	Developing	17.7	37.0	23.3	40.0	27.5	35.0	40.7	44.5	48.0	59.9	72.3	55.7	68.6	85.1
Malaysia	Developing	1,741.1	2,019.1	2,433.6	3,229.9	3,903.0	6,108.1	8,035.2	11,056.8	14,003.8	14,742.2	16,291.1	17,348.9	19,088.7	20,331.5
Maldives	Developing	2.4	1.3	3.2	4.1	4.8	0.9	3.0	2.8	6.7	8.9	5.0	8.9	6.2	4.9
Mongolia	Developing	34.2	31.8	37.4	49.2	111.9	89.0	102.1	93.4	104.9	132.2	169.2	122.2	103.5	112.3
Nepal	Developing	191.3	208.6	285.1	331.4	364.8	333.1	396.6	394.3	398.0	456.5	484.5	526.9	521.1	549.3
North Korea	Developing	5.1	54.8	52.3	60.0	41.7	27.9	53.8	12.6	7.5	18.3	13.1	20.8	47.3	43.8
Pakistan	Developing	1,420.7	1,685.0	2,321.6	2,809.3	3,363.3	4,044.7	4,917.3	5,661.2	6,444.9	7,078.5	8,078.1	8,065.2	8,337.2	9,180.6
Papua New Guinea	Developing	52.6	37.0	33.4	38.2	55.7	59.1	42.9	53.3	47.5	62.6	54.3	64.3	59.7	54.0
Philippines	Developing	361.9	346.4	424.2	410.3	467.8	528.6	588.4	684.3	882.0	854.0	961.8	1,045.0	1,384.7	1,568.7
Singapore	Developed	6,037.0	7,401.0	7,959.6	8,204.6	8,251.5	8,688.5	8,919.5	9,853.9	10,098.5	10,809.3	10,979.5	11,145.3	11,220.9	11,253.8

Region, country, or economy	Region, country, or economy economic status	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
South Korea	Developed	23,201.1	27,398.8	31,646.6	36,746.8	41,521.7	44,300.9	46,020.6	50,935.1	54,716.8	57,373.7	59,205.9	62,691.2	64,523.1	63,063.0
Sri Lanka	Developing	247.2	244.0	332.3	369.5	420.6	469.6	475.8	501.8	578.4	617.7	743.6	704.8	756.7	1,032.9
Taiwan	Developed	15,807.3	18,752.9	22,382.5	25,246.2	28,182.9	29,894.6	31,869.8	33,495.9	35,088.9	34,091.5	33,634.7	32,516.0	29,656.6	27,385.1
Tajikistan	Developing	32.2	38.6	30.8	26.3	32.5	30.0	23.3	40.6	42.8	47.5	62.0	37.8	54.0	47.5
Thailand	Developing	2,260.3	2,714.3	3,433.8	4,270.0	4,812.3	5,527.5	5,940.0	6,811.2	7,336.1	7,768.1	7,917.3	8,476.1	8,675.4	9,581.5
Timor-Leste	Developing	1.3	0.0	1.5	3.5	3.3	1.3	2.6	1.1	3.1	6.0	6.3	10.6	7.8	8.3
Turkmenistan	Developing	4.0	4.5	3.2	3.1	4.9	2.6	5.0	5.3	12.2	13.3	6.9	20.1	6.0	3.5
Uzbekistan	Developing	277.7	355.0	322.6	291.4	346.9	300.5	336.3	388.9	379.2	325.3	353.0	332.2	287.8	357.4
Vietnam	Developing	319.0	323.4	396.3	446.2	513.7	775.9	864.3	1,096.5	1,215.6	1,567.1	1,858.4	2,003.9	2,292.1	2,961.3
Australia and Oceania	-	29,318.0	31,819.2	36,400.6	38,821.6	41,915.2	43,182.3	45,669.3	48,510.3	51,894.2	54,158.4	57,636.8	60,640.9	59,779.0	58,734.1
Australia	Developed	24,849.7	26,946.4	31,031.7	33,100.4	35,798.6	36,822.3	38,996.2	41,564.9	44,378.3	46,386.8	49,921.9	52,643.6	52,147.9	51,068.2
Cook Islands	Developing	0.0	0.0	0.3	0.7	0.4	0.0	0.6	0.5	1.8	2.7	1.7	2.0	1.5	1.2
Fiji	Developing	47.1	64.4	58.8	75.0	85.8	63.3	68.0	62.6	62.1	67.6	89.5	123.2	99.4	154.9
Kiribati	Developing	0.1	0.0	0.0	2.4	1.8	0.0	0.3	0.3	0.0	1.0	1.1	1.9	1.4	2.2
Marshall Islands	Developing	3.8	1.0	1.8	3.8	1.1	1.6	1.7	1.5	1.5	1.5	1.3	1.2	2.6	1.3
Micronesia, Federated States of	Developing	2.3	2.4	6.0	2.0	7.1	4.3	2.9	8.2	4.9	4.5	5.9	3.2	4.3	2.7
Nauru	Developing	0.0	0.2	0.5	0.3	0.0	0.0	0.7	0.0	0.7	0.5	0.3	0.4	0.3	0.7

Region, country, or economy	Region, country, or economy economic status	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
New Zealand	Developed	4,395.8	4,783.1	5,279.3	5,607.4	6,000.4	6,277.4	6,578.6	6,844.5	7,419.6	7,675.9	7,593.9	7,834.7	7,481.3	7,464.7
Niue	Developing	0.0	0.0	0.1	1.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1
Palau	Developing	1.8	2.4	7.0	3.3	4.8	2.7	2.7	5.2	1.8	2.2	3.5	4.7	6.4	3.1
Samoa	Developing	3.8	4.8	5.1	9.9	4.1	2.6	5.4	6.1	6.1	2.5	4.5	7.5	8.2	5.3
Solomon Islands	Developing	4.9	2.6	2.6	6.6	4.3	2.9	3.4	7.9	7.5	5.0	4.3	6.6	10.9	14.0
Tonga	Developing	1.6	3.4	0.7	2.7	2.3	0.5	2.9	1.4	1.9	1.8	1.3	1.0	2.7	1.8
Tuvalu	Developing	0.6	0.6	0.0	1.3	0.4	0.3	0.3	1.0	0.0	0.0	0.3	1.1	1.1	0.4
Vanuatu	Developing	6.5	7.8	6.8	5.0	2.6	4.4	5.6	6.3	7.9	6.4	7.3	9.7	10.9	13.5
Unassigned	-	11,062.5	8,538.1	9,516.4	9,743.9	11,143.2	10,677.0	7,966.8	10,357.8	11,066.8	11,973.4	10,913.0	4,768.1	3,388.0	3,424.4

na = not applicable; country data do not exist.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis. The sum of the regions, countries, or economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017. For more information on the International Monetary Fund economic classification of countries, see https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/groups.htm, accessed December 2016.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-28

S&E articles in agricultural sciences, by region, country, or economy: 2003–16

(Number)

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	21,125.0	23,059.0	24,831.0	29,010.0	33,991.0	36,553.0	38,397.0	39,896.0	42,454.0	43,885.0	48,152.0	49,469.0	51,085.0	51,140.0
North America	5,414.4	6,190.1	6,004.7	6,277.5	6,880.4	6,753.0	6,728.2	6,778.5	6,743.8	6,796.3	6,624.5	6,826.5	7,071.4	6,781.1
Canada	903.5	1,010.8	900.3	1,071.9	1,128.3	1,074.5	1,131.8	1,142.8	1,119.2	1,155.1	1,080.8	1,259.2	1,146.0	1,104.9
Greenland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.0
Mexico	167.6	203.6	227.8	247.5	310.0	359.3	405.5	457.1	604.0	534.3	567.4	604.7	582.7	591.0
United States	4,343.4	4,975.8	4,876.6	4,958.2	5,442.0	5,319.2	5,190.9	5,178.5	5,020.7	5,106.9	4,976.2	4,962.6	5,342.6	5,085.2
Central America and Caribbean	106.4	87.9	147.0	137.5	133.6	159.5	111.4	119.7	161.6	145.0	131.0	151.8	138.7	123.6
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas, The	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Barbados	0.0	4.0	0.6	0.0	0.3	0.5	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0
Belize	0.0	0.0	0.3	0.0	0.0	0.1	1.8	2.8	0.0	0.0	0.0	0.1	1.1	0.0
Costa Rica	4.0	6.2	13.8	9.1	8.7	13.5	9.1	8.3	9.4	16.6	8.5	14.9	10.0	17.4
Cuba	65.3	54.6	78.8	71.6	71.8	95.7	74.0	47.8	86.2	82.4	79.9	73.6	78.7	64.3
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.7
Dominican Republic	0.4	0.2	0.1	0.1	0.0	1.0	0.5	0.9	1.7	0.6	1.3	1.7	1.5	1.5
El Salvador	0.8	0.0	0.3	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	2.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Grenada	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	2.0	0.0	0.7	1.3	0.0	1.3
Guatemala	0.3	2.6	1.1	2.9	0.4	0.2	1.0	2.2	1.0	0.9	1.7	2.4	2.6	2.0
Haiti	0.0	0.3	0.1	0.0	0.0	0.3	0.0	0.0	0.2	0.4	0.0	0.6	0.2	1.6
Honduras	3.2	1.1	0.9	1.9	0.5	2.5	0.7	2.1	0.7	0.5	0.3	1.1	1.6	0.2
Jamaica	2.7	3.3	4.4	3.7	5.0	7.3	3.6	1.9	5.5	5.2	2.1	6.5	1.9	2.1
Nicaragua	0.3	1.3	2.1	1.2	0.5	1.3	1.3	1.0	2.1	1.5	1.3	1.6	2.2	0.8
Panama	0.3	0.0	3.0	1.7	0.8	1.2	2.9	3.9	3.2	1.7	3.3	5.5	3.1	2.7
Puerto Rico	22.0	10.0	23.7	30.3	27.2	27.0	6.2	38.6	33.0	16.4	23.3	24.1	21.1	20.0
Saint Kitts and Nevis	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.2	0.3
Saint Lucia	0.0	0.3	0.3	0.0	0.8	0.0	0.0	0.0	1.3	0.8	0.0	0.1	0.0	0.0
Saint Vincent and the Grenadines	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Trinidad and Tobago	7.1	4.0	17.5	14.9	16.8	8.7	9.8	9.3	13.9	16.7	8.6	18.2	12.5	7.7
South America	1,194.6	1,389.6	1,522.3	2,780.2	3,234.4	4,325.2	4,850.5	5,157.2	5,480.9	5,774.4	5,923.2	6,211.9	6,200.1	6,319.8
Argentina	181.8	213.7	219.1	277.7	327.4	358.1	344.9	431.8	420.1	429.7	447.5	463.1	488.4	509.2
Bolivia	6.4	1.9	2.9	4.3	4.5	5.3	4.0	3.2	3.5	3.8	2.9	1.7	3.9	1.9
Brazil	838.7	985.6	1,094.9	2,221.7	2,560.6	3,509.9	3,885.4	4,143.7	4,453.5	4,633.7	4,810.2	4,955.3	4,992.1	4,921.3
Chile	40.7	57.2	63.4	95.4	127.6	110.0	178.3	163.3	191.1	195.0	185.6	195.5	208.2	227.4
Colombia	20.4	27.2	41.6	51.8	50.8	165.3	241.4	214.4	263.8	335.1	287.7	332.5	326.4	485.0
Ecuador	2.5	1.7	1.2	2.3	2.7	6.0	5.1	1.9	3.7	4.6	6.3	16.8	25.5	37.8

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Guyana	0.5	2.0	0.0	2.2	2.3	0.5	0.0	0.0	0.0	1.0	0.1	1.0	0.0	0.0
Paraguay	0.0	0.3	1.3	0.4	0.8	1.0	4.4	2.4	1.7	0.8	0.5	3.5	2.0	2.8
Peru	14.3	3.7	6.7	9.1	13.8	17.3	22.8	14.1	15.5	19.1	30.5	14.5	25.3	20.0
Suriname	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Uruguay	15.2	21.4	14.9	27.5	20.8	31.4	33.9	50.0	39.6	49.8	53.2	65.0	53.9	62.0
Venezuela	74.3	74.9	76.1	87.2	123.2	120.4	130.3	132.6	88.4	101.5	98.7	163.1	74.4	52.7
Europe	7,499.8	7,930.2	8,765.1	9,639.1	10,950.0	11,656.1	12,407.3	12,217.8	12,997.4	13,759.2	14,658.8	14,314.5	14,950.6	14,786.4
EU	6,652.4	6,882.2	7,667.4	8,232.2	9,529.1	10,215.8	10,846.9	10,631.6	11,226.2	11,694.3	12,729.4	12,400.4	12,824.5	12,523.3
Austria	96.9	73.9	90.5	119.7	104.5	116.1	128.0	152.4	164.0	171.6	163.7	169.4	193.7	174.7
Belgium	228.2	253.9	285.7	297.4	344.2	320.7	324.5	333.5	313.8	348.9	400.2	426.8	427.1	409.4
Bulgaria	14.4	15.4	19.0	23.9	42.7	91.9	72.6	97.5	70.9	101.5	192.9	139.2	150.8	114.5
Croatia	44.3	51.3	95.5	61.8	150.3	180.8	223.8	125.6	200.7	192.7	148.9	171.6	176.7	151.0
Cyprus	1.8	3.6	1.7	4.0	3.4	2.1	9.4	8.7	7.4	10.5	8.5	13.8	13.2	15.4
Czech Republic	155.5	168.7	161.5	224.9	475.2	522.3	547.5	624.0	632.0	649.1	787.8	590.1	694.4	671.4
Denmark	280.3	318.5	291.0	294.7	332.0	306.0	266.7	326.2	307.1	363.0	330.4	318.4	349.0	363.4
Estonia	3.8	9.4	10.5	21.2	19.5	29.1	33.7	22.7	59.8	60.0	54.5	74.2	60.3	65.8
Finland	206.9	257.4	190.8	263.5	206.7	194.0	258.9	208.8	205.3	185.8	193.6	178.4	183.4	156.0
France	701.3	764.6	760.7	905.8	935.2	952.6	929.9	958.8	938.6	953.1	931.5	984.9	1,002.2	961.7
Germany	893.0	919.2	1,145.6	1,150.3	1,150.1	1,218.2	1,174.1	1,178.2	1,268.1	1,387.2	1,340.5	1,414.1	1,411.0	1,294.9

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greece	178.4	166.5	230.1	275.9	297.3	296.5	286.2	283.9	248.1	282.8	267.3	276.0	258.9	241.3
Hungary	131.2	109.1	147.1	136.4	103.4	139.0	192.1	142.7	183.8	182.1	177.1	198.9	172.4	183.3
Ireland	158.8	182.9	193.2	240.9	192.5	267.9	289.2	301.8	271.0	281.4	304.9	289.7	262.2	271.2
Italy	815.2	744.8	899.3	791.0	1,332.9	1,334.8	1,518.4	1,308.3	1,332.8	1,289.4	1,817.5	1,588.1	1,749.0	1,736.0
Latvia	1.0	2.6	38.0	43.0	4.2	18.1	82.3	107.7	213.7	167.6	210.0	173.8	222.3	220.7
Lithuania	15.6	16.2	21.6	34.7	17.7	132.0	138.7	127.7	144.8	161.1	171.5	133.7	122.9	152.0
Luxembourg	0.7	0.6	0.0	0.4	1.5	1.5	3.0	5.9	7.2	8.8	11.6	9.3	5.5	10.8
Malta	0.0	0.7	0.0	0.2	0.0	0.0	0.0	0.2	0.4	0.3	1.3	1.5	4.1	4.8
Netherlands	363.6	352.4	361.1	404.6	455.3	411.4	397.4	405.1	417.5	409.5	440.3	504.3	475.1	508.1
Poland	241.2	297.9	369.3	331.0	414.7	525.2	677.4	682.6	718.8	804.9	906.6	1,051.3	1,131.9	1,164.1
Portugal	92.8	105.2	119.8	188.6	213.3	223.9	250.3	299.0	329.2	346.7	361.4	339.3	398.1	410.3
Romania	5.1	6.3	7.5	6.0	17.5	45.8	82.7	73.1	92.3	174.0	154.3	133.2	130.2	117.4
Slovakia	35.2	44.2	48.9	75.4	98.0	114.6	106.4	99.4	104.4	95.3	237.3	197.6	212.9	268.4
Slovenia	29.8	24.3	37.3	34.5	67.1	136.6	124.6	109.9	147.1	134.9	97.9	102.5	101.7	97.8
Spain	892.4	947.4	1,105.7	1,272.0	1,456.9	1,589.1	1,767.5	1,697.0	1,902.7	1,984.1	2,047.9	2,011.9	1,986.2	1,808.1
Sweden	201.6	215.4	228.8	194.1	220.9	198.3	196.0	183.6	208.1	219.3	212.7	201.7	215.9	200.4
United Kingdom	863.7	830.0	807.0	836.3	872.2	846.9	765.5	767.3	736.6	728.5	757.3	706.7	713.4	750.1
Other Europe	847.4	1,048.0	1,097.7	1,406.9	1,420.9	1,440.4	1,560.5	1,586.1	1,771.2	2,064.9	1,929.4	1,914.1	2,126.2	2,263.2
Albania	1.0	0.6	0.5	0.3	0.6	0.8	5.2	2.9	7.2	8.5	14.3	9.0	6.7	4.7

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belarus	7.6	3.3	2.4	2.0	4.7	7.7	2.2	2.8	4.0	0.3	4.9	4.8	2.9	5.3
Bosnia and Herzegovina	0.2	0.5	1.1	0.6	4.1	9.6	11.7	4.0	11.7	21.2	8.9	9.2	11.5	10.2
Holy See (Vatican City)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iceland	3.4	8.6	5.6	8.6	8.5	8.5	6.7	17.0	17.9	11.6	8.4	9.0	6.3	12.0
Kosovo	0.0	0.0	0.0	0.0	0.0	0.5	2.1	2.0	0.5	1.8	1.4	1.8	2.8	6.3
Liechtenstein	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Macedonia	0.2	0.0	1.1	2.4	2.5	4.2	4.8	3.3	17.1	13.9	16.1	17.0	17.1	12.6
Moldova	1.1	1.3	1.3	4.0	0.8	3.0	0.3	1.3	2.8	6.4	4.8	6.2	3.6	10.4
Monaco	0.0	0.0	0.3	0.0	0.1	0.2	0.0	0.0	0.8	0.0	0.0	0.0	1.0	0.0
Montenegro[a]	na	na	na	na	0.0	0.3	0.0	0.5	2.8	0.9	2.3	2.7	3.6	2.6
Norway	99.8	127.9	138.6	148.0	156.2	147.0	144.4	143.4	159.0	179.6	142.9	147.6	163.5	136.4
Russia	163.5	166.4	166.2	164.9	169.2	170.2	184.1	173.7	166.9	152.3	188.0	209.5	321.9	384.0
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Serbia[a]	na	na	na	na	72.9	74.0	78.8	114.2	187.4	417.7	225.8	240.9	237.4	215.3
Serbia and Montenegro[b]	9.9	16.4	38.0	34.4	na	na	na	na	na	na	na	na	na	na
Switzerland	151.5	137.3	156.4	180.5	175.3	248.0	190.0	196.9	195.6	250.7	249.1	254.4	233.9	252.2
Turkey	400.1	579.3	574.4	855.6	814.2	752.5	919.1	916.4	983.8	977.0	1,036.7	971.6	1,072.1	1,158.5
Ukraine	9.1	6.6	11.9	5.6	11.8	14.0	11.1	7.8	13.8	22.7	24.7	30.4	42.2	52.9

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Middle East	309.9	389.6	440.4	796.7	1,222.8	1,102.2	1,125.0	1,249.2	1,388.8	1,602.4	1,516.4	1,508.4	1,662.4	1,833.8
Armenia	0.0	0.0	1.0	0.7	0.0	0.7	0.4	0.5	1.8	2.8	1.8	1.4	6.9	6.0
Azerbaijan	0.5	0.0	0.0	2.3	3.0	2.2	3.3	7.7	4.4	3.1	1.5	2.8	6.2	4.1
Bahrain	1.3	2.0	3.0	3.9	2.3	7.2	2.8	6.0	4.0	1.5	7.3	2.0	0.3	0.3
Gaza Strip	0.0	0.0	0.1	0.3	5.3	1.7	2.7	1.5	2.5	0.0	2.0	0.3	0.0	0.3
Georgia	2.4	1.0	4.3	5.0	4.1	1.7	2.9	6.1	4.8	4.8	2.6	4.8	8.1	1.2
Iran	61.8	119.5	178.5	471.5	863.8	766.5	780.4	902.7	999.4	1,182.2	1,051.6	1,064.0	1,200.3	1,281.0
Iraq	0.0	1.7	3.7	4.8	7.8	13.9	6.0	20.1	32.0	23.7	18.0	22.3	18.4	149.5
Israel	121.9	130.8	128.5	103.5	139.5	119.0	134.8	108.0	134.5	131.9	131.6	132.8	130.5	104.6
Jordan	39.8	44.3	31.4	56.7	71.7	73.1	61.3	51.4	53.9	59.1	53.0	43.0	41.4	45.3
Kuwait	6.4	7.9	5.9	8.3	9.8	10.5	10.2	7.1	7.6	12.0	14.9	7.3	11.9	13.7
Lebanon	11.0	6.5	11.1	11.6	7.0	8.0	11.1	17.2	13.6	10.2	7.1	18.0	13.2	15.0
Oman	13.2	16.8	17.5	18.0	25.6	10.4	14.7	11.6	11.2	17.9	22.8	17.2	15.3	9.8
Qatar	3.0	1.0	1.0	0.3	0.5	2.3	2.1	1.0	2.4	1.2	2.8	1.7	4.5	4.1
Saudi Arabia	22.4	32.5	23.3	62.7	53.2	46.6	56.5	71.0	75.3	99.6	150.2	161.0	163.5	152.2
Syria	14.3	13.7	20.1	17.2	17.0	23.2	17.4	24.2	27.1	30.2	26.6	14.6	18.4	25.1
United Arab Emirates	9.0	9.7	9.6	24.2	8.4	10.0	16.3	11.2	11.9	14.9	18.5	9.9	17.1	17.9
West Bank	2.1	2.2	1.1	3.8	2.7	3.2	1.8	1.7	0.5	5.1	2.6	2.8	3.8	2.7
Yemen	0.8	0.0	0.0	2.0	1.0	2.0	0.5	0.2	1.9	2.1	1.4	2.6	2.6	1.1

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Africa	789.9	772.6	762.1	1,151.4	1,378.4	1,230.4	1,170.1	1,338.2	1,438.1	1,339.3	1,586.1	1,563.4	1,626.2	1,729.1
Algeria	4.9	7.9	11.5	24.9	24.6	31.5	40.6	42.9	46.3	43.4	70.6	58.1	98.3	90.4
Angola	0.0	0.0	0.5	0.8	0.2	0.1	0.0	0.0	0.5	0.7	0.0	0.6	0.5	0.3
Benin	7.7	9.5	3.7	12.7	6.5	13.3	22.7	19.1	27.9	18.3	18.2	21.1	24.3	21.9
Botswana	11.3	11.1	5.6	10.6	13.9	13.1	10.3	15.8	8.6	5.2	10.7	5.4	5.7	8.1
Burkina Faso	4.8	7.3	10.5	12.1	20.1	19.2	11.3	12.1	17.7	14.5	7.3	10.5	10.5	17.6
Burundi	0.0	0.2	0.0	0.0	0.0	0.0	1.0	0.8	0.0	0.0	0.0	0.2	1.5	1.5
Cameroon	18.7	17.0	25.6	35.8	34.4	32.3	21.7	21.8	24.3	17.2	21.1	33.5	30.1	28.8
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.6	0.0	0.0
Central African Republic	0.1	0.0	0.0	0.7	0.2	0.3	1.0	0.8	0.0	0.0	0.0	0.0	0.0	1.0
Chad	0.1	0.0	0.0	1.8	0.5	0.2	0.0	0.0	0.8	0.6	0.5	0.5	2.1	0.0
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo, Democratic Republic of the	0.2	0.0	0.0	0.0	0.5	1.5	0.8	0.7	2.9	2.0	0.8	2.0	6.6	6.9
Congo, Republic of the	1.2	0.1	0.3	3.4	4.1	0.7	1.7	1.7	0.4	1.2	0.6	3.1	0.9	3.5
Côte d'Ivoire	4.7	1.4	5.7	10.1	12.3	17.3	5.5	15.2	5.6	11.0	11.9	12.8	9.0	13.2
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0
Egypt	66.8	52.8	58.3	113.5	169.6	166.9	160.5	174.2	211.4	196.0	255.3	225.1	231.3	262.9
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eritrea	0.0	0.0	0.3	0.0	1.0	1.8	0.3	1.0	0.0	0.0	1.9	0.1	0.3	1.7

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ethiopia	35.1	35.1	38.4	63.3	66.3	58.0	58.3	46.9	64.1	65.3	87.8	97.5	85.4	110.1
Gabon	0.7	0.5	1.2	0.5	0.5	0.0	1.0	1.1	0.1	1.4	2.7	2.2	0.1	2.1
Gambia, The	2.9	3.7	1.1	0.3	0.5	1.2	0.8	0.0	1.1	0.1	0.5	0.0	0.0	0.0
Ghana	31.9	22.4	24.8	29.4	35.7	28.9	34.0	39.1	42.1	33.2	44.2	46.3	47.2	52.8
Guinea	0.9	0.0	0.1	0.4	0.5	0.7	0.4	0.5	0.0	0.2	0.9	0.1	0.2	0.6
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.2	0.0	0.8	0.0
Kenya	43.6	51.3	57.0	75.0	73.6	62.6	53.5	75.4	97.5	68.9	68.7	71.0	71.9	94.5
Lesotho	0.0	0.2	0.3	0.3	0.3	1.7	0.9	0.0	0.5	1.0	0.3	0.3	0.8	0.3
Liberia	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0
Libya	0.7	0.9	2.0	1.0	1.5	1.6	1.6	1.3	9.0	3.8	5.4	1.6	2.2	2.0
Madagascar	0.9	0.4	0.4	0.9	1.6	3.9	3.5	2.5	3.8	6.5	6.0	4.9	2.2	5.2
Malawi	4.4	2.9	1.7	5.6	7.0	4.0	2.2	6.0	9.8	13.0	5.9	5.7	12.2	11.8
Mali	5.6	5.6	4.3	9.0	5.2	12.3	4.7	2.0	8.4	10.5	4.3	6.4	6.5	6.8
Mauritania	0.7	0.0	0.3	1.0	0.0	0.3	0.0	0.3	1.3	1.7	0.6	0.0	0.2	0.0
Mauritius	3.5	1.8	5.8	2.2	1.8	2.7	5.1	5.3	3.4	5.2	3.0	3.4	4.3	4.0
Morocco	21.8	20.0	23.1	23.9	24.3	35.0	20.8	15.6	20.8	19.6	23.4	46.7	43.5	43.9
Mozambique	1.8	2.4	1.7	3.0	0.2	1.9	0.7	1.6	2.1	2.2	3.0	2.6	4.4	5.7
Namibia	1.5	1.7	2.0	1.0	0.5	0.0	1.5	2.7	2.8	0.7	1.3	0.0	0.7	1.9
Niger	2.9	2.0	3.0	3.0	1.4	3.2	4.0	9.5	6.2	3.1	3.7	7.5	9.7	9.1

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nigeria	230.2	182.7	185.4	358.3	443.8	321.9	256.1	305.6	303.0	278.1	306.0	294.7	299.8	285.4
Rwanda	0.0	0.0	0.3	0.0	0.0	0.4	2.3	2.0	2.3	2.3	3.4	7.1	4.4	4.3
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	12.3	8.7	6.3	7.0	6.6	6.6	10.0	6.6	6.0	6.7	10.4	9.0	8.8	10.1
Seychelles	0.0	0.0	0.3	1.3	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0
Sierra Leone	1.0	0.3	0.3	1.3	2.3	0.0	1.1	0.8	0.4	0.5	0.4	0.0	2.0	0.4
Somalia	0.0	0.0	0.0	0.2	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	161.4	239.0	166.1	205.6	210.8	208.4	233.5	273.4	242.7	252.3	323.3	309.2	313.3	330.1
South Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Sudan	20.2	16.4	14.5	17.2	28.9	26.0	22.3	29.1	38.6	34.7	28.9	19.5	18.2	21.1
Swaziland	1.6	0.2	3.5	1.7	3.5	2.5	2.9	2.9	1.4	0.8	2.5	0.1	0.8	1.5
Tanzania	19.4	15.4	23.4	30.6	47.6	21.2	13.4	21.3	23.2	19.2	31.7	42.9	35.7	39.6
Togo	2.6	2.4	3.6	4.4	2.3	1.3	3.2	5.8	2.9	3.1	4.9	2.2	2.2	4.6
Tunisia	18.0	18.4	29.4	41.6	92.0	87.4	127.9	142.7	155.1	153.4	164.7	148.1	166.2	164.4
Uganda	10.5	14.0	10.3	12.2	7.8	14.6	14.5	15.3	27.1	16.3	21.9	19.2	27.8	31.7
Western Sahara	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zambia	7.9	5.3	5.9	3.5	2.7	4.0	0.7	2.3	1.9	6.1	3.3	4.3	6.0	5.7
Zimbabwe	25.6	11.6	23.8	20.6	21.8	17.1	9.6	14.7	14.1	18.8	23.2	36.5	27.7	21.3
Asia	4,605.6	5,151.4	6,052.8	6,956.4	8,814.8	9,921.1	10,685.4	11,682.2	12,947.2	13,130.8	16,267.8	17,333.3	17,926.8	18,036.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Afghanistan	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.7	2.1	0.6	0.3	0.9	0.3	1.3
Bangladesh	24.2	41.7	37.6	73.5	62.6	44.5	40.9	44.7	56.4	61.3	101.9	102.5	80.6	96.3
Bhutan	2.5	0.8	0.6	0.6	0.5	0.1	3.0	1.1	1.7	1.5	1.6	1.5	1.3	4.1
Brunei	0.0	1.0	0.0	0.0	0.5	0.0	1.0	1.6	0.0	0.1	1.3	1.6	4.9	6.6
Burma	0.1	0.0	0.4	1.4	2.9	0.9	1.4	1.1	1.1	2.3	0.8	1.5	1.9	1.4
Cambodia	8.3	2.8	6.4	5.2	4.7	5.7	3.8	5.9	4.1	3.8	5.0	7.5	5.1	3.4
China	980.4	1,236.3	2,098.4	2,324.9	2,889.0	3,297.2	3,777.6	4,371.7	5,315.2	5,217.1	7,569.8	8,243.0	9,146.3	9,191.9
India	1,076.7	1,111.2	1,210.4	1,403.7	1,650.6	2,077.0	2,071.5	2,099.6	2,153.4	2,434.4	2,750.3	3,120.9	2,920.2	2,918.4
Indonesia	11.7	36.2	34.8	25.9	31.4	31.4	30.3	78.3	94.9	103.9	126.5	182.1	281.5	301.5
Japan	1,697.6	1,817.5	1,716.0	1,658.9	1,751.4	1,869.6	1,899.5	2,015.5	1,800.3	1,684.8	1,774.4	1,678.6	1,489.9	1,492.9
Kazakhstan	0.0	1.5	3.0	1.4	1.1	1.1	0.6	3.6	3.7	4.6	13.1	11.9	9.8	13.5
Kyrgyzstan	0.1	0.5	1.4	0.0	1.5	0.0	0.6	0.9	1.2	0.9	1.1	1.4	1.4	2.6
Laos	4.2	5.4	0.8	6.0	2.4	7.8	5.4	3.9	5.1	10.8	5.8	3.0	5.4	12.7
Malaysia	48.5	64.0	52.6	96.7	124.2	185.2	259.3	296.4	388.5	446.9	519.1	521.3	470.9	549.7
Maldives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Mongolia	0.2	0.3	0.3	1.0	0.9	2.3	2.3	1.8	2.5	1.2	2.2	2.2	3.2	2.3
Nepal	7.2	6.0	7.1	8.5	11.5	3.4	8.7	5.6	4.8	5.2	10.1	6.6	9.2	11.2
North Korea	0.6	0.0	0.0	0.0	0.0	0.7	2.5	0.3	0.0	1.4	0.4	0.1	2.0	0.0
Pakistan	54.4	54.5	56.8	161.0	227.4	177.4	216.1	240.5	334.8	414.6	534.6	501.4	546.7	483.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Papua New Guinea	2.0	1.7	0.0	2.1	2.6	3.9	0.2	3.2	4.6	2.0	0.5	2.7	1.3	2.2
Philippines	57.5	80.0	68.4	67.9	69.4	77.7	87.3	77.1	79.0	63.4	100.3	75.6	75.2	61.9
Singapore	7.9	19.2	19.3	32.9	25.2	24.8	23.3	28.1	28.1	31.3	38.4	51.6	51.6	49.4
South Korea	304.2	327.1	361.4	388.4	1,074.5	1,260.6	1,276.1	1,381.9	1,454.5	1,561.6	1,635.5	1,819.8	1,819.8	1,765.3
Sri Lanka	32.3	23.7	19.9	23.3	28.0	26.1	23.4	13.9	29.6	25.3	31.6	25.5	25.3	38.1
Taiwan	175.9	189.2	214.8	248.9	338.0	334.5	396.2	469.9	484.8	439.0	437.0	384.2	355.2	320.9
Tajikistan	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.8	0.5	0.8	0.6
Thailand	86.2	105.8	113.8	404.8	488.3	452.3	519.8	493.1	651.1	552.8	536.8	533.7	561.4	615.8
Timor-Leste	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.5	0.8	1.5	2.2	0.7	0.0
Turkmenistan	0.0	0.0	0.3	0.0	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uzbekistan	2.6	3.3	3.0	1.9	6.7	5.7	5.5	9.0	7.5	6.0	3.0	2.9	5.9	5.5
Vietnam	20.2	21.4	25.3	16.0	18.9	31.0	29.1	32.9	37.8	52.1	64.2	46.7	49.0	82.7
Australia and Oceania	1,072.7	1,073.7	1,052.3	1,164.2	1,245.0	1,230.9	1,229.2	1,265.9	1,232.6	1,289.0	1,379.1	1,509.8	1,481.8	1,511.3
Australia	794.5	778.6	763.5	864.0	932.9	892.3	937.8	980.0	938.7	960.5	1,020.0	1,133.2	1,126.3	1,115.3
Cook Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Fiji	0.7	0.0	2.0	1.9	0.8	2.3	1.0	0.8	1.2	0.8	0.2	1.1	1.5	4.6
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Micronesia, Federated States of	0.1	0.0	0.0	0.3	0.0	0.4	0.5	0.1	0.0	0.0	0.0	0.1	0.1	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	274.1	291.6	284.2	293.3	308.9	335.2	288.6	282.6	291.5	327.4	357.0	371.3	351.2	389.3
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Samoa	2.6	3.0	2.0	3.8	2.5	0.0	0.0	0.3	0.2	0.0	0.0	3.2	2.2	0.0
Solomon Islands	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.8	0.2	0.3	0.0	0.0	0.1	0.0
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.3	0.3	0.6	0.5	0.0	0.6	0.9	1.3	0.3	0.0	1.9	0.3	0.3	2.0
Unassigned	131.8	73.8	84.2	107.0	131.7	174.6	89.8	87.3	63.6	48.6	65.0	49.4	27.0	18.7

na = not applicable; country data do not exist.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis. The sum of the regions, countries, or economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-29

S&E articles in astronomy, by region, country, or economy: 2003–16

(Number)

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	11,191.0	12,124.0	13,954.0	15,827.0	13,748.0	12,699.0	12,971.0	12,034.0	14,537.0	15,380.0	13,907.0	14,361.0	13,294.0	13,706.0
North America	3,720.4	3,919.7	4,248.8	4,735.9	4,332.8	3,785.7	3,986.3	3,775.2	4,208.1	4,395.7	4,024.7	3,912.3	3,716.7	3,619.5
Canada	242.5	254.6	295.5	334.5	291.9	298.9	284.2	298.5	314.1	362.2	323.6	327.5	258.1	245.8
Greenland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Mexico	179.7	118.2	154.6	150.3	203.3	155.1	147.1	130.7	247.0	132.9	125.3	156.3	134.7	124.9
United States	3,298.2	3,546.8	3,798.7	4,251.0	3,837.6	3,331.6	3,554.9	3,346.0	3,647.0	3,900.5	3,575.8	3,428.5	3,324.0	3,248.7
Central America and Caribbean	4.7	7.6	5.2	9.0	10.9	5.4	7.5	6.7	3.8	4.8	13.0	8.1	12.6	5.2
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas, The	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Barbados	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Belize	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Costa Rica	0.0	1.0	0.0	0.0	0.3	1.2	0.8	0.9	0.1	1.1	4.9	1.0	1.9	1.2
Cuba	0.0	3.0	0.8	1.6	3.6	0.7	1.9	0.7	0.6	0.3	4.8	3.7	7.6	0.1
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dominican Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
El Salvador	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Grenada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.2
Guatemala	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Haiti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Honduras	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Jamaica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nicaragua	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Panama	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.5	0.0	0.1
Puerto Rico	4.7	3.4	4.2	6.9	6.5	3.1	4.5	4.5	2.4	3.3	3.1	2.6	3.1	3.2
Saint Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saint Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saint Vincent and the Grenadines	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	0.0	0.2	0.2	0.5	0.6	0.1	0.1	0.3	0.3	0.0	0.0	0.0	0.0	0.0
South America	281.8	323.5	371.6	489.4	367.4	414.9	440.8	355.4	504.7	420.2	423.1	534.9	462.1	426.2
Argentina	71.6	83.7	91.4	98.5	84.1	95.9	95.4	91.7	137.9	81.1	88.2	97.0	85.0	90.7
Bolivia	0.2	0.1	0.9	0.5	1.5	0.4	0.5	0.4	1.3	0.3	0.0	0.3	0.0	0.2
Brazil	118.1	133.0	158.9	206.5	141.6	156.0	173.7	133.1	176.8	173.3	156.4	207.7	164.6	137.9
Chile	82.9	86.6	106.5	161.5	128.8	143.3	135.5	123.0	161.0	146.4	165.5	204.6	195.2	179.7
Colombia	1.1	4.2	1.1	3.1	0.3	8.7	4.4	3.8	4.3	5.0	7.5	13.8	10.7	9.7
Ecuador	0.0	0.0	0.0	0.6	0.5	0.0	0.0	0.0	1.0	1.4	0.0	0.2	1.3	0.7

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Guyana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Paraguay	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Peru	1.2	2.2	1.7	1.1	1.2	0.2	0.7	0.4	5.4	2.7	0.7	0.1	0.8	0.7
Suriname	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Uruguay	0.1	3.5	1.7	1.3	0.0	2.9	2.1	0.1	2.0	3.7	0.1	1.2	0.7	2.3
Venezuela	6.5	9.3	9.6	16.2	9.3	7.5	28.5	2.9	15.0	6.3	4.7	9.7	3.8	3.4
Europe	5,688.1	6,155.0	7,352.2	8,327.9	6,781.0	6,379.6	6,279.3	5,806.9	7,045.2	7,505.2	6,503.0	6,669.3	6,151.8	6,404.2
EU	4,906.0	5,365.6	6,284.6	7,303.9	5,845.5	5,558.7	5,345.4	5,053.6	5,959.2	6,563.9	5,529.3	5,691.5	5,199.2	5,461.9
Austria	67.1	78.5	116.4	94.3	72.0	75.4	67.7	61.3	80.7	65.1	71.3	80.4	71.8	76.6
Belgium	107.5	129.7	157.7	160.6	140.4	136.6	133.7	127.6	131.3	146.9	145.5	169.8	132.1	137.4
Bulgaria	25.3	21.8	20.3	53.3	22.3	47.6	26.9	33.5	26.2	46.0	21.4	45.3	46.1	27.8
Croatia	7.6	10.1	6.7	13.8	12.6	7.9	8.0	6.4	16.4	11.2	8.2	12.7	10.1	7.3
Cyprus	1.1	0.1	0.6	2.2	0.1	0.2	1.1	0.2	0.8	1.1	2.8	1.7	2.2	2.1
Czech Republic	57.6	55.7	90.1	132.4	62.9	87.4	74.9	82.6	121.1	181.2	123.3	125.9	121.8	133.5
Denmark	71.6	63.3	61.5	85.6	49.7	48.1	41.2	50.7	66.8	78.4	58.8	70.1	71.5	67.3
Estonia	9.3	7.3	16.1	17.0	13.7	16.1	7.3	8.4	16.2	17.6	11.2	20.4	10.8	7.5
Finland	52.2	62.2	89.7	100.7	67.4	60.7	71.8	49.1	67.0	70.1	61.6	63.9	53.1	70.4
France	733.5	840.4	990.3	1,207.3	824.6	846.6	819.0	811.2	821.9	930.6	824.5	786.3	766.5	761.3
Germany	937.0	1,093.7	1,340.1	1,325.6	1,254.7	1,210.0	1,086.5	994.7	1,203.9	1,409.2	1,090.1	1,105.7	956.1	1,130.9

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greece	59.6	72.5	77.3	124.9	60.2	59.9	82.7	53.7	65.4	76.3	63.7	70.0	65.5	88.3
Hungary	31.7	47.4	31.2	51.0	57.4	49.4	49.2	30.3	46.4	54.5	61.2	57.0	41.7	57.0
Ireland	23.8	34.1	54.5	33.6	31.1	34.3	31.1	31.6	41.4	37.2	31.1	29.0	19.6	25.2
Italy	719.4	803.2	907.1	1,105.8	965.6	818.5	885.3	752.4	1,009.3	1,018.3	864.0	816.1	737.8	782.7
Latvia	4.7	0.5	3.2	0.5	0.6	1.9	1.7	3.0	7.0	5.1	5.4	2.5	4.2	3.0
Lithuania	25.4	6.5	16.9	11.5	8.1	19.1	10.3	10.6	7.2	11.4	12.8	14.9	8.9	7.5
Luxembourg	0.4	0.0	0.4	2.0	1.9	0.3	0.7	0.2	0.4	0.0	0.1	1.6	2.1	0.1
Malta	0.0	0.2	0.0	0.5	0.4	0.0	0.0	0.0	0.3	0.3	1.2	1.2	1.7	1.2
Netherlands	320.0	354.8	385.1	403.3	308.6	307.1	258.6	233.8	264.9	324.0	281.2	268.5	262.3	272.9
Poland	143.7	143.3	161.2	160.1	154.5	143.8	145.3	140.5	169.9	171.7	148.8	193.4	156.6	158.9
Portugal	30.3	33.8	32.4	90.0	41.8	65.4	40.1	32.5	42.3	86.3	47.8	52.5	40.1	43.7
Romania	7.1	12.9	10.3	11.5	10.2	15.3	13.2	12.1	23.0	18.3	15.8	11.0	11.7	13.3
Slovakia	27.7	22.0	25.9	20.4	23.2	34.1	29.9	31.9	48.6	54.7	34.3	57.1	43.3	23.6
Slovenia	6.2	5.2	8.6	6.0	2.5	5.9	2.4	3.8	6.3	4.6	7.4	4.3	3.7	4.9
Spain	376.1	347.2	475.1	593.7	464.7	444.1	428.4	439.6	470.3	550.7	480.5	527.8	430.4	454.4
Sweden	78.1	87.6	123.6	159.9	103.5	108.8	80.4	116.6	125.8	123.0	108.0	100.5	115.3	122.6
United Kingdom	982.2	1,031.7	1,082.5	1,336.3	1,090.7	914.4	947.9	935.4	1,078.4	1,070.2	947.3	1,001.9	1,012.3	980.4
Other Europe	782.0	789.4	1,067.6	1,024.0	935.5	820.9	934.0	753.3	1,086.0	941.3	973.7	977.8	952.6	942.3
Albania	0.0	0.0	0.5	0.0	0.5	0.5	0.0	0.7	0.0	1.3	0.0	0.0	1.5	2.9

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Andorra	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belarus	0.0	5.0	0.0	2.2	2.8	1.1	0.7	0.0	3.2	1.3	3.0	0.0	0.3	2.1
Bosnia and Herzegovina	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.1	0.0	0.0
Holy See (Vatican City)	0.0	0.0	0.0	0.3	0.4	0.0	0.0	1.3	0.5	0.3	0.0	0.0	0.0	0.0
Iceland	0.3	3.2	4.5	5.7	6.4	2.2	1.1	0.8	4.6	3.5	2.9	2.1	1.0	1.5
Kosovo	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.3	0.0	0.3	0.0	0.0	0.6	0.0
Liechtenstein	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Macedonia	0.3	2.0	0.2	1.7	1.1	0.0	1.0	1.5	0.0	0.0	0.0	2.0	1.0	3.8
Moldova	0.0	0.2	0.0	0.0	0.0	0.0	0.6	0.0	1.9	0.0	0.8	0.0	0.0	0.0
Monaco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Montenegro[a]	na	na	na	na	0.3	0.2	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Norway	29.0	30.0	61.4	36.4	44.2	25.7	28.1	16.5	37.0	28.1	41.4	23.2	34.7	46.8
Russia	506.6	488.2	646.7	576.1	567.6	456.0	598.8	454.3	698.0	522.7	579.4	573.6	569.9	556.5
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Serbia[a]	na	na	na	na	29.6	48.0	31.7	40.6	34.7	45.8	23.7	53.1	32.4	31.9
Serbia and Montenegro[b]	16.0	18.7	13.3	41.6	na	na	na	na	na	na	na	na	na	na
Switzerland	123.6	164.5	203.6	197.3	183.7	145.2	146.5	138.4	165.1	180.3	163.9	155.5	165.7	160.5
Turkey	27.8	31.4	50.9	71.9	43.4	54.5	46.7	43.9	57.3	68.6	66.6	68.5	60.4	60.8
Ukraine	78.3	46.1	86.3	90.9	55.6	86.7	78.8	55.1	83.8	88.1	91.7	98.7	84.9	74.5

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Middle East	109.2	124.2	127.3	156.0	136.5	141.1	152.4	145.3	207.8	265.4	235.1	256.0	239.8	278.2
Armenia	10.9	9.8	13.9	9.4	9.9	10.0	16.2	7.7	20.8	7.6	9.5	29.2	22.7	20.5
Azerbaijan	1.3	3.3	1.6	4.3	6.3	3.6	2.1	2.8	1.8	4.5	4.1	4.0	6.5	4.0
Bahrain	0.0	0.0	0.0	1.0	2.0	0.0	0.7	1.0	0.0	0.0	0.0	0.3	0.3	0.3
Gaza Strip	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Georgia	5.1	5.6	17.6	14.2	11.3	9.6	10.7	9.8	11.0	10.2	11.5	7.9	8.3	14.1
Iran	14.3	14.4	14.4	28.2	23.2	26.9	30.0	37.5	66.9	100.5	95.7	86.1	73.9	85.4
Iraq	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.9	2.1	1.9	2.9	1.7
Israel	67.0	84.3	74.2	90.7	75.1	85.9	85.2	80.8	90.8	119.6	88.7	88.9	96.7	106.2
Jordan	0.3	1.0	1.1	0.1	1.0	0.6	1.5	0.2	0.5	1.5	1.0	4.3	0.0	1.8
Kuwait	0.0	0.0	0.0	0.3	1.3	1.0	0.3	0.1	0.3	0.0	0.0	0.7	0.6	0.4
Lebanon	0.0	0.5	0.0	1.5	1.2	0.2	1.9	0.3	1.3	1.9	0.5	0.6	3.1	2.4
Oman	0.0	0.2	1.0	1.0	0.5	1.0	0.7	0.3	1.0	1.1	0.1	2.2	2.4	2.6
Qatar	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.3	1.3	1.0	4.4	1.7	2.4	2.9
Saudi Arabia	9.5	3.3	2.0	0.5	2.0	1.0	0.6	3.0	9.4	15.9	16.1	22.2	15.9	17.0
Syria	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	1.0	0.0	0.0	0.0
United Arab Emirates	0.3	0.4	0.4	2.8	1.8	1.0	1.4	0.6	2.4	0.5	0.3	4.5	4.1	18.1
West Bank	0.0	1.5	0.0	1.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yemen	0.0	0.0	1.2	1.0	1.0	0.0	0.2	1.0	0.0	0.0	0.0	1.4	0.0	0.5

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Africa	68.7	70.8	84.3	92.2	94.5	79.9	89.6	139.5	142.9	161.3	184.5	243.0	186.2	201.6
Algeria	0.0	3.3	5.7	6.2	5.7	2.0	6.5	7.5	8.3	14.8	10.1	16.7	4.3	12.0
Angola	0.0	0.0	0.0	0.3	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	3.5	3.7
Botswana	0.0	0.0	0.0	1.4	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Burkina Faso	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.1	0.3	1.0	0.0	0.4	0.3
Burundi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Cameroon	0.0	0.0	1.5	0.8	0.0	0.0	0.4	0.0	1.4	0.4	0.0	1.2	1.0	2.8
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Central African Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chad	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.2	0.0	0.0
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo, Democratic Republic of the	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo, Republic of the	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Côte d'Ivoire	0.3	0.3	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Egypt	14.1	10.6	11.3	16.1	12.2	13.2	13.6	46.8	44.6	48.7	63.8	90.8	69.6	75.5
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eritrea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ethiopia	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.3	0.6	0.5	0.1	2.1	4.7	3.1
Gabon	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gambia, The	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ghana	0.0	0.0	0.2	0.3	2.2	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.1
Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	0.0	0.0	0.0	1.2	0.1	0.0	0.7	0.0	0.5	1.8	1.8	0.0	0.6	1.6
Lesotho	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liberia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Libya	0.0	0.5	0.5	0.0	0.0	0.0	0.5	0.0	0.1	0.5	0.2	0.0	0.1	0.0
Madagascar	0.0	0.0	0.4	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malawi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mali	1.3	1.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Mauritania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mauritius	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.6
Morocco	1.6	4.2	5.9	6.9	2.7	3.1	2.0	3.2	1.3	1.8	1.1	0.3	2.1	4.3
Mozambique	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Namibia	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.0
Niger	0.0	0.0	0.1	0.0	0.5	0.0	0.0	2.0	0.0	0.2	0.0	0.0	0.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nigeria	2.1	0.5	2.3	2.4	3.5	7.6	6.5	12.6	10.9	10.2	22.0	37.5	14.1	11.9
Rwanda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.6	0.0	0.0	0.0
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	0.0	0.0	0.0	0.0	0.8	0.7	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.7
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sierra Leone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	47.4	43.3	52.5	51.6	61.5	50.7	50.3	60.1	68.1	73.5	76.6	87.4	80.1	81.2
South Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sudan	0.0	1.0	1.1	0.0	1.8	0.0	3.0	4.4	0.4	0.3	1.0	0.3	0.1	0.0
Swaziland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tanzania	2.0	3.0	0.0	0.3	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.1	0.3
Togo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunisia	0.0	3.1	2.3	3.2	2.8	1.5	4.0	1.2	5.6	3.9	5.3	5.1	1.6	3.1
Uganda	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	1.0	0.8	0.5	2.0	0.0
Western Sahara	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zambia	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Zimbabwe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Asia	1,078.9	1,234.3	1,441.0	1,681.6	1,729.7	1,615.5	1,753.7	1,529.5	2,075.4	2,203.2	2,150.1	2,325.6	2,153.3	2,428.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bangladesh	1.0	1.5	0.0	1.3	0.0	1.0	1.8	0.0	1.3	6.0	21.0	16.9	10.3	3.5
Bhutan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brunei	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Burma	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Cambodia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
China	247.4	310.6	394.3	544.8	626.0	567.7	590.8	573.2	714.7	882.9	869.1	920.4	925.5	1,106.1
India	167.4	153.3	267.6	279.5	209.3	252.3	258.0	259.0	391.5	359.6	358.2	447.7	379.4	400.2
Indonesia	4.4	3.4	1.3	2.5	3.5	1.7	2.8	0.7	2.0	4.0	1.1	5.0	2.0	6.7
Japan	576.7	654.2	672.6	680.2	707.6	612.5	667.2	461.4	686.4	600.9	557.6	548.6	456.9	522.8
Kazakhstan	4.1	2.0	1.0	2.1	2.1	3.8	2.3	1.3	6.4	8.9	4.9	8.8	11.0	13.4
Kyrgyzstan	0.0	0.1	0.0	0.7	0.0	0.9	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Laos	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malaysia	0.0	0.5	0.0	2.8	1.3	0.8	5.0	7.0	2.3	4.7	6.3	6.9	6.1	4.1
Maldives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mongolia	0.0	0.0	0.0	0.2	0.3	0.0	0.1	0.4	0.0	1.0	0.2	0.1	0.3	0.6
Nepal	0.0	0.0	0.0	0.8	1.7	1.0	0.3	0.8	0.5	1.0	0.7	0.0	0.0	0.1
North Korea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Pakistan	0.0	2.1	1.1	1.9	1.3	4.5	4.0	12.0	13.3	29.0	38.2	68.2	56.3	34.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Papua New Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Philippines	1.0	2.8	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.4	1.7
Singapore	0.8	2.3	0.0	6.8	1.4	0.6	1.4	0.6	0.9	1.4	0.5	1.2	1.6	3.1
South Korea	41.6	55.3	67.4	94.6	111.9	99.8	141.0	137.6	167.8	196.7	199.0	207.9	205.4	225.9
Sri Lanka	0.0	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	0.5	0.0	2.2	0.5	0.0
Taiwan	24.8	34.9	25.7	46.4	52.5	58.3	63.8	64.6	69.6	89.8	73.7	72.7	67.3	74.2
Tajikistan	3.8	4.0	0.0	0.6	1.4	2.1	2.4	0.8	1.3	1.7	1.7	0.6	4.9	1.4
Thailand	3.6	2.1	5.1	5.2	4.3	3.8	4.6	1.7	8.6	5.9	8.4	8.7	15.1	13.1
Timor-Leste	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turkmenistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uzbekistan	2.4	5.3	4.4	6.3	4.9	3.4	5.7	7.5	6.3	5.6	7.9	5.3	6.9	8.0
Vietnam	0.0	0.0	0.4	1.1	0.0	1.0	2.6	0.6	2.3	3.6	1.4	4.3	3.3	8.6
Australia and Oceania	212.3	276.2	269.9	305.8	268.0	254.3	249.8	263.5	344.2	413.3	365.5	383.0	349.2	332.9
Australia	203.2	260.3	253.9	291.6	258.4	239.6	236.2	250.0	325.4	386.1	345.7	361.3	330.7	308.0
Cook Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Fiji	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micronesia, Federated States of	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	9.2	15.9	16.0	13.8	9.6	14.7	13.5	13.5	18.8	27.2	19.6	21.7	18.2	24.8
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Unassigned	26.9	12.7	53.7	29.2	27.3	22.7	11.8	12.1	4.9	10.9	8.1	29.0	22.3	10.2

na = not applicable; country data do not exist.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis. The sum of the regions, countries, or economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-30

S&E articles in biological sciences, by region, country, or economy: 2003–16

(Number)

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	204,709.0	218,773.0	230,356.0	237,684.0	249,605.0	262,930.0	271,339.0	282,223.0	305,909.0	328,879.0	344,741.0	361,805.0	356,715.0	351,877.0
North America	71,605.6	75,921.0	77,660.8	78,018.1	80,768.7	81,521.9	82,430.6	83,292.6	87,789.5	92,760.5	93,738.2	94,895.3	91,568.0	85,798.2
Canada	7,100.7	7,381.3	7,787.3	8,052.1	8,499.2	8,723.6	8,692.6	8,749.6	9,136.8	9,915.4	9,927.6	10,195.6	9,968.0	9,332.0
Greenland	3.2	6.9	3.6	5.5	2.6	4.6	1.2	3.0	3.9	4.0	7.6	3.6	6.1	4.6
Mexico	1,182.9	1,277.7	1,413.0	1,569.1	1,634.1	1,882.5	1,918.8	1,987.3	2,143.6	2,416.2	2,657.0	2,918.7	3,036.8	3,131.5
United States	63,318.8	67,255.1	68,457.0	68,391.4	70,632.9	70,911.3	71,817.9	72,552.7	76,505.1	80,425.0	81,146.0	81,777.5	78,557.2	73,330.2
Central America and Caribbean	491.1	575.1	569.5	610.8	629.0	656.9	669.4	698.6	731.3	762.4	736.2	866.7	688.7	657.7
Antigua and Barbuda	0.0	0.0	0.4	0.1	0.3	0.9	0.0	0.1	0.2	1.3	0.5	0.2	0.7	0.3
Bahamas, The	0.7	0.5	0.3	0.6	1.3	1.1	0.5	0.8	1.0	2.4	2.1	3.4	1.9	2.9
Barbados	4.7	3.0	2.7	5.7	4.3	10.0	2.1	2.4	4.8	1.4	4.1	3.7	7.0	5.0
Belize	0.7	1.4	1.8	3.4	1.9	0.1	2.0	2.4	1.4	3.6	2.9	2.0	1.9	2.8
Costa Rica	68.1	77.9	110.0	75.8	96.0	95.4	95.0	99.4	108.1	102.6	102.4	124.5	103.5	107.7
Cuba	213.7	269.5	257.9	279.8	244.8	279.4	300.7	286.2	290.5	300.5	292.9	309.1	221.2	155.9
Dominica	0.0	0.0	0.1	0.6	0.8	0.2	1.4	0.4	3.1	2.8	0.3	1.2	2.0	1.9
Dominican Republic	3.4	4.2	1.1	1.2	2.3	5.9	4.4	5.5	3.9	6.6	6.1	9.6	10.1	7.2
El Salvador	0.3	2.4	3.4	2.0	1.8	2.7	3.8	4.9	1.8	3.1	5.9	5.2	2.5	9.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Grenada	1.1	1.4	1.9	9.9	10.3	12.3	7.7	4.5	10.9	8.1	9.8	22.1	11.8	9.1
Guatemala	11.9	11.1	16.0	7.9	9.4	10.9	21.5	24.5	15.2	29.6	22.0	20.1	21.9	20.2
Haiti	1.9	0.4	0.8	2.3	1.7	1.3	3.0	1.5	2.6	4.2	6.0	8.4	6.2	6.5
Honduras	1.4	1.9	3.7	3.1	3.4	5.1	4.6	6.0	7.4	8.8	9.6	8.9	11.2	16.6
Jamaica	16.8	17.2	12.8	22.8	19.1	16.9	19.1	22.2	36.8	21.3	26.8	35.4	18.0	21.3
Nicaragua	3.1	4.6	4.5	6.7	5.7	6.5	8.5	9.1	11.0	8.9	8.0	12.0	8.2	12.4
Panama	43.7	43.9	42.1	51.1	63.7	68.8	64.9	66.8	64.1	78.1	83.6	90.3	87.9	95.0
Puerto Rico	98.7	111.4	85.9	120.6	136.5	115.6	105.3	130.3	141.8	147.4	122.4	153.0	145.4	153.4
Saint Kitts and Nevis	0.2	0.2	0.0	0.2	0.6	0.2	1.3	2.0	0.5	5.1	4.6	6.1	4.4	5.6
Saint Lucia	0.0	0.3	0.3	0.5	0.2	0.5	0.0	0.4	0.3	0.4	0.5	0.0	0.6	2.3
Saint Vincent and the Grenadines	0.0	0.1	0.0	0.5	0.1	0.0	0.0	0.1	0.0	0.0	0.6	0.1	0.3	1.1
Trinidad and Tobago	20.8	23.7	23.8	15.9	24.9	23.2	23.4	29.2	25.9	26.3	25.0	51.3	22.0	21.4
South America	5,756.4	6,409.0	6,671.4	8,118.0	8,929.9	10,189.9	10,938.0	11,595.9	12,763.2	14,210.5	14,806.7	15,880.3	16,060.7	16,616.2
Argentina	1,260.6	1,258.2	1,295.0	1,501.4	1,528.3	1,729.9	1,886.0	1,979.5	2,155.7	2,330.3	2,214.4	2,307.5	2,181.5	2,226.2
Bolivia	21.8	15.5	24.4	27.9	41.9	42.1	39.4	34.0	42.4	33.4	40.9	38.8	32.3	31.5
Brazil	3,520.7	4,069.6	4,180.1	5,316.5	5,993.0	6,797.6	7,174.7	7,672.2	8,505.3	9,652.8	10,246.7	10,886.1	11,117.3	11,488.7
Chile	394.6	438.9	505.4	554.2	625.2	698.3	727.5	770.1	894.6	934.1	1,015.8	1,138.7	1,211.1	1,232.2
Colombia	139.5	182.0	187.4	234.4	224.3	302.8	392.7	528.9	524.7	635.8	639.0	758.9	834.6	879.6
Ecuador	20.1	25.1	40.4	43.1	52.4	53.9	74.0	60.1	61.2	79.3	81.9	110.3	118.0	185.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Guyana	1.1	1.7	3.5	2.1	3.5	1.9	3.0	6.9	3.0	1.9	2.8	1.7	3.0	6.0
Paraguay	7.3	9.0	9.2	6.4	7.8	8.4	8.0	7.8	12.6	13.4	12.7	18.1	16.7	21.1
Peru	60.6	55.7	54.4	75.4	94.3	96.8	89.1	94.7	121.1	113.7	148.8	180.1	183.1	212.6
Suriname	1.1	2.7	2.1	1.4	0.6	3.0	1.7	1.2	0.7	2.1	3.4	1.0	2.7	6.4
Uruguay	83.1	92.8	107.3	91.7	98.9	113.1	134.2	120.6	161.5	138.6	152.1	208.4	162.6	182.3
Venezuela	246.1	257.7	262.4	263.5	259.8	342.1	407.6	319.8	280.3	275.2	248.1	230.7	198.0	144.4
Europe	76,461.2	79,555.2	82,133.1	82,569.8	84,676.1	89,494.4	91,366.4	93,195.5	99,259.0	107,054.7	109,928.8	114,037.6	112,498.8	108,675.6
EU	66,309.4	68,862.2	71,100.5	72,590.5	74,331.1	78,671.4	79,835.1	80,921.1	85,863.6	92,766.1	95,400.6	98,408.8	96,384.5	92,324.1
Austria	1,244.4	1,297.3	1,313.1	1,300.1	1,411.5	1,454.8	1,524.5	1,581.6	1,690.9	1,749.3	1,881.5	1,920.5	1,961.3	1,870.5
Belgium	1,974.1	2,124.7	2,204.1	2,054.5	2,123.9	2,241.5	2,380.8	2,428.7	2,665.9	2,828.5	2,889.6	2,865.6	2,787.8	2,718.2
Bulgaria	289.2	252.0	377.5	323.7	487.1	501.2	586.3	503.1	504.2	582.3	580.3	581.7	505.3	507.5
Croatia	285.3	301.6	340.7	416.9	470.4	582.0	504.8	452.1	571.7	556.3	550.3	497.7	478.4	520.0
Cyprus	9.0	12.9	18.3	18.7	27.5	29.0	34.5	38.1	38.5	57.0	75.7	69.0	70.7	89.0
Czech Republic	1,068.5	1,206.3	1,173.0	1,280.7	1,460.2	1,587.3	1,623.9	1,812.4	1,741.1	1,904.9	1,925.3	2,276.8	2,334.6	2,221.8
Denmark	1,609.6	1,642.4	1,595.9	1,639.6	1,663.3	1,712.2	1,727.7	1,861.8	1,968.8	2,247.5	2,410.1	2,527.0	2,550.9	2,439.7
Estonia	121.7	122.7	162.2	168.1	191.2	189.3	245.3	242.4	263.9	268.8	270.1	293.0	327.5	285.8
Finland	1,452.5	1,473.9	1,476.3	1,531.6	1,496.8	1,597.3	1,490.2	1,533.2	1,614.5	1,704.4	1,673.3	1,745.9	1,686.7	1,606.6
France	8,580.3	8,828.9	8,922.1	8,992.5	9,005.4	9,191.4	9,279.9	9,390.8	9,911.3	10,605.9	10,689.0	10,877.5	10,536.3	10,034.6
Germany	11,638.1	12,157.1	12,719.9	12,751.6	13,172.1	13,557.0	13,995.0	13,941.6	14,848.1	16,014.9	16,334.2	17,175.6	16,621.6	15,979.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greece	808.5	942.2	1,074.2	1,235.5	1,149.8	1,471.4	1,326.8	1,351.6	1,319.5	1,378.0	1,419.9	1,340.8	1,251.3	1,243.6
Hungary	852.8	862.9	1,105.5	1,070.7	1,113.0	1,390.6	1,124.8	1,022.9	1,168.6	1,206.8	1,155.9	1,208.9	1,164.5	1,103.3
Ireland	469.4	547.5	617.5	603.4	695.4	773.1	864.7	964.6	1,131.7	1,104.2	1,035.8	1,108.0	1,002.0	974.7
Italy	6,491.2	6,783.2	6,876.5	7,294.0	7,640.8	8,051.9	8,375.4	8,295.7	8,955.2	9,621.8	10,136.3	10,404.1	10,032.1	9,905.8
Latvia	46.2	45.7	30.2	41.4	41.1	41.7	50.3	54.2	79.1	88.5	86.0	95.0	97.9	108.4
Lithuania	80.0	86.3	98.2	108.9	116.4	102.6	109.1	118.7	136.6	184.1	152.5	180.1	273.9	227.9
Luxembourg	20.5	42.8	23.5	31.2	29.8	47.5	49.9	62.9	83.4	75.4	93.4	110.9	122.5	109.5
Malta	19.2	9.8	7.4	7.9	9.1	21.6	18.6	12.0	18.1	17.0	18.9	21.1	32.5	28.7
Netherlands	3,705.4	3,824.7	3,987.6	3,885.3	3,889.7	4,224.0	4,182.3	4,390.8	4,666.5	5,146.5	5,359.4	5,543.5	5,313.4	5,107.3
Poland	2,573.4	2,479.7	2,711.8	2,769.2	2,714.4	2,910.1	2,941.3	3,098.5	3,403.2	3,786.4	4,410.9	4,725.0	4,555.9	4,572.5
Portugal	734.7	777.5	816.5	894.8	970.8	1,188.6	1,294.5	1,315.1	1,564.9	1,887.6	1,981.0	2,079.0	2,049.2	1,910.5
Romania	148.6	156.9	127.8	184.2	189.3	318.7	487.5	548.8	637.6	777.7	794.1	732.1	759.5	693.0
Slovakia	382.6	408.7	407.9	448.4	439.1	507.1	480.1	483.4	511.9	519.1	627.6	571.1	662.1	587.4
Slovenia	231.2	204.2	298.3	250.8	296.6	349.3	360.1	354.0	377.3	413.7	468.3	432.2	442.2	406.4
Spain	5,182.1	5,365.2	5,868.4	6,285.4	6,340.5	7,032.2	7,386.8	7,696.6	8,199.7	9,170.3	9,156.2	9,453.7	9,218.5	8,533.3
Sweden	2,975.1	2,962.7	3,031.0	2,974.1	2,998.4	3,022.6	3,016.9	2,944.3	3,054.1	3,254.1	3,482.8	3,495.0	3,445.8	3,368.5
United Kingdom	13,316.0	13,942.4	13,715.1	14,027.2	14,187.4	14,575.3	14,373.3	14,421.1	14,737.3	15,615.1	15,742.7	16,078.2	16,099.9	15,169.8
Other Europe	10,151.8	10,693.0	11,032.6	9,979.3	10,345.0	10,823.0	11,531.2	12,274.5	13,395.4	14,288.5	14,528.1	15,628.8	16,114.3	16,351.5
Albania	5.2	4.0	5.5	5.0	8.1	5.8	12.6	9.0	13.0	33.6	13.8	19.3	19.3	25.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Andorra	0.5	0.4	1.0	0.0	0.4	0.0	0.0	0.0	0.6	1.1	0.9	0.9	2.0	3.8
Belarus	100.7	101.0	94.9	85.2	98.4	74.5	84.7	75.4	75.3	92.2	65.4	88.6	94.2	67.0
Bosnia and Herzegovina	5.8	5.9	12.4	18.2	15.1	34.7	23.2	38.0	31.5	39.4	40.0	37.9	59.4	42.3
Holy See (Vatican City)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Iceland	54.1	60.5	61.7	54.1	59.9	69.5	66.0	65.0	68.4	85.3	96.3	77.9	87.6	91.3
Kosovo	0.0	0.0	0.0	0.0	0.0	5.0	8.0	5.2	4.2	12.8	7.8	14.9	8.2	15.6
Liechtenstein	0.4	1.8	0.8	0.9	0.5	1.8	0.6	2.2	1.8	1.0	2.8	1.4	3.5	3.8
Macedonia	10.5	40.2	25.3	14.4	22.4	26.9	29.2	21.5	25.0	51.4	39.5	54.8	48.0	61.4
Moldova	9.8	7.5	4.5	8.1	5.8	9.3	7.9	7.2	5.5	7.1	15.9	16.6	17.1	18.0
Monaco	4.8	2.7	2.6	3.8	3.2	3.4	4.8	5.0	7.4	4.2	4.8	6.5	10.2	6.7
Montenegro[a]	na	na	na	na	4.9	9.0	8.6	9.8	16.1	24.4	19.6	28.9	22.9	31.7
Norway	858.9	920.2	994.3	1,062.4	1,119.2	1,104.8	1,187.7	1,211.4	1,342.0	1,361.7	1,469.7	1,526.7	1,506.8	1,475.5
Russia	4,547.6	4,521.2	4,563.4	3,271.4	3,439.1	3,741.2	3,759.9	4,097.9	4,492.6	4,660.0	4,566.3	5,050.4	5,694.7	5,818.9
San Marino	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.4	1.2	0.2	0.3	1.0	0.3	0.5
Serbia[a]	na	na	na	na	308.4	451.2	513.1	557.7	577.0	751.1	732.8	789.5	717.4	673.8
Serbia and Montenegro[b]	161.3	192.4	248.6	277.8	na	na	na	na	na	na	na	na	na	na
Switzerland	2,447.4	2,681.8	2,602.1	2,795.0	2,766.2	2,825.7	3,006.2	3,071.9	3,376.0	3,722.4	3,872.7	4,005.9	3,930.4	3,851.9
Turkey	1,549.9	1,741.4	1,948.9	2,075.2	2,152.0	2,126.0	2,436.2	2,714.0	2,926.6	2,990.3	3,106.8	3,358.2	3,394.6	3,693.3
Ukraine	395.0	411.5	466.7	307.9	341.4	334.1	382.2	383.0	431.2	450.2	472.5	549.5	498.0	470.7

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Middle East	2,801.6	2,931.3	3,078.7	3,478.3	3,899.6	4,090.7	4,571.2	5,454.9	7,469.7	7,217.3	7,445.7	8,628.3	8,664.6	9,408.5
Armenia	26.4	31.7	28.6	28.6	25.6	47.1	23.0	26.4	42.0	43.7	44.9	37.9	39.5	35.7
Azerbaijan	9.2	13.9	21.9	14.8	12.0	7.0	10.2	15.2	24.3	21.9	15.0	21.4	25.1	22.0
Bahrain	15.0	12.9	17.2	16.1	13.4	12.1	10.8	12.5	10.1	10.3	12.6	13.4	19.4	17.3
Gaza Strip	0.0	2.3	1.2	4.1	3.8	1.9	4.2	5.9	7.3	8.8	9.3	8.8	6.5	7.2
Georgia	11.6	22.3	34.2	20.5	21.6	20.7	20.3	37.1	32.6	43.8	36.6	53.1	51.6	44.5
Iran	394.5	536.8	680.7	1,060.4	1,376.1	1,555.4	1,961.8	2,517.0	4,129.8	3,668.4	3,715.8	4,365.4	4,466.2	5,179.8
Iraq	15.5	7.7	8.9	17.5	18.9	14.4	34.8	52.5	64.6	63.0	74.0	83.0	76.9	91.0
Israel	1,751.9	1,764.7	1,720.8	1,743.2	1,800.9	1,782.1	1,781.3	1,788.4	1,880.3	1,973.4	1,891.5	1,991.7	1,984.2	1,850.4
Jordan	92.4	86.4	88.0	101.1	117.4	84.7	140.7	136.4	150.5	157.0	156.7	162.0	173.1	204.1
Kuwait	92.2	82.5	96.6	75.4	89.8	86.5	80.4	85.7	99.5	96.6	92.8	82.5	82.2	90.2
Lebanon	65.0	71.0	57.0	54.9	70.6	76.3	72.5	82.7	91.2	103.3	111.8	135.3	130.8	147.1
Oman	28.0	17.4	29.0	29.0	35.9	29.4	27.1	47.5	43.3	56.0	69.4	101.6	79.2	75.9
Qatar	9.7	13.6	8.3	9.5	14.5	17.4	18.6	29.8	33.1	42.8	56.2	80.6	107.0	118.8
Saudi Arabia	198.2	165.1	171.6	183.6	176.6	207.4	259.1	439.7	676.3	745.0	950.7	1,237.0	1,204.7	1,267.8
Syria	25.3	29.1	26.3	25.8	34.6	47.6	32.9	44.8	55.7	53.0	53.6	59.0	40.2	48.7
United Arab Emirates	53.2	60.2	79.7	76.8	69.7	86.6	66.7	95.5	95.2	95.4	118.2	144.9	146.8	164.9
West Bank	5.5	7.2	4.9	8.5	13.2	10.1	16.0	21.9	18.9	21.6	21.9	24.8	19.7	32.7
Yemen	8.0	6.5	3.8	8.5	4.9	4.0	10.7	15.9	15.0	13.2	14.7	25.9	11.6	10.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Africa	2,602.6	2,677.7	2,881.8	3,336.7	3,775.4	4,084.1	4,744.7	5,406.3	6,131.1	6,212.1	6,577.7	7,155.0	7,202.8	7,649.6
Algeria	40.0	42.7	34.4	60.8	82.2	83.0	90.3	112.0	125.0	160.1	205.1	223.9	236.7	258.6
Angola	0.6	1.9	1.8	0.8	2.0	0.9	3.6	3.1	3.3	5.4	3.8	3.2	4.9	7.6
Benin	13.6	13.4	22.0	25.6	25.8	40.8	38.7	25.7	53.8	62.9	60.1	63.6	52.6	42.4
Botswana	21.4	21.1	16.6	19.2	23.4	19.3	23.1	16.7	22.4	30.3	36.7	29.4	30.2	41.4
Burkina Faso	23.8	18.0	22.2	33.2	27.3	33.7	40.8	38.4	45.3	63.7	48.4	53.4	53.5	45.7
Burundi	0.0	0.5	0.8	0.1	0.9	0.4	0.9	3.8	1.4	3.1	2.5	0.7	2.6	2.2
Cameroon	62.2	54.1	68.9	75.1	105.8	87.4	92.3	115.4	107.7	112.6	117.1	137.5	146.6	142.8
Cape Verde	0.0	0.5	0.0	0.6	0.3	0.7	1.2	1.0	0.0	2.5	2.4	0.7	1.8	2.9
Central African Republic	3.3	4.4	2.8	3.5	1.9	2.2	3.4	5.8	5.6	4.6	4.9	6.2	4.6	6.8
Chad	0.7	0.7	2.0	2.0	1.0	1.6	2.7	0.7	2.7	1.8	0.9	2.6	2.1	2.5
Comoros	0.3	0.2	0.0	0.2	0.1	0.4	0.2	1.1	2.0	1.0	0.6	0.7	0.9	1.6
Congo, Democratic Republic of the	2.6	4.2	6.6	4.0	8.5	9.2	9.7	15.5	15.2	23.9	22.0	25.7	26.1	24.8
Congo, Republic of the	7.4	6.2	12.6	10.6	9.9	11.1	11.7	17.1	12.2	17.0	13.4	17.7	12.6	19.5
Côte d'Ivoire	23.6	26.7	29.3	25.2	30.6	31.4	36.9	38.6	54.4	48.9	45.6	53.2	40.1	32.8
Djibouti	0.0	0.2	0.3	0.1	0.3	0.4	0.5	1.1	1.0	0.8	2.2	0.9	0.6	0.5
Egypt	421.8	415.2	407.9	424.0	471.0	597.8	872.4	903.6	1,260.0	1,309.0	1,264.3	1,615.8	1,501.8	1,772.3
Equatorial Guinea	0.7	1.6	0.5	0.8	1.0	0.7	1.0	1.3	0.7	1.3	1.2	1.0	2.9	3.3
Eritrea	3.9	1.9	2.0	3.1	1.0	1.5	0.4	0.0	2.0	2.0	3.3	3.0	3.9	1.1

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ethiopia	55.2	32.9	50.5	45.5	74.1	64.8	88.7	83.4	118.5	137.3	194.0	221.2	238.9	271.1
Gabon	13.0	16.3	19.4	21.1	15.9	19.4	19.6	17.7	21.0	25.3	24.1	25.2	25.2	25.5
Gambia, The	11.5	14.3	14.6	21.7	19.4	26.4	21.7	28.3	17.0	22.6	20.7	22.5	18.3	22.8
Ghana	31.1	28.2	34.8	33.5	44.4	47.4	66.2	71.7	75.0	98.7	109.5	106.8	148.4	189.8
Guinea	1.6	2.3	1.5	6.6	4.1	4.4	3.3	2.4	4.1	5.9	3.1	5.2	6.3	11.7
Guinea-Bissau	3.2	3.8	5.9	3.7	5.2	3.0	4.2	3.8	5.4	3.7	4.9	8.7	5.0	6.5
Kenya	130.4	123.5	127.0	177.7	161.4	197.8	212.9	215.4	277.7	252.0	272.9	319.0	320.1	317.8
Lesotho	0.0	0.3	1.2	0.2	0.3	0.4	0.7	0.9	3.3	3.0	2.0	1.3	4.4	1.2
Liberia	0.0	0.0	0.2	1.1	0.5	0.2	0.8	1.1	0.5	0.6	0.5	2.0	4.0	3.3
Libya	4.6	8.2	8.0	12.1	12.1	8.9	13.5	25.3	19.9	24.9	26.7	22.7	15.5	21.4
Madagascar	17.8	20.1	31.4	33.0	44.4	31.4	30.0	43.1	42.1	45.7	59.3	43.9	50.6	40.5
Malawi	20.6	12.4	14.2	20.8	24.1	29.5	18.6	31.4	34.2	47.6	36.5	47.1	46.8	43.8
Mali	8.2	10.8	15.2	27.8	27.7	32.6	24.6	34.5	33.4	24.1	19.1	16.8	21.7	23.8
Mauritania	0.6	0.9	1.1	0.6	1.0	0.6	1.7	1.2	3.3	4.3	4.7	2.7	1.9	2.5
Mauritius	7.8	14.1	14.9	15.7	11.0	10.3	11.3	9.2	13.7	19.2	23.5	41.9	16.4	29.9
Morocco	100.1	91.3	87.3	72.5	109.0	110.8	107.8	128.3	141.4	192.4	215.8	176.5	196.6	198.4
Mozambique	5.0	4.6	13.3	6.0	9.9	6.8	11.9	13.4	24.9	21.3	23.2	24.3	37.7	30.4
Namibia	21.7	13.3	18.1	14.3	11.0	12.8	11.3	10.4	15.5	21.7	24.5	26.4	25.0	25.1
Niger	2.1	3.9	3.2	6.8	8.9	5.3	12.5	15.0	12.0	8.5	8.5	12.8	16.3	10.9

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nigeria	211.5	235.5	226.5	392.5	468.2	438.7	638.6	876.7	862.5	716.9	625.4	711.2	622.2	594.1
Rwanda	1.6	1.9	2.8	2.6	4.3	4.4	6.4	7.8	13.1	13.9	17.1	17.3	23.5	27.8
São Tomé and Príncipe	0.2	0.2	0.3	0.5	0.0	0.0	1.0	0.1	0.0	0.5	0.2	0.7	0.0	0.0
Senegal	30.0	33.2	37.7	33.4	38.9	41.1	30.6	38.4	53.5	59.5	64.0	61.4	59.9	71.7
Seychelles	7.7	2.1	2.4	2.5	3.2	2.2	3.4	2.8	5.4	3.7	7.5	5.3	8.4	8.4
Sierra Leone	0.5	0.0	0.0	0.0	0.3	3.1	2.7	3.9	2.6	5.2	3.1	4.8	9.5	13.4
Somalia	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.6	0.4	0.3	0.0	0.6	0.2	0.0
South Africa	1,029.3	1,084.9	1,156.1	1,216.2	1,218.3	1,365.2	1,381.7	1,543.3	1,620.3	1,645.0	1,937.9	1,996.9	2,114.9	2,194.8
South Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.5	0.4	0.7	0.7
Sudan	13.7	18.4	17.3	26.8	28.8	40.1	73.1	74.5	83.9	51.5	55.8	50.0	55.9	62.8
Swaziland	3.5	0.3	3.5	3.1	2.7	5.3	6.2	9.4	8.1	6.2	8.0	4.6	4.1	6.4
Tanzania	37.2	41.6	51.5	60.1	68.4	53.4	78.4	83.8	88.5	79.5	96.5	122.3	137.6	146.5
Togo	3.3	2.3	5.7	6.5	5.1	8.7	8.5	8.3	16.1	12.5	10.5	10.0	14.1	18.4
Tunisia	112.7	129.2	197.7	272.7	385.1	449.7	477.1	518.9	613.2	584.2	596.0	535.5	581.0	531.2
Uganda	39.3	75.4	46.9	61.2	115.1	78.4	91.5	132.7	117.5	133.8	148.7	147.5	148.9	156.1
Western Sahara	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Zambia	12.5	11.3	13.0	16.3	15.8	22.7	17.1	24.6	35.4	34.2	34.3	40.5	38.9	46.3
Zimbabwe	39.0	26.4	28.3	33.1	43.8	35.7	37.3	43.0	33.2	54.6	64.3	79.6	59.3	85.9
Asia	37,653.2	43,539.5	49,752.6	53,742.3	58,995.9	64,262.8	67,879.1	72,689.1	81,127.3	88,972.0	99,213.9	108,673.1	108,577.7	111,541.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Afghanistan	2.4	0.0	1.1	1.5	0.3	2.2	1.9	2.5	5.9	4.9	1.0	2.9	1.6	6.6
Bangladesh	107.6	99.7	120.8	129.3	196.0	196.8	258.5	279.9	348.8	373.4	327.0	373.0	345.5	383.6
Bhutan	1.0	1.4	0.6	5.6	2.5	0.9	3.0	3.1	5.0	4.6	8.3	5.1	6.4	12.0
Brunei	1.2	3.3	2.6	3.2	7.5	4.6	5.7	5.4	5.8	6.9	8.3	11.2	14.8	18.0
Burma	4.0	3.2	6.8	7.9	5.1	4.8	8.5	8.0	9.4	6.1	9.0	10.7	15.2	22.5
Cambodia	5.8	7.6	10.6	9.5	9.3	10.8	17.9	17.4	21.5	24.2	33.5	32.0	35.8	35.9
China	11,070.0	14,572.6	19,937.8	22,891.4	26,314.6	29,308.9	31,305.9	33,103.8	36,613.5	41,794.1	49,740.2	57,282.3	57,415.9	59,744.3
India	4,515.8	5,018.7	5,477.4	6,163.5	7,158.0	7,302.7	8,684.1	10,705.7	12,959.6	13,911.8	13,957.7	14,852.0	14,861.8	15,953.1
Indonesia	81.4	71.5	83.8	85.1	101.2	107.4	144.4	144.8	198.2	238.5	371.2	375.7	482.0	524.9
Japan	15,609.8	16,251.8	16,002.9	15,614.9	15,648.6	15,899.8	15,466.9	14,665.6	14,994.0	15,294.1	15,858.9	15,540.1	15,056.5	14,661.7
Kazakhstan	28.5	17.6	18.7	9.7	16.4	17.2	19.7	20.3	29.4	20.2	42.0	52.3	84.4	70.1
Kyrgyzstan	1.4	4.7	1.8	2.6	1.2	1.9	3.9	3.8	3.9	3.9	6.2	6.4	3.9	7.8
Laos	1.5	3.2	7.2	7.3	7.1	5.7	16.6	11.8	11.4	15.2	23.0	14.1	18.5	18.8
Malaysia	180.2	228.8	301.6	319.3	372.6	489.1	727.1	1,015.4	1,567.1	1,601.0	1,705.3	2,019.5	1,792.6	1,880.7
Maldives	0.1	0.0	1.4	0.0	0.6	0.0	1.4	0.0	0.4	0.4	0.2	1.7	1.2	2.0
Mongolia	5.9	5.9	7.9	6.8	12.9	16.4	20.6	25.6	15.4	24.8	26.5	26.9	19.5	29.5
Nepal	40.8	23.5	34.7	41.6	45.9	36.9	41.3	46.9	42.6	48.6	70.4	76.1	90.8	91.4
North Korea	0.3	15.4	8.6	1.3	1.4	3.6	4.0	2.1	2.0	3.7	1.4	0.9	2.5	5.2
Pakistan	283.4	319.0	409.4	557.7	607.2	769.2	904.0	1,200.1	1,491.5	1,449.3	1,580.5	1,672.2	1,773.3	1,704.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Papua New Guinea	24.9	13.2	7.8	15.1	17.1	25.7	21.5	16.3	18.4	22.8	13.7	22.3	23.6	21.9
Philippines	74.3	59.1	88.0	67.5	74.6	91.2	106.9	118.3	152.4	121.0	179.8	169.3	232.7	215.1
Singapore	455.9	641.9	734.2	800.5	798.7	839.9	932.9	1,066.0	1,110.0	1,244.5	1,330.8	1,400.2	1,425.8	1,440.0
South Korea	3,126.2	3,741.1	3,793.1	4,051.6	4,503.7	5,428.4	5,526.7	6,087.5	6,912.2	7,531.9	8,338.9	8,877.8	9,355.7	9,022.4
Sri Lanka	56.9	54.7	84.2	77.4	94.5	103.3	117.6	98.1	129.6	130.1	122.7	132.8	182.6	237.0
Taiwan	1,540.3	1,902.1	1,977.7	2,185.2	2,184.7	2,591.2	2,584.3	2,829.0	3,244.6	3,616.4	3,813.2	3,978.1	3,541.9	3,375.8
Tajikistan	3.9	5.4	5.2	2.1	0.4	1.4	1.0	2.5	2.3	7.9	2.9	2.0	4.0	3.2
Thailand	373.0	409.0	555.8	595.8	712.6	895.8	842.2	1,073.8	1,066.7	1,277.3	1,407.8	1,484.2	1,486.9	1,730.6
Timor-Leste	0.0	0.0	0.0	0.2	0.2	0.5	0.0	0.9	0.1	2.6	1.3	1.9	0.0	2.3
Turkmenistan	0.3	0.7	0.5	0.2	2.0	0.0	0.0	1.1	0.2	0.4	0.0	3.0	0.0	0.0
Uzbekistan	18.2	17.8	8.6	16.5	22.9	17.3	13.4	16.3	17.9	14.6	16.5	21.3	12.9	21.3
Vietnam	38.2	46.8	62.0	72.0	76.1	89.1	97.3	117.1	147.5	176.7	215.9	225.2	289.5	299.5
Australia and Oceania	5,963.7	6,278.0	6,595.4	7,062.2	7,157.6	7,764.3	7,931.0	8,325.6	8,925.9	9,630.3	10,737.9	11,032.6	11,027.9	11,044.1
Australia	4,875.8	5,176.0	5,388.9	5,876.0	5,840.0	6,465.2	6,575.6	6,829.1	7,442.7	7,966.5	9,035.2	9,315.1	9,278.6	9,362.7
Cook Islands	0.0	0.0	0.3	0.7	0.0	0.0	0.3	0.5	0.9	0.2	1.5	0.4	0.0	0.3
Fiji	4.5	5.0	14.5	8.0	14.9	8.0	8.9	9.2	8.4	8.3	9.2	12.6	13.1	30.5
Kiribati	0.1	0.0	0.0	0.3	1.3	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.3	0.7
Marshall Islands	1.0	0.6	0.5	1.4	0.3	0.0	0.0	0.0	0.4	0.1	0.3	0.4	0.1	0.6
Micronesia, Federated States of	1.1	0.9	1.9	0.2	4.8	3.1	1.1	7.4	4.5	3.2	1.7	1.1	2.1	1.9

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4
New Zealand	1,078.2	1,092.6	1,185.5	1,168.2	1,290.3	1,284.9	1,339.1	1,472.1	1,463.7	1,643.8	1,684.1	1,697.8	1,719.3	1,635.1
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Palau	0.0	0.5	1.5	1.1	2.1	0.3	1.9	1.6	0.4	2.2	0.4	1.6	2.2	0.8
Samoa	0.7	0.1	0.3	0.4	1.0	1.1	2.4	1.4	1.5	1.1	0.8	1.0	2.7	3.5
Solomon Islands	0.8	0.1	0.8	2.5	1.0	0.3	0.5	2.2	1.4	0.9	2.2	1.5	4.8	2.6
Tonga	0.7	1.0	0.0	0.1	0.2	0.0	0.2	0.5	0.3	0.6	0.0	0.2	0.7	0.4
Tuvalu	0.6	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Vanuatu	0.1	1.0	1.2	3.0	1.5	1.5	1.1	1.6	1.9	3.4	1.9	1.0	3.7	4.4
Unassigned	1,373.6	886.2	1,012.8	747.8	772.8	864.9	808.7	1,564.5	1,712.0	2,059.2	1,555.8	636.1	425.8	485.9

na = not applicable; country data do not exist.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis. The sum of the regions, countries, or economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-31

S&E articles in chemistry, by region, country, or economy: 2003–16

(Number)

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	99,215.0	111,918.0	124,730.0	130,271.0	130,284.0	137,982.0	140,801.0	148,546.0	164,151.0	165,646.0	175,254.0	182,922.0	189,417.0	180,557.0
North America	19,524.6	23,034.8	25,953.1	24,952.9	24,508.7	26,971.2	24,599.4	26,646.3	29,228.2	27,260.7	27,859.1	27,439.3	26,743.3	24,768.3
Canada	2,160.5	2,399.0	2,648.2	2,812.1	2,724.7	2,883.6	2,937.0	3,020.1	3,310.8	3,220.8	3,315.6	3,111.8	3,123.9	2,862.9
Greenland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Mexico	451.8	517.9	627.0	548.3	701.2	739.2	778.4	835.6	911.9	896.2	935.6	946.8	997.3	925.3
United States	16,912.3	20,118.0	22,677.9	21,592.5	21,082.9	23,348.4	20,884.0	22,790.6	25,005.5	23,143.6	23,607.9	23,380.7	22,622.0	20,980.1
Central America and Caribbean	107.9	116.1	117.5	115.3	135.4	139.9	141.9	138.1	174.6	169.9	124.3	164.0	125.9	109.3
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0
Bahamas, The	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Barbados	4.3	3.0	2.8	3.0	3.2	5.0	0.0	0.9	1.3	2.7	1.2	2.6	3.5	3.3
Belize	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Costa Rica	2.1	4.4	3.3	2.0	5.5	10.9	6.0	4.2	9.2	6.4	7.8	12.4	6.4	4.0
Cuba	49.0	53.3	55.8	53.6	54.0	52.3	50.2	45.7	91.7	67.3	51.2	69.6	50.1	55.8
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Dominican Republic	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.3	0.4	0.3	0.4	0.1
El Salvador	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.3

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Grenada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4
Guatemala	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.3	0.3	1.6	0.0	0.0	0.1	0.3
Haiti	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Honduras	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Jamaica	11.6	9.0	12.4	7.7	9.9	9.5	12.5	10.6	9.2	10.2	12.9	7.9	2.7	4.9
Nicaragua	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.0
Panama	0.2	2.3	0.6	1.1	1.0	2.7	1.6	0.3	0.8	4.2	0.4	1.3	3.7	3.1
Puerto Rico	37.6	40.7	37.7	46.3	56.7	53.7	66.3	69.5	51.9	69.2	46.2	61.1	52.0	34.7
Saint Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saint Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Saint Vincent and the Grenadines	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	3.1	3.2	4.8	1.7	3.2	4.2	5.0	6.7	8.9	7.5	4.3	8.2	6.8	2.5
South America	2,370.8	2,570.7	2,875.5	3,075.9	3,167.9	3,618.1	3,628.3	3,696.5	4,045.7	4,056.9	4,309.7	4,589.5	4,484.8	4,494.4
Argentina	490.2	419.9	489.3	441.3	452.4	570.0	546.7	565.1	621.1	580.4	607.4	586.5	608.7	616.8
Bolivia	0.8	0.6	0.3	0.2	1.0	2.5	1.5	0.8	2.4	0.4	3.9	0.6	1.7	1.9
Brazil	1,390.2	1,676.8	1,856.0	2,154.4	2,168.6	2,396.7	2,431.5	2,458.2	2,693.5	2,814.4	2,976.5	3,290.9	3,135.8	3,118.1
Chile	249.7	203.0	226.9	223.4	219.2	237.9	268.8	261.3	307.1	307.4	327.0	307.8	317.8	352.0
Colombia	41.1	56.5	62.5	67.0	83.8	162.1	166.3	213.3	226.6	180.4	235.2	249.1	264.7	237.0
Ecuador	4.2	1.4	3.7	2.6	3.8	2.4	2.3	3.3	1.7	0.5	5.0	10.9	17.6	33.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Guyana	2.0	3.0	12.4	0.5	2.0	4.1	2.0	3.0	1.0	1.0	1.0	1.0	0.0	0.3
Paraguay	0.0	0.0	0.0	0.1	0.0	1.0	0.5	2.5	0.2	1.6	0.0	0.7	1.6	0.4
Peru	6.5	1.5	11.8	3.6	2.0	4.8	4.6	3.9	5.6	5.8	7.5	11.1	11.0	14.6
Suriname	0.2	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.0	0.3	0.2	0.0	0.3	0.0
Uruguay	18.6	23.4	22.9	23.0	31.8	35.6	31.8	32.5	51.5	34.5	40.5	42.4	36.3	44.6
Venezuela	167.3	184.7	189.3	159.8	203.1	200.9	172.4	152.5	135.0	130.2	105.6	88.5	89.3	75.6
Europe	41,155.3	43,824.1	44,888.3	44,987.3	45,800.3	47,165.4	48,008.6	49,978.9	52,882.1	51,567.8	54,208.2	53,983.3	55,411.5	52,655.8
EU	31,341.6	33,812.7	34,978.1	35,791.8	36,316.2	37,194.6	37,870.7	39,507.2	41,945.7	41,294.7	43,150.9	42,672.9	43,630.6	40,859.9
Austria	491.9	580.4	545.8	537.7	553.5	640.6	663.9	673.3	699.0	686.1	744.4	775.5	786.4	747.1
Belgium	808.5	910.7	951.2	916.4	959.1	920.7	998.0	1,039.2	1,097.7	1,083.0	1,141.3	1,122.9	1,131.1	1,006.6
Bulgaria	246.7	276.3	271.2	310.1	307.7	324.8	279.1	304.5	364.7	363.5	369.5	317.3	294.9	214.5
Croatia	198.6	232.7	283.7	226.1	292.0	278.7	287.5	274.3	303.8	294.3	260.3	241.0	268.9	270.9
Cyprus	7.5	18.0	17.8	25.3	29.5	22.5	43.3	34.1	43.3	40.0	56.3	45.4	48.3	38.7
Czech Republic	693.0	751.7	963.8	903.4	963.3	1,166.6	1,076.7	1,140.1	1,447.7	1,230.9	1,336.4	1,324.5	1,409.7	1,283.1
Denmark	396.7	419.6	492.0	436.2	437.1	457.9	492.2	521.6	603.7	612.3	653.0	754.4	696.7	614.4
Estonia	45.3	54.5	50.2	63.2	74.9	57.6	67.9	79.3	73.2	79.4	101.7	101.9	122.6	90.1
Finland	394.1	464.1	453.6	464.0	486.7	455.4	500.7	542.5	531.6	507.0	564.1	567.8	604.6	501.3
France	4,399.1	4,500.2	4,617.0	4,847.3	4,750.9	5,124.1	4,997.8	5,199.1	5,335.3	5,243.7	5,458.4	5,256.9	5,354.4	4,954.8
Germany	5,960.8	6,698.5	6,792.4	6,952.9	7,048.5	7,228.5	7,453.3	7,876.2	8,419.1	8,447.2	8,486.8	8,722.4	8,834.1	8,220.5

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greece	461.0	497.5	524.9	646.2	610.6	620.4	635.2	578.5	607.9	560.0	592.7	547.8	571.1	526.8
Hungary	570.6	647.7	602.2	579.8	542.0	582.9	514.6	504.0	518.3	514.0	508.4	536.0	568.5	535.5
Ireland	217.2	210.3	244.5	249.8	294.5	334.2	338.1	440.2	478.2	477.1	469.1	438.9	417.4	355.8
Italy	2,982.5	3,184.8	3,335.0	3,233.0	3,384.8	3,431.7	3,664.3	3,617.9	3,865.2	3,689.3	4,108.2	4,013.7	4,159.6	3,943.1
Latvia	53.7	51.1	42.0	33.3	55.0	50.5	63.8	43.9	54.6	65.7	82.1	92.6	114.5	81.5
Lithuania	61.8	85.9	76.2	102.5	109.4	99.6	131.4	93.9	116.8	122.7	145.4	171.5	236.0	152.7
Luxembourg	2.5	2.2	4.5	5.8	6.7	10.7	12.9	15.8	32.1	30.1	31.9	39.5	26.6	32.5
Malta	1.8	0.3	2.0	1.3	1.5	0.5	1.0	2.1	1.0	0.8	2.0	5.5	9.9	4.1
Netherlands	1,149.2	1,289.6	1,372.2	1,308.8	1,188.6	1,242.6	1,325.1	1,337.4	1,394.1	1,283.1	1,410.7	1,285.7	1,234.5	1,309.3
Poland	2,127.6	2,093.1	2,200.6	2,345.1	2,398.1	2,382.8	2,348.0	2,279.4	2,547.2	2,916.9	3,057.0	2,840.4	3,106.5	2,975.6
Portugal	493.7	598.0	644.3	737.3	782.4	895.5	898.4	1,041.6	1,017.0	1,077.2	1,245.0	1,168.5	1,104.0	952.8
Romania	636.0	634.0	753.1	732.7	788.3	903.1	1,033.8	1,227.5	1,150.3	1,063.5	1,215.4	1,146.1	1,383.4	1,226.7
Slovakia	223.4	253.1	338.4	260.2	293.2	367.0	285.8	250.0	411.5	317.8	341.4	339.2	310.4	271.5
Slovenia	211.4	187.9	226.6	211.5	262.7	274.9	268.1	263.9	262.8	270.1	272.1	280.1	310.4	258.0
Spain	3,139.5	3,449.2	3,679.6	3,763.0	4,154.2	3,857.0	3,961.3	4,195.5	4,416.1	4,447.9	4,596.1	4,430.8	4,315.4	4,288.8
Sweden	936.9	1,048.2	979.3	1,061.9	956.3	898.7	918.2	986.1	968.5	1,013.5	1,095.1	1,188.9	1,138.8	1,118.4
United Kingdom	4,430.6	4,673.1	4,514.0	4,837.2	4,585.0	4,565.3	4,610.3	4,945.0	5,185.2	4,857.6	4,806.3	4,917.7	5,072.2	4,884.9
Other Europe	9,813.7	10,011.4	9,910.2	9,195.5	9,484.1	9,970.7	10,138.0	10,471.8	10,936.3	10,273.1	11,057.3	11,310.4	11,780.9	11,795.9
Albania	0.3	1.0	0.9	0.3	0.0	0.0	0.9	5.3	7.9	5.8	7.1	6.9	2.1	3.9

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Belarus	193.3	186.8	167.9	189.2	150.4	142.9	150.5	153.7	171.9	140.6	123.2	130.8	122.8	104.4
Bosnia and Herzegovina	4.6	0.5	1.8	0.9	3.7	7.5	10.7	10.4	7.9	7.3	17.0	10.1	10.4	11.4
Holy See (Vatican City)	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iceland	5.9	6.9	2.1	7.5	9.8	8.2	10.6	15.3	12.3	12.0	16.9	13.0	20.8	13.2
Kosovo	0.0	0.0	0.0	0.0	0.0	3.3	4.4	7.5	7.1	5.9	6.4	5.3	6.1	10.8
Liechtenstein	2.7	4.6	2.1	5.3	2.2	2.9	3.0	2.0	2.0	3.4	4.1	6.0	3.7	4.3
Macedonia	37.2	48.0	47.0	31.4	39.5	32.4	26.1	25.3	34.0	34.4	31.3	32.0	39.5	24.6
Moldova	43.3	43.3	50.6	41.2	27.4	54.0	51.7	47.3	52.8	48.1	36.3	45.2	35.4	47.6
Monaco	1.0	3.0	5.7	0.2	2.0	1.0	2.2	5.1	2.2	1.5	1.8	1.5	3.9	2.0
Montenegro[a]	na	na	na	na	2.2	4.1	2.4	1.3	4.6	4.1	6.9	4.9	5.4	3.8
Norway	194.1	262.8	302.6	348.8	320.5	316.7	291.6	333.4	371.5	332.6	344.5	362.1	358.7	356.6
Russia	6,286.0	5,947.3	5,784.2	4,912.7	5,067.9	5,455.0	5,372.8	5,550.0	5,896.7	5,169.8	5,626.2	5,881.0	6,382.0	6,737.6
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia[a]	na	na	na	na	312.6	310.4	424.3	393.2	421.3	511.2	543.6	500.3	509.8	497.5
Serbia and Montenegro[b]	203.3	221.5	226.5	233.1	na	na	na	na	na	na	na	na	na	na
Switzerland	1,100.5	1,230.1	1,261.0	1,304.8	1,201.0	1,291.1	1,343.0	1,402.4	1,453.3	1,511.3	1,517.8	1,627.2	1,560.5	1,414.7
Turkey	912.6	1,183.6	1,217.9	1,419.4	1,663.0	1,593.3	1,739.9	1,774.1	1,751.7	1,766.2	1,990.5	1,902.9	1,931.3	1,940.4
Ukraine	829.0	872.3	839.4	700.9	681.8	747.8	704.0	745.3	739.1	719.1	783.6	781.1	788.4	623.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Middle East	1,776.3	2,030.6	2,419.2	2,761.8	3,167.5	3,487.2	3,778.7	4,459.5	5,312.4	5,920.9	6,201.4	6,564.6	7,098.8	7,155.7
Armenia	44.0	56.4	59.6	56.6	55.1	63.9	46.8	67.2	50.2	48.8	52.7	58.9	64.2	55.5
Azerbaijan	50.8	60.1	93.6	64.9	50.0	63.8	141.1	127.8	129.4	98.9	101.1	63.6	57.5	65.5
Bahrain	5.0	2.3	0.9	4.0	1.0	1.8	2.0	1.3	3.8	2.5	4.5	2.3	3.5	2.5
Gaza Strip	17.2	15.5	13.8	10.6	22.9	16.6	18.6	6.5	13.0	12.8	9.7	9.4	13.5	5.3
Georgia	20.6	22.6	29.9	44.2	38.5	26.4	32.0	34.1	25.5	34.8	21.6	25.0	19.0	8.6
Iran	847.5	1,019.4	1,330.6	1,620.9	2,054.8	2,275.1	2,548.0	2,958.8	3,555.4	3,986.1	4,163.6	4,267.5	4,645.3	4,707.3
Iraq	7.5	7.5	14.9	13.2	25.0	22.6	22.7	36.6	44.9	68.3	88.6	97.7	87.0	98.5
Israel	534.8	545.2	566.7	591.1	538.0	605.5	549.7	595.2	632.5	552.6	608.3	622.4	672.2	679.1
Jordan	47.5	54.2	51.2	74.1	91.0	93.5	83.4	79.5	76.5	84.7	85.9	76.0	68.5	67.1
Kuwait	19.3	33.0	47.0	50.3	49.6	48.4	36.2	40.4	39.6	40.3	34.9	44.2	39.8	43.6
Lebanon	7.1	8.1	12.2	15.2	13.2	22.3	20.4	17.2	34.6	24.7	38.7	34.3	54.5	57.2
Oman	11.5	10.4	8.2	19.8	7.3	18.2	14.6	20.7	16.1	29.2	25.3	39.2	46.8	35.9
Qatar	4.7	14.6	11.3	6.6	7.3	15.2	8.5	21.1	32.0	30.4	33.4	64.5	78.9	98.7
Saudi Arabia	120.6	134.6	140.4	141.8	160.4	164.3	190.1	344.5	537.5	796.8	822.7	1,032.5	1,108.3	1,101.4
Syria	15.9	17.3	11.7	12.8	8.6	9.7	10.8	27.7	29.1	31.6	20.4	21.1	27.9	16.2
United Arab Emirates	14.0	13.8	21.2	27.0	32.8	21.6	27.2	44.9	65.4	57.7	74.2	79.4	91.4	95.9
West Bank	4.5	6.1	2.4	4.8	5.8	12.3	19.0	29.7	16.5	12.5	11.6	15.1	13.2	12.1
Yemen	3.8	9.5	3.6	4.3	6.3	6.1	7.7	6.6	10.5	8.1	4.3	11.7	7.1	5.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Africa	1,326.8	1,417.4	1,405.8	1,682.4	1,868.2	1,819.8	2,002.1	2,239.3	2,547.3	2,607.2	2,732.0	2,761.1	3,017.1	3,143.6
Algeria	74.5	89.3	96.7	168.7	163.2	175.3	216.4	230.6	225.8	249.0	274.3	287.8	287.2	311.5
Angola	0.0	0.2	0.0	1.0	0.2	0.0	0.2	0.9	1.2	0.2	0.2	0.1	0.1	0.0
Benin	1.3	6.3	0.5	0.5	2.1	1.3	1.6	0.4	2.0	1.3	1.8	1.1	0.1	3.3
Botswana	11.8	21.8	13.1	18.9	14.1	14.6	12.9	6.6	10.1	11.5	8.2	14.1	6.9	10.3
Burkina Faso	0.2	5.5	0.0	0.3	3.8	2.1	6.2	2.5	4.9	6.2	3.9	3.2	3.6	5.4
Burundi	0.0	0.0	0.0	0.2	0.3	0.3	1.0	1.9	0.3	0.6	0.2	0.2	0.8	0.0
Cameroon	7.6	9.9	11.3	15.8	21.5	18.8	16.6	21.3	28.2	16.1	23.9	20.4	24.0	25.1
Cape Verde	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2
Central African Republic	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Chad	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo, Democratic Republic of the	2.2	0.0	1.2	0.5	0.0	0.5	0.6	2.7	1.0	0.7	2.8	2.2	2.3	5.8
Congo, Republic of the	0.0	0.4	0.0	0.0	0.0	0.6	0.0	0.0	0.4	0.0	1.0	0.2	0.0	0.7
Côte d'Ivoire	2.7	4.4	5.0	3.7	10.7	7.9	12.2	10.0	10.9	5.3	5.3	6.0	5.1	12.9
Djibouti	0.0	0.0	0.0	0.0	0.3	0.2	0.3	0.7	1.1	0.0	1.3	0.4	0.5	0.1
Egypt	662.3	666.0	681.0	756.8	851.5	852.9	833.5	861.7	905.0	974.8	1,053.2	1,103.6	1,261.7	1,292.6
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eritrea	0.0	0.5	0.0	0.5	0.0	0.3	0.8	0.0	0.3	0.0	0.0	0.5	0.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ethiopia	4.7	3.5	3.5	8.4	6.0	7.8	6.6	13.4	15.9	23.4	20.4	23.4	26.2	22.7
Gabon	0.0	0.2	0.4	0.4	0.3	0.2	1.2	0.6	1.0	0.0	0.4	0.6	0.4	1.8
Gambia, The	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1
Ghana	5.7	2.2	5.4	8.0	7.7	5.2	14.0	4.9	11.0	9.5	11.0	11.2	9.5	12.6
Guinea	0.0	0.8	0.0	0.1	0.0	0.5	0.2	0.0	0.0	0.5	1.0	0.3	0.7	0.1
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	11.3	9.3	7.8	2.8	6.0	3.5	10.7	7.3	11.1	17.0	13.0	2.5	5.6	14.0
Lesotho	0.0	1.1	0.0	1.0	1.3	1.0	0.0	0.0	0.3	1.0	0.0	1.0	0.3	2.0
Liberia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Libya	3.4	4.3	5.6	10.7	20.1	13.0	17.6	22.9	14.3	10.7	17.0	16.8	7.7	6.7
Madagascar	0.3	0.8	2.5	0.5	0.6	1.7	2.9	1.9	1.1	1.4	4.4	1.5	1.9	2.2
Malawi	0.0	0.0	0.0	0.0	0.7	0.0	0.1	0.9	0.2	0.1	0.1	0.0	0.4	0.0
Mali	0.0	1.0	0.0	1.6	0.0	0.3	0.3	0.3	0.3	0.2	0.3	0.5	0.0	1.3
Mauritania	0.5	1.2	0.7	0.5	0.9	1.5	1.7	0.3	0.6	0.2	0.2	0.2	0.2	0.2
Mauritius	6.0	4.9	3.9	5.5	7.5	5.7	6.0	7.3	4.9	10.1	9.7	5.4	14.1	8.1
Morocco	108.9	109.5	97.4	96.9	114.6	112.1	153.9	228.1	280.4	214.5	230.4	189.6	166.2	134.3
Mozambique	0.0	0.5	0.0	0.0	0.0	0.0	0.4	0.3	0.3	0.0	0.4	0.3	0.8	0.8
Namibia	0.3	0.0	0.0	0.9	0.5	0.0	0.0	0.3	0.6	0.1	0.2	0.7	1.3	0.4
Niger	0.0	1.3	0.4	0.0	1.5	0.0	0.0	2.3	2.0	0.1	0.0	0.2	0.0	1.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nigeria	31.9	36.7	44.7	44.2	61.4	59.1	85.1	89.7	78.2	90.4	79.4	103.9	86.5	122.9
Rwanda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.3	0.8	0.1	1.0
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	8.8	4.6	7.2	5.3	10.9	9.1	12.6	10.9	20.0	20.0	21.6	24.4	22.4	14.8
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2
Sierra Leone	0.0	0.3	0.0	0.2	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
South Africa	274.1	302.2	293.2	377.7	391.0	351.9	390.5	498.7	682.7	700.3	663.0	654.5	728.0	756.3
South Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sudan	4.8	1.2	2.1	2.1	3.4	4.7	9.8	8.1	14.0	15.4	12.4	13.6	12.1	10.2
Swaziland	0.1	0.0	2.0	0.0	0.0	1.3	1.7	0.2	0.5	0.2	2.0	0.3	0.5	0.3
Tanzania	3.0	3.5	3.3	1.3	3.5	4.1	2.1	3.1	4.7	5.3	7.3	4.4	5.9	11.3
Togo	0.6	1.3	0.0	0.0	1.0	1.0	0.0	0.3	0.1	0.0	0.0	0.4	0.5	0.2
Tunisia	97.6	120.9	115.1	142.6	159.2	159.9	179.1	192.9	211.7	217.4	256.5	262.5	320.5	341.5
Uganda	0.0	0.7	0.6	0.0	0.4	1.3	2.3	2.1	0.1	2.6	0.4	0.5	5.5	0.9
Western Sahara	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zambia	0.0	1.0	0.5	1.0	0.5	0.0	1.2	0.5	0.0	0.0	0.8	0.3	0.5	0.6
Zimbabwe	2.0	0.0	0.3	3.8	1.6	0.3	0.0	2.0	0.0	1.2	3.4	1.7	6.5	6.4
Asia	31,250.9	37,155.4	45,198.9	50,601.7	49,774.7	52,820.0	56,597.1	58,973.0	67,437.3	71,579.7	77,107.4	84,668.5	89,593.7	85,623.4

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.2	0.0	0.5	0.0	0.0
Bangladesh	35.1	39.4	42.1	41.5	46.3	42.7	44.9	46.2	66.4	75.9	82.8	82.6	100.1	84.8
Bhutan	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.3	0.0	0.1	0.3	0.5	0.0	0.0
Brunei	2.4	4.3	1.5	2.1	1.2	1.9	0.5	2.6	4.0	8.2	4.0	6.5	10.0	11.2
Burma	0.8	1.7	1.5	0.2	1.1	0.1	2.3	1.0	0.0	1.0	0.0	0.0	1.6	2.8
Cambodia	0.0	0.0	0.0	0.0	0.0	0.5	0.3	1.2	0.1	0.1	0.0	0.1	0.3	0.8
China	11,632.6	15,439.5	19,067.7	22,132.3	24,677.1	26,244.3	29,237.8	30,279.0	35,418.0	38,300.4	43,240.2	49,335.4	53,344.0	52,423.6
India	4,724.2	5,300.5	5,633.5	6,705.5	7,296.7	7,433.2	7,914.4	8,432.2	9,803.8	10,392.5	10,848.1	12,045.7	12,180.1	11,173.3
Indonesia	11.5	18.5	36.2	23.6	22.4	29.7	36.6	48.5	56.8	114.5	115.6	128.3	166.4	188.6
Japan	9,753.0	10,390.8	14,079.0	14,303.5	10,302.9	10,278.1	10,110.4	9,556.5	10,054.9	10,137.6	10,277.1	9,865.3	9,859.0	8,832.8
Kazakhstan	67.7	74.8	75.5	66.3	48.6	66.1	65.2	73.7	50.4	63.6	91.8	93.5	78.9	111.7
Kyrgyzstan	1.0	0.2	4.0	1.5	1.0	0.2	3.8	0.5	2.1	3.0	2.8	1.3	1.6	2.2
Laos	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.4	0.0	0.0	0.4	0.3	0.3
Malaysia	165.1	201.1	244.3	283.5	329.7	465.4	605.4	960.8	1,172.9	1,171.4	1,045.9	1,117.9	1,547.9	1,461.7
Maldives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.0	0.0	0.0
Mongolia	0.5	1.9	1.6	0.0	2.4	30.6	1.9	0.9	3.6	2.8	4.6	2.7	2.9	1.0
Nepal	0.4	1.0	4.0	2.4	1.1	1.4	2.0	4.7	5.6	7.6	7.0	4.2	7.7	11.7
North Korea	0.0	3.4	0.2	3.0	3.8	0.6	2.1	0.4	0.1	1.5	0.6	1.4	3.5	8.3
Pakistan	151.7	192.4	234.1	338.7	373.8	486.7	562.7	676.7	603.9	670.4	723.9	590.8	703.7	687.5

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Papua New Guinea	0.2	0.0	0.1	0.5	1.5	0.0	1.3	0.5	0.3	0.5	0.5	0.4	1.0	1.4
Philippines	7.8	4.4	11.1	5.6	8.2	10.2	7.2	15.5	22.2	20.5	21.7	30.9	40.8	34.2
Singapore	432.7	584.9	598.9	618.2	604.7	805.7	863.2	1,000.4	1,237.5	1,269.3	1,313.3	1,391.6	1,384.5	1,294.2
South Korea	2,548.5	2,904.3	2,990.2	3,600.0	3,698.9	4,274.3	4,257.3	4,873.4	5,450.7	5,802.4	5,811.6	6,431.9	6,801.8	6,204.9
Sri Lanka	8.2	7.8	14.1	13.5	9.6	11.7	14.8	11.0	12.7	20.9	17.4	28.9	25.6	25.9
Taiwan	1,433.7	1,665.4	1,825.0	2,062.3	1,920.9	2,156.8	2,354.1	2,377.6	2,712.4	2,757.4	2,675.5	2,660.9	2,416.4	2,191.0
Tajikistan	7.0	10.0	3.2	5.3	9.0	10.2	7.7	9.2	8.5	5.5	13.7	5.1	6.2	12.8
Thailand	179.6	204.5	242.6	327.8	337.3	401.7	417.9	441.6	513.5	561.0	589.8	621.6	659.9	588.0
Timor-Leste	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Turkmenistan	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2
Uzbekistan	80.0	94.2	77.4	55.2	55.8	51.3	52.6	74.4	101.7	60.0	58.2	40.7	37.6	39.5
Vietnam	7.1	10.6	10.5	9.4	20.7	16.3	30.5	83.9	133.9	131.3	161.1	178.6	211.7	229.0
Australia and Oceania	1,411.7	1,468.6	1,539.1	1,854.2	1,637.0	1,706.3	1,890.0	2,260.8	2,397.7	2,367.5	2,555.2	2,636.6	2,870.3	2,545.8
Australia	1,234.1	1,278.4	1,321.6	1,616.0	1,408.4	1,470.4	1,624.9	1,997.9	2,088.8	2,102.9	2,245.4	2,339.8	2,562.6	2,285.8
Cook Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fiji	2.3	4.7	7.3	4.3	3.9	3.3	5.6	0.7	4.1	1.2	3.8	2.8	3.1	1.3
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micronesia, Federated States of	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.2	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	175.3	185.3	209.8	233.7	224.7	232.6	259.5	261.5	304.8	263.3	305.0	294.0	304.5	258.8
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Unassigned	290.6	300.3	332.6	239.4	224.3	254.2	154.9	153.4	125.8	115.6	156.7	114.9	71.7	60.7

na = not applicable; country data do not exist.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis. The sum of the regions, countries, or economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-32

S&E articles in computer sciences, by region, country, or economy: 2003–16

(Number)

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	67,577.0	83,413.0	111,282.0	120,976.0	137,497.0	154,429.0	181,751.0	206,663.0	200,142.0	196,054.0	189,696.0	195,084.0	200,495.0	191,637.0
North America	22,316.9	25,944.0	31,648.3	31,965.0	34,200.9	33,312.7	34,373.9	34,706.1	35,187.2	34,205.3	34,474.3	33,740.5	33,916.1	31,140.0
Canada	2,415.1	2,843.7	3,936.4	4,184.5	4,817.0	4,624.0	4,996.5	4,850.8	4,755.6	4,798.9	4,612.3	4,734.5	4,355.2	4,057.2
Greenland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Mexico	318.3	437.5	540.6	602.3	613.0	835.0	766.9	846.2	779.0	797.9	1,085.6	1,151.1	1,034.6	965.0
United States	19,583.5	22,662.8	27,171.3	27,178.2	28,771.0	27,853.8	28,610.4	29,009.1	29,652.6	28,608.5	28,776.4	27,854.9	28,526.3	26,117.3
Central America and Caribbean	56.4	63.4	93.8	90.6	106.9	132.9	119.7	152.8	134.3	169.3	183.2	200.8	201.7	146.0
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.0
Bahamas, The	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.5	0.5	0.7	1.0	0.0	0.0	0.0
Barbados	4.0	5.0	3.0	1.0	1.0	5.4	0.1	0.0	2.2	0.8	2.0	2.3	6.0	2.7
Belize	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.1	0.0
Costa Rica	1.5	9.3	6.9	10.3	8.1	10.6	6.1	8.3	8.0	30.7	30.5	32.9	43.1	41.3
Cuba	16.7	12.1	36.7	39.9	46.9	55.2	36.4	65.4	57.8	64.1	79.3	91.7	64.6	49.9
Dominica	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3
Dominican Republic	0.0	0.0	4.7	0.3	0.0	0.0	1.5	0.0	1.0	0.2	0.8	0.0	1.1	0.3
El Salvador	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.0	0.5	0.8

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Grenada	0.5	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
Guatemala	0.0	1.0	0.0	0.0	0.7	1.0	0.7	2.3	1.8	6.2	3.9	5.0	9.2	3.5
Haiti	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	1.0	0.3	0.0	0.0	0.4	0.0
Honduras	0.0	0.2	0.0	1.0	0.0	0.3	0.5	2.0	0.1	1.5	0.0	1.2	0.7	0.7
Jamaica	1.0	4.8	6.8	5.5	4.8	18.5	21.0	12.3	9.2	11.5	17.7	13.2	9.9	7.4
Nicaragua	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.7	0.0	1.0	0.0	0.0	0.6	1.0
Panama	0.0	0.7	1.0	3.5	0.5	2.0	5.2	7.5	5.5	11.9	9.7	12.5	7.2	5.1
Puerto Rico	27.4	23.0	28.7	25.7	31.4	21.8	25.8	33.0	18.7	25.1	25.4	29.0	41.1	23.0
Saint Kitts and Nevis	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saint Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saint Vincent and the Grenadines	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	5.3	5.6	5.6	3.4	12.8	15.6	22.0	19.5	27.9	14.5	12.5	13.1	16.8	10.1
South America	1,084.1	1,409.7	1,814.2	2,122.2	2,430.2	2,859.9	3,084.7	3,358.4	3,819.3	4,413.7	4,652.2	4,895.9	5,467.4	5,045.1
Argentina	44.3	67.9	127.8	143.0	179.1	203.3	213.9	238.5	254.9	276.5	338.1	286.2	296.3	256.6
Bolivia	0.0	1.0	0.3	1.8	0.3	1.8	0.7	1.5	0.9	0.4	1.8	0.5	2.5	2.2
Brazil	896.2	1,157.7	1,411.5	1,593.4	1,818.3	2,150.9	2,330.9	2,508.3	2,880.0	3,284.3	3,459.1	3,523.2	3,739.4	3,482.1
Chile	76.8	107.1	128.4	172.0	185.4	215.7	251.1	232.4	270.0	260.7	298.3	380.0	379.8	415.5
Colombia	32.6	31.7	51.4	76.4	109.8	158.5	166.8	222.0	284.9	421.2	369.8	464.4	676.8	464.9
Ecuador	1.0	0.0	1.2	6.4	7.3	7.8	8.5	16.0	10.7	12.2	18.2	38.5	162.6	210.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Guyana	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.3	0.0	0.0
Paraguay	1.0	6.3	5.0	6.5	4.0	5.5	4.8	3.2	7.2	6.0	15.1	11.2	23.9	18.2
Peru	0.0	1.8	4.0	9.4	10.8	15.8	8.4	15.3	18.7	19.7	27.3	39.7	77.2	97.8
Suriname	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Uruguay	7.6	10.1	18.9	27.6	27.8	19.5	36.1	39.9	47.6	61.6	62.2	80.7	71.2	71.5
Venezuela	24.6	26.1	65.7	85.6	87.4	80.4	63.5	81.4	44.5	70.8	61.6	71.2	37.7	26.3
Europe	24,164.3	28,033.6	37,909.7	41,786.4	47,790.5	51,875.5	57,607.5	61,486.9	61,496.0	61,332.9	64,564.5	66,316.9	66,570.1	62,445.0
EU	22,183.7	25,970.5	34,867.5	38,153.5	43,806.8	47,544.9	52,430.4	55,720.3	55,488.6	55,153.2	57,914.2	58,709.8	57,774.5	52,875.5
Austria	583.9	607.3	929.2	1,074.0	1,336.4	1,365.8	1,613.1	1,624.0	1,702.0	1,810.6	1,852.9	1,787.9	1,891.3	1,644.6
Belgium	537.2	597.1	859.3	955.6	991.9	1,101.2	1,114.4	1,158.5	1,212.7	1,267.8	1,261.5	1,214.7	1,206.6	1,126.1
Bulgaria	58.3	97.0	81.7	99.9	193.1	212.3	172.1	246.4	257.4	212.0	193.7	206.5	222.2	178.3
Croatia	183.6	140.3	262.0	243.1	360.8	360.6	490.3	464.7	480.8	313.8	435.0	389.8	426.4	378.8
Cyprus	34.2	45.2	75.5	86.3	81.9	113.1	123.7	121.8	131.8	194.7	179.5	172.2	151.7	200.2
Czech Republic	334.9	384.2	588.8	730.0	885.1	909.9	1,014.3	1,239.0	1,282.5	1,221.9	1,345.9	1,350.9	1,423.4	1,396.2
Denmark	310.4	370.8	457.1	537.2	589.2	592.2	701.6	796.5	774.7	839.9	894.3	991.3	952.5	875.8
Estonia	25.7	31.3	56.6	61.1	68.5	103.4	97.7	183.8	160.8	154.8	186.4	199.5	189.0	171.5
Finland	597.1	753.0	1,025.3	1,141.2	1,236.9	1,301.3	1,361.2	1,421.9	1,424.5	1,386.2	1,455.6	1,481.1	1,413.2	1,343.0
France	2,974.7	3,316.6	4,576.8	4,945.3	5,649.3	6,011.9	6,441.4	6,560.1	6,676.5	6,877.9	7,042.7	7,211.1	7,009.7	5,937.8
Germany	3,703.8	4,305.7	6,086.5	6,513.3	7,382.6	8,466.7	9,423.3	10,321.7	9,925.2	9,742.9	10,204.6	10,787.4	10,037.1	9,301.4

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greece	695.4	832.0	1,194.8	1,330.7	1,435.8	1,627.1	1,801.1	1,676.7	1,668.4	1,795.6	1,695.3	1,867.3	1,803.9	1,580.8
Hungary	221.2	293.4	363.4	438.7	541.0	457.6	576.3	516.8	623.2	628.5	701.3	677.6	546.3	621.8
Ireland	270.3	434.3	622.9	721.4	788.7	780.2	922.7	1,019.2	881.8	842.8	825.5	797.7	750.3	774.3
Italy	2,421.9	2,778.2	3,624.2	3,696.6	4,273.0	4,421.8	5,001.3	5,178.5	5,221.2	5,080.8	5,895.3	5,981.2	5,777.1	5,612.3
Latvia	27.3	14.4	69.7	62.8	58.9	100.4	107.4	179.1	203.5	178.9	167.5	157.0	197.7	187.5
Lithuania	44.4	63.0	89.8	133.5	121.3	167.0	130.2	158.8	115.4	171.6	133.3	181.1	268.1	167.6
Luxembourg	13.0	19.1	30.4	54.6	62.4	106.3	129.5	156.6	181.7	185.2	227.1	274.2	249.3	200.3
Malta	3.0	5.3	6.9	13.2	17.1	18.6	23.9	26.0	33.4	31.9	39.0	40.9	48.2	48.7
Netherlands	1,108.1	1,375.6	1,781.5	1,904.9	2,206.0	2,369.1	2,613.1	2,563.9	2,552.2	2,421.5	2,406.2	2,434.8	2,235.7	1,971.2
Poland	498.3	961.2	955.2	1,256.5	1,255.5	1,660.8	1,447.7	1,854.9	1,888.4	2,288.3	2,347.6	2,474.2	2,915.4	2,871.5
Portugal	535.4	498.9	672.6	840.5	1,092.8	1,157.0	1,398.5	1,612.2	1,850.5	1,941.0	2,089.6	2,176.5	2,182.1	1,785.0
Romania	121.3	144.0	251.6	276.4	631.6	993.3	1,239.5	1,617.8	1,240.8	1,033.6	1,123.2	820.5	1,059.8	941.5
Slovakia	91.4	96.8	193.0	202.7	190.5	267.1	253.3	458.4	446.2	461.3	521.3	398.3	582.0	661.5
Slovenia	196.6	179.7	226.3	247.3	255.6	266.3	325.2	334.1	352.2	302.8	352.5	344.8	432.1	284.0
Spain	1,984.9	2,451.7	3,034.5	3,484.3	4,245.7	4,432.5	5,236.7	5,196.7	5,471.4	5,356.2	5,307.6	5,105.6	4,796.8	4,335.5
Sweden	789.9	803.2	1,048.1	1,103.3	1,177.2	1,141.5	1,248.1	1,363.7	1,495.0	1,512.0	1,611.5	1,713.6	1,705.4	1,534.6
United Kingdom	3,817.7	4,371.2	5,703.9	5,999.2	6,678.0	7,039.9	7,422.7	7,668.6	7,234.3	6,898.7	7,418.1	7,472.0	7,301.0	6,743.6
Other Europe	1,980.6	2,063.1	3,042.2	3,633.0	3,983.7	4,330.6	5,177.1	5,766.6	6,007.5	6,179.8	6,650.3	7,607.1	8,795.6	9,569.5
Albania	0.0	0.5	0.2	0.0	0.8	1.0	4.6	12.8	23.6	23.6	26.1	17.2	27.2	37.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Andorra	0.0	0.0	0.0	1.0	1.7	1.0	0.0	0.0	0.0	1.5	0.0	0.5	1.1	0.5
Belarus	29.1	19.1	25.3	33.8	45.5	29.8	34.8	34.2	32.3	32.9	54.6	36.2	38.5	55.9
Bosnia and Herzegovina	5.2	7.3	16.8	16.0	37.4	67.4	75.6	95.4	112.8	72.6	62.9	64.0	60.5	58.4
Holy See (Vatican City)	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iceland	6.8	9.5	20.9	20.3	21.7	33.4	47.3	38.5	51.2	60.7	43.7	36.6	44.1	47.4
Kosovo	0.0	0.0	0.0	0.0	0.0	4.0	2.5	5.7	10.7	6.9	10.4	6.2	8.4	14.9
Liechtenstein	0.8	1.5	0.5	1.2	2.1	10.1	6.9	10.9	12.0	5.9	5.8	11.6	6.0	8.2
Macedonia	15.3	19.7	22.4	20.1	35.1	44.6	63.1	71.9	107.1	91.8	99.2	138.7	129.0	64.9
Moldova	4.1	3.6	5.5	6.7	4.0	4.7	5.1	7.8	4.8	8.7	15.6	12.8	13.1	5.8
Monaco	0.0	0.0	0.0	2.0	1.2	0.0	0.3	0.0	0.5	0.0	0.0	0.0	0.5	0.0
Montenegro[a]	na	na	na	na	5.2	4.1	3.5	15.1	12.0	11.1	29.3	23.2	20.7	40.2
Norway	254.2	306.6	471.7	577.8	599.8	673.1	803.5	882.0	792.6	896.0	846.3	936.5	922.8	947.6
Russia	330.6	268.4	547.3	512.2	662.6	580.2	710.5	838.5	910.9	871.0	1,586.4	1,807.0	2,850.5	3,280.6
San Marino	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.6	0.2	0.0	0.0	0.0
Serbia[a]	na	na	na	na	154.0	176.8	276.1	367.8	405.0	538.8	373.0	348.2	416.4	300.1
Serbia and Montenegro[b]	53.5	64.6	102.0	120.5	na	na	na	na	na	na	na	na	na	na
Switzerland	762.0	871.2	1,132.2	1,259.3	1,366.1	1,408.0	1,577.2	1,651.1	1,640.2	1,733.3	1,794.5	1,802.8	1,740.4	1,587.1
Turkey	285.6	367.5	487.5	691.3	802.8	927.4	1,242.7	1,484.4	1,653.9	1,252.9	1,325.5	2,051.5	2,043.6	2,100.4
Ukraine	233.4	123.1	209.9	370.9	243.2	364.5	323.4	250.7	237.9	571.5	376.8	314.1	472.8	1,020.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Middle East	1,193.8	1,390.3	1,788.6	2,261.6	2,774.3	3,692.5	4,612.9	5,510.1	5,825.6	5,172.2	5,457.6	5,365.3	5,525.6	5,816.7
Armenia	4.8	10.1	6.3	9.0	8.8	6.8	10.5	17.8	20.7	9.4	44.5	12.0	24.9	14.2
Azerbaijan	10.0	10.1	21.8	15.4	21.8	28.3	81.8	45.5	80.7	179.0	54.4	46.7	38.2	62.6
Bahrain	5.0	3.6	9.3	11.5	16.8	23.3	18.1	33.4	26.3	24.2	40.1	21.4	15.8	23.4
Gaza Strip	0.0	2.0	1.0	2.0	3.0	4.3	4.3	5.7	5.1	13.2	10.2	6.7	4.2	6.2
Georgia	5.3	4.3	10.4	8.0	7.7	5.5	16.4	15.8	24.0	37.7	17.1	11.3	17.3	13.0
Iran	196.6	301.8	490.7	633.1	1,056.5	1,704.4	2,349.6	2,959.9	3,089.6	2,007.7	2,342.0	2,132.5	2,050.9	2,449.2
Iraq	17.8	0.0	1.0	18.8	9.0	13.3	29.5	45.8	74.8	68.3	59.2	77.9	82.1	93.5
Israel	715.2	822.3	899.8	1,062.9	1,087.4	1,141.0	1,110.3	1,117.9	1,146.0	1,392.5	1,188.1	1,282.6	1,160.2	1,118.2
Jordan	45.3	40.0	60.2	93.7	114.4	171.9	180.7	289.8	221.9	204.3	211.2	235.0	265.5	288.4
Kuwait	25.8	23.8	47.9	51.7	62.7	62.9	104.1	97.1	101.1	88.7	88.1	85.7	88.2	86.1
Lebanon	28.0	32.8	53.9	64.2	69.8	60.6	91.3	99.0	120.1	134.0	102.4	120.4	136.8	163.4
Oman	16.1	18.5	18.3	27.4	42.1	44.9	60.0	53.6	58.2	66.1	54.1	60.6	89.9	94.0
Qatar	4.2	5.5	5.3	8.6	12.0	32.5	24.7	47.2	61.4	94.3	140.2	163.8	201.9	181.8
Saudi Arabia	62.4	57.2	64.9	91.7	120.3	194.5	291.8	394.7	486.2	539.5	755.5	811.5	963.2	791.8
Syria	0.3	1.0	3.0	7.1	7.8	7.2	17.2	8.7	8.3	7.6	5.2	3.5	11.4	8.2
United Arab Emirates	55.7	55.6	91.7	147.0	128.1	181.7	209.6	256.5	279.6	287.8	318.2	271.4	352.6	390.4
West Bank	1.5	1.0	2.0	6.8	5.8	7.7	6.6	13.2	10.3	12.5	14.4	12.7	16.9	24.6
Yemen	0.0	0.7	1.3	2.8	0.3	1.7	6.4	8.7	11.4	5.4	12.8	9.4	6.0	7.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Africa	340.3	340.6	719.0	944.5	1,112.2	1,534.3	2,029.5	2,415.5	2,531.2	3,087.9	3,265.4	3,713.8	4,710.8	4,984.7
Algeria	56.7	55.9	112.0	201.5	210.4	221.4	338.0	349.7	458.7	553.6	557.1	648.3	1,003.5	656.4
Angola	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.2	0.0	0.3	0.6	1.0	1.2	2.7
Benin	0.0	0.0	0.5	0.3	0.0	0.3	1.5	3.3	0.4	2.5	2.8	2.4	3.5	3.7
Botswana	1.3	0.6	4.4	4.8	5.6	12.5	7.8	9.3	17.9	12.6	12.7	15.8	13.6	20.3
Burkina Faso	0.0	0.3	1.5	1.3	1.9	1.3	0.7	0.8	0.4	0.9	0.7	0.3	2.0	8.5
Burundi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cameroon	3.5	2.0	8.0	3.1	2.8	7.3	10.0	7.6	9.8	16.8	12.3	13.0	12.9	20.9
Cape Verde	0.0	0.0	0.0	1.2	1.0	0.0	1.5	0.0	0.7	0.0	0.5	1.5	0.2	0.0
Central African Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chad	0.0	0.0	0.0	0.0	0.2	0.0	2.0	0.0	0.0	0.3	0.3	0.2	0.0	0.2
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo, Democratic Republic of the	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.5	0.1
Congo, Republic of the	0.0	0.0	0.0	0.0	1.0	0.0	0.3	0.0	0.0	0.0	0.4	0.0	0.3	1.0
Côte d'Ivoire	0.5	0.7	0.7	0.0	1.0	3.0	0.5	1.8	2.0	3.6	1.0	1.0	1.3	0.0
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.0	0.4
Egypt	92.9	85.6	181.9	219.0	282.4	328.0	494.7	578.0	521.4	589.3	575.3	597.0	740.2	854.5
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Eritrea	0.3	0.0	1.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ethiopia	1.2	0.3	4.0	3.1	1.8	3.3	10.7	20.2	8.1	38.8	23.2	29.7	35.6	28.2
Gabon	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.3	0.0	0.3	0.5	0.6
Gambia, The	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.8	0.3	0.3
Ghana	0.0	0.0	0.3	2.4	3.4	4.8	5.8	9.0	9.3	11.3	16.6	20.5	24.1	32.7
Guinea	0.0	0.0	0.3	0.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	1.0	0.0	2.7	0.7	5.8	1.4	15.4	13.8	15.1	12.5	33.6	35.7	28.1	36.6
Lesotho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.3	1.0	1.4
Liberia	0.0	0.0	0.0	0.3	0.3	0.0	0.5	0.5	0.7	1.1	0.0	0.0	0.3	0.0
Libya	1.3	1.3	1.0	4.1	5.2	15.0	33.5	54.0	14.6	16.2	34.8	31.2	32.5	11.8
Madagascar	0.0	0.0	0.5	0.5	0.3	2.0	1.3	0.3	1.9	4.5	7.1	7.2	2.2	1.5
Malawi	0.0	0.5	1.3	0.0	0.0	0.0	1.0	3.2	3.7	4.3	0.7	12.7	11.9	3.8
Mali	0.0	0.0	1.1	0.0	0.0	0.0	0.3	0.1	1.1	1.2	1.3	1.1	0.8	1.0
Mauritania	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.4	0.4	1.0
Mauritius	4.7	7.8	15.6	11.3	10.5	14.4	13.8	27.3	13.3	17.0	22.2	24.0	18.1	52.6
Morocco	21.9	16.1	29.5	44.1	36.6	80.8	167.5	167.2	286.8	374.8	367.5	504.8	730.0	859.5
Mozambique	2.0	0.3	0.0	0.7	0.0	2.1	0.9	2.6	2.8	0.6	1.7	0.4	0.0	1.7
Namibia	0.0	0.0	2.0	0.3	1.7	3.3	2.0	6.1	6.7	10.7	12.9	31.2	22.2	27.2
Niger	0.0	0.5	0.0	1.0	0.0	0.0	1.0	0.8	0.0	0.5	1.0	0.3	2.1	1.1

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nigeria	10.8	10.1	24.6	13.1	21.4	36.9	51.3	86.6	107.8	92.9	131.6	152.3	181.4	233.7
Rwanda	0.5	0.0	0.2	2.0	1.0	3.3	1.5	5.7	1.5	1.5	2.9	2.0	2.6	2.0
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Senegal	0.2	0.2	2.3	2.0	4.8	3.2	7.8	6.9	13.5	16.7	7.8	13.4	30.7	23.7
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0
Sierra Leone	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.5
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.5
South Africa	89.3	98.6	179.8	231.4	267.6	451.3	381.1	523.8	485.1	606.2	684.5	596.9	794.1	888.8
South Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Sudan	1.6	0.0	2.0	2.5	1.6	8.0	6.8	13.1	11.6	16.6	19.0	19.3	41.6	83.4
Swaziland	1.3	0.0	0.0	1.0	0.0	1.0	0.9	0.0	1.8	1.2	1.8	5.0	4.6	2.4
Tanzania	0.0	1.0	0.3	3.3	1.0	2.4	6.1	9.0	13.4	13.7	18.3	9.1	12.1	11.1
Togo	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.7	0.0	0.0	0.0	0.5	0.0	0.0
Tunisia	46.7	56.5	137.9	185.5	231.0	312.5	453.0	487.6	484.0	627.5	673.0	917.1	921.6	1,092.8
Uganda	0.8	2.0	0.8	3.0	9.5	13.3	8.0	19.0	28.5	27.7	24.7	10.6	21.1	9.7
Western Sahara	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zambia	1.0	0.3	0.0	0.5	0.6	0.0	0.0	4.9	1.8	0.6	5.2	0.5	2.5	2.4
Zimbabwe	1.0	0.1	2.3	0.3	2.3	0.5	0.0	0.8	3.3	9.6	4.7	5.7	5.9	3.8
Asia	16,141.4	23,650.8	33,208.9	37,696.7	44,047.5	56,111.9	75,199.7	93,985.4	86,646.8	83,172.5	72,283.2	76,204.3	79,886.7	77,866.3

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Afghanistan	1.0	0.0	0.0	0.5	0.0	1.2	0.0	1.5	1.2	0.3	1.0	0.8	0.0	4.2
Bangladesh	96.8	33.3	35.0	35.0	123.0	160.9	193.4	169.1	205.1	347.8	143.9	395.8	387.5	352.0
Bhutan	0.0	0.0	0.5	1.0	1.0	0.8	0.7	0.0	0.5	2.0	0.0	3.8	3.5	3.5
Brunei	1.6	0.2	1.0	0.0	3.0	1.5	2.6	1.6	4.3	9.1	12.9	24.3	23.1	29.2
Burma	0.3	0.0	31.9	5.3	7.3	21.8	48.5	29.6	48.0	4.1	2.7	0.9	13.2	38.8
Cambodia	0.0	0.0	0.7	0.6	1.5	2.1	1.2	0.3	0.0	0.2	0.3	2.5	3.8	1.0
China	5,822.6	10,715.3	16,655.4	19,383.1	22,675.7	31,841.7	48,050.2	61,863.5	52,589.5	48,661.0	38,338.9	35,970.0	35,419.7	37,132.6
India	814.3	1,140.8	1,496.6	2,005.8	2,939.8	3,728.4	4,423.6	6,700.5	8,183.8	9,105.6	9,011.6	14,548.8	20,501.4	15,571.1
Indonesia	9.9	9.2	22.8	31.3	33.9	76.6	105.5	239.1	270.5	298.6	531.0	884.5	1,040.8	1,212.8
Japan	4,269.5	5,040.5	5,997.4	6,063.5	6,778.7	7,259.7	7,995.1	8,324.1	8,310.5	8,537.7	8,505.0	8,041.8	7,231.0	7,851.8
Kazakhstan	2.5	4.0	3.6	3.2	5.6	5.7	4.8	18.4	31.3	46.1	222.6	120.2	130.1	138.7
Kyrgyzstan	1.0	0.3	0.3	0.0	1.0	1.7	1.8	1.0	4.8	4.0	2.5	2.0	1.0	7.2
Laos	0.0	0.0	0.0	0.0	0.0	0.4	1.0	0.0	0.6	0.0	0.1	2.4	0.7	0.6
Malaysia	221.4	190.3	249.5	401.0	573.6	1,184.2	1,703.6	2,768.7	2,802.7	2,142.4	2,090.3	2,539.1	2,575.3	2,434.3
Maldives	0.7	0.0	0.0	0.0	1.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mongolia	0.0	0.0	1.3	1.3	54.1	6.6	6.6	2.9	6.0	4.5	7.3	15.7	1.4	6.0
Nepal	0.0	0.8	1.9	1.6	9.4	9.3	3.4	4.4	1.5	5.7	0.5	9.2	4.6	22.1
North Korea	1.0	8.0	9.7	13.9	6.1	12.3	8.8	0.1	0.8	1.8	0.4	3.0	8.9	1.3
Pakistan	99.3	172.6	269.5	225.9	296.2	400.0	599.4	762.6	527.8	554.2	762.7	721.7	655.9	925.1

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Papua New Guinea	0.0	0.0	0.2	0.0	0.0	1.8	1.0	1.3	1.0	1.0	0.0	0.2	2.6	1.8
Philippines	9.2	5.5	18.2	13.0	15.9	32.4	29.3	63.6	70.1	40.2	58.8	154.4	75.0	137.7
Singapore	944.5	1,203.8	1,214.6	1,346.7	1,285.1	1,284.5	1,317.2	1,630.8	1,548.4	1,769.4	1,771.6	1,674.2	1,573.9	1,669.3
South Korea	2,038.2	2,850.9	3,836.0	4,348.2	4,551.4	4,340.5	4,323.5	4,558.3	5,109.6	5,243.4	5,043.1	5,386.2	5,012.5	4,920.9
Sri Lanka	2.7	2.7	16.4	43.1	22.9	97.4	29.2	95.1	60.2	92.1	199.3	107.1	66.6	170.6
Taiwan	1,646.1	2,086.8	3,091.9	3,414.2	4,248.9	5,051.4	5,578.2	5,647.5	5,936.2	5,350.1	4,590.1	4,374.2	3,949.8	3,766.5
Tajikistan	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.0
Thailand	120.0	166.2	233.2	317.6	334.2	493.4	616.8	880.4	714.0	631.0	623.0	841.1	743.5	904.0
Timor-Leste	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.1
Turkmenistan	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.5	1.4	2.1	0.3	1.0	1.5	0.5
Uzbekistan	1.0	1.0	1.0	2.3	2.1	5.8	5.3	8.3	6.9	7.8	9.7	6.2	7.0	6.2
Vietnam	37.2	18.6	19.5	38.8	75.9	89.5	149.1	211.9	209.5	310.2	353.8	373.3	451.8	555.5
Australia and Oceania	2,009.3	2,388.2	3,752.0	3,605.0	4,236.9	4,143.4	4,263.0	4,686.4	4,218.4	4,217.8	4,648.3	4,519.9	4,116.6	4,046.2
Australia	1,754.1	2,052.4	3,311.9	3,106.3	3,707.4	3,492.6	3,650.0	4,056.9	3,584.5	3,558.4	3,943.3	3,775.9	3,554.9	3,395.4
Cook Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Fiji	0.3	3.3	1.8	4.3	9.6	7.0	4.5	8.5	3.2	6.9	16.6	33.7	22.1	45.9
Kiribati	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micronesia, Federated States of	0.0	0.0	1.3	0.0	0.8	0.3	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	254.9	332.5	437.0	492.3	518.9	642.5	607.6	621.0	630.7	652.2	687.9	709.2	539.1	604.8
Niue	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Samoa	0.0	0.0	0.0	0.5	0.3	1.0	0.3	0.0	0.0	0.0	0.3	1.0	0.5	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Unassigned	270.4	192.5	347.5	503.9	797.5	766.0	460.2	361.4	283.2	282.3	167.4	126.7	100.1	147.2

na = not applicable; country data do not exist.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis. The sum of the regions, countries, or economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-33

S&E articles in engineering, by region, country, or economy: 2003–16

(Number)

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	172,836.0	199,932.0	242,272.0	256,063.0	282,707.0	300,257.0	320,103.0	343,633.0	361,538.0	370,294.0	383,289.0	391,291.0	405,715.0	423,198.0
North America	46,364.2	50,880.4	60,003.8	57,963.0	58,720.7	58,389.7	60,415.5	65,176.9	64,816.0	65,062.8	65,564.5	62,439.3	62,117.6	61,228.5
Canada	5,477.7	6,652.4	8,158.4	7,878.9	8,698.1	8,496.8	8,902.8	9,721.7	9,175.1	9,589.8	9,339.4	9,257.2	9,331.2	9,023.8
Greenland	0.0	0.0	0.5	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mexico	829.2	1,059.5	1,176.7	1,461.0	1,348.6	1,557.1	1,645.2	1,863.6	1,765.9	1,987.6	1,957.9	1,961.6	2,066.4	2,047.1
United States	40,057.3	43,168.4	50,668.1	48,622.9	48,673.6	48,335.8	49,867.4	53,591.5	53,875.0	53,485.4	54,267.1	51,220.4	50,720.1	50,157.7
Central America and Caribbean	173.7	138.8	214.7	216.3	191.5	232.8	228.2	202.6	208.3	222.4	326.6	208.6	209.8	233.6
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Bahamas, The	0.0	0.0	1.5	0.5	0.0	0.3	1.1	0.0	0.0	0.1	1.0	0.0	0.3	0.0
Barbados	2.5	1.0	0.0	0.0	0.0	1.0	2.2	0.7	0.3	2.0	2.2	1.4	0.5	2.4
Belize	0.0	0.5	0.0	0.0	0.0	1.0	0.0	1.2	0.0	0.1	0.8	0.0	0.0	0.0
Costa Rica	2.4	3.6	3.2	2.7	7.8	11.8	9.3	11.2	15.8	22.9	21.5	14.5	37.8	29.2
Cuba	54.5	44.8	67.6	65.8	49.7	80.0	69.5	48.6	62.3	64.0	205.8	58.1	88.4	54.4
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Dominican Republic	1.3	1.8	1.0	0.0	0.8	0.3	2.1	0.9	0.9	2.8	1.2	2.2	1.2	1.2
El Salvador	0.0	0.0	3.3	5.3	4.5	9.5	3.6	5.5	1.8	1.8	0.9	0.4	2.1	1.8

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Grenada	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0
Guatemala	0.0	0.0	1.0	0.6	2.3	1.3	2.7	2.2	0.3	0.6	1.3	2.1	0.8	7.0
Haiti	0.0	0.0	0.3	0.8	1.0	0.1	0.0	0.3	0.8	0.3	0.7	0.1	0.0	0.0
Honduras	0.3	0.8	0.0	1.0	0.5	0.2	1.3	0.6	0.1	1.0	0.0	0.3	1.1	3.1
Jamaica	14.2	7.9	8.2	5.9	10.4	10.0	13.5	5.0	6.6	6.4	9.2	6.6	13.4	16.0
Nicaragua	1.1	0.5	2.7	4.7	2.3	0.2	1.0	2.3	1.8	2.6	0.7	1.3	0.5	3.4
Panama	0.9	2.3	1.6	0.9	0.7	0.7	3.5	2.9	6.5	7.2	3.6	5.7	4.6	4.1
Puerto Rico	66.7	52.6	92.8	105.7	89.6	93.4	85.7	82.4	69.9	76.8	61.6	67.9	46.2	60.5
Saint Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Saint Lucia	0.0	0.0	1.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saint Vincent and the Grenadines	0.0	0.0	1.3	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Trinidad and Tobago	29.8	23.1	28.8	21.5	21.4	22.9	32.0	38.7	40.2	34.0	16.1	48.1	12.5	48.7
South America	3,130.7	3,023.9	3,657.8	4,846.7	4,056.2	5,187.0	5,465.3	6,446.0	5,817.6	7,129.2	7,114.7	8,129.6	8,163.9	8,400.7
Argentina	394.8	361.1	469.2	692.8	463.0	578.5	561.2	694.0	582.1	706.2	599.8	801.4	719.5	822.5
Bolivia	1.2	5.7	2.8	2.6	0.7	1.0	1.8	4.1	0.7	3.6	3.3	7.8	8.7	5.9
Brazil	2,305.4	2,276.9	2,663.4	3,412.9	2,971.8	3,692.1	3,974.9	4,659.4	4,161.7	5,023.8	5,092.4	5,685.4	5,803.2	5,523.1
Chile	211.4	167.2	257.4	300.0	258.7	375.8	386.1	399.0	361.3	481.2	459.2	527.5	568.3	684.7
Colombia	60.6	69.3	84.3	158.1	142.5	297.5	315.7	446.9	478.2	617.0	729.9	795.5	773.3	857.6
Ecuador	3.6	5.7	11.6	4.3	2.0	4.4	7.4	14.7	7.8	24.8	24.2	53.2	83.4	236.4

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Guyana	0.0	0.0	0.3	0.0	0.5	0.0	0.6	0.3	0.3	0.0	0.2	0.0	0.0	0.7
Paraguay	0.0	2.0	2.2	2.0	0.9	1.8	0.8	1.5	7.0	4.6	8.0	7.6	5.9	16.0
Peru	11.8	12.0	15.2	23.5	18.6	17.4	16.5	43.8	31.4	48.1	28.9	49.9	62.4	100.9
Suriname	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.5	0.9	0.3	4.2	1.7	0.9	0.8
Uruguay	12.5	13.3	16.9	22.5	31.5	32.1	36.9	51.3	53.2	69.2	47.5	58.7	59.4	90.2
Venezuela	129.4	110.6	134.5	228.1	166.0	186.4	162.4	130.6	132.9	150.5	117.1	140.9	78.9	61.9
Europe	53,378.0	59,138.7	70,414.2	70,714.2	80,484.8	84,109.0	89,644.1	94,544.0	96,305.9	105,961.0	104,559.5	110,440.6	113,322.4	114,170.4
EU	41,677.6	46,421.7	57,104.1	58,950.7	66,694.9	70,223.0	74,726.3	78,683.8	80,104.1	87,596.3	84,962.7	90,676.4	91,362.0	89,342.1
Austria	743.0	865.4	1,120.1	1,114.3	1,314.5	1,494.6	1,504.2	1,715.6	1,612.0	1,923.7	1,679.0	1,824.2	1,881.7	1,923.4
Belgium	954.1	1,108.1	1,424.7	1,339.1	1,661.8	1,781.0	1,907.9	1,930.0	2,136.0	2,217.7	2,185.3	2,188.2	2,154.8	2,086.5
Bulgaria	254.8	256.9	371.2	254.2	370.1	223.4	439.6	283.4	299.5	276.1	293.8	348.0	299.4	466.3
Croatia	323.0	296.6	448.2	440.5	494.3	533.6	536.3	550.3	543.7	740.8	462.9	527.7	545.8	490.7
Cyprus	21.9	44.0	52.3	55.3	78.6	86.3	97.4	154.7	143.1	147.7	171.4	151.4	176.6	181.6
Czech Republic	605.8	636.4	1,112.0	1,229.1	1,424.2	1,670.3	1,853.7	2,401.9	2,517.1	2,677.2	2,629.8	3,171.1	3,549.5	3,252.0
Denmark	560.7	650.1	820.9	780.9	995.6	906.3	1,118.5	1,105.8	1,338.1	1,482.9	1,598.2	1,716.7	1,876.1	1,701.9
Estonia	50.2	62.9	70.0	171.2	181.7	238.1	171.0	234.0	221.6	293.5	209.9	295.3	250.2	239.3
Finland	1,177.1	1,356.9	1,647.7	1,528.9	1,637.5	1,525.2	1,647.4	1,694.3	1,698.8	1,764.4	1,887.8	1,886.1	1,837.8	1,735.3
France	5,579.9	6,035.3	7,254.7	7,968.1	8,476.6	9,056.3	9,563.2	9,551.0	9,936.9	10,707.6	10,554.8	10,253.6	10,091.4	9,511.0
Germany	8,201.9	8,376.9	10,427.1	10,114.3	11,550.8	11,914.7	12,443.1	12,618.7	13,173.4	14,675.2	13,527.5	14,584.9	14,738.7	14,897.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greece	946.4	1,169.0	1,435.5	1,715.2	1,898.3	1,806.4	1,771.9	1,958.0	1,934.7	2,000.7	1,929.6	1,881.2	1,859.6	1,931.8
Hungary	396.6	417.1	584.5	532.6	686.3	729.7	599.2	766.5	699.7	786.3	832.7	812.3	884.9	705.2
Ireland	346.1	478.1	679.1	555.4	805.9	732.7	743.4	822.9	797.8	789.9	826.5	854.7	859.5	895.9
Italy	4,574.2	4,981.6	5,909.8	6,563.4	7,087.4	7,495.7	8,161.8	8,407.8	8,668.3	9,403.6	9,563.2	10,898.5	11,995.1	10,867.5
Latvia	47.1	67.6	86.6	77.0	117.6	193.5	168.8	179.0	351.2	379.3	338.1	330.2	404.2	342.2
Lithuania	146.0	197.7	284.7	375.8	362.3	700.7	589.8	643.7	590.9	559.6	567.2	477.5	413.0	379.9
Luxembourg	12.2	13.7	12.2	27.6	23.2	34.9	38.1	56.1	73.1	80.2	125.8	109.8	113.4	134.1
Malta	8.2	7.9	12.2	17.1	24.6	33.8	26.5	50.5	24.9	46.3	42.8	48.0	33.3	47.4
Netherlands	1,777.1	1,919.8	2,497.6	2,292.2	2,808.5	2,815.4	3,054.7	3,292.4	3,041.3	3,405.5	3,160.7	3,109.3	3,084.5	2,880.1
Poland	1,367.0	2,187.8	2,436.5	2,598.6	3,229.2	3,665.8	3,510.4	4,243.9	3,989.2	4,854.7	4,513.0	5,718.8	5,506.4	6,195.4
Portugal	705.2	1,058.9	1,166.7	1,619.3	1,493.5	1,643.5	1,807.6	2,013.2	2,055.0	2,324.6	2,448.1	2,460.7	2,647.5	2,502.6
Romania	568.9	590.5	949.1	939.0	1,704.6	2,246.2	2,967.3	3,207.0	2,621.1	2,681.5	2,392.5	2,603.3	2,300.2	2,517.8
Slovakia	216.4	258.0	405.8	365.2	501.4	520.2	585.4	679.0	755.8	1,047.9	958.4	1,298.4	1,292.2	1,312.6
Slovenia	546.5	483.0	523.2	568.3	674.7	680.0	648.5	621.1	749.1	755.4	714.8	695.5	579.1	572.2
Spain	2,553.4	3,072.6	3,746.0	4,361.7	4,762.3	4,967.6	5,692.7	6,121.2	6,483.4	7,047.4	6,935.7	7,420.0	7,014.8	6,487.9
Sweden	1,664.0	1,952.3	2,211.3	2,183.9	2,330.4	2,315.6	2,596.1	2,731.3	2,863.2	3,248.2	3,228.7	3,460.3	3,252.4	3,328.0
United Kingdom	7,329.6	7,876.2	9,414.4	9,162.5	9,998.7	10,211.4	10,482.0	10,650.5	10,785.3	11,278.4	11,184.7	11,550.9	11,719.7	11,755.9
Other Europe	11,700.4	12,717.0	13,310.0	11,763.5	13,789.9	13,886.0	14,917.8	15,860.2	16,201.8	18,364.7	19,596.8	19,764.2	21,960.4	24,828.2
Albania	1.6	1.9	0.7	6.4	3.5	3.2	4.6	15.5	10.6	11.6	20.4	8.9	18.6	12.5

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.7
Belarus	240.6	329.9	303.8	192.5	247.8	243.7	352.0	250.4	206.9	274.6	269.1	229.6	177.3	185.9
Bosnia and Herzegovina	17.1	19.4	44.2	29.7	36.8	39.6	48.1	56.3	95.4	145.5	114.7	104.7	150.1	145.5
Holy See (Vatican City)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iceland	17.4	16.8	23.9	21.1	38.4	27.6	43.1	55.6	76.0	79.6	79.7	87.9	96.4	119.1
Kosovo	0.0	0.0	0.0	0.0	0.0	8.9	13.7	32.3	25.9	31.5	33.4	22.0	26.5	51.7
Liechtenstein	3.5	3.9	9.3	11.2	8.8	12.2	5.5	8.0	4.1	10.5	6.2	5.9	6.7	8.0
Macedonia	34.9	37.2	54.9	45.1	69.2	42.3	64.0	69.4	65.0	98.5	82.4	76.0	84.8	85.5
Moldova	28.6	11.8	35.9	19.9	33.5	30.8	35.4	33.2	22.1	23.7	26.0	29.0	21.2	95.5
Monaco	0.0	2.0	3.0	7.6	2.7	4.1	0.5	0.8	3.5	3.1	4.7	2.3	0.6	0.5
Montenegro[a]	na	na	na	0.0	22.6	18.9	20.7	33.0	49.6	70.1	55.4	57.3	78.2	65.2
Norway	481.5	556.5	767.8	826.8	1,035.5	933.9	1,173.0	1,263.9	1,268.0	1,632.2	1,497.5	1,600.1	1,486.4	1,576.4
Russia	5,917.8	5,867.2	5,597.9	4,167.2	4,716.2	5,057.8	5,343.9	5,447.0	5,668.1	6,190.4	6,549.2	7,829.5	10,048.2	12,038.3
San Marino	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	2.3	1.8	2.5	1.0	5.2
Serbia[a]	na	na	na	na	545.1	502.7	663.4	740.7	1,147.0	1,323.4	1,254.7	949.9	951.7	1,156.4
Serbia and Montenegro[b]	295.4	329.2	505.3	503.4	na	na	na	na	na	na	na	na	na	na
Switzerland	1,089.7	1,284.8	1,597.3	1,646.5	1,787.4	1,897.5	1,890.1	2,125.3	2,116.8	2,331.8	2,304.3	2,503.2	2,411.4	2,356.1
Turkey	1,565.7	2,259.2	2,458.8	2,857.0	3,344.0	3,445.1	3,799.9	3,849.7	3,855.5	4,347.9	5,139.6	4,263.9	4,332.7	5,010.1
Ukraine	2,006.7	1,997.2	1,907.3	1,429.1	1,898.3	1,617.6	1,459.9	1,879.2	1,586.7	1,787.8	2,157.5	1,991.5	2,068.8	1,915.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Middle East	2,901.1	3,517.5	4,103.3	5,043.3	5,752.0	7,084.8	8,359.2	10,296.9	12,042.3	13,006.4	13,160.2	14,024.0	14,773.9	15,896.3
Armenia	39.6	58.0	66.1	53.7	70.6	62.1	62.5	51.6	86.5	57.8	54.6	50.8	53.8	36.5
Azerbaijan	43.6	45.0	35.7	47.2	34.0	43.3	58.6	83.2	74.0	65.7	46.6	45.4	58.3	54.4
Bahrain	36.4	26.9	28.4	29.2	39.7	26.7	45.3	41.1	37.9	29.3	33.1	28.1	28.2	22.2
Gaza Strip	2.1	2.0	6.6	10.5	7.1	4.7	4.8	10.4	9.4	10.7	21.7	19.5	17.3	16.5
Georgia	44.0	56.3	41.3	49.4	38.6	48.6	62.6	48.4	33.1	35.1	41.2	52.4	35.0	55.2
Iran	1,007.1	1,337.0	1,819.6	2,531.0	3,130.8	4,393.7	5,230.3	6,952.2	8,048.1	8,567.4	8,171.9	9,215.6	9,008.8	10,301.9
Iraq	18.2	21.1	23.5	60.8	43.3	66.7	64.9	140.5	159.6	249.8	212.6	229.9	250.8	342.2
Israel	734.0	939.6	941.2	1,045.3	990.4	1,048.2	1,106.8	1,013.2	994.5	959.4	1,010.3	1,054.0	1,114.2	1,037.6
Jordan	144.3	172.5	178.5	180.3	222.3	242.5	240.9	271.9	315.3	261.8	313.1	229.5	286.1	306.1
Kuwait	132.8	128.5	138.8	133.7	173.2	157.9	173.3	170.6	205.3	226.9	228.4	190.8	318.8	168.2
Lebanon	59.8	84.5	85.4	107.1	99.7	126.1	139.0	137.7	181.4	236.0	266.3	282.9	272.8	329.0
Oman	62.9	68.2	84.0	72.0	111.3	92.0	94.6	112.0	150.3	150.0	146.3	134.0	193.3	162.2
Qatar	18.5	28.3	34.6	35.3	50.3	71.3	77.7	121.3	116.9	197.6	267.7	288.3	349.2	374.3
Saudi Arabia	385.6	353.4	386.4	419.7	479.2	435.7	647.0	695.2	1,061.4	1,228.8	1,601.9	1,486.6	1,819.3	1,923.8
Syria	8.2	25.3	19.2	25.7	24.4	52.1	21.2	35.7	39.6	64.7	33.1	32.3	41.6	28.6
United Arab Emirates	149.6	163.1	202.9	229.0	219.6	201.1	313.1	392.1	487.0	627.8	665.8	640.0	885.7	695.2
West Bank	13.2	6.6	8.3	9.0	11.0	9.0	12.7	12.3	32.6	23.2	27.0	29.8	31.1	30.2
Yemen	1.3	1.3	3.0	4.3	6.7	3.2	3.8	7.6	9.4	14.3	18.8	14.0	9.5	12.1

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Africa	1,905.6	2,690.1	2,634.7	2,851.5	3,295.0	3,462.6	4,324.3	4,529.5	5,141.0	5,985.0	7,160.2	7,038.1	7,186.3	8,597.6
Algeria	215.5	346.5	324.5	428.3	468.4	595.1	709.2	701.5	910.6	1,142.8	1,432.4	1,320.0	1,295.9	1,624.2
Angola	0.0	0.9	2.1	2.1	1.4	0.7	1.2	0.6	0.1	1.0	5.2	4.3	3.4	1.4
Benin	2.3	0.8	0.6	0.3	1.3	1.0	0.5	2.8	2.0	1.0	3.3	5.0	6.1	3.5
Botswana	8.3	11.6	7.8	29.4	7.8	9.8	13.6	17.0	13.4	15.3	16.5	16.7	11.8	52.1
Burkina Faso	4.1	0.2	1.2	1.3	1.3	3.9	5.8	3.0	3.8	16.7	8.7	8.0	5.7	6.4
Burundi	1.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	1.0
Cameroon	6.3	10.8	14.2	13.3	15.8	21.2	22.8	24.3	24.6	35.5	30.1	40.3	34.8	57.7
Cape Verde	0.7	0.0	0.0	0.2	0.8	0.5	0.5	0.0	0.0	0.3	0.3	0.2	0.9	0.8
Central African Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.0	0.3	0.0
Chad	0.5	0.0	0.0	0.2	0.4	0.1	0.7	0.0	0.0	0.2	0.1	0.0	1.2	1.1
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Congo, Democratic Republic of the	0.7	0.0	1.6	1.0	0.0	0.0	1.9	0.0	0.5	0.4	1.0	0.8	0.9	0.3
Congo, Republic of the	0.0	1.0	2.3	1.4	0.8	1.8	1.7	0.0	2.8	2.3	3.9	1.7	0.3	2.0
Côte d'Ivoire	2.7	2.6	2.5	0.1	4.6	4.7	5.1	3.2	1.4	5.4	1.2	8.4	7.5	6.1
Djibouti	0.0	0.0	0.1	0.0	0.5	0.0	0.5	0.3	0.3	0.1	0.4	1.3	0.0	0.5
Egypt	818.4	1,073.7	920.6	1,001.5	1,097.3	1,146.6	1,335.6	1,410.1	1,435.6	1,712.3	1,949.6	1,802.9	1,850.0	2,021.8
Equatorial Guinea	0.0	0.0	0.2	0.0	0.5	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Eritrea	1.1	0.3	0.2	0.1	1.0	1.0	0.5	1.0	2.0	1.0	0.3	0.4	0.1	0.1

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ethiopia	6.2	2.0	4.8	2.3	5.4	6.7	6.8	6.2	16.5	13.9	17.1	28.8	61.9	54.9
Gabon	0.5	0.8	0.0	0.5	0.3	1.3	0.5	0.0	1.7	0.6	1.4	0.9	0.1	2.6
Gambia, The	0.2	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.4	0.8	1.3	0.4	0.0	0.0
Ghana	4.3	9.5	14.5	10.4	13.4	13.3	38.0	27.4	45.0	67.8	45.2	41.0	60.2	60.4
Guinea	0.0	1.9	0.2	0.5	1.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	0.4	0.3
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	8.0	7.5	7.9	9.6	11.2	9.0	19.9	12.7	13.4	19.7	16.9	24.0	41.7	29.5
Lesotho	0.0	0.2	0.0	1.0	2.1	0.2	1.2	1.8	0.0	3.6	1.5	0.4	0.5	1.0
Liberia	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.3	0.2
Libya	25.3	32.9	33.9	29.8	40.0	53.1	39.8	57.0	25.0	49.7	67.4	69.9	53.1	34.9
Madagascar	0.1	0.5	0.0	1.0	2.2	1.9	3.6	0.2	4.6	3.5	2.4	5.1	6.1	4.4
Malawi	0.0	0.0	0.5	2.1	4.1	2.8	5.4	1.5	3.1	4.3	5.4	3.0	0.5	2.2
Mali	0.3	0.7	0.0	0.0	1.3	0.0	0.2	0.4	0.8	0.3	0.4	3.2	0.6	1.6
Mauritania	0.4	0.0	0.0	0.0	0.3	0.0	0.4	0.3	0.6	0.8	1.7	1.1	0.8	1.2
Mauritius	11.2	7.5	3.3	7.3	11.2	7.7	7.3	9.5	5.7	17.6	25.8	11.7	27.0	23.1
Morocco	98.3	142.3	123.6	126.4	163.5	156.1	175.0	194.4	225.6	382.8	426.4	661.1	541.8	1,162.7
Mozambique	3.3	1.8	2.3	1.0	1.9	0.6	2.1	0.5	3.3	3.0	0.8	3.0	2.0	1.9
Namibia	1.3	0.2	3.9	2.3	5.5	2.0	4.0	1.9	5.1	2.6	7.4	6.1	6.3	7.2
Niger	1.1	0.5	1.5	0.3	1.0	1.2	2.3	5.3	0.7	1.8	0.9	1.0	1.7	4.3

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nigeria	96.7	146.9	116.8	129.2	139.3	169.1	322.2	333.7	383.4	378.8	437.5	497.7	575.4	590.2
Rwanda	1.0	0.0	0.0	0.6	2.2	0.5	0.1	3.4	1.6	3.0	0.8	3.7	5.1	2.4
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	3.6	4.3	2.0	4.8	3.0	4.6	6.7	6.6	5.3	9.4	13.4	14.4	16.0	18.6
Seychelles	1.0	0.0	0.0	0.0	0.0	0.0	0.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0
Sierra Leone	0.3	3.0	0.3	0.5	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.3	0.3	0.0
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.2
South Africa	417.2	532.3	701.9	670.7	868.1	629.2	906.6	975.5	1,126.4	1,211.7	1,316.0	1,293.8	1,344.8	1,507.4
South Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0
Sudan	1.8	3.8	3.8	6.4	12.6	11.5	13.7	12.9	25.9	31.1	107.1	18.6	24.4	25.6
Swaziland	0.5	0.3	2.2	1.7	2.3	1.3	1.7	3.2	2.3	3.9	3.1	3.2	1.2	4.4
Tanzania	4.3	7.5	8.0	10.1	10.1	17.0	10.6	7.6	9.8	9.4	14.3	26.1	24.9	25.6
Togo	0.3	0.9	0.0	0.0	1.3	4.0	1.7	0.0	2.4	1.6	1.9	3.6	1.6	1.7
Tunisia	145.8	322.6	310.2	338.3	378.2	565.0	639.6	691.3	815.3	796.8	1,162.3	1,067.0	1,137.5	1,208.6
Uganda	1.5	2.9	2.8	4.1	3.5	6.8	5.7	2.6	12.4	16.1	11.0	22.0	13.6	16.3
Western Sahara	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zambia	1.5	2.1	5.4	2.2	2.3	8.0	4.6	1.6	3.0	9.1	7.0	9.5	6.6	12.3
Zimbabwe	7.8	6.9	7.2	8.8	5.2	2.6	4.6	3.2	4.3	6.0	8.8	6.3	10.9	12.9
Asia	60,159.4	75,439.5	95,152.4	107,905.7	122,261.6	134,516.4	145,215.5	155,727.7	169,879.9	165,359.8	177,692.0	181,600.5	192,645.5	207,596.1

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Afghanistan	0.0	0.0	0.0	0.0	0.2	0.6	0.4	1.3	0.6	2.8	1.4	1.9	0.0	7.6
Bangladesh	65.5	58.5	98.2	112.0	213.2	234.1	238.3	418.2	255.3	492.2	613.5	598.3	461.3	719.4
Bhutan	0.0	2.0	1.8	1.7	0.0	1.2	0.3	1.8	1.3	2.3	2.2	1.0	1.0	1.8
Brunei	4.1	7.5	3.2	9.8	6.0	2.3	7.5	8.0	7.6	12.8	18.9	44.3	34.0	66.4
Burma	0.0	0.5	0.8	3.9	1.0	8.5	5.0	3.0	20.5	2.0	1.2	0.7	10.0	7.1
Cambodia	0.1	0.0	1.0	0.5	2.5	0.3	0.8	1.6	0.2	3.7	1.5	2.7	1.0	3.3
China	25,515.2	36,524.7	51,013.0	59,409.2	67,098.9	77,644.2	84,752.8	92,247.2	100,414.5	94,173.2	101,264.3	107,189.2	113,912.9	123,033.5
India	4,288.3	4,771.7	5,884.9	7,034.6	7,789.8	9,218.5	10,538.6	10,969.3	14,260.2	15,823.2	18,834.7	19,493.9	21,631.0	26,739.6
Indonesia	60.8	93.6	96.0	129.7	156.8	139.6	295.3	200.7	626.8	595.2	692.0	750.3	1,458.4	2,213.8
Japan	16,910.1	17,672.9	18,908.9	19,833.5	21,548.9	20,486.9	21,518.7	21,408.6	20,833.5	20,200.1	20,585.5	18,183.8	17,743.9	16,542.9
Kazakhstan	37.2	42.6	38.2	30.8	42.8	39.1	45.8	66.4	56.6	79.7	129.8	187.9	273.7	341.4
Kyrgyzstan	0.1	1.8	1.5	6.7	2.4	4.5	1.5	1.1	3.9	3.9	4.9	5.6	4.6	5.3
Laos	0.0	1.3	0.6	0.7	0.0	3.0	2.3	4.6	1.6	1.2	2.0	4.0	1.6	4.4
Malaysia	545.2	678.1	788.6	922.5	1,234.4	1,851.7	2,290.1	2,785.2	4,454.4	4,638.7	5,481.0	5,679.4	6,934.3	8,235.1
Maldives	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.2	0.0	0.0
Mongolia	6.6	6.6	4.7	9.4	11.8	2.3	6.5	15.8	26.2	35.1	74.9	10.0	11.1	10.4
Nepal	0.5	3.8	4.9	5.3	9.2	5.7	11.9	12.9	14.8	36.3	13.6	14.6	16.9	32.5
North Korea	1.3	13.6	24.1	27.5	21.8	4.3	17.9	3.6	0.9	5.2	4.4	5.3	5.7	11.2
Pakistan	70.8	105.2	240.7	307.1	399.7	490.6	541.5	503.3	665.9	881.6	1,042.7	908.6	1,111.3	1,386.4

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Papua New Guinea	2.6	2.0	0.0	0.1	0.3	0.5	1.3	2.3	2.5	2.5	1.0	4.1	2.3	4.4
Philippines	27.2	23.6	21.7	30.4	49.2	28.2	45.8	52.0	69.0	112.8	71.4	80.3	187.2	338.9
Singapore	1,997.1	2,327.4	2,567.1	2,207.3	2,517.5	2,413.0	2,499.4	2,577.2	2,529.5	2,622.5	2,640.6	2,445.5	2,684.7	2,701.1
South Korea	6,056.1	7,310.1	8,737.7	9,805.8	11,853.8	12,306.6	12,406.4	13,358.5	14,395.8	14,486.9	14,852.8	15,442.5	16,156.2	15,546.0
Sri Lanka	21.3	15.6	26.7	64.2	66.9	42.0	72.2	48.7	81.3	66.1	59.0	49.5	73.1	124.6
Taiwan	4,064.8	5,063.4	5,934.5	7,004.8	8,042.9	8,121.0	8,508.0	9,313.4	9,117.8	9,015.0	9,112.0	8,305.7	7,345.2	6,358.7
Tajikistan	0.8	2.0	0.5	0.2	1.8	1.1	0.7	1.8	7.2	6.6	2.7	3.3	6.4	3.7
Thailand	438.8	650.4	671.2	867.1	1,075.4	1,307.2	1,260.0	1,414.7	1,802.7	1,723.3	1,739.5	1,776.6	1,997.2	2,256.4
Timor-Leste	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Turkmenistan	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.0	0.0	0.0	1.0	0.0	0.0
Uzbekistan	16.0	21.6	28.7	22.9	68.0	25.3	28.4	71.6	28.7	20.6	27.8	30.4	24.8	60.9
Vietnam	27.9	38.7	53.3	58.1	46.0	134.1	117.9	234.0	200.7	314.3	416.9	380.0	555.5	838.5
Australia and Oceania	2,837.5	2,985.1	3,876.1	4,215.6	5,114.5	4,864.2	4,972.7	5,520.1	6,196.1	6,529.3	6,994.1	7,030.6	7,022.5	6,826.7
Australia	2,536.3	2,623.7	3,477.3	3,715.0	4,516.2	4,235.0	4,332.3	4,854.8	5,461.7	5,767.6	6,278.7	6,279.9	6,308.9	6,104.1
Cook Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Fiji	4.0	9.0	7.9	12.1	8.3	7.9	6.6	8.9	14.0	13.9	21.1	19.9	19.0	19.5
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Marshall Islands	0.0	0.2	0.0	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0
Micronesia, Federated States of	0.0	0.4	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nauru	0.0	0.0	0.0	0.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	297.0	351.2	390.9	487.2	589.7	621.2	632.2	653.8	719.0	746.9	694.1	730.8	692.8	702.8
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.1	0.0	0.2	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Tonga	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Unassigned	1,985.8	2,118.1	2,214.9	2,306.7	2,830.8	2,410.4	1,478.2	1,189.4	1,130.9	1,038.1	717.3	379.8	273.1	248.0

na = not applicable; country data do not exist.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis. The sum of the regions, countries, or economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-34

S&E articles in geosciences, by region, country, or economy: 2003–16

(Number)

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	60,921.0	69,638.0	77,464.0	81,174.0	85,757.0	90,405.0	100,155.0	101,782.0	112,871.0	109,738.0	121,069.0	126,212.0	125,460.0	131,792.0
North America	18,680.1	22,675.4	24,148.4	23,279.9	24,403.5	23,698.2	23,872.8	23,898.7	24,579.0	24,767.2	26,104.1	27,267.7	25,346.9	25,414.4
Canada	2,625.0	2,903.2	3,260.5	3,397.1	3,486.2	3,513.9	3,544.2	3,511.3	3,702.2	3,737.5	3,807.1	3,933.7	3,848.6	3,821.4
Greenland	2.4	5.0	7.1	5.5	8.8	7.6	4.3	9.7	10.1	10.3	10.6	12.0	15.6	9.6
Mexico	644.9	673.9	654.1	691.5	722.5	759.7	823.7	865.8	865.3	906.8	999.4	996.8	997.6	1,057.8
United States	15,407.7	19,093.2	20,226.7	19,185.8	20,186.1	19,417.0	19,500.6	19,512.0	20,001.3	20,112.5	21,286.9	22,325.2	20,485.0	20,525.7
Central America and Caribbean	151.5	186.6	178.6	205.4	152.9	204.2	210.4	216.8	178.0	204.8	169.3	223.6	194.9	189.7
Antigua and Barbuda	0.0	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.3
Bahamas, The	0.3	0.5	1.5	0.5	3.0	1.3	1.1	1.5	1.9	1.9	2.1	4.8	4.1	2.6
Barbados	2.3	3.9	5.4	2.3	1.9	1.6	3.6	0.8	4.5	9.1	4.1	6.8	3.6	5.9
Belize	1.1	0.7	3.5	0.8	0.3	1.5	1.7	1.1	0.4	2.3	2.7	0.7	1.2	1.2
Costa Rica	34.2	75.6	26.5	64.0	37.5	41.6	63.7	58.1	41.8	64.1	33.3	64.1	65.4	61.9
Cuba	26.8	21.0	28.2	39.9	24.7	33.6	33.3	42.9	39.5	33.6	35.9	39.9	27.0	32.0
Dominica	1.5	0.0	1.3	0.8	0.0	1.0	0.0	2.4	0.0	1.4	0.6	0.5	0.0	0.3
Dominican Republic	1.5	0.1	1.6	2.6	0.9	1.7	0.4	1.0	1.8	0.7	2.6	2.5	1.8	1.0
El Salvador	1.8	11.4	0.3	4.9	2.8	2.1	1.7	1.9	6.2	1.8	2.7	2.7	1.8	3.1

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Grenada	0.0	0.4	0.0	0.0	0.5	0.2	0.0	0.0	0.4	0.6	0.0	2.0	0.4	0.8
Guatemala	1.6	3.9	3.4	2.4	1.1	1.3	0.9	1.8	2.5	2.5	2.7	0.7	2.1	2.1
Haiti	0.0	0.0	0.0	0.0	1.2	0.1	1.5	1.7	2.1	0.3	3.3	2.9	0.6	3.1
Honduras	0.5	1.7	0.6	1.8	1.2	0.5	1.7	1.4	0.9	2.4	1.2	3.2	1.3	0.9
Jamaica	26.0	13.1	14.8	8.0	7.8	15.1	11.9	11.6	10.7	6.3	8.3	15.5	13.3	8.0
Nicaragua	3.7	2.9	3.4	4.9	3.3	10.4	3.7	2.5	2.8	3.6	3.3	4.7	2.6	2.7
Panama	7.5	5.2	15.4	9.3	12.5	19.0	16.9	18.6	11.5	22.6	17.9	17.2	14.3	12.5
Puerto Rico	37.6	30.7	46.0	45.9	39.2	51.9	55.5	51.0	39.1	35.9	36.5	44.6	40.4	38.7
Saint Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.4	0.2	0.6	0.9
Saint Lucia	0.1	0.0	0.1	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
Saint Vincent and the Grenadines	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.3	0.0	0.0	0.2	0.0	0.0	0.0
Trinidad and Tobago	5.1	15.3	26.3	17.0	14.7	21.2	12.6	18.3	11.4	14.9	10.4	10.8	13.8	11.8
South America	1,535.5	1,763.6	2,247.5	2,644.3	2,712.1	3,014.9	3,513.1	3,458.2	3,789.2	3,941.3	4,589.3	4,736.9	4,628.1	5,173.4
Argentina	388.5	459.6	516.4	512.8	549.6	641.2	742.7	728.4	778.9	815.8	858.4	901.7	891.6	878.7
Bolivia	6.5	4.2	9.1	9.4	10.6	10.6	9.1	7.9	7.6	13.6	9.5	15.2	11.1	12.9
Brazil	792.7	903.0	1,266.0	1,562.0	1,641.8	1,699.0	2,070.0	2,002.6	2,243.8	2,305.0	2,887.7	2,841.4	2,800.4	3,222.2
Chile	202.6	232.1	220.8	285.2	303.6	339.4	345.4	360.4	388.5	424.5	397.5	486.7	488.7	497.0
Colombia	34.3	44.9	51.7	104.6	88.1	148.0	191.8	213.0	195.2	197.0	245.5	285.0	222.7	304.2
Ecuador	16.5	12.6	16.4	15.3	16.9	24.7	14.6	19.5	20.3	21.6	27.9	32.2	48.8	83.3

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Guyana	0.0	0.0	0.0	1.4	0.7	0.0	0.6	1.1	0.3	1.9	0.8	3.0	0.0	0.4
Paraguay	0.3	1.2	1.3	4.5	0.0	0.5	1.6	0.2	0.5	4.1	0.8	3.0	1.3	0.6
Peru	10.6	23.1	24.3	36.2	26.5	48.7	36.1	32.4	43.2	41.0	47.1	53.1	49.6	52.6
Suriname	0.2	1.1	0.3	2.2	3.1	1.2	1.1	0.0	0.7	2.9	1.3	0.1	0.5	3.6
Uruguay	25.2	28.2	37.9	32.4	21.4	39.6	43.4	34.5	44.7	54.2	42.1	50.5	56.5	56.0
Venezuela	58.0	53.7	103.2	78.3	49.9	62.0	56.5	58.2	65.5	59.8	70.7	65.0	56.8	61.9
Europe	24,133.5	25,155.1	27,738.7	29,449.3	30,314.1	32,548.1	34,810.3	35,672.4	37,993.8	39,137.3	41,697.6	42,529.4	42,345.1	42,788.1
EU	19,579.0	20,231.6	22,492.4	23,922.1	24,398.6	26,178.4	28,082.0	28,547.2	30,288.3	31,634.3	33,294.1	33,862.1	33,250.5	33,488.3
Austria	329.0	361.7	369.4	403.8	454.5	471.6	524.8	503.1	575.5	582.1	654.7	636.3	598.3	658.9
Belgium	462.2	462.5	522.7	551.4	556.7	609.6	644.5	587.4	664.3	648.1	725.4	702.7	706.5	731.4
Bulgaria	59.8	58.4	78.9	89.0	93.1	110.3	101.6	117.8	145.2	158.2	144.9	164.7	169.1	103.2
Croatia	195.2	193.4	266.3	218.9	225.1	234.6	304.7	318.5	350.8	357.1	361.8	288.8	336.6	291.0
Cyprus	6.5	7.2	7.8	6.3	13.6	22.9	28.2	38.8	33.9	29.6	45.0	56.9	44.6	58.2
Czech Republic	351.4	338.1	353.1	384.9	474.9	459.0	544.3	580.8	650.6	739.8	791.5	996.5	944.8	880.4
Denmark	516.5	493.8	504.7	586.6	532.1	567.4	567.2	584.0	648.8	752.6	662.1	675.4	704.0	692.4
Estonia	81.5	103.1	86.3	98.9	130.9	161.6	133.3	177.9	177.3	180.4	146.6	156.5	115.6	124.8
Finland	441.3	471.3	511.0	492.9	532.6	544.0	507.8	488.0	556.7	577.9	581.2	620.2	642.0	634.3
France	2,726.9	2,735.8	2,931.4	3,163.0	3,149.6	3,300.9	3,722.3	3,714.3	3,768.3	3,714.7	4,136.8	4,113.8	3,663.4	3,883.8
Germany	3,061.8	3,189.6	3,725.8	3,631.8	3,633.7	3,901.9	3,949.5	4,234.0	4,183.9	4,556.1	4,539.8	4,631.1	4,653.3	4,834.1

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greece	448.3	508.9	533.2	640.6	624.8	670.5	751.5	771.3	680.9	771.1	803.2	826.2	801.9	796.0
Hungary	216.8	254.2	255.4	281.4	263.0	258.0	325.3	314.7	340.6	351.5	308.5	378.4	374.8	336.1
Ireland	144.9	136.1	167.1	196.3	206.7	209.7	236.1	227.9	287.3	271.9	276.4	257.8	223.8	260.5
Italy	2,145.0	2,154.8	2,299.1	2,610.4	2,652.2	3,110.2	3,105.0	3,216.4	3,228.0	3,700.8	3,880.1	3,463.9	3,554.0	3,933.4
Latvia	8.5	10.0	33.2	11.2	15.1	28.8	73.5	27.6	118.5	57.2	93.6	51.5	139.2	42.5
Lithuania	28.7	131.1	127.6	130.0	137.2	237.4	135.8	128.8	329.1	116.4	109.5	116.6	117.1	126.1
Luxembourg	1.9	10.6	15.5	12.0	14.8	12.7	21.4	21.8	21.8	25.6	33.3	34.1	31.1	28.7
Malta	9.9	2.8	6.3	5.0	4.5	10.3	8.7	9.1	17.5	11.6	11.4	6.3	17.4	18.6
Netherlands	929.3	931.8	1,070.6	1,229.9	1,159.7	1,135.1	1,367.3	1,261.3	1,357.2	1,369.8	1,442.3	1,548.5	1,364.0	1,418.8
Poland	950.5	926.1	1,052.9	1,032.0	1,205.0	1,493.0	1,764.5	1,584.0	1,965.4	1,747.4	2,156.5	2,108.3	2,395.9	2,533.0
Portugal	344.4	360.8	448.7	574.0	631.1	715.7	800.6	716.8	909.7	905.9	1,017.8	1,245.9	1,144.1	1,092.5
Romania	56.1	44.6	68.3	81.0	94.6	248.5	427.5	532.6	632.4	831.6	914.2	857.2	1,075.9	448.0
Slovakia	106.0	111.7	121.4	114.4	173.9	201.5	194.1	200.8	283.9	303.5	374.5	488.6	432.5	355.2
Slovenia	58.8	62.0	110.0	98.0	132.6	109.4	142.4	137.4	136.4	153.8	140.2	170.9	208.0	191.0
Spain	1,424.7	1,465.9	1,743.4	2,074.7	2,082.0	2,300.7	2,451.1	2,584.4	2,783.1	2,974.2	3,077.7	3,274.7	2,985.1	3,163.3
Sweden	812.1	933.4	976.7	958.5	802.9	805.6	794.7	857.4	878.3	919.5	999.6	1,036.2	1,004.0	1,024.1
United Kingdom	3,661.2	3,771.8	4,105.6	4,245.3	4,402.0	4,247.4	4,454.2	4,610.3	4,563.0	4,826.0	4,865.8	4,954.1	4,803.6	4,828.2
Other Europe	4,554.4	4,923.6	5,246.3	5,527.2	5,915.5	6,369.7	6,728.4	7,125.1	7,705.5	7,503.0	8,403.4	8,667.2	9,094.6	9,299.9
Albania	3.7	4.7	8.0	4.9	4.3	17.8	20.1	28.2	45.7	39.1	25.2	36.0	34.3	18.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Andorra	1.2	0.5	0.3	0.8	0.4	0.0	0.3	0.4	0.0	0.8	3.8	0.6	0.5	0.4
Belarus	11.8	14.2	13.2	16.0	14.0	18.8	11.7	12.8	20.4	13.2	27.7	43.0	17.8	15.7
Bosnia and Herzegovina	0.8	0.6	5.7	3.9	5.8	4.9	8.2	15.7	17.8	15.2	15.0	10.7	18.8	15.0
Holy See (Vatican City)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0
Iceland	55.5	61.0	89.5	70.5	76.6	63.4	74.4	82.9	71.6	95.1	72.1	98.8	88.8	91.6
Kosovo	0.0	0.0	0.0	0.0	0.0	4.1	7.0	2.9	13.5	11.7	11.1	16.8	19.2	11.5
Liechtenstein	0.0	5.5	0.1	0.0	0.0	0.0	0.3	0.3	1.1	0.1	0.3	0.0	1.6	0.0
Macedonia	1.0	4.5	9.5	13.7	11.5	10.9	15.8	19.0	28.9	28.7	37.8	27.7	28.7	24.5
Moldova	0.2	1.9	2.0	2.9	3.6	3.3	2.9	2.1	8.7	8.0	14.6	8.0	2.0	7.7
Monaco	12.7	16.5	12.5	10.1	10.2	15.4	19.6	13.3	14.6	6.5	8.5	10.0	8.2	10.7
Montenegro[a]	na	na	na	na	3.3	1.8	4.3	4.3	5.7	5.7	9.4	15.2	11.4	17.5
Norway	728.0	799.6	844.4	907.2	986.5	985.7	1,180.4	1,107.1	1,313.5	1,282.5	1,388.9	1,390.4	1,297.3	1,371.7
Russia	2,241.2	2,311.9	2,386.9	2,400.7	2,468.4	2,674.9	2,570.7	2,972.3	2,949.8	2,762.4	3,231.9	3,627.7	3,938.2	4,167.2
San Marino	0.0	0.0	0.0	0.0	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Serbia[a]	na	na	na	na	81.1	81.1	110.9	152.5	213.6	238.3	243.7	255.2	263.0	293.3
Serbia and Montenegro[b]	26.8	40.3	34.0	56.9	na	na	na	na	na	na	na	na	na	na
Switzerland	649.7	677.6	776.7	888.6	869.7	943.8	1,022.1	972.7	1,110.5	1,137.4	1,299.5	1,209.1	1,184.1	1,176.4
Turkey	617.0	769.3	827.9	945.7	1,155.9	1,291.6	1,423.7	1,405.6	1,507.8	1,392.0	1,504.3	1,495.0	1,836.3	1,714.6
Ukraine	204.9	215.6	235.8	205.2	223.5	252.2	256.1	333.0	382.2	466.4	509.4	422.9	344.3	363.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Middle East	656.3	771.1	863.2	1,111.0	1,277.0	1,610.9	2,123.0	2,230.6	2,538.1	2,728.9	3,226.7	3,672.0	3,775.3	4,241.3
Armenia	5.4	5.4	6.2	9.4	2.8	4.4	8.3	9.4	12.8	19.8	19.4	7.0	9.7	17.9
Azerbaijan	6.7	10.1	15.2	8.9	8.2	35.0	17.9	19.1	22.9	18.0	19.7	16.0	19.4	19.9
Bahrain	4.9	3.6	6.8	4.8	4.4	2.6	9.2	8.9	5.3	6.0	7.4	9.0	4.0	5.7
Gaza Strip	3.0	5.9	4.1	5.3	0.7	4.3	10.0	4.9	8.5	2.3	5.3	8.5	4.8	8.7
Georgia	16.9	18.2	7.8	18.7	21.6	16.0	23.1	34.5	22.5	22.3	37.0	23.4	20.8	25.9
Iran	126.9	171.0	258.1	406.5	521.1	716.5	1,065.7	1,251.8	1,480.4	1,578.9	1,747.7	1,974.4	2,195.7	2,455.8
Iraq	3.0	1.3	3.4	11.3	6.7	21.4	27.1	38.6	48.1	44.5	92.9	78.9	136.6	116.3
Israel	270.6	310.8	292.5	354.8	329.1	360.7	349.7	336.1	347.7	303.1	323.3	388.5	353.8	402.8
Jordan	45.3	47.7	60.5	67.3	107.7	115.8	135.9	89.7	81.5	97.2	122.2	131.2	156.1	147.6
Kuwait	31.7	35.1	29.8	39.3	51.2	42.6	69.8	44.5	63.6	81.3	108.1	77.9	63.9	54.3
Lebanon	23.8	26.8	27.4	33.2	35.0	24.4	31.0	24.7	25.0	31.2	36.8	49.3	48.0	50.4
Oman	17.4	24.5	27.2	28.7	38.6	39.1	58.3	61.3	58.0	41.2	61.8	73.7	55.8	75.4
Qatar	6.9	2.3	6.1	2.9	9.3	9.2	56.9	18.6	21.1	23.3	26.9	139.0	37.9	70.1
Saudi Arabia	45.4	67.9	55.7	70.7	68.0	94.5	164.3	176.9	236.4	313.6	482.1	546.6	502.9	612.4
Syria	9.5	7.1	11.3	8.2	11.7	9.5	6.2	14.9	18.3	17.0	13.8	21.7	20.4	26.0
United Arab Emirates	31.6	26.4	40.1	32.0	50.1	102.5	62.6	70.0	60.3	104.9	97.2	104.1	121.4	125.1
West Bank	4.6	6.5	6.0	6.7	7.8	8.1	17.0	17.1	14.3	10.8	6.9	7.5	10.7	10.3
Yemen	2.7	0.7	4.8	2.4	3.1	4.1	10.1	9.6	11.4	13.6	17.9	15.2	13.3	16.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Africa	1,055.0	1,159.1	1,235.3	1,355.1	1,461.5	1,569.5	2,256.7	2,136.7	2,075.4	2,468.7	2,431.2	2,539.8	2,802.6	3,294.4
Algeria	38.2	43.0	66.4	50.3	45.5	70.5	129.7	114.4	103.6	156.1	209.4	224.0	237.3	373.3
Angola	3.2	1.6	1.6	1.6	2.5	3.2	2.5	4.2	6.9	7.6	4.9	8.3	3.2	4.5
Benin	3.7	0.9	4.1	3.0	5.3	3.2	6.9	6.5	2.5	8.2	12.6	10.9	10.2	13.1
Botswana	11.8	13.5	17.7	30.5	26.4	23.7	16.3	22.0	15.9	15.3	10.6	18.0	17.0	9.8
Burkina Faso	8.0	4.8	2.4	4.4	3.6	4.4	8.1	7.1	7.8	8.4	19.9	11.1	16.1	10.6
Burundi	1.0	0.1	0.6	0.3	0.6	1.1	0.0	1.9	1.2	0.0	2.3	3.6	0.3	0.1
Cameroon	16.7	13.8	14.3	25.3	17.1	22.1	31.8	42.3	28.0	41.7	42.6	41.3	51.8	38.3
Cape Verde	1.2	0.3	0.2	1.0	0.5	0.3	0.7	1.1	0.2	0.9	2.0	4.3	4.0	2.2
Central African Republic	0.0	0.5	0.3	0.0	1.5	2.2	0.1	1.4	0.8	1.4	1.2	1.1	0.3	0.5
Chad	0.0	1.0	1.8	1.3	1.1	1.5	1.5	2.4	0.9	1.0	1.2	0.9	0.4	0.9
Comoros	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.9	0.0	8.9	0.0	0.2	0.5
Congo, Democratic Republic of the	0.8	0.9	3.2	3.5	4.3	1.8	3.4	3.2	3.6	2.0	6.1	8.3	7.3	10.6
Congo, Republic of the	2.6	1.3	1.3	1.0	1.4	3.3	2.1	1.8	4.7	2.7	6.9	5.6	2.2	4.3
Côte d'Ivoire	6.0	3.4	6.0	7.0	8.5	10.7	14.4	12.5	11.9	13.3	9.1	15.9	13.9	11.7
Djibouti	0.0	0.5	0.0	0.5	0.5	0.0	0.2	0.7	0.7	0.4	1.0	1.3	1.5	0.3
Egypt	184.2	162.6	173.4	198.8	243.4	249.9	444.2	426.2	420.8	697.9	458.3	439.0	594.9	660.0
Equatorial Guinea	0.0	0.0	0.8	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.4	0.5	0.0
Eritrea	2.8	5.5	2.2	6.4	3.8	0.7	1.0	2.5	0.3	0.8	1.0	0.3	2.0	0.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ethiopia	11.8	14.9	15.8	28.6	30.1	26.8	45.8	44.8	30.9	41.3	54.8	67.0	70.3	75.2
Gabon	1.8	0.0	1.7	0.7	0.3	1.9	1.0	0.4	0.6	1.6	4.8	3.6	3.2	3.0
Gambia, The	0.3	1.1	0.0	0.3	0.0	0.0	0.0	0.0	0.1	0.7	1.0	0.9	1.6	0.6
Ghana	10.1	13.8	12.8	22.3	20.5	61.4	57.7	68.1	49.5	76.5	56.8	59.7	75.1	82.3
Guinea	1.1	0.2	0.2	0.0	0.0	0.3	1.1	0.8	1.4	0.1	0.0	0.3	0.2	0.6
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.0	0.6	0.1	0.5
Kenya	41.8	27.3	38.1	27.5	52.2	27.9	59.8	54.2	65.2	56.1	92.5	68.9	63.7	68.6
Lesotho	0.7	0.0	0.1	0.2	0.5	0.6	1.0	0.5	1.0	0.0	0.0	1.3	0.2	1.0
Liberia	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3	0.0	0.0	0.0	0.0	0.1	1.1
Libya	2.3	4.5	11.2	7.3	8.3	6.5	20.2	28.5	10.3	6.6	14.1	6.3	20.1	17.8
Madagascar	5.0	2.7	0.6	3.3	3.5	3.0	19.2	5.8	4.7	4.2	5.0	6.3	6.0	7.6
Malawi	4.0	4.3	8.1	8.2	8.9	9.9	6.2	7.4	16.1	7.2	10.3	8.5	6.9	10.5
Mali	1.5	0.6	0.0	1.5	1.4	1.8	5.7	2.1	2.0	1.7	3.5	1.8	1.1	4.0
Mauritania	0.5	1.4	2.4	1.0	2.3	0.9	1.1	1.0	0.4	0.7	2.1	2.5	0.4	2.7
Mauritius	6.2	6.3	6.0	3.0	4.8	7.5	1.0	7.1	7.6	7.7	9.3	9.3	7.3	5.7
Morocco	56.8	73.8	78.5	79.6	66.1	96.6	90.5	84.0	72.4	84.5	88.1	110.2	122.5	145.5
Mozambique	3.2	6.0	8.4	6.4	4.4	7.8	9.8	5.9	8.1	6.6	3.3	14.4	8.7	6.8
Namibia	6.8	9.4	13.1	7.9	11.5	10.3	9.5	5.6	4.1	8.1	14.2	8.5	12.6	15.3
Niger	3.4	0.8	2.7	4.0	2.8	5.0	16.9	6.3	2.6	4.3	5.6	5.1	5.9	3.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nigeria	84.3	129.8	132.0	157.0	172.8	216.3	319.3	323.5	275.6	260.6	251.7	237.3	294.4	374.9
Rwanda	0.0	2.0	0.0	0.5	1.2	4.0	4.7	9.5	5.8	5.6	1.6	2.8	2.7	4.8
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	12.6	12.7	14.1	9.6	5.5	11.8	12.0	13.0	15.3	20.8	18.5	15.1	14.6	21.4
Seychelles	0.8	1.9	0.5	3.2	4.9	3.4	1.1	2.0	1.2	2.9	5.7	3.1	5.8	1.3
Sierra Leone	0.0	0.0	0.0	0.0	0.0	0.3	1.5	0.5	1.0	2.0	1.6	1.0	1.1	1.6
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.8	0.0
South Africa	398.4	468.6	432.4	493.0	490.5	453.4	594.2	510.2	591.2	623.2	635.7	728.0	694.4	820.4
South Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.3	0.1	0.2
Sudan	3.0	2.4	4.8	4.0	6.1	3.8	13.2	27.0	25.4	9.2	10.0	9.2	9.0	42.6
Swaziland	0.7	3.5	1.2	4.7	1.4	3.0	4.3	7.3	0.2	3.4	1.0	1.0	1.3	0.6
Tanzania	28.2	31.3	34.2	25.1	33.5	26.0	25.5	27.8	28.4	27.1	22.4	33.3	38.4	36.3
Togo	0.6	1.3	1.7	1.2	0.6	0.3	2.4	0.0	1.0	1.7	1.3	1.4	1.9	2.3
Tunisia	44.7	40.6	80.0	75.8	102.6	139.4	216.9	194.9	200.9	204.3	270.4	281.5	310.3	326.4
Uganda	8.1	12.8	13.6	11.8	20.1	12.1	22.8	26.8	20.0	18.8	23.7	23.1	30.8	25.6
Western Sahara	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Zambia	6.4	4.1	11.3	7.6	3.7	6.4	10.9	3.7	3.4	6.9	6.2	8.3	6.1	8.4
Zimbabwe	29.8	27.5	13.6	25.4	35.2	22.3	17.3	17.4	17.9	15.9	16.7	25.0	22.1	34.0
Asia	11,877.0	15,012.6	17,404.8	19,694.2	21,408.7	24,158.4	29,140.7	30,418.2	36,992.0	32,082.4	38,501.7	40,507.5	41,705.5	46,001.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Afghanistan	0.0	0.0	0.0	0.2	2.3	0.8	0.4	2.9	6.9	1.2	2.7	2.0	1.4	4.0
Bangladesh	32.5	49.6	48.6	53.7	65.9	67.9	82.9	82.7	75.2	111.8	108.8	104.0	122.4	155.8
Bhutan	0.1	1.3	0.8	2.4	1.1	1.9	2.3	3.3	0.4	0.4	8.6	4.6	1.4	3.0
Brunei	14.3	2.7	2.7	1.5	3.4	3.6	2.7	2.7	1.9	14.2	8.9	11.4	12.7	22.9
Burma	1.5	2.7	2.0	1.4	3.9	4.9	3.9	1.8	7.3	4.9	3.0	8.1	6.9	7.6
Cambodia	0.8	2.8	1.2	3.1	4.5	7.8	8.3	2.4	4.4	3.4	2.1	7.6	7.9	5.3
China	5,240.6	7,851.0	9,724.0	10,880.6	12,085.2	13,860.7	17,699.0	18,774.9	24,561.2	19,119.3	24,776.9	25,968.4	27,685.6	30,314.9
India	1,744.0	1,807.7	2,123.7	2,346.7	2,768.1	2,972.1	3,393.8	3,566.2	3,779.0	4,089.9	4,270.3	4,607.6	4,652.3	5,372.5
Indonesia	37.2	34.1	47.0	43.9	59.2	58.2	88.1	85.1	136.9	180.4	172.0	221.7	225.0	395.2
Japan	3,056.7	3,156.7	3,376.7	3,708.4	3,482.8	3,981.9	3,855.5	3,687.9	4,004.1	3,700.0	3,918.4	3,866.5	3,718.1	3,623.2
Kazakhstan	15.7	11.8	16.9	14.1	16.2	19.1	20.6	36.8	50.1	31.9	58.6	112.5	101.1	167.9
Kyrgyzstan	1.9	9.0	8.0	17.2	9.3	12.1	4.2	9.6	19.3	8.1	16.5	8.9	12.2	30.0
Laos	3.2	17.4	3.6	8.9	1.3	1.6	2.0	4.8	5.5	7.1	10.5	9.5	8.0	13.5
Malaysia	79.1	75.2	108.0	163.1	198.9	305.9	574.1	643.5	755.1	887.1	979.2	1,147.4	829.7	1,004.2
Maldives	0.7	0.3	0.1	0.1	2.6	0.3	0.7	0.5	1.4	6.2	1.4	1.1	3.6	1.9
Mongolia	6.3	6.0	9.1	7.4	11.3	12.3	11.3	11.9	11.6	11.6	18.7	18.3	15.0	24.8
Nepal	9.4	14.0	27.7	20.4	23.3	19.8	18.0	19.5	22.5	24.3	27.6	41.4	44.6	45.7
North Korea	0.3	0.0	0.1	1.0	0.3	0.5	1.0	0.1	0.2	0.5	0.3	1.4	1.2	1.9
Pakistan	31.0	28.9	54.5	58.2	85.2	90.4	159.8	139.7	172.4	166.0	251.4	303.4	385.2	492.3

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Papua New Guinea	6.0	3.7	2.7	2.7	4.0	5.1	4.5	5.0	1.8	4.8	3.6	3.5	6.4	5.9
Philippines	54.0	57.4	50.8	57.2	60.9	54.3	59.7	54.2	88.4	72.3	97.2	102.0	119.1	150.1
Singapore	122.7	133.4	142.9	154.4	127.5	174.6	180.2	235.4	241.9	258.3	297.8	334.1	316.1	356.6
South Korea	617.4	837.7	794.5	971.2	1,020.3	1,122.4	1,312.6	1,398.4	1,396.6	1,658.3	1,750.7	1,905.5	1,833.0	2,058.1
Sri Lanka	26.2	27.8	25.1	18.3	61.4	35.4	41.6	30.8	37.8	33.3	41.6	56.7	57.2	65.3
Taiwan	645.9	725.4	642.6	891.4	1,024.5	1,054.8	1,227.2	1,221.0	1,202.2	1,262.3	1,198.2	1,162.2	1,013.0	1,044.7
Tajikistan	8.0	6.7	5.3	5.4	5.5	1.1	2.7	6.8	5.9	4.8	11.3	7.6	4.3	3.4
Thailand	105.3	112.3	159.9	225.8	235.6	249.4	315.9	323.4	306.0	329.0	338.9	353.8	416.3	480.7
Timor-Leste	0.0	0.0	0.3	0.5	0.5	0.0	0.0	0.0	1.2	0.4	0.3	0.7	0.5	0.4
Turkmenistan	0.2	1.0	0.1	0.1	1.0	1.0	2.0	0.6	2.5	1.4	2.2	6.2	0.2	1.4
Uzbekistan	6.1	15.3	4.5	5.8	6.6	2.9	16.5	12.3	28.1	12.3	34.4	7.1	8.7	10.2
Vietnam	10.0	20.7	21.8	29.1	35.9	35.8	49.5	54.2	64.2	76.7	89.8	122.7	96.4	138.0
Australia and Oceania	2,543.3	2,598.2	3,195.8	2,959.8	3,489.6	3,142.4	3,922.2	3,557.4	4,454.1	4,239.4	4,114.5	4,600.7	4,585.0	4,607.1
Australia	2,044.0	2,159.3	2,656.3	2,434.7	2,899.1	2,613.0	3,281.4	2,946.8	3,743.7	3,558.0	3,484.8	3,879.1	3,919.6	3,931.4
Cook Islands	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.0	0.8	0.9	0.0	1.5	0.9	0.6
Fiji	4.7	3.9	7.2	7.7	7.2	6.0	12.4	5.0	5.1	12.5	9.2	8.7	9.1	13.1
Kiribati	0.0	0.0	0.0	0.1	0.5	0.0	0.0	0.3	0.0	0.0	0.7	0.8	0.5	0.8
Marshall Islands	1.5	0.0	0.0	0.6	0.0	0.4	0.3	1.0	0.7	1.4	0.0	0.1	0.0	0.0
Micronesia, Federated States of	0.5	0.6	1.0	0.6	0.7	0.3	0.1	0.2	0.0	0.3	2.1	0.2	0.2	0.3

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nauru	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	489.1	431.7	523.7	509.5	579.1	519.8	625.0	600.8	698.9	663.9	613.3	702.9	649.2	650.6
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Palau	0.5	1.0	2.5	0.8	1.6	1.5	0.6	1.0	0.6	0.0	1.9	3.1	2.3	1.3
Samoa	0.0	0.0	1.3	2.7	0.0	0.1	0.2	0.9	1.1	0.4	0.4	0.5	0.3	1.2
Solomon Islands	2.4	0.4	1.4	2.3	0.8	0.8	0.4	0.4	1.7	0.1	1.1	0.7	0.2	2.7
Tonga	0.1	0.0	0.2	0.2	0.4	0.0	0.1	0.0	0.6	0.0	0.0	0.1	1.3	0.8
Tuvalu	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	0.0	0.2
Vanuatu	0.5	1.2	1.7	0.7	0.0	0.3	1.4	0.9	1.1	1.8	0.6	2.1	1.5	4.2
Unassigned	288.8	316.2	451.6	475.0	537.6	458.4	305.8	193.2	271.5	168.1	234.7	134.4	76.5	82.1

na = not applicable; country data do not exist.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis. The sum of the regions, countries, or economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-35

S&E articles in mathematics, by region, country, or economy: 2003–16

(Number)

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	27,507.0	29,372.0	32,088.0	34,864.0	37,426.0	40,605.0	44,007.0	43,949.0	47,640.0	50,778.0	55,441.0	57,247.0	54,516.0	53,927.0
North America	7,178.9	7,372.7	8,309.4	8,514.3	8,834.5	9,273.1	9,858.2	9,381.2	9,715.7	10,240.3	10,220.9	10,462.6	10,336.2	9,856.1
Canada	862.6	902.0	1,021.6	1,104.6	1,089.3	1,220.1	1,331.9	1,223.0	1,196.1	1,258.0	1,323.2	1,322.9	1,304.2	1,171.8
Greenland	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Mexico	149.6	167.5	220.0	196.4	241.6	226.2	289.2	245.7	244.5	331.9	362.2	340.3	328.1	314.9
United States	6,166.7	6,302.9	7,067.9	7,213.3	7,503.6	7,826.9	8,237.2	7,912.6	8,275.1	8,650.5	8,535.3	8,799.5	8,703.9	8,369.4
Central America and Caribbean	21.7	14.2	20.5	26.3	22.8	32.7	37.0	31.3	25.8	47.4	31.8	48.7	42.8	37.3
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas, The	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.3	0.8	0.3	2.3
Barbados	1.3	1.5	0.8	0.5	4.0	1.0	0.8	1.0	0.8	1.3	1.3	0.3	0.3	0.0
Belize	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Costa Rica	1.3	0.0	1.2	3.0	1.6	4.1	2.5	1.6	1.3	1.7	1.0	2.9	2.6	5.6
Cuba	3.3	5.8	9.4	9.6	6.6	15.7	17.6	15.2	6.4	28.5	7.3	24.3	25.1	8.0
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Dominican Republic	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.7	0.7	1.4	0.8	1.3	1.3
El Salvador	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Grenada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Guatemala	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haiti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.3	1.0
Honduras	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jamaica	2.5	0.0	1.7	1.7	0.5	3.5	4.8	2.0	3.3	1.0	1.0	2.8	2.2	2.0
Nicaragua	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Panama	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.4
Puerto Rico	12.2	5.6	6.1	11.5	8.0	8.4	9.3	10.4	12.5	10.6	16.4	13.2	9.0	15.0
Saint Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saint Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saint Vincent and the Grenadines	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	1.0	1.3	1.3	0.0	0.5	0.0	2.0	1.2	0.8	3.5	2.0	3.0	1.5	1.0
South America	644.3	701.2	697.9	789.0	842.5	1,011.5	1,084.2	1,088.4	1,262.4	1,222.4	1,398.0	1,479.4	1,597.4	1,616.1
Argentina	101.2	121.8	104.8	127.7	127.6	160.2	169.4	185.6	207.1	185.1	171.1	198.6	191.2	174.8
Bolivia	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Brazil	369.9	407.6	428.2	448.6	478.2	577.8	632.4	624.5	745.9	709.0	851.2	899.7	956.8	989.5
Chile	86.9	98.7	84.5	122.9	128.1	142.9	167.9	158.4	177.7	178.0	183.4	193.9	230.2	224.6
Colombia	23.5	22.2	23.1	40.8	41.1	52.7	45.0	59.6	67.3	90.5	116.2	109.7	139.9	139.2
Ecuador	0.5	3.0	1.5	1.3	1.2	1.3	1.8	4.5	3.0	5.0	6.0	4.2	4.3	11.8

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Guyana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paraguay	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	0.5	0.0	0.3	0.7	1.5	0.0
Peru	2.1	2.0	1.5	2.3	3.3	0.8	5.2	5.7	2.6	5.5	5.5	9.5	7.8	14.2
Suriname	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.3	0.0
Uruguay	11.0	6.2	8.5	7.6	11.4	10.5	20.0	16.4	16.0	14.6	15.8	23.5	25.9	28.2
Venezuela	49.3	39.8	45.9	37.9	51.0	65.4	42.0	33.1	42.3	34.6	48.5	39.6	39.2	33.8
Europe	12,732.9	13,541.3	14,764.7	15,671.6	16,849.0	17,655.4	18,813.4	18,883.7	20,091.6	20,438.3	21,844.8	22,009.8	22,055.5	21,592.8
EU	10,319.0	10,714.0	11,698.7	12,353.6	13,198.8	13,784.2	14,684.5	14,466.3	15,312.3	15,748.3	16,700.1	16,600.8	16,343.3	15,930.3
Austria	213.5	234.1	252.3	297.1	304.4	334.4	330.5	330.8	379.2	385.0	424.0	415.6	421.5	453.7
Belgium	257.3	304.4	325.1	323.9	355.3	372.9	363.9	379.7	354.7	352.7	398.7	361.5	336.7	361.7
Bulgaria	56.2	73.1	74.7	73.5	79.6	87.9	86.7	89.2	89.4	99.9	106.9	111.6	94.0	108.9
Croatia	37.9	49.6	87.3	66.7	108.4	101.4	104.2	121.0	140.1	129.8	123.8	145.3	142.3	142.2
Cyprus	11.9	18.9	18.8	17.1	28.0	25.4	31.5	35.3	26.5	27.1	32.3	29.2	32.7	25.2
Czech Republic	222.7	196.2	232.1	245.9	395.6	349.8	309.3	391.6	366.6	397.4	443.9	435.3	481.8	474.4
Denmark	124.8	123.2	134.2	127.3	107.4	114.4	115.3	126.0	138.9	129.8	133.8	153.9	167.5	146.9
Estonia	19.3	17.8	25.8	19.9	45.0	23.3	38.0	29.9	29.9	29.7	25.0	32.6	19.4	22.4
Finland	126.8	178.2	117.5	149.4	177.5	177.4	168.8	201.5	209.9	192.8	237.4	248.2	241.2	235.1
France	2,016.2	2,127.8	2,250.8	2,342.6	2,377.8	2,461.3	2,632.8	2,690.7	2,661.3	2,745.4	2,883.0	2,797.4	2,722.3	2,653.8
Germany	1,629.7	1,709.5	1,866.5	1,871.0	1,952.7	2,091.4	2,132.6	2,056.8	2,331.9	2,386.1	2,604.2	2,583.8	2,625.4	2,558.7

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greece	225.4	261.1	273.7	291.5	273.9	324.2	311.7	284.3	295.1	316.6	320.9	301.0	271.4	240.9
Hungary	236.3	215.3	234.9	257.2	235.9	287.4	305.3	274.8	318.7	315.6	340.0	302.2	324.0	338.4
Ireland	68.5	75.9	81.8	103.5	95.6	106.7	121.4	120.6	139.3	124.3	116.0	112.2	98.8	91.5
Italy	1,293.5	1,357.7	1,481.1	1,563.7	1,666.2	1,724.8	1,956.2	1,824.2	1,924.7	2,019.1	2,094.4	2,087.8	2,056.2	1,994.5
Latvia	9.3	4.9	14.5	6.5	33.7	13.3	13.3	14.0	23.1	19.1	23.0	19.1	29.0	23.3
Lithuania	76.4	61.4	71.7	76.8	110.1	79.0	67.8	70.1	70.1	72.3	57.5	66.6	52.1	54.8
Luxembourg	1.5	3.7	1.2	3.2	4.7	13.0	14.2	16.8	28.0	21.1	35.0	45.5	43.2	36.5
Malta	2.0	0.0	2.5	1.5	4.3	3.5	3.0	5.1	3.0	4.5	6.0	12.7	6.5	12.2
Netherlands	328.5	267.7	355.5	345.0	321.8	337.0	352.0	322.1	323.5	348.6	376.3	348.4	394.3	372.4
Poland	534.5	471.8	568.6	574.8	690.6	705.5	826.0	725.2	877.8	1,003.0	1,011.4	1,016.2	1,082.3	1,083.7
Portugal	158.9	165.3	205.8	226.2	224.6	258.7	346.7	344.8	405.1	381.9	407.3	401.8	379.8	337.0
Romania	181.5	179.8	219.4	243.9	268.8	430.4	519.3	500.5	602.8	574.7	601.2	538.3	512.9	479.2
Slovakia	65.6	61.8	61.2	64.5	138.1	107.4	94.1	103.8	137.9	130.3	141.8	113.2	141.2	159.3
Slovenia	67.5	74.0	103.8	80.4	129.1	113.3	106.9	115.5	143.9	138.7	150.4	128.0	141.7	119.9
Spain	952.2	1,029.8	1,047.7	1,228.1	1,297.9	1,302.8	1,374.9	1,347.8	1,349.6	1,450.4	1,531.4	1,584.9	1,392.8	1,298.4
Sweden	222.3	269.4	303.9	313.3	288.4	280.5	326.0	320.9	280.8	295.2	312.2	344.4	356.9	328.8
United Kingdom	1,179.0	1,181.8	1,286.4	1,439.3	1,483.6	1,557.0	1,631.9	1,623.2	1,660.5	1,657.2	1,762.7	1,863.8	1,775.4	1,776.7
Other Europe	2,413.9	2,827.3	3,066.1	3,318.0	3,650.2	3,871.2	4,129.0	4,417.4	4,779.3	4,690.0	5,144.7	5,409.1	5,712.2	5,662.5
Albania	1.5	0.5	0.5	0.3	1.3	2.0	0.0	2.9	7.7	6.0	10.7	10.9	7.9	3.8

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belarus	69.2	68.8	77.0	82.8	69.1	61.3	75.7	83.3	86.3	77.2	68.6	74.8	84.1	91.4
Bosnia and Herzegovina	1.3	0.7	4.7	6.8	13.3	6.9	7.7	12.8	10.6	12.6	10.8	18.7	19.9	15.7
Holy See (Vatican City)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Iceland	4.2	4.1	3.4	6.3	8.5	12.9	8.7	22.5	7.3	8.7	4.8	8.2	5.7	10.4
Kosovo	0.0	0.0	0.0	0.0	0.0	5.3	3.0	12.8	7.3	6.7	12.1	12.5	7.3	7.1
Liechtenstein	0.0	0.0	1.0	1.5	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.0
Macedonia	6.3	6.0	4.5	4.8	8.3	7.2	7.8	8.2	13.9	12.4	9.8	15.7	13.4	16.8
Moldova	5.8	2.7	9.8	6.3	4.7	6.2	8.3	5.3	14.6	29.0	20.2	26.4	22.1	14.6
Monaco	0.0	0.0	0.2	0.0	1.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Montenegro[a]	na	na	na	na	4.8	2.0	6.3	10.8	17.9	18.5	21.7	12.3	21.7	12.2
Norway	92.5	110.0	109.2	159.1	147.9	169.6	193.4	177.3	186.5	204.6	204.3	205.3	192.2	234.2
Russia	1,536.4	1,713.8	1,836.8	1,878.2	2,129.1	2,261.9	2,287.7	2,512.3	2,504.5	2,379.0	2,515.4	2,835.3	3,356.9	3,195.4
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Serbia[a]	na	na	na	na	194.9	178.9	201.5	215.1	263.3	262.9	239.4	207.0	207.4	185.5
Serbia and Montenegro[b]	70.7	77.0	99.1	113.1	na	na	na	na	na	na	na	na	na	na
Switzerland	199.1	224.7	250.1	277.4	265.3	279.6	301.7	275.3	334.0	352.8	420.8	429.6	458.4	455.6
Turkey	210.1	329.3	341.9	454.1	451.9	508.9	635.1	688.2	832.3	837.9	1,173.3	1,040.8	881.4	1,001.5
Ukraine	216.8	289.7	327.9	327.2	350.2	368.5	390.9	390.7	493.2	481.3	432.7	511.3	432.9	418.4

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Middle East	785.1	913.2	1,071.3	1,262.6	1,331.4	1,499.2	1,570.4	1,716.7	2,279.4	2,593.7	2,814.2	3,123.8	2,735.1	2,926.6
Armenia	10.6	22.8	17.4	21.3	21.3	17.2	45.8	49.3	61.5	41.9	57.1	43.7	54.9	49.2
Azerbaijan	11.8	17.5	18.0	27.7	24.5	29.5	42.8	53.8	43.4	54.8	47.4	63.7	58.2	67.1
Bahrain	2.0	3.2	4.8	3.3	2.0	6.0	1.0	5.3	1.8	5.0	8.0	5.8	5.2	2.3
Gaza Strip	1.0	0.0	1.5	2.3	0.7	2.3	2.5	1.8	5.5	4.0	4.6	2.3	2.3	1.0
Georgia	30.5	40.9	48.5	55.3	49.0	72.0	83.1	49.5	160.6	127.4	177.1	132.8	154.3	172.8
Iran	140.5	223.2	335.5	445.5	546.2	542.2	650.6	705.7	1,069.8	1,205.4	1,280.1	1,424.7	1,236.0	1,354.7
Iraq	1.0	1.0	1.6	4.7	3.5	13.0	2.0	12.8	12.2	25.0	21.1	30.8	25.3	38.3
Israel	373.9	381.2	388.1	436.4	429.1	494.7	456.7	443.6	456.8	463.8	489.2	547.8	457.2	471.4
Jordan	29.0	41.5	51.6	55.5	54.1	69.2	49.9	66.2	77.6	119.0	87.6	98.3	66.3	92.7
Kuwait	19.3	13.7	17.9	23.8	16.8	26.6	18.5	25.7	23.9	20.8	36.1	36.9	33.6	37.4
Lebanon	12.9	12.2	9.9	14.8	13.1	13.2	15.7	16.4	20.2	32.4	26.1	26.8	31.4	26.4
Oman	19.8	22.6	17.1	18.8	16.1	17.7	22.0	35.8	17.8	24.8	19.1	30.5	20.8	25.7
Qatar	1.7	6.0	4.0	3.5	10.8	9.1	7.9	8.2	15.5	10.6	10.6	24.8	19.6	19.2
Saudi Arabia	89.4	82.4	106.5	107.5	108.4	148.0	138.5	206.3	260.3	407.9	503.2	591.7	502.7	501.4
Syria	2.3	0.0	1.3	1.2	1.7	5.3	1.0	3.5	4.0	2.0	4.0	5.5	4.0	3.8
United Arab Emirates	34.8	39.8	40.1	33.0	29.4	26.9	26.4	28.6	38.5	45.2	34.8	46.2	51.5	60.2
West Bank	3.7	4.9	5.8	5.3	4.2	2.0	1.8	0.3	1.3	0.1	2.4	2.6	3.7	0.3
Yemen	1.0	0.5	1.8	3.0	0.5	4.3	4.5	3.8	8.8	3.3	5.7	9.0	8.1	2.9

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Africa	544.7	553.2	619.9	664.9	650.9	827.8	899.3	922.5	1,091.4	1,119.3	1,259.9	1,439.7	1,283.9	1,505.9
Algeria	44.3	43.1	72.9	92.8	89.0	120.6	130.0	167.7	183.5	190.2	227.8	268.1	268.3	290.0
Angola	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benin	1.8	2.0	1.0	1.8	2.0	1.0	5.5	6.2	6.3	0.3	9.8	3.3	5.8	5.3
Botswana	3.3	7.0	4.3	5.0	3.0	11.5	4.4	5.5	7.5	9.2	12.5	12.7	13.9	8.9
Burkina Faso	0.5	0.0	0.3	0.7	1.0	0.6	5.4	3.4	7.0	13.2	13.3	7.6	5.8	12.3
Burundi	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0
Cameroon	5.5	7.4	9.7	6.3	11.5	12.0	14.8	15.7	21.6	17.8	25.2	28.8	17.7	18.0
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.5	0.2	0.5	1.0	0.3	0.0	0.6	0.0	0.0
Central African Republic	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.3	0.5	0.0
Chad	0.3	0.3	0.0	1.3	0.0	0.0	0.0	0.3	0.0	0.0	0.8	0.0	0.0	1.0
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.2
Congo, Democratic Republic of the	0.0	0.0	0.0	0.5	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.5	0.7	0.8
Congo, Republic of the	1.0	0.0	0.0	0.0	0.1	2.8	1.0	1.0	1.0	0.0	1.6	0.0	0.0	2.2
Côte d'Ivoire	4.0	0.0	2.0	1.2	1.8	18.6	9.5	9.3	8.7	10.3	8.3	6.8	10.0	8.0
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Egypt	174.5	184.2	147.8	129.6	118.8	172.3	176.0	150.9	185.2	212.9	230.7	225.8	185.6	231.0
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eritrea	0.0	0.0	0.5	0.5	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	1.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ethiopia	0.2	0.0	3.1	0.5	3.2	4.0	7.5	5.1	8.2	3.4	4.2	4.5	6.0	6.5
Gabon	1.0	0.3	1.0	0.0	0.3	1.0	1.9	1.0	1.1	2.8	0.9	1.0	0.6	1.9
Gambia, The	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Ghana	0.0	0.0	0.0	0.0	1.3	1.2	1.0	2.5	1.9	5.0	2.8	4.0	7.7	5.6
Guinea	0.0	0.0	0.2	0.0	1.0	0.5	1.0	0.0	0.0	0.3	0.3	0.3	0.0	3.0
Guinea-Bissau	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	1.3	0.5	0.0	0.0	0.5	2.7	4.4	3.0	4.7	6.3	8.7	4.3	4.8	9.8
Lesotho	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.5	0.3	0.0	0.2	0.0	0.0
Liberia	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Libya	1.8	1.0	1.5	0.8	0.6	1.3	2.0	3.0	0.3	3.3	0.8	1.5	2.5	6.3
Madagascar	0.5	1.5	3.5	1.0	2.0	2.4	1.3	1.0	0.5	1.5	2.5	0.5	1.0	2.0
Malawi	0.0	1.0	0.0	1.0	0.0	0.0	1.3	0.0	0.0	0.0	0.7	0.4	0.5	0.6
Mali	0.0	0.0	0.0	0.0	1.0	0.0	1.7	2.7	0.5	0.0	1.7	1.5	1.5	1.3
Mauritania	1.5	2.4	1.7	2.3	2.2	0.0	0.0	0.0	0.5	0.5	1.0	0.5	0.0	1.3
Mauritius	0.5	0.0	3.0	4.0	0.5	6.8	7.3	3.9	1.0	4.3	4.8	1.6	2.0	3.4
Morocco	109.0	99.3	118.3	108.3	96.8	120.3	123.3	122.8	151.4	120.4	149.1	203.3	189.3	229.1
Mozambique	0.0	1.0	0.3	0.3	0.0	0.5	0.0	0.0	0.0	1.0	0.3	1.0	1.2	0.4
Namibia	1.0	0.0	0.5	0.5	0.0	0.0	0.0	1.5	1.0	1.8	0.0	1.5	2.0	1.0
Niger	1.0	0.0	1.0	1.0	0.3	0.8	0.3	0.3	0.0	0.5	2.0	2.8	0.8	1.5

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nigeria	10.7	8.5	14.1	13.9	18.5	31.5	33.2	42.5	65.8	61.0	57.7	91.3	64.1	67.3
Rwanda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3	1.3	0.0
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	3.9	3.3	3.5	5.8	4.2	6.9	5.8	9.2	19.2	12.2	14.3	17.4	18.5	20.3
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sierra Leone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
South Africa	103.0	115.6	128.7	189.2	169.3	170.9	203.1	163.2	207.3	244.4	266.7	331.8	246.7	247.9
South Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sudan	0.0	0.3	0.3	1.5	0.0	2.0	0.0	2.3	2.5	1.6	3.1	5.9	0.8	0.3
Swaziland	0.3	3.0	1.1	0.3	0.0	0.3	0.5	1.2	1.3	0.6	1.5	1.5	0.1	0.0
Tanzania	1.0	0.0	0.0	1.0	1.3	2.0	1.9	0.2	7.8	0.7	2.7	1.3	1.0	4.0
Togo	1.0	1.3	0.0	0.0	0.3	1.0	1.0	0.0	1.3	0.7	0.5	1.0	0.9	0.0
Tunisia	71.4	68.8	94.7	91.5	113.8	126.2	148.5	190.5	186.3	188.8	194.3	198.3	214.9	303.5
Uganda	0.0	0.0	1.5	0.0	2.5	2.0	0.2	1.7	0.3	1.3	2.8	3.0	1.1	4.3
Western Sahara	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zambia	0.0	0.0	0.0	0.0	0.3	0.0	0.0	1.0	0.0	0.0	0.0	0.3	2.0	0.8
Zimbabwe	0.5	0.3	1.8	1.0	2.9	2.5	4.2	0.6	4.7	2.5	3.3	3.8	4.1	3.5
Asia	4,979.3	5,423.5	5,765.8	7,067.2	8,019.0	9,388.7	10,872.4	11,112.1	12,316.9	14,229.0	17,013.2	17,696.4	15,619.5	15,537.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	35.9
Bangladesh	6.2	5.5	6.2	4.3	3.4	14.8	14.5	19.4	21.5	22.3	18.4	19.5	19.5	21.0
Bhutan	0.0	0.0	0.0	1.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brunei	4.3	2.8	3.5	1.0	5.1	6.7	2.5	1.3	3.8	4.5	4.3	4.7	0.9	3.3
Burma	0.0	0.0	0.0	0.3	1.0	0.0	1.0	1.0	1.0	0.8	0.7	0.7	0.0	0.0
Cambodia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0
China	2,049.4	2,513.5	2,636.8	3,522.3	4,135.0	4,857.4	5,855.8	5,981.2	6,568.8	7,906.5	9,906.3	10,543.9	8,720.2	8,656.1
India	546.6	503.1	554.7	620.3	763.7	973.4	1,131.6	1,142.7	1,467.7	1,571.1	1,884.2	1,937.8	2,172.6	2,117.5
Indonesia	4.5	4.3	5.8	8.5	11.5	20.4	29.5	32.4	24.4	32.0	68.7	47.8	58.3	79.2
Japan	1,269.1	1,277.1	1,238.8	1,337.3	1,442.2	1,565.9	1,655.6	1,629.6	1,636.2	1,730.5	1,784.6	1,786.2	1,695.8	1,593.1
Kazakhstan	25.3	26.5	14.9	22.8	22.2	15.5	26.8	41.8	34.3	44.5	52.3	72.9	95.0	91.4
Kyrgyzstan	0.0	3.0	0.0	3.5	3.0	4.0	2.3	1.3	1.3	1.5	0.9	4.0	2.0	5.4
Laos	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.3	0.1	0.1	0.3	0.2	0.0
Malaysia	20.0	17.3	28.7	51.8	42.7	70.0	117.0	142.7	185.2	239.2	291.1	255.0	257.0	176.9
Maldives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0
Mongolia	2.1	0.3	1.1	0.0	0.0	0.5	3.7	5.0	2.5	7.0	5.3	7.1	9.5	7.7
Nepal	0.3	0.0	1.0	0.3	0.3	0.6	0.8	1.5	1.0	0.0	1.3	2.4	3.1	4.5
North Korea	0.0	0.0	0.3	0.3	1.5	0.1	1.3	1.3	0.5	0.3	0.5	3.0	8.3	4.0
Pakistan	9.8	20.7	35.5	62.4	89.6	119.4	155.0	176.3	215.9	266.0	285.9	353.5	295.0	334.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Papua New Guinea	1.0	1.2	0.3	0.2	1.0	0.2	0.0	0.3	0.3	0.0	2.5	1.8	0.3	0.0
Philippines	7.3	3.5	6.6	8.9	8.8	11.2	6.7	4.4	9.8	15.5	7.8	21.5	35.3	29.6
Singapore	137.4	123.4	137.7	131.2	136.7	147.5	132.7	137.4	152.5	166.0	157.5	198.9	190.3	173.8
South Korea	496.3	466.9	562.3	623.9	696.1	789.3	834.7	846.1	915.4	1,076.0	1,219.5	1,153.7	1,043.5	1,118.2
Sri Lanka	0.8	0.1	3.6	4.9	3.4	0.9	3.7	1.8	2.2	0.9	5.1	4.7	6.1	10.3
Taiwan	312.9	351.8	400.2	509.1	498.5	586.7	623.8	618.6	629.1	625.7	687.1	591.4	480.6	456.8
Tajikistan	5.5	5.5	9.1	6.5	3.0	3.0	3.5	7.8	6.5	4.7	10.4	8.1	5.7	7.3
Thailand	23.3	18.6	37.7	59.4	57.8	60.5	118.2	144.1	224.9	274.3	327.6	354.4	239.0	281.1
Timor-Leste	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turkmenistan	1.0	1.3	0.5	1.6	1.0	0.8	1.3	0.6	3.7	4.6	2.5	3.9	1.0	0.3
Uzbekistan	10.3	26.4	20.6	27.2	28.7	23.5	33.5	27.6	37.0	41.5	53.2	58.8	52.3	40.5
Vietnam	45.7	50.7	60.1	58.4	62.1	116.3	116.9	145.6	166.8	193.5	234.9	260.5	228.0	289.3
Australia and Oceania	535.8	658.8	630.0	641.8	661.8	769.7	792.1	732.1	784.7	850.1	818.5	936.1	806.5	812.8
Australia	440.2	560.3	534.6	544.9	551.1	663.5	673.4	619.4	662.9	719.2	679.2	802.1	673.5	688.9
Cook Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fiji	1.1	1.5	1.5	2.5	0.0	1.0	1.0	0.7	2.5	0.7	1.0	1.0	5.5	2.9
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Micronesia, Federated States of	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	94.6	97.0	93.9	94.5	110.7	104.7	117.7	112.0	119.3	130.2	138.3	133.0	127.1	121.0
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unassigned	84.4	193.8	208.3	226.2	214.2	147.0	80.0	81.1	72.0	37.6	39.7	50.3	38.9	41.8

na = not applicable; country data do not exist.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis. The sum of the regions, countries, or economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-36

S&E articles in medical sciences, by region, country, or economy: 2003–16

(Number)

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	308,849.0	328,054.0	354,744.0	373,230.0	386,240.0	402,167.0	422,899.0	435,624.0	457,789.0	482,301.0	497,032.0	519,055.0	517,978.0	507,604.0
North America	96,347.1	102,261.3	108,480.7	112,691.6	114,610.2	118,223.3	122,557.5	124,420.6	129,898.2	134,686.4	136,761.3	142,860.4	141,996.4	137,171.6
Canada	9,045.6	9,661.5	10,576.2	11,228.6	11,784.2	12,523.9	13,171.2	13,319.3	13,861.4	14,652.5	14,954.6	15,591.3	15,563.8	14,860.9
Greenland	2.2	11.4	4.3	2.4	2.8	3.4	5.9	6.3	3.6	8.9	12.8	5.2	5.8	8.0
Mexico	1,342.5	1,446.7	1,651.4	1,859.3	1,755.5	1,992.1	2,092.7	2,166.4	2,139.7	2,492.7	2,340.0	2,899.0	2,725.0	2,661.2
United States	85,956.8	91,141.7	96,248.8	99,601.3	101,067.8	103,704.0	107,287.8	108,928.6	113,893.5	117,532.2	119,453.9	124,364.9	123,701.7	119,641.5
Central America and Caribbean	528.8	576.3	637.0	928.6	929.2	914.8	1,207.2	1,154.3	1,339.2	1,332.9	1,228.0	1,195.4	1,159.9	999.2
Antigua and Barbuda	1.8	0.5	1.3	1.3	4.0	5.4	2.9	2.1	0.0	0.6	1.3	0.6	1.6	6.1
Bahamas, The	1.5	0.5	2.1	4.0	3.0	0.9	4.1	0.2	6.1	1.5	6.0	2.0	3.6	3.7
Barbados	7.8	14.4	11.0	17.9	20.4	9.2	10.6	6.5	8.9	13.0	9.2	9.9	9.6	16.3
Belize	1.3	1.3	0.2	0.0	0.0	0.5	1.5	2.1	0.2	2.8	0.6	1.5	2.1	0.2
Costa Rica	22.4	25.1	34.0	35.1	28.5	35.0	44.6	38.8	36.8	25.4	40.1	46.4	33.6	51.2
Cuba	272.0	284.5	317.9	572.1	549.4	482.0	735.5	701.0	856.5	831.4	729.1	741.6	711.5	546.0
Dominica	2.1	2.2	0.6	0.5	0.3	0.0	0.0	2.3	1.8	2.5	6.3	5.1	4.2	2.7
Dominican Republic	5.5	6.0	7.9	10.2	8.8	5.8	5.5	4.5	6.3	7.8	17.2	15.1	12.9	12.3
El Salvador	2.5	2.4	5.4	1.9	4.7	5.9	6.8	3.3	7.0	9.2	3.9	10.3	8.6	10.1

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Grenada	3.0	2.3	3.5	3.0	9.3	9.4	10.1	10.3	11.0	18.3	20.8	27.8	16.5	21.1
Guatemala	11.1	6.3	26.4	17.9	17.0	18.0	29.4	15.0	21.5	23.5	38.4	29.4	32.1	36.0
Haiti	3.9	5.0	5.3	8.1	6.1	4.3	5.8	7.1	7.9	9.0	16.4	22.5	22.2	16.1
Honduras	5.1	5.0	8.9	3.5	6.4	4.6	6.5	9.4	4.7	7.9	6.6	7.9	13.4	9.0
Jamaica	55.9	83.6	63.9	66.1	84.1	93.6	90.0	95.2	103.1	138.4	93.3	47.9	54.4	38.9
Nicaragua	3.2	5.1	4.1	11.1	4.8	6.9	10.6	10.6	10.3	11.1	11.4	12.5	8.4	12.0
Panama	4.0	11.4	9.8	10.6	14.9	18.6	16.4	11.7	31.3	17.0	31.1	28.9	30.5	18.5
Puerto Rico	85.5	83.6	87.0	120.4	109.9	161.1	149.7	173.7	146.8	143.6	138.0	131.0	142.6	135.2
Saint Kitts and Nevis	0.0	0.0	1.7	1.8	0.6	3.8	1.3	2.4	2.5	3.5	6.8	6.7	8.2	13.3
Saint Lucia	0.0	0.0	0.0	0.5	0.6	0.2	0.0	2.4	2.0	0.0	1.2	0.0	1.1	2.2
Saint Vincent and the Grenadines	0.8	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.1	1.2	0.4	0.5	0.1	0.7
Trinidad and Tobago	39.4	37.1	46.0	42.6	56.6	49.7	74.7	55.8	74.6	65.3	49.7	47.8	42.9	47.8
South America	6,257.8	7,073.8	8,189.4	10,533.4	11,785.6	13,502.7	14,589.2	15,887.1	16,862.4	18,237.9	18,163.4	19,413.7	18,487.5	18,126.7
Argentina	1,005.0	1,009.6	1,038.5	1,136.4	1,088.5	1,139.4	1,341.0	1,519.2	1,556.7	1,480.0	1,592.3	1,754.6	1,658.1	1,535.7
Bolivia	8.1	6.9	11.4	15.4	13.8	22.2	16.4	14.4	10.4	19.0	13.8	19.0	13.7	15.7
Brazil	4,147.0	4,929.8	5,801.8	7,727.9	8,850.5	10,059.7	10,884.1	11,908.9	12,701.8	13,871.8	13,540.9	14,182.0	13,284.3	12,868.6
Chile	505.8	524.2	608.9	763.3	829.9	898.8	910.7	943.1	987.5	1,110.1	1,083.0	1,314.6	1,331.6	1,254.3
Colombia	186.1	212.1	290.3	398.1	479.1	716.1	709.5	736.2	832.8	949.5	1,143.5	1,342.3	1,296.4	1,492.2
Ecuador	42.7	32.5	36.4	37.6	45.3	41.1	47.5	54.2	42.7	75.3	63.0	87.4	92.1	151.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Guyana	3.0	1.8	0.8	3.5	2.5	1.5	2.3	3.7	2.7	4.0	4.6	3.3	3.7	4.7
Paraguay	5.2	5.5	7.8	6.7	15.4	10.0	13.4	13.8	21.2	16.2	17.9	21.7	35.3	35.4
Peru	75.0	77.4	84.8	101.6	94.8	125.3	186.0	205.4	244.3	265.2	286.2	296.6	378.9	365.9
Suriname	1.9	1.1	0.8	0.3	1.1	0.7	0.6	4.3	0.8	3.4	4.9	2.3	6.5	9.6
Uruguay	64.9	69.8	75.0	85.0	71.1	98.1	77.5	106.3	105.4	89.6	104.0	118.3	114.3	136.2
Venezuela	213.1	203.1	233.0	257.6	293.6	389.9	400.3	377.5	356.0	353.7	309.3	271.5	272.6	257.2
Europe	130,581.8	137,692.9	146,690.8	152,678.4	156,554.5	159,771.9	165,187.3	166,268.1	171,508.8	179,177.8	181,677.7	185,763.5	182,776.8	178,115.9
EU	115,202.8	121,224.4	128,163.3	133,986.9	137,236.3	139,820.5	143,917.0	144,553.2	148,574.4	153,693.6	154,805.6	158,081.5	154,111.2	149,513.5
Austria	2,787.9	2,785.7	2,798.6	2,871.4	2,794.6	2,761.2	2,850.8	2,756.5	2,926.0	2,945.1	2,853.7	3,078.1	2,989.6	2,789.4
Belgium	3,423.6	3,442.2	3,681.1	3,853.3	3,995.1	4,062.9	4,169.3	4,138.9	4,096.9	4,339.0	4,287.5	4,570.0	4,433.9	4,255.3
Bulgaria	467.0	494.9	476.1	426.1	434.9	422.9	413.5	406.8	432.4	492.2	495.6	445.2	482.4	425.6
Croatia	829.3	944.2	942.2	1,007.9	1,045.2	943.2	1,141.2	1,184.9	1,301.4	1,291.5	1,247.4	1,229.9	1,082.8	884.1
Cyprus	17.5	24.1	28.5	28.3	30.6	43.0	86.0	58.5	69.2	87.0	113.6	107.0	107.8	116.4
Czech Republic	2,026.2	2,150.5	2,193.9	2,344.9	2,419.2	2,369.3	2,486.4	2,658.9	2,808.0	2,825.1	2,624.3	2,827.5	2,819.4	2,720.4
Denmark	2,377.2	2,596.5	2,638.1	2,770.3	2,904.8	3,105.9	3,169.1	3,308.9	3,617.5	4,020.4	4,114.9	4,506.7	4,316.2	4,287.0
Estonia	69.9	81.6	75.2	89.1	95.6	97.9	103.0	125.1	114.8	124.8	134.3	132.2	119.2	126.0
Finland	2,089.0	2,199.1	2,154.6	2,086.2	2,018.4	2,033.4	2,152.9	2,117.4	2,073.8	2,175.8	2,092.3	2,205.8	2,082.4	2,160.7
France	13,947.1	14,522.3	15,210.5	15,359.7	15,881.6	16,226.0	16,331.7	16,496.8	16,469.7	17,020.5	16,882.2	16,960.4	16,472.3	16,542.5
Germany	21,129.3	21,865.4	22,967.5	23,823.3	24,137.5	24,276.1	24,477.8	24,602.3	25,079.8	25,646.8	25,708.0	26,425.7	25,666.5	25,150.8

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greece	1,968.1	2,369.9	2,701.4	3,062.2	3,197.6	3,396.4	3,594.1	3,385.8	3,499.1	3,167.6	3,116.2	2,947.6	2,750.3	2,504.3
Hungary	1,176.7	1,300.7	1,474.8	1,457.0	1,465.0	1,532.5	1,437.2	1,419.2	1,490.2	1,418.0	1,321.3	1,502.9	1,365.5	1,318.2
Ireland	850.5	972.9	1,019.3	1,142.5	1,235.4	1,340.7	1,526.3	1,662.2	1,782.8	1,738.3	1,852.1	1,920.6	1,827.6	1,757.7
Italy	13,720.7	14,042.6	14,776.3	15,447.3	16,206.2	16,744.3	16,752.4	16,951.1	17,011.7	19,053.6	19,377.9	19,617.7	19,270.8	18,813.5
Latvia	12.0	17.2	23.0	22.8	27.2	24.6	26.7	32.7	76.3	74.8	85.3	76.5	55.2	51.5
Lithuania	220.7	292.0	287.1	212.4	173.6	218.3	233.5	194.7	200.9	227.5	249.5	271.7	260.0	262.1
Luxembourg	21.9	28.1	38.5	31.7	31.6	49.8	57.4	53.1	57.1	67.8	68.9	85.1	66.2	83.7
Malta	25.6	23.7	18.7	14.2	26.2	58.6	54.2	52.6	66.2	83.6	96.6	98.5	96.2	97.9
Netherlands	6,483.9	7,155.9	7,929.5	8,339.9	8,596.0	8,706.6	9,722.2	9,647.8	10,124.7	10,524.8	10,901.9	10,912.5	10,745.9	10,221.0
Poland	4,911.5	5,625.9	6,148.6	6,742.3	6,308.0	6,264.1	6,287.0	6,489.0	6,683.7	6,602.3	6,749.4	6,665.3	6,492.2	6,110.8
Portugal	653.9	753.2	813.8	942.3	1,000.6	1,219.1	1,363.8	1,574.9	1,919.9	2,107.0	2,266.9	2,397.7	2,440.4	2,381.4
Romania	430.8	502.0	546.3	477.3	588.1	876.5	919.6	1,230.4	1,512.0	1,380.6	1,269.0	1,713.3	1,712.2	1,672.1
Slovakia	541.0	525.5	540.6	580.5	495.6	592.4	608.2	690.3	587.2	622.9	545.6	661.4	646.7	640.0
Slovenia	287.4	299.0	303.7	370.8	317.5	405.1	542.1	522.0	650.0	584.0	565.4	547.9	555.5	573.5
Spain	8,499.2	8,993.2	9,830.2	10,859.8	11,138.7	11,721.5	11,688.8	12,235.7	12,358.7	12,461.4	12,549.3	13,015.5	12,899.0	12,750.2
Sweden	4,397.9	4,409.5	4,725.9	4,698.5	4,836.5	4,722.1	4,942.0	4,834.3	4,893.4	4,958.6	5,062.1	5,409.5	5,402.3	5,088.3
United Kingdom	21,837.3	22,806.6	23,819.2	24,925.0	25,835.1	25,606.2	26,779.8	25,722.0	26,671.0	27,652.7	28,174.3	27,749.1	26,952.8	25,729.2
Other Europe	15,379.0	16,468.5	18,527.5	18,691.4	19,318.2	19,951.3	21,270.3	21,714.9	22,934.4	25,484.2	26,872.0	27,682.0	28,665.6	28,602.4
Albania	4.7	4.1	5.2	7.1	7.2	14.8	15.5	22.8	27.3	34.8	47.8	59.7	40.5	45.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Andorra	2.5	0.4	3.6	3.1	3.6	0.7	2.3	0.8	0.0	0.2	0.0	0.5	3.6	2.1
Belarus	42.5	36.5	40.4	69.5	50.3	55.8	44.4	39.5	57.3	44.1	51.3	77.0	86.5	82.2
Bosnia and Herzegovina	81.3	132.2	146.3	126.1	98.9	173.2	174.2	202.1	211.3	205.8	150.8	154.4	127.2	142.8
Holy See (Vatican City)	0.0	0.1	0.0	0.0	0.0	0.5	0.1	1.0	1.0	0.9	0.1	2.0	1.5	1.5
Iceland	58.0	80.9	95.4	109.2	78.3	112.2	133.1	160.2	126.5	149.0	139.6	140.5	135.2	137.4
Kosovo	0.0	0.0	0.0	0.0	0.0	17.6	47.9	42.1	28.6	31.7	34.8	35.7	38.4	50.1
Liechtenstein	1.9	3.6	11.6	7.9	4.2	9.0	4.6	9.9	10.9	5.6	3.9	3.1	7.3	3.9
Macedonia	21.0	45.5	54.1	63.9	70.2	94.5	104.5	87.9	86.8	121.2	124.3	136.8	150.4	96.1
Moldova	6.7	8.9	12.9	1.8	2.8	5.6	7.2	12.3	10.4	10.4	14.2	13.9	12.1	22.0
Monaco	7.2	10.5	10.3	9.1	7.6	11.2	11.7	14.4	16.8	10.1	13.3	17.0	14.7	15.9
Montenegro[a]	na	na	na	na	1.6	11.1	13.3	12.2	13.0	17.0	24.9	26.2	21.8	23.2
Norway	1,619.1	1,641.0	1,931.6	1,897.9	2,014.8	2,134.3	2,273.3	2,222.1	2,310.9	2,456.6	2,395.0	2,382.8	2,408.1	2,595.8
Russia	2,121.7	2,025.7	2,237.0	2,071.7	2,105.0	2,134.8	2,249.4	2,219.6	2,578.3	3,247.4	3,626.2	3,791.3	4,271.2	4,883.1
San Marino	0.2	0.3	1.3	0.7	1.8	2.7	0.4	0.1	0.4	0.1	2.3	0.6	5.0	1.6
Serbia[a]	na	na	na	na	703.0	842.0	973.5	1,047.8	1,149.2	1,332.9	1,248.9	1,207.5	1,091.7	1,033.4
Serbia and Montenegro[b]	452.6	598.1	700.4	694.9	na	na	na	na	na	na	na	na	na	na
Switzerland	4,037.5	4,340.2	4,554.1	4,809.0	5,035.8	5,058.0	5,153.6	5,313.5	5,541.4	5,783.4	5,952.5	5,981.3	5,924.2	5,859.0
Turkey	6,769.9	7,385.1	8,578.7	8,658.2	8,997.6	9,117.1	9,886.9	10,176.2	10,581.0	11,850.3	12,774.8	13,333.7	13,952.0	13,170.6
Ukraine	152.4	155.6	144.9	161.3	135.3	156.1	174.2	130.4	183.4	182.7	267.3	317.9	373.9	436.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Middle East	5,267.6	5,710.3	6,457.5	7,245.5	7,824.2	8,692.7	9,668.3	10,316.1	11,784.2	12,791.1	14,151.7	15,241.2	14,948.8	16,178.8
Armenia	29.9	18.3	33.8	37.4	23.3	32.0	48.7	47.8	57.0	71.4	60.9	74.0	69.0	55.4
Azerbaijan	56.2	127.2	69.6	43.0	179.7	175.5	170.3	132.9	128.4	128.1	88.8	25.8	19.3	52.0
Bahrain	45.2	62.2	73.9	84.7	66.8	61.7	80.5	60.6	67.5	59.4	100.5	112.9	75.0	114.5
Gaza Strip	1.8	4.3	4.2	4.5	7.9	8.9	9.9	7.3	9.2	6.9	13.3	19.2	14.3	5.3
Georgia	14.0	23.1	120.4	60.9	46.2	51.8	64.7	34.1	59.2	59.9	52.4	95.5	93.8	155.2
Iran	626.0	799.4	1,373.5	1,978.4	2,506.8	3,302.0	4,110.6	4,759.7	5,959.7	6,543.3	7,608.7	8,298.0	8,016.4	9,005.2
Iraq	42.7	41.9	61.7	92.5	81.7	109.9	130.6	169.9	154.5	203.9	177.3	136.5	106.0	145.6
Israel	2,985.8	3,106.7	3,110.3	3,160.0	3,177.1	2,962.0	2,966.5	2,805.2	2,795.3	2,995.9	3,035.2	3,117.8	3,094.5	3,070.0
Jordan	137.0	165.2	174.5	235.7	194.9	250.8	254.0	305.6	285.8	265.6	283.5	267.4	252.3	274.0
Kuwait	147.1	159.6	185.8	186.2	193.7	242.5	207.8	214.2	194.3	190.8	199.1	186.3	170.0	161.6
Lebanon	205.9	183.8	231.9	267.1	265.0	300.4	291.9	279.2	295.0	330.9	364.3	368.9	417.4	438.1
Oman	92.7	94.2	85.8	92.3	85.9	91.9	96.6	84.5	182.5	158.2	207.5	179.0	176.7	162.2
Qatar	52.6	58.2	88.8	104.8	118.6	101.3	108.1	125.4	130.0	152.2	167.4	224.1	239.6	265.6
Saudi Arabia	672.3	704.8	655.9	690.2	689.8	760.8	868.8	1,005.6	1,148.6	1,277.2	1,426.4	1,715.6	1,775.0	1,828.9
Syria	18.0	20.4	24.0	14.2	22.4	27.7	27.1	35.9	45.2	69.4	73.4	60.1	68.6	84.3
United Arab Emirates	122.7	116.7	130.1	161.1	135.0	176.1	178.8	192.7	218.3	213.8	236.1	280.1	292.6	281.7
West Bank	4.0	6.7	10.9	12.3	13.5	12.3	23.1	18.4	22.0	28.3	22.1	39.0	29.0	34.1
Yemen	14.0	17.5	22.4	20.2	16.0	25.0	30.5	37.2	31.7	35.9	34.9	41.0	39.3	45.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Africa	3,503.5	3,826.6	4,288.6	4,667.4	4,953.4	5,444.8	6,468.2	7,143.2	8,056.2	8,850.7	9,158.5	10,345.8	10,541.6	10,502.6
Algeria	24.4	31.0	25.6	34.5	26.5	49.7	76.4	67.0	74.7	114.3	107.6	116.3	136.6	186.8
Angola	0.5	1.5	1.2	4.3	1.9	3.2	5.3	3.4	5.1	5.5	7.3	12.2	15.5	17.7
Benin	9.0	17.4	18.9	22.1	27.5	20.1	33.3	27.4	26.9	37.8	53.4	54.4	50.1	43.3
Botswana	13.8	6.5	14.5	15.7	7.8	8.0	19.6	19.3	18.9	17.9	33.1	47.5	24.7	33.8
Burkina Faso	26.9	27.0	24.6	39.2	41.6	49.6	49.7	51.7	53.1	66.0	67.1	95.5	107.5	98.3
Burundi	1.1	1.0	0.3	1.4	1.5	0.3	0.2	1.0	2.4	4.7	8.1	5.9	4.4	5.4
Cameroon	42.1	52.1	52.9	63.9	62.8	56.1	84.9	86.5	104.2	121.0	160.7	179.2	211.3	214.8
Cape Verde	0.5	0.9	0.0	0.9	0.1	0.1	0.5	0.5	0.0	0.0	0.3	0.2	1.4	0.9
Central African Republic	4.1	3.2	4.5	9.2	3.2	3.8	3.2	6.3	5.1	3.8	4.0	9.5	6.0	17.3
Chad	2.1	6.3	2.9	3.5	2.1	2.8	1.5	2.3	2.0	2.1	3.1	3.9	5.8	4.3
Comoros	0.0	1.0	0.6	0.0	2.5	0.4	0.6	1.1	1.0	0.5	4.0	0.7	0.8	1.8
Congo, Democratic Republic of the	10.2	9.3	12.6	13.1	20.3	22.3	20.3	27.7	22.0	44.0	42.8	72.2	74.2	51.7
Congo, Republic of the	19.6	24.4	21.6	17.7	19.3	19.9	16.7	19.4	23.7	27.7	28.5	45.8	41.4	31.4
Côte d'Ivoire	43.3	65.8	45.3	43.9	49.3	69.6	61.8	51.0	75.0	80.7	69.5	76.0	88.8	70.8
Djibouti	1.0	1.2	2.3	0.7	0.4	2.2	6.5	4.0	1.1	4.9	2.5	3.1	1.4	2.1
Egypt	488.6	524.9	607.3	670.4	756.8	896.6	1,181.6	1,511.2	1,816.9	2,110.0	2,279.1	2,387.3	2,524.5	2,683.2
Equatorial Guinea	0.5	2.2	0.0	2.9	2.0	1.3	1.6	1.0	1.5	1.2	1.1	0.7	1.3	0.6
Eritrea	4.1	2.0	3.0	5.6	4.7	1.7	1.4	2.9	4.2	0.4	2.0	2.0	3.4	2.5

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ethiopia	80.1	89.1	83.7	89.6	84.9	119.2	140.1	176.6	193.5	315.0	342.5	435.7	398.8	428.5
Gabon	9.9	13.8	14.2	16.1	13.4	11.0	23.0	20.2	29.2	16.6	15.3	25.4	25.9	19.2
Gambia, The	15.6	16.0	16.8	21.3	14.3	13.2	16.7	13.2	13.9	11.6	19.1	21.5	20.2	22.1
Ghana	36.8	56.5	63.9	57.4	63.1	56.8	71.0	80.1	113.4	134.0	170.6	216.3	250.0	337.9
Guinea	1.4	5.1	4.5	9.5	8.3	4.6	5.5	6.9	4.7	4.1	4.8	16.4	18.2	20.5
Guinea-Bissau	4.8	5.2	2.7	2.0	7.0	4.3	4.1	1.7	4.4	6.4	6.3	8.6	4.2	4.1
Kenya	126.5	173.9	154.4	146.7	186.1	198.2	209.3	219.9	208.0	239.2	249.0	258.9	269.7	285.3
Lesotho	2.0	0.8	0.9	1.4	1.7	0.7	1.6	1.5	0.9	2.0	2.3	1.3	3.2	2.9
Liberia	0.5	0.2	1.1	1.0	1.0	0.2	0.4	0.9	4.4	3.7	4.5	4.8	9.0	7.0
Libya	11.5	5.3	6.9	20.0	15.2	17.7	90.9	97.4	22.0	24.4	30.7	33.8	28.2	20.4
Madagascar	38.0	17.9	13.4	15.1	31.8	31.4	20.6	21.0	27.5	22.0	20.2	38.7	39.4	33.0
Malawi	41.4	45.6	44.5	37.5	58.6	68.9	60.6	69.5	77.1	68.8	76.1	77.2	87.6	95.4
Mali	15.9	10.1	16.7	20.3	29.4	18.1	31.2	29.7	33.4	44.1	26.9	36.5	29.6	41.9
Mauritania	0.7	0.5	3.2	2.0	2.3	1.7	0.6	2.6	5.4	1.4	4.4	2.7	9.5	10.8
Mauritius	3.7	5.9	5.7	4.7	4.1	2.1	5.2	3.7	3.3	8.6	6.4	6.9	14.2	7.6
Morocco	285.8	227.9	228.0	299.2	332.1	356.2	501.3	580.5	671.6	734.8	789.8	1,032.2	904.0	787.2
Mozambique	6.1	8.8	8.8	17.8	20.8	20.8	23.5	11.8	24.7	17.4	23.2	29.0	33.6	40.4
Namibia	4.0	1.6	1.3	4.0	2.5	2.0	0.5	3.9	5.5	9.2	13.9	11.4	16.8	17.7
Niger	8.0	5.7	6.9	12.2	11.0	8.6	8.5	15.8	4.5	10.1	8.0	12.6	11.8	22.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nigeria	467.3	596.2	788.0	796.3	816.0	885.9	1,046.5	1,074.7	1,310.2	1,274.6	1,258.9	1,271.0	1,163.2	1,125.2
Rwanda	1.5	3.2	1.5	8.5	10.2	10.6	12.7	13.8	17.8	20.0	48.5	41.5	54.8	55.1
São Tomé and Príncipe	1.7	0.4	0.0	0.5	1.3	0.0	0.2	1.1	0.0	0.0	0.0	0.0	1.4	0.9
Senegal	107.8	93.2	108.7	91.1	115.6	106.4	82.4	92.2	123.7	104.3	121.3	144.2	170.8	149.1
Seychelles	0.1	0.9	0.4	2.1	2.7	2.9	1.2	1.6	3.3	2.4	2.5	0.3	1.1	1.0
Sierra Leone	0.0	1.3	3.1	2.1	1.9	2.2	2.5	6.3	5.6	6.0	5.2	13.5	17.0	21.4
Somalia	1.5	0.1	0.0	0.8	0.0	0.5	1.0	0.7	1.7	1.0	2.3	1.8	2.4	1.6
South Africa	904.1	953.9	1,028.4	1,049.4	1,099.5	1,228.2	1,392.5	1,372.4	1,512.8	1,768.7	1,759.3	1,993.5	2,043.4	2,034.9
South Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.3	4.3	3.9	2.3	1.3
Sudan	39.5	55.8	51.2	40.5	50.1	59.3	67.3	69.5	74.1	91.0	92.1	83.8	68.3	94.9
Swaziland	1.7	1.1	1.3	1.1	0.3	1.2	4.4	3.8	3.9	4.5	6.6	4.3	11.6	4.7
Tanzania	49.5	63.0	63.0	107.6	95.6	110.9	128.2	161.4	197.2	197.0	165.6	231.7	221.2	200.0
Togo	15.5	10.9	13.1	13.2	20.4	23.2	22.0	29.2	24.0	26.3	39.8	56.6	54.6	41.2
Tunisia	434.1	465.2	582.2	670.4	672.7	718.6	751.3	856.4	844.4	785.0	695.1	785.7	850.4	743.0
Uganda	49.4	63.7	79.6	86.1	84.2	90.4	120.7	142.9	172.5	179.8	186.4	231.3	274.6	233.3
Western Sahara	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Zambia	10.5	13.2	15.4	26.4	32.7	36.2	32.2	37.2	40.7	36.3	43.3	44.6	69.4	68.8
Zimbabwe	34.7	36.9	36.9	44.6	32.7	24.9	23.4	39.1	37.6	36.6	38.9	55.4	62.1	55.6
Asia	53,587.8	59,224.7	67,673.8	71,261.7	75,547.3	81,101.6	88,415.1	93,142.2	99,434.6	106,902.3	115,238.7	126,643.1	131,283.1	129,915.1

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Afghanistan	2.5	5.3	2.8	5.6	3.6	5.0	9.8	10.3	9.9	18.8	11.6	14.5	13.9	16.0
Bangladesh	122.5	135.6	150.1	181.1	192.4	233.7	243.7	283.0	312.6	369.9	368.8	438.8	426.6	349.1
Bhutan	0.0	0.3	0.0	2.2	0.7	0.1	1.8	2.0	5.1	6.9	7.2	7.5	5.8	10.9
Brunei	3.7	3.3	9.0	6.8	7.0	18.8	13.3	20.4	40.6	41.3	51.1	54.4	45.6	24.3
Burma	3.4	5.6	5.5	8.0	6.5	8.2	6.8	7.3	7.7	12.3	10.7	14.1	20.7	19.8
Cambodia	5.7	18.8	12.0	18.9	20.3	20.4	24.7	22.0	27.9	29.8	30.3	28.3	46.5	50.6
China	11,928.9	15,199.4	20,069.8	22,906.6	25,793.2	29,382.9	32,608.7	32,929.5	33,366.4	36,364.7	43,401.1	51,170.6	57,273.1	56,670.3
India	5,555.5	5,599.4	6,363.6	7,134.3	7,593.7	8,476.5	9,617.3	11,213.9	13,268.8	15,384.4	16,771.1	17,529.4	16,937.5	16,897.8
Indonesia	87.4	122.1	141.7	187.4	103.2	114.9	146.2	150.3	146.1	188.4	195.5	239.5	321.4	454.7
Japan	26,506.4	27,487.7	28,048.1	27,032.9	27,076.1	25,963.5	26,919.7	27,554.7	29,525.3	29,691.2	28,619.5	29,914.9	28,051.6	26,953.2
Kazakhstan	15.4	13.7	7.3	16.1	11.1	7.4	6.5	9.5	11.8	21.1	45.0	62.9	73.8	100.9
Kyrgyzstan	1.5	3.2	6.0	3.4	4.9	1.7	6.6	4.8	4.9	11.0	10.5	13.1	7.7	17.7
Laos	7.0	6.8	8.4	13.1	15.2	13.7	8.5	13.6	15.2	17.4	18.2	12.3	23.4	19.6
Malaysia	339.9	392.9	439.1	540.1	561.7	835.9	781.4	1,023.4	1,161.3	1,456.6	1,635.1	1,568.6	1,653.0	1,623.2
Maldives	0.6	0.0	1.2	3.5	0.5	0.1	0.9	0.8	0.8	1.4	2.9	2.3	1.4	0.8
Mongolia	4.1	5.2	4.1	8.9	9.9	8.0	20.9	11.2	11.4	13.2	11.6	11.2	16.4	16.2
Nepal	118.1	143.6	185.7	240.0	246.1	238.0	287.8	279.0	273.7	294.3	319.7	318.3	297.9	272.4
North Korea	0.3	13.1	4.0	6.6	4.6	2.2	12.3	1.6	1.4	0.2	0.0	0.6	1.3	2.1
Pakistan	598.7	659.1	819.6	816.1	907.6	1,096.2	1,360.1	1,474.6	1,783.6	1,913.7	1,921.5	2,025.1	1,926.3	2,134.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Papua New Guinea	12.8	11.2	15.6	12.5	26.9	14.3	10.5	16.0	14.7	19.3	25.8	20.4	16.6	12.7
Philippines	55.1	49.1	70.2	63.9	74.2	98.0	100.9	117.7	210.8	179.0	196.9	188.9	224.4	185.7
Singapore	750.3	973.3	994.5	1,043.9	1,049.7	1,135.0	1,172.4	1,185.5	1,270.2	1,324.2	1,475.3	1,558.7	1,672.6	1,764.4
South Korea	3,268.1	3,744.4	4,782.6	5,413.6	6,129.9	7,219.3	8,545.1	10,022.8	10,928.0	12,008.6	12,684.7	13,561.4	14,117.4	14,457.9
Sri Lanka	64.1	66.3	106.4	76.5	93.7	110.6	125.7	148.1	183.4	190.5	188.4	240.5	250.5	241.8
Taiwan	3,286.9	3,628.8	4,193.2	4,270.8	4,383.9	4,738.8	4,931.1	5,101.4	5,235.8	5,399.3	5,409.0	5,601.3	5,827.1	5,513.3
Tajikistan	0.3	1.0	2.0	2.4	0.8	4.6	2.6	1.2	2.8	3.4	3.3	3.3	5.0	6.2
Thailand	787.8	874.6	1,161.0	1,164.1	1,152.9	1,253.2	1,350.7	1,426.3	1,505.4	1,808.5	1,684.7	1,872.6	1,862.9	1,907.1
Timor-Leste	0.8	0.0	1.3	1.9	1.6	0.3	1.6	0.1	1.0	0.9	1.5	2.7	4.0	1.6
Turkmenistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.7	0.0	0.6	1.9	0.0	0.0
Uzbekistan	11.7	9.9	12.9	4.8	8.6	12.2	11.7	16.6	17.1	18.7	16.9	20.7	10.7	27.1
Vietnam	48.2	51.1	56.1	75.8	66.8	88.1	85.8	93.6	90.2	113.1	120.3	144.2	148.1	163.4
Australia and Oceania	7,437.5	8,221.7	8,725.5	9,521.3	10,032.7	10,532.1	11,231.1	11,611.6	12,584.8	13,274.6	14,083.8	15,030.5	15,035.0	14,926.8
Australia	6,422.6	7,022.0	7,500.7	8,218.8	8,672.1	9,109.5	9,704.3	10,072.4	10,849.9	11,462.5	12,370.4	13,300.1	13,331.6	13,263.3
Cook Islands	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	1.3	0.1	0.0	0.3	0.0
Fiji	17.0	11.8	2.1	13.5	8.1	4.1	3.6	7.9	9.7	7.7	8.2	11.3	7.4	11.0
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.2	0.6	0.5
Marshall Islands	1.3	0.0	1.3	0.3	0.3	0.0	1.1	0.5	0.4	0.0	0.0	0.4	0.0	0.0
Micronesia, Federated States of	0.5	0.5	1.8	0.1	0.5	0.1	0.7	0.5	0.4	0.4	0.6	1.4	1.7	0.4

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nauru	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5	0.3	0.3	0.1	0.3
New Zealand	988.5	1,178.4	1,213.5	1,282.8	1,346.3	1,414.6	1,516.8	1,524.9	1,714.0	1,797.0	1,699.3	1,705.9	1,682.4	1,640.5
Niue	0.0	0.0	0.1	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	1.3	0.9	3.0	1.2	1.2	0.9	0.2	1.4	0.4	0.0	0.8	0.0	0.7	1.0
Samoa	0.0	1.2	0.0	1.2	0.1	0.4	1.1	0.0	2.2	0.6	1.2	0.1	1.8	0.5
Solomon Islands	0.2	1.1	0.3	0.8	1.0	1.0	1.4	2.0	3.0	2.5	0.9	4.4	5.1	8.2
Tonga	0.6	2.1	0.0	1.2	0.6	0.5	1.9	0.2	1.1	0.8	1.0	0.5	0.3	0.2
Tuvalu	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Vanuatu	5.6	3.5	2.7	0.5	0.8	1.2	0.2	1.8	3.1	0.2	0.9	4.9	3.0	0.9
Unassigned	5,337.1	3,466.5	3,600.7	3,702.2	4,002.9	3,983.0	3,575.1	5,680.8	6,320.7	7,047.4	6,569.1	2,561.4	1,748.9	1,667.3

na = not applicable; country data do not exist.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis. The sum of the regions, countries, or economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-37

S&E articles in other life sciences, by region, country, or economy: 2003–16

(Number)

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	16,238.0	17,092.0	18,983.0	20,199.0	20,920.0	22,071.0	22,982.0	24,275.0	26,716.0	28,679.0	28,942.0	28,894.0	28,943.0	28,656.0
North America	9,114.4	9,511.3	10,290.3	10,753.4	10,590.5	10,784.4	11,125.7	11,289.1	11,982.2	12,725.4	12,626.7	12,472.7	11,976.6	11,416.1
Canada	860.3	901.4	1,075.9	1,107.8	1,141.8	1,210.8	1,354.5	1,342.6	1,367.1	1,472.4	1,542.7	1,448.5	1,376.4	1,282.5
Greenland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.2	0.0	0.0	0.0
Mexico	101.6	74.3	57.6	106.6	198.1	100.4	149.0	108.6	131.3	119.1	163.5	133.2	138.6	190.2
United States	8,152.5	8,535.7	9,156.7	9,539.0	9,250.6	9,473.2	9,622.2	9,837.3	10,483.9	11,133.9	10,920.3	10,891.1	10,461.6	9,943.4
Central America and Caribbean	8.0	13.1	8.9	41.9	28.7	28.0	33.6	33.4	61.6	37.4	31.0	28.4	41.8	45.8
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas, The	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.8	0.0	0.0	1.0	0.0	0.0
Barbados	0.0	0.8	1.0	1.8	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0	0.0
Belize	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.3	0.0	0.0	0.4	0.0	0.0
Costa Rica	2.0	0.3	1.5	0.0	2.4	2.9	0.3	1.8	5.9	3.0	0.9	3.1	1.5	3.0
Cuba	3.0	2.8	0.2	27.9	14.2	8.6	15.0	19.2	33.7	20.6	13.5	6.0	19.0	22.4
Dominica	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.4	0.0	0.5	1.2
Dominican Republic	0.0	0.3	0.0	0.0	0.7	0.7	0.3	0.6	1.7	0.7	0.1	2.8	0.5	0.9
El Salvador	0.0	0.2	0.0	0.8	0.0	0.1	0.0	0.0	0.3	0.2	0.0	0.2	1.3	0.5

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Grenada	0.0	1.0	0.0	1.0	0.3	0.0	1.0	0.3	0.0	0.2	1.1	0.1	0.5	0.5
Guatemala	0.0	0.8	0.0	1.3	0.3	1.1	0.3	1.5	2.1	2.3	1.7	0.3	2.8	0.2
Haiti	0.0	0.6	0.1	0.0	0.0	0.6	0.6	1.1	1.0	0.5	1.0	0.4	0.7	0.4
Honduras	0.0	0.7	0.0	0.0	0.0	1.5	0.6	0.0	0.8	0.0	0.1	0.0	1.1	0.0
Jamaica	0.3	1.0	0.8	1.7	1.3	2.0	4.4	0.6	2.1	2.2	3.4	5.3	6.6	7.4
Nicaragua	0.0	0.0	0.9	0.2	0.9	2.8	2.1	0.8	1.8	1.1	0.8	1.0	0.7	0.0
Panama	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3	0.3	0.1	0.7	2.2
Puerto Rico	2.8	3.6	4.4	4.5	4.8	4.7	6.5	4.9	8.0	6.1	5.0	5.0	4.1	4.0
Saint Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.0	0.3	0.0	0.0	0.0
Saint Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Saint Vincent and the Grenadines	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.3	0.0
Trinidad and Tobago	0.0	1.0	0.0	2.6	2.3	1.5	1.9	2.7	1.6	0.3	1.5	2.7	0.4	3.0
South America	266.8	311.7	368.1	520.4	684.0	789.5	1,013.6	1,096.3	1,409.3	1,514.8	1,514.7	1,519.1	1,566.0	1,485.8
Argentina	8.3	4.9	8.3	2.5	15.6	13.7	14.8	21.0	24.4	21.3	16.4	35.0	30.2	56.9
Bolivia	0.0	0.0	1.0	0.0	0.6	0.0	0.0	2.4	3.5	1.3	0.0	0.0	0.7	0.7
Brazil	244.1	291.8	340.7	480.5	617.4	702.7	893.2	972.9	1,252.3	1,343.2	1,331.3	1,323.9	1,309.3	1,131.1
Chile	7.3	7.1	5.2	16.6	28.7	28.7	50.8	41.2	63.5	65.4	86.0	77.4	74.4	78.8
Colombia	1.0	5.9	5.3	11.5	12.9	19.1	24.8	34.3	47.1	46.7	57.5	60.5	102.2	154.8
Ecuador	0.0	0.0	3.8	0.3	0.5	1.2	1.9	2.1	1.3	0.3	0.0	1.5	9.3	20.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Guyana	0.0	0.0	0.0	0.4	0.0	0.0	0.0	1.0	0.2	0.0	0.0	0.0	0.3	0.1
Paraguay	0.0	0.0	1.0	0.0	0.8	1.0	0.4	0.3	0.0	0.6	0.1	0.1	0.9	0.0
Peru	2.0	1.0	2.0	4.0	2.5	7.3	1.5	3.9	3.8	2.3	2.6	1.8	10.0	10.7
Suriname	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uruguay	1.9	0.0	0.8	1.5	2.1	0.0	3.7	4.5	0.3	4.0	2.6	3.3	2.9	2.4
Venezuela	2.3	1.0	0.0	3.2	3.0	15.8	22.5	12.7	12.9	29.7	18.1	15.7	26.0	29.7
Europe	4,853.1	4,798.9	5,827.3	6,061.0	6,372.8	6,694.5	6,981.9	7,382.0	8,291.8	8,841.0	9,258.6	9,013.3	9,167.5	9,076.8
EU	4,587.4	4,516.7	5,492.0	5,709.8	5,999.7	6,190.0	6,464.1	6,734.4	7,641.6	8,064.3	8,478.9	8,194.9	8,348.2	8,137.3
Austria	21.8	21.0	25.5	27.9	26.9	26.6	39.6	46.1	61.0	59.7	63.3	65.8	66.9	52.3
Belgium	81.9	76.7	93.6	91.4	124.3	133.7	149.9	167.4	216.2	201.9	240.8	216.4	209.6	200.0
Bulgaria	1.0	3.2	1.4	1.0	1.0	4.4	2.8	1.3	1.8	2.8	2.1	1.7	5.5	6.9
Croatia	23.3	17.7	22.8	15.3	4.2	30.3	20.2	22.5	42.9	37.9	48.3	50.5	25.4	37.1
Cyprus	0.7	1.0	1.0	2.3	2.2	5.3	3.9	11.7	19.3	16.2	17.2	26.1	20.7	18.5
Czech Republic	13.7	19.2	23.6	24.6	14.2	22.7	22.6	29.8	43.5	33.5	43.4	51.4	55.4	83.2
Denmark	31.5	46.6	72.1	55.1	78.0	80.4	109.4	87.9	127.9	147.9	168.2	169.8	211.9	208.6
Estonia	5.3	5.3	3.0	2.4	5.4	3.8	9.2	12.6	9.4	8.6	12.6	9.9	9.0	8.7
Finland	125.9	128.8	100.8	122.4	141.0	143.2	160.9	142.7	169.2	170.2	189.7	202.4	198.9	212.9
France	259.4	255.7	322.2	527.7	535.8	569.8	596.7	653.5	717.0	765.2	789.0	767.3	705.4	747.1
Germany	349.3	381.4	490.5	396.9	413.5	449.9	431.3	479.9	584.9	666.3	580.4	608.6	561.8	558.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greece	42.7	40.1	56.7	62.8	49.5	77.1	73.0	103.6	124.7	118.7	111.6	105.9	83.2	94.4
Hungary	10.0	7.0	10.7	10.1	17.8	11.6	15.1	17.9	20.8	19.2	18.9	45.0	22.1	25.8
Ireland	50.6	86.7	107.1	136.2	167.0	170.7	217.0	179.8	199.5	218.2	215.9	231.5	207.4	219.1
Italy	111.2	127.8	172.5	168.7	209.8	256.9	306.1	254.4	365.4	322.9	378.3	431.1	504.7	459.6
Latvia	0.4	2.0	0.3	0.0	0.0	0.0	0.0	0.0	0.7	1.9	1.3	2.9	2.0	1.3
Lithuania	0.5	0.9	4.3	4.0	7.6	2.3	2.2	1.2	9.7	5.9	7.5	5.0	6.5	4.8
Luxembourg	0.0	0.4	1.0	0.2	1.0	1.5	1.0	0.0	0.3	1.0	2.8	6.3	4.1	3.3
Malta	1.0	1.0	2.5	3.0	4.0	4.5	0.0	2.5	3.8	10.1	9.0	10.6	6.3	10.4
Netherlands	200.2	220.1	291.6	312.4	355.4	363.4	479.1	526.2	561.2	512.4	573.9	517.2	567.9	535.5
Poland	6.6	15.3	12.3	14.3	19.4	22.7	25.6	18.5	25.9	36.4	58.3	85.4	79.7	122.6
Portugal	23.9	13.4	33.9	22.4	38.4	46.8	48.9	56.8	82.7	81.3	116.8	120.7	132.1	160.3
Romania	6.5	0.6	1.7	5.9	39.5	31.6	55.7	56.3	53.0	65.3	100.0	52.2	88.6	51.8
Slovakia	18.3	15.7	8.5	10.5	3.1	2.7	7.5	18.4	21.9	19.4	14.3	28.4	16.1	25.0
Slovenia	22.0	5.3	13.3	4.5	11.2	12.0	20.1	24.5	19.0	18.3	14.9	21.2	32.0	24.3
Spain	197.1	182.9	300.3	347.8	325.7	338.5	374.3	430.8	501.5	591.4	614.0	583.1	990.5	928.5
Sweden	325.9	338.4	353.7	400.3	489.7	457.7	499.9	511.4	542.1	560.3	635.6	592.8	600.8	602.6
United Kingdom	2,656.7	2,502.6	2,965.0	2,939.9	2,914.2	2,920.0	2,792.2	2,876.5	3,116.4	3,371.6	3,450.6	3,185.7	2,933.4	2,734.5
Other Europe	265.8	282.2	335.3	351.2	373.1	504.4	517.8	647.6	650.3	776.7	779.7	818.4	819.3	939.5
Albania	0.0	0.1	0.0	0.2	0.2	0.3	1.1	0.4	0.0	2.0	2.2	3.0	0.0	3.8

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belarus	0.0	1.2	1.0	1.9	2.0	1.0	1.7	1.0	2.0	2.0	3.0	1.2	1.0	0.0
Bosnia and Herzegovina	0.0	0.0	0.0	0.0	0.0	1.0	1.7	3.3	1.8	6.3	7.3	12.5	3.5	2.7
Holy See (Vatican City)	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Iceland	9.4	7.8	13.7	12.3	9.7	21.9	22.7	18.8	15.9	14.1	20.9	25.8	21.5	29.3
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.0	0.0	0.0	1.0	0.7
Liechtenstein	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Macedonia	0.0	0.2	0.0	0.5	0.0	0.0	0.5	4.5	6.8	3.0	3.0	2.3	6.2	12.1
Moldova	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.3	1.5	1.1	0.5	0.4	1.0	0.5
Monaco	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.8	1.0	0.0	0.0	0.0	0.0
Montenegro[a]	na	na	na	na	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	1.9	0.0
Norway	90.9	87.1	102.6	100.9	112.3	197.2	169.1	208.7	230.3	269.6	275.9	293.4	277.8	288.7
Russia	10.1	3.4	11.7	4.2	8.4	4.2	6.2	4.2	11.5	9.3	9.0	12.8	15.9	26.9
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia[a]	na	na	na	na	3.0	5.6	4.5	21.0	16.4	30.3	33.7	34.9	38.2	21.6
Serbia and Montenegro[b]	2.4	2.0	1.9	1.0	na	na	na	na	na	na	na	na	na	na
Switzerland	99.1	99.4	118.8	123.4	99.3	125.7	141.6	147.4	189.9	200.7	218.3	222.4	196.0	212.4
Turkey	53.9	78.2	84.1	106.2	136.7	147.6	167.6	234.3	172.4	233.7	203.7	206.7	251.9	334.2
Ukraine	0.0	0.0	1.5	0.5	1.6	0.0	1.2	2.9	0.0	2.6	1.9	3.0	2.4	6.5

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Middle East	126.5	137.6	159.1	166.3	215.9	238.8	314.3	309.7	403.2	455.1	455.5	590.1	537.6	663.7
Armenia	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.5	0.0	1.5	1.0	0.7
Azerbaijan	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.8	1.0	0.0	0.0	2.5	0.0
Bahrain	1.0	1.7	0.3	0.3	1.2	0.7	2.4	1.5	0.2	2.0	0.0	1.2	1.1	0.2
Gaza Strip	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.2	0.8	1.3	1.0	1.7	2.8
Georgia	2.0	2.0	1.0	2.9	0.7	4.7	5.4	2.5	0.0	0.3	1.5	2.9	3.7	4.8
Iran	9.2	17.5	19.3	33.2	45.0	58.7	82.2	76.7	139.0	184.5	168.2	229.0	190.3	259.1
Iraq	0.0	0.0	2.4	0.3	4.2	0.0	0.3	0.0	0.0	1.8	0.9	4.3	2.0	1.6
Israel	96.0	89.1	97.0	96.9	117.0	117.7	147.3	141.8	174.2	156.9	160.8	178.6	171.6	188.9
Jordan	6.2	10.5	17.9	9.7	18.8	20.6	35.2	29.9	45.8	40.3	43.8	68.9	57.2	72.3
Kuwait	3.6	2.0	3.2	2.8	4.0	7.2	7.0	6.2	2.4	2.2	5.2	5.5	7.5	6.6
Lebanon	3.2	5.8	6.7	6.4	11.9	8.6	10.3	19.0	11.9	18.3	18.9	20.4	18.1	26.4
Oman	0.0	1.4	2.4	0.8	2.1	0.0	1.9	2.1	3.1	1.5	5.1	13.3	11.4	13.6
Qatar	0.0	0.0	0.0	0.8	1.0	0.5	1.7	5.3	3.8	4.7	7.8	17.3	13.2	12.4
Saudi Arabia	0.5	1.7	3.4	6.0	5.5	15.6	9.9	15.4	14.0	29.9	26.3	34.2	40.9	59.3
Syria	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.7	0.5	0.8	0.5	0.6
United Arab Emirates	3.7	4.1	2.5	5.2	3.0	2.3	7.7	6.8	6.4	9.9	10.6	8.8	12.2	11.7
West Bank	1.0	1.1	2.0	0.6	1.3	2.3	2.8	1.4	1.4	0.0	3.1	2.3	2.6	2.4
Yemen	0.0	0.8	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.1	1.3	0.1	0.1	0.3

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Africa	119.9	129.8	161.3	196.9	243.0	263.0	313.7	338.8	439.0	428.3	468.8	533.4	587.2	813.2
Algeria	0.0	3.0	1.0	2.9	1.9	1.8	1.0	0.5	1.7	8.3	4.8	9.8	10.7	15.7
Angola	0.0	0.0	0.0	0.0	0.0	0.4	1.0	0.3	0.2	0.0	0.1	0.8	0.7	0.2
Benin	0.0	0.3	0.0	0.0	0.0	0.6	0.4	0.5	0.5	0.8	1.2	0.2	1.3	3.4
Botswana	1.0	1.0	3.8	8.1	10.3	6.1	6.7	7.6	9.3	5.7	4.7	3.1	5.3	15.2
Burkina Faso	0.4	0.6	0.3	1.6	0.5	1.1	2.4	3.9	0.4	4.8	2.0	3.4	1.6	0.4
Burundi	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.0	0.4	1.3	0.2
Cameroon	0.1	1.8	0.3	0.0	5.1	3.9	1.4	1.2	11.1	3.7	3.1	9.2	4.2	4.9
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.0
Central African Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Chad	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.4	0.0	0.1	0.1
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo, Democratic Republic of the	0.0	0.3	0.0	0.5	0.0	0.6	0.6	0.2	1.5	1.0	0.6	2.1	3.2	3.1
Congo, Republic of the	0.0	0.7	1.1	1.8	2.6	0.6	0.1	0.2	0.3	0.0	0.0	0.3	1.9	7.3
Côte d'Ivoire	0.0	0.0	0.0	1.3	2.1	0.6	0.1	0.0	0.0	0.0	1.0	0.5	0.0	3.0
Djibouti	0.0	0.0	0.0	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Egypt	2.6	5.2	1.8	3.0	6.3	9.1	10.7	16.1	21.3	22.2	13.7	18.4	28.1	25.1
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Eritrea	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ethiopia	0.0	0.9	0.5	2.8	3.5	4.0	5.6	5.6	6.4	16.3	19.9	21.4	22.3	25.6
Gabon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.4	0.0	1.0	0.0
Gambia, The	0.0	0.0	1.5	0.2	1.1	0.0	0.0	0.6	0.6	0.7	0.0	1.0	0.9	0.6
Ghana	4.4	3.0	1.4	1.7	5.5	6.2	3.0	4.6	19.3	17.8	20.4	17.1	30.2	30.4
Guinea	0.0	0.0	0.0	1.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.0	0.9
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.0	0.0	0.0
Kenya	3.4	2.0	5.2	2.7	8.3	11.3	13.6	13.2	16.1	20.5	24.8	34.1	21.7	25.3
Lesotho	0.7	0.0	1.3	0.1	0.3	0.7	0.4	0.2	0.1	0.9	0.0	0.5	1.5	0.8
Liberia	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.6	2.3	1.6	0.0	0.8	0.0	0.9
Libya	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.4	0.5	0.0	0.0	8.2
Madagascar	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	1.0	1.1	0.0	0.0
Malawi	2.3	2.7	2.8	2.7	8.2	8.3	1.9	9.4	5.8	8.0	4.2	10.0	5.8	18.6
Mali	0.4	0.0	0.0	0.3	0.0	0.5	0.6	0.4	0.7	0.2	0.9	1.2	2.6	0.4
Mauritania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mauritius	0.0	0.0	3.3	0.8	0.2	1.5	0.0	0.0	1.0	2.0	0.2	0.2	2.5	0.0
Morocco	0.0	0.4	1.4	0.7	0.0	1.5	2.8	1.4	2.4	3.7	3.9	2.7	8.5	105.3
Mozambique	0.0	0.2	0.0	1.2	0.8	0.5	1.4	1.9	0.1	0.8	4.0	3.5	2.7	2.5
Namibia	1.0	1.0	0.1	0.5	2.2	0.3	1.1	0.7	2.2	1.3	3.7	2.6	1.0	1.9
Niger	0.0	0.5	0.0	0.5	0.2	0.4	1.5	0.2	0.7	0.0	0.8	0.1	2.8	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nigeria	3.2	7.9	8.9	24.0	31.5	15.9	22.7	33.2	43.8	37.7	39.8	41.6	25.4	54.7
Rwanda	0.0	1.8	0.3	0.6	0.2	1.3	1.8	2.9	3.5	1.7	4.8	3.8	2.0	4.6
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	0.3	1.0	0.0	0.3	0.0	0.1	2.4	2.8	2.1	0.2	0.3	0.4	0.6	2.0
Seychelles	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Sierra Leone	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.6	0.2	1.6	3.0
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.6	0.0	0.0
South Africa	88.7	79.0	115.1	111.6	123.1	155.5	186.0	182.0	240.2	220.6	246.0	272.2	323.2	362.3
South Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sudan	0.0	1.6	0.0	1.7	2.4	1.5	1.9	0.4	2.0	0.6	1.2	2.3	2.1	4.6
Swaziland	0.5	1.8	0.5	2.5	0.7	0.5	1.9	2.0	1.2	2.2	1.0	0.6	1.6	1.9
Tanzania	0.1	2.1	2.1	6.8	7.4	10.0	8.9	11.9	10.8	8.5	19.4	16.7	18.9	15.0
Togo	0.0	0.0	0.0	0.0	0.0	1.1	1.0	0.0	0.0	0.0	0.5	0.3	0.1	1.0
Tunisia	2.8	0.6	1.3	3.0	2.5	2.7	6.5	3.4	5.0	5.0	9.0	8.7	13.0	19.7
Uganda	4.2	7.0	4.5	5.5	9.1	9.8	16.7	17.8	15.3	15.6	19.0	23.0	22.6	28.0
Western Sahara	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zambia	1.8	0.8	0.3	4.6	2.8	3.7	5.2	7.4	5.8	7.5	6.0	7.3	5.6	6.3
Zimbabwe	1.8	2.4	1.9	1.8	3.8	1.0	1.4	3.7	4.5	7.8	4.9	11.5	6.8	7.9
Asia	695.2	1,127.5	1,014.9	1,054.8	1,265.3	1,563.4	1,503.9	1,851.9	1,928.4	2,265.2	2,208.9	2,479.9	2,716.3	3,029.1

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Afghanistan	0.0	0.0	0.3	0.0	1.7	1.0	1.1	3.4	3.3	1.2	4.7	0.8	1.7	1.4
Bangladesh	1.0	1.3	2.0	4.2	7.4	3.3	1.7	5.6	10.2	12.5	7.3	9.3	9.5	12.4
Bhutan	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.3	0.0	0.2	0.0	1.0	0.5	1.0
Brunei	0.0	0.0	1.0	2.0	0.5	0.1	0.1	0.3	1.4	0.9	0.8	1.3	1.0	6.1
Burma	1.1	0.0	0.0	0.0	0.0	0.5	0.0	1.1	0.0	0.5	0.0	0.0	0.3	1.6
Cambodia	0.0	0.1	0.8	0.9	2.7	1.5	2.1	1.3	3.4	3.0	2.8	2.8	1.4	5.6
China	144.5	226.9	167.7	208.0	247.7	335.5	263.6	406.2	359.0	540.6	441.8	631.2	681.6	755.3
India	46.7	77.1	69.8	73.9	88.3	116.4	100.0	112.1	143.9	207.3	194.9	206.5	218.9	432.9
Indonesia	1.3	2.8	2.6	3.4	3.1	1.5	6.3	1.7	6.4	10.0	10.8	7.5	10.0	16.7
Japan	263.4	297.7	271.6	276.8	295.4	361.4	313.1	363.2	392.6	371.3	366.3	358.6	383.1	434.3
Kazakhstan	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	1.0	2.7	1.6	1.5
Kyrgyzstan	0.0	0.0	0.0	0.0	0.0	0.4	0.0	1.0	0.0	0.0	0.5	0.5	0.0	0.6
Laos	0.3	0.0	0.0	0.3	0.0	0.1	0.1	1.1	0.7	1.1	1.8	1.4	0.1	1.9
Malaysia	1.0	4.8	7.2	7.3	5.5	12.6	16.1	30.5	35.9	43.0	46.9	55.2	72.6	66.9
Maldives	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0
Mongolia	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.0	0.5	1.3	0.8	0.2	0.3	0.5
Nepal	0.3	1.0	0.5	1.1	1.8	1.3	2.8	0.6	4.4	4.8	4.6	3.7	6.5	8.2
North Korea	0.0	0.0	0.2	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Pakistan	1.0	4.1	7.9	6.7	5.8	9.3	18.1	7.9	19.8	18.5	21.9	21.0	30.4	20.7

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Papua New Guinea	0.0	0.3	0.5	0.0	0.0	0.1	0.8	0.0	0.8	2.2	2.1	2.5	1.2	0.8
Philippines	1.5	1.8	2.4	4.3	12.7	7.6	10.4	14.0	11.4	5.1	6.8	1.5	6.1	9.4
Singapore	18.0	17.3	24.8	26.4	55.4	53.4	38.5	68.2	76.3	107.3	105.0	126.1	138.9	103.9
South Korea	71.9	248.3	201.6	155.5	170.2	236.6	230.1	254.6	264.5	276.2	419.0	475.5	541.1	571.4
Sri Lanka	1.5	1.7	0.3	2.0	2.4	4.7	0.4	3.7	4.0	6.7	9.2	6.2	7.7	6.2
Taiwan	122.5	216.3	222.9	244.4	310.1	361.6	444.7	523.0	540.3	564.0	493.2	497.2	535.3	464.4
Tajikistan	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.5	0.3	0.3	0.5	0.3	0.0	0.5
Thailand	17.0	23.3	26.0	34.8	48.2	48.8	45.6	41.1	42.6	63.2	58.1	57.6	59.5	68.7
Timor-Leste	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.5	0.7
Turkmenistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uzbekistan	0.0	0.0	1.3	0.0	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Vietnam	2.3	2.6	3.1	2.2	5.4	4.5	7.6	8.5	6.0	23.7	7.9	7.2	6.8	35.3
Australia and Oceania	872.7	922.9	1,006.6	1,195.8	1,249.8	1,425.2	1,418.7	1,519.7	1,654.5	1,806.6	1,907.3	2,096.8	2,183.6	2,011.7
Australia	778.4	813.5	876.2	1,070.6	1,110.0	1,282.0	1,273.3	1,370.3	1,460.6	1,592.9	1,705.0	1,885.3	1,978.8	1,834.0
Cook Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fiji	0.0	0.2	0.0	0.3	0.0	0.4	1.2	0.0	1.5	1.0	0.2	0.0	0.4	0.3
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.8
Micronesia, Federated States of	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	94.3	108.6	130.5	123.9	139.8	142.7	143.3	149.4	192.1	212.2	199.7	211.2	204.2	176.4
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Solomon Islands	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.0	0.0	0.1	0.2
Tonga	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Unassigned	181.4	139.2	146.6	208.5	269.9	284.3	276.6	454.1	545.8	605.3	470.4	160.2	166.4	114.0

na = not applicable; country data do not exist.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis. The sum of the regions, countries, or economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-38

S&E articles in physics, by region, country, or economy: 2003–16

(Number)

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	137,020.0	145,615.0	173,882.0	185,311.0	193,442.0	192,815.0	195,836.0	200,131.0	205,086.0	203,728.0	206,146.0	213,107.0	199,795.0	200,106.0
North America	34,890.6	36,392.9	42,580.1	44,953.5	44,415.6	41,695.5	40,528.1	41,125.1	41,235.3	41,302.5	38,650.1	38,929.2	34,954.4	32,215.3
Canada	2,635.4	3,034.6	3,433.1	3,728.5	3,948.4	3,909.4	3,902.1	3,656.5	4,096.9	3,918.1	3,825.1	3,783.5	3,442.8	3,081.7
Greenland	0.0	0.0	0.0	0.0	0.2	0.4	0.3	0.1	0.8	0.0	0.0	0.0	0.0	0.0
Mexico	1,000.7	983.6	1,286.5	1,568.0	1,397.9	1,424.8	1,180.0	1,387.7	1,493.0	1,367.8	1,433.8	1,463.6	1,425.9	1,549.7
United States	31,254.5	32,374.8	37,860.5	39,657.0	39,069.1	36,361.0	35,445.7	36,080.8	35,644.5	36,016.6	33,391.1	33,682.1	30,085.7	27,584.0
Central America and Caribbean	151.1	142.5	176.2	189.7	180.0	164.5	151.1	131.9	136.8	117.2	109.8	115.2	109.9	95.9
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas, The	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.0	0.1	0.0
Barbados	9.5	8.0	4.3	2.8	2.2	3.0	3.2	3.5	2.9	4.2	2.0	2.0	5.5	3.0
Belize	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
Costa Rica	6.8	6.8	4.5	6.3	17.6	5.0	6.7	6.1	9.8	9.1	5.0	14.6	15.9	15.9
Cuba	52.2	41.6	71.1	56.9	47.5	56.3	42.5	29.8	36.1	30.1	35.4	35.9	28.5	29.5
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dominican Republic	0.0	0.3	0.0	1.0	1.2	0.7	0.7	1.4	0.3	0.6	0.0	0.1	0.0	0.0
El Salvador	0.0	0.0	0.0	0.0	0.8	0.1	0.0	0.0	0.0	0.5	0.0	0.0	1.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Grenada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Guatemala	0.0	0.0	0.5	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.3
Haiti	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.3	0.0
Honduras	0.0	0.3	0.0	0.2	0.2	0.3	0.0	0.3	0.0	0.5	0.0	0.0	0.0	0.0
Jamaica	1.7	0.0	0.0	2.2	2.5	0.7	3.0	5.2	3.7	0.3	0.9	2.0	1.3	4.3
Nicaragua	0.0	0.0	0.0	1.0	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Panama	2.0	1.0	0.1	0.2	0.8	0.5	3.9	1.0	1.0	3.2	1.5	2.7	2.3	0.9
Puerto Rico	75.2	74.8	89.0	112.5	103.2	96.1	85.5	77.3	75.2	64.0	59.7	57.3	49.7	36.9
Saint Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saint Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Saint Vincent and the Grenadines	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	3.3	9.2	6.8	6.0	3.7	1.2	5.4	7.0	6.3	4.5	3.9	0.4	5.2	5.2
South America	2,768.8	3,181.7	3,217.9	3,286.6	3,901.9	3,435.2	3,604.2	3,734.2	3,773.9	3,998.4	4,262.1	4,188.5	4,229.3	4,408.8
Argentina	493.3	535.4	500.0	510.5	712.7	535.6	663.4	534.7	656.7	575.9	598.7	565.7	578.1	535.8
Bolivia	2.9	0.7	0.8	1.6	0.5	0.9	2.4	1.2	1.0	0.1	2.6	2.9	1.3	7.2
Brazil	1,887.7	2,212.9	2,281.9	2,231.0	2,619.5	2,303.9	2,380.6	2,546.0	2,519.4	2,592.4	2,878.4	2,676.8	2,784.2	2,788.9
Chile	122.4	189.0	177.9	256.6	239.4	286.6	251.2	322.6	271.6	434.4	307.4	447.0	393.9	501.8
Colombia	90.8	115.1	119.0	154.5	163.5	182.0	159.4	195.0	220.3	266.0	345.1	362.3	312.7	418.3
Ecuador	3.4	2.1	3.8	4.5	6.1	2.7	5.7	5.5	4.2	11.5	9.3	14.2	30.5	25.4

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Guyana	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Paraguay	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.9	0.8	1.3	0.0	1.4	0.3
Peru	10.0	10.8	9.5	8.6	22.6	7.9	20.6	19.3	19.6	17.6	24.9	19.4	13.0	22.5
Suriname	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.1	0.4
Uruguay	27.5	26.2	31.3	21.4	41.8	31.5	35.2	33.4	31.1	24.5	29.3	35.6	46.2	52.9
Venezuela	130.8	88.3	93.7	97.2	95.6	84.2	85.7	76.4	49.2	75.1	65.2	64.3	67.8	55.2
Europe	55,722.5	59,045.0	67,243.0	69,281.2	72,035.8	72,466.1	73,658.7	74,061.7	75,558.2	74,895.2	75,047.0	77,519.3	73,119.6	72,552.4
EU	42,615.2	45,632.2	52,467.7	54,195.8	56,688.4	57,046.8	58,037.1	58,119.3	58,666.7	58,370.3	58,318.2	58,736.4	53,181.0	50,883.1
Austria	862.4	771.1	977.0	889.2	1,075.8	1,021.5	1,065.2	1,096.1	1,156.4	1,052.5	1,188.8	1,115.9	995.6	899.4
Belgium	1,280.7	1,305.4	1,493.8	1,541.6	1,524.5	1,640.9	1,530.5	1,610.4	1,526.8	1,689.1	1,508.5	1,646.3	1,418.7	1,466.1
Bulgaria	193.7	229.8	234.6	245.8	420.1	294.3	312.2	466.6	298.1	333.5	270.0	296.9	260.7	293.7
Croatia	117.6	145.8	153.6	144.7	189.6	190.6	198.1	187.6	191.1	179.1	158.1	124.6	133.6	123.1
Cyprus	16.4	14.6	27.8	35.5	36.4	50.8	52.9	63.8	63.7	54.2	95.1	70.6	77.3	80.2
Czech Republic	551.6	785.7	815.3	965.0	982.3	1,017.0	1,108.1	1,069.4	1,123.5	1,140.3	1,240.8	1,253.8	1,419.9	1,390.9
Denmark	635.7	630.3	803.8	770.1	826.6	813.3	852.2	902.3	1,052.3	1,013.8	1,007.3	1,015.9	904.8	861.1
Estonia	75.5	77.4	113.8	93.5	129.3	118.4	108.9	134.5	110.4	101.8	125.1	145.2	119.3	101.1
Finland	705.8	704.6	802.2	851.3	891.6	933.7	910.1	865.8	956.8	881.7	968.0	933.7	739.9	747.0
France	6,510.8	7,126.3	8,013.4	8,316.8	8,613.9	8,922.0	8,854.8	8,633.7	8,843.6	8,648.6	8,578.0	8,627.4	7,645.9	7,300.5
Germany	9,934.1	10,185.2	11,796.6	11,952.2	12,547.3	12,230.0	13,209.5	13,264.3	13,438.7	13,418.6	13,516.5	13,171.7	11,602.9	11,060.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greece	546.6	588.6	778.5	900.5	1,038.6	918.3	927.0	866.7	835.2	826.5	827.7	817.7	800.6	760.5
Hungary	489.7	472.8	594.1	520.7	526.9	574.4	495.2	497.0	521.6	540.8	483.8	529.5	504.8	421.9
Ireland	242.6	371.3	653.1	525.8	579.1	578.0	628.0	650.4	706.8	589.8	542.2	548.5	427.5	412.2
Italy	4,824.2	5,410.7	5,759.2	6,225.5	6,683.2	6,486.1	6,190.8	6,196.8	5,945.0	6,048.2	6,135.8	6,552.8	5,763.0	5,765.9
Latvia	43.0	57.9	85.9	55.5	90.1	87.6	79.1	89.7	114.3	105.7	99.7	92.0	139.1	109.6
Lithuania	109.1	192.9	252.2	316.0	234.9	319.8	332.0	321.5	288.9	236.6	308.9	333.2	319.0	212.7
Luxembourg	4.8	10.2	2.7	6.3	10.2	15.0	23.8	22.9	38.1	38.3	52.8	56.7	51.4	60.2
Malta	0.3	1.5	5.8	2.7	3.3	8.7	5.6	1.8	10.8	8.9	11.6	15.7	9.4	12.6
Netherlands	1,638.0	1,800.9	1,961.6	1,963.2	1,910.0	1,894.4	1,929.6	1,931.5	2,090.0	2,028.9	1,956.2	1,901.0	1,618.2	1,638.0
Poland	2,414.1	2,546.5	2,984.9	3,147.8	2,874.8	3,211.4	2,990.6	2,876.0	2,839.1	3,083.0	3,594.7	3,528.3	3,838.3	3,508.3
Portugal	559.7	558.7	691.6	711.5	775.8	812.7	850.0	1,028.9	991.4	999.9	997.2	952.6	846.4	837.2
Romania	382.6	416.5	476.5	475.2	752.9	917.0	1,077.4	1,174.7	975.5	1,106.2	1,014.1	803.0	1,063.3	935.5
Slovakia	236.0	300.7	223.3	318.2	251.4	381.0	263.8	357.1	276.1	345.1	321.3	485.0	335.9	371.3
Slovenia	257.1	203.8	290.4	316.1	311.0	333.9	308.7	340.1	359.8	311.4	323.2	291.9	244.4	231.9
Spain	2,518.5	2,851.5	3,436.0	3,381.6	3,873.3	3,655.1	4,154.0	4,024.0	4,376.3	4,209.0	4,025.4	3,832.4	3,384.3	3,289.3
Sweden	1,392.1	1,474.2	1,566.0	1,603.3	1,502.9	1,469.8	1,471.3	1,569.0	1,621.4	1,601.5	1,486.8	1,606.9	1,412.3	1,312.0
United Kingdom	6,072.4	6,397.2	7,474.0	7,919.9	8,032.6	8,150.9	8,107.8	7,876.7	7,915.2	7,777.1	7,480.5	7,987.1	7,104.3	6,680.3
Other Europe	13,107.2	13,412.8	14,775.3	15,085.5	15,347.5	15,419.3	15,621.5	15,942.4	16,891.5	16,524.8	16,728.8	18,782.9	19,938.6	21,669.2
Albania	1.0	0.8	1.9	2.5	12.4	2.0	6.0	28.5	2.2	2.3	4.3	1.0	5.1	14.5

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Belarus	480.5	424.0	559.4	476.9	598.9	388.1	404.0	391.3	434.9	329.4	361.7	349.2	325.5	313.4
Bosnia and Herzegovina	3.9	2.7	4.8	9.0	12.6	11.0	12.0	11.5	9.2	13.3	11.7	8.5	17.1	17.2
Holy See (Vatican City)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.1
Iceland	13.7	11.7	15.9	15.5	13.0	28.5	33.4	38.2	33.4	54.7	40.6	34.1	31.2	32.0
Kosovo	0.0	0.0	0.0	0.0	0.0	2.3	2.6	5.9	0.6	1.2	2.7	2.5	4.4	10.0
Liechtenstein	5.2	2.9	5.6	5.3	6.4	2.0	3.1	4.8	7.3	5.7	6.3	8.0	0.3	3.4
Macedonia	16.3	21.4	15.4	16.8	18.2	21.6	20.5	26.9	27.7	11.4	18.5	15.2	17.7	31.8
Moldova	54.5	39.8	79.8	49.6	60.1	44.9	70.0	53.0	66.8	72.5	57.6	48.2	57.9	51.0
Monaco	0.0	1.8	1.0	1.6	0.2	0.0	0.5	0.3	1.3	1.2	1.1	0.8	0.9	2.7
Montenegro[a]	na	na	na	na	16.4	11.0	7.2	17.1	8.0	7.0	15.4	14.5	1.4	18.8
Norway	206.7	254.7	333.8	353.4	394.4	420.1	387.1	455.8	511.9	502.1	470.8	449.6	399.2	392.4
Russia	8,432.8	8,595.0	9,054.7	9,111.1	8,675.7	8,980.3	9,106.6	9,211.3	9,635.2	9,324.0	9,505.2	11,287.2	12,700.2	14,558.9
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.5	0.1	0.1	0.0
Serbia[a]	na	na	na	na	346.1	324.8	307.4	324.7	291.8	392.9	298.0	305.9	275.1	291.8
Serbia and Montenegro[b]	128.3	138.9	202.5	238.4	na	na	na	na	na	na	na	na	na	na
Switzerland	1,638.7	1,679.6	2,026.2	2,197.0	2,303.3	2,165.4	2,173.6	2,346.6	2,428.0	2,460.1	2,523.9	2,574.5	2,300.8	2,051.7
Turkey	652.8	768.2	810.9	946.4	1,364.1	1,079.0	1,257.8	1,178.1	1,250.8	1,478.0	1,414.4	1,617.8	1,834.7	2,128.8
Ukraine	1,472.9	1,471.4	1,663.4	1,662.1	1,525.5	1,938.4	1,829.8	1,848.4	2,181.8	1,868.9	1,995.9	2,065.3	1,966.8	1,750.8

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Middle East	2,052.0	2,181.9	2,487.6	2,789.3	3,235.1	3,609.5	3,768.2	4,096.7	4,781.0	4,928.1	5,160.9	5,511.3	5,657.1	6,168.1
Armenia	130.8	121.7	149.6	117.3	164.3	145.1	163.7	201.8	245.6	229.1	181.3	220.7	163.1	189.3
Azerbaijan	74.2	62.4	69.4	58.9	75.8	82.4	86.9	109.4	129.9	97.5	83.8	90.8	102.3	108.7
Bahrain	6.9	14.9	10.4	17.7	20.8	15.8	8.2	25.3	18.3	11.8	11.2	11.4	9.1	10.5
Gaza Strip	11.0	15.2	7.4	6.4	16.1	14.0	12.7	12.1	23.8	22.6	18.8	16.5	16.1	12.1
Georgia	52.5	68.4	52.9	68.7	62.1	75.4	68.1	54.7	73.1	46.9	51.4	54.6	54.8	47.4
Iran	309.2	425.6	546.1	784.1	972.5	1,372.0	1,615.4	1,848.9	2,165.7	2,321.6	2,545.1	2,752.2	2,908.7	3,326.5
Iraq	9.8	2.8	13.3	15.8	27.5	20.5	32.8	33.7	53.7	81.5	91.2	86.5	86.7	132.3
Israel	1,238.8	1,232.3	1,369.7	1,435.9	1,558.9	1,521.0	1,361.4	1,337.0	1,415.9	1,397.1	1,352.8	1,298.7	1,305.6	1,113.2
Jordan	45.5	55.7	52.2	54.1	55.3	68.3	65.5	67.3	71.3	71.8	63.1	63.4	51.5	66.0
Kuwait	8.8	18.3	13.6	26.6	22.0	23.9	32.4	20.1	25.0	24.9	27.7	33.8	18.4	29.7
Lebanon	9.2	19.0	20.7	23.8	32.7	27.6	30.2	35.4	33.7	31.5	32.4	55.0	43.5	46.7
Oman	19.9	23.3	22.4	19.1	21.4	27.3	19.0	33.0	30.3	26.8	21.4	24.5	28.2	44.3
Qatar	4.4	2.4	3.9	7.9	10.3	13.4	13.0	14.1	23.1	25.3	35.5	38.7	60.5	76.6
Saudi Arabia	92.3	80.8	98.2	104.0	121.2	134.0	173.7	217.9	374.1	419.9	517.6	607.3	644.4	794.8
Syria	6.4	13.4	19.9	12.6	22.3	14.3	23.5	24.2	31.1	19.2	20.0	23.9	26.0	22.2
United Arab Emirates	26.0	21.7	31.3	30.6	42.1	34.2	52.5	45.2	50.4	83.4	81.9	107.0	124.0	129.1
West Bank	5.8	2.0	4.8	1.9	5.2	15.4	4.8	10.1	7.9	6.5	13.2	12.7	8.8	11.8
Yemen	0.4	2.1	2.0	4.0	4.8	4.8	4.6	6.8	8.2	10.6	12.4	13.7	5.4	7.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Africa	875.4	1,035.2	1,108.1	1,202.9	1,369.8	1,562.5	1,639.5	1,576.7	1,628.6	1,837.8	1,823.9	2,279.1	2,453.4	2,821.6
Algeria	127.4	158.6	173.4	205.1	274.7	372.8	366.5	327.6	294.6	397.0	353.5	450.4	458.8	556.1
Angola	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.1
Benin	4.3	3.3	3.2	7.1	11.3	5.2	5.8	8.2	6.7	5.7	9.8	14.8	15.7	16.2
Botswana	9.0	5.0	2.7	3.7	7.0	4.4	0.7	2.1	0.8	3.1	0.6	3.4	2.6	8.7
Burkina Faso	2.0	1.0	0.6	1.1	0.7	1.1	1.8	0.0	0.6	2.5	2.5	1.7	3.5	0.1
Burundi	1.4	1.3	0.0	0.3	0.7	0.0	0.0	0.1	0.0	0.1	1.0	0.0	0.1	0.1
Cameroon	22.2	29.3	40.7	47.0	33.0	41.7	36.9	27.8	35.4	43.4	43.1	60.7	62.7	69.3
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Central African Republic	0.8	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	1.0
Chad	0.0	0.0	0.3	0.5	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.3
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1
Congo, Democratic Republic of the	0.1	0.0	0.1	0.1	0.2	0.7	1.3	0.1	0.3	0.2	0.1	0.0	1.0	0.0
Congo, Republic of the	0.2	0.5	0.4	4.9	0.3	0.0	2.0	1.4	0.7	1.3	1.4	0.5	0.5	2.1
Côte d'Ivoire	0.0	0.9	1.0	1.3	1.9	3.3	1.1	1.5	5.7	0.4	1.7	0.1	2.6	1.2
Djibouti	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0
Egypt	342.5	335.0	375.9	396.3	455.0	435.3	514.9	491.7	456.9	461.3	506.5	589.5	680.5	752.1
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eritrea	0.0	0.0	0.0	0.0	0.0	0.8	1.5	0.3	0.0	0.0	0.0	0.0	0.0	0.3

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ethiopia	0.3	4.2	5.0	5.8	11.7	12.9	6.9	9.3	12.3	11.4	11.9	15.6	10.4	18.3
Gabon	0.0	0.0	0.0	0.0	0.8	2.3	0.3	0.2	1.2	1.4	0.6	0.3	0.9	1.3
Gambia, The	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Ghana	5.0	2.3	2.7	2.8	4.4	1.6	1.7	6.9	5.0	5.9	3.7	7.3	6.5	15.2
Guinea	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0
Guinea-Bissau	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	2.8	7.1	2.6	0.8	3.5	2.0	5.3	7.0	7.9	13.0	11.6	11.6	9.9	8.9
Lesotho	0.1	0.7	0.3	1.7	0.2	1.8	0.3	0.3	0.0	1.0	1.0	0.0	0.8	1.2
Liberia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.5
Libya	2.5	2.8	1.7	2.3	0.7	6.8	7.7	9.9	5.4	8.1	14.0	9.9	7.6	5.8
Madagascar	0.0	0.1	0.0	0.6	14.9	1.1	1.2	2.0	6.7	0.5	2.3	0.5	2.7	2.0
Malawi	0.0	0.0	0.1	0.0	0.2	0.1	0.1	0.0	1.2	0.0	0.1	0.6	0.0	0.4
Mali	0.3	0.7	0.3	0.1	0.0	0.3	0.0	0.0	0.0	0.3	0.3	0.0	1.4	0.0
Mauritania	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	1.3	0.0	0.0
Mauritius	1.0	0.0	2.3	2.0	2.0	2.7	5.7	3.5	0.6	1.0	3.4	3.2	1.5	2.2
Morocco	107.7	150.0	106.5	106.3	89.7	116.8	95.6	108.4	118.9	131.0	149.7	194.6	191.4	322.9
Mozambique	0.8	0.0	0.3	0.7	0.2	0.5	0.2	0.0	0.0	2.4	0.0	0.1	0.3	0.4
Namibia	0.5	1.2	5.9	2.3	0.6	0.4	0.7	1.0	0.3	0.1	1.9	0.1	1.8	1.8
Niger	2.0	0.2	0.5	0.0	0.2	0.0	1.0	0.5	0.3	0.3	0.1	1.0	0.3	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nigeria	14.8	15.7	30.9	23.1	16.0	20.5	27.7	43.4	47.5	54.2	59.6	58.3	69.2	91.6
Rwanda	0.1	0.0	0.0	0.1	0.0	0.0	1.9	2.1	0.9	1.2	1.3	0.7	0.6	0.4
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	4.5	1.5	6.0	2.7	4.3	7.1	3.6	6.4	9.7	2.6	9.9	8.9	7.5	6.2
Seychelles	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.6	0.0
Sierra Leone	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.4	0.1	0.2	0.0	0.0	0.1
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
South Africa	138.9	191.3	214.8	240.9	259.7	324.9	327.0	319.1	387.9	443.2	401.9	529.9	543.1	556.5
South Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Sudan	1.0	2.9	1.4	1.8	1.4	5.8	3.2	6.2	10.3	10.9	12.5	5.3	7.1	7.6
Swaziland	0.0	0.0	0.5	0.0	0.0	0.3	1.0	1.0	1.7	0.4	0.9	0.6	0.3	0.7
Tanzania	1.9	0.0	1.2	2.3	0.0	1.8	1.8	1.0	1.0	1.7	2.0	3.8	11.7	3.7
Togo	0.2	0.7	0.0	1.4	0.0	0.1	0.7	0.1	0.1	0.6	0.8	0.0	0.3	3.0
Tunisia	77.6	115.2	121.5	130.3	172.6	183.1	211.5	182.7	202.2	222.5	209.8	294.7	340.8	355.5
Uganda	0.0	0.3	0.0	0.0	0.5	0.3	0.1	2.2	1.4	0.4	1.4	2.0	1.9	3.0
Western Sahara	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zambia	0.4	1.3	1.7	1.5	0.3	0.9	0.4	0.2	1.6	1.3	1.3	2.1	0.8	1.1
Zimbabwe	3.1	2.0	1.8	5.1	1.0	2.7	1.1	2.0	1.5	6.3	1.2	5.0	5.7	3.8
Asia	38,646.1	41,500.9	54,400.6	60,647.4	64,986.5	66,981.9	69,681.1	72,265.7	74,661.2	73,441.9	77,639.7	81,047.5	76,598.4	78,970.1

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Afghanistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	1.0	0.0	1.0
Bangladesh	42.8	33.0	36.2	47.4	55.2	76.0	64.5	88.1	85.1	93.9	125.6	123.2	130.8	276.3
Bhutan	0.0	0.7	0.3	1.3	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.3	1.5	1.0
Brunei	2.1	2.8	3.3	2.3	4.0	1.8	4.5	1.3	2.7	1.0	3.8	7.8	7.5	9.4
Burma	1.3	0.0	1.0	0.9	4.2	7.3	10.2	2.1	1.1	4.5	4.1	5.1	2.6	3.5
Cambodia	0.0	0.1	0.0	1.0	0.2	0.0	0.0	0.3	0.0	1.6	0.4	0.3	0.5	0.8
China	11,397.6	14,416.4	22,076.7	24,332.3	27,617.3	30,829.4	33,998.0	33,855.2	35,396.5	36,081.8	39,915.1	42,601.6	42,323.4	41,980.9
India	2,783.1	2,862.2	3,591.8	4,168.1	4,569.1	5,147.0	5,287.0	6,166.2	7,320.4	7,073.9	8,051.2	9,315.1	7,674.8	9,916.1
Indonesia	20.6	21.4	30.2	31.1	36.3	60.2	59.9	185.3	161.0	127.2	321.2	391.4	567.7	1,624.0
Japan	16,257.0	15,284.4	17,982.2	18,754.9	18,291.4	17,197.9	16,311.0	16,826.0	16,625.2	15,645.1	15,080.0	14,537.6	12,259.3	12,002.2
Kazakhstan	39.0	30.1	55.9	43.5	43.0	43.4	68.0	40.0	92.5	103.2	104.2	159.2	210.2	272.4
Kyrgyzstan	9.2	6.9	19.0	12.0	11.8	19.0	5.6	6.5	4.8	7.4	4.7	5.9	6.9	8.6
Laos	0.0	0.0	0.3	0.0	0.6	0.9	0.0	0.5	0.0	0.7	0.7	0.5	0.3	0.2
Malaysia	75.8	114.3	142.3	318.6	313.6	474.8	626.9	960.7	764.4	1,361.3	1,443.5	1,421.9	1,623.2	1,797.4
Maldives	0.4	0.1	0.0	0.0	0.0	0.1	0.0	0.7	0.1	1.0	0.0	0.2	0.0	0.0
Mongolia	3.9	2.6	5.3	10.7	3.8	2.6	25.5	14.2	22.0	20.8	10.6	17.5	17.6	6.8
Nepal	3.1	2.8	7.0	3.0	1.8	3.3	1.3	4.6	8.6	7.4	8.0	14.1	10.5	12.4
North Korea	0.3	1.0	3.8	4.7	1.7	1.3	2.3	3.1	1.7	3.6	5.2	3.9	12.9	9.3
Pakistan	70.4	70.4	123.5	165.1	241.2	299.8	285.7	328.9	389.4	407.8	494.6	532.7	598.5	725.1

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Papua New Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.0	1.0	1.2	0.0	0.0
Philippines	19.9	25.5	29.0	29.7	37.2	41.9	25.3	35.7	43.7	47.0	49.4	62.8	198.0	167.5
Singapore	919.5	1,138.4	1,247.3	1,521.4	1,358.1	1,480.5	1,373.2	1,501.8	1,480.5	1,490.2	1,317.8	1,393.4	1,150.1	1,045.1
South Korea	4,387.1	4,585.4	5,196.3	6,919.6	7,285.0	6,678.2	6,519.7	7,166.7	6,803.7	6,510.0	6,079.0	6,098.1	6,066.5	5,521.1
Sri Lanka	14.3	18.0	17.2	18.6	19.1	8.8	7.2	11.9	10.7	19.1	18.8	18.0	19.5	72.1
Taiwan	2,313.7	2,579.2	3,443.9	3,867.8	4,573.8	4,054.4	4,346.7	4,384.9	4,838.9	3,803.0	3,911.5	3,645.6	3,045.1	2,748.5
Tajikistan	1.0	3.7	3.6	2.3	8.6	6.2	2.8	6.0	3.8	7.6	4.5	6.2	10.3	4.7
Thailand	81.8	93.5	160.5	177.7	283.7	264.6	343.2	448.1	357.0	364.9	412.9	340.6	372.2	420.4
Timor-Leste	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3	0.3	0.0	0.8
Turkmenistan	2.0	1.0	0.5	1.3	0.3	0.5	0.5	1.0	3.8	3.9	0.3	3.1	3.0	1.2
Uzbekistan	126.7	158.4	156.0	145.9	136.3	150.4	162.0	140.1	124.3	115.9	115.7	131.6	104.4	127.4
Vietnam	73.6	48.5	67.4	66.4	89.0	131.9	150.1	83.5	118.6	136.2	155.5	207.3	181.0	214.0
Australia and Oceania	1,594.0	1,861.2	2,337.6	2,608.6	2,895.1	2,585.0	2,629.8	2,970.9	3,178.6	3,052.6	2,972.9	3,384.3	2,541.2	2,595.4
Australia	1,437.0	1,652.2	2,093.9	2,323.4	2,640.7	2,326.2	2,348.8	2,686.4	2,849.6	2,788.4	2,681.9	3,099.4	2,321.7	2,336.2
Cook Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Fiji	0.0	0.0	0.7	0.0	1.9	0.8	1.0	3.0	3.0	0.8	1.4	0.8	0.0	1.1
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micronesia, Federated States of	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	156.8	209.0	243.0	285.2	252.4	257.9	279.6	281.4	325.5	263.3	289.5	284.2	219.5	258.1
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Solomon Islands	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unassigned	319.6	273.8	330.8	351.7	422.2	314.9	175.3	168.1	132.6	154.3	479.5	132.6	131.7	278.4

na = not applicable; country data do not exist.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis. The sum of the regions, countries, or economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-39

S&E articles in psychology, by region, country, or economy: 2003–16

(Number)

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	19,476.0	20,821.0	23,082.0	25,186.0	26,698.0	29,058.0	30,740.0	32,030.0	34,502.0	36,688.0	38,529.0	39,974.0	40,539.0	38,925.0
North America	10,620.3	11,153.9	12,433.6	13,445.7	13,512.5	14,310.7	15,115.3	15,598.0	16,227.0	16,990.6	17,331.5	18,272.9	17,818.3	16,679.9
Canada	1,082.8	1,210.3	1,294.0	1,447.7	1,578.7	1,628.6	1,761.1	1,822.6	1,836.7	2,010.7	2,111.5	2,145.9	2,154.4	2,154.6
Greenland	0.0	0.0	0.0	0.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mexico	63.0	64.3	63.3	91.8	108.2	99.3	120.9	134.7	155.2	127.1	147.7	138.8	151.4	132.2
United States	9,474.5	9,879.2	11,076.3	11,905.8	11,825.0	12,582.8	13,233.2	13,640.7	14,235.0	14,852.8	15,072.4	15,988.3	15,512.6	14,393.1
Central America and Caribbean	19.2	25.8	31.8	32.2	30.2	28.3	38.6	44.8	46.1	39.1	54.4	39.0	42.8	43.1
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas, The	1.4	1.0	1.0	0.2	1.8	1.0	1.7	3.6	0.0	0.8	2.2	0.2	1.1	0.4
Barbados	0.0	0.9	0.0	1.0	0.0	0.0	2.4	2.0	0.3	1.0	0.7	1.1	0.0	1.0
Belize	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Costa Rica	1.0	1.1	2.8	3.4	6.5	3.6	5.4	7.1	7.8	8.3	6.1	9.0	6.5	3.1
Cuba	1.1	3.7	2.7	0.3	4.4	5.1	2.4	3.4	8.3	5.7	8.7	4.7	4.4	5.2
Dominica	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.5	0.0	2.9	3.2	0.5	1.5	0.2
Dominican Republic	0.0	0.0	0.0	0.0	1.0	0.1	0.0	1.1	0.2	0.5	0.5	0.0	0.9	1.1
El Salvador	0.0	0.0	0.0	0.7	0.0	0.0	0.0	1.0	0.0	1.0	0.0	0.2	0.8	0.3

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Grenada	0.0	0.5	0.0	0.2	0.0	0.0	0.0	0.3	0.0	0.0	3.0	0.9	1.0	0.5
Guatemala	0.0	0.4	0.5	1.5	0.7	1.0	0.6	0.5	0.0	1.3	0.2	2.1	2.6	0.5
Haiti	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.5	0.1	0.3	0.5	1.2	0.5	0.8
Honduras	0.0	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.3
Jamaica	1.5	1.2	1.3	1.2	1.8	2.4	5.5	2.6	5.3	1.2	5.7	4.3	3.5	3.2
Nicaragua	0.0	0.4	1.0	0.0	0.0	0.0	0.0	0.8	0.0	0.3	0.0	0.3	0.0	0.5
Panama	2.0	0.6	1.6	2.8	2.5	1.3	2.5	3.3	4.3	4.9	4.4	4.0	2.8	4.5
Puerto Rico	10.3	13.0	17.1	19.3	11.3	12.9	16.2	13.6	17.7	10.2	14.5	7.5	12.6	16.7
Saint Kitts and Nevis	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	1.3	0.7
Saint Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Saint Vincent and the Grenadines	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	1.9	1.9	2.0	1.5	0.0	0.0	1.9	4.1	2.1	0.8	4.7	2.8	2.7	4.3
South America	120.5	158.1	201.9	449.7	613.4	790.5	865.5	955.2	979.7	1,280.0	1,221.2	1,209.8	1,489.4	1,461.0
Argentina	25.0	33.9	27.4	34.7	44.9	73.6	92.8	106.5	99.6	140.1	131.4	129.8	152.3	151.1
Bolivia	0.0	0.0	0.8	0.0	1.0	0.3	0.1	0.3	1.6	0.2	0.2	0.7	0.8	1.2
Brazil	64.2	79.8	118.8	341.8	400.6	556.2	584.1	682.2	694.5	894.1	887.5	852.3	1,040.9	1,005.7
Chile	12.4	18.5	19.3	27.4	48.3	57.1	83.4	81.8	74.3	121.2	113.4	128.0	170.5	153.4
Colombia	12.9	13.5	16.0	29.0	98.1	78.2	82.1	60.9	82.1	95.0	71.5	70.2	75.0	103.7
Ecuador	0.0	1.4	0.0	0.4	0.3	0.4	1.1	0.7	0.9	3.0	0.0	0.3	5.2	7.7

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Guyana	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	1.0
Paraguay	0.0	0.0	1.0	1.0	0.5	2.0	0.0	1.0	1.1	2.0	0.0	0.0	2.0	0.3
Peru	1.2	2.2	3.4	3.7	5.4	5.7	4.3	5.6	7.9	5.4	8.5	11.0	19.2	18.6
Suriname	0.0	0.0	0.8	0.8	1.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uruguay	0.1	0.8	6.8	6.3	7.7	8.2	6.0	7.5	8.5	9.8	6.5	12.1	14.1	13.4
Venezuela	4.7	8.0	7.6	4.6	5.8	8.8	11.3	8.8	9.3	9.2	2.2	4.8	9.5	4.9
Europe	6,463.7	7,150.0	7,722.4	8,355.6	9,336.2	10,376.2	11,112.3	11,382.6	12,820.0	13,555.2	14,609.5	14,858.3	15,144.9	14,671.6
EU	6,019.3	6,674.8	7,200.4	7,762.1	8,633.5	9,550.0	10,159.7	10,461.1	11,852.5	12,528.6	13,486.6	13,633.7	13,778.9	13,189.4
Austria	73.5	87.7	82.1	86.2	90.5	128.7	136.1	140.9	178.2	203.6	193.5	215.5	242.4	187.1
Belgium	182.7	260.3	264.4	333.3	333.2	407.4	416.4	440.2	453.0	511.7	509.7	540.2	526.1	530.0
Bulgaria	3.4	1.7	1.4	6.3	4.7	4.2	6.7	3.6	5.7	12.8	10.1	10.0	7.7	4.3
Croatia	11.8	3.7	9.6	7.2	23.7	25.8	41.6	32.3	81.9	76.6	108.4	111.1	75.2	83.0
Cyprus	5.3	5.5	3.7	9.2	10.5	14.0	10.8	15.5	18.0	16.6	32.4	29.0	36.7	40.7
Czech Republic	59.8	80.2	76.5	105.1	111.2	106.8	90.7	112.4	110.9	130.8	156.7	124.2	187.1	150.1
Denmark	79.7	83.7	77.9	98.2	99.4	108.2	125.0	126.4	132.8	167.8	174.2	218.2	218.8	214.6
Estonia	13.5	13.6	9.9	8.6	19.3	12.4	16.7	22.5	16.9	40.7	39.5	29.0	32.3	32.3
Finland	128.7	164.5	137.2	149.3	162.9	164.4	198.7	178.5	228.5	213.9	224.5	269.2	282.3	265.8
France	786.9	913.7	936.1	936.0	1,059.5	1,117.2	1,166.7	1,157.1	1,247.3	1,244.7	1,316.4	1,267.6	1,259.1	1,150.9
Germany	1,030.7	1,078.2	1,231.1	1,327.0	1,445.6	1,657.0	1,723.4	1,753.8	1,939.2	2,080.1	2,179.3	2,291.1	2,198.5	2,267.9

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greece	42.0	48.3	62.3	70.9	71.8	88.0	87.6	115.9	124.9	120.5	144.5	129.4	142.4	122.3
Hungary	27.3	31.3	27.2	31.9	57.9	55.9	60.2	49.2	83.9	80.8	104.7	92.8	100.1	113.8
Ireland	35.9	60.3	59.8	59.7	74.9	88.4	90.1	95.8	112.1	142.1	155.3	148.3	149.9	147.3
Italy	293.1	329.8	321.0	397.3	462.1	542.9	620.5	634.5	814.2	914.3	984.6	1,006.1	1,192.4	1,094.6
Latvia	0.9	0.7	1.1	0.0	0.3	2.2	1.8	0.7	0.0	4.0	1.9	3.8	4.8	1.5
Lithuania	0.0	4.1	5.7	2.5	6.2	3.8	4.6	5.1	2.5	20.1	17.5	19.2	19.6	20.0
Luxembourg	2.7	0.0	2.4	3.0	3.5	3.3	3.7	8.8	12.6	11.9	20.7	15.0	14.9	21.0
Malta	0.0	1.1	1.9	2.4	1.6	1.5	4.0	4.9	2.5	6.6	3.9	7.7	6.9	3.5
Netherlands	590.4	655.5	720.0	775.3	885.5	1,066.9	1,121.7	1,207.9	1,252.4	1,270.8	1,199.0	1,320.8	1,218.5	1,156.2
Poland	30.2	32.1	53.1	33.5	62.3	56.7	55.5	62.4	137.7	164.3	274.9	282.7	371.9	325.0
Portugal	34.7	28.5	45.9	57.1	64.8	98.1	119.3	161.0	229.1	269.9	357.7	433.4	400.9	390.3
Romania	2.7	7.9	5.7	2.9	11.6	22.8	21.2	24.1	59.6	91.1	115.5	88.4	90.8	72.5
Slovakia	26.9	36.7	20.9	26.0	26.8	30.8	46.8	42.0	94.9	77.2	120.9	83.3	80.3	92.6
Slovenia	9.5	15.5	12.1	11.2	12.9	19.2	18.8	18.2	30.1	24.2	20.8	45.7	26.7	45.0
Spain	289.2	344.5	376.0	425.2	498.9	645.7	737.7	775.3	965.5	1,042.7	1,166.5	1,228.4	1,180.8	1,086.0
Sweden	255.4	231.1	272.4	314.0	338.2	333.7	332.9	308.6	353.3	385.1	415.2	464.6	495.3	439.9
United Kingdom	2,002.1	2,154.8	2,383.0	2,482.9	2,693.7	2,743.9	2,900.5	2,963.4	3,164.5	3,203.7	3,438.5	3,159.3	3,216.5	3,131.0
Other Europe	444.4	475.2	522.0	593.5	702.7	826.2	952.6	921.5	967.5	1,026.6	1,122.8	1,224.6	1,366.0	1,482.3
Albania	0.0	0.3	0.0	1.2	0.0	0.0	0.3	0.0	0.0	1.6	0.0	0.0	0.1	0.4

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Belarus	0.0	0.0	1.5	0.0	2.0	2.0	2.2	0.0	0.0	0.0	0.0	1.0	2.7	1.0
Bosnia and Herzegovina	1.2	0.0	0.7	0.6	1.1	1.3	1.7	1.6	2.6	3.4	9.0	8.1	5.0	3.5
Holy See (Vatican City)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iceland	9.2	13.1	3.0	14.1	9.7	16.8	18.4	17.9	14.3	11.0	19.6	19.1	20.4	17.0
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.6	0.0	0.0	0.0	0.5	3.8
Liechtenstein	0.0	0.0	1.0	0.7	0.0	0.0	0.0	0.0	0.0	1.0	0.5	1.1	0.0	0.0
Macedonia	0.0	0.0	1.3	1.2	1.5	2.0	1.2	1.1	1.2	0.3	1.2	2.1	4.8	2.4
Moldova	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.0
Monaco	0.0	0.0	0.0	0.0	0.5	0.0	0.0	1.0	0.0	2.1	0.0	0.2	0.0	0.1
Montenegro[a]	na	na	na	na	0.0	1.0	0.0	0.0	1.0	0.1	1.0	0.4	1.3	2.0
Norway	124.8	120.0	126.2	160.2	167.3	200.3	233.8	258.5	288.8	277.5	313.0	358.0	376.5	286.8
Russia	77.0	83.8	79.7	86.0	92.3	79.9	101.5	87.2	75.8	102.2	85.7	120.6	173.1	403.3
San Marino	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serbia[a]	na	na	na	na	39.2	38.6	37.7	27.4	33.7	38.9	39.5	56.9	51.2	60.7
Serbia and Montenegro[b]	2.7	3.9	5.7	3.7	na	na	na	na	na	na	na	na	na	na
Switzerland	164.4	180.6	208.9	216.9	263.2	339.6	363.4	364.0	384.1	413.3	442.8	462.4	484.3	464.6
Turkey	64.1	70.6	92.8	106.7	124.6	142.4	186.5	157.3	155.2	170.0	204.7	186.0	237.5	229.6
Ukraine	1.0	2.4	1.2	2.2	1.2	2.3	4.9	4.7	8.2	4.2	6.0	8.3	8.9	7.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Middle East	313.8	298.6	342.3	374.6	413.0	480.7	426.7	478.3	552.6	625.2	611.3	692.6	774.7	835.3
Armenia	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.7	0.2	0.5	2.6	2.9	0.0
Azerbaijan	0.0	0.1	0.5	0.0	0.0	1.3	0.0	0.5	0.0	0.0	0.0	0.3	0.0	1.8
Bahrain	2.3	0.7	2.0	2.5	1.0	2.5	1.2	1.5	1.0	0.0	0.6	3.7	1.7	0.1
Gaza Strip	0.7	0.3	1.0	0.8	0.0	1.8	0.0	3.0	0.9	1.7	0.5	1.0	0.4	1.2
Georgia	1.0	0.6	0.3	0.4	0.6	1.2	2.3	3.9	2.6	2.2	1.3	2.0	3.4	7.3
Iran	16.7	16.8	18.8	30.6	33.4	43.8	37.5	46.4	61.5	62.1	70.2	93.2	132.7	148.1
Iraq	0.0	1.2	1.8	1.0	1.0	0.5	0.9	0.1	0.2	2.0	0.3	1.6	1.1	2.6
Israel	251.2	236.4	261.3	284.1	325.3	375.1	347.3	358.7	421.4	487.1	440.4	485.0	518.8	573.9
Jordan	4.5	2.8	6.5	6.1	6.5	1.5	6.3	11.2	8.0	7.9	18.1	14.4	15.3	10.7
Kuwait	16.3	19.8	22.4	30.5	16.9	21.8	14.2	12.6	11.4	17.1	11.9	9.3	10.9	4.5
Lebanon	0.9	2.5	9.8	6.3	9.7	9.3	3.4	9.0	10.3	8.3	10.3	17.6	15.0	16.0
Oman	1.5	0.5	0.0	0.0	2.8	3.5	1.3	0.5	6.1	1.0	8.6	2.8	6.9	10.0
Qatar	0.0	1.0	1.5	2.0	1.9	2.0	0.5	2.5	2.2	8.6	5.3	4.2	4.4	6.8
Saudi Arabia	11.3	7.7	9.0	5.5	5.5	5.4	4.5	13.9	12.6	7.5	19.8	33.4	35.5	28.2
Syria	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.0	0.0	0.0
United Arab Emirates	6.4	8.2	7.5	2.8	4.5	8.1	6.3	14.6	12.8	16.8	21.0	18.4	24.9	23.1
West Bank	0.1	0.0	0.0	0.7	4.0	1.0	1.0	0.0	1.0	0.8	0.8	2.2	1.0	0.8
Yemen	0.0	0.0	0.0	0.1	0.0	1.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Africa	131.0	140.3	145.6	204.6	170.4	238.2	239.5	290.2	291.1	368.7	442.7	319.7	407.5	365.0
Algeria	0.0	2.0	0.0	1.3	0.5	1.0	2.8	4.4	1.3	4.3	45.2	13.0	20.1	23.2
Angola	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5	0.0	1.7	0.8	0.0
Benin	0.0	1.0	0.3	0.0	0.0	0.2	0.2	1.1	0.1	0.4	0.4	0.0	1.1	0.4
Botswana	0.0	1.0	1.0	0.4	1.0	1.5	1.0	8.0	0.7	1.0	2.3	5.1	6.9	1.6
Burkina Faso	0.0	0.0	0.8	0.0	1.7	0.0	0.5	0.1	0.0	0.3	1.1	0.1	0.2	0.6
Burundi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.1	0.3	0.0	0.0	0.3	0.2
Cameroon	1.7	1.1	5.5	2.2	2.2	1.0	0.9	1.5	1.0	3.3	4.6	2.1	1.1	5.0
Cape Verde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.1
Central African Republic	1.0	0.3	0.0	0.0	0.5	0.3	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Chad	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Congo, Democratic Republic of the	0.0	0.0	1.0	1.1	0.0	0.0	0.0	0.1	0.4	0.8	0.9	0.0	1.7	0.0
Congo, Republic of the	0.3	0.8	0.0	0.6	0.8	0.0	1.4	0.6	0.1	0.6	0.1	0.0	0.2	0.4
Côte d'Ivoire	0.5	0.4	1.9	0.0	1.0	0.5	3.0	2.0	0.0	0.3	1.3	0.3	0.3	1.1
Djibouti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Egypt	3.3	8.8	0.5	2.7	5.8	3.8	8.1	14.1	8.7	11.6	16.4	10.5	14.3	14.5
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eritrea	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ethiopia	0.0	1.0	0.0	0.6	0.0	0.6	0.5	1.6	0.7	2.4	0.6	5.0	1.9	4.0
Gabon	0.3	0.4	2.9	1.7	1.1	1.0	0.3	0.8	0.1	0.4	0.0	0.8	0.0	0.9
Gambia, The	0.0	0.0	0.5	0.7	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Ghana	2.8	2.0	1.0	2.8	1.2	2.1	2.7	4.9	3.1	3.8	5.5	6.3	8.1	8.8
Guinea	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.8	0.3	0.0	0.0	0.0	0.0	0.0
Guinea-Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	2.8	3.8	4.1	6.0	4.2	6.4	7.0	6.7	2.9	10.8	12.1	11.5	8.2	9.3
Lesotho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.6	0.0	0.0	0.0
Liberia	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.0	0.0	0.0	0.3
Libya	0.0	0.0	0.3	0.5	0.5	0.0	0.7	0.0	0.0	5.3	1.1	0.1	1.5	0.0
Madagascar	1.2	0.4	0.5	1.9	1.5	0.9	0.3	0.7	2.2	0.7	3.2	5.4	3.6	0.4
Malawi	0.0	0.2	0.0	0.0	0.0	1.7	1.4	0.9	0.5	1.0	0.0	0.0	0.1	1.3
Mali	0.0	0.0	0.3	0.0	0.2	0.0	0.0	0.1	1.0	0.4	0.0	0.2	0.0	1.0
Mauritania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Mauritius	0.0	0.0	0.0	1.0	0.0	1.0	1.0	1.3	0.5	1.6	0.6	2.5	3.3	2.0
Morocco	0.0	1.0	1.0	1.2	1.3	2.6	0.6	8.0	6.8	4.8	5.6	3.3	2.9	3.0
Mozambique	1.0	1.0	0.0	0.0	0.2	0.0	0.0	0.2	0.3	0.9	0.0	0.5	0.7	0.6
Namibia	0.0	0.1	0.3	0.0	0.0	0.0	0.0	1.5	0.5	1.8	0.2	0.6	1.7	0.0
Niger	0.2	0.0	0.0	0.0	0.0	1.0	0.3	0.7	0.0	0.1	0.0	0.5	0.5	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nigeria	5.0	10.3	6.7	18.7	11.0	9.5	18.4	12.7	21.6	19.7	17.5	22.4	27.0	29.8
Rwanda	0.0	0.0	0.8	0.4	0.6	0.5	0.4	1.0	0.8	1.6	0.3	0.3	1.1	2.4
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	1.0	0.0	1.0	0.0	0.0	0.0	1.3	1.1	1.8	3.3	0.5	0.3	1.1	0.1
Seychelles	0.0	0.2	0.0	0.0	1.5	0.0	0.3	0.1	0.0	0.0	0.2	0.0	0.0	0.0
Sierra Leone	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.3	0.1	0.5	0.2
Somalia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	106.9	100.5	105.7	147.2	124.2	186.9	174.1	186.1	217.4	263.4	295.5	196.0	275.4	225.8
South Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sudan	0.0	0.0	1.0	0.3	0.0	1.8	1.0	0.0	0.5	1.0	1.0	0.1	0.7	0.4
Swaziland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	2.8	1.1	1.0	0.9	0.0
Tanzania	0.3	0.5	0.3	2.6	0.5	2.2	1.2	4.0	2.7	2.9	2.7	5.0	2.5	1.9
Togo	0.0	0.0	1.9	0.0	0.0	0.0	0.2	0.5	0.0	0.0	2.0	0.2	0.0	0.6
Tunisia	0.8	1.0	3.3	3.3	1.8	3.0	2.4	12.9	4.1	5.6	7.5	11.7	10.4	10.1
Uganda	0.9	1.4	1.3	4.0	2.1	3.3	4.5	4.1	5.1	6.8	5.9	6.9	4.9	8.5
Western Sahara	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zambia	0.0	0.0	0.0	1.3	2.1	1.9	0.2	1.4	2.3	0.0	0.4	4.2	0.9	2.2
Zimbabwe	0.6	0.0	0.8	2.0	3.3	2.8	1.6	2.7	1.8	4.2	4.3	2.1	2.6	4.3
Asia	685.0	800.7	931.6	963.6	1,188.8	1,245.9	1,447.2	1,679.6	1,872.3	2,077.2	2,191.4	2,438.4	2,736.0	2,790.8

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Afghanistan	0.0	0.3	0.0	0.5	0.0	0.0	0.2	0.0	0.5	0.2	0.0	0.3	0.0	0.0
Bangladesh	1.3	1.2	0.2	0.5	2.4	0.8	2.0	4.7	4.3	2.6	2.2	3.5	4.1	6.2
Bhutan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brunei	0.0	0.5	0.0	0.0	3.0	0.0	0.0	0.0	1.0	0.2	0.5	0.0	0.0	2.9
Burma	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.7
Cambodia	0.0	0.0	0.0	0.3	0.0	0.5	0.0	0.3	1.6	0.0	0.3	0.8	0.7	1.2
China	149.6	177.0	161.8	197.5	234.7	284.1	385.4	418.7	481.8	634.0	666.3	833.9	1,039.7	1,098.0
India	35.3	47.8	40.6	63.6	63.1	63.0	61.0	89.4	141.2	149.9	145.7	188.9	233.0	214.3
Indonesia	1.3	2.3	1.6	3.9	3.8	3.1	7.9	93.4	3.4	18.3	15.2	13.9	15.9	15.1
Japan	313.0	391.8	499.8	419.7	510.6	477.8	521.0	544.8	543.1	555.5	565.2	546.1	550.8	568.0
Kazakhstan	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.6	0.2	1.1	0.7	6.6	0.8	1.6
Kyrgyzstan	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3	0.5	0.0	0.0	1.0	0.3	0.7
Laos	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.0	1.3	0.0	0.6	0.0
Malaysia	7.0	9.0	5.9	14.5	3.1	8.7	12.4	20.5	36.9	54.4	50.2	66.6	64.6	69.9
Maldives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Mongolia	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.4	0.0	0.0	0.8	0.0	0.2	0.2
Nepal	0.5	1.2	0.9	0.3	0.5	0.2	0.7	0.8	0.3	0.3	0.3	2.2	1.2	1.2
North Korea	0.0	0.0	0.5	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pakistan	1.6	4.1	1.8	6.2	5.5	7.1	5.2	6.8	14.4	6.4	16.2	17.3	23.4	51.5

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Papua New Guinea	0.5	1.0	0.0	0.0	0.0	0.3	0.0	0.5	0.0	0.0	0.2	0.0	0.0	0.0
Philippines	3.9	2.1	7.2	5.2	2.4	6.4	3.8	5.9	6.6	12.5	12.8	21.5	15.8	22.2
Singapore	36.6	20.7	26.1	45.3	46.4	65.7	76.4	70.0	89.1	108.8	118.5	133.1	117.8	117.4
South Korea	50.8	54.4	70.6	73.9	101.7	90.2	122.0	140.4	197.9	184.1	230.0	265.3	327.2	331.4
Sri Lanka	1.0	1.9	0.0	0.8	1.2	1.0	2.1	2.4	0.6	5.8	4.2	2.7	3.8	3.9
Taiwan	72.4	80.5	94.9	116.6	191.9	218.8	230.7	265.5	329.6	316.2	338.3	310.8	298.8	250.0
Tajikistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.3
Thailand	9.0	3.6	16.5	12.8	18.4	16.5	12.8	11.8	16.1	24.8	18.2	18.6	27.0	29.4
Timor-Leste	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turkmenistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uzbekistan	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.2	5.3	0.5
Vietnam	0.2	1.3	2.8	2.1	0.1	1.5	2.4	1.0	2.0	2.0	4.3	5.3	4.8	3.4
Australia and Oceania	803.9	915.1	1,043.3	1,120.9	1,174.4	1,331.5	1,361.4	1,482.8	1,601.5	1,651.9	1,919.2	2,053.2	2,079.1	2,047.8
Australia	658.4	731.0	877.3	909.7	986.6	1,119.5	1,149.4	1,242.3	1,313.7	1,400.8	1,653.0	1,801.2	1,841.1	1,792.0
Cook Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Fiji	0.0	0.5	1.7	0.7	1.0	1.0	1.4	0.5	1.2	1.0	0.5	2.3	0.0	1.1
Kiribati	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Micronesia, Federated States of	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	145.6	183.6	164.4	210.4	186.7	211.0	210.5	239.5	286.6	249.8	265.3	249.7	237.7	254.7
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Samoa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Tonga	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Unassigned	318.5	178.6	229.5	239.1	259.1	256.0	133.6	118.4	111.8	100.3	147.8	90.1	46.2	30.4

na = not applicable; country data do not exist.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis. The sum of the regions, countries, or economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-40

S&E articles in social sciences, by region, country, or economy: 2003–16

(Number)

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World	45,782.0	49,293.0	53,975.0	57,627.0	63,319.0	70,460.0	79,167.0	88,162.0	97,400.0	105,265.0	114,848.0	121,263.0	121,957.0	122,483.0
North America	20,294.2	21,463.1	23,329.4	24,159.4	25,506.6	27,122.4	29,581.3	31,956.8	33,231.3	34,021.6	35,346.8	36,861.0	36,591.1	34,806.8
Canada	2,283.8	2,469.4	2,700.3	2,910.6	3,138.6	3,308.2	3,531.0	4,075.3	4,053.7	4,039.4	4,447.6	4,427.9	4,623.8	4,356.4
Greenland	1.0	0.0	1.0	0.3	0.3	0.0	1.0	1.8	0.3	3.0	2.4	2.0	4.5	2.7
Mexico	169.8	174.1	213.3	230.0	258.1	345.7	430.4	406.9	478.3	636.2	694.2	877.0	866.4	838.7
United States	17,839.6	18,819.5	20,414.7	21,018.5	22,109.6	23,468.5	25,618.8	27,472.8	28,699.0	29,343.0	30,202.5	31,554.1	31,096.5	29,609.0
Central America and Caribbean	62.9	62.0	61.7	86.6	98.4	115.6	115.1	110.7	122.0	132.0	171.3	148.3	132.5	168.7
Antigua and Barbuda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	1.6	1.1	0.1
Bahamas, The	1.0	0.0	1.0	0.0	0.0	1.5	0.7	1.0	0.0	0.6	0.7	0.2	0.8	2.5
Barbados	4.8	2.8	5.5	8.3	8.1	8.2	9.3	10.0	8.5	11.2	16.5	10.5	12.6	7.8
Belize	1.6	0.0	0.0	0.7	0.3	0.0	1.8	1.2	1.1	0.3	1.9	0.4	0.7	1.3
Costa Rica	6.5	7.8	11.4	10.7	8.3	14.0	11.4	15.6	16.1	24.1	23.8	25.6	26.3	35.1
Cuba	9.4	6.8	11.5	9.5	12.4	10.1	18.2	10.1	19.3	11.2	27.4	24.6	14.9	21.3
Dominica	1.0	0.3	2.0	2.1	1.5	3.0	3.5	2.3	1.0	1.0	0.5	2.3	1.3	0.3
Dominican Republic	1.5	1.1	0.5	1.5	1.5	1.9	0.2	2.3	2.0	4.6	7.3	5.4	3.6	3.3
El Salvador	0.0	0.5	1.9	2.8	0.0	0.0	0.0	1.8	0.5	1.2	0.8	1.0	0.9	2.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Grenada	1.0	0.0	0.1	0.0	0.0	0.0	0.3	0.0	1.7	0.9	0.3	1.0	1.0	0.0
Guatemala	1.7	2.7	2.0	3.6	4.1	3.6	7.5	4.5	3.7	5.9	12.3	10.2	11.7	13.0
Haiti	0.0	1.2	0.5	3.0	0.0	0.0	0.8	1.2	1.0	1.1	1.0	1.9	2.3	0.5
Honduras	0.4	2.0	0.5	0.9	0.0	1.4	0.3	2.2	3.8	3.1	1.8	4.8	1.0	2.3
Jamaica	8.0	15.6	8.7	14.8	26.1	29.1	15.6	18.8	20.0	19.8	14.6	12.8	17.3	19.3
Nicaragua	2.5	2.5	1.5	2.5	4.9	3.1	1.5	5.6	2.7	4.1	2.9	3.7	3.5	2.8
Panama	2.3	1.3	3.9	2.0	3.9	0.8	1.5	3.6	2.6	4.0	4.5	2.0	4.1	10.0
Puerto Rico	16.0	10.2	5.3	13.2	15.4	21.4	23.1	16.0	14.2	15.9	25.5	25.0	18.5	24.5
Saint Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0
Saint Lucia	0.7	0.0	0.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.2
Saint Vincent and the Grenadines	1.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	3.7	7.3	5.0	10.1	11.2	17.5	19.6	14.8	23.0	23.0	28.2	15.3	10.3	21.8
South America	462.9	627.5	611.9	826.9	1,459.3	1,801.0	2,230.8	2,681.6	3,009.0	3,591.0	4,023.1	4,668.1	4,913.6	5,540.9
Argentina	124.1	131.1	122.1	120.5	181.6	257.1	345.3	376.4	466.7	582.6	604.9	828.2	839.0	793.1
Bolivia	1.6	7.5	4.0	5.0	5.1	8.4	9.4	8.1	11.6	10.7	13.1	7.0	8.1	13.7
Brazil	177.5	251.4	267.2	462.5	804.2	929.7	1,131.6	1,442.9	1,557.2	1,886.4	2,017.8	2,342.6	2,364.1	2,929.4
Chile	70.0	154.8	108.9	143.8	278.2	374.6	405.8	457.7	570.0	597.6	736.2	780.6	945.5	944.5
Colombia	32.5	26.1	31.2	38.3	77.2	87.6	184.2	212.6	234.1	297.5	414.1	448.5	485.0	574.3
Ecuador	1.7	6.0	6.3	4.7	1.9	6.2	11.8	7.5	10.1	14.0	28.5	39.3	67.4	93.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Guyana	0.5	1.8	1.3	0.0	1.5	3.5	1.8	4.7	2.1	2.0	2.3	1.2	1.9	0.0
Paraguay	1.0	2.0	0.0	1.0	1.0	1.0	0.8	3.2	3.3	7.8	4.3	1.0	4.8	1.2
Peru	8.7	14.7	16.1	15.9	20.2	17.1	24.5	30.4	53.1	56.1	63.5	74.1	71.9	76.4
Suriname	0.0	0.3	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.1	0.7	2.2	0.0
Uruguay	13.8	10.6	8.5	11.3	16.4	23.6	26.6	25.5	37.3	42.2	44.4	62.0	52.4	67.1
Venezuela	31.6	21.3	45.3	24.0	71.9	92.2	89.1	112.5	62.4	94.0	92.9	83.0	71.3	47.9
Europe	18,448.1	20,010.1	21,977.7	23,538.7	26,289.4	29,288.0	33,935.4	38,016.0	44,062.8	48,417.9	53,301.3	55,406.2	56,179.7	56,761.6
EU	17,263.5	18,676.7	20,384.4	21,865.4	24,284.0	26,970.4	31,193.5	34,667.4	40,078.3	43,910.7	47,438.1	48,953.5	48,874.8	49,245.8
Austria	234.4	301.7	283.3	339.5	343.6	443.0	492.8	533.0	600.0	724.1	786.9	815.4	836.1	888.7
Belgium	513.7	577.1	607.8	617.3	688.0	752.1	921.8	1,067.9	1,218.6	1,335.9	1,531.8	1,474.0	1,381.0	1,365.1
Bulgaria	19.2	14.6	12.2	21.4	27.0	31.4	51.9	45.4	58.5	52.2	72.1	76.3	67.2	107.4
Croatia	207.2	190.4	241.5	261.2	381.6	506.9	549.6	680.9	740.5	632.4	788.5	683.2	696.0	677.0
Cyprus	20.8	22.6	21.5	25.8	31.1	48.7	52.8	52.3	82.1	77.3	105.2	95.7	109.4	106.8
Czech Republic	234.2	227.5	232.5	267.9	319.6	380.7	445.2	530.9	700.2	816.9	952.8	1,146.9	1,431.7	1,305.7
Denmark	285.0	312.6	363.2	354.4	408.0	471.0	557.6	597.8	812.3	818.9	847.9	904.1	1,032.5	997.7
Estonia	34.5	38.0	35.9	39.4	40.0	67.0	96.2	134.0	127.6	114.9	189.6	185.6	229.0	206.3
Finland	295.0	286.7	331.0	322.7	357.7	449.8	491.9	532.9	608.7	657.8	694.9	817.3	787.1	876.9
France	2,541.6	2,808.2	2,795.4	2,936.0	3,216.7	3,429.0	4,044.4	4,359.9	4,707.9	4,955.9	5,179.7	5,113.2	4,995.5	4,990.9
Germany	1,978.2	2,184.4	2,379.3	2,624.3	2,735.7	2,958.3	3,533.8	3,857.2	4,483.0	4,942.8	5,265.8	5,759.9	5,847.9	5,866.7

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greece	258.1	283.8	306.3	327.3	332.8	417.7	469.2	524.2	563.6	566.1	630.8	641.6	535.6	594.3
Hungary	139.2	137.2	110.9	162.9	275.1	339.4	335.5	314.8	403.5	472.6	454.3	517.6	496.7	447.3
Ireland	190.8	234.5	242.9	288.8	353.7	370.1	429.2	518.6	603.5	565.8	611.1	637.5	606.2	649.1
Italy	814.9	937.6	996.1	1,062.7	1,272.9	1,521.3	1,861.2	2,167.9	2,501.2	3,114.1	3,532.7	3,919.5	4,022.5	4,216.1
Latvia	4.3	6.4	7.7	12.5	30.4	22.8	13.0	35.5	32.4	46.6	41.5	65.4	65.9	83.7
Lithuania	18.1	45.0	141.1	168.1	173.9	411.5	379.3	470.7	443.6	421.3	386.1	500.4	363.2	413.0
Luxembourg	4.5	10.2	10.0	20.6	19.8	13.2	33.5	40.3	51.0	50.0	68.7	77.6	67.7	97.3
Malta	7.0	8.6	10.8	12.5	12.8	15.5	12.3	17.6	19.6	28.7	21.5	27.8	29.9	30.6
Netherlands	971.2	1,089.3	1,147.0	1,295.9	1,542.5	1,661.4	1,881.2	2,106.8	2,182.1	2,455.8	2,509.0	2,660.5	2,554.9	2,558.0
Poland	149.5	187.3	175.2	262.0	242.4	334.3	451.4	496.7	611.1	655.6	835.0	1,090.4	1,133.3	1,356.5
Portugal	140.1	157.0	195.7	232.2	293.8	330.6	354.3	428.2	592.3	693.3	775.9	837.4	817.2	969.5
Romania	54.3	33.9	43.4	87.0	73.0	318.6	705.4	805.3	1,305.9	1,263.6	1,467.7	1,301.8	1,338.8	1,024.6
Slovakia	165.7	168.8	153.0	158.0	166.0	206.5	208.9	223.9	219.3	267.3	377.9	414.3	449.9	590.9
Slovenia	150.3	150.5	181.2	193.2	280.8	301.0	353.2	401.9	546.6	596.0	598.2	723.5	554.2	597.8
Spain	878.1	978.4	1,031.1	1,193.3	1,373.8	1,671.5	2,072.7	2,290.9	3,076.9	3,822.3	4,248.0	4,607.0	4,199.5	4,396.7
Sweden	502.5	509.9	605.4	668.7	712.2	875.1	905.7	1,003.3	1,154.3	1,332.1	1,442.3	1,515.5	1,523.6	1,468.8
United Kingdom	6,451.2	6,774.8	7,722.9	7,909.8	8,579.2	8,621.9	9,489.3	10,428.6	11,631.8	12,430.3	13,022.2	12,344.2	12,702.5	12,362.3
Other Europe	1,184.5	1,333.5	1,593.3	1,673.3	2,005.5	2,317.6	2,741.9	3,348.6	3,984.5	4,507.2	5,863.3	6,452.7	7,304.9	7,515.8
Albania	5.0	3.5	2.3	4.6	1.3	3.8	6.0	11.9	20.1	43.8	187.7	188.8	105.7	19.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Andorra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.9	1.7	0.3	0.4
Belarus	2.5	6.4	4.8	7.7	7.4	11.1	7.3	12.3	5.0	7.3	8.0	16.9	16.8	12.4
Bosnia and Herzegovina	2.3	5.7	12.2	11.4	14.3	15.5	32.2	43.4	30.0	29.3	46.3	39.0	41.2	43.7
Holy See (Vatican City)	0.0	0.0	0.0	0.0	0.0	1.0	2.0	0.0	0.0	1.0	2.7	1.0	1.5	0.0
Iceland	20.6	16.0	15.0	16.5	23.9	26.4	31.4	34.9	54.0	50.8	49.3	36.6	52.6	49.7
Kosovo	0.0	0.0	0.0	0.0	0.0	0.3	2.8	2.3	5.8	5.2	7.6	8.1	9.9	6.7
Liechtenstein	0.0	0.0	1.5	0.5	0.3	1.0	1.3	1.8	2.0	1.0	1.0	1.8	1.3	3.1
Macedonia	1.2	2.1	3.3	3.9	4.8	7.4	17.3	5.7	20.9	28.9	42.3	36.3	35.8	46.4
Moldova	1.0	0.5	1.5	3.1	4.2	3.0	10.0	2.6	10.3	15.0	24.7	32.6	8.1	22.3
Monaco	0.0	0.3	1.0	0.0	1.5	0.1	1.0	0.0	1.1	0.8	2.3	2.0	0.0	1.2
Montenegro[a]	na	na	na	na	2.8	2.5	1.0	2.8	2.9	3.0	12.5	32.8	15.8	40.6
Norway	339.2	392.3	471.1	514.3	575.8	639.6	685.6	776.1	947.7	934.5	962.4	1,028.2	1,047.1	1,016.8
Russia	158.3	157.7	179.3	212.5	218.2	257.9	328.2	392.7	568.9	862.1	1,645.8	1,968.8	2,737.9	3,082.8
San Marino	0.0	0.0	0.0	0.0	0.0	1.3	0.5	0.7	0.0	2.5	0.6	0.5	1.0	0.0
Serbia[a]	na	na	na	na	53.3	62.6	87.7	118.4	179.3	192.5	215.6	283.8	280.7	290.9
Serbia and Montenegro[b]	11.0	16.6	12.9	17.7	na	na	na	na	na	na	na	na	na	na
Switzerland	385.0	420.9	497.2	489.6	606.1	710.3	785.9	938.6	998.1	1,123.5	1,117.7	1,273.6	1,294.1	1,285.4
Turkey	244.1	267.5	366.5	359.1	472.8	549.5	704.9	961.9	1,080.1	1,135.8	1,205.9	1,177.1	1,284.4	1,359.5
Ukraine	14.3	44.0	24.7	32.5	19.0	24.3	36.8	42.6	58.2	70.4	330.2	323.2	370.5	235.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Middle East	673.2	765.2	747.2	857.2	924.2	1,083.7	1,290.5	1,412.4	2,023.5	2,254.7	2,454.7	2,110.5	2,450.7	2,414.1
Armenia	8.3	8.1	7.5	16.8	18.7	4.3	20.8	13.5	19.0	17.5	24.8	19.5	18.9	40.2
Azerbaijan	2.0	1.0	2.7	1.0	2.5	3.0	1.2	7.7	5.9	11.3	18.7	18.9	27.4	18.1
Bahrain	1.5	2.9	2.0	6.3	1.0	5.2	4.5	6.5	9.0	8.3	10.7	12.3	9.1	11.4
Gaza Strip	0.0	0.5	0.0	1.0	2.0	1.5	0.7	1.4	2.8	2.0	0.7	4.3	0.0	2.3
Georgia	10.6	3.9	8.5	9.3	5.5	16.4	15.1	15.9	14.3	16.0	22.1	20.4	22.0	29.4
Iran	18.1	34.8	37.1	49.4	72.7	84.7	132.4	191.3	653.9	786.8	800.6	408.2	623.5	420.5
Iraq	0.5	4.5	3.3	3.9	3.3	8.0	9.2	4.4	9.2	10.7	15.1	14.2	21.4	14.3
Israel	535.1	593.7	548.3	635.5	671.1	753.9	874.0	888.5	924.9	983.0	1,029.6	1,077.1	1,157.0	1,176.4
Jordan	20.8	18.8	20.9	20.1	30.9	32.1	38.8	53.9	76.2	74.9	81.4	78.5	76.4	75.7
Kuwait	9.4	20.3	11.6	17.7	20.3	25.0	22.4	24.5	26.3	28.9	31.7	33.4	28.3	42.3
Lebanon	33.2	28.4	26.7	29.0	23.6	40.8	44.0	52.8	49.8	60.6	80.7	90.1	93.6	79.8
Oman	5.2	2.5	4.5	5.1	3.1	8.0	15.5	14.6	20.8	13.5	25.9	27.2	47.2	83.5
Qatar	0.0	2.3	3.9	2.3	7.9	5.5	10.7	14.0	28.3	31.9	50.0	57.9	61.0	79.3
Saudi Arabia	9.5	19.3	16.8	14.0	21.5	14.7	31.4	37.2	65.4	101.0	137.9	131.0	108.6	152.8
Syria	0.8	1.9	4.2	3.0	3.4	3.5	4.5	8.9	10.4	7.3	12.7	1.6	11.3	9.4
United Arab Emirates	15.6	18.1	40.9	38.9	31.8	65.8	56.2	70.7	99.6	87.3	98.8	104.2	137.2	167.6
West Bank	2.5	2.6	6.8	3.0	4.5	9.4	7.0	4.1	6.3	10.4	7.9	7.5	4.5	9.2
Yemen	0.0	1.5	1.5	1.0	0.5	2.0	2.1	2.5	1.4	3.5	5.5	4.1	3.2	2.0

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Africa	779.9	994.1	1,043.4	1,084.5	1,133.3	1,431.1	1,540.6	1,887.3	2,206.7	2,512.4	3,368.0	4,733.1	3,361.3	3,311.0
Algeria	4.0	10.8	8.4	10.4	13.2	17.3	18.9	11.6	26.8	29.5	40.9	43.1	45.3	49.0
Angola	0.0	2.0	2.7	1.5	1.8	0.0	0.0	2.5	0.0	0.9	2.0	3.5	2.9	4.5
Benin	3.5	6.4	0.9	1.6	5.2	5.3	5.0	7.5	3.6	6.7	7.8	4.8	14.9	7.1
Botswana	21.2	20.9	23.8	31.0	19.0	26.6	18.2	24.4	34.9	29.6	32.4	28.8	28.9	16.1
Burkina Faso	5.8	7.5	5.2	5.9	9.4	3.3	3.9	7.1	12.2	12.0	7.7	7.1	9.5	15.5
Burundi	0.0	1.0	0.0	1.8	1.0	0.6	0.5	1.8	2.1	1.5	2.2	3.4	0.7	0.2
Cameroon	10.2	17.6	23.0	26.1	31.8	24.7	24.8	12.1	40.7	29.8	42.7	51.0	37.0	41.6
Cape Verde	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.5	0.0	2.9	0.2	1.3	0.0
Central African Republic	0.0	0.0	1.2	0.0	1.0	0.8	2.0	0.1	1.2	0.0	0.7	1.7	2.0	0.8
Chad	1.0	0.0	0.7	0.0	0.0	0.3	1.0	0.3	1.3	0.0	0.0	0.2	0.8	1.0
Comoros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.3
Congo, Democratic Republic of the	0.0	0.8	0.5	1.4	1.0	1.7	3.4	4.8	1.6	3.9	6.2	6.1	5.9	8.5
Congo, Republic of the	0.0	0.0	2.5	1.0	1.5	4.5	0.2	4.3	3.3	2.0	2.8	1.3	5.6	3.6
Côte d'Ivoire	3.8	2.2	2.3	5.7	5.5	3.0	4.3	10.8	8.3	12.7	9.0	5.0	15.6	16.7
Djibouti	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0
Egypt	24.0	24.6	32.4	26.6	42.1	46.2	59.7	81.0	138.8	168.4	283.1	205.5	148.3	161.5
Equatorial Guinea	0.0	0.3	0.0	0.0	0.3	0.0	1.0	1.5	0.0	0.0	0.0	0.0	0.3	3.0
Eritrea	3.0	1.6	2.7	1.2	4.6	2.3	1.2	1.5	2.0	1.0	2.1	1.3	0.0	1.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ethiopia	15.0	18.7	11.2	21.6	22.4	34.9	35.1	37.8	37.8	41.6	66.0	73.3	58.5	72.8
Gabon	1.3	1.0	2.0	1.4	1.2	4.9	1.0	1.6	1.2	1.7	0.0	0.0	2.3	0.3
Gambia, The	0.2	2.3	1.5	1.6	1.0	0.5	1.0	2.4	0.3	0.7	0.4	2.1	1.4	0.0
Ghana	13.9	35.3	29.3	24.0	46.2	40.3	41.4	48.0	64.6	85.7	117.5	125.7	127.8	153.6
Guinea	0.0	0.2	0.0	0.5	0.3	0.5	0.2	0.0	0.0	0.5	0.9	0.3	0.2	0.3
Guinea-Bissau	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.1	0.0	0.2	0.5
Kenya	36.4	33.2	49.5	39.8	53.2	69.8	66.4	72.6	85.0	86.4	114.3	136.8	105.0	86.1
Lesotho	2.0	2.5	0.7	4.5	3.0	4.0	2.0	2.0	1.7	5.7	3.8	2.4	6.4	11.1
Liberia	0.0	0.0	0.0	1.4	1.0	1.5	2.0	0.0	0.3	3.0	1.6	3.8	2.9	2.6
Libya	2.0	0.5	4.0	3.5	5.7	5.2	1.3	2.5	6.0	4.7	5.8	5.3	1.0	3.4
Madagascar	1.5	5.6	3.0	3.6	0.8	1.9	1.8	2.8	3.1	2.8	4.6	6.9	4.7	4.0
Malawi	5.2	7.5	8.8	7.2	18.4	11.1	13.2	12.0	15.1	17.4	19.8	21.7	24.2	14.8
Mali	3.4	3.3	1.8	2.8	1.5	1.6	3.5	6.7	6.4	4.3	6.5	4.5	4.5	4.1
Mauritania	0.0	0.0	0.6	0.0	0.0	0.0	1.5	0.0	1.0	3.0	1.5	1.4	0.4	0.0
Mauritius	2.8	7.5	3.2	3.5	5.5	7.9	15.8	9.2	8.5	14.3	11.2	12.5	10.8	16.7
Morocco	9.6	15.7	16.6	17.3	6.7	22.4	29.0	17.6	27.6	33.0	55.2	50.2	57.8	66.4
Mozambique	1.5	3.9	0.6	6.1	2.3	7.4	7.3	7.6	7.0	4.3	8.0	6.1	10.7	9.1
Namibia	1.7	2.5	3.0	0.7	2.2	4.8	2.6	3.4	2.5	7.8	5.6	5.5	8.0	8.3
Niger	1.5	7.0	2.8	1.0	1.6	1.4	7.3	7.5	3.0	2.4	2.3	5.6	4.2	2.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nigeria	54.1	75.9	79.8	76.9	93.9	115.5	174.2	223.3	273.3	306.9	522.0	475.4	320.2	239.7
Rwanda	0.0	0.3	1.4	2.8	0.0	0.8	1.8	7.2	5.8	6.5	5.6	7.9	7.1	10.7
São Tomé and Príncipe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	13.7	10.8	18.6	9.6	13.1	10.6	12.9	9.4	14.2	29.8	17.0	24.0	20.2	14.3
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.3	0.0	0.1	0.5	1.5
Sierra Leone	1.0	0.5	2.0	1.0	0.5	1.5	0.0	0.0	0.6	0.8	3.6	1.8	1.3	6.6
Somalia	0.3	1.0	0.0	0.0	0.0	0.5	1.0	0.5	0.8	0.2	2.5	3.0	1.0	1.0
South Africa	467.9	600.2	571.6	652.0	623.7	827.0	842.1	1,043.9	1,150.9	1,289.2	1,644.6	3,001.3	1,916.3	1,874.8
South Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.5	1.3	2.0	0.0
Sudan	0.0	0.3	1.5	3.7	3.8	5.1	12.0	10.6	9.1	6.6	15.2	14.6	15.1	15.2
Swaziland	1.3	2.5	3.3	1.0	0.5	2.1	2.9	5.0	9.2	4.3	3.7	11.5	8.0	8.1
Tanzania	14.7	13.4	23.4	15.7	18.6	30.3	24.7	37.4	27.6	31.6	25.1	51.1	37.0	43.8
Togo	2.0	1.0	0.0	2.3	1.1	1.1	1.0	3.5	1.0	1.0	2.0	5.1	1.7	3.6
Tunisia	14.0	13.6	25.8	22.2	31.5	41.6	59.9	77.4	97.0	129.8	143.6	181.7	157.8	165.8
Uganda	12.8	13.8	53.3	20.4	18.0	18.0	18.9	33.6	32.3	43.8	49.5	47.1	52.3	55.5
Western Sahara	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Zambia	4.9	4.5	7.3	4.3	3.2	9.7	3.2	4.4	8.4	8.4	12.9	17.5	14.8	24.3
Zimbabwe	18.1	13.5	10.5	17.5	15.2	9.7	9.6	25.7	28.3	34.2	49.4	62.7	52.6	58.5
Asia	2,583.8	2,813.2	3,323.7	3,900.2	4,502.0	5,444.4	6,278.4	7,489.8	8,131.6	9,193.4	10,740.7	11,605.9	12,388.4	13,814.6

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Afghanistan	1.5	0.2	5.2	1.4	6.3	1.8	9.4	11.0	11.6	4.8	4.2	7.7	4.7	2.3
Bangladesh	37.1	31.9	33.8	35.6	37.9	42.9	61.3	56.2	79.3	83.2	98.4	94.1	96.8	85.6
Bhutan	0.0	2.0	1.0	0.0	1.7	1.1	0.3	4.3	2.4	0.0	1.2	2.6	2.6	3.0
Brunei	1.2	1.0	2.5	5.3	1.5	1.3	6.0	2.5	6.5	8.0	11.5	18.4	23.0	16.3
Burma	0.0	0.7	1.1	0.5	5.2	1.4	0.0	0.0	0.3	4.4	4.5	4.8	3.9	5.0
Cambodia	4.6	3.4	4.0	7.6	5.0	5.3	2.6	6.3	7.9	5.9	9.5	9.7	8.4	8.9
China	442.6	571.5	744.1	1,026.9	1,306.1	1,518.6	1,804.6	2,111.2	2,246.2	2,406.5	2,843.0	3,272.9	3,380.4	4,057.8
India	499.3	536.7	501.1	590.8	734.6	1,033.6	1,186.3	1,333.5	1,464.0	1,678.7	1,864.6	2,280.4	2,300.4	2,612.7
Indonesia	27.9	28.1	41.7	42.7	47.3	33.4	61.3	84.4	93.9	116.8	155.5	217.5	442.2	695.5
Japan	752.8	680.6	868.2	818.2	924.1	942.5	1,003.8	1,254.6	1,163.9	1,275.6	1,365.4	1,286.6	1,316.3	1,457.5
Kazakhstan	3.1	4.0	5.7	5.2	4.7	8.3	10.0	12.0	15.4	53.9	249.0	174.2	188.9	239.2
Kyrgyzstan	4.0	0.5	1.0	2.4	1.2	5.0	2.5	3.3	3.3	5.3	12.0	6.0	9.3	12.9
Laos	1.6	2.9	2.2	2.8	0.8	1.8	4.5	3.3	6.3	6.1	8.8	8.0	9.7	13.0
Malaysia	57.9	42.8	65.9	108.7	141.7	223.8	316.8	402.0	676.9	695.5	997.1	950.1	1,261.3	1,027.4
Maldives	0.0	0.7	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.3	2.3	0.0	0.0
Mongolia	4.7	3.0	2.2	3.5	4.5	7.1	2.3	2.2	3.4	9.0	5.8	10.3	6.2	6.3
Nepal	10.7	11.0	9.7	6.1	12.1	12.1	17.5	12.8	17.8	21.2	20.6	34.0	28.1	35.9
North Korea	1.0	0.3	0.8	1.3	0.5	2.0	1.6	0.0	0.0	0.0	0.0	0.3	1.0	0.5
Pakistan	48.7	52.1	67.2	102.5	122.6	94.1	105.7	131.7	212.1	301.0	404.0	349.3	231.2	201.5

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Papua New Guinea	2.5	2.8	6.4	5.0	2.3	7.2	1.9	5.7	2.9	6.5	3.5	5.3	4.4	2.9
Philippines	43.3	31.5	50.6	56.7	54.3	69.5	105.1	125.7	118.6	164.6	158.9	136.3	174.7	214.6
Singapore	213.6	214.9	252.2	269.5	245.1	263.5	308.7	352.6	333.5	416.0	412.3	436.9	513.0	535.4
South Korea	194.6	272.8	253.0	300.6	324.2	454.7	525.5	708.9	720.1	837.6	942.2	1,065.6	1,242.9	1,319.5
Sri Lanka	17.9	23.8	18.4	24.2	17.7	27.6	38.0	36.4	26.4	26.5	46.3	30.1	38.2	37.2
Taiwan	167.3	229.2	315.3	384.1	412.4	566.2	581.0	679.6	747.7	853.3	895.9	931.8	780.8	820.3
Tajikistan	1.0	0.0	2.0	1.5	1.8	0.0	0.0	3.1	3.8	4.0	10.3	0.9	6.2	2.4
Thailand	34.8	50.4	50.7	77.1	63.5	80.3	92.4	111.1	127.3	151.9	171.7	212.7	234.5	286.2
Timor-Leste	0.0	0.0	0.0	0.0	1.0	0.5	1.0	0.0	0.3	0.3	1.3	1.8	1.9	0.3
Turkmenistan	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0
Uzbekistan	1.7	1.8	4.1	2.6	5.2	2.2	1.8	5.2	3.6	22.0	9.7	7.0	11.4	10.2
Vietnam	8.5	12.2	14.0	16.8	16.8	36.7	25.5	29.7	36.1	33.7	32.4	48.6	66.2	104.1
Australia and Oceania	2,023.4	2,171.5	2,377.0	2,566.5	2,752.8	3,433.2	3,778.2	4,313.6	4,321.0	4,836.2	5,140.6	5,426.6	5,680.2	5,425.5
Australia	1,671.0	1,838.8	1,975.6	2,129.3	2,275.6	2,913.5	3,208.9	3,658.4	3,656.2	4,122.8	4,479.2	4,671.0	4,919.6	4,651.0
Cook Islands	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fiji	12.5	24.5	12.2	19.3	30.1	21.6	20.9	17.6	8.2	12.7	17.9	29.0	18.2	23.7
Kiribati	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marshall Islands	0.0	0.1	0.0	0.0	0.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
Micronesia, Federated States of	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.3	0.0	0.2

Region, country, or economy	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
New Zealand	338.3	305.6	386.9	412.6	443.2	495.6	545.2	632.0	654.5	698.7	640.9	723.0	736.0	747.8
Niue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.3	0.0	1.0	0.0
Samoa	0.5	0.5	1.5	1.3	0.2	0.0	0.3	1.5	1.1	0.4	1.2	1.7	0.4	0.1
Solomon Islands	1.0	0.5	0.0	1.0	1.5	0.3	1.2	2.0	0.1	0.7	0.0	0.0	0.6	0.4
Tonga	0.0	0.0	0.5	1.2	1.0	0.0	0.5	0.1	0.0	0.0	0.0	0.0	0.5	0.3
Tuvalu	0.0	0.0	0.0	0.0	0.3	0.3	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0
Vanuatu	0.0	1.5	0.3	0.3	0.3	0.8	1.0	0.0	0.7	1.0	1.0	1.3	2.4	2.0
Unassigned	453.6	386.2	503.1	607.2	653.1	740.6	416.9	293.8	292.0	305.9	301.5	303.2	259.5	239.7

na = not applicable; country data do not exist.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis. The sum of the regions, countries, or economies may not add to the world total because of rounding. Some publications have incomplete address information for coauthored publications in the Scopus database. The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-41

U.S. S&E articles, by field and sector: 2003–16

(Number)

Field and sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
All fields														
Total	321,766	347,874	379,701	383,115	389,452	391,933	398,871	409,853	424,938	432,312	435,212	440,230	429,139	408,985
Federal government	18,725	20,739	21,682	21,666	21,463	21,697	21,240	21,594	22,455	22,580	21,485	21,334	20,217	19,556
Industry	27,793	31,158	33,498	32,240	32,671	31,730	31,140	32,074	31,157	31,226	29,401	28,569	26,276	24,565
Academic	224,593	244,335	265,505	271,502	279,219	284,535	290,836	298,648	312,139	317,712	323,433	328,562	322,101	307,413
Academic public	138,916	150,882	166,446	169,816	175,613	178,563	181,981	186,673	194,286	196,689	199,741	200,075	193,921	180,871
Academic private	76,278	82,470	89,221	92,026	93,937	96,195	97,940	100,674	107,018	110,276	111,566	114,168	110,690	103,422
Academic undefined	9,399	10,982	9,838	9,659	9,669	9,777	10,915	11,301	10,835	10,748	12,127	14,318	17,489	23,119
FFRDCs	8,621	8,999	10,600	10,413	10,281	9,782	9,456	9,780	10,398	10,927	10,344	10,215	9,643	9,107
Private nonprofit	15,692	17,070	19,662	21,555	21,288	19,757	19,269	19,430	20,588	21,566	21,236	21,986	21,973	21,248
State and local government	1,238	1,472	1,733	1,639	1,657	1,684	1,648	1,682	1,722	1,757	1,679	1,759	1,576	1,537
Unassigned	25,103	24,102	27,020	24,100	22,872	22,748	25,281	26,645	26,480	26,544	27,634	27,806	27,352	25,560
Engineering														
Total	40,057	43,168	50,668	48,623	48,674	48,336	49,867	53,592	53,875	53,485	54,267	51,220	50,720	50,158
Federal government	2,807	2,770	3,163	2,699	2,783	2,993	2,927	3,143	3,084	2,981	2,760	2,575	2,608	2,567
Industry	8,068	8,623	9,832	8,741	9,104	8,849	8,713	9,355	9,060	8,735	8,458	7,708	7,393	6,923

Field and sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Academic	24,230	25,976	29,638	28,472	28,862	29,489	31,549	34,175	34,528	34,216	35,986	33,755	34,135	34,528
Academic public	17,808	18,976	21,898	20,822	21,389	21,926	23,371	25,616	25,594	25,578	26,799	25,106	25,037	25,027
Academic private	5,706	6,221	6,781	6,648	6,595	6,678	7,207	7,537	8,009	7,710	8,217	7,547	7,698	7,592
Academic undefined	716	779	959	1,002	879	885	972	1,022	924	928	969	1,102	1,400	1,909
FFRDCs	1,918	2,032	2,391	2,201	2,270	2,218	2,368	2,279	2,545	2,500	2,688	2,380	2,350	2,243
Private nonprofit	380	568	1,951	2,701	2,329	1,145	568	577	510	576	453	557	470	405
State and local government	88	121	128	100	141	145	111	153	125	141	103	131	79	74
Unassigned	2,566	3,078	3,566	3,710	3,184	3,497	3,631	3,910	4,024	4,337	3,819	4,115	3,685	3,418
Astronomy														
Total	3,298	3,547	3,799	4,251	3,838	3,332	3,555	3,346	3,647	3,901	3,576	3,428	3,324	3,249
Federal government	393	486	438	501	397	358	323	343	331	354	323	321	310	309
Industry	95	112	113	168	97	86	69	79	74	88	83	73	47	61
Academic	2,465	2,489	2,744	2,938	2,853	2,497	2,576	2,541	2,777	2,953	2,762	2,601	2,597	2,458
Academic public	1,313	1,378	1,507	1,643	1,632	1,399	1,503	1,432	1,572	1,707	1,553	1,480	1,434	1,354
Academic private	982	932	1,058	1,105	1,078	957	940	915	1,029	1,068	1,008	963	988	930
Academic undefined	169	179	180	190	143	141	134	193	176	177	202	157	174	174
FFRDCs	213	312	341	370	347	273	266	259	295	336	243	291	203	233
Private nonprofit	71	78	84	144	85	63	76	70	89	106	89	75	93	95
State and local government	1	1	0	0	0	0	0	0	0	0	0	0	1	1

Field and sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Unassigned	61	69	79	131	59	54	245	53	81	64	76	68	73	91
Chemistry														
Total	16,912	20,118	22,678	21,593	21,083	23,348	20,884	22,791	25,006	23,144	23,608	23,381	22,622	20,980
Federal government	728	951	831	879	878	945	867	929	1,070	976	888	825	826	727
Industry	2,409	3,120	2,735	3,091	2,881	2,818	2,465	2,705	2,688	2,581	2,270	2,047	1,836	1,785
Academic	12,272	14,041	14,755	15,375	15,321	17,438	15,458	16,719	18,609	17,067	17,952	17,829	17,519	16,258
Academic public	8,658	9,887	10,385	10,921	10,917	12,326	10,850	11,693	13,177	12,026	12,627	12,487	12,267	11,093
Academic private	3,419	3,821	4,129	4,245	4,192	4,876	4,352	4,727	5,172	4,805	5,050	5,001	4,739	4,473
Academic undefined	196	333	240	209	213	235	256	299	260	236	275	341	513	693
FFRDCs	770	970	1,127	1,082	1,053	1,134	1,110	1,324	1,495	1,345	1,449	1,483	1,405	1,280
Private nonprofit	225	259	270	334	303	318	284	263	330	285	291	252	221	237
State and local government	13	12	8	13	18	18	25	14	19	23	21	17	10	15
Unassigned	495	766	2,952	818	629	678	674	837	795	867	737	926	804	678
Physics														
Total	31,255	32,375	37,860	39,657	39,069	36,361	35,446	36,081	35,645	36,017	33,391	33,682	30,086	27,584
Federal government	1,809	2,118	2,162	2,305	2,233	1,987	2,013	1,949	2,132	2,101	1,744	1,858	1,557	1,638
Industry	4,805	4,882	5,096	5,328	5,057	4,573	4,297	4,491	4,105	4,086	3,434	3,610	2,990	2,772
Academic	19,565	20,581	24,758	25,911	25,806	24,591	24,252	24,228	24,377	24,379	23,272	23,246	21,038	19,081
Academic public	12,689	13,405	16,377	16,889	16,931	16,178	15,953	15,748	15,754	15,928	15,177	15,195	13,705	12,372

Field and sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Academic private	6,422	6,694	7,819	8,435	8,326	7,890	7,752	7,915	8,180	7,963	7,590	7,485	6,739	5,942
Academic undefined	453	481	562	587	549	523	547	565	443	488	505	567	594	766
FFRDCs	3,798	3,486	4,315	4,313	4,294	3,818	3,492	3,844	3,655	4,040	3,370	3,459	3,135	2,693
Private nonprofit	180	199	263	394	355	238	203	246	248	240	231	213	200	188
State and local government	5	11	7	10	13	12	7	14	11	12	18	11	9	8
Unassigned	1,094	1,098	1,258	1,396	1,312	1,142	1,180	1,308	1,116	1,158	1,321	1,286	1,156	1,204
Geosciences														
Total	15,408	19,093	20,227	19,186	20,186	19,417	19,501	19,512	20,001	20,113	21,287	22,325	20,485	20,526
Federal government	2,003	2,618	2,754	2,459	2,498	2,300	2,224	2,146	2,239	2,211	2,230	2,278	1,980	1,971
Industry	1,231	2,041	2,543	1,919	2,291	2,038	2,191	2,261	2,070	2,200	2,298	2,504	1,804	1,731
Academic	9,888	11,371	11,452	11,905	12,309	12,086	12,057	12,069	12,569	12,425	13,331	13,972	13,461	13,586
Academic public	7,332	8,500	8,571	8,945	9,233	9,227	9,110	9,048	9,443	9,409	9,989	10,412	9,895	9,689
Academic private	2,084	2,269	2,338	2,438	2,568	2,391	2,416	2,458	2,603	2,495	2,788	2,872	2,761	2,792
Academic undefined	472	602	543	522	508	468	531	564	523	520	554	688	805	1,105
FFRDCs	632	693	723	820	711	697	602	617	760	790	861	838	883	839
Private nonprofit	404	507	541	559	579	544	508	536	533	567	543	670	531	475
State and local government	250	332	428	316	364	329	306	322	295	282	299	273	267	262
Unassigned	1,000	1,532	1,786	1,208	1,434	1,423	1,613	1,560	1,536	1,637	1,724	1,789	1,559	1,662
Mathematics														

Field and sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total	6,167	6,303	7,068	7,213	7,504	7,827	8,237	7,913	8,275	8,650	8,535	8,799	8,704	8,369
Federal government	111	114	156	116	122	151	144	137	165	162	160	147	135	158
Industry	232	238	222	245	218	224	223	217	274	253	254	249	285	222
Academic	5,514	5,572	6,283	6,416	6,787	7,094	7,544	7,210	7,474	7,887	7,747	8,038	7,912	7,588
Academic public	3,851	3,778	4,346	4,332	4,600	4,829	5,132	4,834	4,975	5,268	5,189	5,315	5,179	4,892
Academic private	1,532	1,644	1,789	1,929	2,032	2,113	2,180	2,150	2,282	2,426	2,330	2,461	2,414	2,344
Academic undefined	131	150	148	156	155	152	231	225	217	193	228	262	319	352
FFRDCs	67	95	110	117	95	103	88	89	71	105	97	82	70	86
Private nonprofit	46	49	52	64	42	52	48	50	58	62	53	60	60	60
State and local government	3	0	3	1	1	5	2	1	2	4	2	4	3	1
Unassigned	194	234	242	253	239	198	188	208	231	178	221	220	240	253
Computer sciences														
Total	19,584	22,663	27,171	27,178	28,771	27,854	28,610	29,009	29,653	28,608	28,776	27,855	28,526	26,117
Federal government	480	520	561	605	575	609	578	606	539	572	535	514	538	569
Industry	2,765	3,087	3,576	3,595	3,914	3,810	3,901	3,802	3,714	3,590	3,422	3,123	3,176	2,787
Academic	15,038	17,704	21,182	20,932	22,527	21,771	22,311	22,868	23,332	22,486	22,886	22,023	22,640	20,460
Academic public	9,779	11,808	14,324	14,088	15,267	14,635	14,953	15,335	15,830	15,084	15,232	14,289	14,692	13,350
Academic private	4,700	5,385	6,210	6,248	6,617	6,467	6,546	6,821	6,871	6,797	6,913	6,915	7,018	6,186
Academic undefined	559	512	648	595	643	669	811	712	631	605	742	819	931	924

Field and sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
FFRDCs	326	407	496	499	441	514	474	475	639	572	573	555	596	524
Private nonprofit	137	159	284	521	451	301	200	185	189	228	192	202	221	212
State and local government	8	5	6	12	7	13	28	11	18	14	11	16	14	10
Unassigned	830	781	1,067	1,015	856	837	1,118	1,062	1,223	1,147	1,158	1,422	1,342	1,557
Agricultural sciences														
Total	4,343	4,976	4,877	4,958	5,442	5,319	5,191	5,179	5,021	5,107	4,976	4,963	5,343	5,085
Federal government	695	822	824	867	911	969	876	864	813	804	717	688	694	593
Industry	197	227	230	255	251	242	254	210	246	251	253	236	242	200
Academic	3,103	3,573	3,477	3,492	3,874	3,733	3,657	3,717	3,625	3,718	3,658	3,689	3,838	3,912
Academic public	2,820	3,203	3,131	3,127	3,511	3,337	3,281	3,248	3,231	3,323	3,254	3,270	3,407	3,310
Academic private	195	232	220	243	242	245	224	272	233	240	261	259	257	274
Academic undefined	88	137	126	122	121	152	151	196	160	156	143	159	174	328
FFRDCs	22	13	20	25	23	16	16	19	19	23	24	22	21	17
Private nonprofit	32	35	37	55	46	42	53	40	47	49	46	44	39	48
State and local government	8	16	20	22	21	23	22	21	20	14	20	15	19	18
Unassigned	287	290	268	243	316	294	313	307	251	247	258	270	490	297
Biological sciences														
Total	63,319	67,255	68,457	68,391	70,633	70,911	71,818	72,553	76,505	80,425	81,146	81,777	78,557	73,330
Federal government	4,806	5,132	5,149	5,168	5,127	5,212	5,166	5,259	5,685	5,791	5,704	5,553	5,281	5,131

Field and sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Industry	4,150	4,369	4,188	4,092	4,134	4,295	4,107	4,034	3,980	4,171	3,915	4,026	3,729	3,495
Academic	46,340	49,985	51,292	51,446	53,239	53,468	54,385	54,608	57,677	61,024	61,906	62,450	59,697	55,682
Academic public	27,949	30,122	31,250	31,803	32,954	32,957	33,520	33,553	35,482	37,410	37,863	37,999	35,823	32,418
Academic private	16,353	17,457	18,112	17,897	18,493	18,737	18,935	19,013	20,186	21,532	21,778	21,806	20,641	18,682
Academic undefined	2,039	2,406	1,931	1,747	1,792	1,774	1,929	2,042	2,009	2,081	2,265	2,645	3,234	4,583
FFRDCs	545	626	711	660	622	647	658	609	680	729	768	751	768	705
Private nonprofit	3,654	3,867	3,922	3,917	4,040	3,983	3,992	4,162	4,432	4,628	4,653	4,724	4,486	4,199
State and local government	332	403	456	464	469	469	429	437	443	466	455	464	452	410
Unassigned	3,492	2,873	2,739	2,643	3,001	2,838	3,081	3,445	3,608	3,616	3,745	3,809	4,144	3,708
Medical sciences														
Total	85,957	91,142	96,249	99,601	101,068	103,704	107,288	108,929	113,893	117,532	119,454	124,365	123,702	119,642
Federal government	4,078	4,300	4,590	4,969	4,869	5,091	5,012	5,041	5,109	5,247	5,139	5,275	5,074	4,792
Industry	2,928	3,502	3,757	3,682	3,734	3,799	3,902	3,903	3,828	4,077	3,842	3,906	3,708	3,631
Academic	58,455	63,328	67,736	70,931	72,775	75,090	77,462	78,634	82,996	85,882	87,144	92,107	91,462	88,436
Academic public	29,687	31,756	34,868	36,543	37,649	38,602	39,892	40,591	42,432	43,544	43,874	45,451	44,528	41,108
Academic private	25,371	27,495	29,713	31,186	31,796	33,099	33,805	34,488	36,958	38,856	39,119	41,544	40,492	38,478
Academic undefined	3,397	4,078	3,155	3,203	3,330	3,389	3,765	3,555	3,606	3,482	4,151	5,111	6,441	8,850
FFRDCs	290	302	300	255	318	287	320	206	160	402	191	252	141	413
Private nonprofit	8,831	9,499	10,124	10,573	10,848	11,032	11,208	11,090	11,838	12,241	12,274	12,945	13,502	13,397

Field and sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
State and local government	427	469	539	540	498	520	555	565	615	618	582	644	591	596
Unassigned	10,949	9,741	9,202	8,651	8,025	7,884	8,828	9,489	9,347	9,067	10,282	9,237	9,223	8,378
Other life sciences														
Total	8,152	8,536	9,157	9,539	9,251	9,473	9,622	9,837	10,484	11,134	10,920	10,891	10,462	9,943
Federal government	232	247	266	300	268	274	285	282	295	322	303	296	304	257
Industry	534	534	619	564	506	475	456	488	529	579	543	485	454	425
Academic	5,012	5,384	5,800	6,019	5,940	6,223	6,332	6,579	7,088	7,430	7,435	7,444	7,272	7,054
Academic public	2,981	3,239	3,513	3,664	3,654	3,854	3,891	4,004	4,264	4,368	4,330	4,305	4,135	3,869
Academic private	1,657	1,749	1,838	1,969	1,901	2,007	2,037	2,162	2,404	2,592	2,627	2,616	2,508	2,459
Academic undefined	374	395	450	386	386	362	403	413	421	469	478	522	629	726
FFRDCs	17	25	13	25	23	22	19	11	18	16	11	14	10	12
Private nonprofit	892	922	1,057	1,145	1,094	1,027	1,051	1,071	1,149	1,343	1,160	1,055	973	866
State and local government	46	48	60	70	57	77	69	59	69	91	78	77	61	58
Unassigned	1,419	1,374	1,342	1,416	1,362	1,375	1,411	1,347	1,335	1,353	1,390	1,519	1,388	1,271
Psychology														
Total	9,475	9,879	11,076	11,906	11,825	12,583	13,233	13,641	14,235	14,853	15,072	15,988	15,513	14,393
Federal government	184	186	268	292	264	310	268	315	359	443	350	378	343	279
Industry	173	180	281	304	237	243	245	258	243	266	241	227	263	169
Academic	7,716	8,381	9,231	9,913	10,171	10,884	11,330	11,721	12,273	12,868	13,230	14,067	13,579	12,715

Field and sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Academic public	4,987	5,323	5,976	6,411	6,686	7,143	7,468	7,554	7,929	8,303	8,501	8,915	8,520	7,841
Academic private	2,446	2,691	2,938	3,197	3,165	3,456	3,521	3,756	3,934	4,220	4,300	4,604	4,435	4,074
Academic undefined	282	368	317	306	320	286	341	410	409	345	429	549	624	800
FFRDCs	2	6	12	7	16	10	9	8	12	8	12	19	16	5
Private nonprofit	265	274	306	345	327	301	335	330	351	336	366	379	368	335
State and local government	24	18	32	43	27	31	43	29	41	34	27	40	26	29
Unassigned	1,112	833	947	1,001	782	802	1,002	979	957	897	846	879	919	861
Social sciences														
Total	17,840	18,819	20,415	21,018	22,110	23,468	25,619	27,473	28,699	29,343	30,203	31,554	31,096	29,609
Federal government	399	475	520	507	537	499	556	578	634	616	631	628	567	566
Industry	209	242	307	256	247	279	317	270	346	347	388	374	352	364
Academic	14,995	15,949	17,156	17,751	18,754	20,170	21,923	23,581	24,815	25,377	26,123	27,341	26,950	25,654
Academic public	9,061	9,507	10,301	10,630	11,190	12,152	13,055	14,019	14,601	14,739	15,353	15,850	15,299	14,549
Academic private	5,411	5,880	6,275	6,488	6,933	7,280	8,025	8,459	9,157	9,570	9,585	10,096	10,000	9,195
Academic undefined	523	563	580	634	631	739	843	1,103	1,057	1,068	1,185	1,395	1,651	1,910
FFRDCs	22	30	42	39	68	42	34	39	49	62	57	68	46	55
Private nonprofit	573	654	771	802	789	710	741	810	813	907	884	812	809	732
State and local government	35	37	45	48	41	43	51	55	64	58	63	66	45	56
Unassigned	1,606	1,433	1,573	1,616	1,674	1,725	1,997	2,140	1,977	1,976	2,057	2,265	2,328	2,182

FFRDC = federally funded research and development center.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are assigned to a sector on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple sectors, each sector receives fractional credit on the basis of the proportion of its participating institutions). The unassigned category count is the sum of fractional counts for publications that cannot be assigned to a sector.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-42

S&E articles in all fields combined, by coauthorship attribute and selected region, country, or economy: 2003–16

(Number)

Region, country, or economy and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
World														
Total articles	1,192,446	1,309,104	1,481,643	1,567,422	1,661,634	1,752,431	1,861,148	1,958,948	2,070,735	2,137,315	2,217,046	2,300,684	2,305,909	2,295,608
with multiple institutions	680,313	773,707	882,721	942,578	1,004,544	1,054,616	1,083,367	1,135,058	1,224,911	1,291,811	1,359,474	1,426,343	1,455,530	1,485,902
with domestic institutions only	977,346	1,075,379	1,219,341	1,286,115	1,355,831	1,430,703	1,522,122	1,596,549	1,680,624	1,716,242	1,768,347	1,825,712	1,816,079	1,788,258
with international institutions	194,398	216,800	243,010	261,100	282,138	299,202	323,334	343,627	370,287	400,381	429,680	464,484	481,060	498,465
Canada														
Total articles	49,015	54,598	61,805	65,131	69,510	71,604	74,911	77,017	79,265	83,374	85,169	87,969	87,509	85,504
with multiple institutions	33,207	37,984	43,007	45,357	48,908	50,724	51,908	53,157	55,668	59,771	61,709	64,945	65,474	65,800
with domestic institutions only	29,139	32,130	36,238	37,791	39,872	40,365	41,913	42,616	43,341	44,347	44,501	44,422	43,119	39,974
with international institutions	19,131	21,927	24,888	26,588	28,737	30,340	32,458	33,784	35,274	38,349	39,989	43,242	44,117	45,287
Mexico														
Total articles	8,598	9,394	10,747	12,072	12,410	13,665	13,999	14,886	15,762	16,781	17,626	19,002	18,982	19,424
with multiple institutions	6,277	7,018	7,893	8,928	9,203	10,350	10,399	10,986	11,714	12,675	13,315	14,313	14,611	15,154
with domestic institutions only	5,022	5,487	6,434	7,214	7,288	8,014	8,345	8,880	9,247	9,935	10,527	11,351	11,299	11,146
with international institutions	3,408	3,808	4,197	4,687	4,934	5,425	5,481	5,808	6,300	6,635	6,948	7,564	7,602	8,208
United States														

Region, country, or economy and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total articles	370,659	400,854	438,680	445,992	456,396	461,110	472,035	487,243	507,758	521,924	531,288	543,169	536,010	519,289
with multiple institutions	239,293	268,226	294,570	303,407	311,730	314,905	311,931	316,862	337,919	353,210	366,132	379,613	381,730	379,826
with domestic institutions only	277,880	300,150	326,698	327,273	329,953	330,973	335,552	343,251	354,235	357,116	356,448	357,747	345,601	325,017
with international institutions	86,408	95,644	106,108	112,317	119,442	124,094	132,441	140,195	149,422	160,755	170,710	183,101	188,528	192,375
Argentina														
Total articles	5,920	6,259	6,709	7,435	7,728	8,536	9,359	9,963	10,597	11,082	11,122	12,090	11,901	11,920
with multiple institutions	4,158	4,731	4,977	5,439	5,887	6,492	6,887	7,365	7,838	8,287	8,369	9,084	8,997	9,189
with domestic institutions only	3,517	3,482	3,732	4,257	4,263	4,754	5,310	5,728	6,121	6,218	6,295	6,782	6,588	6,496
with international institutions	2,321	2,705	2,903	3,086	3,361	3,668	3,975	4,123	4,401	4,765	4,773	5,240	5,281	5,397
Brazil														
Total articles	19,953	22,883	25,815	32,613	35,955	40,962	44,145	47,841	51,346	56,780	59,466	63,236	63,917	64,878
with multiple institutions	14,440	16,923	19,256	24,841	27,849	31,844	33,167	35,877	39,195	43,353	45,309	48,706	49,708	51,293
with domestic institutions only	13,985	16,104	18,324	23,802	26,141	29,959	33,080	36,086	38,403	42,480	43,638	45,137	44,644	43,620
with international institutions	5,427	6,350	7,042	8,080	8,838	9,889	10,384	10,939	12,249	13,619	15,158	17,674	19,037	21,061
Chile														
Total articles	3,070	3,411	3,833	4,668	5,052	5,744	6,100	6,536	7,169	8,057	8,390	9,910	10,362	11,193
with multiple institutions	2,380	2,692	3,116	3,781	4,073	4,447	4,670	5,063	5,627	6,423	6,680	8,009	8,399	9,307
with domestic institutions only	1,395	1,530	1,637	2,074	2,261	2,635	2,892	2,980	3,273	3,603	3,574	4,031	4,273	4,255
with international institutions	1,617	1,827	2,139	2,523	2,712	2,987	3,162	3,516	3,857	4,406	4,757	5,841	6,064	6,911

Region, country, or economy and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Austria														
Total articles	10,762	11,545	12,890	13,303	14,651	15,566	16,431	17,194	18,510	19,664	20,375	21,257	21,635	21,511
with multiple institutions	7,905	8,893	9,853	10,089	11,197	11,877	12,119	12,672	13,885	14,930	15,612	16,550	16,884	17,269
with domestic institutions only	5,600	5,656	6,234	6,407	6,770	6,998	7,409	7,517	7,841	8,129	8,122	8,220	8,209	7,539
with international institutions	4,992	5,766	6,510	6,743	7,733	8,401	8,919	9,592	10,609	11,450	12,178	12,982	13,402	13,937
Belgium														
Total articles	15,267	16,471	18,522	18,953	20,374	21,571	22,690	23,678	25,179	26,687	27,489	28,706	28,711	28,423
with multiple institutions	11,187	12,375	14,090	14,517	15,801	16,818	17,468	18,230	19,665	21,032	21,841	23,187	23,667	23,761
with domestic institutions only	7,581	8,060	8,907	8,995	9,373	9,685	9,957	10,142	10,406	10,882	10,860	10,718	10,053	9,593
with international institutions	7,480	8,295	9,476	9,775	10,831	11,690	12,599	13,406	14,646	15,676	16,527	17,940	18,613	18,792
Czech Republic														
Total articles	8,136	9,036	10,281	11,429	12,778	13,668	14,424	16,161	17,259	18,150	18,898	20,923	22,500	21,663
with multiple institutions	5,624	6,488	7,106	8,002	8,812	9,274	9,426	10,092	10,638	11,600	12,151	13,674	14,599	14,392
with domestic institutions only	5,135	5,652	6,499	7,162	8,067	8,640	9,087	10,369	11,178	11,426	11,676	12,513	13,443	12,565
with international institutions	2,912	3,316	3,718	4,194	4,611	4,910	5,266	5,702	5,970	6,599	7,167	8,381	9,022	9,069
Denmark														
Total articles	10,403	11,131	12,110	12,660	13,546	14,068	15,075	16,089	17,905	19,663	20,583	22,421	23,212	22,943
with multiple institutions	7,914	8,569	9,300	9,901	10,759	11,245	11,315	12,259	13,841	15,276	16,216	17,709	18,741	19,012
with domestic institutions only	5,206	5,570	5,908	6,011	6,246	6,386	6,786	7,064	7,870	8,595	8,755	9,301	9,030	8,381

Region, country, or economy and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
with international institutions	4,959	5,478	6,080	6,534	7,159	7,544	8,239	8,938	9,946	10,964	11,703	13,062	14,113	14,514
Finland														
Total articles	10,238	11,165	11,984	12,379	12,994	13,270	13,892	14,239	14,943	15,489	16,269	17,163	17,094	17,113
with multiple institutions	7,376	8,035	8,574	9,120	9,755	9,966	10,267	10,591	11,240	11,857	12,572	13,307	13,577	13,800
with domestic institutions only	5,935	6,541	6,979	6,999	6,995	7,033	7,309	7,126	7,359	7,249	7,302	7,489	7,003	6,751
with international institutions	4,219	4,571	4,935	5,312	5,904	6,167	6,540	7,026	7,474	8,145	8,845	9,646	10,069	10,343
France														
Total articles	67,123	71,872	78,763	82,801	86,548	90,479	94,575	96,456	99,934	104,339	106,771	108,368	106,215	104,116
with multiple institutions	46,271	50,708	56,043	59,247	62,909	66,101	69,502	71,925	75,964	80,525	83,555	86,155	85,785	85,298
with domestic institutions only	39,810	41,844	45,117	47,136	48,270	50,065	51,059	51,504	52,380	53,588	53,495	52,321	49,470	46,554
with international institutions	26,587	29,419	32,999	34,963	37,416	39,633	43,073	44,515	47,096	50,294	52,870	55,728	56,398	57,076
Germany														
Total articles	91,211	97,103	108,403	111,070	117,259	121,047	126,932	131,061	136,925	144,466	146,207	152,210	149,929	148,211
with multiple institutions	62,735	69,839	77,294	79,736	84,531	87,126	87,630	89,893	94,946	101,228	104,180	108,426	109,040	109,664
with domestic institutions only	53,707	55,954	62,627	63,399	65,589	67,785	70,350	71,595	74,133	77,052	76,160	78,686	75,038	72,198
with international institutions	35,960	39,692	44,432	46,377	50,250	51,666	55,743	58,707	62,125	66,645	69,414	73,073	74,524	75,629
Greece														
Total articles	8,431	9,760	11,565	13,351	13,990	14,857	15,641	15,584	15,929	16,361	16,380	16,551	16,175	15,852
with multiple institutions	5,814	6,877	8,160	9,364	9,922	10,452	10,847	10,658	11,267	11,557	11,776	12,058	12,036	11,987

Region, country, or economy and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
with domestic institutions only	5,358	6,276	7,487	8,576	8,808	9,474	9,602	9,451	9,300	9,156	8,876	8,607	8,086	7,537
with international institutions	2,992	3,429	3,987	4,684	5,064	5,290	5,961	6,027	6,521	7,119	7,428	7,890	8,058	8,284
Hungary														
Total articles	6,234	6,617	7,546	7,547	8,064	8,628	8,320	8,228	9,043	9,492	9,402	10,002	9,718	9,556
with multiple institutions	4,212	4,669	5,397	5,462	5,710	5,931	5,754	5,798	6,339	6,860	6,787	7,368	7,193	7,358
with domestic institutions only	3,404	3,591	4,208	4,188	4,451	4,996	4,573	4,415	4,870	4,877	4,832	5,074	4,860	4,445
with international institutions	2,803	2,972	3,262	3,248	3,524	3,545	3,699	3,749	4,112	4,540	4,523	4,866	4,830	5,085
Ireland														
Total articles	4,296	5,310	6,558	6,882	7,840	8,401	9,383	10,247	10,841	10,781	11,052	11,358	11,002	11,332
with multiple institutions	2,885	3,545	4,373	4,650	5,307	5,843	6,509	7,143	7,593	7,838	8,192	8,481	8,529	8,930
with domestic institutions only	2,263	2,820	3,494	3,553	4,038	4,185	4,647	5,096	5,363	5,055	4,978	5,006	4,501	4,420
with international institutions	1,982	2,455	3,013	3,234	3,701	4,149	4,684	5,056	5,350	5,583	5,941	6,308	6,486	6,897
Italy														
Total articles	50,599	54,198	59,213	62,880	68,106	70,965	74,519	76,108	79,440	85,503	90,470	94,409	95,318	94,685
with multiple institutions	36,244	39,834	43,530	46,603	50,444	52,202	53,378	54,762	58,133	62,838	66,983	71,139	72,784	73,820
with domestic institutions only	33,303	34,933	37,696	39,697	42,149	43,652	45,527	45,283	46,490	49,625	51,836	52,534	51,737	49,489
with international institutions	16,763	18,923	21,122	22,732	25,416	26,744	28,624	30,393	32,499	35,446	38,207	41,512	43,201	44,826
Netherlands														
Total articles	26,773	29,456	32,815	34,253	36,053	37,612	40,937	42,548	44,358	47,638	48,872	50,257	49,415	49,271

Region, country, or economy and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
with multiple institutions	19,888	22,692	25,222	26,569	28,103	29,447	31,497	33,095	34,812	38,215	39,523	40,481	40,901	41,557
with domestic institutions only	14,467	15,574	17,630	17,809	18,530	19,121	20,557	20,578	21,125	21,445	21,577	21,460	19,967	18,683
with international institutions	11,969	13,605	14,914	16,167	17,247	18,189	20,145	21,720	22,943	25,900	26,953	28,656	29,318	30,423
Poland														
Total articles	19,516	21,986	24,143	25,819	26,346	28,115	28,577	29,751	31,410	34,222	36,554	38,897	40,270	40,988
with multiple institutions	11,401	13,161	14,967	16,334	16,475	16,913	16,438	16,915	17,780	19,625	20,984	22,800	24,032	25,358
with domestic institutions only	13,512	15,225	16,875	18,178	18,394	20,118	20,118	21,186	22,381	24,353	26,012	27,352	28,190	28,020
with international institutions	5,833	6,596	7,084	7,476	7,669	7,726	8,213	8,250	8,704	9,540	10,281	11,453	11,958	12,835
Portugal														
Total articles	6,095	6,931	7,964	9,696	10,337	11,863	13,045	14,529	16,522	18,250	19,758	20,644	20,876	20,444
with multiple institutions	4,415	5,159	5,902	7,296	7,757	9,158	9,875	11,061	12,670	14,266	15,614	16,545	16,798	16,954
with domestic institutions only	3,296	3,683	4,287	5,202	5,566	6,257	7,064	7,758	8,813	9,450	10,075	10,385	10,216	9,314
with international institutions	2,744	3,202	3,640	4,434	4,694	5,531	5,926	6,691	7,636	8,706	9,569	10,203	10,622	11,088
Spain														
Total articles	35,596	39,028	44,563	49,277	53,159	56,182	60,878	64,112	69,058	73,486	75,067	77,952	76,132	75,193
with multiple institutions	24,460	27,162	31,412	35,066	37,852	40,680	41,910	44,703	49,462	53,204	54,829	58,017	57,888	58,351
with domestic institutions only	23,294	25,420	28,610	31,242	33,155	34,282	36,882	37,816	39,854	41,551	41,378	41,377	38,862	36,648
with international institutions	11,811	13,321	15,607	17,602	19,472	21,373	23,702	25,976	28,874	31,589	33,363	36,309	36,932	38,088
Sweden														

Region, country, or economy and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total articles	19,934	21,048	22,921	23,409	24,267	24,359	25,776	26,949	28,419	30,556	31,945	34,181	34,537	34,589
with multiple institutions	14,612	15,605	17,198	17,715	18,735	18,814	19,537	20,490	21,798	23,737	25,258	27,104	28,122	28,749
with domestic institutions only	10,627	11,085	11,892	11,898	11,656	11,566	11,962	12,086	12,450	13,015	13,298	13,860	13,087	12,268
with international institutions	9,063	9,777	10,837	11,333	12,419	12,587	13,708	14,709	15,823	17,424	18,498	20,228	21,317	22,255
United Kingdom														
Total articles	95,095	101,534	111,170	116,395	122,357	124,782	129,742	132,258	137,921	143,909	149,506	153,527	154,851	153,292
with multiple institutions	60,617	67,046	74,196	77,805	82,839	85,092	86,782	87,959	93,804	99,457	106,009	111,094	114,522	116,576
with domestic institutions only	58,897	61,074	65,954	68,053	69,972	69,642	71,084	70,748	72,387	73,449	73,393	72,037	69,593	65,203
with international institutions	35,056	39,678	44,245	47,268	51,124	53,936	57,798	60,319	64,191	69,042	74,622	80,871	84,770	87,577
Norway														
Total articles	7,151	8,021	9,371	10,200	11,140	11,700	12,941	13,485	14,583	15,798	16,070	17,138	17,157	17,953
with multiple institutions	5,422	6,141	7,157	7,827	8,680	9,090	9,977	10,434	11,334	12,474	12,758	13,749	13,858	14,713
with domestic institutions only	3,771	4,112	4,936	5,157	5,527	5,648	6,191	6,344	6,881	7,146	7,105	7,168	6,900	6,884
with international institutions	3,263	3,825	4,342	4,932	5,489	5,919	6,683	7,084	7,621	8,575	8,883	9,937	10,228	11,030
Russia														
Total articles	39,300	39,676	41,070	36,347	37,431	38,690	39,452	40,528	43,204	43,643	47,614	53,612	62,618	69,214
with multiple institutions	18,240	19,804	21,245	18,311	18,940	18,954	19,471	20,017	21,701	22,543	25,083	29,117	35,748	40,659
with domestic institutions only	27,426	26,994	27,489	24,391	25,294	27,118	27,793	29,360	31,232	31,203	34,225	38,978	46,076	51,708
with international institutions	10,577	11,197	12,311	11,706	11,889	11,319	11,515	11,096	11,917	12,348	13,296	14,567	16,396	17,345

Region, country, or economy and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Switzerland														
Total articles	19,604	21,578	23,780	25,508	27,120	28,158	29,477	31,364	33,420	36,036	37,380	39,207	39,230	38,857
with multiple institutions	14,346	16,088	17,842	19,301	20,966	21,741	22,385	23,927	25,706	28,055	29,478	31,077	31,718	32,106
with domestic institutions only	8,610	9,284	10,174	10,728	10,735	11,022	11,363	11,807	12,317	12,947	13,103	13,357	12,663	11,856
with international institutions	10,690	12,096	13,367	14,543	16,125	16,863	17,963	19,334	20,917	22,836	24,047	25,756	26,460	26,892
Turkey														
Total articles	14,739	17,491	19,593	21,482	23,677	24,040	27,042	28,467	29,962	32,291	35,299	36,036	37,901	39,151
with multiple institutions	9,745	12,119	13,801	14,846	16,095	16,401	17,540	18,258	19,677	21,778	24,209	25,249	26,883	28,148
with domestic institutions only	12,217	14,427	16,374	17,964	19,799	19,883	22,312	23,366	24,505	25,860	28,257	28,770	29,969	30,349
with international institutions	2,400	2,931	3,079	3,380	3,715	4,006	4,565	4,936	5,304	6,292	6,905	7,148	7,873	8,687
Iran														
Total articles	4,352	5,742	8,066	11,230	14,718	18,621	22,627	27,653	34,419	35,484	37,457	40,287	40,846	45,516
with multiple institutions	2,625	3,508	5,042	6,960	9,244	11,513	14,062	17,194	21,898	23,496	25,566	27,539	27,861	31,343
with domestic institutions only	3,264	4,348	6,188	8,931	11,698	15,030	18,376	22,503	28,100	28,554	29,740	31,884	32,236	35,952
with international institutions	1,054	1,347	1,780	2,184	2,795	3,354	4,086	4,927	6,081	6,707	7,539	8,259	8,533	9,475
Israel														
Total articles	12,651	13,283	13,666	14,438	14,896	15,137	15,083	15,201	15,911	16,588	16,599	17,361	17,717	17,388
with multiple institutions	8,895	9,383	9,813	10,223	10,608	10,622	10,410	10,656	11,221	11,771	12,008	12,381	12,921	12,895
with domestic institutions only	7,421	7,911	7,937	8,469	8,630	8,682	8,623	8,217	8,419	8,940	8,710	9,124	8,887	8,538

Region, country, or economy and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
with international institutions	5,047	5,240	5,609	5,836	6,159	6,325	6,393	6,850	7,330	7,522	7,774	8,199	8,805	8,818
Saudi Arabia														
Total articles	2,189	2,161	2,237	2,446	2,655	3,023	3,959	5,705	8,538	10,976	13,440	16,223	17,847	18,594
with multiple institutions	1,256	1,317	1,420	1,526	1,660	1,936	2,472	3,952	6,464	8,655	10,633	13,399	15,088	15,905
with domestic institutions only	1,392	1,403	1,362	1,503	1,548	1,689	2,117	2,470	2,955	3,328	4,024	4,243	4,244	4,296
with international institutions	756	730	811	898	1,030	1,275	1,805	3,187	5,522	7,594	9,355	11,943	13,584	14,288
Egypt														
Total articles	4,117	4,405	4,592	5,038	5,716	6,344	7,982	8,841	10,157	11,753	12,845	13,969	14,840	16,268
with multiple institutions	2,415	2,558	2,855	3,207	3,615	4,057	5,212	5,980	7,173	8,446	9,501	10,678	11,441	12,770
with domestic institutions only	2,731	2,941	2,929	3,240	3,722	3,984	4,923	5,269	5,777	6,595	6,661	6,730	7,116	7,846
with international institutions	1,347	1,419	1,621	1,731	1,904	2,277	2,978	3,462	4,266	5,044	6,108	7,212	7,707	8,403
South Africa														
Total articles	5,499	6,322	6,856	7,551	8,007	8,722	9,673	10,483	11,831	13,235	14,597	17,097	16,799	17,848
with multiple institutions	3,402	4,052	4,508	4,895	5,389	5,783	6,365	6,784	7,767	8,795	9,800	11,279	11,605	12,726
with domestic institutions only	3,230	3,667	3,853	4,242	4,325	4,782	5,230	5,726	6,300	6,922	7,522	8,976	8,284	8,503
with international institutions	2,207	2,602	2,927	3,232	3,545	3,853	4,384	4,671	5,444	6,188	6,972	8,059	8,454	9,295
China														
Total articles	94,583	129,446	176,622	203,435	231,718	268,240	311,551	342,147	362,426	363,316	397,852	431,489	451,763	469,771
with multiple institutions	40,976	59,142	87,788	104,351	122,804	143,337	168,294	188,958	204,917	216,047	242,356	269,626	291,625	312,490

Region, country, or economy and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
with domestic institutions only	79,508	110,720	153,301	176,197	199,655	231,426	268,609	292,124	306,139	300,631	325,997	351,013	363,057	373,125
with international institutions	14,460	18,076	21,929	25,646	29,825	34,699	40,747	46,644	52,660	58,709	68,559	78,634	87,254	95,476
India														
Total articles	29,773	32,233	37,032	43,006	48,413	54,168	60,600	69,593	83,189	90,828	98,415	110,853	117,349	121,720
with multiple institutions	15,384	17,436	20,481	23,885	27,110	30,609	33,915	38,657	46,826	51,422	56,069	62,922	65,621	69,133
with domestic institutions only	24,034	25,905	29,762	34,548	39,144	43,927	49,197	56,610	68,285	74,589	80,703	91,556	97,367	100,332
with international institutions	5,392	5,980	6,884	7,967	8,737	9,668	10,924	12,436	14,255	15,573	16,928	18,856	19,729	21,124
Japan														
Total articles	108,194	112,166	122,415	124,170	122,560	120,855	122,650	123,310	126,488	126,157	126,463	123,535	117,525	115,117
with multiple institutions	69,130	74,224	81,129	83,144	82,607	81,313	80,778	81,972	84,831	85,604	86,710	84,713	81,493	82,340
with domestic institutions only	86,454	89,069	97,290	97,581	95,782	93,915	95,242	95,091	96,965	95,492	95,170	92,195	86,249	82,551
with international institutions	20,452	22,086	24,116	25,382	25,542	25,775	26,698	27,282	28,506	29,677	30,440	30,996	30,954	32,074
Malaysia														
Total articles	2,234	2,593	3,132	4,100	4,924	7,289	9,628	13,391	16,946	18,272	20,208	21,786	23,819	25,346
with multiple institutions	1,356	1,638	2,043	2,750	3,227	4,208	5,713	8,109	10,662	12,227	13,713	15,191	16,646	18,094
with domestic institutions only	1,404	1,608	1,982	2,578	3,134	5,135	6,752	9,211	11,528	11,750	12,761	13,246	14,748	15,552
with international institutions	796	937	1,115	1,423	1,709	2,088	2,814	4,111	5,351	6,457	7,367	8,498	9,033	9,731
Pakistan														
Total articles	1,704	1,980	2,683	3,314	4,032	4,908	5,966	7,001	8,093	9,102	10,520	10,837	11,429	12,823

Region, country, or economy and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
with multiple institutions	966	1,186	1,510	1,999	2,482	3,265	3,994	4,766	5,712	6,631	7,777	8,166	8,865	10,198
with domestic institutions only	1,200	1,436	1,998	2,337	2,778	3,323	4,055	4,528	5,166	5,581	6,309	5,992	6,056	6,465
with international institutions	481	528	650	942	1,210	1,527	1,769	2,278	2,784	3,405	4,145	4,796	5,325	6,327
Singapore														
Total articles	7,461	9,065	9,964	10,597	10,909	11,730	12,359	13,814	14,440	15,798	16,596	17,309	17,799	18,074
with multiple institutions	4,388	5,586	6,479	7,132	7,513	8,180	8,581	9,569	10,278	11,630	12,596	13,429	14,152	14,443
with domestic institutions only	4,776	5,839	6,169	6,160	6,057	6,316	6,339	6,911	6,907	7,183	7,035	6,876	6,772	6,705
with international institutions	2,610	3,184	3,739	4,344	4,732	5,332	5,980	6,834	7,477	8,556	9,496	10,414	11,001	11,352
South Korea														
Total articles	26,934	31,721	36,817	42,452	47,719	50,852	52,989	58,916	63,684	67,089	69,305	73,226	75,255	74,041
with multiple institutions	17,838	21,506	25,003	28,685	32,085	33,863	35,212	39,416	43,729	46,540	48,745	51,797	53,441	53,226
with domestic institutions only	19,969	23,616	27,203	31,703	36,047	38,525	39,969	44,262	47,404	49,537	50,877	53,862	55,394	53,785
with international institutions	6,776	7,977	9,456	10,543	11,326	12,050	12,847	14,441	16,072	17,382	18,244	19,245	19,745	20,064
Taiwan														
Total articles	17,580	20,746	24,689	27,815	31,158	33,305	35,542	37,525	39,386	38,732	38,509	37,595	34,998	33,005
with multiple institutions	11,142	13,542	16,645	18,973	21,208	23,119	24,541	25,769	27,406	27,345	27,454	27,268	25,881	24,819
with domestic institutions only	14,342	17,093	20,455	23,028	25,638	27,019	28,711	30,102	31,449	30,300	29,586	28,317	25,430	23,100
with international institutions	3,084	3,567	4,088	4,582	5,198	6,076	6,707	7,300	7,814	8,316	8,821	9,214	9,484	9,843
Thailand														

Region, country, or economy and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total articles	3,184	3,758	4,673	5,696	6,408	7,267	7,775	8,813	9,552	10,259	10,453	11,307	11,672	12,863
with multiple institutions	2,386	2,817	3,481	4,309	4,866	5,342	5,619	6,329	6,987	7,754	7,778	8,221	8,688	9,572
with domestic institutions only	1,612	1,949	2,512	3,155	3,602	4,221	4,593	5,331	5,725	6,030	6,215	6,675	6,823	7,589
with international institutions	1,549	1,766	2,138	2,500	2,763	3,010	3,146	3,424	3,679	4,019	4,186	4,613	4,830	5,231
Australia														
Total articles	31,556	34,729	39,780	42,704	46,632	48,732	52,253	56,331	60,555	64,607	70,276	75,316	76,448	76,738
with multiple institutions	21,182	24,263	27,420	29,823	32,839	34,447	36,714	39,752	43,689	47,637	52,757	57,452	59,623	61,861
with domestic institutions only	19,484	20,952	24,418	25,775	27,735	28,084	29,499	31,111	32,936	34,146	36,162	37,564	36,245	34,455
with international institutions	11,638	13,502	15,048	16,585	18,424	20,177	22,468	24,828	27,237	29,988	33,660	37,556	39,996	42,096
New Zealand														
Total articles	5,969	6,579	7,410	7,890	8,468	8,894	9,380	9,914	10,827	11,263	11,580	12,043	11,756	11,920
with multiple institutions	4,063	4,657	5,338	5,701	6,114	6,371	6,559	6,917	7,635	8,118	8,577	8,948	8,909	9,215
with domestic institutions only	3,252	3,494	3,843	4,015	4,319	4,511	4,713	4,847	5,208	5,365	5,186	5,286	5,025	4,946
with international institutions	2,653	3,057	3,518	3,804	4,061	4,322	4,614	4,986	5,520	5,785	6,293	6,715	6,712	6,932

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating region, country, or economy is credited with one count). Regions, countries, or economies with less than 1% of internationally coauthored articles in 2016 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within a single region, country, or economy. Articles with international institutions are counts of articles with institutional addresses from more than one region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-43

Indexes of internationally coauthored S&E publications, by selected region, country, or economy pairs: 2006 and 2016

(International collaboration index)

Region, country, or economy and year	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
Canada																																											
2006	na	0.65	1.14	0.67	0.65	0.60	0.44	0.55	0.46	0.59	0.63	0.69	0.48	0.43	0.45	0.57	0.49	0.62	0.54	0.35	0.45	0.54	0.68	0.84	0.45	0.64	0.44	1.78	0.72	0.68	0.54	0.63	0.77	0.54	0.51	0.32	0.77	0.47	0.50	0.56	0.41	0.82	0.85
2016	na	0.92	1.13	1.12	0.96	1.09	0.73	0.77	0.77	0.98	0.84	0.90	0.67	0.66	0.90	0.98	0.68	0.90	0.83	0.61	0.63	0.81	0.84	1.02	0.57	0.87	0.79	1.23	1.14	0.66	0.69	1.15	0.84	0.64	0.64	0.47	0.62	0.53	0.57	0.71	0.49	0.99	1.21
Mexico																																											
2006	0.65	na	0.98	2.89	1.57	2.38	0.28	0.52	0.97	0.36	0.47	0.84	0.39	0.58	0.34	0.79	0.57	0.44	0.53	0.41	2.43	0.46	0.48	0.27	0.94	0.42	0.30	0.15	0.50	0.25	0.26	0.57	0.24	0.71	0.25	0.31	0.41	0.13	0.48	0.24	0.36	0.41	0.37
2016	0.92	na	1.04	4.64	2.20	4.09	1.19	1.02	1.77	0.82	1.56	1.06	0.75	1.91	2.54	1.74	1.04	0.74	1.49	1.69	2.94	0.64	0.67	0.70	1.55	0.99	1.80	1.29	0.71	0.64	1.23	1.41	0.35	1.20	0.66	0.96	1.99	0.45	0.98	1.22	2.31	0.62	1.88
United States																																											
2006	1.14	0.98	na	0.77	0.87	0.81	0.51	0.53	0.51	0.60	0.61	0.58	0.69	0.70	0.69	0.62	0.75	0.67	0.57	0.47	0.60	0.63	0.71	0.68	0.63	0.69	1.03	0.51	1.28	0.57	0.59	0.78	0.88	0.86	0.89	0.31	0.57	0.76	1.23	1.29	0.83	0.76	0.68
2016	1.13	1.04	na	0.86	0.94	0.91	0.67	0.65	0.59	0.78	0.70	0.66	0.74	0.72	0.77	0.72	0.74	0.77	0.64	0.52	0.65	0.74	0.77	0.73	0.65	0.81	0.91	0.65	1.33	0.54	0.51	0.86	1.19	0.83	0.85	0.32	0.45	0.72	1.23	1.05	0.84	0.75	0.81
Argentina																																											
2006	0.67	2.89	0.77	na	4.76	8.15	0.63	0.55	0.99	0.58	0.70	0.81	0.59	0.47	0.65	0.92	0.84	0.60	0.55	1.09	2.95	0.53	0.47	0.39	0.44	0.69	0.45	0.31	0.57	0.75	0.20	1.26	0.20	0.70	0.21	0.65	0.27	0.25	0.36	0.22	0.54	0.56	0.58
2016	1.12	4.64	0.86	na	4.78	8.31	1.72	1.06	2.51	1.56	0.78	1.22	1.03	2.30	3.40	0.83	1.28	1.16	1.86	2.37	2.99	1.13	0.71	1.72	1.23	1.32	2.25	0.48	2.26	0.28	0.46	2.84	0.34	0.76	0.96	1.54	0.64	0.37	0.47	1.68	0.92	1.06	1.31
Brazil																																											
2006	0.65	1.57	0.87	4.76	na	2.78	0.46	0.62	1.00	0.52	0.47	0.97	0.62	0.32	0.58	0.60	0.78	0.55	0.39	2.89	1.03	0.58	0.66	0.47	0.57	0.49	0.43	0.15	0.47	0.29	0.17	0.62	0.22	0.72	0.42	0.20	0.27	0.13	0.30	0.31	0.28	0.49	0.34
2016	0.96	2.20	0.94	4.78	na	2.81	1.00	0.99	1.37	1.03	1.01	1.08	0.78	1.37	2.04	1.27	1.06	0.94	1.29	4.19	1.61	0.86	0.83	0.95	1.04	0.92	1.35	0.70	0.90	0.42	0.59	1.44	0.28	0.85	0.58	0.84	1.16	0.32	0.52	0.93	1.33	0.79	0.99
Chile																																											

Region, country, or economy and year	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
2006	0.60	2.38	0.81	8.15	2.78	na	0.38	0.73	0.30	0.82	0.51	0.99	0.81	0.24	0.25	0.51	0.91	0.61	0.53	1.00	2.72	0.56	0.56	0.40	0.50	0.53	0.24	0.09	0.43	0.23	0.12	0.83	0.13	0.35	0.25	0.22	0.22	0.10	0.25	0.20	0.25	0.65	0.46
2016	1.09	4.09	0.91	8.31	2.81	na	1.32	1.06	1.64	1.58	1.20	1.47	1.17	2.11	2.61	1.07	1.27	1.13	1.63	1.95	3.37	1.18	1.01	1.72	1.31	1.34	1.77	0.53	1.86	0.41	0.29	2.65	0.34	0.66	0.92	1.25	0.47	0.29	0.61	1.57	0.61	1.19	1.35
Austria																																											
2006	0.44	0.28	0.51	0.63	0.46	0.38	na	1.29	2.36	1.19	1.28	0.73	2.09	1.18	2.47	0.97	1.24	1.03	1.63	1.31	1.01	1.17	0.67	1.07	1.00	1.87	0.74	0.55	0.60	0.39	0.74	0.68	0.27	0.52	0.45	0.38	0.53	0.20	0.32	0.51	0.76	0.65	0.60
2016	0.73	1.19	0.67	1.72	1.00	1.32	na	1.80	3.64	1.83	2.18	1.24	2.63	2.69	4.93	1.77	1.76	1.71	2.37	1.93	1.42	1.80	1.03	2.06	1.52	2.51	2.03	0.89	1.56	0.60	0.88	1.39	0.37	0.69	0.80	1.02	1.29	0.39	0.60	1.17	1.80	0.79	1.21
Belgium																																											
2006	0.55	0.52	0.53	0.55	0.62	0.73	1.29	na	1.42	1.28	1.20	1.66	0.93	1.63	1.55	1.17	1.22	2.81	1.38	1.22	1.18	1.13	0.97	1.05	0.79	1.29	0.66	0.35	0.72	0.36	0.63	1.06	0.30	0.38	0.41	0.21	0.23	0.26	0.28	0.16	0.28	0.48	0.52
2016	0.77	1.02	0.65	1.06	0.99	1.06	1.80	na	1.90	1.65	1.74	1.97	1.35	2.31	2.67	2.02	1.70	3.09	1.87	1.89	1.51	1.49	1.26	1.50	1.06	1.71	1.33	0.81	1.05	0.43	0.73	1.41	0.36	0.62	0.64	0.53	0.70	0.42	0.60	0.72	0.97	0.82	1.20
Czech Republic																																											
2006	0.46	0.97	0.51	0.99	1.00	0.30	2.36	1.42	na	1.04	1.58	1.24	1.32	2.11	2.74	1.91	1.33	1.08	3.37	1.66	0.98	1.32	0.81	1.09	1.89	1.29	0.77	0.26	0.83	0.62	0.36	0.83	0.29	0.70	0.60	0.26	0.20	0.14	0.48	0.33	0.27	0.46	0.33
2016	0.77	1.77	0.59	2.51	1.37	1.64	3.64	1.90	na	1.90	2.52	1.44	1.51	3.72	6.46	2.06	1.63	1.43	5.07	2.61	1.67	1.83	0.96	2.23	3.05	1.92	3.11	1.07	2.04	0.66	1.22	1.86	0.42	1.18	1.02	1.77	1.60	0.53	0.98	1.98	1.99	0.73	1.49
Denmark																																											
2006	0.59	0.36	0.60	0.58	0.52	0.82	1.19	1.28	1.04	na	2.73	0.84	1.13	1.36	0.94	1.40	1.11	1.58	1.06	1.32	1.16	3.62	1.14	4.31	0.57	1.00	0.41	0.29	0.84	0.13	0.32	0.79	0.29	0.43	0.39	0.17	0.08	0.47	0.23	0.18	0.38	0.80	0.72
2016	0.98	0.82	0.78	1.56	1.03	1.58	1.83	1.65	1.90	na	3.16	1.14	1.51	2.40	2.76	1.94	1.45	2.23	2.05	1.82	1.47	3.65	1.43	4.94	1.08	1.71	1.53	0.67	1.65	0.29	0.27	1.71	0.52	0.58	0.76	0.92	0.61	0.65	0.54	0.82	0.90	1.11	1.09
Finland																																											
2006	0.63	0.47	0.61	0.70	0.47	0.51	1.28	1.20	1.58	2.73	na	0.80	1.03	1.32	1.92	2.08	1.16	1.42	1.36	1.39	1.15	3.97	1.03	3.31	1.92	1.19	0.77	0.47	0.53	0.05	0.28	0.52	0.37	0.41	0.62	0.14	0.26	0.42	0.48	0.62	0.28	0.52	0.57
2016	0.84	1.56	0.70	0.78	1.01	1.20	2.18	1.74	2.52	3.16	na	1.24	1.44	3.04	3.68	2.79	1.53	1.84	2.67	1.84	1.56	4.15	1.28	3.79	2.83	1.72	1.80	1.17	1.11	0.67	1.10	1.59	0.57	1.11	0.98	1.00	1.68	0.69	0.94	1.11	1.69	0.83	1.65
France																																											

Region, country, or economy and year	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
2006	0.69	0.84	0.58	0.81	0.97	0.99	0.73	1.66	1.24	0.84	0.80	na	0.87	1.06	0.86	0.86	1.35	0.96	1.11	1.13	1.22	0.78	0.82	0.98	1.04	1.38	0.48	0.59	0.69	0.24	0.36	0.66	0.35	0.58	0.48	0.17	0.27	0.23	0.27	0.29	0.31	0.49	0.40
2016	0.90	1.06	0.66	1.22	1.08	1.47	1.24	1.97	1.44	1.14	1.24	na	1.16	1.62	1.68	1.29	1.59	1.25	1.49	1.33	1.45	1.11	1.01	1.21	1.27	1.67	0.95	0.45	1.05	0.48	0.44	1.03	0.38	0.60	0.78	0.44	0.56	0.45	0.44	0.64	0.81	0.68	0.74
Germany																																											
2006	0.48	0.39	0.69	0.59	0.62	0.81	2.09	0.93	1.32	1.13	1.03	0.87	na	1.02	1.35	0.89	0.99	1.29	1.30	0.85	0.87	1.00	0.83	0.89	1.43	1.66	0.67	0.45	0.84	0.23	0.68	0.65	0.46	0.68	0.51	0.24	0.50	0.26	0.32	0.34	0.27	0.54	0.46
2016	0.67	0.75	0.74	1.03	0.78	1.17	2.63	1.35	1.51	1.51	1.44	1.16	na	1.52	1.91	1.30	1.30	1.68	1.63	1.08	1.19	1.38	1.07	1.26	1.56	2.04	1.00	0.57	1.31	0.42	0.67	0.94	0.44	0.62	0.78	0.35	0.56	0.44	0.56	0.61	0.62	0.72	0.85
Greece																																											
2006	0.43	0.58	0.70	0.47	0.32	0.24	1.18	1.63	2.11	1.36	1.32	1.06	1.02	na	1.22	1.26	1.54	1.31	1.62	1.75	1.30	1.08	1.42	1.67	0.82	1.07	1.17	0.28	0.84	0.31	0.45	0.48	0.15	0.39	0.30	0.43	0.47	0.26	0.21	0.27	0.31	0.31	0.22
2016	0.66	1.91	0.72	2.30	1.37	2.11	2.69	2.31	3.72	2.40	3.04	1.62	1.52	na	5.17	2.94	2.46	2.06	3.38	3.23	2.19	2.08	1.74	2.86	1.95	2.11	4.11	1.30	2.37	1.27	1.31	1.85	0.40	0.93	0.79	1.90	1.75	0.53	0.87	1.80	2.47	0.72	1.42
Hungary																																											
2006	0.45	0.34	0.69	0.65	0.58	0.25	2.47	1.55	2.74	0.94	1.92	0.86	1.35	1.22	na	0.92	1.09	1.01	1.84	1.56	0.94	1.35	0.71	0.85	0.96	0.80	0.98	0.11	1.02	0.54	0.70	1.07	0.26	0.64	0.60	0.56	0.17	0.15	0.43	0.49	0.19	0.40	0.30
2016	0.90	2.54	0.77	3.40	2.04	2.61	4.93	2.67	6.46	2.76	3.68	1.68	1.91	5.17	na	2.90	2.12	1.98	4.95	3.77	2.18	2.52	1.43	3.17	3.14	2.38	4.56	1.57	3.13	0.82	1.77	2.63	0.62	1.50	1.57	2.80	2.90	0.44	1.55	3.06	3.05	0.98	2.15
Ireland																																											
2006	0.57	0.79	0.62	0.92	0.60	0.51	0.97	1.17	1.91	1.40	2.08	0.86	0.89	1.26	0.92	na	0.93	1.23	0.63	1.11	1.07	1.28	2.04	1.26	0.73	0.88	0.53	0.33	0.62	0.99	0.61	0.77	0.46	0.68	0.35	0.57	0.17	0.39	0.41	0.16	0.13	0.92	1.27
2016	0.98	1.74	0.72	0.83	1.27	1.07	1.77	2.02	2.06	1.94	2.79	1.29	1.30	2.94	2.90	na	1.63	1.83	2.53	2.14	1.75	1.56	2.16	2.03	1.65	1.59	1.87	1.27	1.13	0.85	1.42	1.45	0.52	1.11	0.49	1.27	1.80	0.73	0.78	1.20	1.95	1.10	2.51
Italy																																											
2006	0.49	0.57	0.75	0.84	0.78	0.91	1.24	1.22	1.33	1.11	1.16	1.35	0.99	1.54	1.09	0.93	na	1.22	1.14	1.12	1.62	0.97	1.00	1.14	1.05	1.42	0.73	0.33	0.82	0.23	0.40	0.46	0.24	0.46	0.44	0.20	0.44	0.20	0.25	0.29	0.16	0.47	0.37
2016	0.68	1.04	0.74	1.28	1.06	1.27	1.76	1.70	1.63	1.45	1.53	1.59	1.30	2.46	2.12	1.63	na	1.60	1.85	1.69	1.89	1.35	1.27	1.41	1.14	1.77	1.51	0.92	1.46	0.47	0.54	0.92	0.29	0.66	0.68	0.49	0.67	0.36	0.51	0.74	0.71	0.66	0.77
Netherlands																																											

Region, country, or economy and year	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
2006	0.62	0.44	0.67	0.60	0.55	0.61	1.03	2.81	1.08	1.58	1.42	0.96	1.29	1.31	1.01	1.23	1.22	na	0.85	1.17	1.20	1.19	1.21	1.69	0.76	1.15	0.64	0.38	0.71	0.38	0.39	1.25	0.36	0.46	0.36	0.32	0.21	0.30	0.24	0.17	0.53	0.62	0.60
2016	0.90	0.74	0.77	1.16	0.94	1.13	1.71	3.09	1.43	2.23	1.84	1.25	1.68	2.06	1.98	1.83	1.60	na	1.63	1.51	1.41	1.79	1.50	2.26	0.95	1.71	1.30	0.62	1.23	0.35	0.27	1.89	0.41	0.56	0.65	0.58	0.49	0.54	0.40	0.63	0.77	1.08	0.99
Poland																																											
2006	0.54	0.53	0.57	0.55	0.39	0.53	1.63	1.38	3.37	1.06	1.36	1.11	1.30	1.62	1.84	0.63	1.14	0.85	na	1.35	1.00	1.25	0.70	1.20	1.83	0.99	0.52	0.32	0.57	0.27	0.46	0.79	0.23	0.57	0.63	0.22	0.22	0.31	0.55	0.73	0.22	0.46	0.39
2016	0.83	1.49	0.64	1.86	1.29	1.63	2.37	1.87	5.07	2.05	2.67	1.49	1.63	3.38	4.95	2.53	1.85	1.63	na	2.35	1.78	1.83	1.12	2.48	2.92	1.85	2.49	1.27	1.86	0.67	1.00	1.79	0.41	1.11	1.02	1.26	1.20	0.50	0.90	1.78	1.57	0.71	1.14
Portugal																																											
2006	0.35	0.41	0.47	1.09	2.89	1.00	1.31	1.22	1.66	1.32	1.39	1.13	0.85	1.75	1.56	1.11	1.12	1.17	1.35	na	2.97	1.16	1.17	1.18	0.98	0.98	0.68	0.16	0.61	0.20	0.24	0.62	0.30	0.47	0.29	0.25	0.56	0.09	0.11	0.18	0.49	0.28	0.22
2016	0.61	1.69	0.52	2.37	4.19	1.95	1.93	1.89	2.61	1.82	1.84	1.33	1.08	3.23	3.77	2.14	1.69	1.51	2.35	na	3.43	1.28	1.19	1.86	1.44	1.49	2.27	1.20	1.53	0.67	0.97	1.54	0.36	0.85	0.56	1.38	1.04	0.36	0.54	1.28	1.46	0.65	1.34
Spain																																											
2006	0.45	2.43	0.60	2.95	1.03	2.72	1.01	1.18	0.98	1.16	1.15	1.22	0.87	1.30	0.94	1.07	1.62	1.20	1.00	2.97	na	0.94	0.99	1.15	0.71	0.89	0.42	0.26	0.57	0.13	0.45	0.56	0.18	0.35	0.29	0.21	0.19	0.14	0.21	0.35	0.19	0.33	0.30
2016	0.63	2.94	0.65	2.99	1.61	3.37	1.42	1.51	1.67	1.47	1.56	1.45	1.19	2.19	2.18	1.75	1.89	1.41	1.78	3.43	na	1.34	1.16	1.51	1.08	1.36	1.32	0.68	1.18	0.56	0.56	1.00	0.28	0.57	0.63	0.56	0.55	0.33	0.47	0.74	0.73	0.67	0.75
Sweden																																											
2006	0.54	0.46	0.63	0.53	0.58	0.56	1.17	1.13	1.32	3.62	3.97	0.78	1.00	1.08	1.35	1.28	0.97	1.19	1.25	1.16	0.94	na	1.00	3.86	0.98	1.02	0.52	0.55	0.54	0.28	0.36	0.78	0.54	0.49	0.51	0.16	0.54	0.45	0.25	0.29	0.55	0.68	0.56
2016	0.81	0.64	0.74	1.13	0.86	1.18	1.80	1.49	1.83	3.65	4.15	1.11	1.38	2.08	2.52	1.56	1.35	1.79	1.83	1.28	1.34	na	1.27	4.42	1.23	1.48	1.25	0.78	1.29	0.32	0.40	1.52	0.54	0.71	0.77	0.65	0.86	0.59	0.49	0.71	0.78	0.93	1.06
United Kingdom																																											
2006	0.68	0.48	0.71	0.47	0.66	0.56	0.67	0.97	0.81	1.14	1.03	0.82	0.83	1.42	0.71	2.04	1.00	1.21	0.70	1.17	0.99	1.00	na	1.15	0.59	0.91	0.68	0.91	0.51	0.62	0.44	1.30	0.58	0.67	0.49	1.10	1.02	0.56	0.32	0.40	0.74	1.07	1.25
2016	0.84	0.67	0.77	0.71	0.83	1.01	1.03	1.26	0.96	1.43	1.28	1.01	1.07	1.74	1.43	2.16	1.27	1.50	1.12	1.19	1.16	1.27	na	1.40	0.77	1.21	0.87	0.55	0.88	0.50	0.48	1.33	0.62	0.67	0.65	0.84	0.76	0.77	0.45	0.57	0.94	1.19	1.35
Norway																																											

Region, country, or economy and year	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
2006	0.84	0.27	0.68	0.39	0.47	0.40	1.07	1.05	1.09	4.31	3.31	0.98	0.89	1.67	0.85	1.26	1.14	1.69	1.20	1.18	1.15	3.86	1.15	na	1.20	0.92	0.61	0.39	0.66	0.47	0.09	1.13	0.42	0.30	0.35	0.45	0.22	0.35	0.23	0.34	0.30	0.61	0.79
2016	1.02	0.70	0.73	1.72	0.95	1.72	2.06	1.50	2.23	4.94	3.79	1.21	1.26	2.86	3.17	2.03	1.41	2.26	2.48	1.86	1.51	4.42	1.40	na	1.66	1.58	1.71	0.50	1.57	0.38	0.35	2.34	0.43	0.71	0.75	1.06	0.91	0.46	0.43	1.00	0.94	0.99	1.02
Russia																																											
2006	0.45	0.94	0.63	0.44	0.57	0.50	1.00	0.79	1.89	0.57	1.92	1.04	1.43	0.82	0.96	0.73	1.05	0.76	1.83	0.98	0.71	0.98	0.59	1.20	na	0.97	0.58	0.39	0.91	0.25	0.21	0.36	0.44	0.57	0.80	0.17	0.36	0.20	0.96	0.92	0.08	0.31	0.16
2016	0.57	1.55	0.65	1.23	1.04	1.31	1.52	1.06	3.05	1.08	2.83	1.27	1.56	1.95	3.14	1.65	1.14	0.95	2.92	1.44	1.08	1.23	0.77	1.66	na	1.16	1.84	0.62	1.71	0.57	0.82	1.40	0.51	1.07	1.11	0.87	1.12	0.40	1.02	1.61	1.17	0.54	0.85
Switzerland																																											
2006	0.64	0.42	0.69	0.69	0.49	0.53	1.87	1.29	1.29	1.00	1.19	1.38	1.66	1.07	0.80	0.88	1.42	1.15	0.99	0.98	0.89	1.02	0.91	0.92	0.97	na	0.55	0.38	0.70	0.26	0.31	0.73	0.24	0.59	0.49	0.19	0.80	0.41	0.43	0.53	0.38	0.61	0.48
2016	0.87	0.99	0.81	1.32	0.92	1.34	2.51	1.71	1.92	1.71	1.72	1.67	2.04	2.11	2.38	1.59	1.77	1.71	1.85	1.49	1.36	1.48	1.21	1.58	1.16	na	1.35	0.64	1.32	0.42	0.49	1.49	0.33	0.68	0.77	0.60	0.74	0.46	0.57	0.92	1.02	0.80	1.01
Turkey																																											
2006	0.44	0.30	1.03	0.45	0.43	0.24	0.74	0.66	0.77	0.41	0.77	0.48	0.67	1.17	0.98	0.53	0.73	0.64	0.52	0.68	0.42	0.52	0.68	0.61	0.58	0.55	na	1.63	1.02	2.84	0.85	0.69	0.17	0.31	0.42	0.60	1.07	0.23	0.34	0.27	0.31	0.40	0.28
2016	0.79	1.80	0.91	2.25	1.35	1.77	2.03	1.33	3.11	1.53	1.80	0.95	1.00	4.11	4.56	1.87	1.51	1.30	2.49	2.27	1.32	1.25	0.87	1.71	1.84	1.35	na	3.26	2.08	2.27	1.92	2.13	0.46	1.26	0.91	2.07	3.68	0.62	0.97	1.83	2.23	0.64	1.37
Iran																																											
2006	1.78	0.15	0.51	0.31	0.15	0.09	0.55	0.35	0.26	0.29	0.47	0.59	0.45	0.28	0.11	0.33	0.33	0.38	0.32	0.16	0.26	0.55	0.91	0.39	0.39	0.38	1.63	na	0.16	0.27	0.21	0.22	0.22	1.02	0.44	2.77	0.89	0.03	0.16	0.26	0.19	1.03	0.19
2016	1.23	1.29	0.65	0.48	0.70	0.53	0.89	0.81	1.07	0.67	1.17	0.45	0.57	1.30	1.57	1.27	0.92	0.62	1.27	1.20	0.68	0.78	0.55	0.50	0.62	0.64	3.26	na	0.26	1.08	1.33	1.28	0.32	1.05	0.45	4.96	2.05	0.51	1.02	0.94	1.61	1.00	1.59
Israel																																											
2006	0.72	0.50	1.28	0.57	0.47	0.43	0.60	0.72	0.83	0.84	0.53	0.69	0.84	0.84	1.02	0.62	0.82	0.71	0.57	0.61	0.57	0.54	0.51	0.66	0.91	0.70	1.02	0.16	na	0.45	0.28	0.58	0.28	0.60	0.34	0.19	0.05	0.36	0.31	0.47	0.30	0.52	0.39
2016	1.14	0.71	1.33	2.26	0.90	1.86	1.56	1.05	2.04	1.65	1.11	1.05	1.31	2.37	3.13	1.13	1.46	1.23	1.86	1.53	1.18	1.29	0.88	1.57	1.71	1.32	2.08	0.26	na	0.27	0.28	1.52	0.42	0.91	0.79	0.95	0.36	0.73	0.59	1.36	0.49	0.82	0.83
Saudi Arabia																																											

Region, country, or economy and year	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
2006	0.68	0.25	0.57	0.75	0.29	0.23	0.39	0.36	0.62	0.13	0.05	0.24	0.23	0.31	0.54	0.99	0.23	0.38	0.27	0.20	0.13	0.28	0.62	0.47	0.25	0.26	2.84	0.27	0.45	na	40.65	0.99	0.15	1.39	0.14	2.45	11.73	0.74	0.08	0.44	0.35	0.39	0.31
2016	0.66	0.64	0.54	0.28	0.42	0.41	0.60	0.43	0.66	0.29	0.67	0.48	0.42	1.27	0.82	0.85	0.47	0.35	0.67	0.67	0.56	0.32	0.50	0.38	0.57	0.42	2.27	1.08	0.27	na	13.69	0.77	0.57	2.59	0.47	3.07	7.24	0.61	1.02	0.97	1.35	0.57	0.73
Egypt																																											
2006	0.54	0.26	0.59	0.20	0.17	0.12	0.74	0.63	0.36	0.32	0.28	0.36	0.68	0.45	0.70	0.61	0.40	0.39	0.46	0.24	0.45	0.36	0.44	0.09	0.21	0.31	0.85	0.21	0.28	40.65	na	0.61	0.31	0.61	0.96	1.59	1.28	0.21	0.43	0.53	0.12	0.15	0.48
2016	0.69	1.23	0.51	0.46	0.59	0.29	0.88	0.73	1.22	0.27	1.10	0.44	0.67	1.31	1.77	1.42	0.54	0.27	1.00	0.97	0.56	0.40	0.48	0.35	0.82	0.49	1.92	1.33	0.28	13.69	na	0.70	0.33	1.08	1.11	1.68	2.29	0.21	1.07	1.01	1.68	0.28	1.37
South Africa																																											
2006	0.63	0.57	0.78	1.26	0.62	0.83	0.68	1.06	0.83	0.79	0.52	0.66	0.65	0.48	1.07	0.77	0.46	1.25	0.79	0.62	0.56	0.78	1.30	1.13	0.36	0.73	0.69	0.22	0.58	0.99	0.61	na	0.30	0.87	0.35	0.85	1.11	0.46	0.19	0.26	0.58	1.48	0.96
2016	1.15	1.41	0.86	2.84	1.44	2.65	1.39	1.41	1.86	1.71	1.59	1.03	0.94	1.85	2.63	1.45	0.92	1.89	1.79	1.54	1.00	1.52	1.33	2.34	1.40	1.49	2.13	1.28	1.52	0.77	0.70	na	0.41	2.28	0.79	1.33	1.31	0.53	0.47	1.17	1.76	1.54	1.76
China																																											
2006	0.77	0.24	0.88	0.20	0.22	0.13	0.27	0.30	0.29	0.29	0.37	0.35	0.46	0.15	0.26	0.46	0.24	0.36	0.23	0.30	0.18	0.54	0.58	0.42	0.44	0.24	0.17	0.22	0.28	0.15	0.31	0.30	na	0.43	1.51	1.25	0.88	3.02	0.95	1.64	0.49	1.08	0.49
2016	0.84	0.35	1.19	0.34	0.28	0.34	0.37	0.36	0.42	0.52	0.57	0.38	0.44	0.40	0.62	0.52	0.29	0.41	0.41	0.36	0.28	0.54	0.62	0.43	0.51	0.33	0.46	0.32	0.42	0.57	0.33	0.41	na	0.39	1.09	0.45	1.23	2.03	0.90	1.73	0.79	1.15	0.65
India																																											
2006	0.54	0.71	0.86	0.70	0.72	0.35	0.52	0.38	0.70	0.43	0.41	0.58	0.68	0.39	0.64	0.68	0.46	0.46	0.57	0.47	0.35	0.49	0.67	0.30	0.57	0.59	0.31	1.02	0.60	1.39	0.61	0.87	0.43	na	0.98	4.40	1.60	1.29	1.48	1.65	0.89	0.67	0.26
2016	0.64	1.20	0.83	0.76	0.85	0.66	0.69	0.62	1.18	0.58	1.11	0.60	0.62	0.93	1.50	1.11	0.66	0.56	1.11	0.85	0.57	0.71	0.67	0.71	1.07	0.68	1.26	1.05	0.91	2.59	1.08	2.28	0.39	na	0.98	2.17	1.60	1.26	2.16	1.74	1.98	0.85	1.02
Japan																																											
2006	0.51	0.25	0.89	0.21	0.42	0.25	0.45	0.41	0.60	0.39	0.62	0.48	0.51	0.30	0.60	0.35	0.44	0.36	0.63	0.29	0.29	0.51	0.49	0.35	0.80	0.49	0.42	0.44	0.34	0.14	0.96	0.35	1.51	0.98	na	1.02	0.56	0.63	1.88	1.29	2.32	0.61	0.39
2016	0.64	0.66	0.85	0.96	0.58	0.92	0.80	0.64	1.02	0.76	0.98	0.78	0.78	0.79	1.57	0.49	0.68	0.65	1.02	0.56	0.63	0.77	0.65	0.75	1.11	0.77	0.91	0.45	0.79	0.47	1.11	0.79	1.09	0.98	na	1.56	0.48	0.95	1.83	2.16	3.28	0.80	0.74
Malaysia																																											

Region, country, or economy and year	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
2006	0.32	0.31	0.31	0.65	0.20	0.22	0.38	0.21	0.26	0.17	0.14	0.17	0.24	0.43	0.56	0.57	0.20	0.32	0.22	0.25	0.21	0.16	1.10	0.45	0.17	0.19	0.60	2.77	0.19	2.45	1.59	0.85	1.25	4.40	1.02	na	4.67	3.55	0.54	1.00	6.61	1.37	1.30
2016	0.47	0.96	0.32	1.54	0.84	1.25	1.02	0.53	1.77	0.92	1.00	0.44	0.35	1.90	2.80	1.27	0.49	0.58	1.26	1.38	0.56	0.65	0.84	1.06	0.87	0.60	2.07	4.96	0.95	3.07	1.68	1.33	0.45	2.17	1.56	na	5.97	1.64	1.02	2.34	3.74	1.54	2.19
Pakistan																																											
2006	0.77	0.41	0.57	0.27	0.27	0.22	0.53	0.23	0.20	0.08	0.26	0.27	0.50	0.47	0.17	0.17	0.44	0.21	0.22	0.56	0.19	0.54	1.02	0.22	0.36	0.80	1.07	0.89	0.05	11.73	1.28	1.11	0.88	1.60	0.56	4.67	na	1.15	1.52	0.36	1.88	0.42	0.07
2016	0.62	1.99	0.45	0.64	1.16	0.47	1.29	0.70	1.60	0.61	1.68	0.56	0.56	1.75	2.90	1.80	0.67	0.49	1.20	1.04	0.55	0.86	0.76	0.91	1.12	0.74	3.68	2.05	0.36	7.24	2.29	1.31	1.23	1.60	0.48	5.97	na	0.51	2.27	1.29	3.42	0.65	1.98
Singapore																																											
2006	0.47	0.13	0.76	0.25	0.13	0.10	0.20	0.26	0.14	0.47	0.42	0.23	0.26	0.26	0.15	0.39	0.20	0.30	0.31	0.09	0.14	0.45	0.56	0.35	0.20	0.41	0.23	0.03	0.36	0.74	0.21	0.46	3.02	1.29	0.63	3.55	1.15	na	0.69	1.59	1.23	1.53	0.95
2016	0.53	0.45	0.72	0.37	0.32	0.29	0.39	0.42	0.53	0.65	0.69	0.45	0.44	0.53	0.44	0.73	0.36	0.54	0.50	0.36	0.33	0.59	0.77	0.46	0.40	0.46	0.62	0.51	0.73	0.61	0.21	0.53	2.03	1.26	0.95	1.64	0.51	na	1.11	1.62	1.80	1.27	1.37
South Korea																																											
2006	0.50	0.48	1.23	0.36	0.30	0.25	0.32	0.28	0.48	0.23	0.48	0.27	0.32	0.21	0.43	0.41	0.25	0.24	0.55	0.11	0.21	0.25	0.32	0.23	0.96	0.43	0.34	0.16	0.31	0.08	0.43	0.19	0.95	1.48	1.88	0.54	1.52	0.69	na	1.30	0.53	0.48	0.28
2016	0.57	0.98	1.23	0.47	0.52	0.61	0.60	0.60	0.98	0.54	0.94	0.44	0.56	0.87	1.55	0.78	0.51	0.40	0.90	0.54	0.47	0.49	0.45	0.43	1.02	0.57	0.97	1.02	0.59	1.02	1.07	0.47	0.90	2.16	1.83	1.02	2.27	1.11	na	1.75	2.10	0.60	1.03
Taiwan																																											
2006	0.56	0.24	1.29	0.22	0.31	0.20	0.51	0.16	0.33	0.18	0.62	0.29	0.34	0.27	0.49	0.16	0.29	0.17	0.73	0.18	0.35	0.29	0.40	0.34	0.92	0.53	0.27	0.26	0.47	0.44	0.53	0.26	1.64	1.65	1.29	1.00	0.36	1.59	1.30	na	1.07	0.72	0.33
2016	0.71	1.22	1.05	1.68	0.93	1.57	1.17	0.72	1.98	0.82	1.11	0.64	0.61	1.80	3.06	1.20	0.74	0.63	1.78	1.28	0.74	0.71	0.57	1.00	1.61	0.92	1.83	0.94	1.36	0.97	1.01	1.17	1.73	1.74	2.16	2.34	1.29	1.62	1.75	na	3.36	0.83	1.28
Thailand																																											
2006	0.41	0.36	0.83	0.54	0.28	0.25	0.76	0.28	0.27	0.38	0.28	0.31	0.27	0.31	0.19	0.13	0.16	0.53	0.22	0.49	0.19	0.55	0.74	0.30	0.08	0.38	0.31	0.19	0.30	0.35	0.12	0.58	0.49	0.89	2.32	6.61	1.88	1.23	0.53	1.07	na	1.35	0.91
2016	0.49	2.31	0.84	0.92	1.33	0.61	1.80	0.97	1.99	0.90	1.69	0.81	0.62	2.47	3.05	1.95	0.71	0.77	1.57	1.46	0.73	0.78	0.94	0.94	1.17	1.02	2.23	1.61	0.49	1.35	1.68	1.76	0.79	1.98	3.28	3.74	3.42	1.80	2.10	3.36	na	1.26	2.69
Australia																																											

Region, country, or economy and year	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
2006	0.82	0.41	0.76	0.56	0.49	0.65	0.65	0.48	0.46	0.80	0.52	0.49	0.54	0.31	0.40	0.92	0.47	0.62	0.46	0.28	0.33	0.68	1.07	0.61	0.31	0.61	0.40	1.03	0.52	0.39	0.15	1.48	1.08	0.67	0.61	1.37	0.42	1.53	0.48	0.72	1.35	na	3.72
2016	0.99	0.62	0.75	1.06	0.79	1.19	0.79	0.82	0.73	1.11	0.83	0.68	0.72	0.72	0.98	1.10	0.66	1.08	0.71	0.65	0.67	0.93	1.19	0.99	0.54	0.80	0.64	1.00	0.82	0.57	0.28	1.54	1.15	0.85	0.80	1.54	0.65	1.27	0.60	0.83	1.26	na	3.38
New Zealand																																											
2006	0.85	0.37	0.68	0.58	0.34	0.46	0.60	0.52	0.33	0.72	0.57	0.40	0.46	0.22	0.30	1.27	0.37	0.60	0.39	0.22	0.30	0.56	1.25	0.79	0.16	0.48	0.28	0.19	0.39	0.31	0.48	0.96	0.49	0.26	0.39	1.30	0.07	0.95	0.28	0.33	0.91	3.72	na
2016	1.21	1.88	0.81	1.31	0.99	1.35	1.21	1.20	1.49	1.09	1.65	0.74	0.85	1.42	2.15	2.51	0.77	0.99	1.14	1.34	0.75	1.06	1.35	1.02	0.85	1.01	1.37	1.59	0.83	0.73	1.37	1.76	0.65	1.02	0.74	2.19	1.98	1.37	1.03	1.28	2.69	3.38	na

na = not applicable.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating region, country, or economy is credited with one count). Regions, countries, or economies with less than 1% of internationally coauthored articles in 2016 are omitted. The index of collaboration is calculated as follows: $ICxy = (Cxy/Cx)/(Cy/Cw)$, where $ICxy$ = index of collaboration between country x and country y, Cxy = number of papers coauthored between country x and country y, Cx = total number of international coauthorships by country x, Cy = total number of international coauthorships by country y, and Cw = total number of international coauthorships in the database.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-44

Internationally coauthored S&E publications, by selected region, country, or economy pairs: 2003 and 2016

(Number)

Region, country, or economy, and year	World	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
World																																												
2003	194,398	19,131	3,408	86,408	2,321	5,427	1,617	4,992	7,480	2,912	4,959	4,219	26,587	35,960	2,992	2,803	1,982	16,763	11,969	5,833	2,744	11,811	9,063	35,056	3,263	10,577	10,690	2,400	1,054	5,047	756	1,347	2,207	14,460	5,392	20,452	796	481	2,610	6,776	3,084	1,549	11,638	2,653
2016	498,465	45,287	8,208	192,375	5,397	21,061	6,911	13,937	18,792	9,069	14,514	10,343	57,076	75,629	8,284	5,085	6,897	44,826	30,423	12,835	11,088	38,088	22,255	87,577	11,030	17,345	26,892	8,687	9,475	8,818	14,288	8,403	9,295	95,476	21,124	32,074	9,731	6,327	11,352	20,064	9,843	5,231	42,096	6,932
Canada																																												
2003	19,131	na	188	9,655	104	343	73	187	372	112	258	242	1,613	1,536	141	176	101	744	643	330	73	496	460	2,203	217	384	597	126	208	289	69	60	120	993	257	1,039	26	25	153	278	167	71	881	228
2016	45,287	na	684	19,704	547	1,846	684	928	1,307	635	1,287	787	4,669	4,616	497	414	614	2,778	2,483	972	619	2,164	1,644	6,685	1,025	904	2,136	621	1,059	917	861	524	970	7,245	1,234	1,875	418	357	542	1,038	634	235	3,768	760
Mexico																																												
2003	3,408	188	na	1,513	98	115	61	20	69	41	32	17	354	220	20	19	4	135	78	58	26	475	43	307	19	139	40	11	2	54	4	2	18	58	43	110	4	2	8	40	10	8	55	20
2016	8,208	684	na	3,287	412	763	466	274	317	264	196	265	997	930	260	213	198	771	373	314	309	1,841	235	970	127	444	437	257	202	103	150	170	216	544	418	350	154	207	84	324	198	199	433	215
United States																																												
2003	86,408	9,655	1,513	na	760	2,125	609	1,175	1,748	657	1,361	1,147	6,842	10,750	950	835	494	5,288	3,470	1,553	537	3,257	2,563	10,769	924	2,741	3,353	1,136	295	2,771	186	372	718	5,406	2,040	8,302	117	152	876	3,762	1,713	579	3,819	880
2016	192,375	19,704	3,287	na	1,787	7,606	2,421	3,618	4,703	2,081	4,385	2,788	14,440	21,584	2,295	1,510	1,907	12,784	9,078	3,192	2,245	9,530	6,383	25,858	3,118	4,336	8,455	3,046	2,375	4,543	2,964	1,653	3,084	43,968	6,759	10,484	1,192	1,106	3,133	9,553	3,990	1,686	12,127	2,175
Argentina																																												
2003	2,321	104	98	760	na	284	125	38	37	23	29	14	232	236	12	26	6	156	53	29	34	422	45	180	11	26	61	12	4	33	3	1	21	25	21	64	6	2	4	8	9	8	61	18

Region, country, or economy, and year	World	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
2016	5,397	547	412	1,787	na	1,089	622	259	215	246	245	87	753	847	206	187	62	620	381	259	285	1,232	273	677	205	231	384	212	49	216	44	42	286	350	173	334	162	44	45	103	179	52	481	98
Brazil																																												
2003	5,427	343	115	2,125	284	na	106	50	137	47	53	48	721	570	36	33	12	363	151	107	198	283	115	587	52	198	132	21	2	61	5	7	41	120	104	212	6	3	8	45	21	15	141	33
2016	21,061	1,846	763	7,606	1,089	na	820	586	783	524	629	443	2,603	2,479	478	438	369	2,008	1,205	699	1,965	2,593	804	3,074	445	759	1,047	496	282	334	251	208	566	1,133	761	787	347	310	155	442	388	293	1,401	289
Chile																																												
2003	1,617	73	61	609	125	106	na	25	47	5	33	24	208	234	5	8	4	95	47	20	16	249	37	185	11	32	33	7	1	29	1	2	19	21	17	42	4	1	7	17	5	6	42	17
2016	6,911	684	466	2,421	622	820	na	255	275	206	318	172	1,167	1,232	242	184	102	789	476	290	300	1,777	363	1,222	263	314	498	213	70	227	81	34	341	451	193	411	169	41	45	169	214	44	692	130
Austria																																												
2003	4,992	187	20	1,175	38	50	25	na	214	167	124	139	496	1,759	86	129	44	498	313	234	95	294	216	570	96	197	462	36	12	72	5	22	52	114	63	200	5	9	19	44	39	27	167	28
2016	13,937	928	274	3,618	259	586	255	na	946	924	742	629	1,979	5,561	622	701	341	2,205	1,454	852	597	1,513	1,120	2,514	635	738	1,888	494	235	385	238	206	361	990	410	719	277	229	123	334	323	263	929	235
Belgium																																												
2003	7,480	372	69	1,748	37	137	47	214	na	120	243	177	1,703	1,234	176	176	88	731	1,172	246	147	538	347	1,337	132	332	495	52	10	137	15	42	85	181	67	310	6	2	17	52	30	18	199	39
2016	18,792	1,307	317	4,703	215	783	275	946	na	649	904	678	4,239	3,854	722	512	525	2,870	3,547	903	790	2,175	1,250	4,174	625	690	1,729	434	290	349	232	232	493	1,281	491	777	193	167	180	452	266	192	1,294	313
Czech Republic																																												
2003	2,912	112	41	657	23	47	5	167	120	na	55	83	415	631	67	98	31	244	170	216	72	159	133	356	56	213	159	17	5	68	2	10	14	42	36	199	3	2	8	17	16	11	60	13
2016	9,069	635	264	2,081	246	524	206	924	649	na	502	475	1,497	2,074	561	598	259	1,332	789	1,185	526	1,155	742	1,535	447	964	940	491	185	327	172	187	314	728	453	597	313	184	110	359	354	189	560	188
Denmark																																												

Region, country, or economy, and year	World	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
2003	4,959	258	32	1,361	29	53	33	124	243	55	na	257	511	885	87	58	64	423	442	160	99	345	775	992	365	181	324	26	7	85	6	18	40	118	55	156	3	7	12	34	6	15	207	49
2016	14,514	1,287	196	4,385	245	629	318	742	904	502	na	952	1,896	3,319	579	408	389	1,893	1,977	766	589	1,629	2,364	3,658	1,586	546	1,342	386	184	424	120	67	463	1,446	358	713	261	113	216	316	235	137	1,363	219
Finland																																												
2003	4,219	242	17	1,147	14	48	24	139	177	83	257	na	401	643	71	108	59	322	374	141	92	258	719	765	219	312	213	29	7	59	0	7	20	89	26	182	3	0	23	41	11	10	125	13
2016	10,343	787	265	2,788	87	443	172	629	678	475	952	na	1,463	2,260	522	388	399	1,419	1,160	710	424	1,232	1,917	2,317	868	1,020	961	324	230	204	198	192	306	1,122	486	651	201	221	162	391	226	183	721	238
France																																												
2003	26,587	1,613	354	6,842	232	721	208	496	1,703	415	511	401	na	3,977	450	331	191	2,845	1,447	874	479	1,934	815	3,756	411	1,258	1,826	130	49	422	19	43	178	720	358	1,150	17	12	53	204	91	65	637	111
2016	57,076	4,669	997	14,440	753	2,603	1,167	1,979	4,239	1,497	1,896	1,463	na	10,084	1,537	981	1,015	8,182	4,370	2,195	1,693	6,305	2,821	10,079	1,526	2,522	5,131	946	486	1,064	789	422	1,100	4,182	1,441	2,873	494	408	591	1,020	725	487	3,293	590
Germany																																												
2003	35,960	1,536	220	10,750	236	570	234	1,759	1,234	631	885	643	3,977	na	547	641	265	2,736	2,542	1,362	359	1,679	1,481	4,877	492	2,755	2,858	229	69	785	23	183	267	1,313	736	1,885	18	49	125	363	165	62	1,107	199
2016	75,629	4,616	930	21,584	847	2,479	1,232	5,561	3,854	2,074	3,319	2,260	10,084	na	1,912	1,470	1,364	8,821	7,746	3,171	1,817	6,871	4,671	14,200	2,104	4,099	8,310	1,319	825	1,757	909	852	1,327	6,419	1,975	3,776	516	538	756	1,708	909	489	4,570	890
Greece																																												
2003	2,992	141	20	950	12	36	5	86	176	67	87	71	450	547	na	64	36	370	217	128	77	205	128	717	81	134	186	30	3	62	3	8	21	42	17	95	5	2	6	30	11	4	63	8
2016	8,284	497	260	2,295	206	478	242	622	722	561	579	522	1,537	1,912	na	437	337	1,830	1,042	721	595	1,388	768	2,531	524	563	941	593	205	348	302	183	286	641	325	423	307	184	100	290	295	215	507	164
Hungary																																												
2003	2,803	176	19	835	26	33	8	129	176	98	58	108	331	641	64	na	27	243	158	140	46	147	144	355	37	117	157	31	4	85	0	15	22	55	52	178	3	1	14	41	25	3	45	11
2016	5,085	414	213	1,510	187	438	184	701	512	598	408	388	981	1,470	437	na	204	969	614	648	426	847	572	1,274	357	555	654	404	152	282	119	152	249	606	324	514	278	187	51	318	307	163	419	152

Region, country, or economy, and year	World	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
Ireland																																												
2003	1,982	101	4	494	6	12	4	44	88	31	64	59	191	265	36	27	na	142	158	28	51	117	84	750	49	61	82	11	9	18	6	9	18	43	30	58	4	5	17	10	5	5	78	27
2016	6,897	614	198	1,907	62	369	102	341	525	259	389	399	1,015	1,364	337	204	na	1,014	770	449	329	921	479	2,621	310	396	592	225	166	138	168	165	187	693	324	216	171	158	115	217	164	141	643	241
Italy																																												
2003	16,763	744	135	5,288	156	363	95	498	731	244	423	322	2,845	2,736	370	243	142	na	1,207	473	303	1,537	695	2,892	255	838	1,303	116	41	306	13	43	78	297	218	615	10	20	34	148	60	17	454	79
2016	44,826	2,778	771	12,784	620	2,008	789	2,205	2,870	1,332	1,893	1,419	8,182	8,821	1,830	969	1,014	na	4,378	2,135	1,684	6,481	2,700	10,023	1,395	1,776	4,292	1,182	782	1,157	606	411	766	2,517	1,255	1,975	431	384	366	926	651	334	2,486	479
Netherlands																																												
2003	11,969	643	78	3,470	53	151	47	313	1,172	170	442	374	1,447	2,542	217	158	158	1,207	na	290	213	796	620	2,395	307	502	737	64	16	201	6	22	128	296	143	479	17	9	32	91	34	28	440	86
2016	30,423	2,483	373	9,078	381	1,205	476	1,454	3,547	789	1,977	1,160	4,370	7,746	1,042	614	770	4,378	na	1,279	1,019	3,283	2,427	8,039	1,519	1,007	2,806	688	358	660	302	141	1,070	2,377	721	1,277	345	190	374	486	381	245	2,780	417
Poland																																												
2003	5,833	330	58	1,553	29	107	20	234	246	216	160	141	874	1,362	128	140	28	473	290	na	100	289	307	629	110	543	320	24	3	118	5	18	52	136	95	402	3	2	17	108	60	6	127	25
2016	12,835	972	314	3,192	259	699	290	852	903	1,185	766	710	2,195	3,171	721	648	449	2,135	1,279	na	670	1,741	1,048	2,533	705	1,304	1,281	558	309	423	247	217	428	1,016	606	840	315	196	146	465	450	212	773	204
Portugal																																												
2003	2,744	73	26	537	34	198	16	95	147	72	99	92	479	359	77	46	51	303	213	100	na	462	168	563	77	148	156	11	1	44	1	4	28	67	32	68	3	0	5	14	8	8	47	11
2016	11,088	619	309	2,245	285	1,965	300	597	790	526	589	424	1,693	1,817	595	426	329	1,684	1,019	670	na	2,903	636	2,309	457	555	891	439	253	301	214	182	318	765	399	400	298	146	92	242	281	170	609	206
Spain																																												
2003	11,811	496	475	3,257	422	283	249	294	538	159	345	258	1,934	1,679	205	147	117	1,537	796	289	462	na	464	1,980	220	388	549	54	6	181	10	22	61	189	107	274	7	5	21	80	40	14	259	51

Region, country, or economy, and year	World	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
2016	38,088	2,164	1,841	9,530	1,232	2,593	1,777	1,513	2,175	1,155	1,629	1,232	6,305	6,871	1,388	847	921	6,481	3,283	1,741	2,903	na	2,276	7,789	1,272	1,433	2,795	874	491	792	606	362	711	2,043	914	1,533	420	265	285	722	557	293	2,148	395
Sweden																																												
2003	9,063	460	43	2,563	45	115	37	216	347	133	775	719	815	1,481	128	144	84	695	620	307	168	464	na	1,482	610	505	394	43	19	113	8	13	64	269	97	429	9	3	29	73	33	31	399	59
2016	22,255	1,644	235	6,383	273	804	363	1,120	1,250	742	2,364	1,917	2,821	4,671	768	572	479	2,700	2,427	1,048	636	2,276	na	4,967	2,178	955	1,780	483	331	509	204	150	632	2,284	669	1,102	284	243	299	437	314	183	1,754	327
United Kingdom																																												
2003	35,056	2,203	307	10,769	180	587	185	570	1,337	356	992	765	3,756	4,877	717	355	750	2,892	2,395	629	563	1,980	1,482	na	641	987	1,596	379	189	436	88	110	502	1,347	557	1,681	149	115	280	306	199	202	2,278	610
2016	87,577	6,685	970	25,858	677	3,074	1,222	2,514	4,174	1,535	3,658	2,317	10,079	14,200	2,531	1,274	2,621	10,023	8,039	2,533	2,309	7,789	4,967	na	2,720	2,335	5,720	1,322	920	1,371	1,246	703	2,170	10,472	2,494	3,659	1,428	847	1,541	1,589	981	862	8,838	1,640
Norway																																												
2003	3,263	217	19	924	11	52	11	96	132	56	365	219	411	492	81	37	49	255	307	110	77	220	610	641	na	175	153	25	2	51	6	7	43	101	38	103	5	0	11	18	11	5	112	44
2016	11,030	1,025	127	3,118	205	445	263	635	625	447	1,586	868	1,526	2,104	524	357	310	1,395	1,519	705	457	1,272	2,178	2,720	na	637	940	328	104	307	119	66	481	901	330	530	229	127	115	190	217	109	919	157
Russia																																												
2003	10,577	384	139	2,741	26	198	32	197	332	213	181	312	1,258	2,755	134	117	61	838	502	543	148	388	505	987	175	na	465	51	12	206	2	9	26	301	124	882	2	2	10	315	127	7	165	14
2016	17,345	904	444	4,336	231	759	314	738	690	964	546	1,020	2,522	4,099	563	555	396	1,776	1,007	1,304	555	1,433	955	2,335	637	na	1,088	555	203	525	282	241	454	1,693	783	1,235	296	247	159	709	552	213	794	204
Switzerland																																												
2003	10,690	597	40	3,353	61	132	33	462	495	159	324	213	1,826	2,858	186	157	82	1,303	737	320	156	549	394	1,596	153	465	na	65	14	189	4	25	87	197	164	486	10	14	32	117	74	30	374	68
2016	26,892	2,136	437	8,455	384	1,047	498	1,888	1,729	940	1,342	961	5,131	8,310	941	654	592	4,292	2,806	1,281	891	2,795	1,780	5,720	940	1,088	na	632	325	627	323	222	749	1,716	775	1,337	317	253	279	619	489	288	1,819	379
Turkey																																												

Region, country, or economy, and year	World	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
2003	2,400	126	11	1,136	12	21	7	36	52	17	26	29	130	229	30	31	11	116	64	24	11	54	43	379	25	51	65	na	8	56	28	13	14	28	18	117	17	11	4	27	18	9	49	10
2016	8,687	621	257	3,046	212	496	213	494	434	491	386	324	946	1,319	593	404	225	1,182	688	558	439	874	483	1,322	328	555	632	na	538	319	564	281	345	759	463	508	351	406	122	338	314	203	466	165
Iran																																												
2003	1,054	208	2	295	4	2	1	12	10	5	7	7	49	69	3	4	9	41	16	3	1	6	19	189	2	12	14	8	na	0	4	1	4	17	22	47	14	6	4	9	9	4	66	4
2016	9,475	1,059	202	2,375	49	282	70	235	290	185	184	230	486	825	205	152	166	782	358	309	253	491	331	920	104	203	325	538	na	44	292	212	226	586	423	277	917	246	111	390	175	160	799	209
Israel																																												
2003	5,047	289	54	2,771	33	61	29	72	137	68	85	59	422	785	62	85	18	306	201	118	44	181	113	436	51	206	189	56	0	na	1	1	45	136	67	207	4	1	13	59	32	10	135	19
2016	8,818	917	103	4,543	216	334	227	385	349	327	424	204	1,064	1,757	348	282	138	1,157	660	423	301	792	509	1,371	307	525	627	319	44	na	68	41	250	703	340	448	164	40	147	211	237	45	613	102
Saudi Arabia																																												
2003	756	69	4	186	3	5	1	5	15	2	6	0	19	23	3	0	6	13	6	5	1	10	8	88	6	2	4	28	4	1	na	194	17	15	25	12	7	29	4	1	3	1	19	4
2016	14,288	861	150	2,964	44	251	81	238	232	172	120	198	789	909	302	119	168	606	302	247	214	606	204	1,246	119	282	323	564	292	68	na	3,297	205	1,562	1,568	435	855	1,313	197	589	275	203	693	146
Egypt																																												
2003	1,347	60	2	372	1	7	2	22	42	10	18	7	43	183	8	15	9	43	22	18	4	22	13	110	7	9	25	13	1	1	194	na	8	21	11	137	2	3	6	14	5	7	14	3
2016	8,403	524	170	1,653	42	208	34	206	232	187	67	192	422	852	183	152	165	411	141	217	182	362	150	703	66	241	222	281	212	41	3,297	na	109	538	385	602	276	244	41	363	168	148	199	160
South Africa																																												
2003	2,207	120	18	718	21	41	19	52	85	14	40	20	178	267	21	22	18	78	128	52	28	61	64	502	43	26	87	14	4	45	17	8	na	42	52	61	6	9	25	12	9	8	213	53
2016	9,295	970	216	3,084	286	566	341	361	493	314	463	306	1,100	1,327	286	249	187	766	1,070	428	318	711	632	2,170	481	454	749	345	226	250	205	109	na	723	897	472	242	154	113	174	214	172	1,212	228

Region, country, or economy, and year	World	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
China																																													
2003	14,460	993	58	5,406	25	120	21	114	181	42	118	89	720	1,313	42	55	43	297	296	136	67	189	269	1,347	101	301	197	28	17	136	15	21	42	na	187	2,385	136	14	632	514	450	62	1,017	110
2016	95,476	7,245	544	43,968	350	1,133	451	990	1,281	728	1,446	1,122	4,182	6,419	641	606	693	2,517	2,377	1,016	765	2,043	2,284	10,472	901	1,693	1,716	759	586	703	1,562	538	723	na	1,585	6,706	841	1,488	4,413	3,476	3,271	790	9,246	864
India																																													
2003	5,392	257	43	2,040	21	104	17	63	67	36	55	26	358	736	17	52	30	218	143	95	32	107	97	557	38	124	164	18	22	67	25	11	52	187	na	607	113	15	107	208	180	29	202	35
2016	21,124	1,234	418	6,759	173	761	193	410	491	453	358	486	1,441	1,975	325	324	324	1,255	721	606	399	914	669	2,494	330	783	775	463	423	340	1,568	385	897	1,585	na	1,337	895	430	605	1,839	727	438	1,515	301
Japan																																													
2003	20,452	1,039	110	8,302	64	212	42	200	310	199	156	182	1,150	1,885	95	178	58	615	479	402	68	274	429	1,681	103	882	486	117	47	207	12	137	61	2,385	607	na	80	26	145	1,387	341	370	745	108
2016	32,074	1,875	350	10,484	334	787	411	719	777	597	713	651	2,873	3,776	423	514	216	1,975	1,277	840	400	1,533	1,102	3,659	530	1,235	1,337	508	277	448	435	602	472	6,706	1,337	na	975	197	696	2,360	1,367	1,105	2,157	329
Malaysia																																													
2003	796	26	4	117	6	6	4	5	6	3	3	3	17	18	5	3	4	10	17	3	3	7	9	149	5	2	10	17	14	4	7	2	6	136	113	80	na	14	45	10	15	30	90	12
2016	9,731	418	154	1,192	162	347	169	277	193	313	261	201	494	516	307	278	171	431	345	315	298	420	284	1,428	229	296	317	351	917	164	855	276	242	841	895	975	na	738	364	400	450	382	1,262	296
Pakistan																																													
2003	481	25	2	152	2	3	1	9	2	2	7	0	12	49	2	1	5	20	9	2	0	5	3	115	0	2	14	11	6	1	29	3	9	14	15	26	14	na	3	16	3	5	17	1
2016	6,327	357	207	1,106	44	310	41	229	167	184	113	221	408	538	184	187	158	384	190	196	146	265	243	847	127	247	253	406	246	40	1,313	244	154	1,488	430	197	738	na	74	579	161	227	347	174
Singapore																																													
2003	2,610	153	8	876	4	8	7	19	17	8	12	23	53	125	6	14	17	34	32	17	5	21	29	280	11	10	32	4	4	13	4	6	25	632	107	145	45	3	na	38	110	27	323	45

Region, country, or economy, and year	World	Canada	Mexico	United States	Argentina	Brazil	Chile	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Poland	Portugal	Spain	Sweden	United Kingdom	Norway	Russia	Switzerland	Turkey	Iran	Israel	Saudi Arabia	Egypt	South Africa	China	India	Japan	Malaysia	Pakistan	Singapore	South Korea	Taiwan	Thailand	Australia	New Zealand
2016	11,352	542	84	3,133	45	155	45	123	180	110	216	162	591	756	100	51	115	366	374	146	92	285	299	1,541	115	159	279	122	111	147	197	41	113	4,413	605	696	364	74	na	508	364	215	1,222	216
South Korea																																												
2003	6,776	278	40	3,762	8	45	17	44	52	17	34	41	204	363	30	41	10	148	91	108	14	80	73	306	18	315	117	27	9	59	1	14	12	514	208	1,387	10	16	38	na	139	29	187	34
2016	20,064	1,038	324	9,553	103	442	169	334	452	359	316	391	1,020	1,708	290	318	217	926	486	465	242	722	437	1,589	190	709	619	338	390	211	589	363	174	3,476	1,839	2,360	400	579	508	na	695	442	1,017	286
Taiwan																																												
2003	3,084	167	10	1,713	9	21	5	39	30	16	6	11	91	165	11	25	5	60	34	60	8	40	33	199	11	127	74	18	9	32	3	5	9	450	180	341	15	3	110	139	na	25	92	18
2016	9,843	634	198	3,990	179	388	214	323	266	354	235	226	725	909	295	307	164	651	381	450	281	557	314	981	217	552	489	314	175	237	275	168	214	3,271	727	1,367	450	161	364	695	na	347	689	175
Thailand																																												
2003	1,549	71	8	579	8	15	6	27	18	11	15	10	65	62	4	3	5	17	28	6	8	14	31	202	5	7	30	9	4	10	1	7	8	62	29	370	30	5	27	29	25	na	150	21
2016	5,231	235	199	1,686	52	293	44	263	192	189	137	183	487	489	215	163	141	334	245	212	170	293	183	862	109	213	288	203	160	45	203	148	172	790	438	1,105	382	227	215	442	347	na	556	196
Australia																																												
2003	11,638	881	55	3,819	61	141	42	167	199	60	207	125	637	1,107	63	45	78	454	440	127	47	259	399	2,278	112	165	374	49	66	135	19	14	213	1,017	202	745	90	17	323	187	92	150	na	658
2016	42,096	3,768	433	12,127	481	1,401	692	929	1,294	560	1,363	721	3,293	4,570	507	419	643	2,486	2,780	773	609	2,148	1,754	8,838	919	794	1,819	466	799	613	693	199	1,212	9,246	1,515	2,157	1,262	347	1,222	1,017	689	556	na	1,977
New Zealand																																												
2003	2,653	228	20	880	18	33	17	28	39	13	49	13	111	199	8	11	27	79	86	25	11	51	59	610	44	14	68	10	4	19	4	3	53	110	35	108	12	1	45	34	18	21	658	na
2016	6,932	760	215	2,175	98	289	130	235	313	188	219	238	590	890	164	152	241	479	417	204	206	395	327	1,640	157	204	379	165	209	102	146	160	228	864	301	329	296	174	216	286	175	196	1,977	na

na = not applicable.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating region, country, or economy is credited with one count). Regions, countries, or economies with less than 1% of internationally coauthored articles in 2016 are omitted.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-45

U.S. sector publications coauthored with other U.S. sectors and foreign institutions: 2006 and 2016

(Number)

Year and publications authored	U.S. sector					
	Academic	Federal government	Industry	FFRDCs	Private nonprofit	State and local government
2006						
All publications	355,041	43,086	57,340	19,414	46,395	3,954
Total coauthored	253,508	36,569	43,462	14,975	40,769	3,559
Total coauthored with another U.S. sector or foreign institution	146,943	32,283	37,012	13,920	35,209	3,209
Coauthored with another U.S. sector	74,796	28,120	29,602	11,182	30,010	3,059
Coauthored with academic sector	na	23,435	24,310	9,611	26,501	2,524
Coauthored with nonacademic sector	74,796	11,108	11,605	3,831	9,633	1,479
Coauthored with foreign institution	88,383	10,354	12,903	6,463	11,201	555
2016						
All publications	437,682	45,214	50,889	20,650	50,146	4,298
Total coauthored	332,539	40,059	41,485	17,887	44,724	3,943
Total coauthored with another U.S. sector and/ or foreign institution	223,244	37,039	37,268	17,036	40,753	3,750
Coauthored with another U.S. sector	89,132	32,096	28,321	13,663	35,404	3,594
Coauthored with academic sector	na	28,693	24,964	12,548	33,451	3,182
Coauthored with nonacademic sector	89,132	11,662	9,857	3,892	9,270	1,597

Year and publications authored	U.S. sector					
	Academic	Federal government	Industry	FFRDCs	Private nonprofit	State and local government
Coauthored with foreign institution	162,906	15,137	17,775	9,410	16,501	819

na = not applicable

FFRDC = federally funded research and development center.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a sector on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating institution type is credited one count in each qualifying group). The sum of articles coauthored with various sectors could exceed the total number of articles coauthored with another sector and/or foreign sector because of articles coauthored by multiple sectors. Articles from unknown U.S. sectors, approximately 7% of the total, are not shown. Counts of publications coauthored with another U.S. sector are limited to copublications involving the U.S. sector at stake and another different sector. For instance, the number of coauthored publications with the nonacademic sector for FFRDCs does not include publications coauthored by two FFRDCs.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-46

U.S. S&E articles, by field and coauthorship attribute: 2003–16

(Number)

Field and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Agricultural sciences														
Total articles	5,035	5,705	5,628	5,802	6,491	6,347	6,282	6,295	6,232	6,397	6,467	6,583	7,079	6,938
with multiple institutions	3,516	3,994	4,028	4,155	4,648	4,540	4,607	4,532	4,636	4,831	4,988	5,165	5,394	5,653
with domestic institutions only	3,722	4,268	4,183	4,192	4,575	4,453	4,293	4,309	4,124	4,128	3,926	3,818	4,192	3,862
with international institutions	1,257	1,403	1,400	1,576	1,850	1,842	1,950	1,957	2,090	2,262	2,526	2,752	2,876	3,069
Astronomy														
Total articles	4,794	5,266	5,628	6,296	5,908	5,099	5,547	5,462	5,942	6,357	6,021	5,821	5,705	5,814
with multiple institutions	3,868	4,339	4,567	5,154	4,842	4,313	4,717	4,731	5,128	5,428	5,274	5,116	5,038	5,247
with domestic institutions only	2,077	2,166	2,320	2,571	2,224	1,876	1,998	1,814	1,937	2,054	1,813	1,731	1,628	1,567
with international institutions	2,710	3,094	3,286	3,685	3,676	3,206	3,545	3,643	4,002	4,300	4,204	4,081	4,073	4,243
Biological sciences														
Total articles	74,830	79,396	81,194	81,562	84,759	85,763	87,553	89,372	95,106	101,141	103,644	105,628	103,278	98,674
with multiple institutions	55,264	60,401	62,294	62,779	65,439	66,979	65,871	66,646	72,832	78,231	81,628	83,879	83,165	81,572
with domestic institutions only	52,898	56,085	56,767	56,561	57,998	57,798	58,054	57,748	60,405	62,803	62,469	62,475	59,072	53,998
with international institutions	20,983	22,863	23,956	24,576	26,339	27,560	29,151	31,080	34,124	37,752	40,661	42,862	43,964	44,383
Chemistry														

Field and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total articles	19,674	23,390	26,003	25,003	24,620	27,113	24,897	27,196	29,948	28,422	29,197	29,623	29,480	27,833
with multiple institutions	10,401	12,748	13,243	13,772	13,902	15,323	14,592	16,060	17,877	17,988	18,763	19,697	20,362	19,821
with domestic institutions only	14,562	17,425	19,883	18,682	18,088	20,123	17,523	19,006	20,796	18,848	18,934	18,460	17,516	15,980
with international institutions	5,048	5,853	6,023	6,179	6,410	6,852	7,286	8,132	9,092	9,528	10,134	11,081	11,940	11,824
Computer sciences														
Total articles	21,944	25,357	30,533	30,900	33,096	32,480	33,740	34,409	35,344	34,559	35,165	34,665	35,525	33,005
with multiple institutions	10,825	12,225	15,262	16,273	17,679	17,909	18,925	19,284	20,077	20,302	21,086	21,545	22,051	20,993
with domestic institutions only	17,354	20,137	23,983	23,744	24,788	23,716	24,240	24,381	24,875	23,713	23,721	22,566	23,125	20,975
with international institutions	4,401	5,016	6,283	6,773	7,722	8,277	9,239	9,889	10,368	10,758	11,386	12,050	12,351	11,987
Engineering														
Total articles	45,047	48,822	58,175	57,006	57,143	56,394	58,359	62,437	63,013	63,182	65,017	62,670	63,222	63,304
with multiple institutions	23,908	27,534	34,749	36,593	36,157	34,280	34,666	36,473	37,082	37,587	39,379	38,908	40,291	40,821
with domestic institutions only	35,382	37,880	43,975	41,308	41,033	41,171	42,603	46,031	46,090	45,329	45,511	42,431	41,461	40,678
with international institutions	9,068	10,105	13,015	13,929	14,026	13,707	14,892	16,012	16,423	17,436	19,218	20,006	21,620	22,516
Geosciences														
Total articles	18,537	22,657	24,264	23,432	24,675	24,181	24,667	24,817	25,748	26,069	28,041	29,616	27,943	28,551
with multiple institutions	12,906	16,097	17,566	16,819	17,823	17,803	18,100	18,292	19,008	19,415	21,217	22,445	22,040	22,790
with domestic institutions only	12,611	15,926	16,644	15,474	16,267	15,392	15,257	15,202	15,459	15,498	16,060	16,848	15,101	14,888
with international institutions	5,796	6,509	7,257	7,682	8,047	8,516	9,196	9,483	10,163	10,483	11,870	12,690	12,808	13,617

Field and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Mathematics														
Total articles	7,609	7,744	8,690	8,889	9,319	9,754	10,288	9,901	10,481	10,987	11,070	11,536	11,370	11,063
with multiple institutions	4,538	4,847	5,343	5,538	5,903	6,197	6,319	6,018	6,510	6,934	7,193	7,663	7,610	7,527
with domestic institutions only	4,828	4,963	5,558	5,677	5,869	6,089	6,399	6,180	6,332	6,560	6,334	6,510	6,455	6,073
with international institutions	2,746	2,722	3,091	3,133	3,370	3,599	3,856	3,697	4,119	4,406	4,716	5,004	4,907	4,965
Medical sciences														
Total articles	97,043	103,011	109,110	113,141	115,646	119,283	123,785	126,748	132,655	137,856	141,318	147,916	148,932	145,950
with multiple institutions	72,706	80,073	86,194	87,233	89,958	92,446	90,513	90,393	97,857	102,227	106,694	112,524	115,749	116,384
with domestic institutions only	76,147	80,536	84,727	87,594	87,955	89,751	92,615	93,206	97,313	99,964	101,012	104,449	102,853	98,315
with international institutions	17,752	20,200	22,036	23,479	25,739	27,697	29,727	31,784	33,408	35,845	38,159	42,352	45,018	46,613
Other life sciences														
Total articles	8,507	8,916	9,576	10,058	9,868	10,154	10,405	10,684	11,459	12,129	11,993	11,872	11,451	10,973
with multiple institutions	3,836	4,547	4,993	5,892	5,986	6,067	5,808	5,881	6,553	6,973	7,046	7,175	7,219	6,986
with domestic institutions only	7,775	8,116	8,672	9,020	8,599	8,774	8,897	9,081	9,668	10,285	9,994	10,049	9,640	9,113
with international institutions	498	601	685	789	957	1,052	1,255	1,261	1,398	1,421	1,638	1,681	1,679	1,768
Physics														
Total articles	38,172	39,615	45,902	48,154	47,825	45,073	44,161	45,080	44,925	46,108	43,217	44,313	39,884	37,472
with multiple institutions	23,133	24,351	27,493	29,271	29,595	28,243	27,890	28,846	29,312	30,902	29,253	30,173	27,383	26,836
with domestic institutions only	25,361	26,265	31,008	32,403	31,688	29,111	28,218	28,656	28,020	27,903	25,735	25,662	22,792	20,455

Field and coauthorship attribute	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
with international institutions	12,654	13,209	14,752	15,530	15,871	15,776	15,862	16,339	16,840	18,135	17,255	18,579	17,053	16,921
Psychology														
Total articles	10,363	10,740	12,056	12,975	13,028	13,866	14,524	15,088	15,753	16,572	16,886	18,025	17,560	16,419
with multiple institutions	7,379	8,328	9,354	9,868	9,499	9,685	9,117	8,908	9,498	10,099	10,527	11,491	11,340	10,941
with domestic institutions only	8,566	8,957	10,043	10,776	10,597	11,266	11,958	12,315	12,786	13,250	13,441	14,152	13,678	12,655
with international institutions	1,391	1,571	1,714	1,927	2,143	2,343	2,419	2,643	2,844	3,220	3,321	3,795	3,840	3,742
Social sciences														
Total articles	19,104	20,235	21,921	22,774	24,018	25,603	27,827	29,754	31,152	32,145	33,252	34,901	34,581	33,293
with multiple institutions	7,013	8,742	9,484	10,060	10,299	11,120	10,806	10,798	11,549	12,293	13,084	13,832	14,088	14,255
with domestic institutions only	16,597	17,426	18,935	19,271	20,272	21,453	23,497	25,322	26,430	26,781	27,498	28,596	28,088	26,458
with international institutions	2,104	2,498	2,610	3,059	3,292	3,667	4,063	4,275	4,551	5,209	5,622	6,168	6,399	6,727

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating region, country, or economy is credited with one count). Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within a single region, country, or economy. Articles with international institutions are counts of articles with institutional addresses from more than one region, country, or economy.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-47

Citations from international S&E publications, by region, country, or economy: 1996–2014

(Percent)

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
North America	39.2	39.9	40.7	41.2	41.7	41.9	42.3	42.9	43.6	44.2	45.4	46.7	47.8	48.6	49.2	50.1	51.1	51.8	52.9
Canada	70.7	71.6	72.9	73.2	74.2	74.0	74.1	74.4	74.5	74.6	75.0	75.8	76.1	76.8	76.8	76.9	77.3	77.6	78.2
Greenland	95.3	93.3	89.7	95.3	69.6	89.4	79.7	87.2	82.1	95.6	91.7	91.2	93.5	81.1	89.9	89.7	91.7	90.2	91.1
Mexico	63.7	63.2	64.4	67.3	67.4	67.1	68.3	67.7	69.3	70.0	71.7	71.6	72.4	74.3	72.7	72.5	73.0	72.5	74.3
United States	42.3	43.2	44.0	44.5	45.0	45.2	45.6	46.3	47.0	47.7	48.8	50.1	51.1	51.8	52.4	53.2	54.2	54.7	55.7
Central America and Caribbean	75.0	75.0	74.2	75.5	75.0	74.4	75.3	76.0	78.4	79.9	81.3	82.9	83.6	83.5	84.0	85.4	84.7	85.4	86.2
Antigua and Barbuda	na	100.0	na	55.9	na	na	100.0	53.3	100.0	100.0	100.0	75.0	100.0	100.0	100.0	100.0	98.9	100.0	100.0
Bahamas, The	71.3	67.5	94.8	91.6	68.8	100.0	68.0	96.9	67.6	74.9	97.2	79.5	77.5	90.9	70.1	97.1	97.2	95.1	94.8
Barbados	93.8	85.9	73.7	69.9	90.0	85.1	90.7	82.9	88.3	94.3	90.2	92.6	94.8	95.4	84.0	91.6	86.4	91.1	95.9
Belize	94.6	95.8	100.0	100.0	94.4	100.0	85.8	94.9	100.0	95.9	99.2	99.3	87.1	96.1	99.7	98.2	98.4	97.5	97.4
Costa Rica	78.8	81.9	79.6	86.3	80.7	75.0	82.2	82.4	84.6	86.3	87.9	90.3	85.7	87.5	87.4	87.3	79.9	86.2	85.9
Cuba	56.3	51.8	57.3	58.2	58.5	65.1	63.5	64.8	69.3	71.4	73.5	76.3	79.7	75.9	77.5	77.6	76.6	76.8	80.8
Dominica	100.0	22.2	100.0	na	na	91.9	100.0	58.1	100.0	83.9	64.0	79.5	80.7	95.6	82.0	100.0	90.5	97.5	98.9
Dominican Republic	96.8	93.6	95.2	98.8	98.7	99.0	91.3	97.0	97.9	98.7	97.6	97.6	97.3	97.1	97.3	97.2	97.6	98.2	97.2
El Salvador	87.5	96.7	100.0	100.0	73.7	95.8	95.4	73.7	93.6	97.8	99.8	93.6	98.5	98.2	96.5	96.0	93.5	93.1	88.3
Grenada	63.9	100.0	100.0	100.0	100.0	100.0	100.0	94.8	94.4	99.1	92.9	89.3	98.3	97.4	98.5	96.8	99.4	97.1	95.4

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Guatemala	78.9	89.4	90.7	98.1	96.9	98.2	90.0	87.1	93.6	95.7	95.5	93.5	92.9	91.6	89.6	90.3	94.4	89.8	92.1
Haiti	85.2	98.8	100.0	100.0	100.0	92.9	89.6	87.7	92.4	92.8	93.9	93.0	98.6	98.2	97.7	93.6	89.1	87.7	89.7
Honduras	99.4	90.2	79.2	82.1	96.0	99.2	95.5	99.7	92.5	95.3	99.5	94.0	94.5	96.6	94.3	93.2	95.8	95.2	89.6
Jamaica	87.7	86.8	89.4	81.2	71.7	75.2	62.4	65.2	65.3	83.6	85.6	80.3	71.4	74.6	81.9	82.2	87.7	90.6	88.0
Nicaragua	92.1	94.8	92.3	96.8	95.3	92.3	95.0	94.3	90.9	90.1	93.3	94.7	93.8	89.9	92.8	93.1	95.7	96.4	95.6
Panama	89.8	93.4	90.4	89.5	93.3	92.8	91.8	89.1	88.9	90.1	91.5	91.9	92.8	90.8	91.5	90.3	90.6	89.5	92.4
Puerto Rico	80.5	82.9	81.9	82.8	79.2	74.6	77.2	81.1	82.4	81.0	82.2	83.4	84.1	85.9	86.2	89.0	89.5	88.9	87.5
Saint Kitts and Nevis	100.0	100.0	100.0	99.3	na	na	100.0	na	100.0	96.5	100.0	100.0	87.6	98.2	97.7	94.4	93.8	91.2	97.7
Saint Lucia	76.4	100.0	94.4	100.0	na	100.0	na	100.0	100.0	100.0	97.3	100.0	na	na	99.1	96.5	100.0	100.0	100.0
Saint Vincent and the Grenadines	na	100.0	100.0	100.0	100.0	na	100.0	100.0	100.0	100.0	95.2	100.0	na	na	100.0	na	100.0	100.0	100.0
Trinidad and Tobago	78.1	73.3	81.2	72.3	79.0	72.0	88.2	79.7	87.0	79.0	78.4	83.0	87.4	82.6	84.0	87.3	89.4	89.3	88.7
South America	59.2	59.2	59.0	60.0	60.2	60.7	61.6	62.7	62.4	61.9	59.7	59.3	58.8	58.5	59.1	58.8	60.2	61.7	62.5
Argentina	60.0	62.6	62.5	65.4	66.4	70.1	70.4	72.7	73.0	73.6	73.9	74.0	72.2	72.5	73.3	72.4	74.2	74.5	75.3
Bolivia	89.4	77.8	76.6	83.6	80.2	90.4	93.6	91.6	91.7	91.1	88.6	89.0	91.7	92.2	93.3	88.0	91.1	94.9	94.0
Brazil	58.8	58.3	57.9	57.7	58.8	57.8	59.4	60.2	60.3	59.6	57.1	57.1	56.8	56.5	56.9	56.8	58.4	60.7	62.0
Chile	68.4	69.3	71.9	71.3	72.3	71.9	71.1	75.1	75.2	75.0	74.8	74.7	75.0	75.4	75.8	75.4	76.3	76.1	76.2
Colombia	86.2	76.6	77.1	81.6	75.9	77.4	76.5	72.7	75.0	77.0	77.1	77.0	75.7	74.9	74.2	74.3	75.8	75.5	75.6
Ecuador	88.4	92.0	88.9	90.5	65.2	56.9	72.6	85.8	91.1	86.2	86.4	84.6	83.0	86.1	86.4	90.3	85.4	85.7	80.7
Guyana	100.0	93.2	78.4	97.4	84.5	86.6	96.6	100.0	85.3	97.1	98.2	100.0	97.5	96.4	84.9	100.0	97.5	98.0	96.8

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Paraguay	98.6	97.7	95.1	96.7	99.2	97.9	99.1	88.9	85.0	91.4	93.2	91.9	88.3	91.6	88.8	91.9	92.4	90.2	86.6
Peru	85.1	82.2	90.4	91.2	92.0	89.1	92.3	87.5	86.7	87.0	87.3	89.2	88.1	87.3	88.8	88.1	87.5	85.1	84.0
Suriname	53.1	88.4	83.4	91.7	100.0	94.4	98.0	91.9	98.8	88.4	95.7	98.5	97.7	100.0	84.3	90.3	86.5	90.4	97.9
Uruguay	77.6	75.2	80.2	83.5	83.4	79.3	79.7	80.2	81.3	82.2	81.7	81.3	81.5	79.4	81.0	81.9	81.4	81.9	82.6
Venezuela	70.1	67.8	70.7	70.8	68.9	73.2	72.0	78.5	77.9	79.0	78.4	79.9	79.5	81.6	80.7	80.0	82.9	83.7	84.3
Europe	34.0	35.2	36.1	36.9	37.6	38.4	39.2	39.7	40.0	40.4	40.8	41.2	41.4	41.8	41.8	42.1	42.7	43.2	44.0
EU	37.4	38.7	39.7	40.5	41.3	42.1	43.0	43.5	43.7	44.0	44.4	44.9	44.9	45.3	45.4	45.8	46.5	47.2	48.1
Austria	72.6	73.7	75.5	77.3	77.7	78.8	78.0	79.0	79.8	79.8	80.3	80.3	80.0	80.0	80.3	80.3	80.6	80.5	81.2
Belgium	72.8	73.7	75.2	76.4	77.3	77.3	77.0	78.1	77.8	78.7	78.9	79.3	79.8	80.4	80.5	80.4	81.3	81.8	82.2
Bulgaria	62.0	66.5	66.8	68.1	69.0	71.4	71.7	71.9	74.3	73.5	73.7	73.4	73.3	74.2	72.7	73.0	72.6	74.2	74.4
Croatia	55.1	55.5	57.1	58.2	58.3	59.7	60.1	61.4	63.2	63.1	67.8	65.7	65.0	66.1	68.9	71.1	70.9	73.8	75.6
Cyprus	77.7	80.9	78.5	79.8	81.9	82.1	82.7	80.7	81.4	78.2	80.3	79.1	80.5	79.9	80.6	80.3	80.9	83.4	84.1
Czech Republic	58.5	61.0	62.2	61.3	62.0	61.0	62.5	64.9	63.8	63.8	64.1	64.6	63.7	62.3	62.7	63.4	64.7	64.9	66.3
Denmark	72.2	74.5	74.9	76.5	77.4	77.3	77.7	79.3	79.8	80.3	80.8	81.1	81.2	80.6	80.5	79.2	80.2	80.2	80.6
Estonia	68.5	71.9	64.4	66.8	72.2	72.9	71.2	71.0	73.0	68.6	67.7	71.9	69.9	70.0	72.0	73.8	74.2	76.4	76.9
Finland	66.8	70.2	71.5	72.4	74.3	73.8	74.8	74.7	75.5	74.6	76.4	76.4	77.3	76.9	77.1	77.3	77.7	77.6	79.0
France	64.7	65.6	67.4	68.7	69.8	70.8	71.4	71.9	72.2	72.4	72.3	72.3	72.5	73.1	73.3	73.9	74.3	75.2	76.0
Germany	60.8	61.8	63.6	65.3	66.0	66.8	67.9	68.2	68.4	68.9	69.2	69.8	69.1	69.3	69.7	69.9	70.6	71.4	71.9
Greece	64.0	66.1	68.2	69.4	70.2	71.6	72.4	74.7	74.4	75.2	75.6	76.4	78.4	80.1	79.8	79.9	79.8	80.8	81.3

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Hungary	68.0	65.8	67.1	68.9	69.6	70.5	72.9	73.8	74.4	73.7	75.0	74.3	75.5	76.1	74.9	75.9	75.6	74.4	74.5
Ireland	76.9	79.0	78.8	80.3	80.5	81.3	80.4	81.1	80.9	79.2	81.0	81.2	80.7	79.9	80.8	81.8	82.0	82.9	83.3
Italy	64.7	66.5	67.9	68.5	68.9	68.8	69.8	70.7	71.2	71.6	71.3	72.0	72.2	72.6	72.1	70.2	69.1	68.2	69.1
Latvia	58.6	56.8	71.7	65.8	67.9	67.6	70.1	79.4	76.3	79.4	73.5	70.0	67.3	62.1	55.1	54.8	60.8	68.9	63.8
Lithuania	64.1	57.4	59.3	67.0	70.1	61.7	61.4	64.6	61.5	60.9	59.5	55.0	44.3	45.9	49.9	58.0	64.6	66.0	67.9
Luxembourg	84.2	83.6	85.4	81.6	91.9	92.3	87.5	79.3	86.3	90.9	85.0	82.7	85.3	85.3	82.0	82.9	81.9	80.4	83.4
Malta	88.5	78.7	56.4	75.2	72.4	90.0	92.1	94.5	89.5	82.2	77.5	69.3	73.9	79.0	72.7	78.4	80.8	83.6	85.1
Netherlands	70.3	72.3	73.8	75.3	75.5	75.9	77.1	77.6	77.9	77.7	78.4	78.6	78.6	79.4	79.2	79.4	80.2	80.5	80.8
Poland	52.6	53.3	53.1	55.5	56.2	56.5	56.7	59.9	60.7	61.6	62.2	63.5	62.2	62.8	60.2	58.9	58.1	59.1	60.0
Portugal	63.7	67.6	66.0	65.2	69.0	67.5	69.3	70.7	71.4	70.4	71.0	71.7	72.5	73.3	73.2	73.3	74.1	74.5	76.1
Romania	53.1	59.0	59.2	58.4	61.8	59.6	64.2	63.4	64.9	61.7	60.9	58.4	51.0	50.4	53.7	57.2	59.7	61.7	64.1
Slovakia	56.5	57.0	57.2	61.8	58.2	62.8	64.6	66.4	67.6	66.3	69.7	71.0	70.5	69.8	67.4	66.2	64.2	62.6	63.1
Slovenia	59.3	56.7	57.3	62.3	64.2	64.7	65.7	69.5	69.0	68.9	73.1	72.9	71.1	73.0	73.7	73.6	75.7	76.0	78.0
Spain	60.2	61.8	64.2	64.5	65.2	66.4	66.7	67.8	67.8	67.7	68.4	69.2	69.7	70.6	70.7	71.7	73.1	73.7	75.2
Sweden	68.9	71.4	72.0	73.9	75.2	75.8	77.0	77.2	77.6	78.3	78.8	79.6	79.6	79.8	80.0	79.2	79.7	80.0	80.9
United Kingdom	63.8	65.6	66.6	67.6	69.0	70.2	71.6	72.1	72.6	73.3	73.4	74.1	74.7	75.2	75.3	75.8	76.4	76.6	77.2
Other Europe	65.4	66.3	67.2	68.1	69.0	69.1	69.1	68.9	70.1	70.6	72.2	72.1	72.8	72.4	71.6	71.1	70.9	69.4	68.4
Albania	72.9	90.9	95.0	91.8	93.8	94.4	88.3	84.9	97.9	89.3	96.8	83.4	92.1	90.3	86.9	83.9	80.5	78.3	87.7
Andorra	na	100.0	100.0	na	na	100.0	na	98.5	100.0	96.1	88.4	100.0	99.2	99.0	99.8	85.0	97.1	99.2	88.8

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Belarus	53.6	55.9	58.5	61.5	65.0	66.7	62.9	59.8	62.2	66.9	68.2	73.3	75.5	74.0	75.6	73.5	70.4	69.4	70.8
Bosnia and Herzegovina	77.7	93.4	74.3	81.2	79.5	92.1	87.3	84.3	86.1	78.3	80.6	79.2	73.1	78.9	80.5	83.7	84.0	85.7	85.7
Holy See (Vatican City)	100.0	86.5	na	na	na	na	na	na	100.0	na	na	100.0	100.0	100.0	95.3	99.2	85.8	100.0	91.0
Iceland	81.0	85.6	82.0	86.7	82.6	84.2	86.5	84.3	84.1	87.3	87.1	89.9	89.2	88.2	84.9	83.7	84.6	85.2	84.6
Kosovo	na	na	na	na	na	na	na	na	na	na	na	na	78.6	90.2	85.4	88.5	89.8	89.3	84.1
Liechtenstein	58.8	42.3	46.3	73.7	83.6	80.9	61.6	70.2	86.2	78.0	83.4	85.2	84.6	94.8	93.4	94.8	91.3	89.7	87.6
Macedonia	83.6	72.5	59.3	55.2	56.8	77.1	70.7	74.9	86.1	85.0	83.3	80.2	78.6	78.8	74.6	79.1	73.9	70.1	77.9
Moldova	69.6	70.2	79.5	74.3	64.4	76.2	76.5	79.9	85.0	79.9	85.6	79.1	83.5	82.5	82.5	72.8	79.2	80.4	73.7
Monaco	66.0	93.0	82.0	82.5	81.8	86.6	82.0	72.9	87.3	90.8	77.8	89.6	85.7	86.8	87.1	90.9	94.3	94.6	92.9
Montenegro[a]	na	na	na	na	na	na	na	na	na	na	na	77.2	70.8	68.6	66.5	71.1	74.5	66.0	62.7
Norway	66.5	68.4	69.4	71.4	73.8	74.7	75.6	76.3	77.1	75.5	76.6	76.3	77.6	78.2	77.4	77.4	77.7	78.6	79.0
Russia	50.8	50.2	53.1	54.7	54.9	54.1	55.3	54.9	57.1	58.2	61.7	62.1	61.7	58.9	57.7	54.3	53.0	47.1	43.4
San Marino	100.0	100.0	100.0	100.0	100.0	100.0	na	na	100.0	100.0	100.0	na	100.0	95.0	89.4	89.4	94.1	97.6	93.9
Serbia[a]	na	na	na	na	na	na	na	na	na	na	na	64.0	64.5	64.6	62.9	62.3	67.7	70.5	74.0
Serbia and Montenegro[b]	54.9	54.9	56.3	63.2	61.9	64.8	64.8	63.7	64.2	82.0	96.9	na	na	na	na	na	na	na	na
Switzerland	77.6	78.5	79.0	79.3	80.2	81.0	81.2	81.1	81.4	81.6	82.3	82.3	82.6	82.5	82.6	82.7	82.7	82.9	83.7
Turkey	57.1	59.2	60.3	63.0	63.4	62.6	61.7	62.2	64.4	65.6	67.2	68.7	69.6	70.1	69.3	69.9	70.3	70.2	70.7
Ukraine	51.0	54.0	51.1	52.5	52.9	51.8	52.9	56.5	56.1	55.1	58.8	57.0	60.8	58.1	59.6	57.1	56.2	55.7	56.0
Middle East	72.3	72.6	73.7	74.1	74.2	74.3	74.0	74.9	73.5	72.4	72.0	70.8	70.1	68.9	67.7	68.0	68.1	68.5	68.2

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Armenia	63.2	64.0	70.5	73.6	61.3	71.9	66.3	65.6	69.0	71.3	69.6	72.7	66.8	62.8	58.3	55.5	60.5	58.0	60.0
Azerbaijan	68.3	66.1	82.9	82.9	63.4	60.9	62.2	63.1	54.2	62.3	74.9	79.0	78.6	73.2	71.4	71.0	71.8	69.5	72.7
Bahrain	73.7	68.9	52.4	80.7	66.1	74.1	92.0	66.5	81.3	75.4	83.1	89.2	87.9	85.8	85.5	87.4	89.3	90.4	91.1
Gaza Strip	89.2	71.9	80.2	49.9	28.2	76.5	49.0	51.0	78.6	67.5	75.7	75.2	79.8	84.6	74.4	69.2	66.9	76.7	64.5
Georgia	72.5	71.5	70.6	82.0	86.8	82.7	76.4	73.1	79.9	76.2	81.7	75.0	77.3	79.2	80.6	75.6	80.2	73.2	83.3
Iran	55.1	47.3	51.8	51.9	47.5	46.1	47.4	52.9	50.3	50.5	52.3	55.3	55.8	56.4	57.0	57.4	58.7	60.2	59.8
Iraq	68.3	51.9	85.4	77.7	91.5	66.6	80.8	85.1	80.3	76.3	82.3	75.7	83.2	82.2	81.9	80.0	86.2	86.5	83.3
Israel	74.5	74.9	75.7	76.5	77.0	77.7	78.2	79.5	79.2	79.8	80.7	80.7	81.2	82.0	81.7	82.5	82.4	82.8	82.5
Jordan	56.7	62.8	69.6	67.7	70.6	71.0	71.7	74.7	78.6	78.0	81.3	79.1	78.0	83.6	83.9	82.3	81.6	81.4	79.5
Kuwait	57.4	61.6	61.2	66.2	75.7	71.5	74.8	77.2	77.0	78.2	76.4	81.4	77.6	81.4	81.2	82.8	82.9	84.3	87.5
Lebanon	72.7	75.5	83.6	80.9	79.5	81.5	82.5	82.2	83.1	86.2	86.9	87.6	87.5	87.2	85.7	85.2	85.3	86.9	86.7
Oman	76.9	79.9	79.6	79.8	76.1	69.5	75.0	79.4	75.3	75.7	79.1	80.0	84.9	81.9	83.2	80.2	79.7	82.3	82.6
Qatar	91.2	85.1	98.7	95.6	84.9	90.7	82.3	86.3	80.7	82.9	87.4	89.2	85.9	85.9	85.5	87.1	83.2	86.0	87.1
Saudi Arabia	62.4	66.1	72.3	71.9	74.8	72.6	71.6	77.5	76.2	79.5	80.7	80.5	81.5	81.0	78.6	79.0	79.4	79.8	81.3
Syria	79.5	65.5	70.0	68.4	74.1	71.9	80.1	73.1	69.6	78.0	85.0	79.3	81.1	77.6	79.2	82.1	85.6	89.2	79.4
United Arab Emirates	50.4	60.9	73.2	76.2	74.2	77.6	73.8	71.2	77.8	76.5	82.1	84.0	86.8	86.0	84.2	84.0	80.5	81.1	85.5
West Bank	88.4	76.1	80.6	75.5	79.8	82.7	90.4	84.0	79.8	82.7	78.6	80.2	64.2	66.3	75.1	84.6	92.2	90.7	72.7
Yemen	95.9	49.8	83.4	74.9	81.4	79.4	85.6	89.1	83.5	87.1	89.5	93.9	90.5	92.0	90.4	89.2	90.3	92.0	92.1
Africa	62.7	61.9	66.5	65.7	66.0	67.1	66.7	68.6	68.7	69.7	69.3	70.3	70.6	71.3	70.7	70.7	70.6	69.7	69.7

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Algeria	77.6	73.1	72.2	64.2	69.6	67.4	69.7	66.2	72.8	68.7	73.1	72.3	76.8	79.5	78.8	77.0	75.7	72.8	73.4
Angola	58.9	100.0	100.0	98.6	99.8	100.0	87.8	98.3	97.7	99.9	91.9	97.5	95.8	96.1	97.0	96.2	91.2	95.3	87.2
Benin	76.6	70.3	75.0	87.1	77.6	76.0	84.6	83.1	87.0	87.7	87.6	80.0	81.8	78.2	80.1	84.2	81.0	83.8	86.6
Botswana	67.2	74.3	61.7	84.2	74.3	68.4	65.9	77.0	80.8	83.7	81.9	89.5	85.3	88.8	90.4	90.8	93.4	89.8	86.9
Burkina Faso	77.3	77.5	86.0	90.7	89.0	85.0	79.2	89.6	91.6	88.1	87.7	91.8	87.0	87.3	86.1	86.7	88.4	89.8	91.6
Burundi	96.2	78.6	100.0	97.4	100.0	89.1	91.2	97.7	98.2	97.6	97.7	97.7	99.0	96.7	99.3	96.7	94.5	88.2	93.7
Cameroon	75.7	73.6	73.3	83.0	82.6	81.7	76.0	79.2	80.3	76.0	76.7	81.5	80.7	82.4	83.4	81.4	80.8	78.5	77.5
Cape Verde	93.3	100.0	88.9	98.8	na	100.0	na	96.5	na	100.0	100.0	89.7	97.6	98.2	99.0	100.0	95.5	97.8	97.1
Central African Republic	87.8	99.2	88.6	99.3	97.0	99.6	96.5	79.9	78.1	92.3	95.9	98.5	91.4	97.5	90.8	96.6	94.8	94.1	97.6
Chad	100.0	100.0	96.1	100.0	100.0	100.0	99.6	90.2	94.5	93.6	98.1	95.0	89.8	96.5	97.9	98.8	97.6	92.2	97.8
Comoros	na	na	na	100.0	100.0	100.0	na	100.0	91.7	96.7	na	97.9	100.0	100.0	96.0	98.1	100.0	100.0	85.7
Congo, Democratic Republic of the	96.1	87.9	89.7	89.9	98.3	95.2	90.7	92.4	92.5	84.4	94.2	84.1	91.5	94.8	90.2	93.2	90.3	88.6	89.8
Congo, Republic of the	91.8	91.3	95.9	96.8	86.8	89.2	92.1	88.8	91.2	92.5	92.5	92.2	91.7	93.4	96.8	91.6	93.1	97.3	88.6
Côte d'Ivoire	91.0	76.1	82.1	89.8	89.1	85.1	84.5	83.8	93.7	87.5	91.7	88.4	84.6	85.9	86.0	88.9	89.4	88.3	89.2
Djibouti	100.0	100.0	100.0	100.0	na	100.0	na	na	100.0	99.1	100.0	100.0	98.3	95.7	91.6	88.2	97.1	96.0	96.5
Egypt	58.7	58.0	62.2	62.6	61.4	64.2	64.5	69.3	70.7	72.8	74.0	76.5	77.1	77.9	76.9	78.2	78.4	76.9	75.9
Equatorial Guinea	93.9	97.6	100.0	92.9	na	100.0	46.7	95.5	89.4	100.0	80.8	72.6	96.6	97.1	100.0	94.1	95.5	91.4	93.2
Eritrea	100.0	100.0	95.8	98.1	93.7	56.5	81.8	86.2	79.3	92.6	95.6	95.3	98.6	98.6	99.7	98.7	99.4	97.9	98.1
Ethiopia	76.8	74.8	79.6	83.6	77.9	77.6	71.8	80.8	85.8	89.6	82.9	79.6	79.4	81.3	80.2	78.7	79.9	78.6	80.0

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Gabon	84.6	81.7	90.3	87.3	90.1	89.6	91.8	91.6	88.3	89.3	88.9	92.0	91.2	92.2	92.2	95.7	90.2	85.7	94.7
Gambia, The	88.2	82.0	92.7	90.0	91.5	89.3	93.7	91.9	87.9	92.0	87.4	93.4	91.1	92.6	91.4	94.4	94.6	93.9	92.1
Ghana	80.4	81.9	89.2	84.7	85.6	87.6	89.7	88.8	88.2	87.0	88.9	89.9	89.4	89.6	85.7	86.1	84.0	85.6	83.1
Guinea	96.3	96.6	99.2	96.0	99.3	99.6	91.3	99.9	99.3	97.9	96.6	94.7	99.4	96.8	96.9	97.2	94.6	92.5	96.8
Guinea-Bissau	95.3	82.6	79.9	94.2	96.9	81.3	86.1	80.2	81.6	78.7	66.2	90.5	90.7	91.8	86.2	86.8	79.1	83.4	83.4
Kenya	79.4	78.0	78.9	82.7	82.7	84.5	85.4	83.3	85.5	85.8	83.3	85.3	85.9	86.3	88.4	86.7	88.1	87.2	85.9
Lesotho	81.3	60.0	61.9	100.0	100.0	98.3	100.0	99.5	100.0	94.6	91.9	98.7	98.5	98.3	99.3	97.3	92.6	98.7	91.6
Liberia	100.0	100.0	na	na	100.0	100.0	98.6	77.8	87.8	100.0	100.0	100.0	98.6	100.0	98.2	90.8	89.8	96.5	98.7
Libya	59.1	94.2	96.4	83.6	93.3	97.6	88.8	92.1	85.6	83.9	92.7	89.6	88.9	83.7	96.2	96.0	93.1	92.5	92.2
Madagascar	73.4	85.0	79.6	87.2	84.0	80.9	84.6	91.2	83.5	80.9	76.8	85.7	86.8	91.6	87.5	88.8	92.1	88.9	87.1
Malawi	85.3	82.4	81.9	90.7	87.6	80.9	80.7	82.5	85.0	83.1	82.1	87.6	88.7	91.5	90.3	89.7	89.9	90.9	89.4
Mali	84.9	93.6	93.6	96.6	96.9	95.8	91.9	93.9	88.6	90.1	92.2	93.1	89.9	92.9	92.6	92.9	94.6	95.6	94.4
Mauritania	86.2	100.0	82.5	96.0	99.1	95.4	99.3	99.4	96.4	97.1	97.7	98.1	100.0	94.4	96.9	94.6	92.7	90.9	93.1
Mauritius	71.9	66.8	86.6	69.3	71.9	81.9	86.1	84.1	78.5	87.1	86.4	87.9	86.4	82.3	87.4	88.0	76.2	88.0	84.6
Morocco	76.5	67.8	69.7	62.5	64.5	65.6	69.9	73.4	72.9	77.9	77.7	79.1	80.8	80.9	73.9	73.1	71.1	72.5	70.4
Mozambique	95.9	79.8	93.9	94.7	81.2	87.6	90.3	92.1	82.4	91.8	91.8	95.6	87.6	90.7	91.6	91.9	92.8	90.7	92.2
Namibia	80.8	78.8	59.9	61.7	67.3	58.1	66.8	71.1	85.8	92.2	93.3	89.2	93.9	92.8	91.0	91.7	90.9	88.4	93.1
Niger	92.9	83.1	85.1	91.7	90.2	96.9	91.8	84.5	92.2	78.3	89.7	97.0	95.4	95.4	96.6	95.7	90.4	90.0	95.4
Nigeria	56.4	59.4	65.1	69.2	70.8	68.7	69.3	67.1	66.8	67.5	67.1	67.7	69.6	70.2	73.8	76.2	75.0	73.5	74.6

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Rwanda	89.4	94.1	97.0	98.3	99.5	100.0	100.0	97.1	93.3	91.2	95.4	94.1	97.3	95.7	92.6	95.1	91.7	90.4	88.4
São Tomé and Príncipe	90.6	na	100.0	na	88.3	82.8	85.5	96.1	100.0	na	88.7	94.2	na	95.8	97.5	na	100.0	100.0	98.4
Senegal	77.8	68.0	75.2	83.0	88.3	86.7	79.4	85.6	85.3	92.2	87.7	93.7	90.8	89.4	91.5	86.4	86.2	84.4	87.8
Seychelles	92.4	100.0	91.3	98.0	93.4	100.0	62.2	49.7	99.8	93.5	92.8	94.7	96.1	96.3	94.3	93.4	95.3	93.0	88.9
Sierra Leone	93.9	62.4	94.9	100.0	100.0	100.0	100.0	100.0	100.0	99.7	100.0	94.5	95.6	97.7	83.1	82.2	87.8	93.7	94.8
Somalia	100.0	100.0	na	100.0	100.0	na	100.0	na	100.0	na	100.0	na	100.0	100.0	99.2	86.5	99.1	87.6	97.3
South Africa	61.4	62.4	68.2	65.1	65.8	69.1	67.9	69.9	69.9	71.1	70.4	71.4	72.1	72.8	71.9	70.8	71.8	71.9	72.5
South Sudan	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	99.8	99.0	71.2	99.0
Sudan	77.5	64.4	85.0	89.5	85.9	87.5	78.8	82.5	68.5	75.3	80.6	84.4	83.5	79.2	81.3	80.4	85.3	89.1	89.4
Swaziland	87.1	67.3	100.0	100.0	99.5	100.0	87.5	94.3	87.9	91.2	99.3	91.0	86.1	96.0	94.4	98.2	99.4	96.8	98.9
Tanzania	83.1	81.8	88.2	80.0	87.6	88.5	87.0	89.3	85.7	87.5	86.6	87.1	87.6	88.1	85.9	87.4	84.8	86.0	86.1
Togo	61.3	90.3	62.6	88.3	88.3	78.1	94.6	88.4	86.7	85.2	92.0	84.6	83.7	93.9	93.5	87.8	89.5	88.7	89.1
Tunisia	64.8	70.7	63.3	71.0	68.7	72.2	70.2	73.6	69.7	70.4	72.1	72.6	72.3	72.7	74.8	76.7	73.3	72.0	72.0
Uganda	86.9	81.6	79.9	89.5	86.3	88.3	85.1	89.2	87.2	89.5	88.2	87.5	87.5	85.6	86.8	87.2	87.9	85.6	87.0
Western Sahara	na	na	na	na	na	na	na	na	na	na	na	na	na	100.0	100.0	na	na	na	na
Zambia	87.9	88.3	92.4	88.8	94.8	90.9	90.6	87.8	91.6	90.1	86.9	92.2	91.1	91.8	90.5	91.6	92.9	89.5	92.0
Zimbabwe	71.9	75.6	80.0	74.8	82.9	86.4	84.5	84.1	81.8	86.4	85.2	90.7	93.1	92.2	89.9	86.6	79.9	85.6	86.0
Asia	47.7	49.3	49.9	49.3	48.4	47.4	45.9	45.0	43.9	42.3	41.1	39.6	38.8	38.3	37.3	35.9	34.6	33.5	32.3
Afghanistan	na	na	100.0	100.0	100.0	na	100.0	83.6	100.0	95.7	98.6	92.7	92.5	92.2	98.2	93.7	93.7	95.7	92.5

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Bangladesh	70.5	69.0	79.0	79.0	74.0	76.7	76.4	79.1	82.1	82.2	83.1	79.5	79.2	79.6	78.3	76.8	78.1	74.8	75.9
Bhutan	25.0	92.8	58.3	100.0	70.0	na	79.1	100.0	82.6	94.2	91.5	95.6	89.6	90.0	94.5	82.5	90.3	96.2	92.3
Brunei	82.1	79.7	74.8	82.4	81.3	70.3	77.1	81.2	79.1	88.5	95.1	89.8	94.2	86.0	91.8	85.0	82.7	71.4	72.9
Burma	37.7	100.0	78.8	95.0	90.2	83.9	84.9	97.6	90.7	94.9	96.0	93.5	88.7	96.6	97.8	97.4	93.2	95.3	90.5
Cambodia	94.9	91.1	90.9	96.1	97.0	99.2	81.8	82.3	92.5	93.3	93.0	90.0	89.2	93.9	92.6	92.3	90.0	88.3	91.7
China	51.6	51.4	49.9	47.9	45.2	45.1	43.5	43.8	42.2	41.2	41.4	40.9	41.0	41.9	41.5	40.3	39.4	38.6	37.7
India	48.5	49.5	52.4	53.0	55.7	55.2	56.5	58.5	58.9	59.8	60.5	62.4	63.3	62.8	61.2	61.4	60.9	61.1	61.9
Indonesia	83.1	78.7	76.8	85.8	86.9	86.4	88.6	89.7	91.1	89.8	89.1	88.4	87.4	86.6	83.9	80.3	81.3	79.0	71.4
Japan	52.6	55.1	56.5	57.4	57.8	58.0	58.7	59.8	60.4	60.8	61.7	62.1	62.9	63.4	64.0	64.5	65.4	66.5	67.0
Kazakhstan	74.5	66.7	58.6	71.8	60.8	59.6	53.7	69.0	76.7	75.0	79.8	76.6	78.6	73.5	77.6	62.2	64.8	66.5	67.5
Kyrgyzstan	99.0	73.1	54.1	68.3	63.1	88.7	75.8	85.4	86.6	98.7	88.4	91.4	85.8	92.0	95.3	90.8	87.5	94.9	91.9
Laos	86.2	81.5	88.4	100.0	87.3	86.9	97.5	82.6	92.5	84.3	91.2	89.2	94.0	88.9	90.9	88.4	91.6	91.8	91.2
Malaysia	66.8	68.7	71.8	68.4	68.4	69.8	70.4	74.5	76.2	76.0	72.6	68.1	65.5	65.0	62.3	62.9	65.2	67.0	69.5
Maldives	92.7	na	100.0	100.0	na	90.0	na	100.0	100.0	100.0	97.1	98.9	98.2	99.9	99.2	95.4	78.5	94.8	96.6
Mongolia	93.4	92.4	84.3	88.1	88.8	85.6	88.6	95.3	91.9	93.9	94.1	93.1	91.9	92.8	93.8	91.9	90.9	93.4	93.9
Nepal	82.0	80.4	79.6	87.3	86.0	85.1	86.7	88.1	82.6	82.6	88.4	86.7	85.3	88.1	87.4	85.3	87.2	86.5	87.4
North Korea	100.0	100.0	100.0	98.2	99.6	99.5	100.0	100.0	99.6	99.2	99.3	99.2	98.4	99.3	98.4	93.5	97.1	99.4	91.6
Pakistan	61.5	56.7	62.9	57.3	60.5	62.3	54.3	61.0	59.5	61.2	58.2	60.8	59.5	62.7	63.4	63.8	62.6	67.1	67.3
Papua New Guinea	69.5	85.4	71.2	80.8	86.9	71.9	87.3	88.7	92.3	92.9	92.7	94.2	91.6	91.7	89.1	90.2	87.6	94.0	88.6

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Philippines	74.6	77.3	77.4	83.5	75.0	79.2	86.0	85.7	86.9	86.0	86.3	84.6	84.1	84.7	83.1	83.3	83.5	83.9	81.5
Singapore	65.9	63.4	69.5	66.8	67.6	69.6	70.7	71.7	74.5	77.2	77.8	79.1	78.8	79.5	80.9	81.2	83.3	83.6	84.8
South Korea	56.6	57.9	58.8	61.3	63.5	63.1	63.4	65.5	66.6	67.0	67.0	66.8	67.7	69.5	69.6	70.0	71.8	71.4	72.0
Sri Lanka	71.8	65.8	77.9	76.3	74.5	79.2	80.8	83.2	84.6	83.7	83.3	84.7	87.4	86.6	86.3	83.8	83.1	84.9	84.0
Taiwan	56.5	60.2	61.2	62.5	63.9	65.0	64.6	66.8	67.4	66.6	67.1	68.1	69.1	69.3	69.5	71.4	72.9	75.1	76.8
Tajikistan	74.8	70.6	100.0	66.2	47.1	89.3	63.1	76.4	71.3	86.1	95.2	94.8	91.6	82.4	82.1	82.7	93.4	92.1	89.6
Thailand	74.5	69.9	70.5	75.4	75.0	72.3	76.2	77.6	77.6	77.2	75.9	75.6	75.3	75.2	75.4	76.4	77.4	77.7	78.4
Timor-Leste	na	na	na	na	na	na	na	100.0	na	54.4	92.1	100.0	99.4	94.5	99.0	97.6	77.5	93.1	96.1
Turkmenistan	100.0	87.4	90.7	94.4	95.2	100.0	100.0	95.8	88.1	92.5	94.6	93.1	100.0	92.4	90.3	88.4	87.7	88.0	84.2
Uzbekistan	72.7	58.7	57.5	80.4	72.4	59.6	64.4	71.1	78.3	73.0	77.1	80.5	79.1	81.1	74.2	71.7	67.3	69.1	74.9
Vietnam	76.6	74.0	74.4	82.0	85.4	84.1	84.6	86.5	86.6	87.6	82.5	81.3	80.3	78.6	79.7	81.4	78.2	77.6	77.4
Australia and Oceania	64.0	65.3	68.0	68.2	69.4	69.7	71.2	70.7	71.1	70.8	71.1	71.4	71.9	71.8	72.0	71.6	71.9	72.6	73.7
Australia	65.3	66.6	69.0	69.6	70.3	71.0	72.3	71.5	71.9	71.7	72.0	72.3	72.8	72.7	72.9	72.3	72.8	73.3	74.5
Cook Islands	98.0	na	100.0	100.0	na	na	100.0	na	na	na	100.0	100.0	na	100.0	97.1	98.0	93.8	95.6	99.1
Fiji	95.7	89.3	79.3	84.2	76.8	76.5	86.8	85.4	75.9	78.0	78.5	77.2	90.4	87.6	91.0	89.3	83.3	90.6	88.1
Kiribati	na	na	na	na	na	100.0	na	100.0	na	na	100.0	100.0	na	na	100.0	na	na	95.8	100.0
Marshall Islands	78.6	73.7	100.0	100.0	100.0	100.0	na	100.0	100.0	100.0	94.4	100.0	100.0	92.5	91.5	100.0	100.0	100.0	98.6
Micronesia, Federated States of	100.0	100.0	53.1	100.0	97.1	93.0	na	98.6	99.5	100.0	93.8	77.9	83.8	99.9	53.8	5.0	84.6	92.8	99.2
Nauru	na	na	100.0	na	na	na	na	na	100.0	na	na	na	na	100.0	na	100.0	na	94.3	94.8

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
New Zealand	67.2	68.5	72.4	70.9	74.4	73.6	74.8	76.9	76.7	77.6	77.4	77.1	77.7	77.6	77.6	77.9	78.2	79.0	79.6
Niue	na	na	na	na	na	na	na	na	na	na	100.0	100.0	na	na	na	na	na	na	100.0
Palau	100.0	100.0	100.0	na	100.0	93.4	99.5	90.6	98.7	88.7	97.5	90.4	99.6	93.3	100.0	82.2	97.4	87.9	96.6
Samoa	na	100.0	100.0	97.1	50.0	85.2	100.0	89.3	68.7	100.0	98.8	99.1	97.5	96.9	99.8	97.8	97.4	98.0	99.1
Solomon Islands	82.8	41.9	62.3	79.3	82.8	94.8	86.7	96.4	99.2	92.9	99.7	98.6	97.6	94.5	93.2	96.6	87.0	92.4	93.0
Tonga	na	na	100.0	56.3	100.0	98.3	90.0	100.0	97.2	93.3	100.0	95.8	99.3	96.5	97.8	96.4	100.0	100.0	98.7
Tuvalu	na	na	na	na	na	na	na	na	100.0	na	100.0	100.0	100.0	100.0	na	na	100.0	50.0	100.0
Vanuatu	96.4	100.0	71.7	95.3	100.0	80.2	98.9	78.4	85.7	93.6	98.3	96.0	94.2	99.5	96.3	94.8	89.4	90.2	97.7

na = not applicable; no citation to this country was made.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Article counts refer to publications from a selection of journals, books, and conference proceedings in S&E from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Articles are credited on a fractional-count basis (i.e., for articles with collaborating institutions from multiple regions or countries, each region or country receives fractional credit on the basis of the proportion of its participating institutions). Citation counts are based on all citations made to articles in their publication year and in the following 2 years (i.e., a 3-year citation window; e.g., scores in 2010 are based on citations to articles published in 2010 that were made in articles published in 2010–12). This indicator cannot be computed past 2014 because the citation window is incomplete for more recent years.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-48

Share of S&E articles, by field, citation percentile, and country or economy of institutional author: 2004 and 2014

(Percent share)

Field and citation percentile	United States		EU		China		Japan	
	2004	2014	2004	2014	2004	2014	2004	2014
All fields								
99th (top 1%)	1.79	1.90	1.05	1.28	0.49	1.01	0.65	0.78
95th (top 5%)	8.04	8.27	5.33	6.15	2.75	4.96	3.56	3.75
90th (top 10%)	15.01	15.36	10.79	12.14	5.76	9.72	7.51	7.68
75th (top 25%)	33.59	33.90	27.10	29.20	15.69	23.64	20.98	20.96
50th (top 50%)	59.74	59.72	53.01	55.18	36.44	47.23	46.43	46.02
< 50th (bottom 50%)	40.26	40.28	46.99	44.82	63.56	52.77	53.57	53.98
Engineering								
99th (top 1%)	1.93	1.79	1.26	1.15	0.42	1.09	0.63	0.65
95th (top 5%)	8.11	7.63	6.26	5.65	2.47	5.23	3.54	3.20
90th (top 10%)	14.50	14.03	12.57	11.49	5.44	10.17	7.74	6.55
75th (top 25%)	31.56	30.66	30.52	28.50	16.32	24.53	21.87	18.59
50th (top 50%)	55.54	53.84	56.94	54.65	41.15	48.85	47.76	42.93
< 50th (bottom 50%)	44.46	46.16	43.06	45.35	58.85	51.15	52.24	57.07
Astronomy								

Field and citation percentile	United States		EU		China		Japan	
	2004	2014	2004	2014	2004	2014	2004	2014
99th (top 1%)	1.79	2.18	1.18	1.25	0.23	1.08	1.12	1.89
95th (top 5%)	8.03	9.44	5.47	6.08	2.32	3.46	5.03	9.11
90th (top 10%)	15.35	17.72	10.74	12.08	5.51	6.82	10.00	15.19
75th (top 25%)	36.12	39.04	26.05	29.36	17.68	20.69	23.49	33.48
50th (top 50%)	65.48	66.84	50.32	54.71	43.66	48.92	49.37	61.11
< 50th (bottom 50%)	34.52	33.16	49.68	45.29	56.34	51.08	50.63	38.89
Chemistry								
99th (top 1%)	1.87	1.47	1.03	0.97	0.69	1.36	0.87	0.68
95th (top 5%)	8.23	7.36	5.29	4.69	4.06	6.84	4.94	3.91
90th (top 10%)	15.22	13.98	10.76	10.12	8.28	12.76	9.98	7.95
75th (top 25%)	34.03	32.58	28.68	27.27	19.16	28.34	26.13	21.74
50th (top 50%)	58.22	58.53	57.71	56.00	38.67	51.98	54.28	47.78
< 50th (bottom 50%)	41.78	41.47	42.29	44.00	61.33	48.02	45.72	52.22
Physics								
99th (top 1%)	1.89	2.07	1.10	1.41	0.67	0.88	0.76	1.03
95th (top 5%)	8.18	8.22	5.69	6.45	3.47	4.85	4.05	4.79
90th (top 10%)	15.01	14.69	11.57	12.55	7.48	9.95	8.66	9.45
75th (top 25%)	32.82	31.80	28.72	29.24	20.55	25.44	23.29	23.80

Field and citation percentile	United States		EU		China		Japan	
	2004	2014	2004	2014	2004	2014	2004	2014
50th (top 50%)	57.47	55.86	55.09	54.06	45.84	52.00	49.31	48.56
< 50th (bottom 50%)	42.53	44.14	44.91	45.94	54.16	48.00	50.69	51.44
Geosciences								
99th (top 1%)	1.47	1.92	1.30	1.46	0.62	1.07	0.68	1.13
95th (top 5%)	7.00	8.43	6.14	6.99	3.17	4.86	4.61	4.38
90th (top 10%)	13.26	15.81	12.59	13.84	5.80	9.41	8.79	8.53
75th (top 25%)	30.40	35.14	31.50	32.84	13.60	22.44	24.60	23.07
50th (top 50%)	54.53	60.18	60.44	59.78	32.24	46.48	53.94	49.37
< 50th (bottom 50%)	45.47	39.82	39.56	40.22	67.76	53.52	46.06	50.63
Mathematics								
99th (top 1%)	1.78	1.40	1.01	1.25	1.28	1.30	0.73	1.04
95th (top 5%)	7.96	6.51	5.11	5.95	6.48	5.84	4.66	4.78
90th (top 10%)	15.08	13.15	10.27	12.01	12.44	10.90	8.38	9.95
75th (top 25%)	33.39	30.95	26.64	29.34	29.03	25.24	21.88	24.01
50th (top 50%)	59.25	56.62	53.77	56.03	54.38	48.99	45.59	48.59
< 50th (bottom 50%)	40.75	43.38	46.23	43.97	45.62	51.01	54.41	51.41
Computer sciences								
99th (top 1%)	2.10	2.21	0.77	0.96	0.46	1.45	0.36	0.36

Field and citation percentile	United States		EU		China		Japan	
	2004	2014	2004	2014	2004	2014	2004	2014
95th (top 5%)	9.07	9.90	4.35	5.39	2.26	5.63	2.39	2.10
90th (top 10%)	16.53	18.50	9.40	11.35	4.86	9.95	5.70	5.29
75th (top 25%)	35.07	38.32	25.72	29.40	14.22	21.92	17.94	17.75
50th (top 50%)	59.40	63.23	53.05	56.30	36.15	43.66	43.08	43.93
< 50th (bottom 50%)	40.60	36.77	46.95	43.70	63.85	56.34	56.92	56.07
Agricultural sciences								
99th (top 1%)	1.51	1.91	1.32	1.53	0.70	1.03	0.49	0.21
95th (top 5%)	6.47	7.37	6.51	7.65	3.53	5.73	2.61	2.63
90th (top 10%)	12.29	14.79	13.50	14.58	6.38	11.31	4.89	5.51
75th (top 25%)	29.55	33.69	31.78	34.71	16.00	26.10	16.14	18.40
50th (top 50%)	56.70	61.25	58.17	62.32	36.90	50.06	39.86	46.61
< 50th (bottom 50%)	43.30	38.75	41.83	37.68	63.10	49.94	60.14	53.39
Biological sciences								
99th (top 1%)	1.67	2.00	1.09	1.38	0.21	0.63	0.80	0.98
95th (top 5%)	7.85	8.69	5.45	6.78	1.70	3.61	3.97	4.60
90th (top 10%)	14.90	15.97	11.02	13.10	3.43	7.62	8.31	9.32
75th (top 25%)	33.97	35.08	27.69	30.79	9.65	20.40	22.47	24.12
50th (top 50%)	61.72	61.80	54.27	57.53	22.63	42.21	48.42	51.07

Field and citation percentile	United States		EU		China		Japan	
	2004	2014	2004	2014	2004	2014	2004	2014
< 50th (bottom 50%)	38.28	38.20	45.73	42.47	77.37	57.79	51.58	48.93
Medical sciences								
99th (top 1%)	1.93	2.10	0.97	1.44	0.33	0.56	0.49	0.70
95th (top 5%)	8.71	8.98	4.95	6.58	1.58	3.23	2.57	3.23
90th (top 10%)	16.35	16.51	9.91	12.58	3.57	7.14	5.55	6.70
75th (top 25%)	36.51	35.97	24.52	28.99	10.61	19.89	16.65	18.88
50th (top 50%)	64.04	62.89	48.43	53.82	25.11	42.17	39.98	42.29
< 50th (bottom 50%)	35.96	37.11	51.57	46.18	74.89	57.83	60.02	57.71
Other life sciences								
99th (top 1%)	1.05	1.10	1.08	1.17	0.37	1.81	0.61	0.00
95th (top 5%)	5.21	5.36	5.41	5.36	4.03	7.91	4.57	2.47
90th (top 10%)	10.21	10.73	11.08	10.67	7.83	13.37	5.69	6.56
75th (top 25%)	25.16	26.82	26.33	25.30	26.94	31.41	11.88	20.62
50th (top 50%)	51.27	52.59	49.58	49.13	54.45	59.18	33.62	46.40
< 50th (bottom 50%)	48.73	47.41	50.42	50.87	45.55	40.82	66.38	53.60
Psychology								
99th (top 1%)	1.34	1.26	0.97	1.12	0.64	0.85	0.22	0.15
95th (top 5%)	6.32	6.39	4.47	5.27	3.70	4.97	1.16	1.72

Field and citation percentile	United States		EU		China		Japan	
	2004	2014	2004	2014	2004	2014	2004	2014
90th (top 10%)	12.32	12.22	8.95	10.52	9.47	9.37	2.90	4.23
75th (top 25%)	29.31	28.56	23.13	26.04	20.93	24.00	11.28	13.86
50th (top 50%)	55.72	54.25	46.57	50.85	47.15	51.39	29.80	36.84
< 50th (bottom 50%)	44.28	45.75	53.43	49.15	52.85	48.61	70.20	63.16
Social sciences								
99th (top 1%)	1.56	1.56	0.82	1.15	1.63	1.86	0.26	0.84
95th (top 5%)	7.16	6.82	4.39	5.56	6.61	9.12	3.11	3.64
90th (top 10%)	13.73	13.21	8.77	10.86	12.00	17.10	5.54	8.50
75th (top 25%)	31.31	31.00	22.67	26.33	30.70	34.15	19.50	25.04
50th (top 50%)	58.04	57.36	45.94	51.28	58.03	58.16	44.51	51.99
< 50th (bottom 50%)	41.96	42.64	54.06	48.72	41.97	41.84	55.49	48.01

EU = European Union.

Note(s)

The citation percentile is the share of publications that are in the top 1% of the world's citations, relative to all the country's or economy's publications in that period and field. It is computed as follows: $Sx = HCPx/Px$, where Sx is the share of output from country or economy x in the top 1% most-cited articles, $HCPx$ is the number of articles from country or economy x that are among the top 1% most-cited articles in the world, and Px is the total number of papers from country or economy x in the database that were published in 2014 or earlier. Citations are presented for the year of publication, showing the counts of subsequent citations from peer-reviewed literature. At least 2 years of data after publication are needed for a meaningful measure. Publications that cannot be classified by country or economy or by field are excluded. Articles are classified by the publication year and are assigned to a country or economy on the basis of the institutional address(es) listed in the article. See Appendix Table 5-26 for countries and economies included in the EU. The world average stands at 1.00% for each period and field.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-49

Average relative citations for the United States, by scientific field: 1996–2014

(Average relative citation)

Field	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
All fields	1.41	1.41	1.43	1.42	1.41	1.44	1.42	1.42	1.41	1.42	1.43	1.43	1.46	1.47	1.48	1.47	1.44	1.42	1.42
Engineering	1.32	1.36	1.47	1.36	1.37	1.48	1.42	1.44	1.45	1.41	1.44	1.47	1.47	1.40	1.43	1.42	1.37	1.33	1.34
Astronomy	1.45	1.56	1.47	1.44	1.46	1.58	1.57	1.50	1.45	1.55	1.57	1.52	1.55	1.49	1.48	1.54	1.52	1.51	1.55
Chemistry	1.60	1.51	1.61	1.54	1.54	1.62	1.46	1.47	1.38	1.36	1.37	1.32	1.27	1.40	1.43	1.28	1.34	1.32	1.27
Physics	1.53	1.46	1.48	1.45	1.44	1.46	1.41	1.40	1.42	1.41	1.34	1.41	1.46	1.46	1.47	1.46	1.44	1.44	1.42
Geosciences	1.37	1.34	1.34	1.31	1.31	1.36	1.29	1.31	1.23	1.24	1.32	1.27	1.34	1.37	1.40	1.45	1.39	1.42	1.37
Mathematics	1.48	1.37	1.47	1.42	1.43	1.40	1.36	1.42	1.40	1.31	1.38	1.29	1.36	1.33	1.32	1.30	1.25	1.25	1.22
Computer sciences	1.47	1.59	1.47	1.55	1.58	1.75	1.67	1.61	1.61	1.69	1.78	1.67	1.82	1.97	2.14	1.94	1.85	1.74	1.69
Agricultural sciences	1.37	1.31	1.31	1.31	1.25	1.36	1.36	1.29	1.19	1.20	1.30	1.21	1.30	1.27	1.33	1.32	1.33	1.38	1.35
Biological sciences	1.34	1.35	1.37	1.38	1.36	1.36	1.35	1.35	1.36	1.38	1.39	1.40	1.42	1.42	1.41	1.43	1.42	1.40	1.42
Medical sciences	1.47	1.53	1.52	1.52	1.51	1.51	1.53	1.52	1.52	1.53	1.54	1.55	1.56	1.57	1.55	1.55	1.54	1.53	1.54
Other life sciences	1.02	1.00	1.04	1.03	1.04	1.04	1.01	1.00	1.00	1.07	1.01	1.07	1.06	1.07	1.07	1.06	1.08	1.08	1.07
Psychology	1.15	1.14	1.13	1.14	1.13	1.13	1.17	1.20	1.20	1.15	1.14	1.18	1.19	1.17	1.17	1.21	1.21	1.19	1.16
Social sciences	1.33	1.33	1.33	1.37	1.33	1.36	1.33	1.32	1.30	1.28	1.23	1.26	1.25	1.24	1.26	1.31	1.29	1.26	1.29

Note(s)

An average relative citation (ARC) value greater than 1.00 has more citations than average, and an ARC value less than 1.00 has fewer citations than average. The ARC is the average across a given area of geography or a sector of the relative citations for each publication. The relative citation divides each publication's citation count by the average citation count of all of the same type of publications in that subfield and year. ARC values are presented for the year in which the cited article was published, showing the counts of subsequent citations from peer-reviewed literature. At least 2 years of data after publication are needed for a meaningful measure. Publications that cannot be classified by country or field are excluded.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-50

Average relative citations in the Scopus database, by region, country, or economy: 1996–2014

(Average relative citation)

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
World	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Not United States	0.79	0.79	0.79	0.80	0.81	0.81	0.82	0.81	0.82	0.83	0.83	0.84	0.84	0.84	0.85	0.85	0.86	0.87	0.87
North America	1.38	1.38	1.40	1.38	1.38	1.41	1.38	1.38	1.38	1.38	1.39	1.39	1.41	1.42	1.43	1.42	1.40	1.38	1.38
Canada	1.31	1.32	1.35	1.31	1.28	1.32	1.25	1.31	1.35	1.37	1.38	1.36	1.43	1.46	1.47	1.50	1.49	1.47	1.46
Greenland	ne	ne	ne	ne	ne	ne	ne	1.11	0.71	1.26	1.28	0.98	1.84	1.72	1.66	1.91	1.66	1.79	1.64
Mexico	0.73	0.73	0.73	0.76	0.77	0.78	0.73	0.72	0.79	0.78	0.77	0.77	0.81	0.79	0.80	0.87	0.94	0.85	0.85
United States	1.41	1.41	1.43	1.42	1.41	1.44	1.42	1.42	1.41	1.42	1.43	1.43	1.46	1.47	1.48	1.47	1.44	1.42	1.42
Central America and Caribbean	0.83	0.73	0.85	0.78	0.63	0.67	0.71	0.76	0.76	0.84	0.81	0.80	0.87	0.89	0.85	0.94	1.16	1.01	1.06
Antigua and Barbuda	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Bahamas, The	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	1.06	1.17	0.81	1.21
Barbados	1.13	1.28	0.40	0.80	0.69	0.72	1.13	1.01	1.04	0.83	0.63	0.56	0.78	1.02	1.05	1.21	1.06	0.95	6.56
Belize	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Costa Rica	0.73	0.93	0.78	0.74	0.95	1.03	1.30	1.61	0.87	1.11	0.98	1.00	1.14	1.30	1.22	1.10	1.24	1.19	1.12
Cuba	0.44	0.31	0.59	0.39	0.35	0.41	0.36	0.46	0.47	0.50	0.44	0.45	0.53	0.41	0.52	0.49	0.44	0.53	0.47
Dominica	ne	ne	ne	na	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Dominican Republic	0.64	ne	ne	ne	1.38	ne	ne	ne	0.75	0.50	0.94	0.78	1.19	0.93	0.92	1.11	1.10	1.22	0.85

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
El Salvador	ne	ne	ne	ne	ne	ne	ne	ne	0.52	0.84	0.63	ne	0.78	1.11	1.07	1.39	1.45	0.74	1.01
Grenada	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.71	0.70	0.55	0.86	0.64	1.04	0.71	1.05	1.07
Guatemala	0.83	0.80	0.77	1.60	0.75	1.20	1.11	1.01	0.98	0.84	0.87	1.16	1.01	0.76	1.18	1.04	1.35	1.26	2.05
Haiti	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	1.58	ne	3.15	1.44	1.56	2.06	1.17	1.09	1.10
Honduras	ne	ne	0.96	0.94	ne	ne	1.05	0.82	0.65	1.04	0.95	1.05	1.10	0.74	1.27	1.32	0.78	1.08	0.74
Jamaica	0.83	0.86	0.60	1.50	0.59	0.61	0.54	0.38	0.52	0.68	1.14	0.71	0.73	0.58	0.66	0.83	0.49	1.33	0.78
Nicaragua	1.15	0.89	ne	ne	ne	ne	ne	0.83	0.71	1.23	1.31	0.96	1.39	1.08	0.87	1.30	1.06	1.27	0.85
Panama	1.66	1.69	2.08	1.42	1.69	1.62	2.00	1.50	1.57	1.47	1.78	1.86	1.63	1.48	1.43	1.76	3.60	1.39	2.39
Puerto Rico	1.23	1.06	1.08	1.25	0.89	0.91	0.88	0.82	1.00	1.16	1.07	1.03	1.07	1.50	1.19	1.46	1.92	1.63	1.58
Saint Kitts and Nevis	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.97
Saint Lucia	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	na	ne	ne	ne	ne	ne
Saint Vincent and the Grenadines	ne	ne	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	na	ne	ne	ne	ne	ne	ne
Trinidad and Tobago	0.67	0.64	0.96	0.59	0.63	0.71	0.74	0.66	0.59	0.63	0.68	0.69	1.15	0.67	0.64	0.71	0.57	0.75	0.57
South America	0.75	0.74	0.79	0.75	0.76	0.76	0.79	0.80	0.82	0.87	0.80	0.82	0.82	0.82	0.81	0.83	0.83	0.82	0.81
Argentina	0.68	0.76	0.81	0.72	0.73	0.76	0.76	0.84	0.89	0.89	0.93	0.91	1.00	0.97	0.98	1.02	1.10	0.96	1.01
Bolivia	1.11	0.93	1.14	1.22	1.07	0.89	1.09	0.97	1.55	0.95	1.21	1.10	1.44	1.22	1.38	1.26	5.49	1.35	1.08
Brazil	0.77	0.72	0.76	0.74	0.78	0.75	0.78	0.78	0.80	0.87	0.78	0.79	0.81	0.80	0.78	0.81	0.80	0.81	0.79
Chile	0.81	0.84	0.99	0.97	0.89	0.94	1.00	1.01	1.00	1.01	0.95	0.98	0.98	1.02	1.05	1.10	1.17	1.13	1.10
Colombia	0.81	0.84	0.81	0.72	0.79	0.81	0.70	0.80	0.80	1.02	0.88	0.84	0.86	0.74	0.83	0.88	0.99	0.80	0.82

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Ecuador	1.03	0.83	0.92	0.96	1.00	1.15	1.01	0.85	1.26	1.25	1.31	1.09	1.71	1.22	1.56	1.29	1.27	1.29	1.05
Guyana	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.34	ne	ne	ne	ne
Paraguay	1.21	ne	0.59	ne	ne	0.81	ne	1.13	1.09	1.15	1.58	0.86	0.94	1.09	1.69	1.04	1.00	1.22	0.68
Peru	0.80	0.88	0.98	1.16	1.14	0.94	0.88	1.25	1.13	1.11	1.12	1.25	1.27	1.11	1.53	1.32	1.28	1.29	1.48
Suriname	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.84	ne
Uruguay	1.00	0.93	0.93	1.14	0.93	0.89	0.91	0.90	1.03	0.96	0.98	1.05	1.13	1.07	1.07	1.07	1.88	1.08	1.01
Venezuela	0.65	0.69	0.78	0.64	0.57	0.65	0.63	0.70	0.68	0.65	0.59	0.62	0.56	0.54	0.61	0.56	0.59	0.58	0.60
Europe	0.93	0.94	0.94	0.96	0.97	0.96	0.96	0.98	1.00	1.03	1.05	1.06	1.06	1.09	1.10	1.11	1.10	1.10	1.10
EU	1.01	1.01	1.02	1.02	1.03	1.03	1.03	1.05	1.06	1.09	1.10	1.11	1.11	1.14	1.16	1.17	1.16	1.17	1.16
Austria	1.34	1.08	1.07	1.19	1.15	1.12	1.12	1.22	1.25	1.28	1.27	1.30	1.31	1.33	1.47	1.46	1.50	1.46	1.47
Belgium	1.19	1.18	1.14	1.16	1.16	1.17	1.22	1.27	1.32	1.42	1.41	1.46	1.50	1.55	1.56	1.60	1.62	1.64	1.63
Bulgaria	0.58	0.55	0.60	0.53	0.63	0.56	0.58	0.55	0.65	0.62	0.77	0.67	0.69	0.62	0.74	0.73	0.88	0.72	0.97
Croatia	0.40	0.45	0.50	0.44	0.41	0.46	0.45	0.49	0.55	0.62	0.55	0.58	0.57	0.64	0.81	0.74	0.92	0.80	0.86
Cyprus	0.82	0.84	1.21	0.81	1.03	0.95	1.24	1.21	1.29	0.95	1.10	1.27	1.29	1.16	1.42	1.41	1.81	1.35	1.62
Czech Republic	0.57	0.59	0.59	0.58	0.63	0.61	0.61	0.68	0.71	0.73	0.78	0.76	0.81	0.84	0.89	0.88	0.96	0.98	0.94
Denmark	1.32	1.38	1.39	1.40	1.44	1.48	1.39	1.50	1.56	1.57	1.63	1.61	1.68	1.72	1.72	1.75	1.79	1.71	1.79
Estonia	0.86	0.90	0.95	0.82	0.82	0.84	0.81	0.91	1.01	1.12	0.97	1.11	1.15	1.18	1.22	1.25	1.58	1.52	1.69
Finland	1.19	1.26	1.23	1.21	1.22	1.22	1.28	1.27	1.17	1.23	1.32	1.34	1.37	1.34	1.45	1.41	1.53	1.48	1.60
France	1.05	1.04	1.07	1.04	1.05	1.05	1.06	1.08	1.09	1.17	1.17	1.17	1.21	1.23	1.27	1.29	1.28	1.30	1.28

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Germany	1.05	1.04	1.05	1.07	1.08	1.11	1.10	1.14	1.14	1.20	1.20	1.25	1.25	1.29	1.33	1.35	1.33	1.35	1.34
Greece	0.88	0.88	0.95	0.88	0.93	0.96	0.97	1.01	1.02	1.09	1.10	1.13	1.15	1.22	1.21	1.21	1.37	1.29	1.36
Hungary	0.72	0.69	0.72	0.71	0.71	0.77	0.80	0.91	0.87	0.87	0.91	0.91	0.89	0.92	0.99	0.97	1.18	1.05	1.08
Ireland	1.04	1.19	1.15	1.17	1.10	1.23	1.15	1.17	1.17	1.23	1.36	1.38	1.40	1.46	1.43	1.43	1.60	1.50	1.53
Italy	0.93	0.93	1.00	0.99	1.00	1.02	1.06	1.03	1.09	1.17	1.17	1.18	1.23	1.26	1.31	1.33	1.37	1.37	1.41
Latvia	0.52	0.49	0.74	0.56	0.61	0.55	0.48	0.60	0.79	0.77	0.73	0.59	0.65	0.55	0.71	0.50	0.70	0.65	0.78
Lithuania	0.59	0.57	0.61	0.66	0.65	0.60	0.52	0.61	0.63	0.59	0.65	0.64	0.57	0.61	0.70	0.77	1.00	0.88	0.95
Luxembourg	0.52	0.85	0.65	0.82	0.67	0.95	0.75	0.78	0.92	1.10	1.01	0.99	1.19	1.42	1.44	1.32	1.42	1.59	1.58
Malta	0.87	1.41	0.80	0.66	0.52	1.07	1.21	1.16	0.60	1.08	1.69	1.13	1.00	0.80	0.92	0.93	0.77	0.99	1.28
Netherlands	1.33	1.40	1.40	1.41	1.40	1.41	1.37	1.49	1.45	1.52	1.55	1.60	1.60	1.64	1.72	1.72	1.75	1.70	1.68
Poland	0.55	0.55	0.58	0.56	0.57	0.57	0.55	0.59	0.61	0.63	0.64	0.69	0.66	0.71	0.73	0.79	0.86	0.85	0.91
Portugal	0.88	0.86	0.87	1.04	0.92	0.97	1.02	0.98	1.08	1.13	1.18	1.18	1.18	1.25	1.16	1.20	1.27	1.24	1.23
Romania	0.45	0.49	0.53	0.49	0.53	0.51	0.57	0.55	0.63	0.63	0.63	0.60	0.58	0.48	0.52	0.61	0.67	0.76	0.77
Slovakia	0.55	0.59	0.46	0.57	0.46	0.54	0.51	0.56	0.60	0.62	0.70	0.71	0.73	0.70	0.73	0.73	0.85	0.80	0.80
Slovenia	0.70	0.77	0.79	0.77	0.64	0.73	0.75	0.84	0.83	0.88	1.09	0.96	0.98	1.10	1.02	0.99	1.16	1.12	1.14
Spain	0.89	0.90	0.94	0.95	0.95	0.96	0.98	1.01	1.04	1.11	1.11	1.14	1.18	1.22	1.24	1.28	1.30	1.30	1.32
Sweden	1.32	1.33	1.36	1.32	1.29	1.39	1.34	1.40	1.40	1.41	1.45	1.46	1.49	1.52	1.56	1.58	1.62	1.59	1.64
United Kingdom	1.22	1.25	1.25	1.25	1.27	1.26	1.29	1.31	1.33	1.37	1.39	1.41	1.43	1.46	1.49	1.50	1.52	1.52	1.53
Other Europe	0.64	0.70	0.67	0.70	0.71	0.70	0.70	0.76	0.81	0.86	0.92	0.94	0.96	0.97	0.96	0.99	1.00	0.98	0.97

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Albania	0.61	0.32	0.65	0.59	0.59	0.42	0.57	0.58	1.09	0.83	0.65	0.76	1.02	0.49	0.62	0.46	0.38	0.22	0.35
Andorra	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Belarus	0.29	0.38	0.37	0.48	0.41	0.49	0.43	0.38	0.45	0.46	0.44	0.46	0.65	0.48	0.72	0.73	1.34	1.02	0.89
Bosnia and Herzegovina	0.56	0.71	0.40	0.16	0.52	0.51	0.54	0.39	0.37	0.45	0.51	0.54	0.43	0.45	0.56	0.40	0.45	0.57	0.64
Holy See (Vatican City)	ne	ne	ne	ne	ne	na	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Iceland	1.67	1.54	1.44	1.47	1.49	1.57	1.62	1.58	1.78	1.69	1.83	1.82	1.61	1.73	2.01	1.81	2.09	1.97	2.12
Kosovo	na	na	na	na	na	na	na	na	na	na	na	na	0.49	0.38	0.45	0.45	0.56	0.46	0.59
Liechtenstein	ne	1.21	ne	ne	1.30	ne	ne	0.97	1.19	1.18	1.78	1.27	1.07	1.97	1.69	1.27	1.14	1.26	1.10
Macedonia	1.06	0.68	0.59	0.44	0.39	0.67	0.45	0.54	0.54	0.52	0.57	0.51	0.51	0.60	0.57	0.60	0.71	0.73	1.12
Moldova	0.29	0.36	0.39	0.54	0.31	0.50	0.57	0.59	0.78	0.76	0.79	0.95	1.14	0.93	1.02	0.65	0.75	0.72	0.92
Monaco	1.99	1.07	1.55	1.05	ne	1.63	1.28	0.89	1.60	1.30	1.17	1.26	2.03	1.77	1.22	1.86	2.34	1.68	1.15
Montenegro[a]	na	na	na	na	na	na	na	na	na	na	na	0.71	1.06	0.81	0.96	0.74	0.80	0.68	0.83
Norway	1.11	1.12	1.19	1.19	1.16	1.28	1.31	1.35	1.34	1.37	1.37	1.35	1.46	1.44	1.41	1.53	1.56	1.56	1.48
Russia	0.34	0.39	0.37	0.38	0.39	0.38	0.36	0.41	0.42	0.46	0.53	0.52	0.52	0.49	0.53	0.54	0.63	0.61	0.65
San Marino	ne	ne	ne	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Serbia[a]	na	na	na	na	na	na	na	na	na	na	na	0.72	0.78	0.76	0.82	0.79	0.86	0.84	1.01
Serbia and Montenegro[b]	0.45	0.43	0.51	0.49	0.45	0.46	0.53	0.53	0.55	0.51	0.65	na	na	na	na	na	na	na	na
Switzerland	1.38	1.51	1.44	1.46	1.47	1.48	1.50	1.54	1.60	1.68	1.66	1.67	1.74	1.77	1.76	1.83	1.87	1.77	1.75
Turkey	0.65	0.64	0.65	0.64	0.73	0.70	0.70	0.70	0.77	0.81	0.79	0.87	0.88	0.87	0.80	0.82	0.81	0.79	0.80

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Ukraine	0.27	0.28	0.28	0.34	0.32	0.31	0.33	0.35	0.40	0.43	0.45	0.51	0.50	0.46	0.48	0.62	0.60	0.56	0.61
Middle East	1.00	1.01	1.03	0.98	0.97	1.04	0.98	0.97	0.99	0.98	1.00	0.98	0.99	1.00	1.02	1.01	1.04	1.06	1.13
Armenia	0.36	0.56	0.56	0.53	0.71	0.73	0.55	0.70	0.68	0.78	1.07	0.94	1.27	0.75	1.09	1.07	2.09	1.56	1.33
Azerbaijan	0.18	0.25	0.23	0.27	0.29	0.21	0.28	0.28	0.17	0.29	0.44	0.25	0.55	0.30	0.49	0.55	1.09	0.92	1.32
Bahrain	0.32	0.53	0.35	0.81	0.38	0.66	0.56	0.34	0.41	0.49	0.49	0.55	0.53	0.56	0.69	0.55	0.67	0.67	1.23
Gaza Strip	ne	ne	ne	0.28	ne	ne	0.39	0.38	0.28	0.86	0.64	0.66	0.66	0.62	0.57	0.68	0.89	0.86	0.89
Georgia	0.46	0.59	0.40	0.50	0.65	0.68	0.64	0.52	0.66	0.52	0.68	0.79	1.06	0.66	1.27	1.07	2.37	1.47	2.40
Iran	0.74	0.71	0.91	0.79	0.71	0.75	0.72	0.78	0.73	0.75	0.77	0.82	0.81	0.88	0.89	0.83	0.91	0.93	0.98
Iraq	1.02	0.44	0.40	0.47	0.53	0.40	0.36	0.46	0.43	0.46	0.47	0.59	0.48	0.43	0.49	0.54	0.55	0.74	0.83
Israel	1.21	1.22	1.25	1.20	1.19	1.29	1.21	1.23	1.27	1.34	1.37	1.31	1.41	1.37	1.48	1.52	1.50	1.42	1.48
Jordan	0.64	0.75	0.66	0.61	0.74	0.73	0.63	0.70	0.96	0.72	0.78	0.72	0.90	0.83	0.78	0.82	0.83	0.75	1.05
Kuwait	0.66	0.75	0.66	0.67	0.66	0.68	0.70	0.67	0.88	0.75	0.67	0.72	0.72	0.70	0.75	0.85	0.78	0.76	1.01
Lebanon	0.95	0.93	0.64	0.64	0.66	0.69	0.68	0.66	0.74	0.70	0.86	0.87	0.84	0.97	1.04	0.95	0.92	0.96	1.20
Oman	0.71	0.67	0.58	0.52	0.54	0.67	0.79	0.63	0.74	0.84	0.74	0.71	0.79	0.72	0.84	0.77	0.76	0.89	0.92
Qatar	0.30	0.46	0.30	0.58	0.34	0.43	0.40	0.90	1.14	0.56	0.87	0.98	0.83	1.01	1.18	1.14	1.03	1.35	1.63
Saudi Arabia	0.58	0.59	0.65	0.58	0.59	0.65	0.74	0.64	0.65	0.66	0.66	0.76	0.74	0.86	1.00	1.16	1.30	1.26	1.40
Syria	0.79	0.66	0.85	0.73	0.84	0.90	0.85	0.80	0.85	0.74	0.88	0.86	1.08	1.03	0.97	0.75	0.81	0.78	0.78
United Arab Emirates	0.86	0.65	0.58	0.53	0.54	0.63	0.65	0.62	0.73	0.61	0.76	0.80	0.90	0.91	0.84	0.98	0.88	1.16	1.08
West Bank	0.76	0.79	0.68	0.85	0.59	0.70	0.95	0.78	1.10	0.73	0.84	0.79	0.85	0.81	0.70	0.59	0.71	0.79	2.43

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Yemen	0.67	0.58	0.77	0.42	0.77	0.72	1.07	0.76	0.50	0.66	0.92	1.15	0.61	0.76	0.67	0.85	0.80	0.90	0.81
Africa	0.72	0.73	0.74	0.76	0.73	0.72	0.71	0.74	0.77	0.83	0.84	0.84	0.88	0.83	0.87	0.87	0.90	0.87	0.88
Algeria	0.59	0.59	0.67	0.48	0.58	0.67	0.63	0.53	0.61	0.69	0.70	0.72	0.84	0.76	0.83	0.68	0.68	0.70	0.75
Angola	ne	ne	ne	ne	ne	ne	ne	ne	ne	1.09	0.57	ne	0.62	1.19	0.63	0.59	0.62	1.06	0.65
Benin	0.54	0.87	0.58	0.71	0.78	0.72	1.09	0.96	0.85	0.85	0.70	0.91	0.82	0.79	0.87	0.97	0.81	0.81	1.20
Botswana	0.86	0.94	0.70	1.04	0.69	0.50	0.63	0.80	0.64	1.53	0.91	0.87	0.69	0.70	0.84	2.00	1.15	0.84	2.10
Burkina Faso	0.83	0.79	0.66	0.96	0.72	0.85	0.89	1.02	0.80	0.98	0.98	0.88	1.22	0.97	0.95	1.09	1.07	0.85	0.98
Burundi	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.81	ne	1.03	0.54	0.87
Cameroon	0.67	0.83	0.83	0.77	0.81	0.72	0.69	0.79	1.01	0.68	0.80	0.76	0.82	0.80	0.95	0.84	0.82	0.89	0.99
Cape Verde	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	1.12	1.03
Central African Republic	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.70	1.50	1.01	1.13
Chad	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	1.04	ne	ne	0.98	ne	ne	ne	ne	1.21
Comoros	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Congo, Democratic Republic of the	0.85	0.83	1.58	1.31	0.76	ne	ne	0.80	1.05	0.63	1.16	1.02	1.02	1.56	1.12	1.21	1.25	1.02	1.49
Congo, Republic of the	0.85	ne	0.40	0.14	ne	ne	0.55	0.44	0.73	1.13	0.66	0.85	0.65	1.13	0.81	0.92	0.88	0.86	1.37
Côte d'Ivoire	0.45	0.58	0.70	0.98	0.90	0.77	0.99	0.83	0.64	0.67	0.64	0.84	0.66	0.78	0.70	0.64	0.75	0.66	0.93
Djibouti	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Egypt	0.66	0.65	0.68	0.62	0.64	0.61	0.69	0.66	0.71	0.79	0.79	0.80	0.84	0.78	0.84	0.90	0.86	0.88	0.90
Equatorial Guinea	ne	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Eritrea	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.79	1.13	0.76	ne	ne	ne	ne	ne	ne	ne
Ethiopia	0.84	0.75	0.82	0.79	0.92	0.81	0.69	0.84	0.87	0.92	0.98	1.06	0.94	1.07	0.94	0.95	0.92	0.94	1.24
Gabon	1.14	1.35	0.96	0.91	1.38	0.69	0.95	0.92	0.83	0.96	1.10	1.02	0.95	0.96	0.82	1.39	1.54	0.98	1.37
Gambia, The	1.22	1.88	2.47	1.69	1.71	1.50	1.18	1.53	1.30	1.81	1.51	1.64	1.50	1.30	1.44	1.57	1.65	2.53	1.33
Ghana	0.88	0.79	0.78	0.78	0.75	0.92	0.74	0.84	1.01	0.88	0.93	0.87	1.20	0.92	1.13	0.95	2.02	1.08	1.33
Guinea	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.74	1.21	0.86	1.10	1.00	0.60	0.88	1.20	4.67
Guinea-Bissau	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	1.34	1.03	1.17
Kenya	1.10	1.27	0.99	1.31	1.27	1.05	1.08	1.14	1.16	1.15	1.14	1.21	1.33	1.22	1.51	1.48	1.71	1.26	1.53
Lesotho	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.79	0.75	ne
Liberia	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	5.39
Libya	0.33	0.72	0.54	0.59	0.39	0.37	0.43	0.65	0.41	0.42	0.70	0.57	0.66	0.36	0.46	0.47	0.68	0.58	0.70
Madagascar	0.59	1.10	0.97	0.72	0.70	0.60	0.61	0.78	0.59	0.74	1.10	0.87	0.95	0.89	1.03	1.09	1.02	0.78	0.88
Malawi	1.74	0.79	1.36	1.39	1.62	0.89	0.97	1.20	1.10	1.11	1.30	1.27	1.17	1.35	1.45	2.09	1.51	1.38	1.37
Mali	0.50	1.47	0.83	0.70	1.12	1.27	0.84	0.77	0.92	0.99	0.81	0.77	0.99	1.37	1.12	1.14	1.06	1.84	1.16
Mauritania	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.62	ne	ne	ne	ne	ne	0.79	0.86	0.63	0.89
Mauritius	ne	ne	0.50	0.64	0.32	0.44	0.58	0.50	0.63	0.75	1.00	0.57	0.65	0.48	0.68	1.09	0.57	0.86	0.91
Morocco	0.63	0.56	0.62	0.54	0.56	0.58	0.66	0.59	0.67	0.70	0.76	0.69	0.79	0.63	0.68	0.66	0.87	0.74	0.72
Mozambique	ne	0.76	0.92	0.77	1.25	0.63	0.73	0.98	1.23	1.04	1.02	1.44	1.73	1.33	2.39	1.68	6.38	1.62	1.22
Namibia	1.31	0.81	0.91	1.03	0.91	0.76	0.62	0.70	1.41	1.22	1.73	1.22	1.21	1.43	0.95	1.13	0.84	1.12	1.19

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Niger	0.76	1.17	1.17	0.88	0.81	0.46	0.64	0.75	0.63	0.69	1.11	0.87	1.36	0.99	0.81	1.12	1.16	1.30	0.99
Nigeria	0.46	0.52	0.51	0.51	0.47	0.50	0.43	0.51	0.53	0.53	0.49	0.56	0.59	0.49	0.50	0.51	0.67	0.45	0.59
Rwanda	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	1.22	0.90	1.09	1.14	0.90	1.17	1.00	1.33	1.55
São Tomé and Príncipe	ne	na	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	na	ne	ne	na	ne	ne	ne
Senegal	0.76	0.75	0.61	0.54	0.74	0.84	0.63	0.72	0.67	0.80	0.75	0.58	0.74	0.81	0.73	0.80	0.86	0.76	0.86
Seychelles	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	1.69	1.11	ne	0.97	1.49	1.06	1.10	2.16
Sierra Leone	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	1.13	0.74	1.54	1.56	5.34
Somalia	ne	ne	ne	ne	ne	na	ne	ne	ne	na	ne	na	ne	ne	ne	ne	ne	ne	ne
South Africa	0.75	0.76	0.83	0.94	0.82	0.84	0.81	0.85	0.94	1.03	1.03	1.00	1.09	1.06	1.15	1.14	1.25	1.17	1.10
South Sudan	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	ne	ne	ne	ne
Sudan	0.68	0.63	0.80	0.88	0.89	0.88	0.59	0.79	0.66	0.59	0.64	0.83	0.66	0.80	0.69	0.64	2.60	0.67	0.72
Swaziland	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.72	1.00	ne	0.82	1.00	1.24	1.27	0.73	0.86	0.90
Tanzania	1.11	1.59	1.02	0.87	1.06	1.09	0.97	1.16	1.11	1.12	1.17	1.25	1.27	1.53	1.30	1.30	1.27	1.34	1.22
Togo	0.36	0.64	0.28	0.28	0.46	0.52	ne	0.61	0.59	0.60	0.58	0.49	0.41	0.50	0.56	0.57	0.39	0.50	0.45
Tunisia	0.44	0.61	0.60	0.47	0.53	0.63	0.56	0.52	0.53	0.64	0.60	0.69	0.71	0.71	0.70	0.74	0.75	0.68	0.78
Uganda	0.90	1.14	0.82	1.43	1.41	1.25	0.88	1.15	1.12	0.98	1.32	1.24	1.44	1.29	1.49	1.34	2.23	1.24	1.29
Western Sahara	na	na	na	na	na	na	ne	na	ne	na	na	na	ne	ne	ne	na	ne	na	na
Zambia	0.60	0.85	0.94	0.77	1.11	0.99	0.94	1.04	1.12	0.85	1.33	1.43	1.34	1.44	1.57	1.75	1.28	1.40	1.65
Zimbabwe	0.72	0.60	0.86	0.67	0.62	0.87	0.78	1.01	0.93	0.99	1.13	1.03	1.24	1.23	0.96	2.22	1.06	1.32	1.26

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Asia	0.69	0.69	0.70	0.70	0.71	0.70	0.73	0.74	0.75	0.74	0.75	0.76	0.77	0.78	0.79	0.82	0.86	0.88	0.90
Afghanistan	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.93	0.54	0.89	0.65	0.66	1.19	6.81
Bangladesh	0.72	0.55	0.59	0.58	0.66	0.62	0.70	0.72	0.86	0.82	0.79	0.72	0.71	0.70	0.74	0.74	0.76	0.82	0.98
Bhutan	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	1.34	ne	ne	ne	0.73	0.91	0.79	0.96	0.85
Brunei	1.11	0.62	0.63	0.80	1.12	1.10	0.97	0.72	0.63	0.75	0.82	0.86	0.90	0.68	0.72	0.64	0.73	0.66	0.79
Burma	ne	ne	ne	ne	ne	ne	ne	1.12	1.05	0.91	0.66	0.79	0.55	0.49	0.83	0.48	0.66	0.74	1.58
Cambodia	ne	ne	ne	ne	ne	ne	0.76	0.77	0.89	1.46	1.01	1.42	1.00	2.23	1.52	1.37	1.56	1.46	1.67
China	0.46	0.49	0.48	0.52	0.54	0.50	0.58	0.62	0.62	0.61	0.64	0.67	0.69	0.70	0.73	0.78	0.88	0.91	0.96
India	0.61	0.60	0.61	0.61	0.68	0.67	0.69	0.73	0.77	0.81	0.83	0.83	0.83	0.84	0.81	0.78	0.77	0.78	0.76
Indonesia	0.95	0.85	0.80	0.76	0.90	0.81	0.77	0.78	0.80	0.83	0.83	0.92	0.95	1.08	0.76	0.79	0.80	0.70	0.79
Japan	0.77	0.77	0.80	0.78	0.77	0.80	0.79	0.80	0.82	0.81	0.82	0.83	0.84	0.83	0.84	0.86	0.85	0.86	0.87
Kazakhstan	0.28	0.35	0.29	0.45	0.39	0.48	0.32	0.38	0.42	0.37	0.43	0.51	0.49	0.43	0.51	0.49	0.68	0.38	0.60
Kyrgyzstan	0.29	ne	0.14	0.40	0.16	0.75	0.74	0.53	0.30	0.34	0.68	0.78	0.53	0.77	0.99	0.60	0.84	1.13	2.34
Laos	ne	ne	ne	ne	ne	ne	ne	1.47	0.84	1.25	1.25	1.49	1.03	1.14	1.31	1.04	1.24	1.10	1.65
Malaysia	0.70	0.63	0.70	0.70	0.66	0.74	0.67	0.68	0.78	0.70	0.70	0.77	0.67	0.75	0.74	0.78	0.81	0.82	0.88
Maldives	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Mongolia	1.63	0.84	0.80	0.63	1.37	0.94	1.24	1.07	1.36	1.00	0.96	1.14	0.73	0.78	0.90	0.77	0.78	0.79	0.85
Nepal	0.70	0.72	0.74	0.99	0.82	0.94	0.60	0.77	0.70	0.54	0.83	0.70	0.65	0.64	0.68	0.70	1.87	0.96	0.89
North Korea	ne	ne	0.93	ne	ne	1.65	2.05	ne	0.81	1.43	1.42	1.05	1.09	0.75	1.07	ne	0.44	0.74	0.76

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Pakistan	0.49	0.50	0.46	0.45	0.44	0.42	0.43	0.53	0.56	0.56	0.59	0.74	0.81	0.72	0.77	0.77	0.89	0.91	0.96
Papua New Guinea	0.65	0.69	0.72	0.77	0.70	0.80	0.75	0.73	0.56	0.96	0.83	0.82	0.90	1.15	0.81	1.01	1.14	1.29	1.75
Philippines	1.25	1.24	1.00	0.99	0.96	0.86	0.97	0.88	1.06	1.00	1.09	1.24	1.03	1.34	1.10	1.22	1.09	0.98	1.07
Singapore	1.00	0.99	1.08	0.94	1.06	1.14	1.15	1.25	1.23	1.47	1.38	1.40	1.55	1.62	1.75	1.72	1.91	1.84	1.83
South Korea	0.79	0.78	0.82	0.84	0.89	0.89	0.92	0.90	0.89	0.93	0.88	0.88	0.92	1.00	1.04	1.04	1.08	1.05	1.06
Sri Lanka	0.58	0.67	0.81	0.77	0.88	0.72	0.78	1.22	1.06	0.83	0.94	0.86	0.83	0.87	0.89	0.77	1.82	0.82	1.50
Taiwan	0.85	0.86	0.83	0.84	0.88	0.89	0.94	0.93	0.94	1.00	0.98	0.96	1.02	1.03	0.98	1.04	1.04	0.97	0.97
Tajikistan	0.08	0.12	0.06	0.12	0.19	0.27	0.27	0.19	0.27	0.55	0.62	0.45	0.37	0.53	0.43	0.43	0.70	0.64	0.56
Thailand	0.89	0.94	0.79	0.80	0.81	0.73	0.77	0.91	0.97	1.02	0.90	0.96	0.91	1.04	0.88	0.93	0.96	0.90	0.87
Timor-Leste	na	na	na	na	na	na	na	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Turkmenistan	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.79	1.08	ne	1.15
Uzbekistan	0.14	0.19	0.20	0.25	0.31	0.27	0.24	0.38	0.39	0.39	0.57	0.57	0.75	0.47	0.49	0.48	0.42	0.51	0.61
Vietnam	0.85	0.68	0.90	0.86	1.23	1.06	0.87	0.93	1.07	0.97	1.02	1.05	1.09	0.95	1.06	1.04	1.08	1.01	1.12
Australia and Oceania	1.19	1.16	1.22	1.16	1.16	1.17	1.20	1.21	1.27	1.26	1.31	1.30	1.39	1.39	1.45	1.46	1.50	1.51	1.52
Australia	1.18	1.16	1.23	1.18	1.16	1.19	1.23	1.22	1.30	1.28	1.32	1.32	1.42	1.42	1.47	1.49	1.54	1.54	1.56
Cook Islands	ne	ne	ne	ne	ne	na	ne	na	na	ne	ne	ne	na	ne	ne	ne	ne	ne	ne
Fiji	ne	0.82	0.76	0.74	0.61	1.12	0.39	0.62	0.44	0.75	0.85	1.12	1.55	1.19	1.13	0.91	1.03	1.01	2.99
Kiribati	ne	na	na	na	na	ne	na	ne	na	na	ne	ne	na	ne	ne	na	ne	ne	ne
Marshall Islands	ne	ne	ne	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Micronesia, Federated States of	ne	ne	ne	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Nauru	na	ne	ne	na	na	ne	na	na	ne	ne	ne	na	na	ne	na	ne	ne	ne	ne
New Zealand	1.28	1.16	1.21	1.09	1.19	1.08	1.07	1.18	1.14	1.20	1.29	1.24	1.31	1.33	1.38	1.35	1.49	1.44	1.36
Niue	na	na	na	na	na	na	na	na	na	ne	ne	ne	na	na	na	na	na	na	ne
Palau	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Samoa	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Solomon Islands	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Tonga	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Tuvalu	na	na	na	na	na	ne	na	ne	ne	na	ne	ne	ne	ne	ne	na	ne	ne	ne
Vanuatu	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.93

na = not applicable; no articles are assigned to the entity. ne = not eligible; there are fewer than 30 articles available to make a calculation.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

An average relative citation (ARC) value greater than 1.00 has more citations than average, and an ARC value less than 1.00 has fewer citations than average. The ARC is the average across a given area of geography or sector of the relative citations for each publication. The relative citation divides each publication's citation count by the average citation count of all of the same type of publications in that subfield and year. ARC values are presented for the year in which the cited article was published, showing the counts of subsequent citations from peer-reviewed literature. At least 2 years of data after publication are needed for a meaningful measure. Publications that cannot be classified by region, country, or economy or field are excluded.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

Science and Engineering Indicators 2018

APPENDIX TABLE 5-51

Share of S&E publications in the top 1% of most-cited articles in the Scopus database, by region, country, or economy: 1996–2014

(Index)

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
World	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Not United States	0.62	0.62	0.62	0.63	0.65	0.64	0.64	0.63	0.65	0.67	0.66	0.69	0.68	0.69	0.68	0.69	0.70	0.71	0.72
North America	1.65	1.67	1.70	1.70	1.66	1.73	1.71	1.71	1.70	1.69	1.75	1.73	1.79	1.82	1.85	1.86	1.83	1.81	1.79
Canada	1.48	1.52	1.49	1.42	1.33	1.41	1.30	1.41	1.48	1.58	1.57	1.67	1.71	1.73	1.84	1.96	1.95	1.92	1.97
Greenland	ne	ne	ne	ne	ne	ne	ne	0.00	0.00	2.17	0.00	0.00	3.92	0.00	4.41	5.00	2.86	4.39	1.90
Mexico	0.50	0.40	0.45	0.67	0.60	0.60	0.45	0.40	0.50	0.48	0.63	0.54	0.68	0.64	0.75	0.85	0.82	0.93	0.79
United States	1.72	1.75	1.77	1.78	1.76	1.81	1.81	1.81	1.79	1.78	1.85	1.83	1.90	1.93	1.96	1.97	1.95	1.93	1.90
Central America and Caribbean	0.88	0.38	0.62	0.65	0.36	0.50	0.56	0.45	0.57	0.83	0.77	0.72	0.95	0.95	0.86	1.20	1.24	1.25	1.31
Antigua and Barbuda	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Bahamas, The	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	0.00	0.00	0.00
Barbados	0.00	2.56	0.00	0.00	0.00	0.00	1.92	1.56	1.30	0.00	0.00	0.00	1.37	3.03	0.00	1.25	1.04	1.10	3.57
Belize	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Costa Rica	0.00	0.37	0.39	0.46	0.59	1.45	1.74	1.71	0.53	1.66	0.94	1.03	1.26	1.34	1.65	1.23	1.37	1.13	1.25
Cuba	0.39	0.00	0.36	0.24	0.16	0.23	0.08	0.29	0.37	0.19	0.30	0.42	0.43	0.27	0.73	0.52	0.28	0.77	0.39
Dominica	ne	ne	ne	na	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Dominican Republic	0.00	ne	ne	ne	0.00	ne	ne	ne	0.00	0.00	0.00	0.00	1.72	0.00	0.00	1.41	1.27	1.77	0.00

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
El Salvador	ne	ne	ne	ne	ne	ne	ne	ne	0.00	0.00	0.00	ne	2.63	5.26	4.65	2.00	1.82	0.00	0.00
Grenada	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	0.00	1.28	0.00	0.00	1.30	0.00	2.06	1.48
Guatemala	1.69	0.00	0.00	3.51	0.00	0.00	0.00	1.52	0.00	0.89	0.00	0.00	0.00	0.75	0.79	1.56	2.14	1.62	1.62
Haiti	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	ne	3.33	2.94	2.56	3.17	1.92	0.00	1.89
Honduras	ne	ne	0.00	0.00	ne	ne	0.00	0.00	0.00	0.00	0.00	2.78	2.38	0.00	3.03	1.49	0.00	0.00	0.00
Jamaica	1.25	0.69	0.69	2.13	0.00	0.00	0.00	0.00	0.00	0.00	1.05	0.83	0.72	0.71	0.36	1.34	0.00	1.69	0.60
Nicaragua	2.94	0.00	ne	ne	ne	ne	ne	0.00	0.00	3.70	2.41	0.00	2.47	1.11	0.00	1.09	0.93	1.22	0.00
Panama	2.22	1.20	2.30	0.90	3.06	1.80	2.83	0.66	1.09	1.59	2.65	1.89	3.32	2.22	1.46	3.53	3.39	1.33	2.89
Puerto Rico	1.53	0.81	0.94	1.49	0.69	1.05	0.79	0.37	1.13	1.56	1.28	1.15	1.28	1.68	1.37	2.27	3.08	2.49	2.81
Saint Kitts and Nevis	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00
Saint Lucia	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	na	ne	ne	ne	ne	ne
Saint Vincent and the Grenadines	ne	ne	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	na	ne	ne	ne	ne	ne	ne
Trinidad and Tobago	0.00	1.04	0.80	0.00	0.00	0.00	0.62	0.00	0.00	0.00	0.49	0.39	1.56	0.61	0.00	0.27	0.31	1.03	0.58
South America	0.50	0.48	0.54	0.50	0.49	0.47	0.48	0.50	0.56	0.58	0.56	0.59	0.59	0.62	0.62	0.60	0.63	0.70	0.70
Argentina	0.30	0.56	0.48	0.36	0.50	0.41	0.45	0.49	0.80	0.57	0.73	0.70	0.82	0.79	0.80	0.90	0.99	1.07	1.19
Bolivia	1.56	0.00	1.04	0.84	0.00	0.00	0.99	0.00	1.57	0.00	1.74	0.93	2.53	0.44	2.26	1.30	3.62	3.47	1.06
Brazil	0.52	0.49	0.49	0.48	0.50	0.45	0.48	0.50	0.51	0.58	0.54	0.52	0.54	0.54	0.61	0.53	0.57	0.67	0.65
Chile	0.73	0.36	1.12	0.72	0.86	0.66	0.85	0.91	0.73	0.81	0.64	0.79	0.91	1.08	0.87	1.26	1.20	1.55	1.34
Colombia	0.70	0.47	0.48	0.67	0.12	0.62	0.20	0.65	0.72	0.73	0.73	0.67	0.96	0.81	1.00	1.03	1.06	1.05	0.95

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Ecuador	1.02	0.00	0.68	0.00	0.75	1.71	1.20	0.00	1.49	1.43	1.38	0.91	2.05	0.86	1.67	1.15	2.34	1.47	1.20
Guyana	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	ne	ne	ne	ne
Paraguay	1.21	ne	0.00	ne	ne	3.13	ne	0.00	1.85	1.67	3.39	0.00	1.39	2.41	4.49	1.72	1.55	2.26	1.36
Peru	0.00	0.47	0.52	2.21	0.79	0.75	0.00	0.75	0.94	0.78	1.16	1.35	1.52	1.55	2.51	1.80	1.85	2.70	2.57
Suriname	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	ne
Uruguay	0.92	0.30	0.63	0.91	0.28	0.87	0.41	0.00	0.79	0.53	0.51	1.89	1.06	0.84	1.02	1.09	1.65	1.40	0.93
Venezuela	0.60	0.77	0.80	0.49	0.26	0.67	0.22	0.52	0.59	0.48	0.38	0.57	0.54	0.60	0.73	0.60	0.72	0.68	0.78
Europe	0.87	0.88	0.88	0.90	0.92	0.91	0.90	0.94	0.98	1.03	1.05	1.07	1.07	1.12	1.13	1.16	1.17	1.17	1.18
EU	0.94	0.95	0.95	0.97	0.98	0.98	0.97	1.01	1.05	1.10	1.12	1.14	1.14	1.18	1.21	1.23	1.25	1.27	1.28
Austria	0.97	1.26	1.08	1.08	1.26	1.16	0.97	1.20	1.31	1.34	1.48	1.61	1.59	1.57	2.04	2.04	2.08	2.13	2.22
Belgium	1.22	1.03	1.28	1.32	1.12	1.30	1.23	1.39	1.59	1.77	1.76	1.88	1.90	2.02	2.07	2.14	2.26	2.50	2.42
Bulgaria	0.51	0.18	0.27	0.43	0.52	0.42	0.36	0.42	0.35	0.31	0.63	0.54	0.54	0.49	0.47	0.72	0.64	0.89	0.95
Croatia	0.24	0.25	0.29	0.17	0.05	0.07	0.25	0.34	0.47	0.59	0.38	0.48	0.60	0.53	0.89	0.71	0.98	0.93	1.15
Cyprus	0.00	0.55	2.19	0.55	1.39	0.00	2.21	0.76	1.02	0.82	0.71	1.65	1.20	1.27	1.60	1.84	2.70	1.62	2.48
Czech Republic	0.45	0.35	0.44	0.31	0.45	0.54	0.42	0.47	0.69	0.54	0.77	0.67	0.80	0.66	0.93	0.89	0.95	1.15	1.17
Denmark	1.40	1.70	1.39	1.45	1.78	1.72	1.61	1.81	1.95	2.05	2.21	2.36	2.16	2.24	2.41	2.74	2.65	2.81	2.93
Estonia	0.71	0.75	0.64	0.60	0.47	0.29	0.29	0.79	0.66	0.96	0.94	1.14	1.32	1.27	1.59	1.65	2.28	2.28	2.49
Finland	0.90	1.16	1.10	0.96	1.30	1.22	1.19	1.32	1.02	1.22	1.28	1.48	1.66	1.65	1.78	1.80	1.88	2.02	2.01
France	1.03	1.00	1.01	1.00	1.01	1.07	1.04	1.05	1.15	1.21	1.23	1.26	1.28	1.41	1.45	1.48	1.53	1.65	1.61

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Germany	1.00	1.02	1.03	1.09	1.09	1.10	1.09	1.19	1.24	1.29	1.30	1.40	1.44	1.49	1.65	1.66	1.67	1.71	1.76
Greece	0.65	0.59	0.68	0.55	0.80	0.84	0.78	0.87	0.86	1.01	1.10	0.92	1.14	1.21	1.42	1.41	1.59	1.81	2.06
Hungary	0.54	0.45	0.65	0.48	0.54	0.82	0.67	0.75	0.85	0.86	0.95	0.87	0.95	0.95	1.07	1.06	1.34	1.54	1.39
Ireland	0.87	1.19	1.31	1.20	0.84	0.94	1.10	1.20	1.49	1.32	1.66	1.52	1.86	1.67	1.87	2.08	2.21	2.25	1.99
Italy	0.80	0.85	0.92	0.86	0.83	0.97	1.03	0.89	1.02	1.15	1.19	1.27	1.29	1.37	1.48	1.44	1.51	1.59	1.72
Latvia	0.24	0.19	0.69	0.44	0.25	0.00	0.41	0.00	0.67	0.79	1.39	0.61	0.49	0.34	0.72	0.39	0.74	0.95	0.59
Lithuania	0.20	0.00	0.33	0.57	0.14	0.28	0.38	0.27	0.27	0.55	0.44	0.45	0.27	0.42	0.59	0.81	1.52	1.18	1.24
Luxembourg	0.00	2.15	0.00	0.00	0.00	0.90	0.79	0.59	1.21	1.90	0.75	0.71	1.63	2.12	2.00	2.22	1.64	1.73	2.43
Malta	0.00	3.33	0.00	1.47	0.00	4.41	1.39	2.99	0.00	1.41	2.14	1.88	2.43	0.91	1.83	1.00	0.00	1.61	1.67
Netherlands	1.54	1.66	1.50	1.62	1.65	1.56	1.63	1.80	1.82	1.91	2.09	2.18	2.21	2.13	2.41	2.54	2.55	2.62	2.55
Poland	0.29	0.39	0.36	0.36	0.39	0.36	0.35	0.40	0.47	0.49	0.52	0.54	0.50	0.59	0.61	0.69	0.77	0.83	0.88
Portugal	0.63	0.72	0.70	0.80	0.63	0.74	0.90	0.75	1.08	1.01	1.20	1.35	1.18	1.18	1.24	1.26	1.41	1.42	1.52
Romania	0.27	0.31	0.34	0.26	0.33	0.27	0.51	0.28	0.63	0.47	0.54	0.42	0.44	0.33	0.40	0.59	0.63	0.96	0.95
Slovakia	0.42	0.39	0.13	0.24	0.19	0.39	0.26	0.39	0.54	0.44	0.55	0.69	0.58	0.45	0.80	0.62	0.73	0.89	0.83
Slovenia	0.53	0.67	0.62	0.51	0.19	0.61	0.55	0.79	0.64	0.68	1.36	0.88	0.97	0.94	1.22	0.73	1.41	1.52	1.72
Spain	0.74	0.65	0.75	0.79	0.80	0.79	0.87	0.91	1.02	1.10	0.99	1.23	1.13	1.30	1.40	1.44	1.53	1.59	1.62
Sweden	1.22	1.38	1.40	1.36	1.24	1.51	1.31	1.57	1.69	1.64	1.62	1.73	1.78	1.84	2.12	2.03	2.13	2.17	2.32
United Kingdom	1.30	1.35	1.32	1.38	1.41	1.38	1.43	1.54	1.58	1.66	1.68	1.76	1.86	1.88	1.94	2.04	2.12	2.19	2.25
Other Europe	0.61	0.67	0.66	0.67	0.73	0.68	0.72	0.76	0.84	0.88	0.97	1.01	1.02	1.11	1.06	1.14	1.16	1.16	1.12

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Albania	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.89	0.00	0.00	1.33	2.11	0.00	0.46	0.80	0.00	0.00	0.21
Andorra	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Belarus	0.07	0.38	0.14	0.59	0.35	0.65	0.51	0.19	0.37	0.18	0.19	0.45	0.42	0.56	0.60	0.84	1.42	1.76	1.49
Bosnia and Herzegovina	0.00	0.00	0.00	0.00	0.00	0.00	1.45	0.00	0.44	0.57	0.66	0.28	0.40	0.18	0.43	0.00	0.46	0.53	0.48
Holy See (Vatican City)	ne	ne	ne	ne	ne	na	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Iceland	2.97	2.68	2.22	1.06	2.06	2.14	2.66	1.76	2.76	2.79	2.07	3.27	2.99	3.45	3.88	3.07	4.28	3.20	3.48
Kosovo	na	na	na	na	na	na	na	na	na	na	na	na	0.00	0.00	0.48	0.00	0.88	0.00	0.41
Liechtenstein	ne	0.00	ne	ne	0.00	ne	ne	0.00	2.08	1.56	3.17	1.79	0.00	4.55	2.20	0.00	1.19	1.23	1.00
Macedonia	1.68	0.53	0.70	0.00	0.00	0.50	0.00	0.48	0.28	0.25	0.56	0.48	0.00	0.55	0.58	0.32	1.28	0.55	1.31
Moldova	0.00	0.00	0.00	0.45	0.00	0.00	0.43	0.00	0.00	0.57	1.02	1.10	1.33	1.70	1.68	0.28	1.48	0.25	1.48
Monaco	0.00	0.00	4.35	0.00	ne	0.00	2.78	0.00	4.00	0.00	1.35	1.37	2.44	4.00	1.12	5.61	5.62	2.75	0.94
Montenegro[a]	na	na	na	na	na	na	na	na	na	na	na	0.79	0.00	0.70	0.52	0.44	1.46	0.62	1.10
Norway	1.14	1.07	1.21	1.16	1.57	1.42	1.37	1.34	1.61	1.53	1.69	1.50	1.67	1.62	1.84	1.84	2.06	2.25	2.12
Russia	0.25	0.31	0.26	0.26	0.26	0.25	0.24	0.28	0.30	0.35	0.43	0.38	0.37	0.37	0.40	0.46	0.52	0.54	0.57
San Marino	ne	ne	ne	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Serbia[a]	na	na	na	na	na	na	na	na	na	na	na	0.59	0.90	0.75	0.93	0.97	0.78	0.94	1.36
Serbia and Montenegro[b]	0.26	0.11	0.23	0.30	0.31	0.19	0.58	0.28	0.38	0.33	0.45	na	na	na	na	na	na	na	na
Switzerland	1.70	1.88	1.85	1.81	1.93	1.99	2.12	2.12	2.21	2.29	2.28	2.40	2.44	2.65	2.53	2.75	2.87	2.88	2.65
Turkey	0.36	0.34	0.29	0.29	0.40	0.34	0.42	0.45	0.58	0.48	0.51	0.68	0.61	0.77	0.61	0.73	0.65	0.75	0.78

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Ukraine	0.10	0.09	0.13	0.21	0.11	0.06	0.17	0.17	0.15	0.21	0.22	0.27	0.35	0.31	0.41	0.52	0.52	0.58	0.69
Middle East	0.91	0.87	0.87	0.79	0.85	0.94	0.82	0.86	0.87	0.87	0.91	0.87	0.91	0.97	1.03	0.97	0.99	1.11	1.34
Armenia	0.24	0.55	0.84	0.00	1.28	0.45	0.44	0.81	0.94	1.63	2.05	1.27	0.98	0.74	1.83	2.06	2.66	4.11	2.73
Azerbaijan	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.00	0.46	0.26	0.20	0.52	0.00	0.65	0.94	1.03	1.86	2.88
Bahrain	0.00	0.00	0.00	1.01	0.00	0.00	0.00	0.00	0.00	0.48	0.40	0.00	0.00	0.00	0.69	0.33	0.00	0.51	1.92
Gaza Strip	ne	ne	ne	0.00	ne	ne	0.00	0.00	0.00	1.54	0.00	0.97	0.00	0.00	0.00	0.00	1.49	0.00	0.00
Georgia	0.38	0.76	0.00	0.00	0.30	0.30	0.29	0.00	0.91	0.18	0.55	0.81	0.73	0.32	2.34	1.56	3.33	2.95	4.30
Iran	0.24	0.19	0.85	0.14	0.28	0.58	0.39	0.61	0.38	0.35	0.50	0.61	0.53	0.61	0.60	0.53	0.64	0.75	0.93
Iraq	1.05	0.00	0.00	0.00	1.01	0.00	0.00	0.74	0.00	0.56	0.00	0.67	0.00	0.21	0.57	0.47	0.33	0.96	0.84
Israel	1.20	1.20	1.19	1.16	1.22	1.32	1.14	1.20	1.31	1.50	1.46	1.35	1.66	1.70	1.93	1.96	1.78	1.89	2.06
Jordan	0.23	0.40	0.00	0.00	0.31	0.32	0.28	0.36	0.75	0.29	0.49	0.49	0.86	0.61	0.61	0.73	0.67	0.59	0.73
Kuwait	0.17	0.17	0.31	0.58	0.17	0.00	0.17	0.29	0.68	0.49	0.24	0.75	0.45	0.47	0.81	0.88	0.97	0.62	1.27
Lebanon	2.26	1.32	0.65	0.00	0.42	0.59	0.59	0.48	0.29	0.51	0.86	0.71	0.46	1.47	1.63	0.93	0.67	0.66	1.11
Oman	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.75	0.94	1.09	0.40	0.52	1.17	0.43	0.77	0.43	0.41	0.79	0.77
Qatar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66	1.06	0.40	0.71	1.00	0.40	1.82	1.93	1.48	0.99	1.83	2.38
Saudi Arabia	0.32	0.21	0.27	0.40	0.22	0.33	0.59	0.46	0.42	0.36	0.45	0.53	0.68	0.87	1.30	1.50	1.53	1.71	2.17
Syria	0.88	0.00	0.00	0.76	0.71	1.65	0.77	0.00	1.00	0.41	0.43	0.40	0.92	0.36	1.50	0.00	0.72	0.81	0.50
United Arab Emirates	1.44	0.53	0.00	0.00	0.00	0.40	0.19	0.38	0.48	0.25	0.94	0.39	0.74	1.25	0.90	1.00	0.82	1.17	1.30
West Bank	0.00	0.00	0.00	0.00	0.00	0.00	1.45	0.00	1.23	0.00	0.00	0.00	0.67	0.00	0.47	0.00	0.00	0.37	1.52

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Yemen	0.00	0.00	0.00	0.00	0.00	0.00	2.50	2.08	0.00	0.00	1.03	1.09	0.00	0.60	0.00	0.00	0.38	0.96	0.48
Africa	0.46	0.44	0.51	0.39	0.41	0.44	0.49	0.40	0.54	0.55	0.57	0.64	0.71	0.65	0.72	0.71	0.76	0.82	0.78
Algeria	0.26	0.26	0.68	0.00	0.19	0.32	0.77	0.00	0.26	0.40	0.55	0.34	0.64	0.55	0.51	0.33	0.53	0.45	0.47
Angola	ne	ne	ne	ne	ne	ne	ne	ne	ne	3.33	0.00	ne	0.00	0.00	0.00	0.00	0.00	1.54	1.00
Benin	0.00	0.00	0.00	0.00	0.00	1.30	2.35	1.06	0.82	0.85	0.00	1.12	0.00	0.00	0.00	0.76	0.94	0.53	1.03
Botswana	1.09	1.18	0.00	1.90	0.00	0.00	0.00	0.63	0.00	1.06	0.37	0.88	0.00	0.00	0.83	2.37	1.07	0.61	1.66
Burkina Faso	0.00	1.01	0.00	0.00	1.19	0.00	0.88	0.58	0.00	0.60	0.85	0.43	0.75	1.01	0.34	0.86	1.93	0.25	1.77
Burundi	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	ne	0.00	0.00	0.00
Cameroon	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.77	0.00	0.00	0.17	0.17	0.31	0.72	0.64	0.36	0.81	0.74
Cape Verde	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	0.00
Central African Republic	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	2.78	0.00	0.00
Chad	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	ne	ne	3.10	ne	ne	ne	ne	3.03
Comoros	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Congo, Democratic Republic of the	0.00	0.00	5.71	0.00	0.00	ne	ne	0.00	0.00	0.00	0.00	0.00	1.11	2.61	1.38	0.63	1.46	0.96	1.81
Congo, Republic of the	0.00	ne	0.00	0.00	ne	ne	0.00	0.00	0.00	1.32	0.00	0.00	0.00	1.03	1.85	0.84	0.70	0.68	1.53
Côte d'Ivoire	0.00	0.00	0.00	0.53	0.46	0.83	1.54	0.18	0.00	0.00	0.00	0.91	0.77	0.76	0.00	0.67	0.81	0.34	0.59
Djibouti	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Egypt	0.49	0.25	0.53	0.23	0.31	0.19	0.39	0.29	0.54	0.47	0.44	0.66	0.63	0.44	0.55	0.59	0.73	0.84	0.71
Equatorial Guinea	ne	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Eritrea	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	2.47	0.00	ne	ne	ne	ne	ne	ne	ne
Ethiopia	0.42	0.00	0.00	0.00	0.42	0.00	0.00	0.57	0.85	0.74	0.73	0.54	0.17	0.59	0.27	0.33	0.53	0.92	0.82
Gabon	0.00	3.57	1.45	0.00	2.08	0.00	0.00	0.00	0.00	0.00	0.89	0.00	0.97	0.90	0.92	1.99	3.94	0.65	2.69
Gambia, The	0.00	1.54	4.48	1.39	0.19	0.00	0.00	0.00	0.00	2.38	1.82	1.08	1.85	0.90	0.90	1.09	2.48	6.57	1.21
Ghana	0.61	0.48	1.01	0.00	0.47	0.00	0.99	0.00	0.34	0.30	0.28	0.00	0.64	0.27	1.44	0.93	1.58	0.77	0.90
Guinea	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.15
Guinea-Bissau	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	0.00	0.00
Kenya	0.49	1.73	0.35	2.45	1.18	1.23	1.42	0.76	0.86	0.59	0.63	0.92	1.67	1.31	2.29	1.66	1.48	1.64	1.72
Lesotho	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	0.00	ne
Liberia	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	6.45
Libya	0.00	0.00	0.00	1.75	0.00	0.00	0.00	1.22	0.00	0.00	1.42	0.00	0.47	0.00	0.44	0.00	1.07	0.25	0.99
Madagascar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78	0.00	0.00	2.13	1.02	0.00	1.03	1.01	1.15	1.07	0.36	1.20
Malawi	3.09	0.00	2.60	0.95	0.92	0.85	0.00	0.73	0.00	0.63	1.10	0.81	0.74	0.77	1.29	2.25	1.76	1.52	2.64
Mali	0.00	5.26	1.25	0.00	0.00	1.67	1.61	0.00	0.00	0.00	0.00	0.00	0.68	2.94	1.71	1.49	0.89	1.99	0.98
Mauritania	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	ne	ne	ne	ne	ne	0.00	0.00	0.00	0.00
Mauritius	ne	ne	0.00	0.00	0.00	0.00	1.27	0.00	0.00	1.08	2.33	0.00	0.00	0.00	0.00	1.96	0.00	1.08	1.09
Morocco	0.36	0.44	0.47	0.34	0.08	0.38	0.54	0.31	0.14	0.15	0.56	0.32	0.28	0.20	0.61	0.41	0.79	0.85	0.79
Mozambique	ne	0.00	0.00	0.00	2.78	0.00	0.00	1.72	2.90	0.00	1.01	1.66	0.79	1.35	2.21	2.49	5.26	1.48	0.88
Namibia	2.38	0.00	1.39	2.27	0.00	0.00	0.00	0.00	4.84	0.89	2.83	2.00	1.12	0.99	1.09	2.26	0.00	1.48	1.39

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Niger	0.00	0.00	1.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.56	0.00	0.00	1.82	0.78	0.00	0.00	3.13	0.76
Nigeria	0.00	0.19	0.29	0.09	0.17	0.18	0.08	0.21	0.24	0.12	0.17	0.34	0.55	0.32	0.42	0.40	0.32	0.09	0.48
Rwanda	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	0.00	1.56	1.22	0.79	1.43	0.65	0.94	1.32
São Tomé and Príncipe	ne	na	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	na	ne	ne	na	ne	ne	ne
Senegal	1.80	0.46	0.00	0.36	0.00	1.42	0.00	0.30	0.00	0.58	0.68	0.00	0.27	1.04	0.00	0.75	1.06	0.53	0.84
Seychelles	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	0.00	ne	0.00	0.00	0.00	2.22	2.44
Sierra Leone	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	0.00	2.44	2.50	7.94
Somalia	ne	ne	ne	ne	ne	na	ne	ne	ne	na	ne	na	ne	ne	ne	ne	ne	ne	ne
South Africa	0.49	0.45	0.57	0.43	0.62	0.73	0.69	0.64	0.97	1.02	0.97	1.00	1.25	1.18	1.32	1.32	1.28	1.63	1.37
South Sudan	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	ne	ne	ne	ne
Sudan	1.05	0.00	0.00	0.00	1.98	0.00	0.00	1.46	0.00	0.00	0.00	1.19	0.00	0.81	0.24	0.20	1.47	0.32	0.54
Swaziland	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	0.00	ne	3.03	1.75	0.00	1.41	0.00	0.00	1.30
Tanzania	1.22	1.18	0.00	0.41	0.82	1.33	0.37	0.58	0.54	0.46	0.36	1.35	1.21	1.19	1.02	1.77	1.03	1.58	1.00
Togo	0.00	0.00	0.00	0.00	0.00	0.00	ne	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tunisia	0.00	0.80	0.40	0.13	0.12	0.10	0.33	0.15	0.23	0.23	0.04	0.44	0.37	0.43	0.40	0.47	0.51	0.28	0.44
Uganda	0.00	0.64	0.00	1.60	1.42	0.98	0.54	0.00	1.66	0.50	0.94	0.96	1.32	1.45	1.34	1.24	1.42	1.40	0.88
Western Sahara	na	na	na	na	na	na	ne	na	ne	na	na	na	ne	ne	ne	na	ne	na	na
Zambia	0.00	0.00	0.97	0.00	2.63	0.00	1.04	0.00	0.00	0.00	1.94	1.16	1.92	2.06	0.43	2.57	0.66	2.14	1.79
Zimbabwe	0.30	0.00	0.32	0.54	0.29	0.96	0.38	0.55	0.00	0.41	1.41	0.94	1.46	2.42	0.00	2.50	0.78	2.49	2.03

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Asia	0.48	0.51	0.51	0.49	0.50	0.51	0.55	0.57	0.60	0.58	0.58	0.62	0.62	0.64	0.66	0.70	0.78	0.82	0.85
Afghanistan	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	0.00	0.00	0.00	0.00	1.59	5.49
Bangladesh	0.61	0.00	0.39	0.18	0.51	0.33	0.00	0.61	1.21	0.64	0.65	0.74	0.44	0.42	0.42	0.40	0.79	0.78	0.78
Bhutan	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	2.94	ne	ne	ne	0.00	0.00	0.00	1.56	0.00
Brunei	2.70	0.00	0.00	0.00	2.04	0.00	2.86	0.00	0.00	0.00	1.43	0.00	2.44	0.00	0.00	0.81	1.10	0.45	1.31
Burma	ne	ne	ne	ne	ne	ne	ne	2.94	0.00	1.12	0.00	0.00	0.00	0.00	0.93	0.00	0.95	0.00	0.81
Cambodia	ne	ne	ne	ne	ne	ne	0.00	0.00	0.00	2.41	0.92	2.13	0.00	4.38	1.72	1.07	3.03	3.18	1.83
China	0.31	0.40	0.38	0.38	0.38	0.35	0.47	0.52	0.49	0.49	0.51	0.55	0.56	0.60	0.64	0.73	0.85	0.94	1.01
India	0.33	0.31	0.40	0.38	0.42	0.48	0.45	0.59	0.63	0.61	0.68	0.68	0.67	0.65	0.60	0.58	0.59	0.61	0.61
Indonesia	0.89	0.52	0.53	0.34	0.73	0.83	0.61	0.27	0.54	0.56	0.42	0.75	1.04	1.47	0.65	0.66	0.82	0.61	0.73
Japan	0.59	0.61	0.63	0.56	0.55	0.62	0.61	0.58	0.65	0.62	0.63	0.67	0.65	0.68	0.68	0.72	0.72	0.76	0.78
Kazakhstan	0.75	0.53	0.00	0.48	0.00	0.84	0.00	0.00	0.30	0.00	0.64	0.00	0.29	0.00	0.44	0.19	0.58	0.21	0.46
Kyrgyzstan	0.00	ne	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	1.39	0.00	0.00	1.52	0.00	1.01	2.08	3.25
Laos	ne	ne	ne	ne	ne	ne	ne	2.63	0.00	1.52	2.22	1.37	0.83	0.99	1.65	0.00	2.12	0.53	0.55
Malaysia	0.62	0.27	0.45	0.39	0.37	0.36	0.46	0.54	0.81	0.36	0.34	0.67	0.63	0.64	0.63	0.69	0.71	0.82	0.95
Maldives	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Mongolia	2.22	0.00	0.00	0.00	3.70	0.00	1.92	0.00	3.41	1.02	1.68	1.43	0.00	0.40	0.78	0.00	0.66	0.30	0.93
Nepal	0.00	0.00	0.68	0.00	0.65	1.08	0.00	1.04	0.31	0.00	1.01	0.72	0.00	0.17	0.45	0.28	1.12	1.40	1.17
North Korea	ne	ne	0.00	ne	ne	0.00	2.56	ne	0.80	2.16	1.40	0.00	1.61	0.00	0.00	ne	0.00	0.00	0.00

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Pakistan	0.00	0.10	0.09	0.27	0.00	0.37	0.01	0.48	0.56	0.52	0.27	0.67	0.51	0.50	0.64	0.66	0.87	1.13	1.04
Papua New Guinea	0.00	0.00	0.00	0.93	0.00	0.98	0.00	0.00	0.00	1.47	0.00	0.00	0.76	0.95	0.00	0.00	1.49	2.31	1.28
Philippines	1.81	0.63	1.10	0.84	0.36	0.47	0.70	0.79	0.62	0.92	1.28	1.54	0.96	2.06	1.49	1.75	1.84	1.28	1.30
Singapore	0.96	1.02	0.87	0.70	0.78	1.11	1.10	1.26	1.40	1.71	1.43	1.57	2.16	2.22	2.51	2.40	3.00	2.80	3.02
South Korea	0.50	0.44	0.53	0.54	0.69	0.61	0.76	0.69	0.68	0.81	0.73	0.74	0.75	0.84	0.90	0.97	1.02	1.05	1.01
Sri Lanka	0.00	0.38	1.18	0.48	1.16	0.00	0.71	1.46	0.76	0.49	0.89	0.75	1.00	0.68	1.16	0.69	1.45	1.16	1.76
Taiwan	0.39	0.53	0.36	0.60	0.53	0.54	0.54	0.66	0.70	0.70	0.79	0.78	0.75	0.76	0.69	0.74	0.83	0.81	0.79
Tajikistan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.33	0.00	0.00	0.00	0.00	0.00	1.16	0.00	1.25
Thailand	0.68	0.92	0.19	0.53	0.71	0.32	0.36	0.57	0.90	0.94	0.84	0.91	0.69	0.86	0.66	0.91	0.97	0.88	0.93
Timor-Leste	na	na	na	na	na	na	na	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Turkmenistan	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00	0.00	ne	0.00
Uzbekistan	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46	0.20	0.22	0.39	0.37	0.36	0.00	0.00	0.20
Vietnam	0.34	0.59	0.65	0.72	0.52	0.98	0.24	0.31	0.91	0.91	0.97	0.67	1.24	0.69	1.15	0.91	1.25	0.78	0.90
Australia and Oceania	1.24	1.17	1.30	1.16	1.15	1.13	1.23	1.22	1.34	1.32	1.44	1.64	1.69	1.75	1.84	1.91	1.96	2.08	2.12
Australia	1.27	1.21	1.32	1.22	1.15	1.18	1.29	1.23	1.42	1.37	1.48	1.70	1.77	1.84	1.91	1.99	2.05	2.15	2.23
Cook Islands	ne	ne	ne	ne	ne	na	ne	na	na	ne	ne	ne	na	ne	ne	ne	ne	ne	ne
Fiji	ne	0.00	2.63	0.00	0.00	2.33	0.00	0.00	0.00	0.99	0.00	1.27	2.46	1.59	2.56	0.74	0.68	0.54	1.30
Kiribati	ne	na	na	na	na	ne	na	ne	na	na	ne	ne	na	ne	ne	na	ne	ne	ne
Marshall Islands	ne	ne	ne	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne

Region, country, or economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Micronesia, Federated States of	ne	ne	ne	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Nauru	na	ne	ne	na	na	ne	na	na	ne	ne	ne	na	na	ne	na	ne	ne	ne	ne
New Zealand	1.18	1.11	1.24	0.95	1.19	0.99	1.00	1.26	1.04	1.20	1.33	1.40	1.44	1.49	1.73	1.71	1.81	1.97	1.69
Niue	na	na	na	na	na	na	na	na	na	ne	ne	ne	na	na	na	na	na	na	ne
Palau	ne	ne	ne	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Samoa	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Solomon Islands	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Tonga	na	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne
Tuvalu	na	na	na	na	na	ne	na	ne	ne	na	ne	ne	ne	ne	ne	na	ne	ne	ne
Vanuatu	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	ne	0.00

na = not applicable; no articles are assigned to the entity. ne = not eligible; there are fewer than 30 articles available to make a calculation.

EU = European Union.

[a] Beginning in 2006, Serbia and Montenegro represented individual countries.

[b] Serbia and Montenegro represented a single country for data purposes from 1992 to 2006.

Note(s)

Articles are classified by the publication year and are assigned to a region, country, or economy on the basis of the institutional address(es) listed in the article. Citation data are based on all citations made to articles in their publication year and all following years and are normalized by subfield and publication year to allow for comparisons across subfields and over time, resulting in the world-level standing at 1.00% for each subfield and year. A minimum 2-year citation window is needed for a relative citation (RC) score to be computed. This results in scores regarding highly cited articles not being computed after 2014 because the citation window for more recent years is not yet complete. The share of articles in the top 1% is computed as follows: $Sx = HCPx/Px$, where Sx is the share of output from country x in the top 1% most-cited articles; $HCPx$ is the number of articles from country x that are among the top 1% of most-cited articles (using full counting, with the exception of papers at the limit of the top 1%, which are fractioned so the world average can stand at 1.00%); and Px is the total number of papers from country x with an RC score, which excludes articles released after 2014 and unclassified publications.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017.

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