

Appendix table 5-31

S&E articles in computer sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
World	4,399.0	4,801.0	5,039.0	5,422.0	5,625.0	5,527.0	6,139.0	6,220.0	6,521.0	7,307.0	7,573.0	8,088.0	7,821.0	8,638.0	9,266.0
North America															
Canada	196.7	192.2	177.8	228.4	214.9	228.4	277.0	265.1	295.2	341.2	351.0	358.9	398.0	368.2	371.5
Mexico	6.2	7.5	5.3	14.3	12.7	12.0	21.3	17.8	10.9	16.2	24.3	16.0	28.5	25.4	25.4
United States	1,924.2	1,948.9	2,039.7	2,070.7	2,027.8	2,012.2	2,173.1	2,248.8	2,332.1	2,533.8	2,398.1	2,282.9	2,188.3	2,171.7	2,253.6
Central America/Caribbean															
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	0.0
Bahamas	0.0	0.0	0.0	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	0.0	0.0	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	0.0
Costa Rica	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	0.0	0.0
Cuba	0.0	0.0	0.5	0.8	1.3	0.0	2.0	0.0	1.5	2.5	2.8	1.3	2.7	4.9	1.8
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	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	0.0
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	0.0	0.0
Guatemala	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	0.0
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	0.0
Honduras	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	0.0	0.0
Jamaica	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	0.0	0.3
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	0.0
Panama	0.0	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	0.0
St. 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	0.0
St. 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	0.0
St. Vincent	0.0	0.0	0.0	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	0.0	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
West Indies Associated States	0.0	0.0	0.0	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 America															
Argentina	5.2	1.2	2.8	1.3	7.8	11.2	3.8	4.1	11.0	8.2	6.5	10.7	11.0	8.8	13.0
Bolivia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brazil	14.7	12.2	19.2	27.8	30.5	34.4	42.7	36.8	45.6	53.5	64.7	51.6	65.4	81.0	84.4
Chile	8.3	7.5	3.2	7.0	12.2	6.3	12.1	11.6	11.3	5.7	13.1	18.9	15.1	10.6	22.2
Colombia	0.0	0.5	2.0	0.8	0.0	1.2	2.8	0.5	0.0	1.5	2.0	6.1	1.9	3.5	10.2
Ecuador	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.5	0.0	0.0	0.0	0.0
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	0.0
Paraguay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.5	0.0
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	0.0
Uruguay	0.0	1.0	1.3	1.0	2.0	2.0	0.8	1.2	1.3	2.5	3.3	2.8	1.3	2.0	0.5
Venezuela	3.0	2.8	2.0	2.2	4.2	3.0	3.2	1.8	1.1	0.3	3.2	3.5	0.6	2.4	1.3

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S&E articles in computer sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Europe															
European Union															
Austria	27.9	31.1	27.2	26.0	41.9	38.0	54.7	41.9	32.9	46.9	54.1	53.0	57.3	62.9	67.9
Belgium	52.6	43.6	46.6	32.8	48.1	50.2	70.6	52.0	61.2	71.6	84.1	81.4	77.5	81.8	84.3
Bulgaria	1.8	7.0	4.7	3.8	5.1	3.3	6.3	5.8	4.5	1.0	1.6	8.0	1.0	10.0	4.5
Cyprus	1.3	1.5	0.5	1.0	2.5	2.9	1.5	1.7	3.0	6.5	5.9	4.3	5.6	6.6	8.9
Czech Republic	10.5	10.9	14.5	20.8	23.1	21.1	30.6	29.7	33.1	33.2	39.5	43.8	50.2	53.2	65.4
Denmark	22.4	23.5	32.2	23.9	34.5	25.6	34.0	31.2	29.1	37.9	39.7	39.2	26.1	33.1	38.3
Estonia	1.0	0.0	0.0	0.0	1.8	2.0	2.5	0.5	0.3	3.2	2.0	3.2	3.0	2.0	3.8
Finland	25.1	31.6	31.7	38.5	42.2	42.9	42.0	36.2	48.5	58.9	60.1	54.6	52.4	56.9	49.6
France	183.1	204.4	209.6	241.3	250.4	275.3	322.2	282.5	289.7	346.4	301.3	383.5	357.4	386.0	443.3
Germany	208.1	234.8	239.6	259.3	269.4	249.9	286.6	256.7	283.3	304.6	296.3	292.6	298.2	320.9	383.0
Greece	28.5	29.7	46.9	48.0	49.2	72.8	73.1	74.7	73.0	95.8	102.4	113.5	105.3	127.1	115.2
Hungary	17.1	32.4	33.6	22.9	26.5	32.8	30.0	16.1	28.4	21.6	26.2	32.5	19.1	28.2	33.9
Ireland	3.2	12.0	10.3	9.2	11.8	13.8	13.7	28.3	40.4	43.2	47.8	34.5	27.7	36.1	25.8
Italy	149.9	184.6	226.6	223.4	235.8	220.5	249.0	233.5	235.2	262.8	285.8	314.0	299.4	301.3	296.1
Latvia	0.5	0.2	2.3	3.3	3.3	0.3	0.7	0.0	1.0	2.2	1.0	3.7	5.3	5.5	3.0
Lithuania	1.5	0.5	0.0	3.0	1.0	1.5	2.2	2.5	2.5	4.7	1.7	5.0	3.5	3.9	3.5
Luxembourg	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.7	1.3	0.3	2.1	2.0	2.8	3.2
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.6	1.0	0.0	0.5
Netherlands	78.5	68.9	76.5	91.7	98.4	87.1	120.3	94.4	114.3	130.1	119.2	127.0	130.1	126.2	151.3
Poland	17.0	32.2	24.1	25.5	35.0	36.7	31.4	41.2	33.5	49.2	31.7	46.8	49.6	65.9	58.1
Portugal	8.7	14.2	12.5	14.8	18.7	18.4	34.2	26.6	27.8	32.0	26.9	37.1	30.8	48.1	41.8
Romania	5.2	6.9	3.5	7.5	10.2	9.0	7.7	10.4	8.2	10.4	11.2	19.2	24.3	31.3	32.1
Slovakia	6.0	5.2	13.3	6.8	10.2	3.7	7.7	11.3	12.8	6.5	8.7	11.9	12.6	15.2	21.0
Slovenia	4.0	8.3	9.2	6.5	10.2	8.0	14.0	10.3	15.5	11.3	17.6	14.4	14.8	18.9	14.5
Spain	72.9	80.1	99.5	121.4	171.8	162.9	172.4	192.7	198.9	215.9	235.0	279.0	325.9	335.3	358.2
Sweden	43.1	60.1	60.2	34.1	55.4	65.1	65.5	55.3	46.1	64.6	54.5	58.4	62.8	61.6	73.1
United Kingdom	206.3	252.6	273.1	272.1	311.0	304.6	324.0	321.2	321.5	426.4	395.5	438.2	364.7	395.2	419.3
Other Europe															
Albania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0
Belarus	0.0	2.3	3.7	2.5	3.0	2.7	3.0	0.3	2.0	1.8	1.0	0.5	1.2	0.3	0.5
Bosnia and Herzegovina	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Croatia	2.2	1.3	1.5	1.0	3.5	1.8	3.9	4.3	2.5	1.3	2.6	1.3	6.9	4.8	4.3
Iceland	1.5	0.3	0.5	0.7	1.8	1.0	1.2	1.1	1.3	0.7	1.0	1.9	2.6	2.7	3.0
Kosovo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liechtenstein	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	0.0
Macedonia	0.0	0.0	1.0	0.0	1.5	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.3	0.5	4.0
Moldova	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.8	0.0	0.0	0.6	0.3	0.8
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	0.0
Montenegro	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	0.0	0.0	0.0	1.0	0.0

Appendix table 5-31

S&E articles in computer sciences, by region/country/economy: 1997–2011

Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eritrea	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	0.0	0.0
Ethiopia	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	0.5	0.0
Gabon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gambia	0.0	0.0	0.0	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	0.0	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	0.0	0.0	0.0	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	0.0
Kenya	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lesotho	0.0	0.0	0.0	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	0.0
Libya	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0
Madagascar	0.0	0.0	0.0	0.0	0.0	0.0	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	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Mali	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0
Mauritius	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	0.0
Morocco	1.0	0.0	2.3	0.0	3.5	1.8	1.0	1.2	0.0	1.5	0.8	3.3	3.6	2.8	2.2
Mozambique	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Namibia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Niger	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	0.0
Nigeria	0.0	0.0	0.0	1.0	1.5	3.0	0.0	2.5	0.0	0.0	0.0	0.5	1.0	0.0	1.8
Rwanda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0
Senegal	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	0.3
Senegambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	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	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	0.0
South Africa	7.8	3.5	6.7	9.5	10.3	10.2	13.8	11.2	12.1	18.3	11.0	16.8	8.2	18.3	12.5
Sudan	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0	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	0.3
Tanzania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.3
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	0.0
Tunisia	5.0	4.0	2.2	2.2	1.7	7.0	4.8	7.2	1.8	2.7	3.5	4.0	3.9	3.8	12.2
Uganda	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.0
Zambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zimbabwe	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	0.0	0.0
Asia															
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	0.0
Armenia	0.0	0.0	0.0	1.0	0.0	0.0	1.0	3.0	0.5	0.0	1.0	1.0	0.0	0.0	0.0
Azerbaijan	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.8	0.0	1.3	0.0	1.8
Bangladesh	1.0	0.5	0.0	1.8	0.0	1.0	1.0	1.7	1.5	0.0	0.0	0.4	1.2	1.0	1.8

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Region/country/economy	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
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	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	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	0.0

NA = not available, country did not exist as such.

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by their year of publication and are assigned to a region/country/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 countries/economies, each country/economy receives fractional credit on the basis of the proportion of its participating institutions). Detail may not add to total because of rounding.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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