





TABLE S5A-32

**S&E articles in all fields combined, by coauthorship attribute and selected region, country, or economy: 1996–2018**

(Whole count of articles)

Country/economy pair	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
With multiple institutions	2,871	3,166	3,498	3,558	3,828	3,907	4,409	5,893	6,987	8,134	9,300	9,933	10,467	10,792	10,633	11,267	11,528	11,800	12,086	12,159	12,433	12,624	12,900
With domestic institutions only	3,274	3,654	3,667	3,691	4,349	4,758	5,371	5,411	6,429	7,471	8,506	8,919	9,522	9,609	9,507	9,297	9,105	8,830	8,518	8,122	7,887	7,588	7,471
With international institutions	1,645	1,752	1,964	1,995	2,201	2,245	2,408	3,058	3,479	3,987	4,675	5,095	5,295	5,942	6,029	6,536	7,140	7,488	7,914	8,115	8,529	8,701	9,029
Ireland																							
Total articles	2,715	2,861	3,073	3,121	3,511	3,630	4,020	4,368	5,357	6,560	6,886	7,802	8,392	9,370	10,195	10,717	10,656	10,891	11,168	11,055	11,712	11,979	12,555
With multiple institutions	1,643	1,785	1,896	1,940	2,066	2,066	2,337	2,943	3,586	4,380	4,713	5,303	5,863	6,520	7,129	7,554	7,785	8,110	8,504	8,647	9,303	9,677	10,339
With domestic institutions only	1,615	1,652	1,746	1,776	2,075	2,235	2,377	2,285	2,828	3,490	3,507	4,011	4,148	4,612	5,032	5,261	4,965	4,855	4,806	4,473	4,527	4,558	4,484
With international institutions	1,063	1,163	1,294	1,301	1,386	1,372	1,615	2,033	2,498	3,022	3,286	3,700	4,184	4,716	5,085	5,366	5,645	6,006	6,334	6,567	7,163	7,400	8,050
Italy																							
Total articles	39,205	40,849	40,359	41,068	42,977	44,290	46,952	51,837	55,089	59,660	63,071	68,379	71,234	74,532	75,978	79,060	84,611	89,440	93,285	95,347	96,822	99,130	100,117
With multiple institutions	24,117	25,049	25,693	26,289	26,247	25,582	28,969	37,038	40,339	43,707	46,656	50,596	52,356	53,517	54,869	58,212	62,768	67,051	71,163	73,720	75,965	78,893	80,653
With domestic institutions only	28,835	29,559	28,374	28,424	30,039	31,453	32,422	34,013	35,503	38,058	39,845	42,331	43,837	45,449	45,104	46,074	48,697	50,586	51,557	51,301	50,518	50,584	49,378
With international institutions	9,893	10,899	11,598	11,963	12,530	12,547	14,225	17,287	19,235	21,211	22,793	25,514	26,826	28,730	30,457	32,548	35,531	38,541	41,498	43,816	46,064	48,122	50,243
Netherlands																							
Total articles	22,274	23,144	23,595	22,597	24,151	23,866	25,363	27,346	29,770	33,139	34,459	36,182	37,760	40,884	42,574	44,222	47,256	48,451	49,833	49,776	50,971	51,708	52,063
With multiple institutions	14,105	14,861	15,591	15,132	15,626	14,478	15,736	20,327	22,893	25,445	26,779	28,299	29,675	31,635	33,325	34,951	38,269	39,466	40,654	41,528	43,116	44,094	45,054
With domestic institutions only	14,578	14,658	14,803	13,865	14,733	14,964	15,413	14,714	15,737	17,804	17,903	18,500	19,124	20,404	20,469	20,915	20,959	20,997	20,950	19,889	19,399	19,063	18,107
With international institutions	7,364	8,193	8,454	8,370	9,190	8,752	9,813	12,290	13,769	15,076	16,280	17,397	18,355	20,262	21,872	23,061	26,078	27,294	28,791	29,798	31,414	32,407	33,713
Poland																							
Total articles	13,210	13,235	13,759	14,428	15,733	17,155	18,612	20,428	22,940	24,627	26,457	26,955	28,730	28,989	30,006	31,313	34,066	36,527	38,877	40,658	43,087	43,663	44,997
With multiple institutions	5,909	6,009	6,348	6,695	7,060	7,348	8,070	11,727	13,313	14,993	16,320	16,480	17,076	16,558	17,056	17,763	19,353	20,891	22,804	24,255	26,377	27,441	28,639
With domestic institutions only	9,340	9,301	9,686	10,139	11,212	12,471	13,584	14,152	16,063	17,331	18,810	18,994	20,660	20,494	21,392	22,271	24,307	26,019	27,378	28,531	29,787	29,390	29,953
With international institutions	3,756	3,883	3,975	4,212	4,431	4,572	4,918	6,103	6,715	7,113	7,480	7,682	7,794	8,259	8,275	8,724	9,568	10,412	11,427	12,058	13,218	14,182	14,950
Portugal																							
Total articles	2,794	3,347	3,602	4,077	4,371	4,903	5,323	6,261	7,068	8,019	9,751	10,372	11,943	13,023	14,492	16,469	18,122	19,601	20,512	21,091	21,238	21,699	22,105
With multiple institutions	1,524	1,807	1,949	2,429	2,617	2,829	3,338	4,539	5,257	5,935	7,341	7,787	9,207	9,864	11,018	12,686	14,227	15,539	16,527	17,089	17,636	18,164	18,734
With domestic institutions only	1,712	2,089	2,254	2,416	2,581	2,983	3,105	3,378	3,752	4,299	5,233	5,591	6,291	7,028	7,725	8,738	9,322	9,944	10,296	10,267	9,739	9,804	9,515
With international institutions	1,069	1,243	1,320	1,627	1,770	1,904	2,198	2,828	3,274	3,678	4,467	4,702	5,590	5,939	6,696	7,675	8,742	9,615	10,183	10,799	11,459	11,858	12,534
Spain																							
Total articles	24,272	26,592	27,081	28,450	29,578	31,026	33,530	36,164	39,487	44,797	49,391	53,473	56,457	60,906	64,100	69,002	73,020	74,310	77,373	76,621	78,642	79,551	79,866
With multiple institutions	13,733	15,450	15,771	16,378	16,731	16,459	18,843	24,874	27,480	31,573	35,184	38,022	40,877	41,990	44,791	49,649	53,277	54,858	58,107	58,613	61,088	62,635	64,179
With domestic institutions only	17,628	19,231	19,226	20,134	20,990	22,482	23,587	23,583	25,657	28,792	31,350	33,405	34,473	36,914	37,736	39,718	41,070	40,549	40,965	39,204	38,900	38,472	37,157
With international institutions	6,338	7,103	7,562	7,902	8,261	8,283	9,737	12,118	13,540	15,658	17,638	19,555	21,466	23,713	26,076	29,004	31,675	33,570	36,257	37,227	39,412	40,683	42,137
Sweden																							
Total articles	16,626	17,293	17,791	18,311	18,822	18,925	19,033	20,312	21,181	23,007	23,486	24,295	24,448	25,984	27,026	28,393	30,531	32,056	34,112	34,828	35,945	36,571	37,012
With multiple institutions	10,870	11,572	12,072	12,491	12,152	11,764	11,899	14,865	15,685	17,250	17,767	18,732	18,891	19,628	20,553	21,843	23,769	25,457	27,104	28,422	29,795	30,679	31,344



TABLE S5A-32

## S&amp;E articles in all fields combined, by coauthorship attribute and selected region, country, or economy: 1996–2018

(Whole count of articles)

Country/economy pair	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
With international institutions	3,628	3,762	3,869	3,900	4,106	4,134	4,336	5,239	5,324	5,622	5,886	6,198	6,389	6,417	6,886	7,353	7,532	7,808	8,184	8,866	9,087	9,193	9,790
Saudi Arabia																							
Total articles	1,926	1,975	1,998	1,806	1,898	1,850	1,939	2,232	2,199	2,276	2,489	2,719	3,083	4,033	5,736	8,419	10,846	13,234	16,053	17,976	19,028	19,806	21,361
With multiple institutions	1,113	1,080	1,136	1,002	950	853	931	1,276	1,323	1,433	1,536	1,684	1,971	2,497	3,969	6,367	8,574	10,503	13,258	15,188	16,222	16,826	18,139
With domestic institutions only	1,400	1,455	1,469	1,323	1,354	1,344	1,406	1,416	1,436	1,389	1,543	1,597	1,718	2,170	2,481	2,907	3,259	3,916	4,184	4,297	4,458	4,830	5,296
With international institutions	487	506	508	463	522	485	521	776	734	821	900	1,044	1,304	1,820	3,203	5,456	7,548	9,289	11,845	13,665	14,555	14,951	16,037
Egypt																							
Total articles	2,908	2,860	2,967	2,918	3,242	3,482	3,652	4,245	4,462	4,615	5,080	5,758	6,386	8,007	8,781	10,030	11,546	12,474	13,770	14,850	16,681	17,348	19,933
With multiple institutions	1,500	1,408	1,502	1,431	1,533	1,471	1,719	2,461	2,574	2,858	3,209	3,612	4,049	5,220	5,943	7,068	8,309	9,259	10,575	11,497	13,071	13,831	16,094
With domestic institutions only	1,959	1,967	2,081	2,082	2,296	2,626	2,649	2,840	2,989	2,952	3,285	3,754	4,031	4,955	5,216	5,708	6,443	6,375	6,612	7,098	8,103	8,212	9,712
With international institutions	905	860	854	778	903	828	974	1,367	1,425	1,620	1,727	1,911	2,272	2,959	3,451	4,205	5,014	6,056	7,136	7,740	8,556	9,121	10,176
South Africa																							
Total articles	4,540	4,634	4,722	4,857	4,768	4,938	5,354	5,554	6,348	6,876	7,618	8,043	8,647	9,706	10,419	11,547	12,943	13,979	15,303	16,306	18,178	19,395	20,203
With multiple institutions	2,281	2,480	2,547	2,608	2,507	2,323	2,637	3,439	4,079	4,532	4,911	5,423	5,762	6,379	6,790	7,682	8,704	9,604	10,731	11,592	13,134	14,129	15,016
With domestic institutions only	3,251	3,237	3,231	3,282	3,228	3,447	3,656	3,258	3,677	3,889	4,330	4,359	4,740	5,280	5,676	6,087	6,722	7,032	7,473	7,861	8,600	9,060	8,951
With international institutions	1,252	1,323	1,415	1,460	1,481	1,466	1,659	2,237	2,615	2,906	3,218	3,549	3,818	4,365	4,646	5,379	6,139	6,897	7,788	8,387	9,496	10,295	11,188
China																							
Total articles	36,785	41,056	47,555	49,356	57,857	75,350	79,968	95,154	130,260	177,423	203,829	231,542	267,680	307,974	338,291	355,697	360,520	393,981	427,736	448,690	483,862	523,937	584,407
With multiple institutions	12,682	14,622	16,309	17,801	21,096	21,440	27,548	41,622	59,649	88,046	104,502	122,781	143,270	167,140	187,203	202,473	214,364	239,931	267,330	289,481	321,398	357,068	407,749
With domestic institutions only	30,745	34,287	40,081	41,700	49,059	66,244	68,854	79,618	111,178	153,751	176,284	199,024	230,366	264,531	287,602	298,842	297,573	322,478	347,942	359,998	383,921	411,435	456,040
With international institutions	5,674	6,485	7,167	7,222	8,403	8,753	10,669	14,837	18,315	22,081	25,753	29,961	34,844	40,873	46,728	52,726	58,897	68,897	78,620	87,808	98,327	110,727	126,868
India																							
Total articles	21,021	21,475	22,040	23,215	23,904	25,030	27,139	30,399	32,730	37,354	42,953	48,449	54,370	60,763	69,237	81,974	89,015	95,633	106,612	112,539	123,977	134,241	150,013
With multiple institutions	9,018	9,210	9,757	9,954	9,871	9,759	10,744	15,674	17,648	20,585	23,828	27,067	30,635	33,942	38,437	45,895	50,280	54,402	60,753	63,566	70,555	75,945	85,707
With domestic institutions only	17,540	18,058	18,237	19,499	19,997	21,160	22,832	24,462	26,266	30,034	34,447	39,124	44,122	49,311	56,272	67,140	73,022	78,230	87,512	92,488	101,861	110,240	123,027
With international institutions	3,172	3,145	3,529	3,492	3,721	3,702	4,164	5,573	6,086	6,914	7,991	8,761	9,675	10,952	12,419	14,233	15,474	16,943	18,787	19,856	21,815	23,694	26,684
Japan																							
Total articles	94,961	99,009	99,963	102,158	105,145	104,548	107,487	111,984	115,421	124,561	125,860	123,841	122,288	123,577	124,144	127,226	126,358	126,176	123,172	119,150	120,505	121,068	119,942
With multiple institutions	47,418	50,029	53,311	53,336	54,522	50,935	55,767	70,990	75,625	82,004	83,579	82,902	81,877	81,110	82,340	85,080	85,473	86,552	84,664	82,395	85,658	87,513	88,855
With domestic institutions only	81,884	84,791	85,020	86,889	89,050	88,616	89,833	89,606	91,925	99,221	99,113	96,941	95,139	96,090	95,759	97,617	95,714	94,880	91,993	87,678	86,870	86,255	83,107
With international institutions	12,078	13,365	13,990	14,289	15,234	15,085	16,774	21,008	22,426	24,276	25,488	25,647	25,985	26,774	27,396	28,539	29,792	30,701	30,938	31,274	33,217	34,229	36,050
Malaysia																							
Total articles	998	1,146	1,180	1,347	1,630	1,457	1,797	2,277	2,671	3,179	4,110	4,900	7,168	9,591	13,562	16,773	17,942	19,457	21,782	23,402	25,587	27,801	29,917
With multiple institutions	553	623	619	775	784	723	937	1,379	1,659	2,060	2,740	3,214	4,171	5,683	8,168	10,491	11,969	13,184	15,155	16,473	18,357	19,993	22,211
With domestic institutions only	619	702	729	758	1,112	963	1,237	1,421	1,671	2,019	2,596	3,108	5,026	6,730	9,396	11,410	11,533	12,199	13,309	14,296	15,611	17,008	17,887
With international institutions	369	435	442	571	496	485	546	822	951	1,124	1,418	1,710	2,076	2,801	4,097	5,295	6,352	7,202	8,438	9,074	9,924	10,723	11,954

TABLE S5A-32

## S&amp;E articles in all fields combined, by coauthorship attribute and selected region, country, or economy: 1996–2018

(Whole count of articles)

Country/economy pair	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Pakistan</b>																							
Total articles	899	985	1,161	1,176	1,227	1,392	1,568	1,755	2,022	2,696	3,302	4,057	4,950	5,994	7,031	7,968	8,804	9,999	10,545	11,570	13,535	16,131	18,609
With multiple institutions	485	514	563	544	488	507	664	979	1,201	1,518	1,979	2,490	3,259	4,025	4,782	5,617	6,403	7,440	7,967	8,961	10,666	12,840	15,173
With domestic institutions only	590	667	816	854	906	1,091	1,213	1,238	1,470	2,008	2,343	2,796	3,374	4,054	4,557	5,107	5,379	5,848	5,779	6,145	7,007	8,090	8,706
With international institutions	304	309	330	312	317	291	329	492	536	651	928	1,215	1,518	1,773	2,271	2,747	3,382	4,100	4,725	5,381	6,493	7,998	9,810
<b>Singapore</b>																							
Total articles	2,902	3,740	3,853	4,731	5,645	5,787	6,520	7,554	9,179	10,008	10,613	10,965	11,821	12,459	13,895	14,599	15,851	16,703	17,524	18,085	18,979	19,467	19,581
With multiple institutions	1,446	1,759	1,947	2,191	2,575	2,704	3,353	4,445	5,650	6,514	7,200	7,546	8,220	8,643	9,576	10,357	11,654	12,671	13,575	14,366	15,145	15,842	16,347
With domestic institutions only	2,025	2,694	2,667	3,428	4,069	4,131	4,527	4,820	5,893	6,178	6,134	6,066	6,349	6,369	6,955	6,981	7,187	7,069	7,018	6,882	7,135	6,886	6,306
With international institutions	820	1,013	1,120	1,238	1,506	1,586	1,910	2,658	3,244	3,776	4,387	4,777	5,389	6,056	6,881	7,571	8,624	9,597	10,494	11,176	11,822	12,557	13,216
<b>South Korea</b>																							
Total articles	10,409	13,059	14,079	16,703	18,074	20,902	22,931	27,498	32,043	37,033	42,581	47,701	50,677	52,875	58,612	62,736	66,012	67,976	71,192	73,467	74,018	75,523	78,744
With multiple institutions	5,524	6,809	7,935	9,048	9,984	11,480	13,320	18,191	21,742	25,154	28,717	32,074	33,777	35,169	39,260	43,110	45,869	47,897	50,541	52,409	53,375	54,951	57,261
With domestic institutions only	7,783	10,032	10,670	13,096	14,147	16,457	17,564	20,302	23,876	27,391	31,823	36,009	38,299	39,869	43,917	46,419	48,457	49,570	51,968	53,528	53,346	54,192	56,114
With international institutions	2,537	2,927	3,306	3,479	3,786	4,304	5,218	6,983	8,026	9,455	10,493	11,314	12,105	12,825	14,471	16,085	17,366	18,265	19,151	19,870	20,560	21,132	22,422
<b>Taiwan</b>																							
Total articles	10,848	11,890	12,345	12,681	13,491	15,160	16,067	17,878	21,014	24,850	27,726	31,216	33,355	35,528	37,590	39,484	38,636	38,670	37,946	35,634	34,561	33,613	32,815
With multiple institutions	5,137	5,473	5,871	6,171	6,513	7,142	8,200	11,345	13,724	16,753	18,977	21,287	23,172	24,575	25,806	27,430	27,331	27,631	27,453	26,255	25,802	25,521	25,394
With domestic institutions only	8,857	9,822	10,285	10,732	11,356	12,815	13,504	14,522	17,284	20,574	22,912	25,686	27,012	28,625	30,094	31,505	30,152	29,640	28,663	25,937	24,288	22,651	21,192
With international institutions	1,896	1,983	1,976	1,841	2,080	2,294	2,478	3,211	3,649	4,134	4,629	5,232	6,147	6,777	7,388	7,880	8,400	8,966	9,249	9,653	10,221	10,907	11,542
<b>Thailand</b>																							
Total articles	1,174	1,401	1,598	1,765	2,204	2,277	2,829	3,251	3,780	4,829	5,779	6,494	7,329	7,855	8,873	9,552	10,106	10,254	11,177	11,720	13,155	14,779	16,448
With multiple institutions	818	1,002	1,059	1,216	1,483	1,376	1,819	2,411	2,828	3,498	4,324	4,914	5,357	5,656	6,350	6,979	7,624	7,684	8,170	8,731	9,883	10,856	12,273
With domestic institutions only	598	734	884	1,015	1,276	1,448	1,678	1,664	1,962	2,653	3,227	3,657	4,267	4,653	5,394	5,722	5,950	6,019	6,565	6,845	7,674	8,878	9,920
With international institutions	555	655	704	724	910	812	1,136	1,565	1,774	2,154	2,512	2,795	3,024	3,153	3,424	3,682	4,033	4,215	4,593	4,859	5,438	5,879	6,486
<b>Australia</b>																							
Total articles	24,231	25,706	26,265	26,615	28,011	28,287	29,530	32,225	35,275	40,179	43,158	46,906	49,147	52,418	56,453	61,255	64,779	70,807	75,407	77,469	80,404	81,985	85,029
With multiple institutions	14,163	15,056	15,722	15,767	15,921	15,231	16,538	21,621	24,591	27,761	30,113	33,110	34,744	36,867	39,882	44,061	47,802	53,320	57,869	60,644	64,614	67,191	71,212
With domestic institutions only	17,027	17,843	17,922	18,173	19,357	19,765	19,954	19,850	21,350	24,661	26,100	27,908	28,376	29,593	31,214	33,518	34,216	36,466	37,509	36,870	36,517	35,062	34,219
With international institutions	6,771	7,467	7,911	7,806	8,283	8,248	9,379	11,927	13,657	15,208	16,709	18,543	20,301	22,559	24,883	27,387	30,231	34,120	37,747	40,472	43,702	46,728	50,584
<b>New Zealand</b>																							
Total articles	4,635	5,003	5,213	5,427	5,358	5,417	5,526	6,060	6,698	7,487	7,972	8,556	9,016	9,479	9,985	11,074	11,340	11,740	12,210	12,102	12,543	13,029	13,291
With multiple institutions	2,866	3,024	3,189	3,330	3,133	2,920	3,143	4,177	4,751	5,438	5,789	6,200	6,427	6,635	6,957	7,756	8,184	8,650	9,119	9,160	9,635	10,244	10,692
With domestic institutions only	2,898	3,207	3,233	3,424	3,415	3,565	3,483	3,269	3,565	3,900	4,076	4,367	4,625	4,758	4,898	5,402	5,396	5,289	5,345	5,179	5,277	5,178	5,007
With international institutions	1,658	1,721	1,897	1,879	1,857	1,803	1,996	2,726	3,096	3,533	3,833	4,100	4,329	4,666	5,016	5,597	5,873	6,407	6,831	6,906	7,235	7,826	8,258

**Note(s)**

Article counts refer to publications from a selection of journals 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) of the author(s) 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 that have contributed to less than 1% of all internationally coauthored articles in 2018 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, which include single author articles and articles coauthored under the same institutional address. Articles with international institutions are counts of articles with institutional addresses from more than one region, country, or economy. The number of articles from the "with domestic institutions only" and "with international institutions" categories may not sum to the total article number. This is due to some coauthored publications having incomplete address information in the Scopus database. Those often cannot be reliably identified as international or domestic collaborations. They are in turn not included in either subcategory but are included in the number of articles in the "with multiple institutions" category and counted towards the total number of articles.

**Source(s)**

National Center for Science and Engineering Statistics, National Science Foundation; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed June 2019.

*Science and Engineering Indicators*