

Table SPBS-55

Coronavirus-related S&E articles by coauthorship attribute, whole and fractional counting, by region, country, or economy: 2020

(Number of papers [whole counting], number of papers [fractional counting], number of papers by coauthorship attribute [whole counting])

Rank	Country	Region	Number of papers (whole)	Number of papers (fractional)	Papers involving multiple institutions (whole)	Papers involving only domestic institutions (whole)	Papers involving international institutions (whole)
0	World	World	58,627	58,627.0	43,491	44,333	12,862
1	United States	North America	15,738	12,199.6	12,333	9,879	5,523
2	China	Asia	8,756	7,529.1	7,099	6,213	2,381
3	UK	EU-27 and UK ^a	5,709	3,518.6	4,543	2,508	3,120
4	Italy	EU-27 and UK ^a	5,325	4,070.7	4,597	3,067	2,084
5	India	Asia	4,168	3,528.0	2,995	2,970	1,153
6	Spain	EU-27 and UK ^a	2,697	1,930.9	2,207	1,477	1,099
7	Germany	EU-27 and UK ^a	2,631	1,673.4	2,145	1,222	1,378
8	Canada	North America	2,511	1,426.4	2,175	967	1,511
9	France	EU-27 and UK ^a	2,286	1,542.6	1,897	1,146	1,052
10	Brazil	South America	2,060	1,634.6	1,685	1,343	690
11	Australia	Australia and Oceania	2,040	1,139.8	1,763	757	1,262
12	Iran	Middle East	1,480	1,227.9	1,339	946	521
13	Turkey	Other Europe	1,227	968.4	942	842	377
14	Russia	Other Europe	1,189	975.2	834	867	311
15	Switzerland	Other Europe	1,174	542.6	1,037	311	854
16	Netherlands	EU-27 and UK ^a	1,106	512.6	1,007	298	787
17	Saudi Arabia	Middle East	1,073	628.1	927	342	724
18	Japan	Asia	1,021	698.9	847	560	455
19	South Korea	Asia	955	708.4	809	570	368
20	Belgium	EU-27 and UK ^a	770	357.3	702	210	554
20	Singapore	Asia	770	446.2	667	313	415
22	Mexico	North America	752	529.3	609	407	334
23	Indonesia	Asia	692	591.6	474	520	154
24	Poland	EU-27 and UK ^a	669	458.7	520	380	286
24	Sweden	EU-27 and UK ^a	669	279.9	599	155	505
26	Pakistan	Asia	663	440.4	549	271	383
27	South Africa	Africa	653	364.3	523	256	387
28	Egypt	Africa	578	318.1	504	191	385
29	Taiwan	Asia	558	370.8	518	278	273
30	Israel	Middle East	534	338.4	463	263	269
30	Greece	EU-27 and UK ^a	534	305.7	454	203	327

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Rank	Country	Region	Number of papers (whole)	Number of papers (fractional)	Papers involving multiple institutions (whole)	Papers involving only domestic institutions (whole)	Papers involving international institutions (whole)
32	Portugal	EU-27 and UK ^a	533	299.5	455	226	303
33	Austria	EU-27 and UK ^a	508	220.4	457	122	382
34	Ireland	EU-27 and UK ^a	496	278.5	398	209	282
34	Malaysia	Asia	496	296.4	427	198	293
36	Denmark	EU-27 and UK ^a	436	175.5	404	93	333
37	Colombia	South America	422	259.9	362	188	231
38	Norway	Other Europe	375	197.7	316	139	232
39	Chile	South America	359	205.9	323	144	206
40	Bangladesh	Asia	357	231.2	303	129	228
41	Romania	EU-27 and UK ^a	341	226.5	260	185	154
42	Argentina	South America	330	188.4	271	137	191
43	United Arab Emirates	Middle East	329	187.7	274	108	220
44	New Zealand	Australia and Oceania	317	160.4	264	102	211
45	Nigeria	Africa	311	212.0	265	139	170
46	Thailand	Asia	281	149.6	250	97	184
47	Czechia	EU-27 and UK ^a	273	170.9	210	128	141
48	Peru	South America	241	147.0	210	100	141
49	Finland	EU-27 and UK ^a	239	94.5	215	51	188
50	Vietnam	Asia	236	118.7	218	49	187
51	Jordan	Middle East	209	121.9	182	77	132
52	Morocco	Africa	207	171.0	144	151	55
53	Hungary	EU-27 and UK ^a	203	125.7	164	94	109
54	Nepal	Asia	199	127.3	169	95	103
55	Qatar	Middle East	195	116.3	168	76	119
56	Croatia	EU-27 and UK ^a	193	135.0	131	114	78
57	Ecuador	South America	180	114.7	150	71	105
58	Lebanon	Middle East	174	101.8	150	63	107
59	Philippines	Asia	170	110.4	124	84	85
60	Iraq	Middle East	145	93.2	121	67	78
60	Ethiopia	Africa	145	114.1	113	96	49
62	Cuba	Central America and Caribbean	144	127.3	97	117	26
63	Ukraine	Other Europe	137	95.2	106	70	67

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64	Slovenia	EU-27 and UK ^a	134	78.9	96	67	67
65	Kenya	Africa	127	53.8	114	25	102
66	Serbia	Other Europe	122	72.9	92	52	67
67	Ghana	Africa	118	73.6	105	49	66
68	Slovakia	EU-27 and UK ^a	115	80.4	81	60	54
69	Tunisia	Africa	107	60.3	95	39	66
70	Kuwait	Middle East	102	50.6	90	27	75
71	Cyprus	EU-27 and UK ^a	97	40.7	80	24	73
72	Oman	Middle East	93	45.2	80	25	67
73	Bulgaria	EU-27 and UK ^a	79	57.3	58	53	26
74	Uganda	Africa	73	29.1	66	14	59
75	Sri Lanka	Asia	65	44.5	54	31	34
76	Algeria	Africa	62	34.8	52	22	40
77	Venezuela	South America	59	29.6	53	14	45
77	Malta	EU-27 and UK ^a	59	41.7	39	36	22
77	Bahrain	Middle East	59	39.6	44	28	30
80	Luxembourg	EU-27 and UK ^a	51	18.3	46	6	45
81	Estonia	EU-27 and UK ^a	50	19.2	43	10	40
82	Uruguay	South America	47	14.7	44	8	39
82	Kazakhstan	Asia	47	29.6	41	20	26
84	Cameroon	Africa	46	18.9	42	12	34
84	Sudan	Africa	46	16.0	43	6	40
84	Lithuania	EU-27 and UK ^a	46	14.0	39	9	37
87	Zimbabwe	Africa	41	19.9	34	9	32
88	Bosnia and Herzegovina	Other Europe	38	20.3	34	16	22
89	Tanzania	Africa	36	13.6	33	8	28
89	Costa Rica	Central America and Caribbean	36	12.0	29	7	29
91	Georgia	Middle East	35	12.1	30	6	26
92	Puerto Rico	Central America and Caribbean	34	8.1	34	0	33
93	Yemen	Middle East	30	9.9	29	3	26

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Rank	Country	Region	Number of papers (whole)	Number of papers (fractional)	Papers involving multiple institutions (whole)	Papers involving only domestic institutions (whole)	Papers involving international institutions (whole)
94	Congo, Democratic Republic of the	Africa	29	13.0	28	3	25
94	Brunei	Asia	29	18.2	27	8	20
96	Senegal	Africa	28	12.1	25	6	21
96	Bolivia	South America	28	7.9	27	1	27
98	Latvia	EU-27 and UK ^a	27	14.2	19	10	17
99	Zambia	Africa	25	10.0	22	7	18
99	Libya	Africa	25	12.5	25	10	15
99	Mozambique	Africa	25	3.9	25	0	25
102	Iceland	Other Europe	24	11.9	22	9	15
102	Belarus	Other Europe	24	14.9	14	13	11
102	Paraguay	South America	24	8.5	24	4	20
105	West Bank	Middle East	23	8.6	20	5	17
106	Jamaica	Central America and Caribbean	22	10.2	17	7	15
107	Honduras	Central America and Caribbean	21	9.7	16	7	14
107	Rwanda	Africa	21	6.6	21	1	19
107	Panama	Central America and Caribbean	21	7.3	20	4	17
110	Guatemala	Central America and Caribbean	19	3.0	19	0	19
111	Malawi	Africa	18	5.5	18	2	16
111	Albania	Other Europe	18	7.1	16	4	13
111	Gaza Strip	Middle East	18	7.6	14	4	13
111	Trinidad and Tobago	Central America and Caribbean	18	8.8	16	4	13
111	Syria	Middle East	18	9.6	15	6	12
116	Azerbaijan	Middle East	16	5.6	12	4	12
116	North Macedonia	Other Europe	16	3.8	15	1	15
118	Botswana	Africa	15	4.9	13	3	12
119	Barbados	Central America and Caribbean	14	5.0	12	2	12
119	Burkina Faso	Africa	14	6.4	13	3	11
119	Mali	Africa	14	4.2	14	1	13
119	Uzbekistan	Asia	14	9.8	9	8	6

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123	Congo, Republic of the	Africa	13	3.5	13	0	13
123	Burma	Asia	13	3.5	13	1	12
125	Montenegro	Other Europe	12	7.5	9	6	6
125	Gambia, The	Africa	12	3.8	12	1	11
125	Kosovo	Other Europe	12	2.0	12	0	12
125	Mauritius	Africa	12	5.6	9	4	8
125	Dominican Republic	Central America and Caribbean	12	7.0	11	4	8
130	Fiji	Australia and Oceania	11	6.5	6	5	6
131	Afghanistan	Asia	10	2.4	10	0	10
131	Sierra Leone	Africa	10	2.9	9	1	9
131	Cambodia	Asia	10	2.1	10	0	10
131	Armenia	Middle East	10	2.4	10	2	8
131	Benin	Africa	10	4.6	9	2	8
136	Kyrgyzstan	Asia	9	4.4	9	4	5
136	Madagascar	Africa	9	2.7	9	0	9
136	Côte d'Ivoire	Africa	9	2.7	8	2	7
136	Liechtenstein	Other Europe	9	4.7	7	2	7
136	Namibia	Africa	9	6.1	8	5	4
141	Somalia	Africa	8	3.5	7	2	6
142	Mauritania	Africa	7	1.2	7	0	7
143	Guinea	Africa	5	0.7	5	0	5
143	Laos	Asia	5	0.9	5	0	5
143	Moldova	Other Europe	5	0.3	5	0	5
143	Mongolia	Asia	5	1.4	5	0	5
143	Gabon	Africa	5	1.2	5	0	5
143	Grenada	Central America and Caribbean	5	2.1	5	1	4
143	Bhutan	Asia	5	2.5	4	2	3
143	Niger	Africa	5	2.3	4	2	3
151	Seychelles	Africa	4	0.6	4	0	4
151	Maldives	Asia	4	2.8	4	1	3
151	Guinea-Bissau	Africa	4	0.4	4	0	4

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151	Papua New Guinea	Asia	4	0.2	4	0	4
151	Haiti	Central America and Caribbean	4	1.1	4	0	4
151	El Salvador	Central America and Caribbean	4	0.4	4	0	4
151	Eswatini	Africa	4	2.2	3	2	2
158	Andorra	Other Europe	3	2.0	3	1	2
158	Eritrea	Africa	3	0.6	3	0	3
158	Solomon Islands	Australia and Oceania	3	0.4	3	0	3
158	San Marino	Other Europe	3	0.3	3	0	3
158	Nicaragua	Central America and Caribbean	3	0.2	3	0	3
158	Liberia	Africa	3	1.1	2	1	2
158	Togo	Africa	3	1.3	3	0	3
158	Burundi	Africa	3	1.4	3	0	3
158	Saint Kitts and Nevis	Central America and Caribbean	3	1.0	3	0	3
158	Bahamas, The	Central America and Caribbean	3	0.4	3	0	3
168	Tajikistan	Asia	2	0.3	2	0	2
168	Saint Lucia	Central America and Caribbean	2	0.1	2	0	2
168	Lesotho	Africa	2	0.0	2	0	2
168	Djibouti	Africa	2	1.0	2	1	1
168	Central African Republic	Africa	2	1.1	1	1	1
168	Vanuatu	Australia and Oceania	2	1.1	2	0	2
168	Samoa	Australia and Oceania	2	2.0	2	2	0
175	Belize	Central America and Caribbean	1	1.0	0	1	0
175	Suriname	South America	1	0.0	1	0	1
175	Tonga	Australia and Oceania	1	0.0	1	0	1
175	Comoros	Africa	1	0.1	1	0	1

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175	Cabo Verde	Africa	1	0.1	1	0	1
175	Saint Vincent and the Grenadines	Central America and Caribbean	1	0.2	1	0	1
175	South Sudan	Africa	1	1.0	0	1	0
175	Greenland	North America	1	0.3	1	0	1
175	Timor-Leste	Asia	1	0.3	1	0	1
175	Dominica	Central America and Caribbean	1	0.3	1	0	1
175	Guyana	South America	1	1.0	1	1	0
175	Nauru	Australia and Oceania	1	0.2	1	0	1
175	Angola	Africa	1	1.0	0	1	0
na	Unknown	Unknown	1,949	567.8	1,949	0	517

na = not applicable.

EU = European Union; UK = United Kingdom.

^a Beginning in 2020, the UK was no longer a member of the EU.**Note(s):**

Whole and fractional counting of articles is used. Due to international collaboration, the sum of all whole counting numbers is higher than the world total. Only articles published in 2020 are counted. The list is sorted based on decreasing whole counting numbers. When countries are tied for the same rank, they are ordered in alphabetical order. Any article that had any of the following keywords in its title, abstract, or author-defined keywords was used to build the data set: "covid"; "coronavirus*"; "corona virus*"; "severe acute respiratory syndrome"; "middle east respiratory syndrome"; "SARS-CoV-2"; "spike protein*"; "mers-cov"; "nl63"; "229e"; "oc43"; "hcov"; "alphacoronavirus*"; "covid19"; "covid-19"; "SARSCoV2." Note that the * character is used to specify that the words should serve as prefixes, such that "coronavirus*" also captures articles that used "coronaviruses," for example. Articles, conference proceedings, and reviews indexed in the Scopus database were searched. The number of articles from the papers involving only domestic institutions and papers involving 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 coauthored publications often cannot be reliably identified as international or domestic collaborations. They are, in turn, not included in either subcategory but are still counted toward the total number of articles. Publications with a single domestic institution count toward the papers involving only domestic institutions category.

Source(s):

National Center for Science and Engineering Statistics; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed May 2021.

Science and Engineering Indicators