

Table SPBS-57

Coronavirus research papers international collaboration network analysis: 2020

(Number)

Country	Degree	Degree (rank)	Strength	Strength (rank)	Betweenness centrality	Betweenness centrality (rank)	Closeness centrality	Closeness centrality (rank)	Weighted PageRank	Weighted PageRank (rank)	Weighted eigenvector centrality	Weighted eigenvector centrality (rank)
United States	46	1	11,199	1	383.47	1	0.98	1	0.14	1	1.00	1
China	24	7	4,385	4	40.96	5	0.67	7	0.05	4	0.59	4
United Kingdom	39	2	7,950	2	182.72	2	0.85	2	0.10	2	0.79	2
Italy	34	3	6,248	3	73.97	3	0.78	3	0.07	3	0.66	3
India	18	11	2,024	12	11.01	11	0.62	11	0.03	12	0.26	12
Spain	30	4	3,902	6	53.02	4	0.73	4	0.05	6	0.42	7
Germany	28	5	4,292	5	32.60	6	0.71	5	0.05	5	0.47	6
Canada	21	9	3,495	8	11.04	10	0.64	9	0.04	8	0.48	5
France	25	6	3,578	7	22.46	7	0.68	6	0.04	7	0.41	8
Brazil	18	11	1,899	13	14.33	9	0.62	11	0.02	13	0.24	13
Australia	23	8	3,267	9	18.98	8	0.66	8	0.04	9	0.41	9
Iran	7	26	652	26	0.00	19	0.54	26	0.01	25	0.11	22
Turkey	10	18	770	22	0.32	18	0.56	18	0.01	22	0.11	23
Russia	6	29	450	30	0.00	19	0.53	29	0.01	31	0.07	30
Switzerland	18	11	2,453	11	4.09	13	0.62	11	0.03	11	0.31	11
Netherlands	19	10	2,649	10	5.57	12	0.63	10	0.03	10	0.33	10
Saudi Arabia	9	21	996	18	3.50	14	0.55	21	0.02	16	0.12	21
Japan	11	16	1,020	17	0.38	17	0.57	16	0.01	17	0.15	17
South Korea	8	23	688	24	0.00	19	0.55	23	0.01	24	0.10	25
Singapore	10	18	975	19	0.00	19	0.56	18	0.01	19	0.15	16
Belgium	14	14	1,741	14	0.49	16	0.59	14	0.02	14	0.23	14
Mexico	6	29	484	29	0.00	19	0.53	30	0.01	29	0.08	29
Sweden	14	14	1,364	15	2.10	15	0.59	14	0.02	15	0.18	15
Poland	8	23	654	25	0.00	19	0.55	23	0.01	26	0.10	27
Pakistan	3	36	294	35	0.00	19	0.51	41	0.01	35	0.04	36
South Africa	7	26	609	27	0.00	19	0.54	26	0.01	27	0.10	24
Egypt	4	34	410	31	0.00	19	0.52	34	0.01	30	0.06	33
Taiwan	2	43	183	40	0.00	19	0.51	44	0.01	40	0.04	39
Greece	9	21	829	21	0.00	19	0.55	21	0.01	21	0.12	20
Israel	5	31	405	32	0.00	19	0.53	30	0.01	32	0.07	31
Portugal	8	23	719	23	0.00	19	0.55	23	0.01	23	0.10	26
Austria	10	18	1,045	16	0.00	19	0.56	18	0.01	18	0.14	18
Malaysia	3	36	168	42	0.00	19	0.52	35	0.00	42	0.03	41

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Ireland	7	26	586	28	0.00	19	0.54	26	0.01	28	0.10	28
Denmark	11	16	912	20	0.00	19	0.57	16	0.01	20	0.13	19
Colombia	4	34	277	36	0.00	19	0.52	35	0.01	36	0.04	38
Norway	5	31	358	33	0.00	19	0.53	30	0.01	33	0.06	32
Chile	3	36	213	38	0.00	19	0.51	41	0.01	38	0.03	43
Bangladesh	2	43	140	44	0.00	19	0.51	41	0.00	44	0.03	44
Romania	3	36	174	41	0.00	19	0.52	35	0.00	41	0.03	40
Argentina	5	31	337	34	0.00	19	0.53	30	0.01	34	0.05	34
United Arab Emirates	1	45	54	47	0.00	19	0.50	45	0.00	47	0.01	46
New Zealand	3	36	240	37	0.00	19	0.52	35	0.01	37	0.04	35
Nigeria	1	45	59	46	0.00	19	0.47	48	0.00	46	0.01	48
Thailand	3	36	164	43	0.00	19	0.52	35	0.00	43	0.03	42
Peru	1	45	66	45	0.00	19	0.50	45	0.00	45	0.02	45
Finland	3	36	198	39	0.00	19	0.52	35	0.01	39	0.04	37
Vietnam	1	45	53	48	0.00	19	0.50	45	0.00	48	0.01	47

Note(s):

These statistics were computed for the top 50 national producers of coronavirus-related papers. A minimum number of 50 cowritten papers was necessary to establish a link between two countries. Countries that did not cowrite 50 papers or more with any other of the top 50 countries were removed because they would have resulted in unlinked nodes. Only 2020 papers were counted. Degree, betweenness centrality, and closeness centrality are unweighted measurements, which means that the number of cowritten papers is not used in their computation. Network indicators are described in detail in the Technical Appendix. Any article that had any of the following keywords in its title, abstract, or author-defined keywords were 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. Whole counting is used in the network analysis.

Source(s):

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

Science and Engineering Indicators