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Highly Cited Works In Covid-19 - The Global Perspective

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Highly Cited Works in Covid-19: The Global Perspective

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Abstract

Research papers published covid-19 during 1989-2020 and cited at least 100 times. It is founded that 72 countries contributed a total 1000 highly cited research publications and received 227766 Citations (Average Citation Per Articles is 227.766 and Cited References 51830). United States of America (USA) topped in the table with highest citations (86603) for 432 publications followed by China with 83829 citations for 280 Publications, United Kingdom (UK) with 29372 citations for 122 publications. It is also important to note that the top 8 countries have more than 10,000 citations that include Netherlands, Germany, Canada, France, and Saudi Arabia. India stands in the list with 500 citations. University Hong Kong has the most citations (28278) followed by Chinese Academy of Sciences with 14513 GCS, Huazhong University of Science & Technology with 12294 Citations and Wuhan University with 10392 citations. LANCET' is the journal which has got the maximum citations of 22221 (41 records) out of the total 249 Journals followed by 'Journal of Virology' with 22039 citations (139 records) 'NEW ENGLAND JOURNAL OF MEDICINE' with 21213 citations, 'PNAS' with 11216. The prominent journals 'Nature' and 'Science' share the table with 9639 & 9613 citations respectively. It will surprise few recently published (Feb 2020, April 2020, March 2020) that methods papers lead the list of the most cited scientific papers. "The Huang CL, Wang YM, Li XW, Ren LL, Zhao JP, et al.," leads with 3915 Citations (Huang CL, Wang YM, Li XW, Ren LL, Zhao JP, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. LANCET. 2020 FEB 15; 395 (10223): 497-506). Notably, Institutes from China dominating in top 10 list, University Hong Kong has the most citations (28278) followed by Chinese Academy of Sciences with 14513 Citations.

Keyword: Covid-19; Coronavirus; Citations; Highly Cited papers; Scientometrics;

INTRODUCTION

According to World Health Organization (WHO), there have been 2,42,57,989 confirmed cases and 8,27,246 deaths world wide as on 28th August 2020, in India more than 33 lacs people are affected. The Corona virus Disease 2019 (COVID 19) outbreak has put too many challenges among the scientists to develop a proper vaccine or drug to stop this pandemic. This viral infection transmitted from Wuhan, China and rapidly spreading around the world, day by day, people are getting infected and cured, but is there an end to it. The research world is striving hard to control the ongoing pandemic caused by COVID 19. Scholarly publications on COVID are also enormously growing. The scientometric studies opens the gateway to assess the literature output to identify the research hotspots, highly productive institutions, most productive authors and highly cited countries.

OBJECTIVES

The main objective of this study is to analyze the performance of highly cited publications in COVID-19 indexed in Web of Science (WoS) database. In specific, the study aims to find:

1. Geographical-wise research output;
2. Highly cited institutions;
3. Highly prolific authors based on citations & h-index;
4. Country-wise citations and Publications;
5. Year-wise distribution of research output and Citations;
6. Highly productive sources based on citations;

METHODOLOGY

A Scientometric method is used to analyze framed objectives. The study is based on the highly cited research publications indexed in WoS Research data that are retrieved using the search criteria (Text – 'Covid 19' in topic or Coronavirus in topic field) on August 28, 2020. The study period was restricted

from 1989 to 2020 and search strategy yielded 1000 records, which was used for further analysis. Scientometric tools like Biblioshiny, HistCite & VOSviewer were employed to analyze the bibliometrics profile, most cited countries, most cited sources, source impact, collaboration among eminent institutions, Global Cited References (GCS), h-index, highly productive authors, co-authorship network, visualization of highly cited publication, sources, authors and keywords.

Description	Results
MAIN INFORMATION ABOUT DATA	
Time span	1989:2020
Sources (Journals, Books, etc)	249
Documents	1000
Average years from publication	11.4
Average citations per documents	227.8
Average citations per year per doc	77.39
References	28284
DOCUMENT CONTENTS	
Keywords Plus (ID)	2596
Author's Keywords (DE)	968
AUTHORS	
Authors	5779
Author Appearances	9092
Authors of single-authored documents	30
Authors of multi-authored documents	5749
AUTHORS COLLABORATION	
Single-authored documents	38
Documents per Author	0.173
Authors per Document	5.78
Co-Authors per Documents	9.09
Collaboration Index	5.98

DATA ANALYSIS AND INTERPRETATIONS

Geographical wise Publication and Citation Impact (72 Countries)

Table 1 shows the geographical-wise citations impact on COVID 19 Research. It is founded that 72 countries contributed a total 1000 highly cited research publications and United States of America (USA) topped in the table with highest citations (86603) for 432 publications followed by China with 83829 citations for 280 Publications, United Kingdom (UK) with 29372 citations for 122 publications. It is also important to note that the top 8

countries are recorded more than 10,000 citations that include Netherlands, Germany, Canada, France, and Saudi Arabia. India stands in the list with 500 citations. 38 Countries recorded minimum of 500 Citations including India and 5 Countries with 100 Publications and 20 Countries with minimum of 10 Publications.

Table 1. Geographical wise Publication and Citation Impact (72 Countries)

#	Country	Records	TGCS	#	Country	Records	TGCS
1	USA	432	86603	37	Poland	3	445
2	Peoples R China	280	83829	38	Slovenia	3	570
3	UK	122	29372	39	USSR	3	790
4	Netherlands	117	29742	40	Argentina	2	284
5	Germany	108	25348	41	Bulgaria	2	262
6	Canada	76	15800	42	Ghana	2	291
7	France	49	10221	43	Jordan	2	281
8	Saudi Arabia	41	10391	44	Norway	2	305
9	Italy	34	6117	45	Oman	2	688
10	Australia	33	8715	46	Panama	2	331
11	Switzerland	33	6845	47	Qatar	2	460
12	Spain	28	5021	48	Senegal	2	220
13	Japan	25	4410	49	Angola	1	181
14	Singapore	19	7324	50	Bangladesh	1	309
15	Belgium	18	3117	51	Bolivia	1	145
16	Sweden	18	4356	52	Cameroon	1	151
17	Finland	15	3225	53	Chile	1	373
18	Taiwan	15	4323	54	Colombia	1	145
19	South Korea	14	2296	55	Croatia	1	134
20	Austria	13	3997	56	Dem Rep Congo	1	151
21	Denmark	9	2025	57	Ethiopia	1	109
22	Thailand	9	1360	58	Georgia	1	134
23	Egypt	8	1453	59	Guatemala	1	151
24	Russia	8	2314	60	Honduras	1	145
25	Mexico	7	948	61	Indonesia	1	145
26	Brazil	5	841	62	Nepal	1	145
27	Czech Republic	5	653	63	Pakistan	1	181
28	South Africa	5	764	64	Peru	1	145
29	India	4	500	65	Portugal	1	134
30	Israel	4	442	66	Rep Congo	1	315
31	Kenya	4	598	67	Romania	1	134
32	Nigeria	4	480	68	Sudan	1	139
33	U Arab Emirates	4	663	69	Tunisia	1	109
34	Vietnam	4	626	70	Turkey	1	134
35	Greece	3	561	71	Ukraine	1	186
36	New Zealand	3	722	72	Venezuela	1	145

Country Collaboration Map



Country Scientific Production

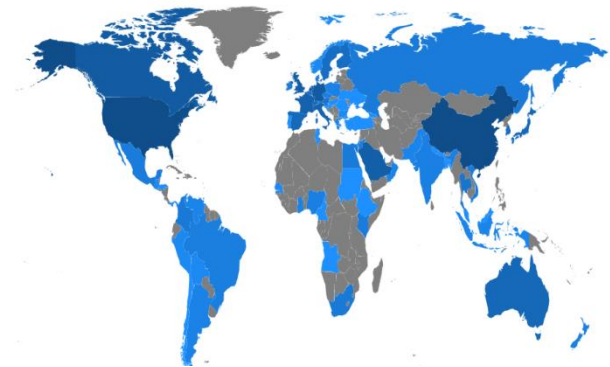


Figure 1 and 2 shows country-wise collaboration world map and country Scientific production

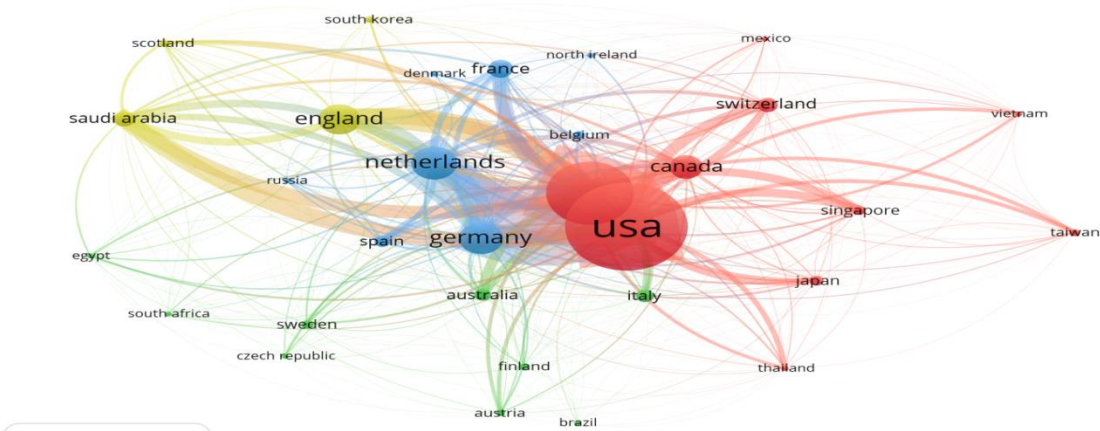


Figure 3 displays the collaboration network of highly cited countries

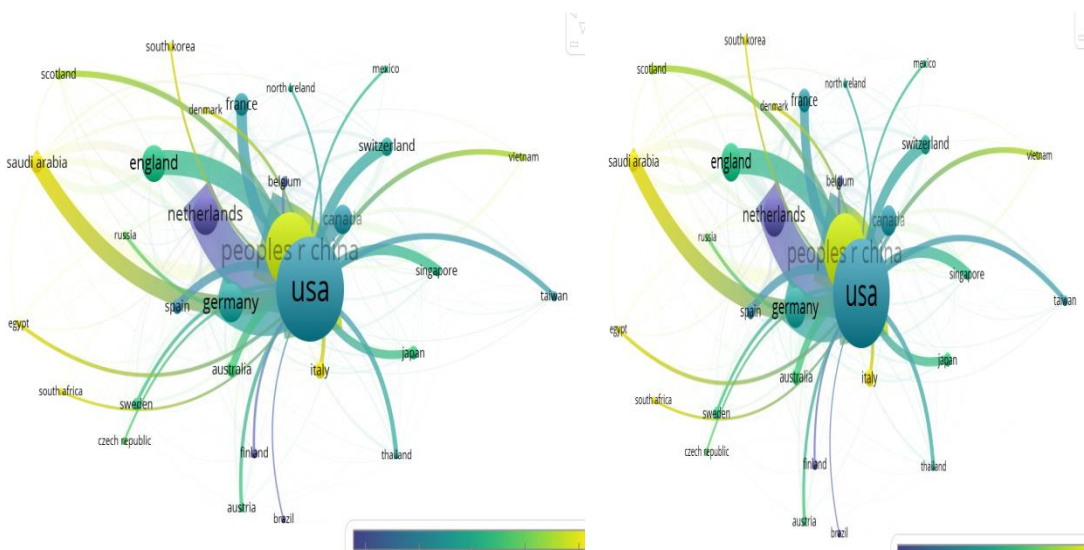


Figure 4 & 5 shows the collaboration network of USA & China

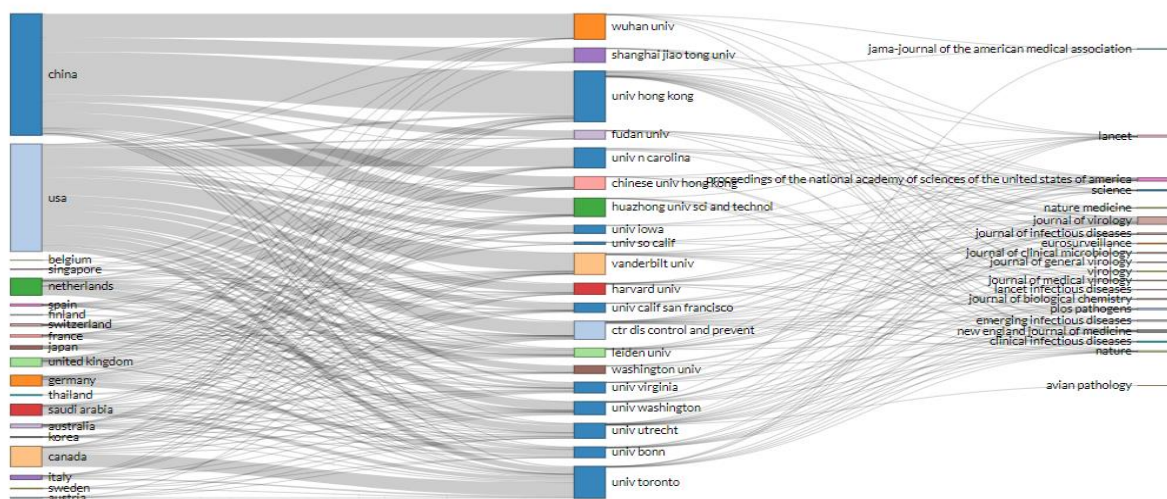


Figure 6 shows the networking and collaboration among Institutions, Countries & Sources

Highly Cited Institutions (Minimum 5000 Citations)

Table 2 displays highly cited institutions whose citation is minimum 5000 and it is found that University Hong Kong has the most citations (28278) followed by Chinese Academy of Sciences with 14513 GCS, Huazhong University of Science & Technology with 12294 GCS and Wuhan University with 10392 citations.

Table-2: Highly Cited Institutions (Minimum 5000 Citations)

#	Institution	Records	TLCS	TGCS
1	University Hong Kong	95	1672	28278
2	Chinese Academy of Science	40	576	14513
3	Huazhong Univ Sci & Technol	26	184	12294
4	Wuhan University	23	213	10392
5	Capital Med University	12	193	9908
6	Chinese Academy of Medical Science	16	244	9508
7	Ctr Dis Control & Prevent	35	464	9410
8	Chinese Ctr Dis Control & Prevent	8	178	8728
9	Leiden University	36	386	8309
10	Tsinghua University	12	138	7657
11	NIAID	40	341	7627
12	Erasmus MC	24	344	7478
13	University Utrecht	35	370	6984
14	China Japan Friendship Hosp	6	131	6953
15	Minist Hlth	28	267	6489
16	Chinese University Hong Kong	16	277	6295

2003, 2004, 2005 & 2013 with the citations of 26216, 17503, 16393 and 10614 respectively.

Table-3: Year wise distribution of Citations

#	Year	Records	TGCS	Year	Records	TGCS
1	2020	211	63934	2016	17	2989
2	2003	63	26216	1993	12	2834
3	2004	89	17503	2011	15	2715
4	2005	76	16393	1995	9	2586
5	2013	51	10614	1999	13	2434
6	2006	56	9649	2000	14	2424
7	2007	53	9289	1997	12	2181
8	2014	46	6900	1990	12	1797
9	2009	32	6351	2002	12	1758
10	2008	32	5839	2001	9	1584
11	2012	22	5674	1994	10	1392
12	1991	16	4275	1996	8	1204
13	2010	26	3977	1989	5	1142
14	2015	22	3703	2017	6	1082
15	1992	17	3191	2018	5	748
16	1998	16	3031	2019	3	620

Source Title wise distribution of Citations (249 Journals)

From Table 4, 'LANCET' is the journal which has got the maximum citations of 22221 (41 records) out of the total 249 Journals. 'Journal of Virology' took the second position in the analysis with 22039 citations (139 records) followed by the 'NEW ENGLAND JOURNAL OF MEDICINE' with 21213 citations, 'PNAS' with 11216. The prominent journals 'Nature' and 'Science' share with 9639 & 9613 citations respectively. It is found from the analysis that the top four titles have got more than 10,000 citations, 37 journals with more than 1,000 citations and 70 journals with 500 citations.

Table-4: Source-wise distribution of citations

#	Journal	Records	TLCS	TGCS
1	LANCET	41	840	22221
2	JOURNAL OF VIROLOGY	139	1567	22039
3	NEW ENGLAND JOURNAL OF MEDICINE	39	881	21213
4	PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA	52	764	11216
5	NATURE	24	469	9639
6	SCIENCE	20	603	9613
7	JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	20	100	7336
8	VIROLOGY	29	280	4897
9	EMERGING INFECTIOUS DISEASES	33	243	4661

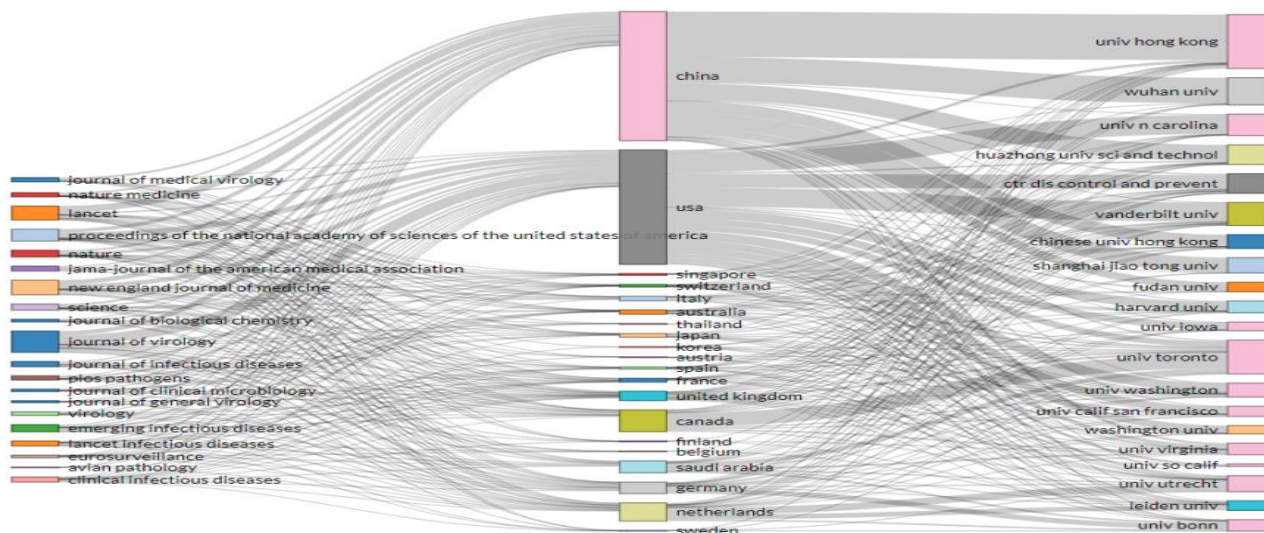


Figure 10 shows the collaboration strength among Countries, Sources & Institutions

Source Dynamic

Table 5 shows the top 10 journals with appearance of publications in COVID 19. The study found that LANCET leads with 22221 Citations followed by Journal of Virology with 22039 Citations, New England Journal of Medicine with 21213 Citations, PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA with 11216 Citations, Nature with 9639 and Science with 9613 Citations. As seen earlier in analysis, the highly cited source 'LANCET' first published articles on COVID 19 in the year 2003 with 10 records; it has seen the rapid growth year by year to 41 records in the year 2020, 14 records every year were published from 2004 to 2007, 15 records in 2008 - 2010 . The source 'NEW ENGLAND JOURNAL OF MEDICINE' first released 2 articles in COVID 19 in 1991 till the year 2002 followed by 10 records in 2003, 11 articles from 2004 - 2011, and 20 articles from 2017 - 2019.

Table 5: Distribution of publications in top 10 journals

Year	LANCET	NEW ENGLAND JOURNAL OF MEDICINE	JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	SCIENCE	NATURE	PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA	JOURNAL OF VIROLOGY	CLINICAL INFECTIOUS DISEASES	VIROLOGY	EMERGING INFECTIOUS DISEASES	JOURNAL OF MEDICAL VIROLOGY
1989	0	0	0	0	0	1	0	0	2	0	0

1990	0	0	0	0	0	1	3	0	5	0	0
1991	0	2	0	0	0	3	9	0	8	0	0
1992	0	2	0	0	2	3	14	0	10	0	0
1993	0	2	0	0	2	3	16	0	13	0	0
1994	0	2	0	0	2	3	23	0	13	0	0
1995	0	2	0	0	2	3	25	0	15	0	0
1996	0	2	0	0	2	3	26	0	17	0	0
1997	0	2	0	0	2	5	27	0	18	0	0
1998	0	2	0	0	2	5	32	0	19	0	0
1999	0	2	0	0	2	6	37	0	19	0	0
2000	0	2	0	0	2	7	43	0	19	0	0
2001	0	2	0	0	2	7	46	0	20	0	0
2002	0	2	0	0	2	7	50	1	21	0	1
2003	10	10	0	6	4	10	56	3	22	1	1
2004	14	11	0	7	5	21	72	5	24	9	3
2005	14	11	0	10	6	29	86	10	25	12	5
2006	14	11	0	10	7	34	92	13	26	15	8
2007	14	11	0	11	8	36	105	14	27	16	9
2008	15	11	0	11	8	39	110	15	28	16	11
2009	15	11	0	12	8	41	113	15	28	17	12
2010	15	11	1	12	9	41	121	15	28	17	13
2011	16	11	1	12	9	41	125	16	29	17	13
2012	17	12	1	12	9	41	128	16	29	17	13
2013	21	15	1	12	12	44	135	17	29	20	13
2014	22	17	1	12	13	48	137	19	29	32	13
2015	23	18	1	12	13	49	138	20	29	32	13
2016	24	18	1	14	16	49	138	21	29	33	13
2017	24	20	1	14	16	49	138	21	29	33	13
2018	24	20	1	14	17	49	138	21	29	33	13
2019	24	20	1	14	17	49	138	21	29	33	13
2020	41	39	20	20	21	52	139	21	29	33	23

Highly Cited papers

Table 6 depicts the highly cited papers based on Global Citation Score (GCS). The paper titled as “Clinical features of patients infected with 2019 novel corona virus in Wuhan, China” authored by Huang, CL., et. al. published in ‘LANCET’ secured the highest citations (3915). It is interesting to note that that the highly cited papers is dominated by two journals i.e. ‘NEW ENGLAND JOURNAL OF MEDICINE’ and ‘LANCET’ among the top 10 highly cited papers.

The sources are 'JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION' with 2370 citations and 'SCIENCE' with 1551 citations followed by 'NATURE' with 1514 citations.

Table 6: Highly cited papers

#	Date / Author / Journal	LCS	GCS	LCR	CR
1	801 Huang CL, Wang YM, Li XW, Ren LL, Zhao JP, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China, LANCET. 2020 FEB 15; 395 (10223): 497-506	92	3915	12	37
2	911 Guan W, Ni Z, Hu Y, Liang W, Ou C, et al., Clinical Characteristics of Coronavirus Disease 2019 in China, NEW ENGLAND JOURNAL OF MEDICINE. 2020 APR 30; 382 (18): 1708-1720	29	2382	11	23
3	841 Wang DW, Hu B, Hu C, Zhu FF, Liu X, et al. Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. 2020 MAR 17; 323 (11): 1061-1069	60	2370	8	17
4	186 Ksiazek TG, Erdman D, Goldsmith CS, Zaki SR, Peret T, et al. A novel coronavirus associated with severe acute respiratory syndrome NEW ENGLAND JOURNAL OF MEDICINE. 2003 MAY 15; 348 (20): 1953-1966	185	2067	1	33
5	802 Chen NS, Zhou M, Dong X, Qu JM, Gong FY, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study LANCET. 2020 FEB 15; 395 (10223): 507-513	52	2062	12	24
6	807 Zhu N, Zhang DY, Wang WL, Li XW, Yang B, et al. A Novel Coronavirus from Patients with Pneumonia in China, 2019 NEW ENGLAND JOURNAL OF MEDICINE. 2020 FEB 20; 382 (8): 727-733	52	2056	7	17
7	187 Drosten C, Gunther S, Preiser W, van der Werf S, Brodt HR, et al. Identification of a novel coronavirus in patients with severe acute respiratory syndrome, NEW ENGLAND JOURNAL OF MEDICINE. 2003 MAY 15; 348 (20): 1967-1976	184	1994	2	13
8	856 Zhou F, Yu T, Du RH, Fan GH, Liu Y, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study LANCET. 2020 MAR 28; 395 (10229): 1054-1062	17	1778	10	37
9	636 Zaki AM, van Boheemen S, Bestebroer TM, Osterhaus ADME, Fouchier RAM, Isolation of a Novel Coronavirus from a Man with Pneumonia in Saudi Arabia, NEW ENGLAND JOURNAL OF MEDICINE. 2012 NOV 8; 367 (19): 1814-1820	112	1673	9	25
10	182 Peiris JSM, Lai ST, Poon LLM, Guan Y, Yam LYC, et al. Coronavirus as a possible cause of severe acute respiratory syndrome LANCET. 2003 APR 19; 361 (9366): 1319-1325	152	1570	0	15
11	193 Rota PA, Oberste MS, Monroe SS, Nix WA, Campagnoli R, et al. Characterization of a novel coronavirus associated with severe acute respiratory syndrome, SCIENCE. 2003 MAY 30; 300 (5624): 1394-1399	124	1551	7	23
12	827 Zhou P, Yang XL, Wang XG, Hu B, Zhang L, et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin, NATURE. 2020 MAR; 579 (7798): 270-+	43	1514	8	16

13	229 Li WH, Moore MJ, Vasilieva N, Sui JH, Wong SK, et al. Angiotensin-converting enzyme 2 is a functional receptor for the SARS coronavirus, NATURE. 2003 NOV 27; 426 (6965): 450-454	120	1398	13	30
14	849 Li Q, Guan XH, Wu P, Wang XY, Zhou L, et al. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia, NEW ENGLAND JOURNAL OF MEDICINE. 2020 MAR 26; 382 (13): 1199-1207	0	1394	4	19
15	88 JOHNSTON SL, PATTEMORE PK, SANDERSON G, SMITH S, LAMPE F, et al., COMMUNITY STUDY OF ROLE OF VIRAL-INFECTIONS IN EXACERBATIONS OF ASTHMA IN 9-11 YEAR-OLD CHILDREN BRITISH MEDICAL JOURNAL. 1995 MAY 13; 310 (6989): 1225-1229	14	1350	1	31
16	194 Marra MA, Jones SJM, Astell CR, Holt RA, Brooks-Wilson A, et al. The genome sequence of the SARS-associated coronavirus SCIENCE. 2003 MAY 30; 300 (5624): 1399-1404	118	1331	9	32
17	888 Wu ZY, McGoogan JM, Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention, JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. 2020 APR 7; 323 (13): 1239-1242	13	1213	0	6
18	803 Chan JFW, Yuan SF, Kok KH, To KKW, Chu H, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster, LANCET. 2020 FEB 15; 395 (10223): 514-523	42	1121	10	30
19	380 Allander T, Tammi MT, Eriksson M, Bjerkner A, Tiveljung-Lindell A, et al., Cloning of a human parvovirus by molecular screening of respiratory tract samples, PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA. 2005 SEP 6; 102 (36): 12891-12896	26	1051	2	26

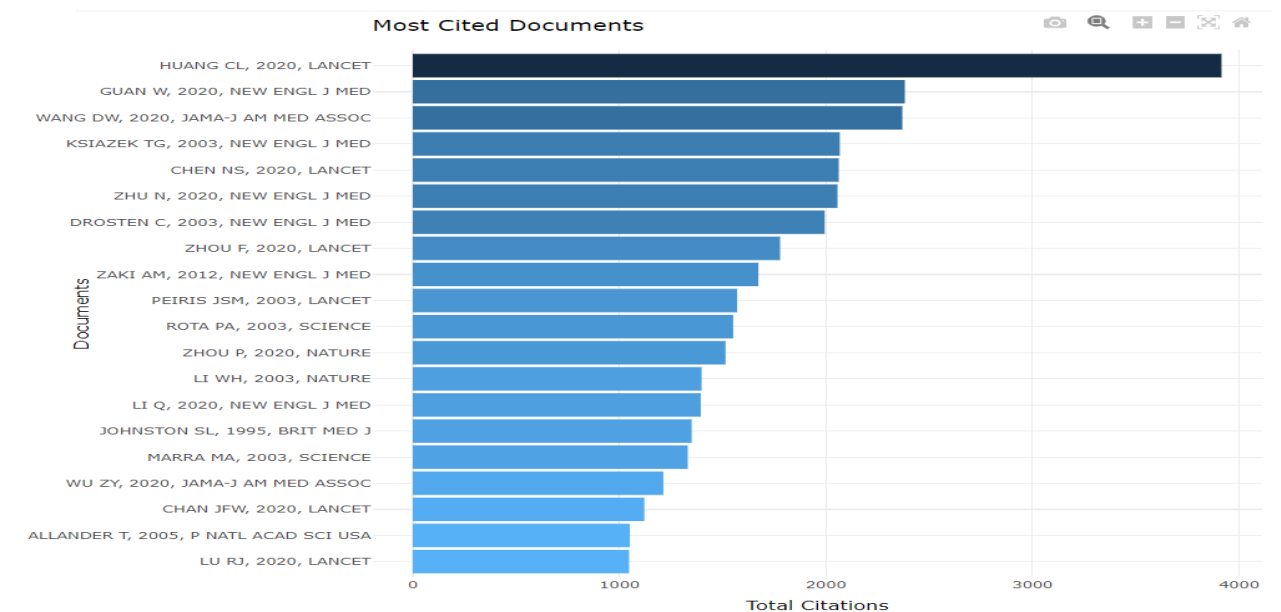


Figure 10: shows highly cited documents

Author Citation Impact of Authors (5779 Authors)

Yuen, KY., is the most prolific author with 18022 Citations (5.6% of Publications) followed by Drosten, C. with 11531 Citations (3.7% of Publications), Chan, K.H., with 11115 (3.6% of Publications). The top 5 authors have more than 10000 citations. Global citation range are 5000 to 18022 citations.

Table 7 distribution of highly prolific author based Citation Impact

#	Author	Records	%	TGCS	#	Author	Records	%	TGCS
1	Yuen KY	56	5.6	18022	17	Cao B	4	0.4	6336
2	Drosten C	37	3.7	11531	18	Li XW	3	0.3	6262
3	Chan KH	36	3.6	11115	19	Snijder EJ	25	2.5	6148
4	Liu Y	15	1.5	10061	20	Lim W	6	0.6	5994
5	Zhang L	12	1.2	10026	21	Fan GH	3	0.3	5839
6	Osterhaus ADME	17	1.7	9462	22	Gu XY	3	0.3	5839
7	Peiris JSM	25	2.5	9210	23	Wang YM	3	0.3	5839
8	Yu T	6	0.6	9104	24	Xu JY	3	0.3	5839
9	Guan Y	25	2.5	9087	25	Cheng VCC	15	1.5	5756
10	Poon LLM	21	2.1	8429	26	Woo PCY	25	2.5	5532
11	Li H	7	0.7	8312	27	Huang CL	2	0.2	5429
12	Wei Y	4	0.4	8252	28	Liu M	3	0.3	5409
13	Hu Y	7	0.7	7635	29	Gorbalenya AE	21	2.1	5386
14	Fouchier RAM	13	1.3	7131	30	Wang JL	5	0.5	5278
15	Xia JA	4	0.4	7107	31	Hu B	6	0.6	5013
16	Cheng ZS	5	0.5	6809					

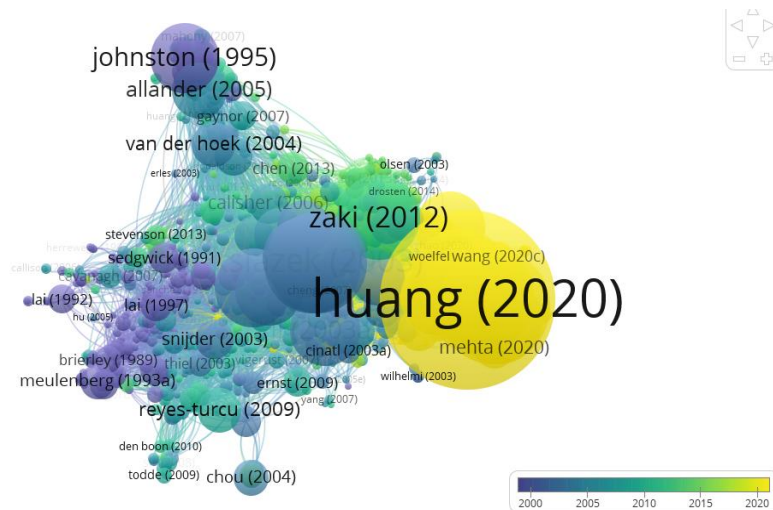


Figure 11: shows highly cited authors

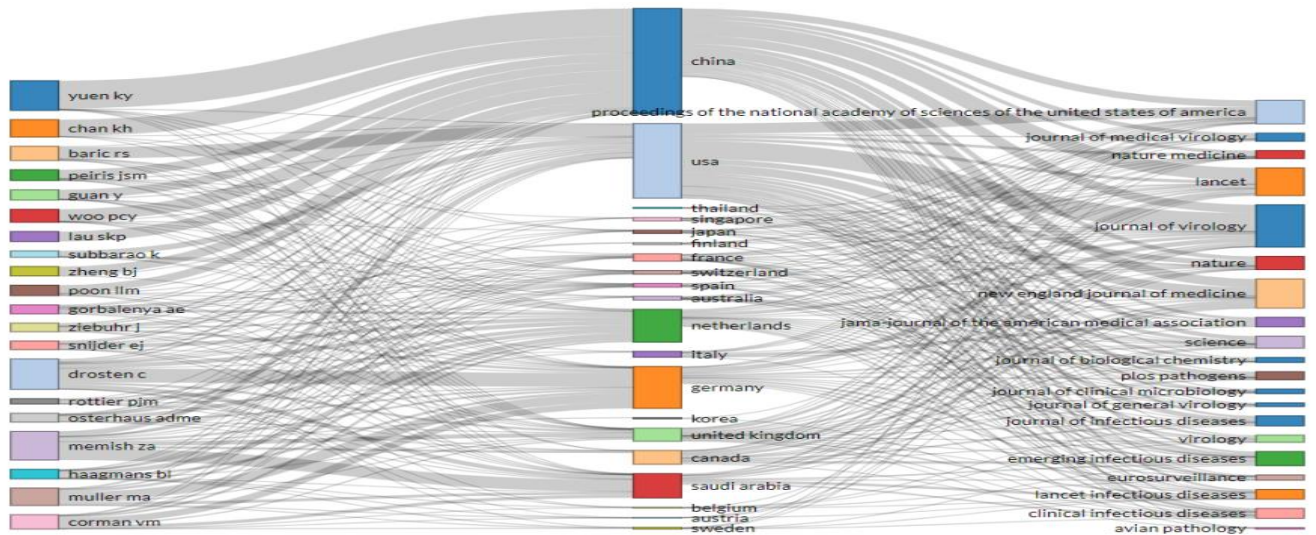


Figure 12: shows Three Fields Plot (Author, Country and Journal)

Author impact based on h-index

YUEN KY is the most productive author based on h-index with 56 followed by Drosten C with the h-index of 37, CHAN KH with 36, Baric RS with 26. Four authors have the h-index of 25 each. Table 12 lists the authors whose h-index is 16 and more.

Table 12: Highly Productive Author based on h-index

Author	h_index	g_index	m_index	TC	NP	PY_start
YUEN KY	56	56	3.11	18022	56	2003
DROSTEN C	37	37		11531	37	2003
CHAN KH	36	36	2	11115	36	2003
BARIC RS	26	26	0.83	4698	26	1990
GUAN Y	25	25	1.38	9087	25	2003
PEIRIS JSM	25	25	1.38	9210	25	2003
SNIJDER EJ	25	25	0.83	6148	25	1991
WOO PCY	25	25	1.47	5532	25	2004
LAU SKP	23	23	1.35	4997	23	2004
MEMISH ZA	22	22	2.75	4733	22	2013
GORBALENYA AE	21	21	0.65	5386	21	1989
MULLER MA	21	21		4589	21	2009
POON LLM	21	21	1.16	8429	21	2003
CORMAN VM	19	19		3474	19	2010
ROTTIER PJM	18	18	0.62	3768	18	1992
OSTERHAUS ADME	17	17	0.94	9462	17	2003

ZHENG BJ	17	17	0.94	4752	17	2003
DENISON MR	16	16	0.72	2688	16	1999
HAAGMANS BL	16	16	0.88	3964	16	2003
SUBBARAO K	16	16	0.94	3021	16	2004

Year wise word dynamics

The research output in Covid-19 research during 1989–2020 has been published in context of 2208 Keywords. Table 13 shows that the highest number of occurrences “Coronavirus” with 129 times followed by “Identification” with 127, “Acute Respiratory Syndrome” with 119, and “Virus” with 109.

Table 13: shows frequency of Word with year

Year	CORONAVIRUS	IDENTIFICATION	ACUTE RESPIRATORY SYNDROME	VIRUS	MOUSE HEPATITIS- VIRUS	INFECTION	PROTEIN	REPLICATION	SARS	EXPRESSION
1990	0	0	0	0	0	0	0	0	0	0
1991	1	2	0	0	3	1	3	1	0	3
1992	4	3	0	4	6	3	3	4	0	7
1993	6	4	0	6	9	5	7	6	0	9
1994	6	6	0	6	11	5	7	7	0	14
1995	9	7	0	6	11	5	7	7	0	15
1996	9	7	0	6	11	5	7	7	0	16
1997	10	8	0	9	14	6	7	8	0	16
1998	12	9	0	10	16	10	8	11	0	18
1999	16	10	0	10	20	11	9	13	0	19
2000	17	10	0	10	30	12	10	13	0	19
2001	19	12	0	10	36	13	11	15	0	20
2002	21	14	0	10	38	14	13	15	0	24
2003	42	26	13	18	43	14	14	18	2	25
2004	61	52	40	32	51	19	17	25	8	36
2005	73	71	55	46	60	31	31	31	13	48
2006	80	82	66	52	67	37	40	37	13	50
2007	83	88	72	64	71	42	46	42	14	54
2008	86	93	75	69	73	45	47	45	15	55
2009	93	101	81	72	74	49	49	48	17	57
2010	97	108	82	76	74	49	54	50	17	57
2011	98	109	83	78	76	51	59	51	17	57
2012	101	113	88	81	78	53	59	52	19	57
2013	107	116	94	88	80	56	64	56	26	60
2014	109	118	94	94	80	62	67	60	28	61

2015	110	118	96	95	82	64	68	62	28	61
2016	112	120	97	96	82	64	68	63	29	61
2017	113	120	98	96	82	66	69	64	29	61
2018	113	121	98	97	82	67	69	64	30	61
2019	114	121	98	98	83	67	69	64	30	61
2020	129	127	119	109	83	81	78	69	66	65

FINDINGS AND CONCLUSION

It will surprise few recently published (Feb 2020, April 2020, March 2020) that methods papers lead the list of the most cited scientific papers. “The Huang CL, Wang YM, Li XW, Ren LL, Zhao JP, et al.,” leads with 3915 Citations (Huang CL, Wang YM, Li XW, Ren LL, Zhao JP, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. LANCET. 2020 FEB 15; 395 (10223): 497-506) followed by others. Yuen, KY., (Univ Hong Kong, Dept Microbiol, Hong Kong, Hong Kong, Peoples R China) is the most prolific author with 18022 GCS (5.6%) and 5 papers recorded more than 1000 Citations. The study found that Lancet leads with 22221 Citations followed by Journal of Virology with 22039 Citations. Notably, in 10 highly recorded citations from China, University Hong Kong has the most citations (28278) followed by Chinese Academy of Sciences with 14513 GCS. It also found USA recorded 86603 Citations for 432 publications and China with 83829 for 280 publications. Worldwide scientometrics is becoming a more powerful instrument of science policy, determining to a great extent the way of a project and institutional funding by assessment of priorities, perspectives, and capacity.

References

- **Laksham S., Surulinathi M., Balasubramani, R. and Srinivasaragavan S. (2020).** Mapping the research output on Coronavirus: A Scientometric Study, Gedrag & Organisatie Review, 33(2), 163-186.
- **Rajalakshmi, N., Surulinathi, M., Srinivasaragavan, S., and Balasubramani R. (2020).** Research Productivity of Social Scientists in

Tamilnadu State Universities: A Bibliometric Study, *Gedrag and Organisatie Review*, 33(3), 633-634.

- **Savita Nandan Bhatkal, Surulinathi, M., Balasubramani, R., and Srinivasaragavan, S. (2020).** Geographical Information System Research in India: A Scientometric Mapping of Publications, *Gedrag and Organisatie Review*, 33(3), 327-342.
- **Surulinathi, M., Balasubramani, R., and Amsaveni, N (2020).** COVID-19 research output in 2020: The Global Perspective using Scientometric Study, *Library Philosophy and Practice*, 1-18.
- **Sankaralingam, R., Surulinathi, M. and Srinivasaragavan, S. (2020).** Indian contribution to Drugs Discovery: A Scientometric Mapping of Publications, *Gedrag and Organisatie Review*, 33(3), 712-734.
- **Rajagopal, T., Archunan, G., Surulinathi, M., & Ponmanickam, P. (2013).** Research output in pheromone biology: a case study of India. *Scientometrics*, 94(2), 711-719.
- **Karthik, M., Surulinathi, M., Nithiya, S & Srinivasaragavan, S (2020),** Mapping the Research output on Hantavirus: The Global Perspective, *Gedrag and Organisatie Review*, 33(3), 1214-1231.
- **Karthik, M., Laksham, S., Surulinathi, & Jayasuriya, T., (2020),** Research output on Hantavirus/Coronavirus in India: A Scientometric Study, *Gedrag and Organisatie Review*, 33(3), 1214-1231.
- **Kalaiselvan,S., Balasubramani,R., Surulinathi,M.,and Srinivasaragavan,S.,(2020),** Mapping of Agriculture Universality research output in South India: A Scientometric Analysis, 33(3), 1232-1240.
- **Madhan, M., Chandrasekar, G., & Arunachalam, S. (2010).** Highly cited papers from India and China. *Current Science*, 738-749.
- **Patil, S.B.,(2020).** A Scientometric Analysis of Global COVID-19 Research Based on Dimensions Database (June 13, 2020). Available at SSRN: <https://ssrn.com/abstract=3631795>
- **WHO:** <https://covid19.who.int/>