Scientometrics (2021) 126:259–285
https://doi.org/10.1007/s11192-020-03764-3

Number of references: a large-scale study of interval ratios

Jeppe Nicolaisen[1] · **Tove Faber Frandsen**[2]

Received: 31 March 2020 / Published online: 4 November 2020

Abstract
The paper presents a large-scale study (covering 26,998,764 items) of the development in the number of references over time (1996–2019) in three document types (articles; reviews; notes) from seven fields (Arts and Humanities; Social Sciences; Computer Science; Mathematics; Engineering; Medicine; Physics and Astronomy). Using interval ratios instead of average numbers, the paper makes it possible to follow the development, and to locate the main causes of growth in the number of references over time. The results show significant differences between fields and document types. The number of references in journal articles and reviews are growing in all fields (except for the reviews in Arts and Humanities that remain stable over time), but at different pace; The number of references in notes are growing in some fields (again at different pace) and are stable in others. The observed growth is primarily caused by a drop in short reference lists and a corresponding increase in a bit longer and medium size reference lists. Long and very long reference lists remain much more stable in shares over time, and does therefore not contribute much to the observed growth. The results underline the importance of normalizing citation data, and for taking citation inflation into account when conducting citation analyses expanding different fields, document types, and longer time-periods.

Keywords Citing behavior · Document types · Number of references · Reference analysis · Subject areas · Normalization · Citation inflation

Introduction

The development in number of references in scientific publications over time has been studied at least since 1965 when Derek J. de Solla Price reported that on average, journal papers contain 15 references. More specifically, he had found that about 10% of all papers contained no references whereas 5% contained more than 45 references. According to de Solla Price (1965), 85% of all papers contained 25 or fewer references. This is a quite

✉ Jeppe Nicolaisen
jep.nic@hum.ku.dk

[1] Department of Communication, University of Copenhagen, Njalsgade 76, 2300 Copenhagen S, Denmark

[2] Department of Design and Communication, University of Southern Denmark, Universitetsparken 1, 6000 Kolding, Denmark

unique method when reporting the number of references. Many studies have followed in the footsteps of de Solla Price, but have only provided the average or median number of references, and thus not interval ratios. All of these studies show a clear tendency: The number of references in scientific publications is growing.

About 15 years after the publication of the study by Derek J. de Solla Price, Eugene Garfield noticed a substantial growth in the number of references per item in 37 core biochemical journals (Garfield 1979, 1980). Garfield examined the growth rate by developing an R/S journal indicator where R is the number of references contained in all publications during a specified year and S being the number of source articles (S) it published that year. Furthermore, by revisiting earlier studies Garfield confirmed the increasing R/S in biochemistry, mathematics and botany. The growth rates differed but the tendency to increasing reference lists was clear (Garfield 1979, 1980). Garfield suggested five possible explanations for the increase in the number of references. Firstly, fragmented publishing implies referencing more as each study is split into several publications. Secondly, the growth of the literature would also imply an increase although the increase should level out or all publications become reviews. Thirdly, citation consciousness may incite authors to cite more. Fourthly, improved current awareness systems help authors be aware of recently published studies. Finally, available databases help authors find older studies as well and their retrospective search capability is thus also strengthened (Garfield 1979).

More recent studies have also shown that the number of references has increased. The average number of references increased substantially over a 38 year-period in the journal "Polymer testing" (Jaunich, 2018). Similar results are found in 8 engineering journals (Ucar et al. 2014) although growth rates differ over time. Ucar et al. found a strong growth trend in the number of references in engineering papers. Krampen (2010) found increasing numbers of references using a sample of 45 English and 45 German articles on developmental psychology, psychological diagnosis and assessment, and social psychology. Similarly, by examining one volume from each decade Lipetz (1999) documented that papers without references disappeared in The Journal of the American Society for Information Science (JASIST) during 50 years of publication, and that the average number of references per paper had grown exponentially. Also studying JASIST, Tsay (2008) found that the average number of references cited per paper increased 2 to 3 times over a period of about 25 years. Sánchez-Gil et al. (2018) reported an increasing average number of references in all scientific areas and categories, except in some Arts and Humanities categories although there is considerable variation across fields as well as within fields. However, the analysis by Sánchez-Gil et al. does not normalize for document types, and as reviews generally contain considerably more references normalization is necessary. Without normalization the findings could be caused by an increase in specific publication types.

A number of studies have shown that the number of references differ across fields. Hyland (2004) found that the average number of references per publication range from 24.8 in magnetic physics to 104.0 in sociology. Sánchez-Gil et al. (2018) found considerable differences across five knowledge areas ranging from an average of 24.79 references per publication in health sciences to 36.55 in life sciences. Yang et al. (2006) reported differences in the average number of references in five andrology journals.

Meadows (1974) argued that the increase in the number of references will level out and reach a maximum. The number of references in a paper may also decrease over time due to journal limitations which is reported by Anger (1999) describing a maximum limit of four references in a health sciences journal for brief communications, case reports and letters to the editor which would. However, although a limited study, Ucar et al. (2014) found a doubling of the median number of references from 1972 to 2000 and a growth acceleration

after the year 2000. The acceleration is explained predominantly by a greater access to information by the generalization of the Internet, and they consequently argue that as such "there is still no sign of the so called saturation phase" (Ucar et al. 2014: 1863).

Pan et al. (2018) argue that the growth in scientific production as well as in the number of references per paper has widespread implications for scientific communities in general and more specifically how academic knowledge is connected, accessed and evaluated. Normalization is one of the areas where an increasing number of references plays an important role. Bibliometric studies often include the use of field-normalized indicators to account for the varying publication and citation cultures across fields (Waltman 2016). However, numerous approaches for normalized indicators exist (see Bornmann and Marx 2018). One way is by so-called "citing-side", "a priori", "ex ante" or "source" normalization (Zitt 2013). This approach is based on references in the citing documents (for recent examples see, for instance Frandsen et al. (2019), Mingers and Meyer (2017), Fang (2015)). Consequently, any changing patterns in the number of references in specific document types as well as within fields are important for citing-side normalization of impact indicators.

In summary, studies have repeatedly reported a growing number of references in research publications from most fields. A number of reasons for this growth have been suggested, but consensus is yet to emerge. To get a better understanding of the growth rate, we return to the praxis of reporting interval ratios. This will help to identify the causes of the growth: Is the growth caused mainly by authors writing very long papers with many references or is it primarily caused by more gradual shifts from shorter reference lists to medium size reference lists, etc.? Also: is the growth rate the same in different fields, for different document types, and over time? Finally, what are the consequences for the normalization of impact indicators? The aim of this study is to answer these questions.

We therefore report interval ratios for seven fields (Arts and Humanities; Social Sciences; Computer Science; Mathematics; Engineering; Medicine; Physics and Astronomy) and three types of journal papers (journal articles; notes; reviews) for a period of 24 years (1996–2019), and discuss how the findings may affect citing-side normalization. Bornmann and Marx (2018) appeal for more studies analyzing the validity of the various field-normalized indicators. This study adds to the knowledge base within the field by examining potentially changing patterns in the number of references.

Methods

Data was retrieved from Scopus ultimo March 2020. The publication window was set to 1996–2019 and limited to three document types[1] (articles, notes and reviews) and seven subject areas[2] (Arts and Humanities, Computer science, Engineering, Mathematics, Medicine, Physics and Astronomy, Social sciences). The selection of document types and subject areas were guided by an aspiration to cover variations of both, and the selection thus covers a total of 26,931,419 items.

Retrieved items were organized by number of references using twelve intervals: 0–9; 10–19: 20–29: 30–39; 40–49; 50–59; 60–69; 70–79; 80–89; 90–99; 100–199; 200–299

[1] Searched as DOCUMENT TYPE and further limited to SOURCE TYPE: Journal.

[2] As a journal may be indexed with more than one subject area code, subject areas slightly overlap.

Table 1 Calculation of interval ratios

2019	0–19	20–39	40–59	60–79	80–99	100–199	200–299	Total
n	15,367	25,928	20,831	11,162	4,913	4,043	162	82,406
%	18.6	31.5	25.3	13.5	6.0	4.9	0.2	100

(see "Appendices 1–21"). Interval ratios for each document type were calculated year-by-year as a percentage number. For example: In Arts and Humanities (2019) we retrieved 15,367 journal articles with a reference list containing 0 to 19 references. This amounts to 18.6 percent of the total number of retrieved journal articles that year (82,406). Table 1 illustrates the calculation of interval ratios for Arts and Humanities journal articles published in 2019.

Note that the percentages are calculated using reference lists in the range of 0–299 as total. There are, of course, a (small) number of journal articles with longer reference lists. Thus, the actual percentages are probably a little bit lower.

The organization of the data in intervals makes it possible to collapse retrieved reference intervals and perform analyses on larger interval ratios. Articles can serve as an example: Publications with less than 60 references account for more than 92% of the publications and thus some of the ratio intervals were collapsed to provide a clearer picture in the figures. Thus, analyses on the growth rate of references in journal articles were performed using six interval ratios (0–19; 20–39; 40–59; 60–79; 80–99; 100–199). Not all ratio intervals are included in all figures to enable an overview of the dominant tendencies for each document type. Reviews tend to have longer reference lists whereas few reviews have short reference lists. Consequently, analyses of reviews were performed using four interval ratios (0–49; 50–99; 100–299). The number of references tend to be smaller in notes and we therefore concentrate on the first four intervals. Other interval ratios are easily constructed from data provided in the appendices.

Results are presented in graphs showing the development over time for the period 1996–2019 in absolute numbers and ratios.

Results

First, we consider the development over time using absolute numbers and a general increase in the number of publications is evident. The number of publications in our data set has more than tripled from 1996 to 2019. Serving as an example, Fig. 1 presents an overview of the development in the number of references in journal articles. The number of articles with at least 50 references is more than 10 times higher in 2019 than 1996. Articles with 20 to 49 references have at least tripled in 2019 compared to 1996. Finally, articles with 0–19 references have only increased slightly or even decreased. Consequently, due to the general increase in the number of publications indexed in Scopus we are analyzing the development over time using ratios.

Now we turn to ratio intervals. The results of the investigation show significant differences between fields and document types.

We find that the number of references in journal articles is growing relatively in all fields, but not at the same pace (see Figs. 2, 3 and 4). Journal articles with short reference lists (0–19 references) dominated in the beginning of the investigated period—especially

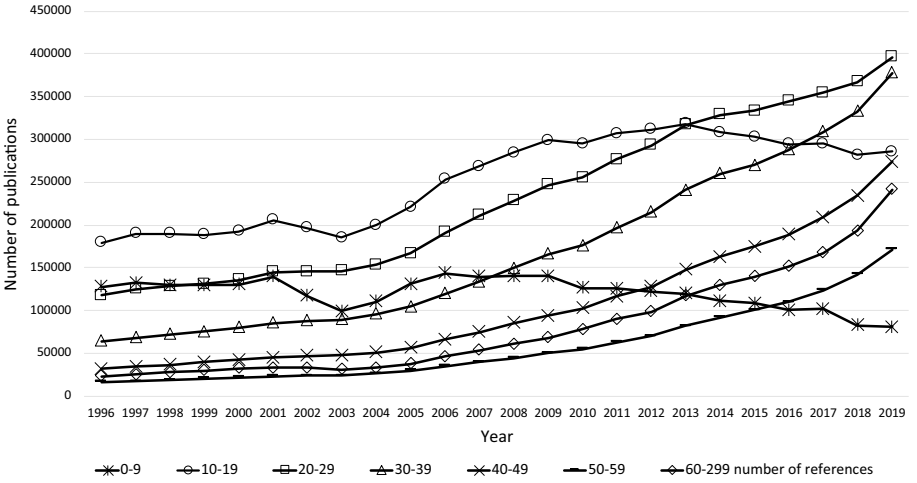

Fig. 1 The development in the number of references in journal articles

in the fields of Computer Science, Engineering, Mathematics, and Physics and Astronomy. Here the short reference list was the most frequent kind until 2010 (Computer Science), 2013 (Engineering and Mathematics), and 2014 (Physics and Astronomy) when it was replaced at the first spot by journal articles with a bit longer reference lists (20–39 references). A similar replacement is found in Medicine, Social Sciences, and Arts and Humanities. Yet, in these fields the shift took place at an earlier point (Medicine: 2000; Social Sciences: 2002; Arts and Humanities: 2005). Medium length reference lists (40–59 references) were rarer guests in the first part of the investigated period, but show a steady increase in all fields over time—overtaking the second spot in Arts and Humanities (2015), Computer Science (2018), and Engineering (2019), and even ending up sharing first spot in Social Sciences (2019).

Journal articles with longer reference lists are much fewer relatively and are found to be more constant in shares over time - except for journal articles with 60–79 references in Social Sciences that are found to almost double its share over time.

These findings verify that the number of references in journal articles has been growing over time. They also reveal that the main cause of the growth in all fields is a drop in the share of articles with short reference lists (1–9 references) and an increase in share of articles with a bit longer and medium size reference lists (20–39 references and 40–59 references (and even 60–79 references especially in Social Sciences)). Journal articles with long reference lists (80–99) and very long reference lists (100–199) have shares that are found to be quite constant over time. There are marked differences in growth rates between fields. Arts and Humanities and Social Sciences display much more steady tendencies compared to the five other fields.

Turning to the development in the number of references in review articles, we find that this is quite diverse (see Fig. 3) during the period 1996–2019. Review articles with shorter reference lists (0–49 references) are dominating in all fields, but in Computer Science, Engineering, Mathematics, Medicine, and Physics and Astronomy their shares decreased heavily over time. Social Sciences display a moderate drop in shorter reference lists over time, and in Arts and Humanities the share of shorter reference lists is practically constant over time. In Medicine, the share of shorter reference lists went from almost 70 percent in

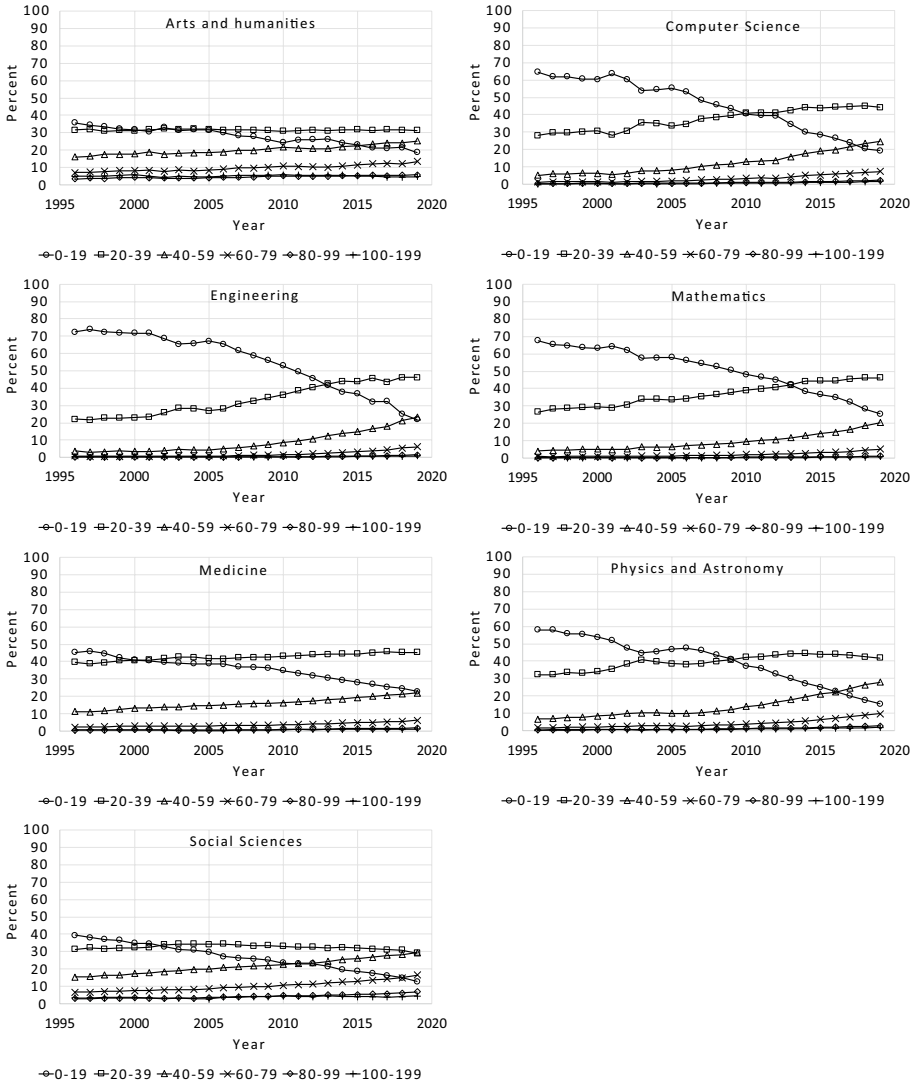

Fig. 2 The development in the number of references in journal articles

1996 to around 45 percent in 2019. In Computer Science (90% to 20%), Engineering (85% to 30%), Mathematics (85% to 50%), and Physics and Astronomy (75% to 30%) the drop was even more significant. The share of shorter reference lists only dropped around 15% in Social Sciences, from around 75% in 1996 to around 60 percent in 2019.

The shares of medium size reference lists (50–99 references) and long reference lists (100–199) gradually increased over time in all fields (except Arts and Humanities). As we are dealing with shares, the growth is of course most significant in the same fields where a significant drop in shorter reference lists were observed. Yet, the two types of reference lists are not growing at the same pace between fields. Long reference lists in Computer

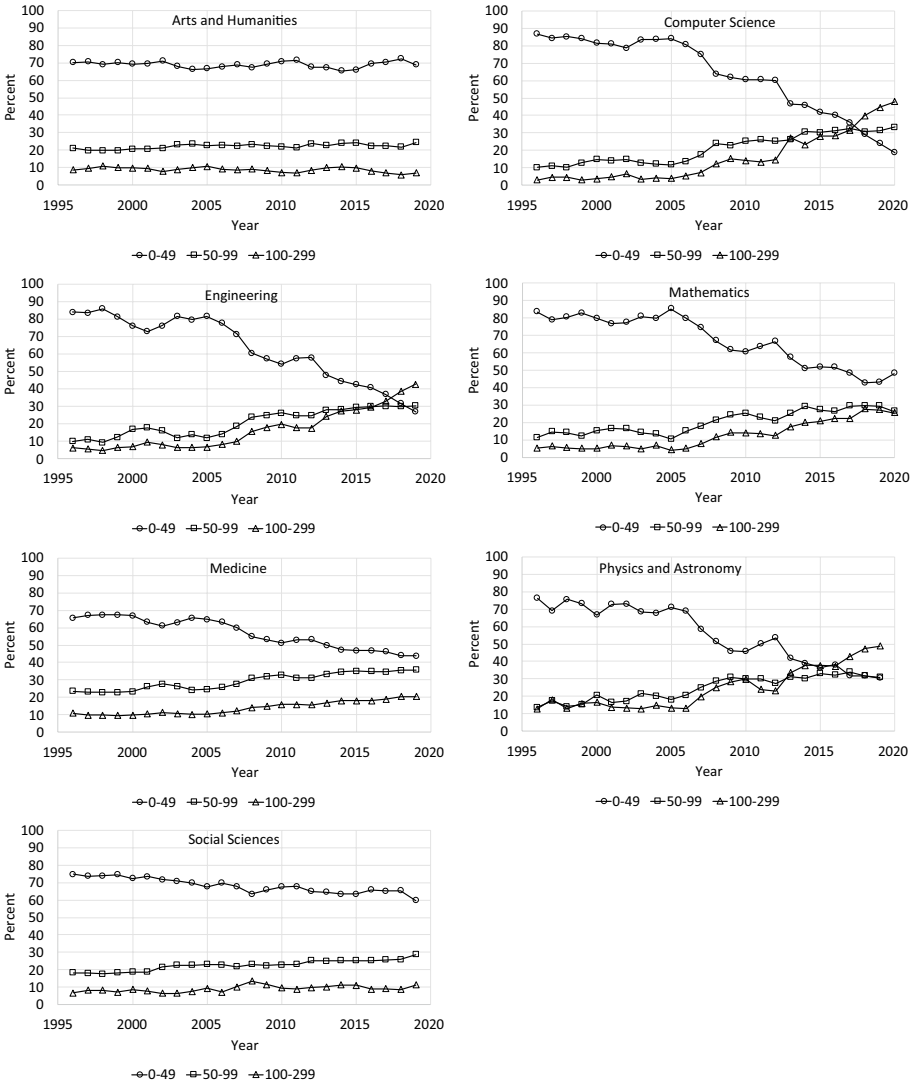

Fig. 3 The development in the number of references in reviews

Science, Engineering, and Physics and Astronomy are now the most frequent kind, but still takes the third spot on the other fields.

Consequently, the primary cause of the observed growth in number of references in reviews over time was a drop in shorter reference lists and an increase in medium size and long reference lists.

Compared to the two other document types (articles and reviews), the number of references in notes are found to be more constant over time. Most notes contain a limited number of references. Figure 4 therefore only show results of notes with very short reference

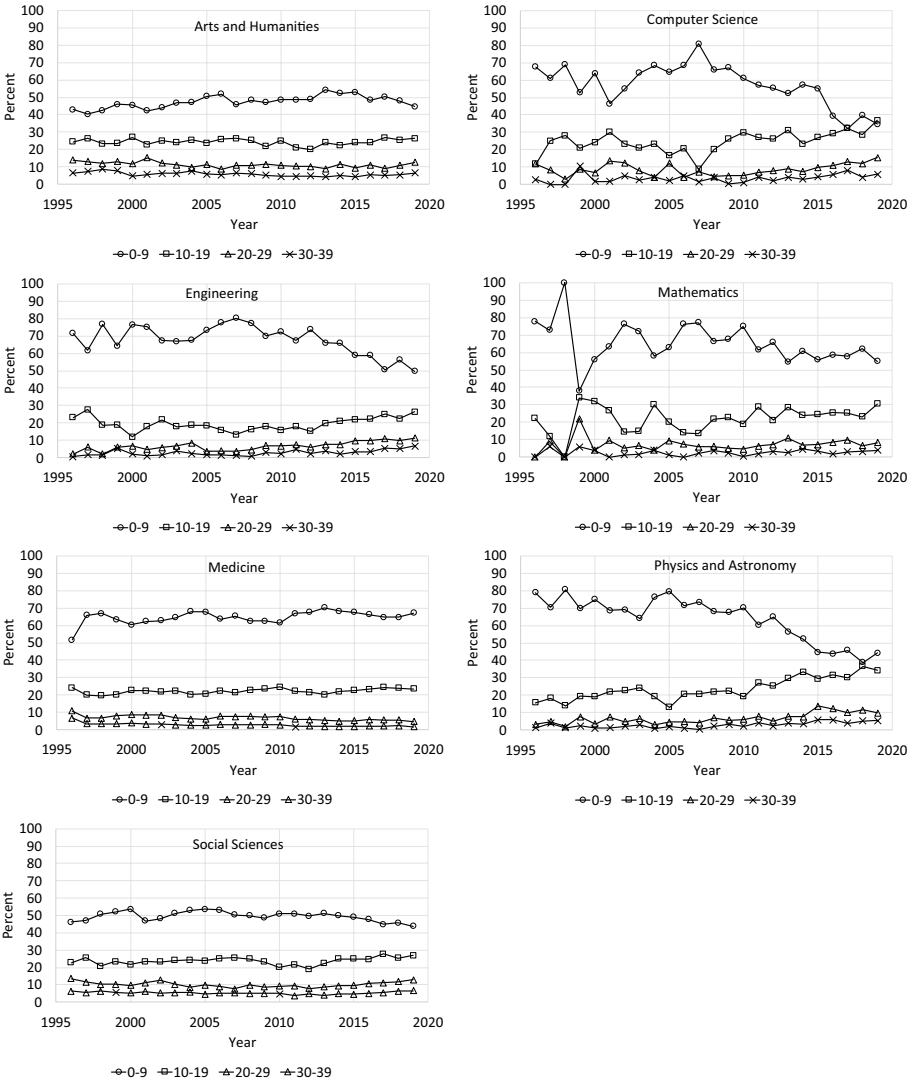

Fig. 4 The development in the number of references in notes

lists (0–9 references), short reference lists (10–19 references), and medium size reference lists (20–29 references and 30–39 references).

Only a few notes were published within the field of Mathematics during the first part of the investigated period, consequently causing the observed variability in the reported shares. When ignoring this variability, it is evident that in four of the seven fields (Arts and Humanities, Mathematics, Medicine, and Physics and Astronomy), notes display characteristics of a stable document type with a quite constant number of references. The same is not the case for the three other fields where the share of very short reference lists (0–9)

have dropped significantly over time. In these fields it is especially notes with short reference lists (10–19) that have experienced a growth over time.

Thus, the results show some differences between fields, but again data reveals that in fields where the number of references have grown in notes, the growth is primarily caused by a drop in reference lists of the shorter kind and a growth in a bit longer reference lists. The share of the longest reference lists seems to be quite stable.

Discussion and conclusion

The results of the investigation show significant differences between fields and document types. The number of references in journal articles and reviews is growing in all fields (except for the reviews in Arts and Humanities that remain stable over time), but at a different pace; the number of references in notes is growing in some fields (again at a different pace) whereas it remains stable in others.

By focusing on interval ratios, this study reveals that the main cause of the observed growth in number of references is a drop in the share of short reference lists and a corresponding increase in the share of a bit longer and medium size reference lists. The share of long and very long reference lists remain much more stable in shares over time.

Before discussing the implications of the study, the limitations need to be considered—specifically the unit of analysis and the quality of data. First, the analyses are performed on seven subject areas as indexed in Scopus. Differences in the number of references across fields as well as subfields are documented (Sánchez-Gil et al. 2018) and thus a more fine-grained analysis could potentially have shown even greater differences within fields. However, for the purpose of this paper, field differences remain clear using the current data set. Secondly, data quality is of great importance for any bibliometric study, and Scopus (as well as Web of Science) suffer from various documented inaccuracies (Krauskop 2019; Van Eck and Waltman 2017). Consequently, we expect some inaccuracies in the obtained data. However, as we expect these inaccuracies to be evenly distributed across the data set, bias is not expected.

Finding that the number of references in articles and reviews are increasing across all fields (except for Arts and Humanities reviews) lends support to Ucar et al. (2014) stating that a saturation phase is not in sight. Collectively, the seven fields are displaying a substantial decrease in publications with very few references, but also that the declining pace varies across fields. This support the need for field-specific studies of document types (Sánchez-Gil et al. 2018). Yet, the stable number of references in notes in four of the seven fields suggests that the development in the number of references is also closely linked to the document type. This may be explained by certain journal limitations (Anger 1999) or by certain document types having reached a maximum as suggested by Meadows (1974). A third explanation offered in several studies is that the increased number of references is correlated with an increase in paper length. Abt and Garfield (2002) analyzed 41 journals from physical, life, and social sciences and found a linear relationship between the average number of references and the normalized paper lengths. Papers in review journals have on average twice the number of references as research papers of the same lengths. Similar results were reported by Costas et al. (2012) who had analyzed the use of bibliographic references by individual scientists in three different research areas and found that within each area the number of references increased with paper length. However, Hyland (2004) found great disciplinary differences in the number of references even when correcting for the

number of words (the number of references per 1000 words ranged from 7.3 in Mechanical Engineering to 15.5 in Molecular Biology), and Vosner et al. (2016) found that the average number of references is increasing whereas the number of pages per publication is decreasing, although it has remained stable in recent years. Thus, the third explanation might be somewhat questionable.

Normalization is a key principle in citation analysis, and a number of normalization procedures have been suggested. The many field-normalized indicators measure citation impact comparably, but they are not equivalent, and the choice of field-normalized indicator can lead to different results in a research evaluation (Bornmann et al. 2019). One of these field-normalizing approaches is citing-side normalization which normalize impact indicators by correcting for the effect of reference list length (Waltman 2016). Zhou and Leydesdorff (2011: 362) describe the procedure as follows: "Each of the […] citing documents contains a number of references (k) and is accordingly attributed to the cited document with a fractional weight 1/k." The number of references in the citing paper is used to normalize a specific citation. In some cases, the average number of references in the same journal as the citing document is used as weighting factor (Bornmann et al. 2019). It is important to keep in mind that the number of references used to normalize the citations only includes references that falls within a certain reference window and that points to a publication in a journal covered by the database used for the analysis i.e. so-called active references (Zitt and Small 2008). Several indicators exist that are based on source normalization approaches. Waltman and van Eck (2012) examines three mean source normalized citation score indicators and find that they are all strongly correlated.

Zitt (2010) acknowledges that there are limitations to citing-side normalization and explains that a pool of documents with few references may produce anomalies. Mingers and Kaymaz (2019) encountered problems with cases with extremely high as well as cases with extremely low numbers of active citations when computing normalized book citations in Google Scholar. In the case of no active citations available the target book could not be normalized. Furthermore, Zitt (2010) argues that journals with constraints on the number of references can also produce irregularities although Zitt argues that the principle of aggregation reduces this type of problem. Waltman and van Eck (2012, p. 714) concludes that "[w]hen taking a source normalization approach, it is especially important to exclude journals with very small numbers of active references".

Consequently, researchers working with citing-side normalization recognizes the importance of the number of references. However, so far there has been little work done to address the consequences of the general increase in the average number of references. In a recent study, Petersen et al. (2019) estimates that the increase in reference lists accounts for one-third of the growth rate for the total number of references produced by the scientific literature published in any given year. While they acknowledge the importance of normalizing citation data, they argue that the problem of citation inflation may be even more fundamental:

> "The problem is rather simple—when citations are produced in distinct historical periods their 'nominal values' are inconsistent and thus cannot simply be added together" (Petersen et al. (2019: 1855).

The authors provide convincing examples showing that the cutoff for the top 1% of articles in the journal *Science* published in the year 2000 corresponds to 200 citations, whereas the top 1% cutoff for publications from 1965 was just under 100 citations. Similarly, they calculate that the cutoff for the top 10% of social science publications from 1965 is around 10 citations, whereas in 2000 the threshold had risen to more than 40 citations.

Furthermore, Bornmann and Mutz (2015, p. 2221) argue that the growth may be caused by "a mixture of internal and external (sociological, historical, psychological) practices that continuously have altered the ways of viewing science". These examples illustrate why neither field-normalization nor a fixed citation window can overcome the temporal bias induced by citation inflation. The authors therefore develop a six-step procedure for obtaining data that may be used for citation deflation. This procedure involves defining a target subject and obtaining deflator time series, but do not address the importance of document types.

Our results underline the importance of normalizing citation data, and for taking citation inflation into account when conducting citation analyses expanding longer time-periods. However, our results not only show differences in number of references between fields and over time, but also that a third parameter play a role. Thus, the number of references is not only field and time dependent, but also document type-specific. To obtain even more fine-grained citation deflator data, future developers may therefore also take our results into account, and develop procedures incorporating the document type of citing documents into their equations.

Funding Not applicable.

Availability of data and material See appendices.

Compliance with ethical standards

Conflict of interest None.

Code availability Not applicable.

Appendix 1: Arts and humanities; journal articles; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	4612	10,755	12,877	13,051	11,563	9268	6566	4596	2996	1917	4043	162	82,406
2018	5455	10,672	11,967	11,710	10,269	7926	5492	3663	2530	1695	3421	155	74,955
2017	5169	9647	11,100	11,106	9548	7389	5188	3487	2336	1487	3258	165	69,880
2016	4889	9210	10,536	10,240	8777	6813	4754	3301	2221	1604	3455	218	66,018
2015	5438	9966	11,094	10,171	8497	6523	4562	3188	2144	1464	3563	273	66,883
2014	6392	10,971	11,810	10,971	9048	6805	4574	3208	2243	1564	4077	362	72,025
2013	7417	11,159	11,729	10,269	8458	6305	4345	2936	2068	1503	3974	410	70,573
2012	6237	9491	10,095	9012	7323	5277	3747	2573	1822	1166	3304	311	60,358
2011	5522	8301	8761	7805	6500	4736	3375	2271	1555	1106	2990	298	53,220
2010	3896	6250	6702	6157	5218	3899	2669	1887	1283	868	2494	290	41,613
2009	4246	6172	6603	5927	4824	3476	2412	1660	1124	865	2308	219	39,836
2008	4927	6564	6808	6201	4830	3308	2411	1608	1083	801	2281	284	41,106
2007	4651	6305	6641	5675	4451	3240	2279	1492	996	719	2082	230	38,761
2006	4550	5934	5805	5181	3766	2852	1898	1299	887	660	1808	222	34,862

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2005	4397	5630	5478	4648	3563	2399	1606	1061	748	540	1444	194	31,708
2004	4108	5326	5255	4258	3223	2246	1459	949	679	470	1409	171	29,553
2003	3887	4987	4958	4094	3053	2113	1449	992	679	459	1404	141	28,216
2002	4265	5288	5110	4158	3076	2029	1326	910	675	483	1272	158	28,750
2001	2842	3677	3625	3147	2382	1641	1100	718	496	378	1089	129	21,224
2000	2704	3771	3516	2821	2102	1546	985	725	505	397	1195	135	20,402
1999	2659	3716	3462	2743	2036	1438	986	662	504	343	1083	127	19,759
1998	2747	3855	3365	2725	2044	1415	897	639	443	294	1040	170	19,634
1997	2785	3689	3441	2600	1843	1263	799	591	436	299	939	133	18,818
1996	2932	3726	3355	2533	1756	1248	779	548	384	286	941	105	18,593

Appendix 2: Arts and humanities; reviews; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	1660	2465	2437	2082	1608	1217	912	659	462	381	936	95	14,914
2018	2795	3713	3649	2885	2340	1610	1190	812	574	445	1141	101	21,255
2017	2782	4041	3926	3153	2491	1853	1229	922	695	521	1490	159	23,262
2016	3007	3802	3695	3093	2309	1741	1253	966	688	503	1655	195	22,907
2015	2268	3184	3167	2735	2129	1629	1245	933	646	506	1824	184	20,450
2014	1917	2364	2305	1909	1535	1182	888	708	510	397	1440	171	15,326
2013	1606	1840	1664	1408	1053	828	582	472	347	311	981	154	11,246
2012	1848	2119	2119	1814	1420	1079	806	609	467	328	1053	139	13,801
2011	2078	3012	2956	2374	1819	1287	958	616	472	339	1090	110	17,111
2010	2274	3406	3509	2787	2095	1513	1068	782	585	443	1318	122	19,902
2009	2012	2860	2870	2318	1773	1259	933	705	530	402	1292	134	17,088
2008	1350	1610	1593	1354	1012	779	599	414	336	273	866	86	10,272
2007	1434	1630	1470	1178	937	690	546	409	313	212	737	111	9667
2006	1429	1809	1711	1415	1087	801	596	487	367	263	893	125	10,983
2005	1470	1813	1700	1491	1204	868	639	486	354	278	1061	166	11,530
2004	1281	1635	1468	1209	985	750	566	463	336	233	874	124	9924
2003	1270	1534	1453	1260	930	778	533	396	274	222	760	84	9494
2002	1228	1425	1225	1094	807	545	437	329	229	174	573	59	8125
2001	526	581	582	464	334	238	184	144	94	85	310	35	3577
2000	643	592	514	422	327	246	175	141	103	82	311	47	3603
1999	573	651	490	395	278	237	150	122	98	68	294	46	3402
1998	492	546	477	350	283	183	145	120	80	89	311	32	3108
1997	575	582	452	358	285	194	164	107	96	69	272	35	3189
1996	543	535	445	312	235	211	159	117	73	68	225	31	2954

Appendix 3: Arts and humanities; notes; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	767	452	216	111	64	37	17	20	16	6	8	0	1714
2018	930	495	210	108	68	53	25	15	11	7	15	0	1937
2017	948	505	173	98	59	31	23	11	14	8	13	3	1886
2016	837	415	194	96	42	33	22	21	11	8	42	6	1727
2015	768	349	135	64	32	31	16	12	11	5	26	0	1449
2014	814	348	181	79	37	25	18	18	8	5	19	3	1555
2013	688	304	114	56	41	16	15	5	11	5	10	1	1266
2012	680	279	144	68	36	35	18	13	11	12	77	18	1391
2011	734	320	159	70	51	45	30	21	10	13	45	9	1507
2010	642	333	144	61	47	19	18	13	13	5	26	2	1323
2009	515	238	126	57	37	34	22	12	12	6	30	6	1095
2008	587	307	133	74	35	22	12	10	5	7	16	7	1215
2007	474	274	113	69	43	18	6	4	7	4	16	8	1036
2006	487	243	83	51	34	18	9	3	4	4	2	1	939
2005	403	190	90	48	27	11	8	3	5	1	8	2	796
2004	404	219	85	66	33	14	9	6	6	3	13	1	859
2003	342	176	81	47	29	16	14	6	3	3	11	3	731
2002	343	196	96	50	25	27	10	10	5	4	13	1	780
2001	194	105	70	26	15	15	7	6	6	5	7	2	458
2000	241	143	63	26	20	14	13	4	0	1	4	1	530
1999	193	99	55	33	15	11	2	5	0	2	4	0	419
1998	196	108	55	40	29	15	5	2	3	4	4	0	461
1997	171	112	56	32	16	13	8	3	7	1	5	0	424
1996	169	96	55	26	16	16	4	5	2	0	5	0	394

Appendix 4: Computer science; journal articles; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	6351	29,386	41,731	39,688	28,658	16,598	8997	4848	2766	1658	3286	240	184,207
2018	4831	24,640	33,894	31,019	21,523	12,552	6623	3474	2010	1209	2203	134	144,112
2017	5860	24,857	30,917	26,247	17,555	10,108	5390	2821	1577	928	1809	112	128,181
2016	6229	24,860	28,659	23,221	14,842	8476	4496	2388	1347	810	1567	91	116,986
2015	6311	24,197	26,177	20,607	13,150	7251	3710	2068	1182	688	1296	80	106,717
2014	6237	24,800	25,929	19,948	12,040	6379	3461	1895	996	638	1151	56	103,530
2013	7635	27,256	24,817	17,948	10,549	5505	2915	1494	886	504	910	63	100,482
2012	8060	29,811	23,820	15,748	8696	4614	2309	1149	690	450	780	46	96,173
2011	7797	26,091	21,308	13,923	7564	3886	2062	1063	565	404	638	47	85,348

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2010	7724	23,499	19,113	12,338	6613	3395	1805	962	547	294	624	47	76,961
2009	9098	23,959	18,609	11,478	5993	2946	1544	782	463	298	523	34	75,727
2008	9454	21,628	16,329	9885	5171	2403	1259	655	365	219	421	36	67,825
2007	9747	20,321	14,818	8587	4250	2071	1044	532	292	182	337	17	62,198
2006	12,041	18,702	12,776	7185	3509	1656	799	426	227	145	247	16	57,729
2005	10,641	15,412	10,336	5435	2521	1244	619	330	205	110	170	8	47,031
2004	7546	12,832	8619	4478	1989	927	432	244	148	67	127	6	37,415
2003	6110	11,698	7804	3922	1756	814	396	213	132	75	135	10	33,065
2002	9327	13,969	8020	3850	1646	800	383	203	126	76	151	9	38,560
2001	11,776	15,500	8387	3731	1647	768	408	203	128	86	173	17	42,824
2000	8624	12,260	7203	3421	1498	714	364	200	138	64	161	10	34,657
1999	7717	11,360	6587	2960	1386	676	328	193	117	68	147	16	31,555
1998	7977	11,332	6373	2915	1225	625	297	179	87	66	133	14	31,223
1997	7479	10,753	6108	2656	1197	584	278	181	76	49	127	20	29,508
1996	7872	10,921	5803	2423	1035	492	254	147	73	58	92	10	29,180

Appendix 5: Computer science; reviews; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	146	266	288	293	339	348	319	379	373	320	2098	388	5557
2018	189	294	285	248	297	300	257	301	285	240	1503	294	4493
2017	216	328	319	280	278	297	259	261	243	225	1060	187	3953
2016	201	256	284	290	221	214	227	194	178	166	748	132	3111
2015	189	210	207	202	171	161	179	143	119	106	553	104	2344
2014	201	228	186	182	163	166	138	122	107	107	439	48	2087
2013	194	213	212	192	172	135	121	112	95	87	508	66	2107
2012	280	373	371	320	275	182	163	123	112	103	340	52	2694
2011	215	304	274	253	213	151	146	102	76	67	246	30	2077
2010	142	163	173	143	111	89	57	51	47	62	156	16	1210
2009	170	185	144	114	80	73	65	55	30	34	147	24	1121
2008	118	156	121	94	90	68	52	46	23	28	103	9	908
2007	304	304	155	102	91	74	55	33	33	28	79	14	1272
2006	527	559	317	237	138	107	85	48	42	23	104	16	2203
2005	724	803	466	336	211	134	72	60	56	36	111	12	3021
2004	539	625	411	253	180	105	79	47	43	19	90	9	2400
2003	605	531	313	222	158	107	71	35	40	32	74	5	2193
2002	231	249	165	119	56	55	37	29	23	11	63	5	1043
2001	142	145	95	71	31	20	31	8	14	12	25	4	598
2000	128	150	84	55	38	30	18	19	11	5	19	2	559
1999	105	99	65	55	30	16	16	8	9	5	12	1	421
1998	169	171	94	70	38	19	22	10	9	5	28	2	637
1997	167	162	99	70	44	19	12	15	10	16	25	4	643

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
1996	147	147	107	48	31	21	11	8	12	5	15	2	554

Appendix 6: Computer science; notes; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	144	153	64	25	9	8	3	2	1	3	3	0	415
2018	164	118	50	17	17	17	8	5	3	7	7	0	413
2017	121	121	49	30	13	13	2	5	5	1	14	0	374
2016	158	117	44	23	15	18	6	2	3	3	9	2	400
2015	242	119	43	19	6	2	2	1	2	0	3	0	439
2014	199	81	26	11	6	7	1	3	2	2	9	0	347
2013	111	66	19	9	3	0	2	0	1	0	1	0	212
2012	125	59	18	5	7	2	1	3	0	2	2	2	226
2011	122	58	15	9	3	3	0	0	2	0	2	0	214
2010	106	52	9	2	4	1	0	0	0	0	0	0	174
2009	118	46	9	1	1	0	0	1	0	0	0	0	176
2008	85	26	6	5	2	3	0	0	0	1	1	0	129
2007	101	11	9	2	1	0	0	1	0	0	0	0	125
2006	82	25	5	6	1	0	0	1	0	0	0	0	120
2005	58	15	11	2	1	2	0	0	0	0	1	0	90
2004	50	17	3	3	0	0	0	0	0	0	0	0	73
2003	73	24	9	3	2	1	2	0	0	0	0	0	114
2002	66	28	15	6	3	1	0	1	0	0	0	0	120
2001	51	33	15	2	1	2	2	1	0	1	1	1	110
2000	37	14	4	1	0	0	0	0	1	0	1	0	58
1999	30	12	5	6	2	1	0	0	1	0	0	0	57
1998	22	9	1	0	0	0	0	0	0	0	0	0	32
1997	22	9	3	0	1	0	0	0	0	0	1	0	36
1996	23	4	4	1	0	1	0	0	0	1	0	0	34

Appendix 7: Engineering; journal articles; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	15,661	73,544	99,312	88,868	60,461	34,141	17,173	8232	4074	2120	3675	294	407,555
2018	15,658	74,627	90,927	75,408	49,487	27,006	13,222	6194	2916	1590	2836	233	360,104
2017	30,052	85,899	87,986	67,627	41,848	22,001	10,479	5010	2321	1299	2394	201	357,117
2016	21,901	78,783	82,490	60,434	34,672	17,671	8150	3815	1833	1032	1962	190	312,933
2015	25,407	83,590	77,081	52,727	29,774	14,732	6483	3060	1623	862	1790	182	297,311

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2014	24,301	78,653	71,093	48,295	25,948	12,258	5384	2482	1241	702	1468	128	271,953
2013	25,810	81,077	66,882	42,222	21,874	10,022	4253	1997	955	604	1180	113	256,989
2012	27,736	77,419	58,126	34,720	17,197	7741	3358	1516	747	433	889	52	229,934
2011	30,019	77,994	53,598	30,572	14,399	6186	2753	1239	594	345	876	96	218,671
2010	33,278	77,241	48,861	26,560	12,518	5244	2369	1080	615	317	776	97	208,956
2009	37,672	76,971	46,589	24,350	10,629	4549	1905	897	481	271	657	59	205,030
2008	38,641	70,556	40,568	19,796	8662	3649	1524	784	422	237	577	55	185,471
2007	39,952	65,779	36,427	16,620	6848	2798	1298	629	344	218	527	67	171,507
2006	43,391	60,522	30,606	13,925	5702	2352	1048	501	267	154	466	54	158,988
2005	39,980	50,644	25,230	11,092	4272	1791	808	366	220	150	283	39	134,875
2004	32,322	43,697	22,759	9727	3659	1506	642	354	181	130	286	28	115,291
2003	26,978	37,487	19,816	8266	3218	1329	585	279	171	139	305	35	98,608
2002	31,804	40,071	19,319	7788	2997	1185	609	283	153	115	320	32	104,676
2001	40,818	43,033	19,913	7492	2981	1183	582	264	186	115	385	42	116,994
2000	37,440	38,742	17,611	6860	2627	1199	568	313	194	117	378	49	106,098
1999	36,167	37,294	16,877	6450	2638	1107	502	258	175	109	337	48	101,962
1998	35,370	36,550	16,319	6225	2299	1049	485	285	159	120	291	53	99,205
1997	36,159	36,557	15,658	5704	2165	913	396	240	136	83	305	48	98,364
1996	35,441	36,048	15,726	6127	2454	1225	594	360	175	135	362	45	98,692

Appendix 8: Engineering; reviews; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	304	556	733	753	692	793	702	687	616	633	3903	917	11,289
2018	359	649	763	642	642	658	604	578	569	479	3045	693	9681
2017	409	701	778	760	712	677	582	537	512	438	2471	533	9110
2016	464	744	767	629	572	568	524	427	436	374	1946	350	7801
2015	411	604	606	519	421	456	423	339	296	266	1429	257	6027
2014	408	538	593	520	444	404	313	327	282	265	1279	261	5634
2013	410	621	554	501	415	400	335	271	244	207	1075	190	5223
2012	607	925	878	720	565	436	315	307	275	241	957	163	6389
2011	505	751	744	607	436	382	292	248	191	192	831	112	5291
2010	420	536	463	423	341	288	246	186	175	159	688	101	4026
2009	364	488	513	447	280	264	177	140	176	150	569	83	3651
2008	366	450	441	483	271	208	184	160	139	100	439	80	3321
2007	766	636	501	684	295	239	160	119	125	110	346	57	4038
2006	1270	1159	701	439	290	208	178	144	88	81	354	54	4966
2005	1708	1666	957	544	337	246	171	125	121	89	361	62	6387
2004	1274	1011	654	410	261	212	145	96	93	83	239	51	4529
2003	1090	887	465	307	228	139	110	78	57	52	198	40	3651
2002	594	438	274	200	124	111	74	63	54	39	136	32	2139
2001	365	334	201	121	89	82	70	49	44	24	120	23	1522
2000	296	253	166	112	85	82	51	25	25	19	73	10	1197
1999	329	292	154	106	69	45	27	32	27	14	65	9	1169

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
1998	553	472	249	137	79	57	34	30	24	14	70	13	1732
1997	506	503	266	134	91	55	47	34	33	27	72	29	1797
1996	519	570	293	161	91	57	40	41	34	20	105	17	1948

Appendix 9: Engineering; notes; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	421	223	97	57	24	8	7	3	1	1	5	1	848
2018	538	215	94	50	25	17	9	4	2	1	1	0	956
2017	408	203	89	45	24	12	10	7	3	1	5	0	807
2016	446	168	74	26	16	12	11	2	2	0	1	0	758
2015	480	180	80	28	21	11	5	3	3	1	3	0	815
2014	530	170	61	18	14	6	3	1	0	0	2	0	805
2013	476	143	55	28	7	3	3	2	3	0	1	0	721
2012	696	145	58	23	8	7	2	3	1	0	2	0	945
2011	396	105	44	28	1	5	1	2	2	1	4	1	590
2010	493	108	47	17	8	3	5	0	0	1	0	0	682
2009	481	125	48	21	4	3	2	1	0	0	2	0	687
2008	459	97	27	6	2	1	0	1	0	0	0	0	593
2007	428	71	20	7	2	4	1	0	0	0	1	1	535
2006	416	85	21	8	2	1	2	0	0	0	1	0	536
2005	281	71	14	7	3	2	3	0	1	0	2	0	384
2004	166	46	21	6	3	0	1	1	0	0	2	0	246
2003	150	40	15	9	5	1	2	2	0	0	0	0	224
2002	182	59	16	5	5	1	2	0	0	0	0	0	270
2001	184	44	12	3	1	1	0	0	0	0	0	0	245
2000	133	21	12	4	2	1	0	0	0	0	1	0	174
1999	95	28	9	8	4	3	0	0	1	0	0	0	148
1998	102	25	3	2	0	0	0	0	1	0	0	0	133
1997	69	31	7	2	1	0	0	1	0	0	1	0	112
1996	93	30	3	1	0	1	0	2	0	0	0	0	130

Appendix 10: Mathematics; journal articles; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	6699	29,303	36,053	29,050	18,744	10,044	5010	2460	1281	707	1213	76	140,640

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2018	6900	28,459	32,315	25,089	15,365	8053	3781	1875	1023	544	951	62	124,417
2017	8373	30,586	31,909	23,100	13,377	6610	3174	1665	776	410	803	57	120,840
2016	9399	31,543	30,693	21,180	11,726	5855	2813	1376	735	376	817	50	116,563
2015	9506	31,222	29,584	19,681	10,636	5015	2380	1185	704	357	692	44	111,006
2014	10,128	32,531	30,018	19,225	9946	4583	2114	1164	569	334	625	42	111,279
2013	11,164	34,035	27,707	17,430	8684	3995	1901	913	483	280	518	36	107,146
2012	11,924	34,047	26,256	15,406	7490	3412	1646	753	421	233	435	24	102,047
2011	11,739	31,742	23,661	13,445	6474	3065	1375	687	329	222	395	41	93,175
2010	12,043	30,284	22,015	12,147	5776	2597	1314	625	337	185	346	43	87,712
2009	13,921	31,430	22,202	11,838	5291	2404	1112	544	320	177	355	35	89,629
2008	13,756	28,895	19,548	10,004	4625	1967	1000	436	233	139	254	30	80,887
2007	13,502	27,072	17,790	8787	3969	1701	817	390	214	114	255	23	74,634
2006	12,930	24,360	15,399	7384	3367	1464	676	332	174	95	186	16	66,383
2005	12,228	21,462	13,238	6235	2663	1150	494	256	134	82	159	9	58,110
2004	11,045	20,145	12,524	5846	2391	1034	464	227	128	53	117	7	53,981
2003	10,051	18,541	11,565	5354	2299	969	429	233	102	60	89	9	49,701
2002	12,954	20,036	11,376	4974	2008	839	405	193	113	78	147	13	53,136
2001	15,646	21,625	11,731	5063	2041	903	421	218	115	70	151	15	57,999
2000	12,629	18,250	10,115	4344	1760	799	347	178	128	57	179	22	48,808
1999	11,637	17,188	9390	3900	1614	746	344	185	124	65	134	25	45,352
1998	11,923	17,079	9010	3879	1445	668	275	181	112	68	135	20	44,795
1997	11,639	16,980	8888	3550	1436	610	279	157	92	51	141	20	43,843
1996	12,925	16,409	8324	3209	1273	572	302	142	88	46	118	15	43,423

Appendix 11: Mathematics; reviews; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	65	194	241	197	169	168	126	121	81	95	465	82	2004
2018	62	157	204	172	149	134	109	120	91	63	396	87	1744
2017	76	211	229	220	160	135	127	114	86	81	348	64	1851
2016	73	187	217	172	131	95	81	83	69	70	289	46	1513
2015	70	157	157	138	108	96	77	59	62	37	218	34	1213
2014	63	123	141	141	85	79	73	63	47	54	186	29	1084
2013	103	167	170	164	113	80	73	57	53	51	187	32	1250
2012	145	301	282	219	177	103	89	62	51	50	180	32	1691
2011	123	227	232	169	111	95	78	46	43	48	161	22	1355
2010	97	143	127	102	96	75	50	44	36	31	120	11	932
2009	73	130	114	61	66	47	52	26	29	20	87	16	721
2008	81	121	74	94	62	42	41	19	19	17	61	14	645
2007	128	173	124	99	76	45	35	28	21	15	54	7	805
2006	258	334	292	203	130	96	62	36	25	12	67	11	1526
2005	418	598	419	254	154	88	46	30	41	24	79	12	2163
2004	200	323	276	178	99	72	46	27	15	21	79	13	1349
2003	171	312	252	167	118	66	45	30	19	20	57	5	1262

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2002	133	144	115	78	33	34	30	19	13	10	37	5	651
2001	99	128	85	50	33	28	23	13	16	5	32	3	515
2000	111	124	96	72	32	32	20	13	16	2	24	3	545
1999	78	90	59	40	32	18	7	7	9	3	16	2	361
1998	82	92	74	51	19	21	14	8	9	4	19	3	396
1997	65	94	55	30	25	15	10	13	6	6	18	4	341
1996	77	94	48	31	17	13	7	10	4	2	15	2	320

Appendix 12: Mathematics; notes; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	209	116	32	15	1	4	0	1	0	0	1	1	380
2018	188	70	20	10	7	4	1	1	0	1	1	0	303
2017	188	82	32	10	5	3	2	0	0	1	2	0	325
2016	186	81	27	6	5	6	1	2	0	1	2	0	317
2015	146	64	19	9	7	6	3	0	0	0	3	5	262
2014	188	74	21	14	2	3	2	3	1	0	1	0	309
2013	105	55	21	5	3	2	1	0	0	0	1	0	193
2012	137	44	15	7	4	0	0	0	0	1	0	0	208
2011	154	72	16	5	1	2	0	0	0	0	1	0	251
2010	149	38	9	1	2	0	0	0	0	0	0	0	199
2009	172	58	13	6	2	3	1	0	0	0	0	0	255
2008	182	60	17	10	2	1	0	1	0	1	0	0	274
2007	142	25	11	4	0	0	0	1	0	0	1	0	184
2006	103	19	10	0	0	3	0	0	0	0	0	0	135
2005	47	15	7	1	2	2	0	0	0	0	1	0	75
2004	29	15	2	2	1	0	0	0	0	1	0	0	50
2003	44	9	4	1	1	1	0	0	0	1	0	0	61
2002	58	11	4	1	1	0	1	0	0	0	0	0	76
2001	33	14	5	0	0	0	0	0	0	0	0	0	52
2000	14	8	1	1	0	0	0	0	1	0	0	0	25
1999	19	17	11	3	0	0	0	0	0	0	0	0	50
1998	13	0	0	0	0	0	0	0	0	0	0	0	13
1997	24	4	3	2	0	0	0	0	0	0	0	0	33
1996	14	4	0	0	0	0	0	0	0	0	0	0	18

Appendix 13: Medicine; journal articles; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	32,632	87,901	123,439	114,430	74,021	41,855	21,419	11,750	6437	3803	6544	491	524,722
2018	32,954	87,021	116,893	104,276	67,184	36,883	18,252	9801	5368	3107	5286	428	487,453
2017	34,697	85,298	113,742	100,841	63,223	33,791	16,673	8727	4745	2774	4941	414	469,866
2016	38,234	87,710	112,135	97,267	60,841	32,213	15,654	8257	4439	2709	5207	529	465,195
2015	40,521	88,291	109,707	94,705	58,224	31,019	14,905	7918	4477	2717	5832	628	458,944
2014	40,624	92,283	109,327	90,649	55,051	28,911	13,990	7436	4202	2458	5405	568	450,904
2013	41,289	92,255	105,857	86,256	51,673	26,786	12,698	6673	3695	2327	4994	498	435,001
2012	41,028	89,549	100,167	79,535	47,099	23,732	11,042	5734	3162	1921	4067	376	407,412
2011	41,601	90,307	96,601	75,533	44,727	22,721	10,330	5445	3001	1807	4022	378	396,473
2010	41,978	86,978	90,744	69,004	40,512	19,867	8882	4520	2406	1412	2961	278	369,542
2009	43,272	85,827	85,661	64,921	37,982	18,906	8133	4017	2111	1182	2343	185	354,540
2008	40,897	82,267	81,553	60,311	35,441	17,508	7679	3725	1950	1051	2111	176	334,669
2007	38,463	77,769	76,739	56,234	32,953	16,307	7110	3375	1668	997	2001	164	313,780
2006	38,758	74,920	71,311	51,643	29,843	14,724	6444	3016	1557	919	1661	162	294,958
2005	35,551	68,556	64,807	47,329	26,537	13,392	5537	2547	1263	709	1397	104	267,729
2004	31,012	63,491	59,944	43,424	23,971	11,523	4923	2268	1100	615	1158	81	243,510
2003	30,023	61,475	58,837	41,177	22,346	10,441	4520	2106	1034	591	1096	83	233,729
2002	31,171	61,935	57,791	40,551	21,984	10,607	4788	2329	1233	756	1782	135	235,062
2001	33,478	62,567	57,354	39,741	21,599	10,464	4890	2500	1326	909	2066	202	237,096
2000	33,631	61,739	56,582	38,551	20,859	10,015	4747	2426	1347	883	2129	213	233,122
1999	35,250	61,986	55,680	37,215	19,770	9408	4365	2112	1188	753	1880	181	229,788
1998	37,467	63,936	54,781	34,893	18,088	8519	3940	1960	1057	689	1828	196	227,354
1997	38,355	65,500	54,442	33,502	17,306	8077	3675	1860	1071	654	1781	186	226,409
1996	33,562	57,324	48,654	31,209	15,609	7133	3143	1530	800	475	1312	154	200,905

Appendix 14: Medicine; reviews; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	2814	5925	7740	8687	8580	7701	6537	5439	4329	3686	13,864	1918	77,220
2018	3155	5843	7259	8142	8072	7309	6099	5089	4135	3483	13,284	1804	73,674
2017	3212	6233	7751	8469	7879	7166	5721	4923	4017	3410	12,232	1609	72,622
2016	3140	6262	7265	7941	7592	6845	5562	4494	3793	3214	11,211	1294	68,613
2015	2767	5415	6677	6846	6683	5917	4781	4162	3481	2928	9917	1114	60,688
2014	2512	5671	7050	7091	6655	5837	4940	4052	3458	2848	9965	1078	61,157
2013	2522	6157	7511	6977	6466	5633	4500	3845	3155	2671	9117	942	59,496
2012	2890	7662	9248	8327	7317	6027	4712	3948	3281	2778	9490	985	66,665
2011	2816	6711	7924	6999	6192	5360	4051	3526	2816	2317	8268	905	57,885

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2010	2254	5771	8040	7538	6794	6000	4606	3669	2878	2417	8574	881	59,422
2009	2817	6738	8400	7939	6881	6002	4583	3785	2940	2389	8226	945	61,645
2008	2980	7192	8671	8030	6820	5868	4470	3584	2790	2350	7881	827	61,463
2007	4891	9557	9135	8240	6697	5524	4209	3358	2606	2147	7122	791	64,277
2006	5711	11,783	10,644	8646	6911	5654	4185	3230	2613	2074	6938	840	69,229
2005	6317	11,997	10,940	8529	6776	5383	4023	3225	2422	1932	6483	743	68,770
2004	6234	11,820	10,898	8570	6458	5227	3733	3137	2357	1836	6134	704	67,108
2003	5180	9798	8975	7408	6284	5107	3744	2997	2211	1685	5729	718	59,836
2002	3446	6744	6713	5952	5028	3951	3105	2362	1815	1440	4617	592	45,765
2001	3922	6079	5622	4834	4022	3275	2411	1877	1408	1159	3656	449	38,714
2000	4834	7038	5933	4903	4045	3080	2155	1740	1345	977	3507	451	40,008
1999	4529	6360	5111	4277	3419	2612	1955	1488	1089	944	2958	412	35,154
1998	4159	5899	4819	3926	3015	2332	1791	1375	1105	836	2769	422	32,448
1997	4240	5538	4690	3851	3002	2284	1795	1363	1066	822	2786	361	31,798
1996	2793	4235	3678	2923	2327	1796	1413	1086	798	638	2315	337	24,339

Appendix 15: Medicine; notes; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	15,589	5470	1103	440	217	136	88	52	42	20	68	5	23,230
2018	13,758	5107	1216	524	249	164	88	59	37	27	43	2	21,274
2017	13,642	5168	1194	484	271	131	74	64	19	19	37	3	21,106
2016	14,394	5055	1272	461	224	127	72	38	23	16	38	1	21,721
2015	13,275	4471	1042	384	190	91	62	33	20	14	41	3	19,626
2014	14,118	4585	1026	419	215	111	85	37	31	20	50	9	20,706
2013	13,613	3934	1044	371	162	87	64	43	17	16	33	2	19,386
2012	11,730	3770	1046	381	171	110	69	35	20	13	39	1	17,385
2011	10,784	3590	996	340	178	83	51	29	19	11	48	3	16,132
2010	8585	3444	1066	405	193	104	54	37	25	18	51	4	13,986
2009	8379	3168	986	403	210	88	54	44	29	8	40	2	13,411
2008	7612	2779	960	363	173	99	52	54	18	15	37	5	12,167
2007	6477	2131	766	277	119	38	41	20	10	9	27	1	9916
2006	5485	1942	678	267	105	56	29	22	12	3	27	4	8630
2005	5087	1559	463	196	86	48	24	12	10	5	13	5	7508
2004	4450	1323	416	178	74	33	24	11	13	5	18	2	6547
2003	3689	1282	403	160	83	46	25	14	11	4	8	0	5725
2002	3237	1120	443	169	82	41	15	20	11	5	9	0	5152
2001	3189	1154	434	166	69	38	21	13	6	8	14	0	5112
2000	2661	999	390	174	83	32	18	15	7	12	19	3	4413
1999	2839	911	367	161	76	47	30	14	12	8	11	1	4477
1998	2109	618	213	108	43	16	11	12	2	2	13	2	3149
1997	1814	551	190	97	43	23	10	8	8	3	6	2	2755
1996	444	208	95	58	23	14	5	4	2	3	5	0	861

Appendix 16: Physics and astronomy; journal articles; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	6328	34,570	53,492	57,200	44,911	29,291	16,829	9350	4885	2865	5151	288	265,160
2018	7503	37,233	53,885	53,608	40,585	25,900	14,444	8175	4221	2454	4591	219	252,818
2017	8526	39,703	53,708	50,834	36,684	22,092	12,422	6894	3547	2093	3837	203	240,543
2016	10,084	43,271	54,842	48,872	32,832	19,598	10,945	5827	3280	1899	3702	228	235,380
2015	11,103	46,361	54,700	46,337	30,975	17,699	9637	5284	2887	1706	3315	216	230,220
2014	12,942	49,065	55,978	45,309	28,594	15,798	8334	4567	2538	1515	3005	193	227,838
2013	14,402	52,573	55,977	42,722	25,745	14,043	7462	3996	2182	1407	2597	205	223,311
2012	16,158	51,902	52,472	38,613	21,939	12,055	6234	3536	1997	1224	2344	119	208,593
2011	18,458	54,761	51,712	35,191	19,762	10,500	5585	3068	1829	1120	2099	133	204,218
2010	17,489	53,811	49,036	31,792	17,587	9002	4944	2794	1680	966	1947	151	191,199
2009	21,954	58,719	49,269	30,479	15,832	8253	4489	2516	1479	897	1799	148	195,834
2008	23,395	59,694	47,381	28,368	14,574	7196	3935	2120	1239	778	1460	136	190,276
2007	25,080	57,861	44,245	24,950	12,379	6353	3428	1904	1052	670	1302	118	179,342
2006	24,711	57,148	42,386	23,242	11,276	5860	3046	1667	988	600	1187	101	172,212
2005	21,142	48,548	36,969	20,472	9898	5076	2674	1529	816	502	920	95	148,641
2004	17,432	44,318	34,327	19,288	9215	4886	2506	1409	784	464	800	51	135,480
2003	15,748	41,186	33,680	18,483	8816	4369	2284	1303	711	405	716	50	127,751
2002	20,577	44,620	33,880	18,639	9277	4479	2423	1344	759	450	782	71	137,301
2001	26,648	48,975	33,782	17,927	8591	4335	2306	1216	719	397	846	85	145,827
2000	27,360	47,646	31,033	16,335	7849	3956	2066	1079	639	369	848	71	139,251
1999	28,297	46,957	30,021	14,918	7129	3564	1847	1041	604	351	704	90	135,523
1998	26,032	47,612	29,601	14,690	6666	3336	1788	901	538	323	664	82	132,233
1997	28,134	46,665	28,173	13,548	6072	2959	1459	860	476	284	599	76	129,305
1996	26,989	45,492	27,389	12,764	5772	2821	1447	826	436	261	615	69	124,881

Appendix 17: Physics and astronomy; reviews; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	358	287	364	348	387	402	374	346	331	318	2190	598	6303
2018	163	324	342	369	342	330	335	285	292	300	1767	526	5375
2017	154	317	354	337	384	381	342	332	316	281	1644	434	5276
2016	168	346	415	378	365	342	283	297	267	220	1290	339	4710
2015	120	274	307	324	299	299	243	242	195	230	1109	268	3910
2014	186	296	376	339	336	263	257	257	217	195	1214	272	4208
2013	201	302	354	315	309	290	223	218	186	183	951	238	3770
2012	299	685	749	565	475	383	312	256	251	214	981	215	5385

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2011	237	409	455	421	341	278	262	244	151	183	740	155	3876
2010	158	261	270	214	227	193	157	138	141	117	598	140	2614
2009	118	195	237	185	173	146	122	106	123	113	453	104	2075
2008	179	218	201	196	180	129	128	115	95	80	373	103	1997
2007	332	391	261	236	169	183	128	107	99	79	384	86	2455
2006	575	726	548	423	359	258	176	153	135	71	397	107	3928
2005	563	839	620	519	343	232	182	124	111	90	441	104	4168
2004	492	788	477	348	268	234	152	132	115	75	416	100	3597
2003	429	644	538	438	306	252	159	137	114	79	350	95	3541
2002	421	702	366	247	153	144	105	77	71	51	252	92	2681
2001	378	642	261	159	128	100	90	65	64	40	225	70	2222
2000	197	289	200	185	123	101	61	53	46	48	187	59	1549
1999	242	296	226	142	84	56	43	38	35	36	154	61	1413
1998	229	373	228	144	90	62	37	39	35	26	145	41	1449
1997	163	249	184	118	85	48	55	39	30	29	158	53	1211
1996	231	402	240	140	86	64	42	34	33	24	145	42	1483

Appendix 18: Physics and astronomy; notes; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	305	236	68	38	17	9	5	5	2	0	5	1	691
2018	219	206	65	30	19	13	6	0	2	1	2	1	564
2017	248	163	54	21	25	13	8	2	2	3	3	0	542
2016	295	213	83	40	20	12	4	3	1	1	3	0	675
2015	275	181	85	36	21	9	2	3	0	0	3	2	617
2014	316	202	47	21	3	7	5	3	0	0	1	0	605
2013	352	185	49	25	6	1	0	1	1	1	2	0	623
2012	385	150	31	15	5	3	2	1	0	1	0	0	593
2011	354	159	46	24	0	1	1	1	0	0	0	0	586
2010	385	106	34	12	5	2	2	2	1	0	0	0	549
2009	357	119	30	17	3	2	0	1	0	0	0	0	529
2008	292	95	30	10	2	1	0	0	0	0	0	0	430
2007	371	105	21	2	4	1	1	0	1	0	0	0	506
2006	313	91	21	5	4	2	0	0	1	1	0	0	438
2005	121	20	7	3	0	0	1	0	0	0	0	0	152
2004	167	42	7	2	0	0	0	0	0	0	1	0	219
2003	127	48	13	6	3	0	0	1	0	0	0	0	198
2002	188	62	13	6	3	0	0	0	0	0	0	0	272
2001	109	35	12	2	0	1	0	0	0	0	0	0	159
2000	129	33	6	2	1	0	1	0	0	0	0	0	172
1999	118	33	13	4	0	0	1	0	0	0	0	0	169

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
1998	166	29	4	3	1	1	0	0	1	1	0	0	206
1997	104	27	7	6	2	1	0	1	0	0	0	0	148
1996	190	38	8	3	1	1	0	0	0	0	0	0	241

Appendix 19: Social sciences; journal articles; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	8234	20,421	29,481	35,820	35,636	29,924	22,051	14,910	9670	6017	10,464	312	222,940
2018	9359	19,268	27,436	31,558	29,970	24,178	17,147	11,585	7279	4705	8012	280	190,777
2017	9364	19,172	25,288	29,170	26,884	21,605	15,140	10,038	6333	3908	6973	329	174,204
2016	9899	19,070	25,164	26,817	24,921	19,282	13,645	8993	5770	3685	6814	426	164,486
2015	10,397	19,548	24,942	26,019	23,473	18,147	12,519	8367	5357	3282	6734	455	159,240
2014	10,635	19,811	24,956	25,717	22,408	17,223	11,908	7729	4981	3257	6796	589	156,010
2013	12,063	20,016	23,705	23,867	20,703	15,618	10,674	7046	4663	3040	6793	710	148,898
2012	11,543	19,538	22,337	21,775	18,239	13,362	9196	6059	3911	2476	5743	593	134,772
2011	10,913	17,950	20,876	19,913	16,919	12,101	8457	5348	3496	2322	5388	712	124,395
2010	9893	16,789	19,075	18,244	14,702	10,858	7234	4863	3262	2111	5102	737	112,870
2009	10,189	16,220	18,093	16,953	13,324	9594	6371	4097	2671	1827	4373	650	104,362
2008	9274	14,626	16,106	14,771	11,848	8313	5698	3551	2362	1587	3807	449	92,392
2007	8208	13,230	14,550	13,066	10,240	7197	4911	2984	2031	1310	3210	418	81,355
2006	7172	11,786	12,718	11,247	8454	6144	3904	2572	1684	1112	2713	270	69,776
2005	7224	10,511	10,937	9412	7039	4860	3177	2065	1356	864	1757	175	59,377
2004	6891	10,124	10,307	8709	6488	4394	2751	1791	1115	725	1653	147	55,095
2003	6694	9755	9917	8173	6110	4042	2669	1634	1110	700	1748	143	52,695
2002	7385	10,644	10,203	8417	6131	4023	2636	1745	1135	685	1654	165	54,823
2001	8493	10,649	9906	8043	5816	4055	2560	1655	1100	737	1969	262	55,245
2000	8089	10,261	9560	7470	5422	3763	2482	1590	1080	755	1987	299	52,758
1999	8074	10,347	8975	7167	4945	3365	2319	1411	1014	686	1861	289	50,453
1998	8235	9798	8749	6567	4833	3199	2128	1365	930	661	1862	291	48,618
1997	8014	9568	8513	6333	4370	2883	1908	1267	853	553	1628	256	46,146
1996	8344	9739	8290	6119	4240	2864	1830	1250	837	580	1622	239	45,954

Appendix 20: Social sciences; reviews; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	1767	2308	2458	2221	1874	1534	1236	996	767	593	1816	203	17,773
2018	2519	3439	3500	3045	2615	2011	1536	1039	822	568	1807	198	23,099
2017	2602	3683	3632	3111	2681	2101	1504	1126	837	649	1952	241	24,119

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2016	2799	3342	3181	2833	2349	1868	1392	1014	749	536	1719	245	22,027
2015	2261	2715	2611	2368	1917	1569	1178	861	664	478	1801	277	18,700
2014	1992	2268	2006	1789	1541	1210	914	739	561	424	1482	225	15,151
2013	1719	1777	1661	1481	1211	1012	703	593	388	346	1066	194	12,151
2012	1946	2319	2224	1946	1638	1276	947	713	558	413	1287	226	15,493
2011	2105	2414	2316	2056	1670	1214	949	592	484	365	1208	204	15,577
2010	1983	2209	2228	1826	1459	1126	764	585	448	362	1129	253	14,372
2009	1737	1941	1881	1601	1239	931	688	527	401	324	1152	327	12,749
2008	1662	1835	1663	1499	1181	897	785	502	395	296	1211	458	12,384
2007	2111	2108	1795	1545	1218	945	691	521	406	259	1004	333	12,936
2006	2392	2646	2416	2213	1756	1374	909	675	482	313	1027	159	16,362
2005	2570	3020	2936	2511	2055	1513	1121	839	582	430	1594	216	19,387
2004	2148	2688	2435	2101	1654	1224	903	684	469	314	1076	136	15,832
2003	2000	2234	2112	1815	1409	1070	804	531	363	284	811	77	13,510
2002	1539	1703	1392	1228	872	681	514	391	266	184	555	59	9384
2001	935	873	679	531	413	331	206	153	106	80	331	36	4674
2000	881	855	655	581	411	309	210	152	131	81	353	60	4679
1999	1033	889	661	466	384	306	210	142	100	84	284	44	4603
1998	964	762	645	493	389	267	174	129	104	105	318	53	4403
1997	936	858	625	464	379	257	222	134	104	84	306	62	4431
1996	922	843	601	485	337	249	203	150	104	75	247	47	4263

Appendix 21: Social sciences; notes; number of references

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2019	1602	983	472	244	133	72	49	40	25	13	26	1	3660
2018	1873	1042	482	258	180	106	49	30	29	16	37	1	4103
2017	1732	1076	436	215	132	79	50	38	26	15	52	7	3858
2016	1800	934	404	193	105	82	55	37	24	19	88	28	3769
2015	1438	732	283	136	77	53	42	17	24	14	99	16	2931
2014	1566	782	296	149	77	43	25	26	22	13	93	40	3132
2013	1320	574	226	105	86	41	33	20	23	10	90	46	2574
2012	1261	481	203	122	86	47	42	41	19	22	139	72	2535
2011	1325	564	244	99	73	54	43	26	14	19	99	40	2600
2010	1029	408	187	102	69	40	34	17	19	13	71	32	2021
2009	912	435	165	96	52	41	23	20	17	12	60	41	1874
2008	980	490	193	100	43	30	23	9	6	10	32	46	1962
2007	906	459	139	94	60	24	20	7	10	13	43	21	1796
2006	729	346	123	74	35	22	12	5	2	4	16	4	1372

Year	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–199	200–299	Total
2005	615	273	114	53	32	16	10	8	7	0	16	1	1145
2004	577	265	94	62	32	21	12	5	3	3	12	2	1088
2003	539	254	108	59	31	14	12	9	5	6	12	4	1053
2002	552	265	147	60	34	32	15	14	4	6	16	1	1146
2001	408	204	98	54	30	21	19	8	9	6	11	3	871
2000	472	190	85	47	25	19	18	5	0	3	13	2	879
1999	424	191	84	46	26	21	6	6	1	2	7	0	814
1998	368	150	75	47	32	21	9	4	5	4	8	1	724
1997	326	177	81	38	29	15	10	4	3	2	8	0	693
1996	348	171	103	48	24	26	7	5	2	5	13	1	753

References

Abt, H. A., & Garfield, E. (2002). Is the relationship between numbers of references and paper lengths the same for all sciences? *Journal of the American Society for Information Science and Technology, 53*(13), 1106–1112. https://doi.org/10.1002/asi.10151.

Anger, J. (1999). Should there be a recommended limit to the number of references in a scientific article? *Sao Paulo Medical Journal, 117*(1), 42–43. https://doi.org/10.1590/S1516-31801999000100010.

Bornmann, L., & Marx, W. (2018). Critical rationalism and the search for standard (field-normalized) indicators in bibliometrics. *Journal of Informetrics, 12*(3), 598–604.

Bornmann, L., & Mutz, R. (2015). Growth rates of modern science: A bibliometric analysis based on the number of publications and cited references. *Journal of the Association for Information Science and Technology, 66*(11), 2215–2222.

Bornmann, L., Tekles, A., & Leydesdorff, L. (2019). The convergent validity of several (field-normalized) bibliometric indicators: How well does I3 perform for impact measurement? In *Paper presented at the 17th International Conference on Scientometrics and Informetrics, ISSI 2019*.

Costas, R., van Leeuwen, T. N., & Bordons, M. (2012). Referencing patterns of individual researchers: Do top scientists rely on more extensive information sources? *Journal of the American Society for Information Science and Technology, 63*(12), 2433–2450. https://doi.org/10.1002/asi.22662.

Fang, H. (2015). A theoretical model of scientific impact based on citations. *Malaysian Journal of Library & Information Science, 20*(3), 1–13.

Frandsen, T. F., Jacobsen, R. H., Nicolaisen, J., & Ousager, J. (2019). Pressure to publish: A bibliometric study of PhD-students (1993–2009). *Information Research*, 24(4), http://informationr.net/ir/24-4/colis/colis1925.html.

Garfield, E. (1979). Trends in biochemical literature. *Trends in Biochemical Sciences, 4*(12), N290.

Garfield, E. (1980). Number of biochemical articles is growing, but why also the number of references per article. *Current Contents, 11*, 5–16.

Hyland, K. (2004). *Disciplinary discourses: social interactions in academic writing*. Harlow: Pearson Education Ltd.

Jaunich, M. (2018). Editorial: The average number of references per article published in Polymer Testing over the years. *Polymer Testing, 68*, A1–A2. https://doi.org/10.1016/j.polymertesting.2018.05.034.

Krampen, G. (2010). Acceleration of citing behavior after the millennium? Exemplary bibliometric reference analyses for psychology journals. *Scientometrics, 83*(2), 507–513. https://doi.org/10.1007/s11192-009-0093-z.

Krauskopf, E. (2019). Missing documents in Scopus: the case of the journal Enfermeria Nefrologica. *Scientometrics, 119*(1), 543–547. https://doi.org/10.1007/s11192-019-03040-z.

Lipetz, B. A. (1999). Aspects of JASIS authorship through five decades. *Journal of the American Society for Information Science*, 50(11), 994–1003. https://doi.org/10.1002/(SICI)1097-4571(1999)50:11%3C994::AID-ASI5%3E3.0.CO;2-U.

Meadows, A. J. (1974). *Communication in science*. London: Butterworth.

Mingers, J., & Meyer, M. (2017). Normalizing Google Scholar data for use in research evaluation. *Scientometrics, 112*(2), 1111–1121.
Mingers, J., & Kaymaz, E. (2019). Normalizing book citations in Google Scholar: A hybrid cited-side citing-side method. *Journal of Data and Information Science, 4*(2), 19–35.
Pan, R. K., Petersen, A. M., Pammolli, F., & Fortunato, S. (2018). The memory of science: Inflation, myopia, and the knowledge network. *Journal of Informetrics, 12*(3), 656–678. https://doi.org/10.1016/j.joi.2018.06.005.
Petersen, A. M., Pan, R. K., Pammolli, F., & Fortunato, S. (2019). Methods to account for citation inflation in research evaluation. *Research Policy, 48*, 1855–1865.
Sanchez-Gil, S., Gorraiz, J., & Melero-Fuentes, D. (2018). Reference density trends in the major disciplines. *Journal of Informetrics, 12*(1), 42–58. https://doi.org/10.1016/j.joi.2017.11.003.
Solla Price, D. J. (1965). Networks of scientific papers. *Science, 149*(3683), 510–515.
Tsay, M. Y. (2008). Journal bibliometric analysis: A case study on the JASIST. *Malaysian Journal of Library & Information Science, 13*(2), 121–139.
Ucar, I., Lopez-Fernandino, F., Rodriguez-Ulibarri, P., Sesma-Sanchez, L., Urrea-Mico, V., & Sevilla, J. (2014). Growth in the number of references in engineering journal papers during the 1972–2013 period. *Scientometrics, 98*(3), 1855–1864. https://doi.org/10.1007/s11192-013-1113-6.
Van Eck, N. J., & Waltman, L. (2017). Accuracy of citation data in Web of Science and Scopus. In *Paper presented at the 16th International Conference on Scientometrics and Informetrics, ISSI 2017.*.
Vosner, H. B., Kokol, P., Bobek, S., Zeleznik, D., & Zavrsnik, J. (2016). A bibliometric retrospective of the Journal Computers in Human Behavior (1991–2015). *Computers in Human Behavior, 65*, 46–58. https://doi.org/10.1016/j.chb.2016.08.026.
Waltman, L. (2016). A review of the literature on citation impact indicators. *Journal of Informetrics, 10*(2), 365–391.
Waltman, L., & van Eck, N. J. (2012). Source normalized indicators of citation impact: an overview of different approaches and an empirical comparison. *Scientometrics, 96*(3), 699–716. https://doi.org/10.1007/s11192-012-0913-4.
Yang, H., Pan, B. C., & Chen, J. (2006). Citation analysis of five journals in andrology. *Archives of Andrology, 52*(6), 433–440. https://doi.org/10.1080/01485010600840764.
Zhou, P., & Leydesdorff, L. (2011). Fractional counting of citations in research evaluation: A cross- and interdisciplinary assessment of the Tsinghua University in Beijing. *Journal of Informetrics, 5*(3), 360–368.
Zitt, M. (2010). Citing-side normalization of journal impact: A robust variant of the Audience Factor. *Journal of Informetrics, 4*(3), 392–406.
Zitt, M. (2013). Variability of citation behavior between scientific fields and the normalization problem: The "citing-side" normalization in context. *Collnet Journal of Scientometrics and Information Management, 7*(1), 55–67.
Zitt, M., & Small, H. (2008). Modifying the journal impact factor by fractional citation weighting: The audience factor. *Journal of the American Society for Information Science and technology, 59*(11), 1856–1860.