Publication Report

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Report Generated on April 25, 2024

1 Data Quality

This section gives an overall overview of the works covered by the survey. We first look at all works, and consider which entries cannot be full analyzed. We consider the following status outcomes: no DOI, the bib entry does not give a DOI, this typically means that we cannot find the citation and reference counts for the work. A special case is the Thesis type, which do not have a DOI assigned by the university. Even entries with a DOI may not be covered, we distinguish entries that are covered by neither Crossref nor Scopus, or entries which are covered by one, but not the other. THE OK status indicates that we can find the entry in all our sources.

Note that OpenCitations does not distinguish between a DOI that is not covered, and a DOI for which there are no references or citations. In both cases, an empty list is returned by the query.

We may be able to repair some of the entries by finding a DOI for entries which miss them, or by correcting a mistake in a DOI, where neither Crossref nor Scopus recognizes the entry. Not that the system responses are cached, and missing entries are not repeatedly queried by the system. This means that additions or corrections in the databases that occur after we first queried them for a specific entry are not automatically taken into account. It may be good practice to re-run all queries from time to time to reflect updates in the databases.

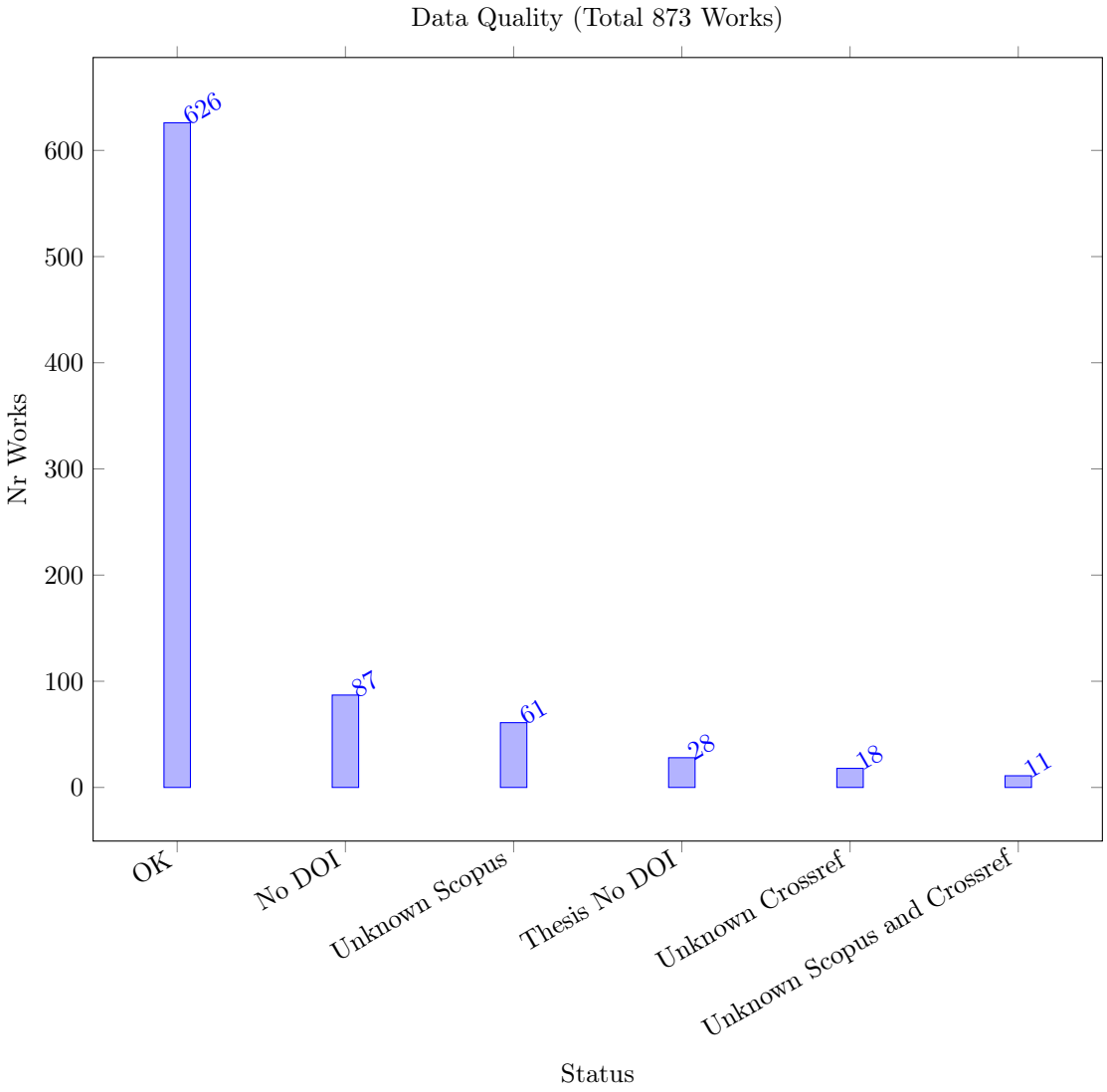

Data Quality (Total 873 Works)
Nr Works
0
100
200
300
400
500
600
626
87
61
28
18
11
OK
No DOI
Unknown Scopus
Thesis No DOI
Unknown Crossref
Unknown Scopus and Crossref
Status

Table 1: Works Unknown to Crossref and Scopus

Key	DOI	Source Group	Year	Nr Citations	Crossref Citations	Scopus Citations	Range Citations	Range Percentage
abs-2402-00459	10.48550/arxiv.2402.00459	Preprint	2024	0	0	0	0	NaN
abs-2305-19888	10.48550/arxiv.2305.19888	Preprint	2023	0	0	0	0	NaN
abs-2306-05747	10.48550/arxiv.2306.05747	Preprint	2023	0	0	0	0	NaN
abs-2312-13682	10.48550/arxiv.2312.13682	Preprint	2023	0	0	0	0	NaN
GokPTGO23	10.1007/s10479-022-04547-	ORJournal	2023	0	0	0	0	NaN
abs-2211-14492	10.48550/arxiv.2211.14492	Preprint	2022	0	0	0	0	NaN
OrnekOS20	10.1007/s12351-020-00563-	ORJournal	2022	0	0	0	0	NaN
OrnekO16	10.23055/ijietap.2016.23.1.1930	OtherJournal	2016	0	0	0	0	NaN
AronssonBK09	10.4230/oasics.atmos.2009.2141	OtherConf	2009	0	0	0	0	NaN
KanetAG04	10.1201/9780203489802.ch47	Incoll	2004	0	0	0	0	NaN
BeckF98	10.1609/aimag.v19i4.1426	AIJournal	1998	0	0	0	0	NaN

Table 2: Works Unknown to Crossref

Key	DOI	Source Group	Year	Nr Citations	Crossref Citations	Scopus Citations	Range Citations	Range Percentage
JuvinHHL23	10.4230/lipics.cp.2023.19	CP	2023	0	0	0	0	NaN
PovedaAA23	10.4230/lipics.cp.2023.31	CP	2023	0	0	0	0	NaN
AalianPG23	10.4230/lipics.cp.2023.6	CP	2023	0	0	0	0	NaN
KameugneFND23	10.4230/lipics.cp.2023.20	CP	2023	0	0	0	0	NaN
BoudreaultSLQ22	10.4230/lipics.cp.2022.10	CP	2022	0	0	0	0	NaN
PopovicCGNC22	10.4230/lipics.cp.2022.34	CP	2022	0	0	0	0	NaN
WinterMMW22	10.4230/lipics.cp.2022.41	CP	2022	0	0	0	0	NaN
ArmstrongGOS21	10.4230/lipics.cp.2021.16	CP	2021	1	0	1	1	100.00
AntuoriHHEN21	10.4230/lipics.cp.2021.14	CP	2021	0	0	1	1	100.00
KovacsTKSG21	10.4230/lipics.cp.2021.36	CP	2021	0	0	4	4	100.00
LacknerMMWW21	10.4230/lipics.cp.2021.37	CP	2021	0	0	3	3	100.00
WangB20	10.3233/faia200114	ECAI	2020	0	0	0	0	NaN
BarzegaranZP20	10.4230/oasics.fog-iot.2020.3	OtherConf	2020	0	0	0	0	NaN
BridiLBBM16	10.3233/978-1-61499-672-9-1598	ECAI	2016	0	0	0	0	NaN
BartakV15	10.5220/0005215701190130	OtherConf	2015	0	0	1	1	100.00

Key	DOI	Source Group	Year	Nr Citations	Crossref Citations	Scopus Citations	Range Citations	Range Percentage
TranB12	10.3233/978-1-61499-098-7-774	ECAI	2012	0	0	30	30	100.00
OddiRC10	10.3233/978-1-60750-606-5-967	ECAI	2010	0	0	2	2	100.00
Hunsberger08	10.3233/978-1-58603-891-5-553	ECAI	2008	0	0	1	1	100.00

Table 3: Works Unknown to Scopus

Key	DOI	Source Group	Year	Nr Citations	Crossref Citations	Scopus Citations	Range Citations	Range Percentage
Caballero23	10.1007/s10601-023-09357-0	Constraints	2023	0	0	0	0	NaN
NaderiBZ23	10.2139/ssrn.4494381	Preprint	2023	0	0	0	0	NaN
HebrardALLCMR22	10.24963/ijcai.2022/643	IJCAI	2022	0	0	0	0	NaN
NaderiBZ22	10.2139/ssrn.4140716	Preprint	2022	0	0	0	0	NaN
JuvinHL22	10.2139/ssrn.4068164	Preprint	2022	0	0	0	0	NaN
NaderiR22	10.1287/ijoo.2021.0056	ORJournal	2022	5	7	0	7	100.00
KotaryFH22	10.1609/aaai.v36i7.20685	AAAI	2022	0	2	0	2	100.00
QinWSLS21	10.1109/tase.2019.2947398	OtherJournal	2021	12	19	0	19	100.00
GeibingerMM21	10.1609/aaai.v35i7.16789	AAAI	2021	0	1	0	1	100.00
KletzanderMH21	10.1609/aaai.v35i13.17408	AAAI	2021	2	2	0	2	100.00
GodetLHS20	10.1609/aaai.v34i02.5510	AAAI	2020	1	1	0	1	100.00
FallahiAC20	10.1504/ijams.2020.10026882	OtherJournal	2020	0	0	0	0	NaN
NishikawaSTT19	10.15803/ijnc.9.2_131	OtherJournal	2019	3	3	0	3	100.00
BlazewiczEP19	10.1007/978-3-319-99849-7	Incoll	2019	38	38	0	38	100.00
RiahiNS018	10.1609/icaps.v28i1.13895	ICAPS	2018	4	4	0	4	100.00
AgussurjaKL18	10.1609/aaai.v32i1.12086	AAAI	2018	4	4	0	4	100.00
TranVNB17a	10.24963/ijcai.2017/726	IJCAI	2017	1	1	0	1	100.00
Bonfietti16	10.3233/ia-160095	AIJournal	2016	0	0	0	0	NaN
TranDRFWOVB16	10.1609/socs.v7i1.18390	OtherConf	2016	3	9	0	9	100.00
FrankDT16	10.1609/icaps.v26i1.13780	ICAPS	2016	4	5	0	5	100.00
KinsellaS0OS16	10.1609/aaai.v30i2.19079	AAAI	2016	1	2	0	2	100.00
Siala15	10.1007/s10601-015-9213-y	Constraints	2015	4	3	0	4	100.00
Kameugne15	10.1007/s10601-015-9227-5	Constraints	2015	0	0	0	0	NaN
LimBTBB15a	10.1609/aaai.v29i1.9236	AAAI	2015	3	3	0	3	100.00
FriedrichFMRSST14	10.1007/978-3-319-28697-6_23	OtherConf	2014	3	3	0	3	100.00

Key	DOI	Source Group	Year	Nr Citations	Crossref Citations	Scopus Citations	Range Citations	Range Percentage
LipovetzkyBPS14	10.1609/icaps.v24i1.13666	ICAPS	2014	5	5	0	5	100.00
LudwigKRBMS14	10.1609/aaai.v28i2.19030	AAAI	2014	1	1	0	1	100.00
ChunS14	10.1609/aaai.v28i2.19013	AAAI	2014	3	3	0	3	100.00
BonfiettiLM13	10.1609/icaps.v23i1.13608	ICAPS	2013	1	1	0	1	100.00
LombardiM13	10.1609/icaps.v23i1.13580	ICAPS	2013	3	0	0	3	100.00
TranTDB13	10.1609/icaps.v23i1.13552	ICAPS	2013	2	2	0	2	100.00
MalapertCGJLR13	10.1609/icaps.v23i1.13575	ICAPS	2013	0	0	0	0	NaN
BajestaniB11	10.1609/icaps.v21i1.13450	ICAPS	2011	2	2	0	2	100.00
Milano11	10.1002/9780470400531.eorms0473	Inbook	2011	0	0	0	0	NaN
Baptiste09	10.1007/978-3-642-04244-7_1	CP	2009	0	0	0	0	NaN
MonetteDH09	10.1609/icaps.v19i1.13356	ICAPS	2009	9	10	0	10	100.00
MercierH08	10.1287/ijoc.1070.0226	InformsJC	2008	32	33	0	33	100.00
AggounMV08	10.1007/978-0-387-74759-0_396	Inbook	2008	0	0	0	0	NaN
Limtanyakul07	10.1007/978-3-540-77903-2_65	OtherConf	2007	2	2	0	2	100.00
NeronABCDD06	10.1007/978-0-387-33768-5_7	Inbook	2006	3	3	0	3	100.00
OddiPCC05	10.1007/0-387-27744-7_7	OtherConf	2005	3	3	0	3	100.00
DannaP04	10.1007/978-1-4419-8917-8_2	Inbook	2004	2	2	0	2	100.00
AjiliW04	10.1007/978-1-4419-8917-8_6	Inbook	2004	4	4	0	4	100.00
AggounV04	10.1007/978-3-540-24734-0_15	Inbook	2004	7	7	0	7	100.00
Tsang03	10.1023/a:1024016929283	OtherJournal	2003	1	0	0	1	100.00
DomdorfPH03	10.1007/978-3-642-18965-4_31	Inbook	2003	0	0	0	0	NaN
Apt03	10.1017/cbo9780511615320	Background	2003	381	374	0	381	100.00
ElkhyariGJ02	10.1007/3-540-46135-3_49	CP	2002	1	1	0	1	100.00
ZhuS02	10.1007/3-540-47961-9_69	OtherConf	2002	0	0	0	0	NaN
MilanoORT02	10.1287/ijoc.14.4.387.2830	InformsJC	2002	14	14	0	14	100.00
Hooker02	10.1287/ijoc.14.4.295.2828	InformsJC	2002	94	93	0	94	100.00
Hentenryck02	10.1287/ijoc.14.4.345.2826	Background	2002	48	50	0	50	100.00
BaptistePN01	10.1007/978-1-4615-1479-4	Book	2001	296	302	0	302	100.00
BosiM2001	10.1002/1097-024x(200101)31:1<17::aid-spe355>3.0.co;2-l	OtherJournal	2001	3	3	0	3	100.00
LopezAKYG00	10.1016/s0947-3580(00)71114-9	OtherJournal	2000	0	0	0	0	NaN
Hooker00	10.1002/9781118033036	Book	2000	185	186	0	186	100.00
Simonis99	10.1007/3-540-45406-3_6	OtherConf	1999	5	5	0	5	100.00
DorndorfPH99	10.1007/978-3-642-58409-1_35	OtherConf	1999	0	0	0	0	NaN
DorndorfHP99	10.1007/978-1-4615-5533-9_10	Inbook	1999	18	18	0	18	100.00
PembertonG98	10.1090/dimacs/057/06	OtherConf	1998	26	0	0	26	100.00

Key	DOI	Source Group	Year	Nr Citations	Crossref Citations	Scopus Citations	Range Citations	Range Percentage
MarriottS98	10.7551/mitpress/5625.001.0001	Background	1998	410	423	0	423	100.00
BeckDDF98	10.1002/(sici)1099-1425(199808)1:2<89::aid-jos9>3.0.co;2-h	OtherJournal	1998	9	8	0	9	100.00
Simonis95a	10.1007/3-540-60794-3_11	OtherConf	1995	1	1	0	1	100.00
BaptisteLV92	10.1109/robot.1992.220195	OtherConf	1992	13	11	0	13	100.00
CarlierP90	10.1007/bf03543071	Background	1990	112	114	0	114	100.00
CarlierP89	10.1287/mnsc.35.2.164	Background	1989	516	524	0	524	100.00
PritskerWW69	10.1287/mnsc.16.1.93	Background	1969	504	518	0	518	100.00

1.1 Range of Citation Counts

We get citation counts for the works included in the survey from different sources. OpenCitations provides the set of papers citing a reference, but only if both have DOIs. Crossref gives a count of how many papers cite a reference, they include some papers without DOI. Scopus gives a citation count, but does not give access to the actual citations. In this table we show the works with the largest range of citation count, excluding all background works. A typical issue is that one source does not cover the work, and has a zero count. An alternative is where papers with many citations give a slightly different count depending on which links are included in their database.

The results seem to indicate the using multiple sources is required, to avoid leaving out works that are not covered by one specific source.

Table 4: Works with largest Range of Citation Counts

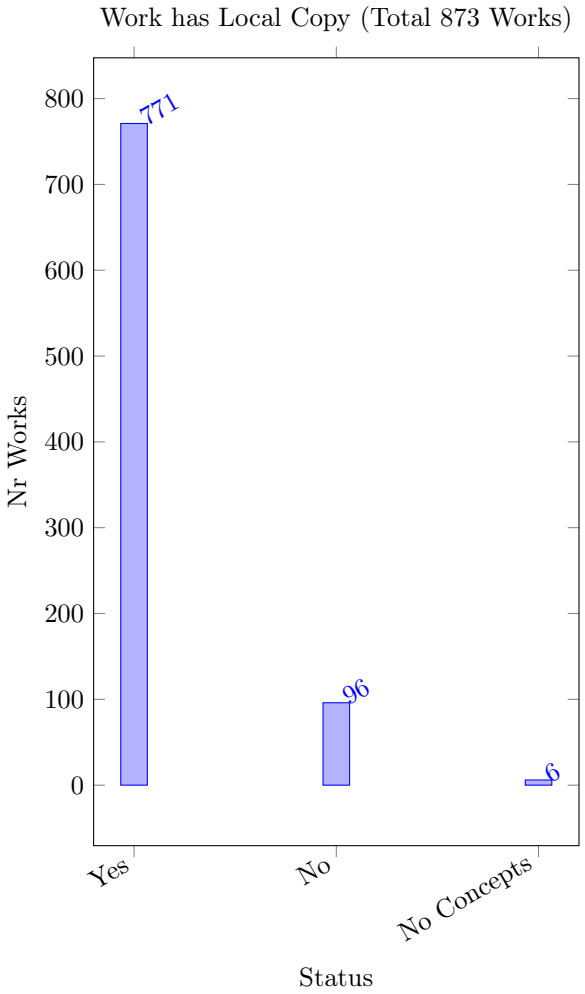
Key	DOI	Source Group	Year	Nr Citations	Crossref Citations	Scopus Citations	Range Citations	Range Percentage
BaptistePN01	10.1007/978-1-4615-1479-4	Book	2001	296	302	0	302	100.00
Hooker00	10.1002/9781118033036	Book	2000	185	186	0	186	100.00
BensanaLV99	10.1023/a:1026488509554	Constraints	1999	99	0	150	150	100.00
JainM99	10.1016/s0377-2217(98)00113-1	EJOR	1999	490	503	630	140	22.22
SakkoutW00	10.1023/a:1009856210543	Constraints	2000	73	0	105	105	100.00
Hooker02	10.1287/ijoc.14.4.295.2828	InformsJC	2002	94	93	0	94	100.00
MintonJPL92	10.1016/0004-3702(92)90007-k	AIJournal	1992	437	440	525	88	16.76
BaptistePN99	10.1023/a:1018995000688	ORJournal	1999	72	0	85	85	100.00
OhrimenkoSC09	10.1007/s10601-008-9064-x	Constraints	2009	127	128	198	71	35.86
BlazewiczDP96	10.1016/0377-2217(95)00362-2	EJOR	1996	344	357	412	68	16.50
RodosekWH99	10.1023/a:1018904229454	ORJournal	1999	53	0	67	67	100.00
ArtiguesDN08	10.1002/9780470611227	Book	2008	63	0	0	63	100.00
BaptisteP00	10.1023/a:1009822502231	Constraints	2000	46	0	62	62	100.00

Key	DOI	Source Group	Year	Nr Citations	Crossref Citations	Scopus Citations	Range Citations	Range Percentage
BeldiceanuC94	10.1016/0895-7177(94)90127-9	OtherJournal	1994	167	169	223	56	25.11
LaborieRSV18	10.1007/s10601-018-9281-x	Constraints	2018	148	178	203	55	27.09
HookerO03	10.1007/s10107-003-0375-9	OtherJournal	2003	317	333	371	54	14.56
MengZRZL20	10.1016/j.cie.2020.106347	OtherJournal	2020	100	133	152	52	34.21
Wallace96	10.1007/bf00143881	Constraints	1996	87	89	138	51	36.96
NuijtenP98	10.1023/a:1009687210594	OtherJournal	1998	42	0	50	50	100.00
Laborie03	10.1016/s0004-3702(02)00362-4	AIJournal	2003	128	129	175	47	26.86
BeckR03	10.1023/a:1021849405707	ORJournal	2003	29	0	45	45	100.00
AchterbergBKW08	10.1007/978-3-540-68155-7_4	CPAIOR	2008	80	80	125	45	36.00
JainG01	10.1287/ijoc.13.4.258.9733	InformsJC	2001	279	284	321	42	13.08
Laborie09	10.1007/978-3-642-01929-6_12	CPAIOR	2009	53	52	91	39	42.86
BlazewiczEP19	10.1007/978-3-319-99849-7	Incoll	2019	38	38	0	38	100.00
HarjunkoskiMBC14	10.1016/j.compchemeng.2013.12.001	OtherJournal	2014	381	393	418	37	8.85
SadehF96	10.1016/0004-3702(95)00098-4	AIJournal	1996	95	97	131	36	27.48
BeckW07	10.1613/jair.2080	AIJournal	2007	27	31	61	34	55.74
Ham18	10.1016/j.trc.2018.03.025	OtherJournal	2018	164	192	197	33	16.75
MercierH08	10.1287/ijoc.1070.0226	InformsJC	2008	32	33	0	33	100.00
PerronSF04	10.1007/978-3-540-30201-8_35	CP	2004	34	34	67	33	49.25
SchildW00	10.1023/a:1009804226473	Constraints	2000	23	0	32	32	100.00
CorreaLR07	10.1016/j.cor.2005.07.004	ORJournal	2007	106	114	137	31	22.63
LiW08	10.1007/s10951-008-0079-3	OtherJournal	2008	113	123	144	31	21.53
TranB12	10.3233/978-1-61499-098-7-774	ECAI	2012	0	0	30	30	100.00
Thorsteinsson01	10.1007/3-540-45578-7_2	CP	2001	67	68	97	30	30.93
AggounB93	10.1016/0895-7177(93)90068-a	OtherJournal	1993	187	191	214	27	12.62
PembertonG98	10.1090/dimacs/057/06	OtherConf	1998	26	0	0	26	100.00
Beck10	10.1007/978-3-642-15396-9_10	CP	2010	19	21	45	26	57.78
NuijtenA96	10.1016/0377-2217(95)00354-1	EJOR	1996	65	65	90	25	27.78
VilimLS15	10.1007/978-3-319-18008-3_30	CPAIOR	2015	31	31	55	24	43.64
Rodriguez07	10.1016/j.trb.2006.02.006	OtherJournal	2007	117	121	141	24	17.02
Hooker07	10.1287/opre.1060.0371	ORJournal	2007	181	197	205	24	11.71
MengGRZSC22	10.1016/j.swevo.2022.101058	OtherJournal	2022	38	56	62	24	38.71
Davis87	10.1016/0004-3702(87)90091-9	AIJournal	1987	308	312	332	24	7.23
Beck07	10.1613/jair.2169	AIJournal	2007	34	34	57	23	40.35
HarjunkoskiG02	10.1016/s0098-1354(02)00100-x	OtherJournal	2002	169	173	192	23	11.98
KuB16	10.1016/j.cor.2016.04.006	ORJournal	2016	119	132	141	22	15.60

Key	DOI	Source Group	Year	Nr Citations	Crossref Citations	Scopus Citations	Range Citations	Range Percentage
BartakSR08	10.1007/s10845-008-0203-4	OtherJournal	2008	54	57	76	22	28.95
BourdaisGP03	10.1007/978-3-540-45193-8_11	CP	2003	29	30	51	22	43.14

1.2 Local Copies

The tool relies on local pdf copies of works to perform a detailed analysis of the content of the work. We have collected our own private copies of works for that purpose. The following plot shows how many entries do not have a local copy, or which do not extract any concepts from the local copy. A detailed list of all missing entries is given in the main report. Note that in some cases we use an open access version of the work, which might differ slightly from the published version.



1.3 Orphan Files

The following list shows entries for which we have a pdf file in the works directory, but the name of hte file does not match any key in the bibliography. These orphans should be resolved, either by correcting the name, or adding a bib entry for the work, or by removing the file, if it is not required.

If there are no files listed, then all pdf files in the works directory correspond to a bib entry, and no clean-up is required.

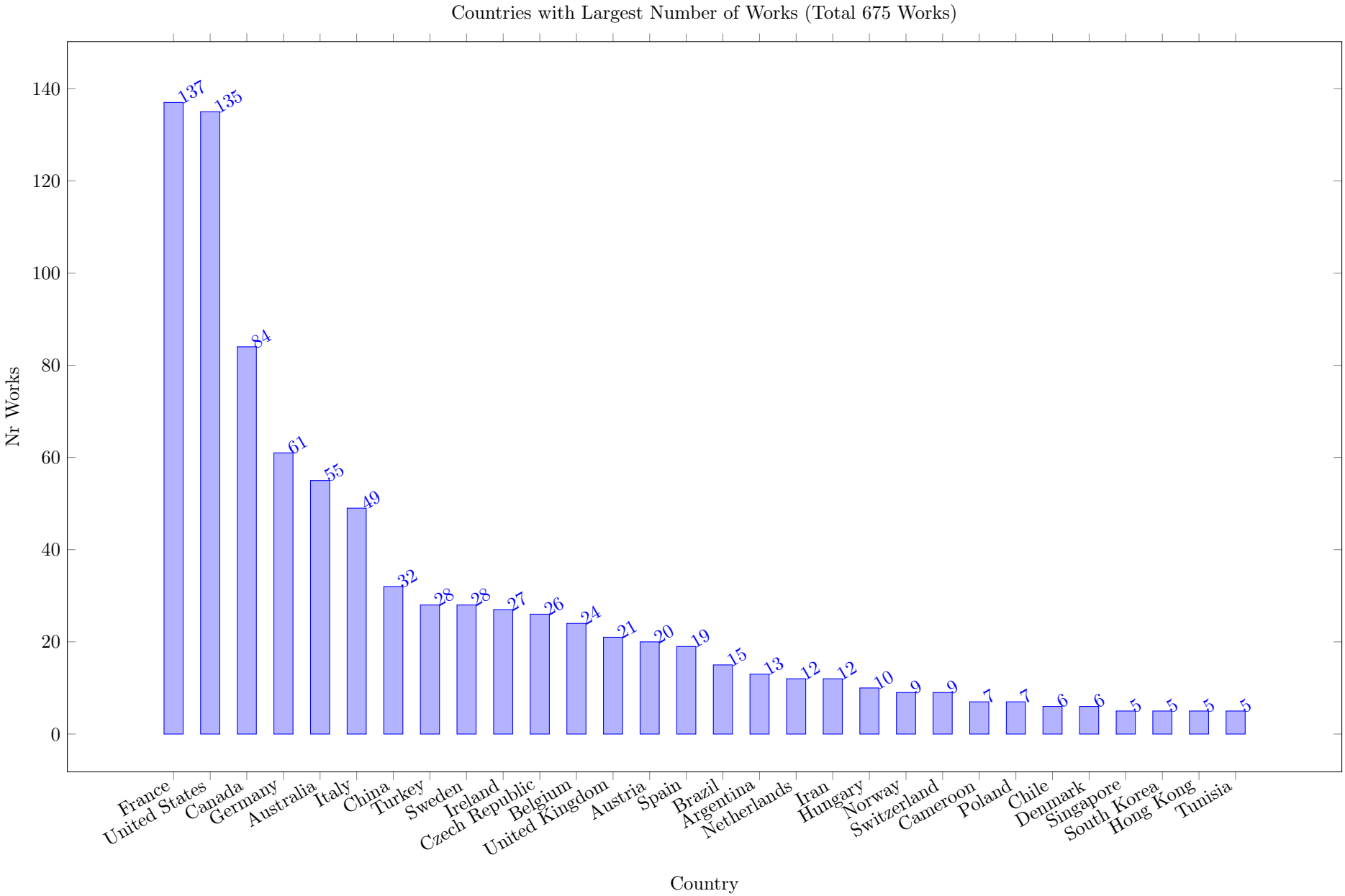
Table 5: Orphan Files

Key	File

2 Works by Location

This section analyzes papers by affiliation, which is given by the Scopus data only. Only works which are covered by Scopus are included. We first present the number of papers by country. A paper is counted in this analysis (once), if at least one of the affiliations is from the country. Multiple affiliations from the same country only count once. The 30 countries with the largest counts are shown.

Note that one work will be counted for multiple countries, if the affiliations are from different countries. So the sum of the bar heights typically exceeds the total number of works considered.


Countries with Largest Number of Works (Total 675 Works)
Nr Works
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49
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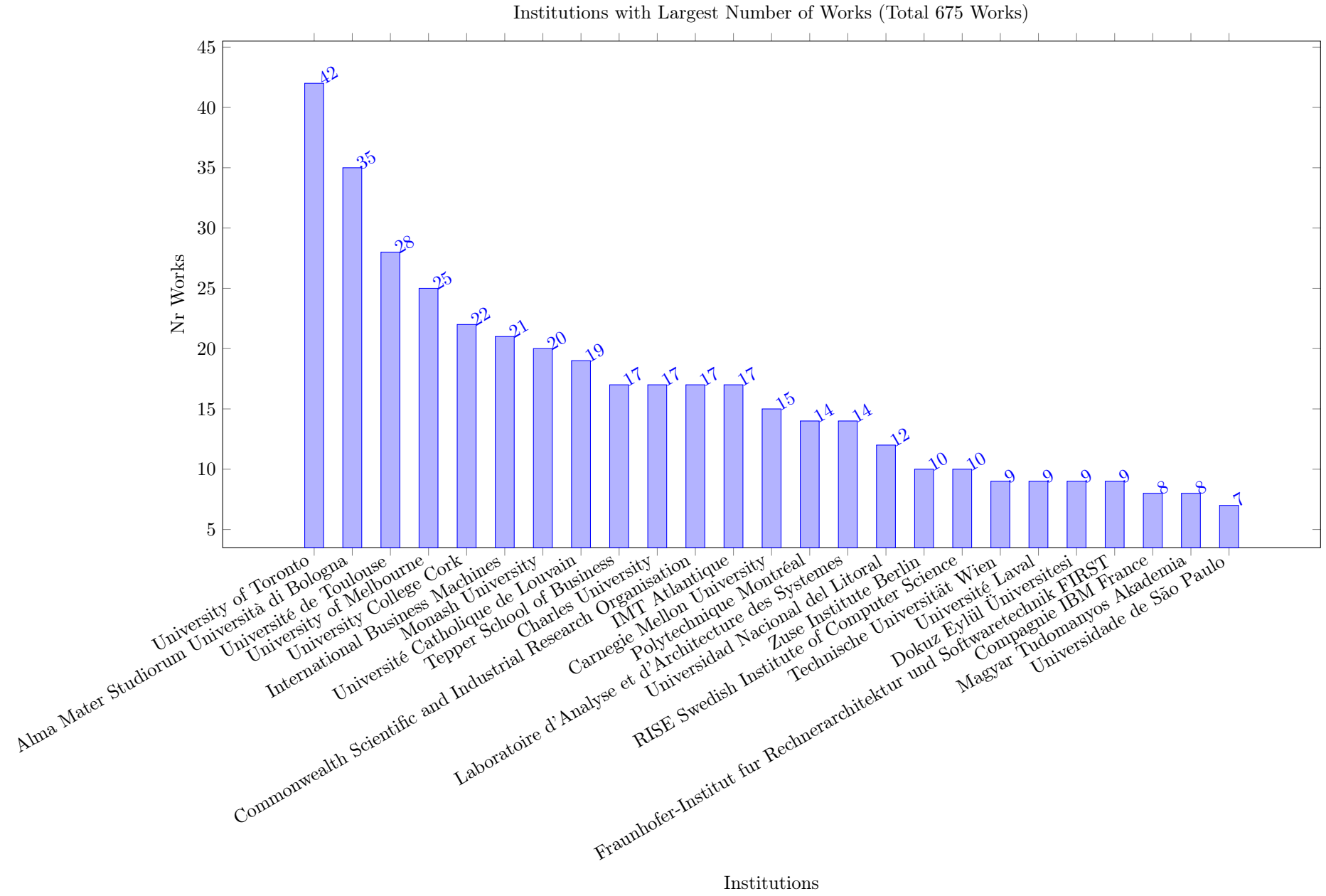
France
United States
Canada
Germany
Australia
Italy
China
Turkey
Sweden
Ireland
Czech Republic
Belgium
United Kingdom
Austria
Spain
Brazil
Argentina
Netherlands
Iran
Hungary
Norway
Switzerland
Cameroon
Poland
Chile
Denmark
Singapore
South Korea
Hong Kong
Tunisia
Country

The next plot shows the number of papers associated to institutions, as stated in the Scopus affiliation. A work is counted, if at least one of the affiliations is from a given institution. Due to the format of the Scopus data, we cannot fractionally assign a paper based on the author affiliations, each paper is counted one for every institution for which an affiliation is given. If some author has multiple affiliations listed, we (mis)count the work for each of them.


Institutions with Largest Number of Works (Total 675 Works)
Nr Works
Institutions
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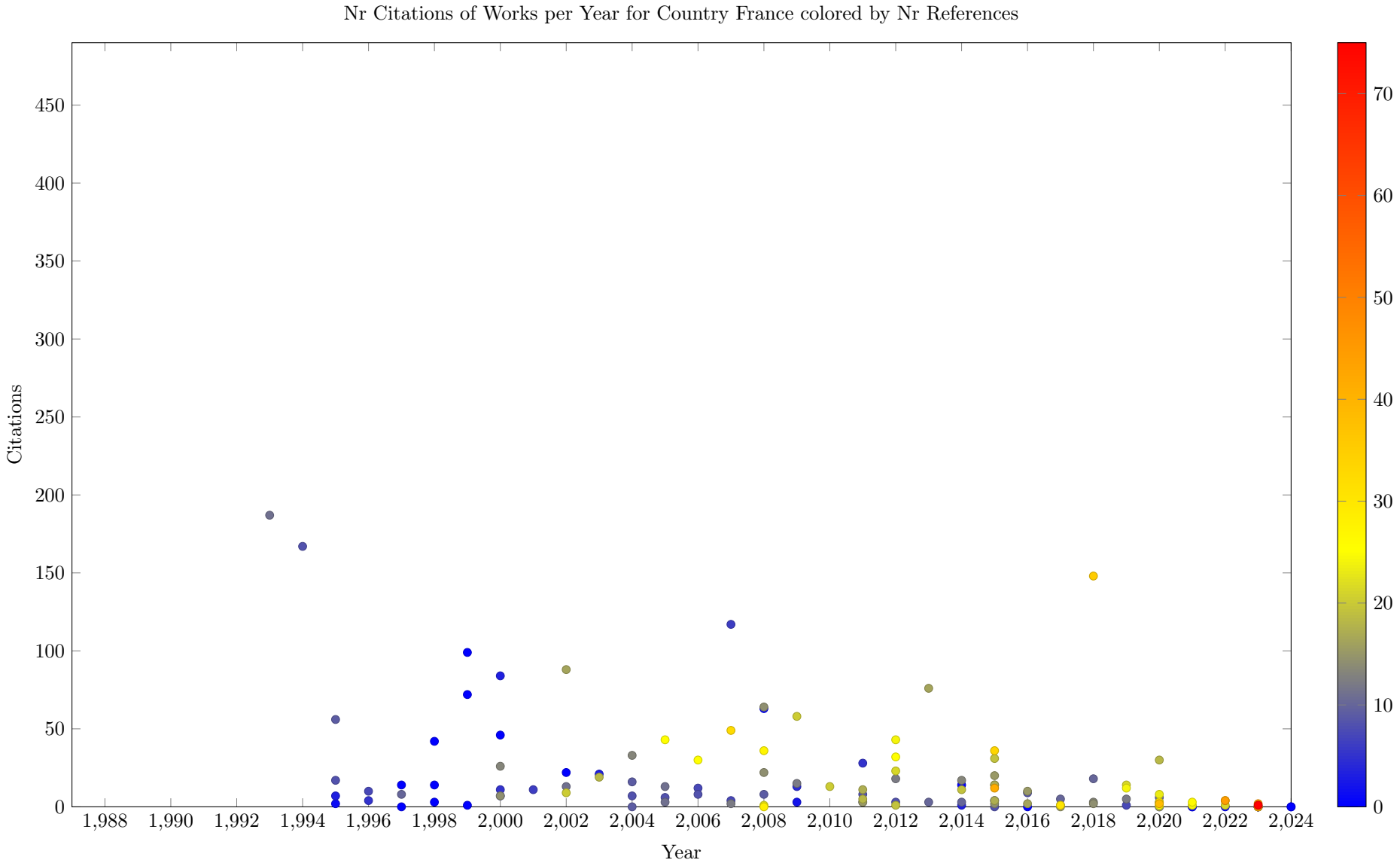
University of Toronto
Alma Mater Studiorum Università di Bologna
Université de Toulouse
University of Melbourne
University College Cork
International Business Machines
Monash University
Université Catholique de Louvain
Tepper School of Business
Charles University
Commonwealth Scientific and Industrial Research Organisation
IMT Atlantique
Carnegie Mellon University
Polytechnique Montréal
Laboratoire d'Analyse et d'Architecture des Systèmes
Universidad Nacional del Litoral
RISE Swedish Institute of Computer Science
Zuse Institute Berlin
Technische Universität Wien
Université Laval
Dokuz Eylül Üniversitesi
Fraunhofer-Institut fur Rechnerarchitektur und Softwaretechnik FIRST
Compagnie IBM France
Magyar Tudomanyos Akademia
Universidade de São Paulo

The following plots show for the top 30 countries when the works included were published, and how many citations (OpenCitation count) each paper had. The scatter plots are colored by the number of references (OpenCitation count), this help to identify surveys more easily. The plot gives an indication in which period the work from the country falls, and how influential the published works are. The x and y ranges of all plots are uniform to allow comparison between plots.

It would be nice to have tooltips on the plots, so identify specific works in the plots. This is currently not supported by the framework library used.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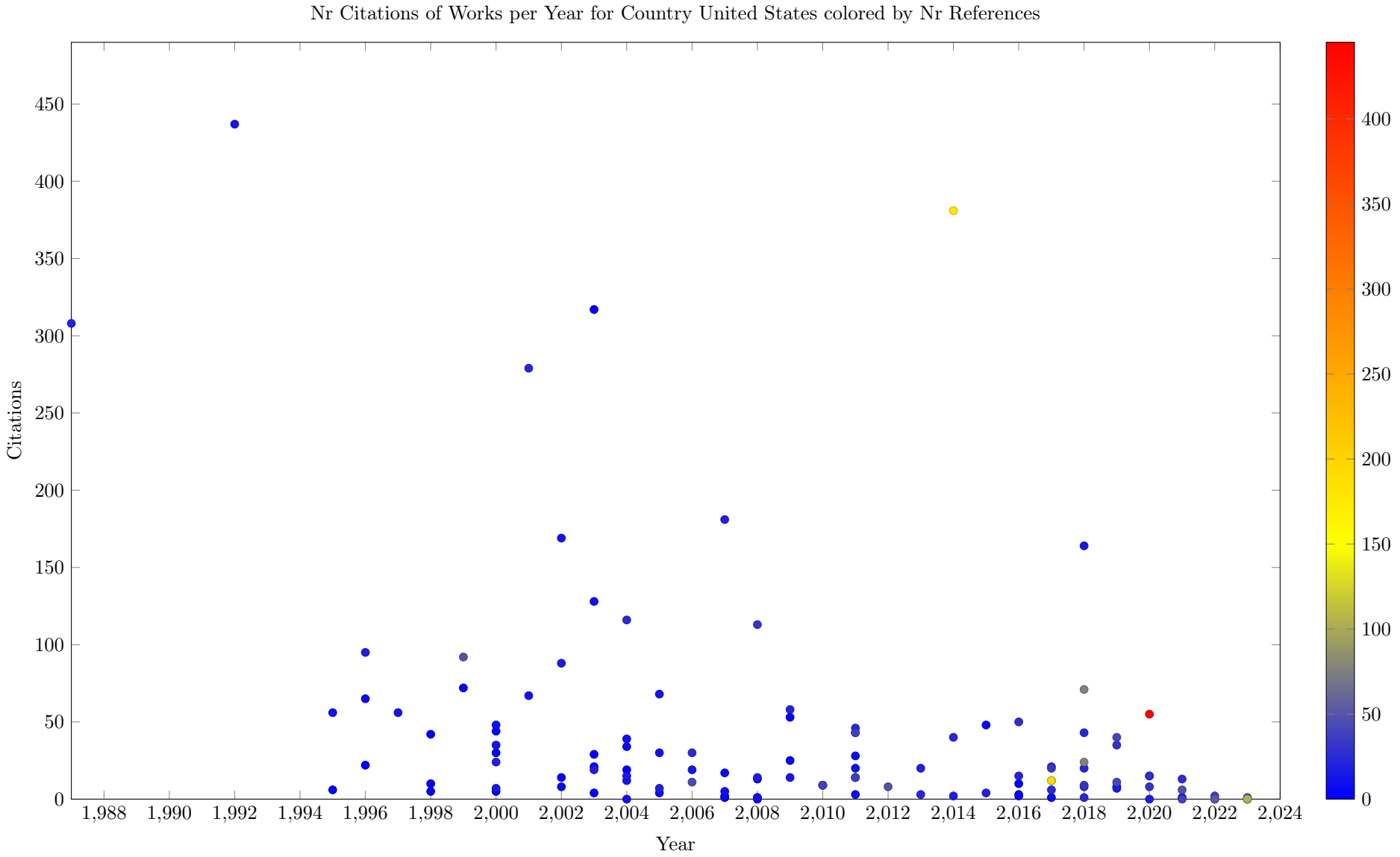
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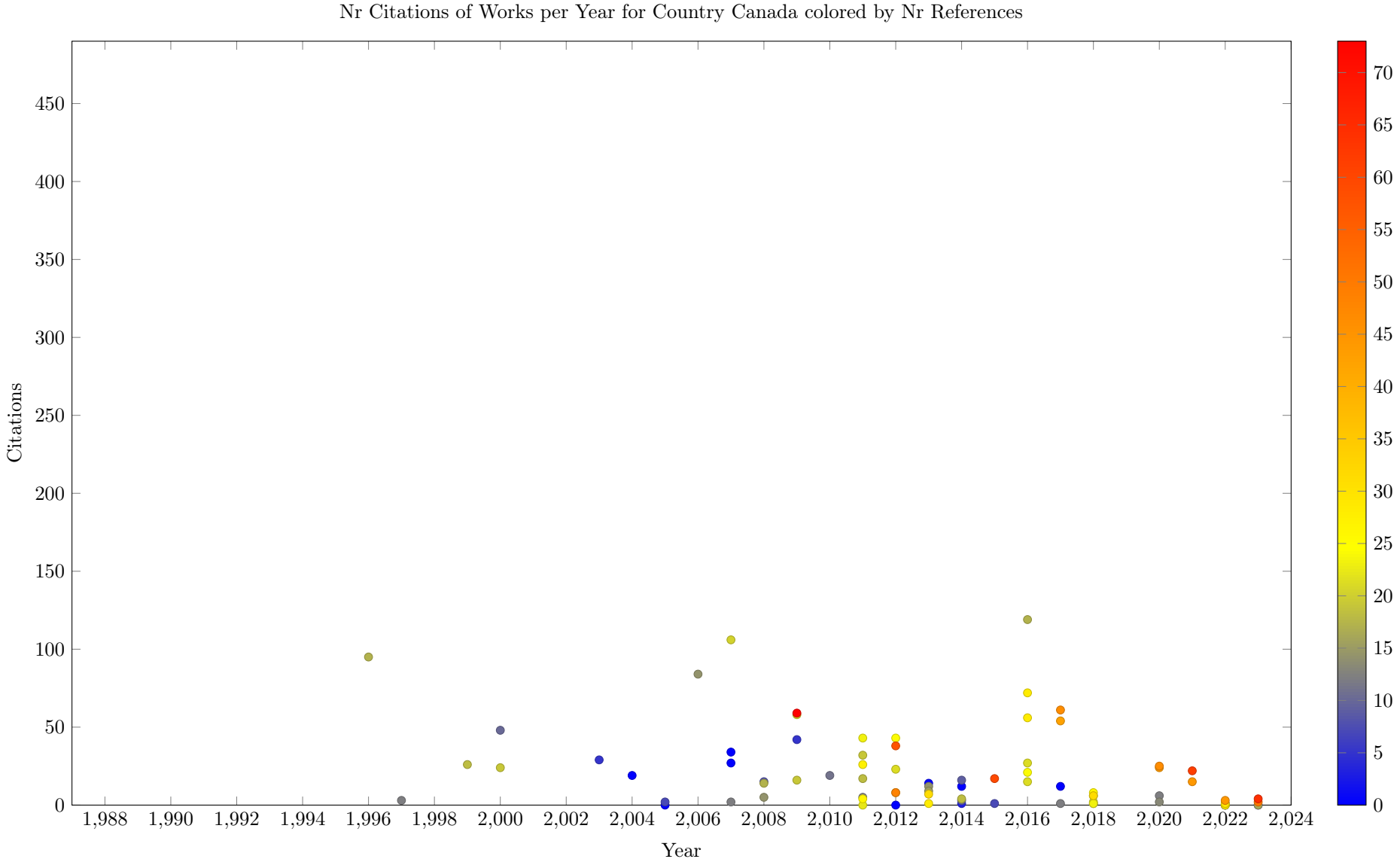
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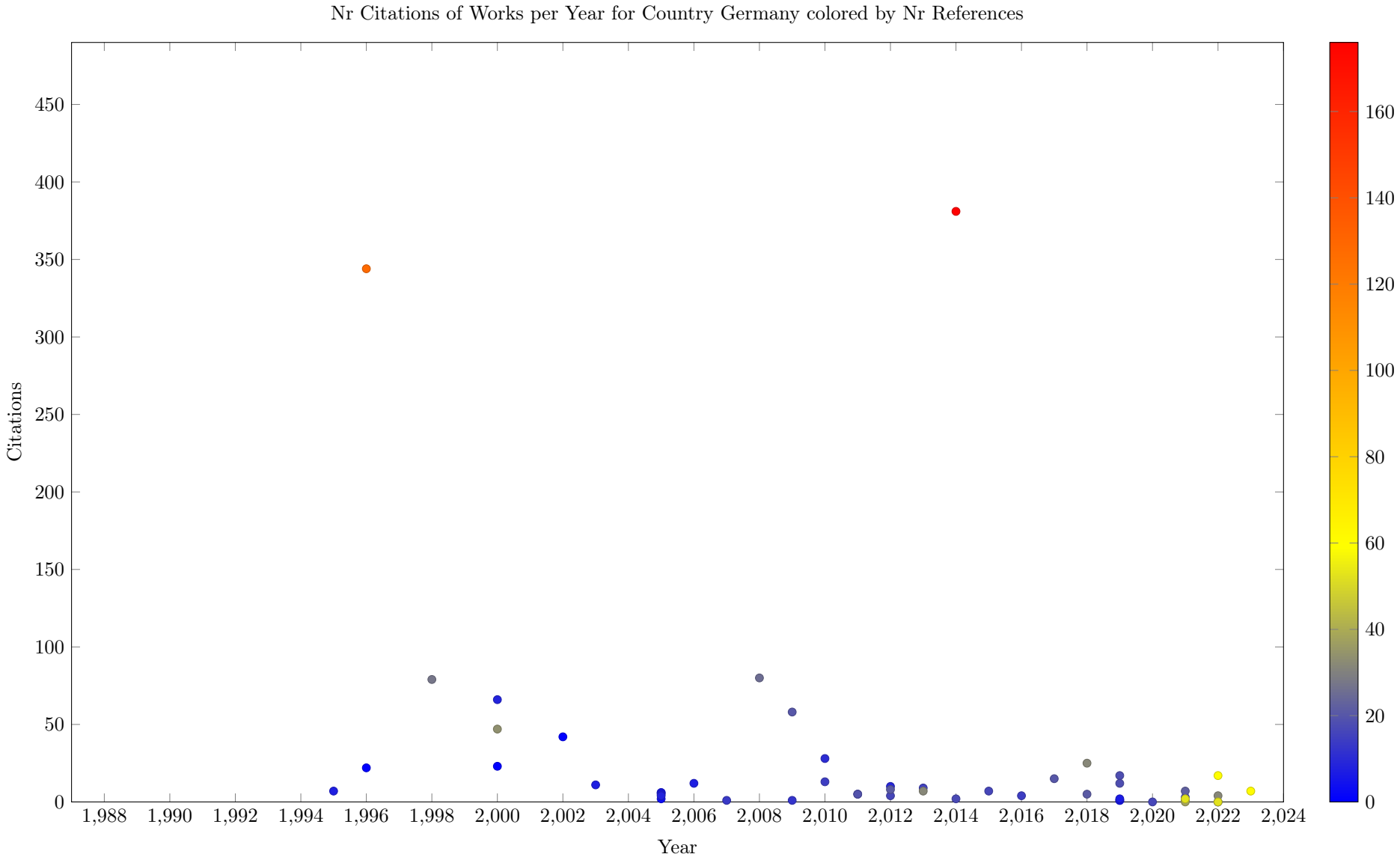
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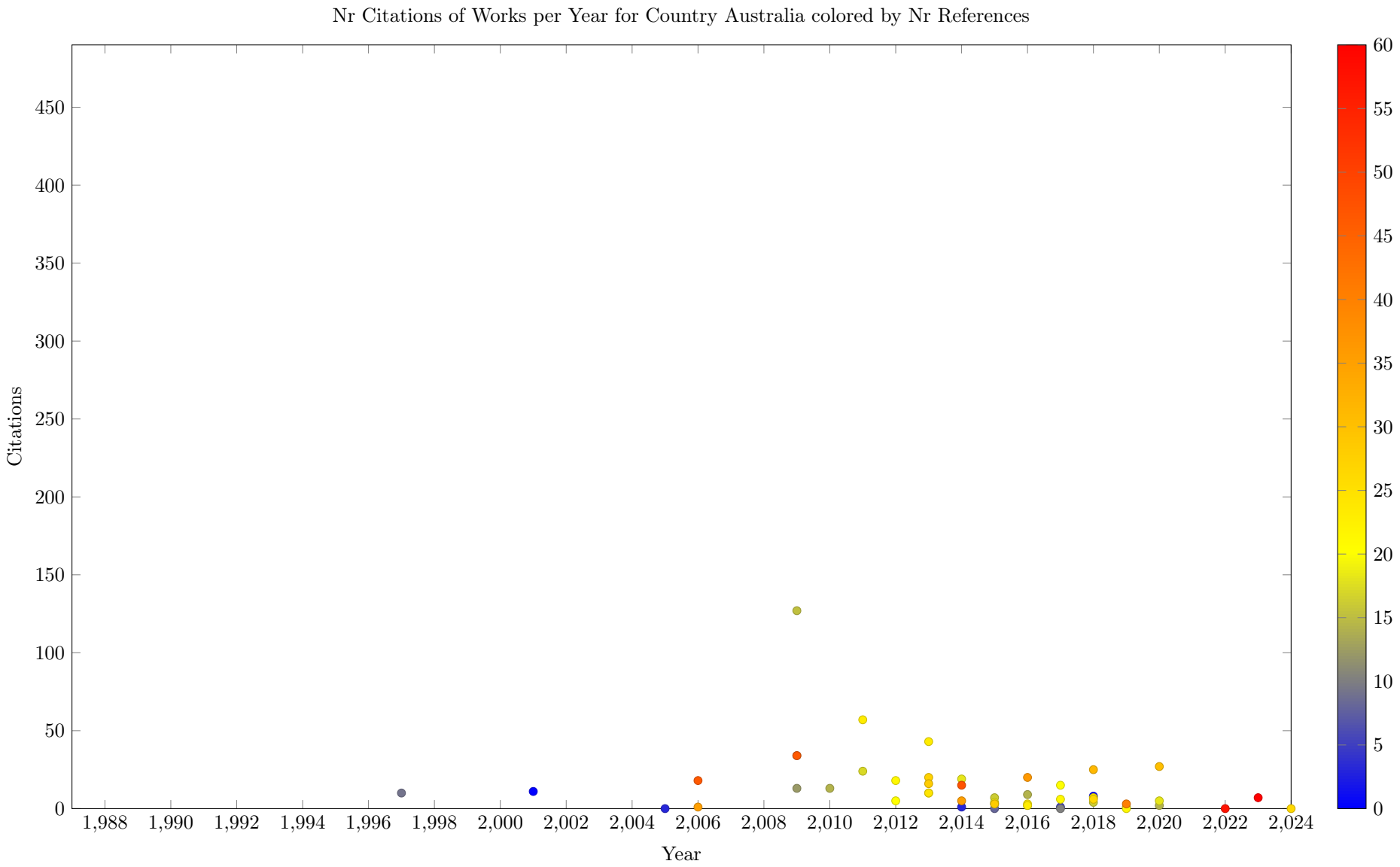
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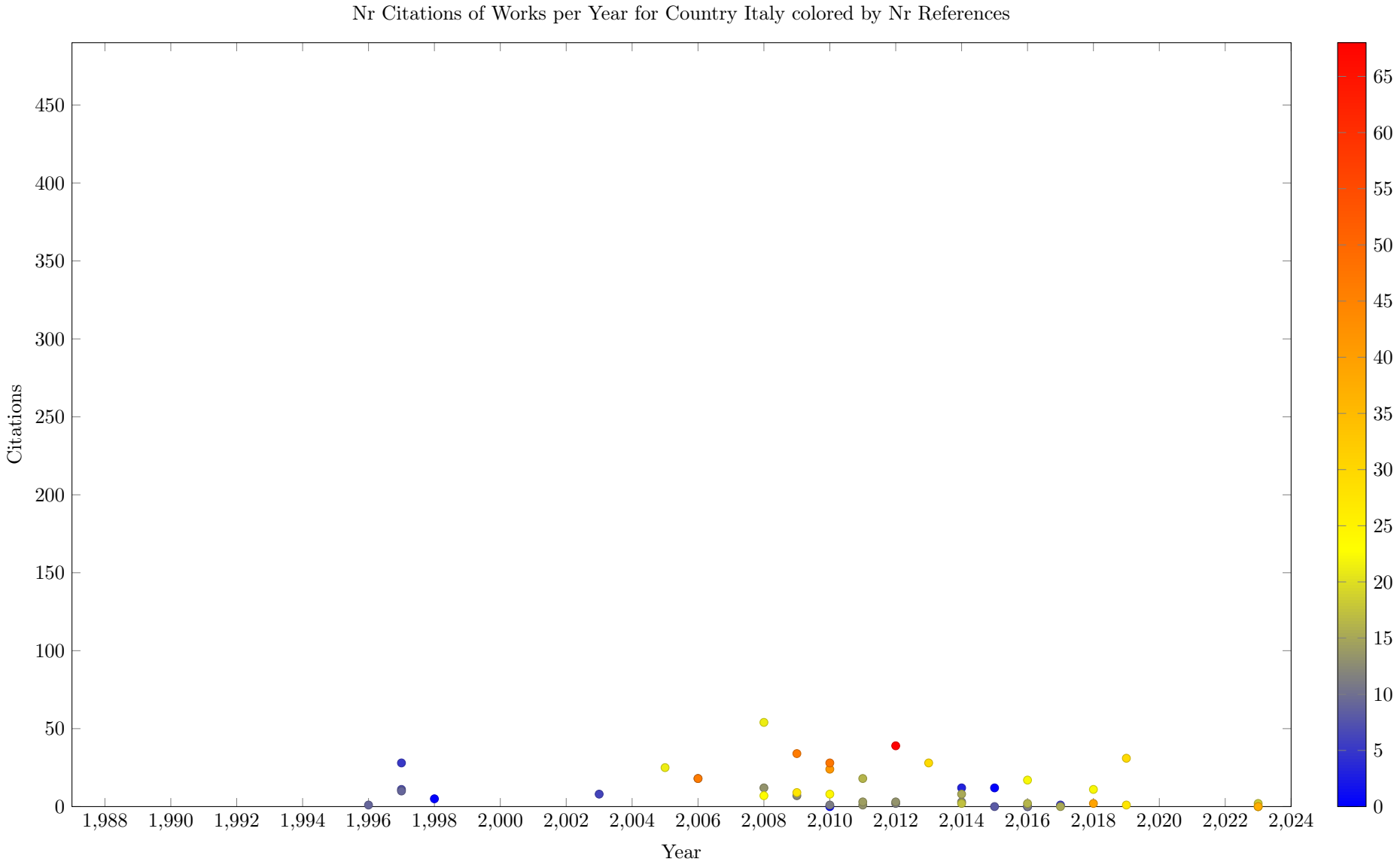
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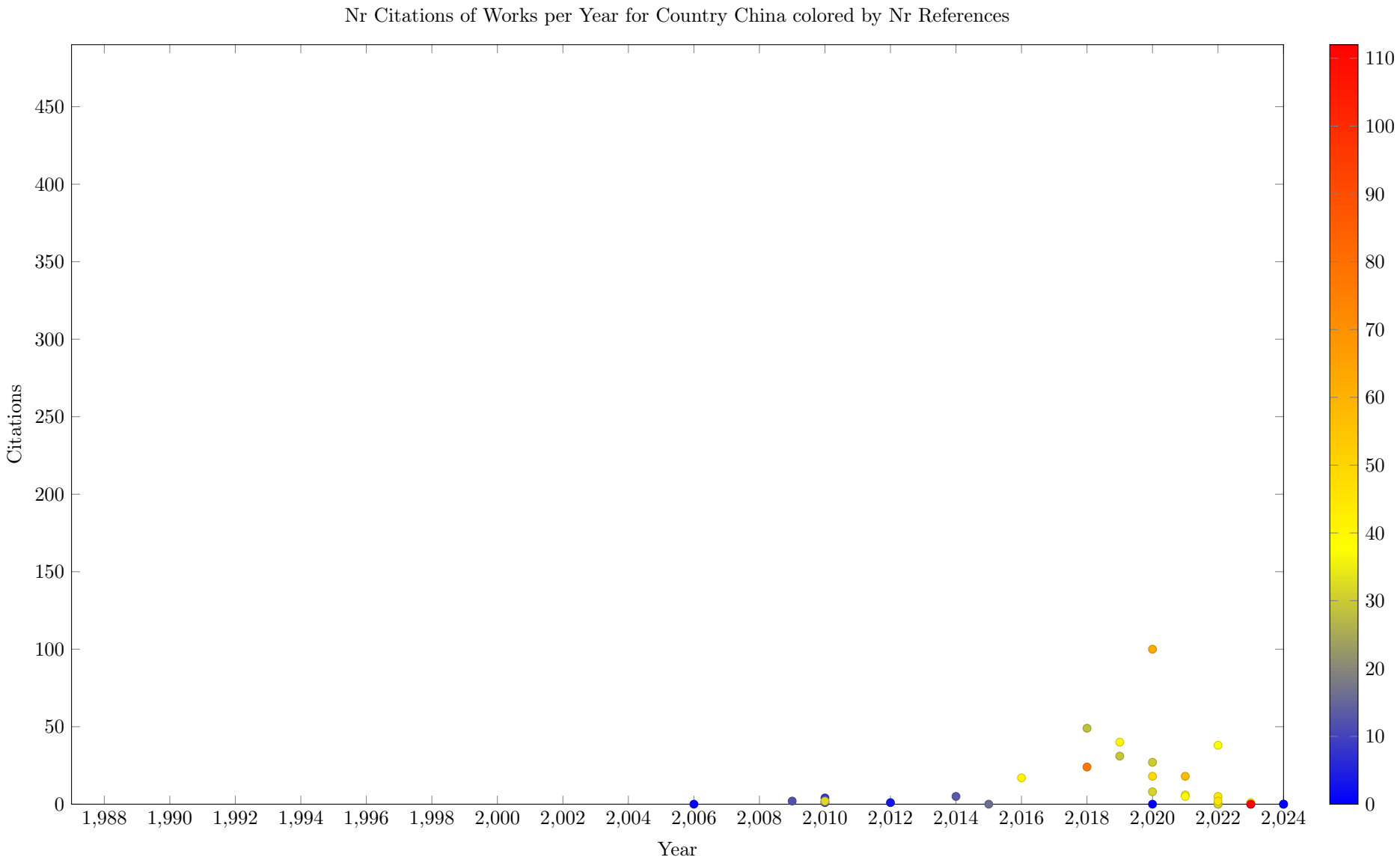
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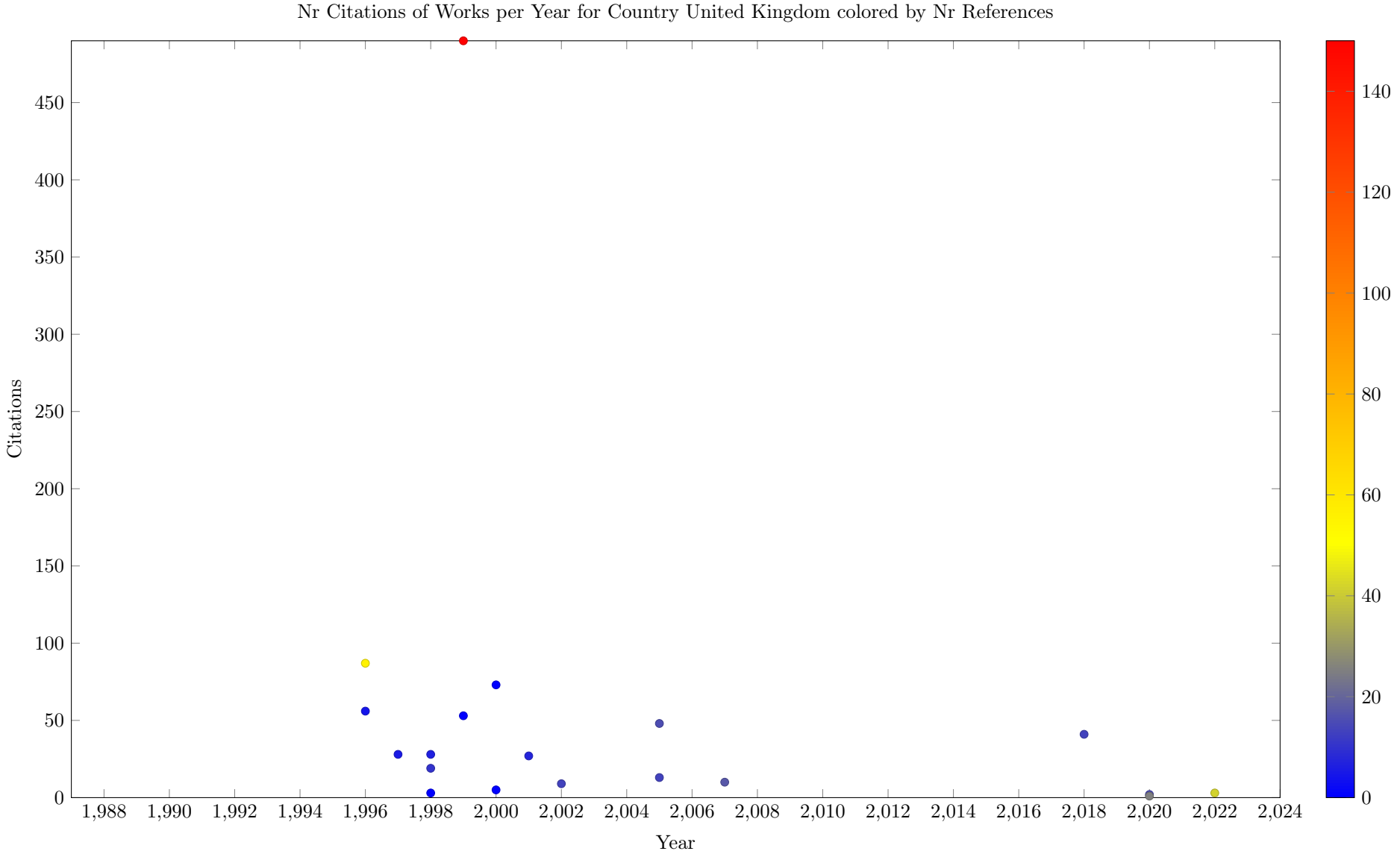
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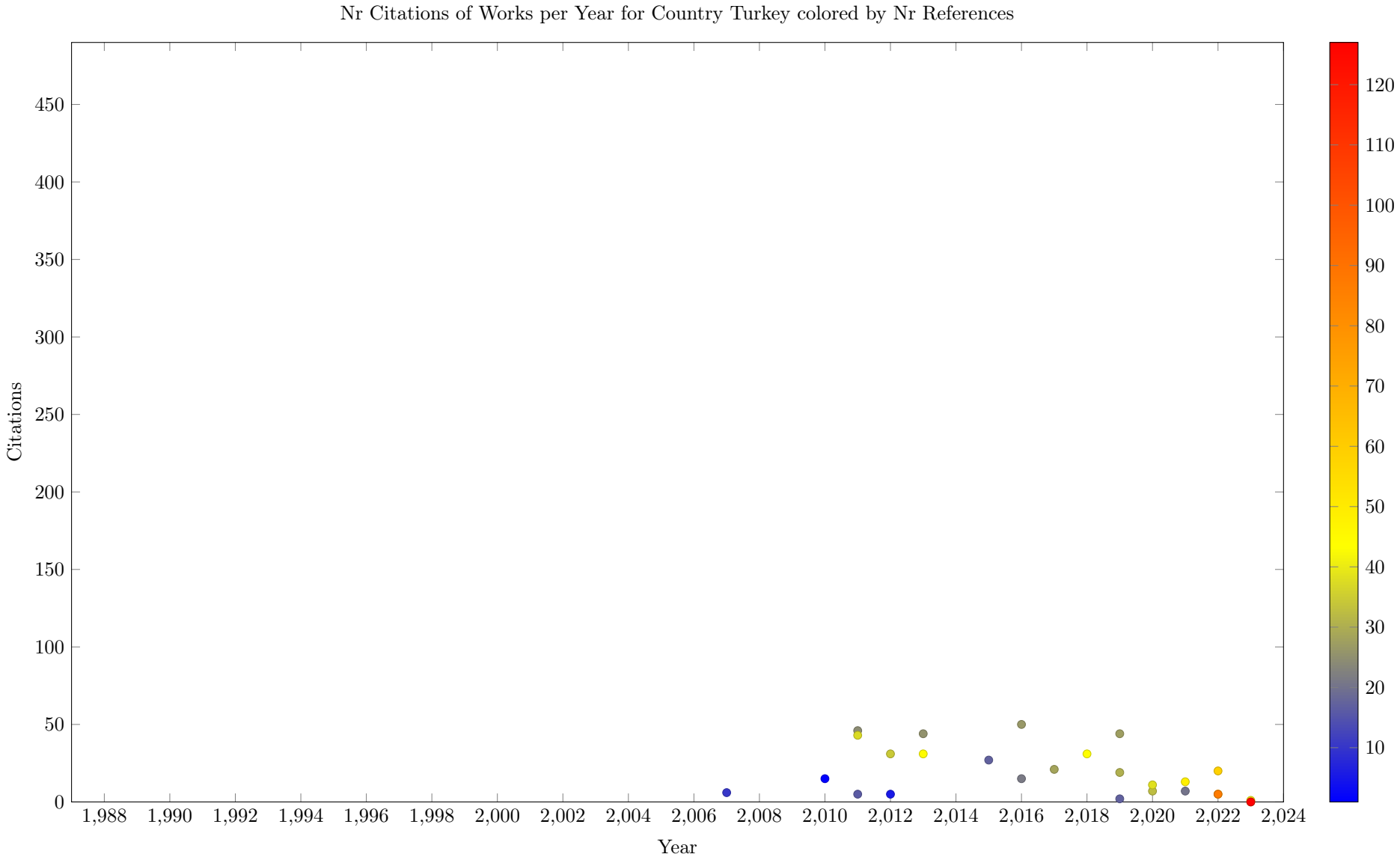
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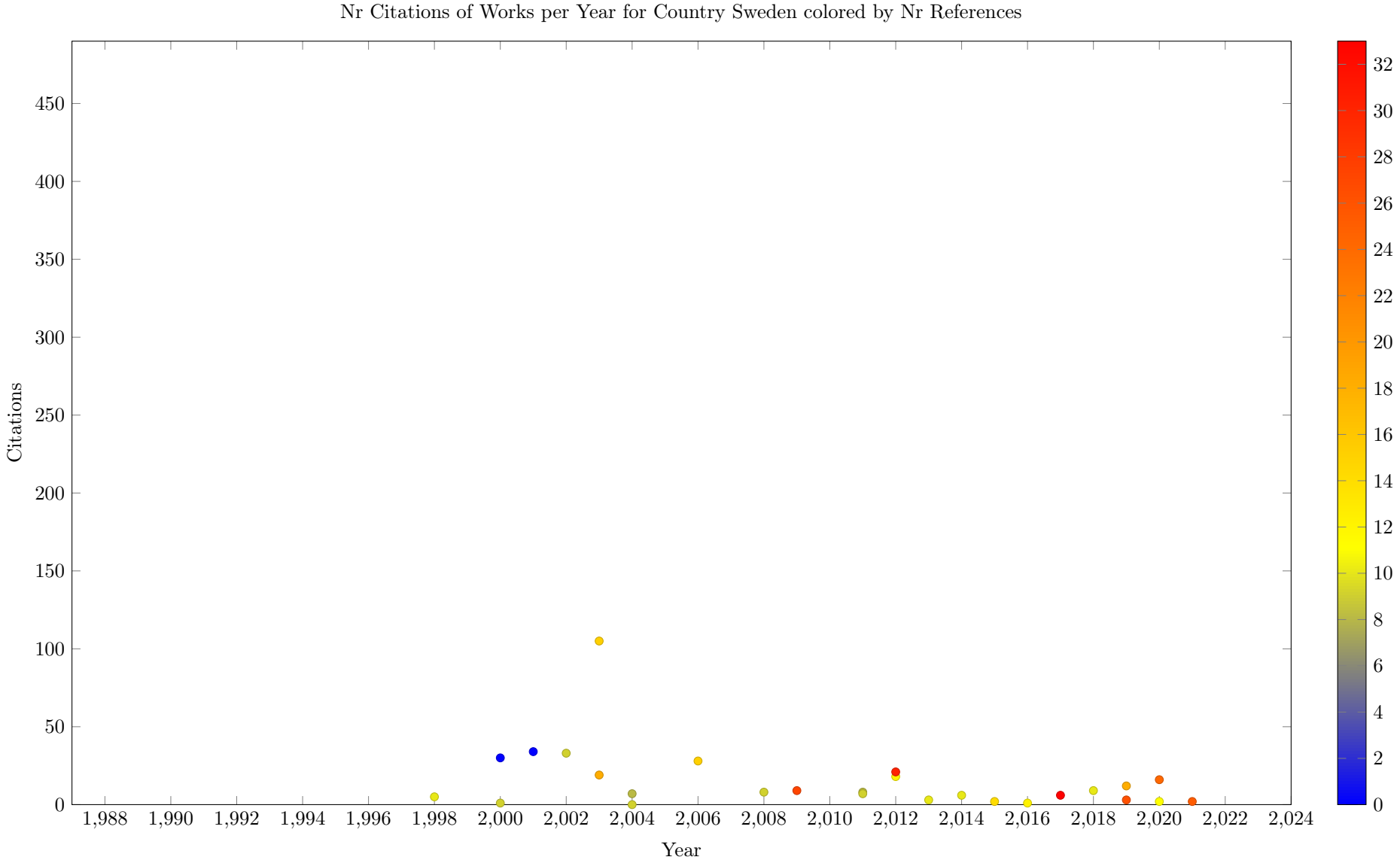
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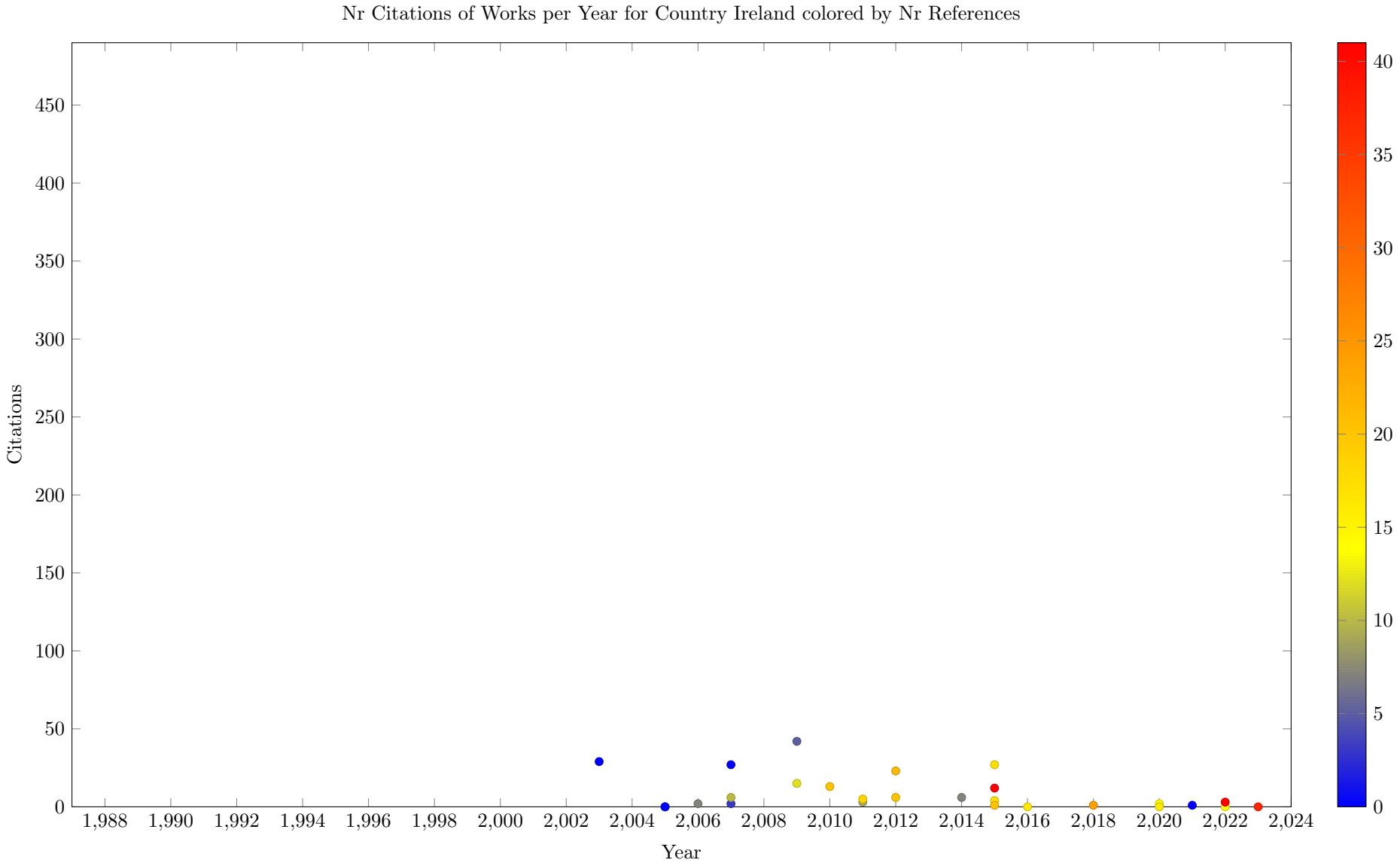
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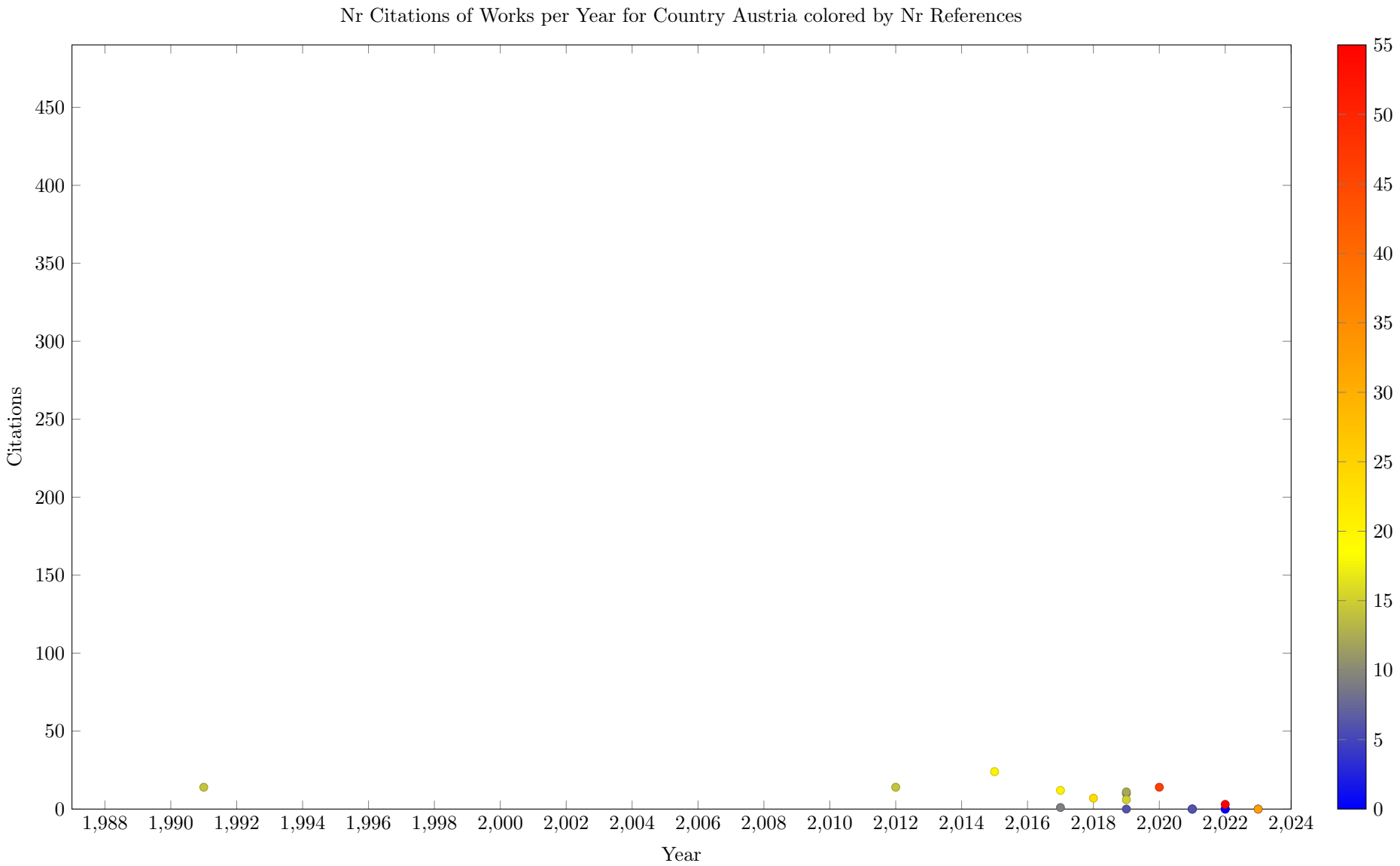
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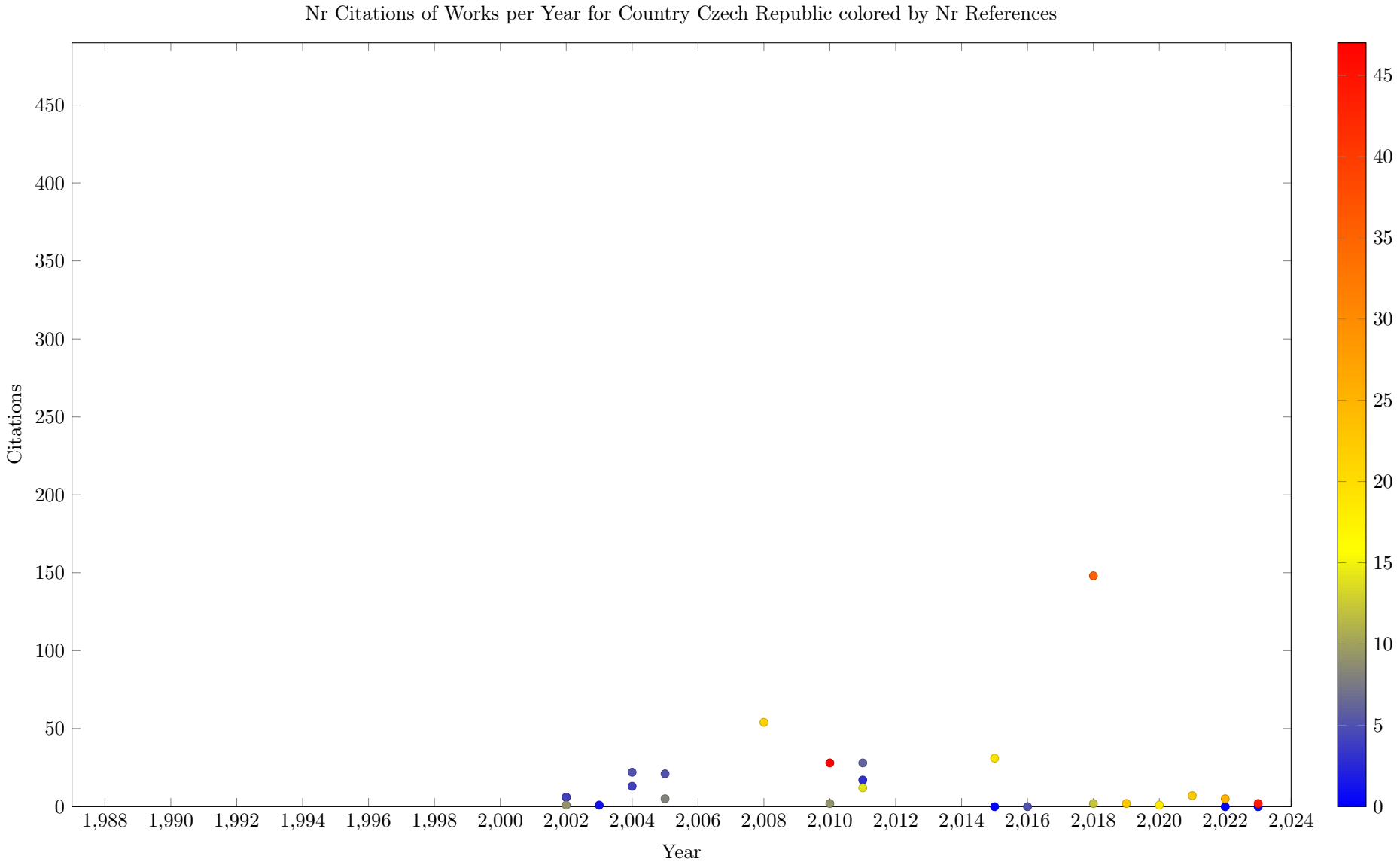
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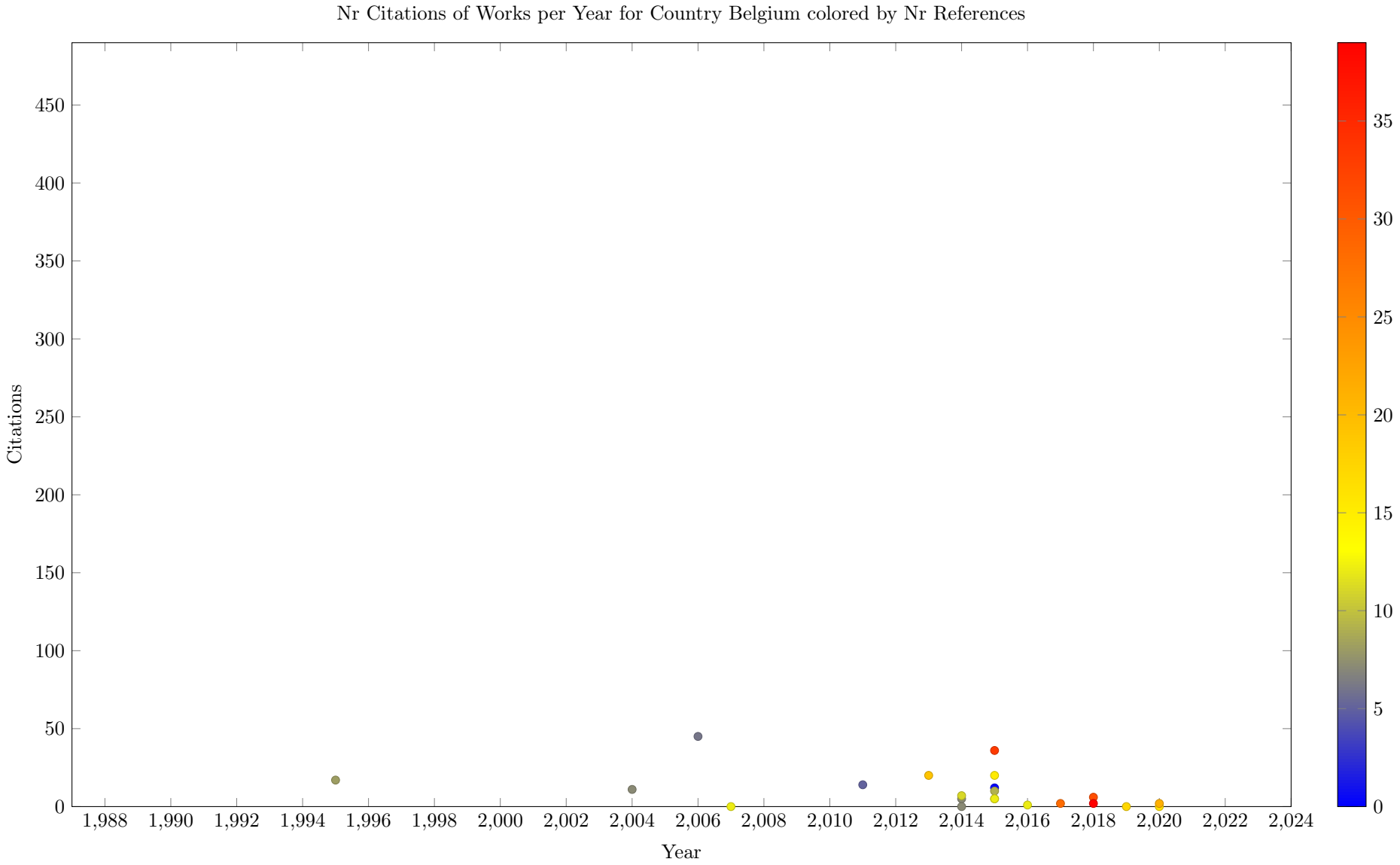
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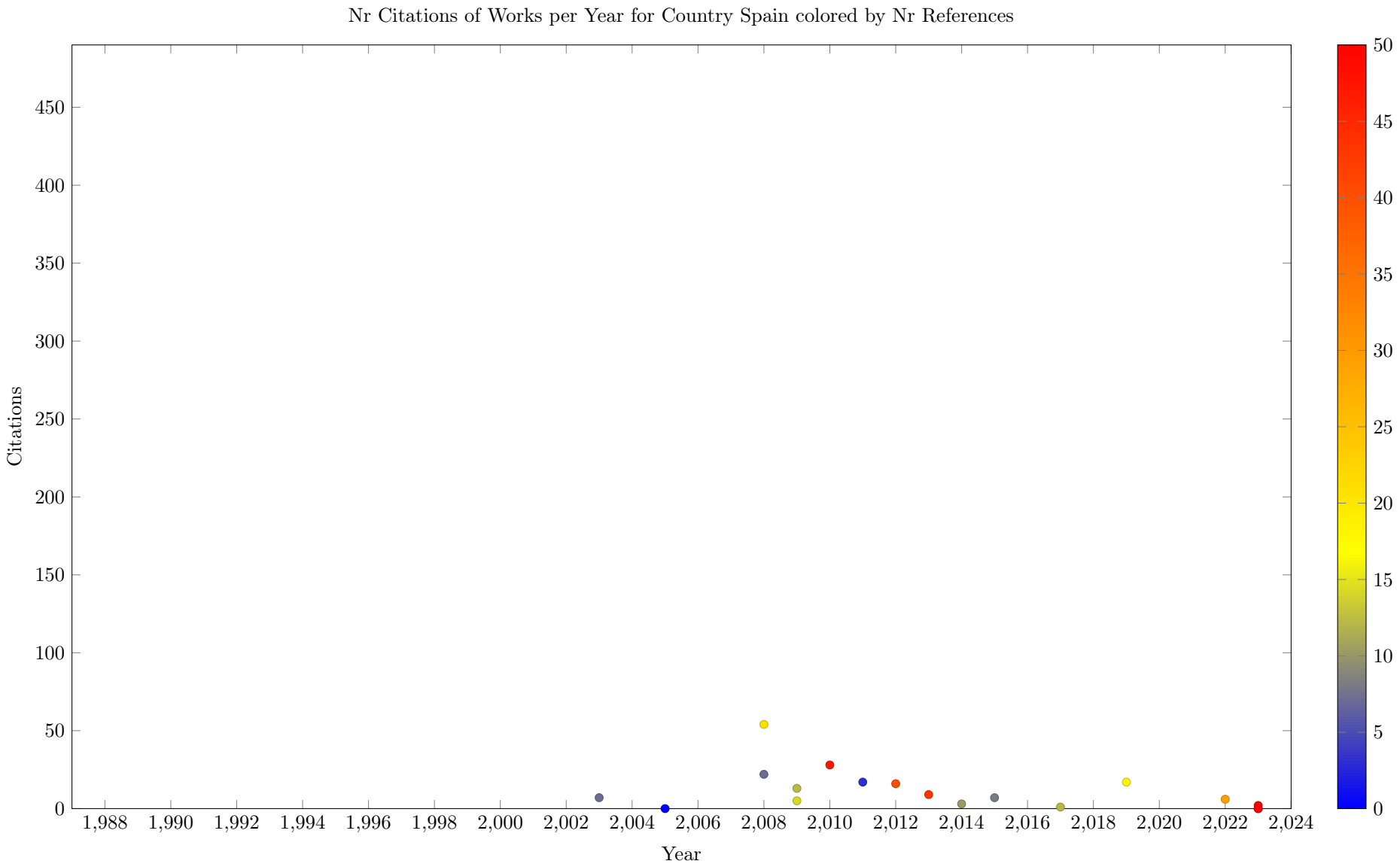
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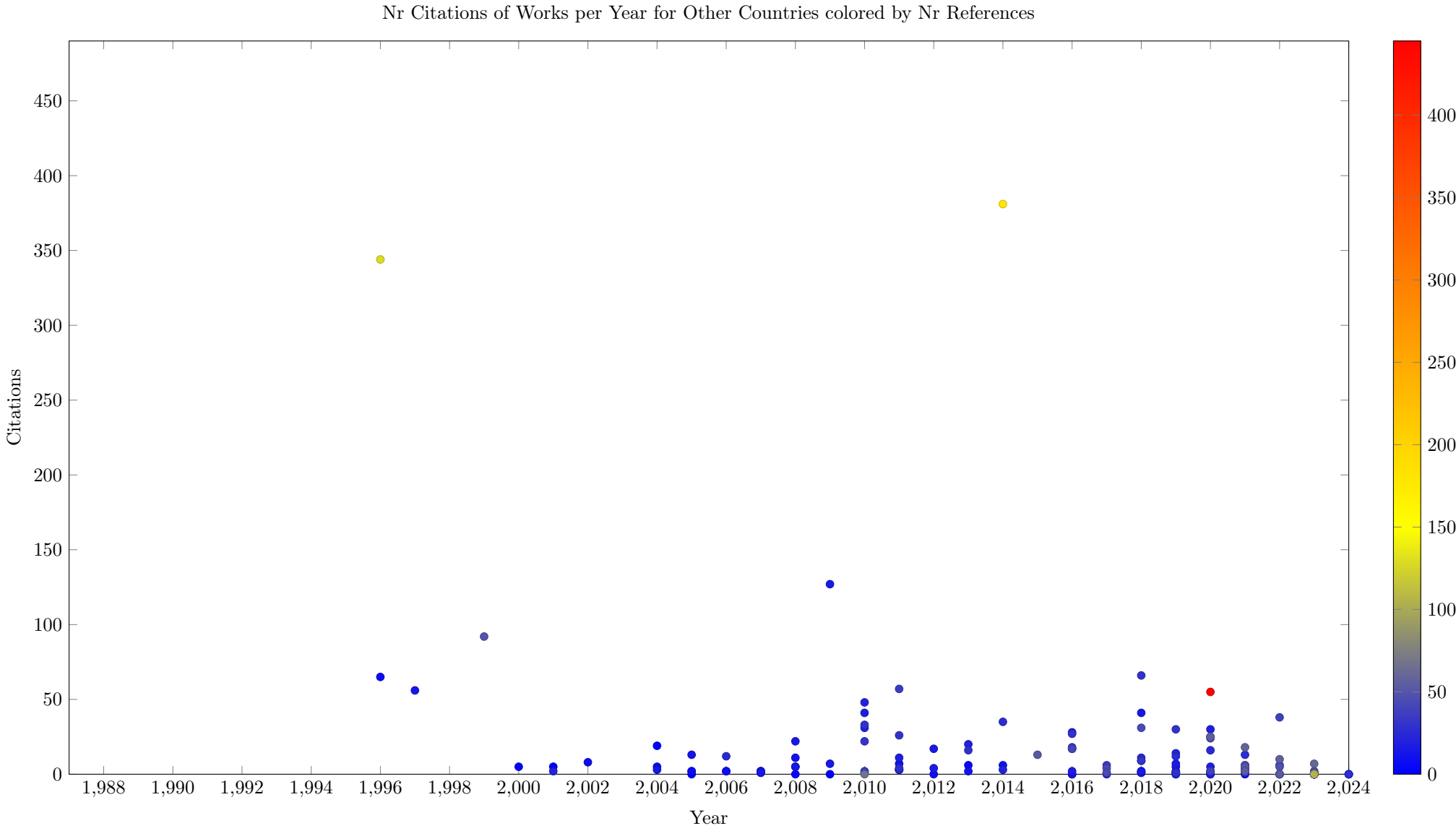
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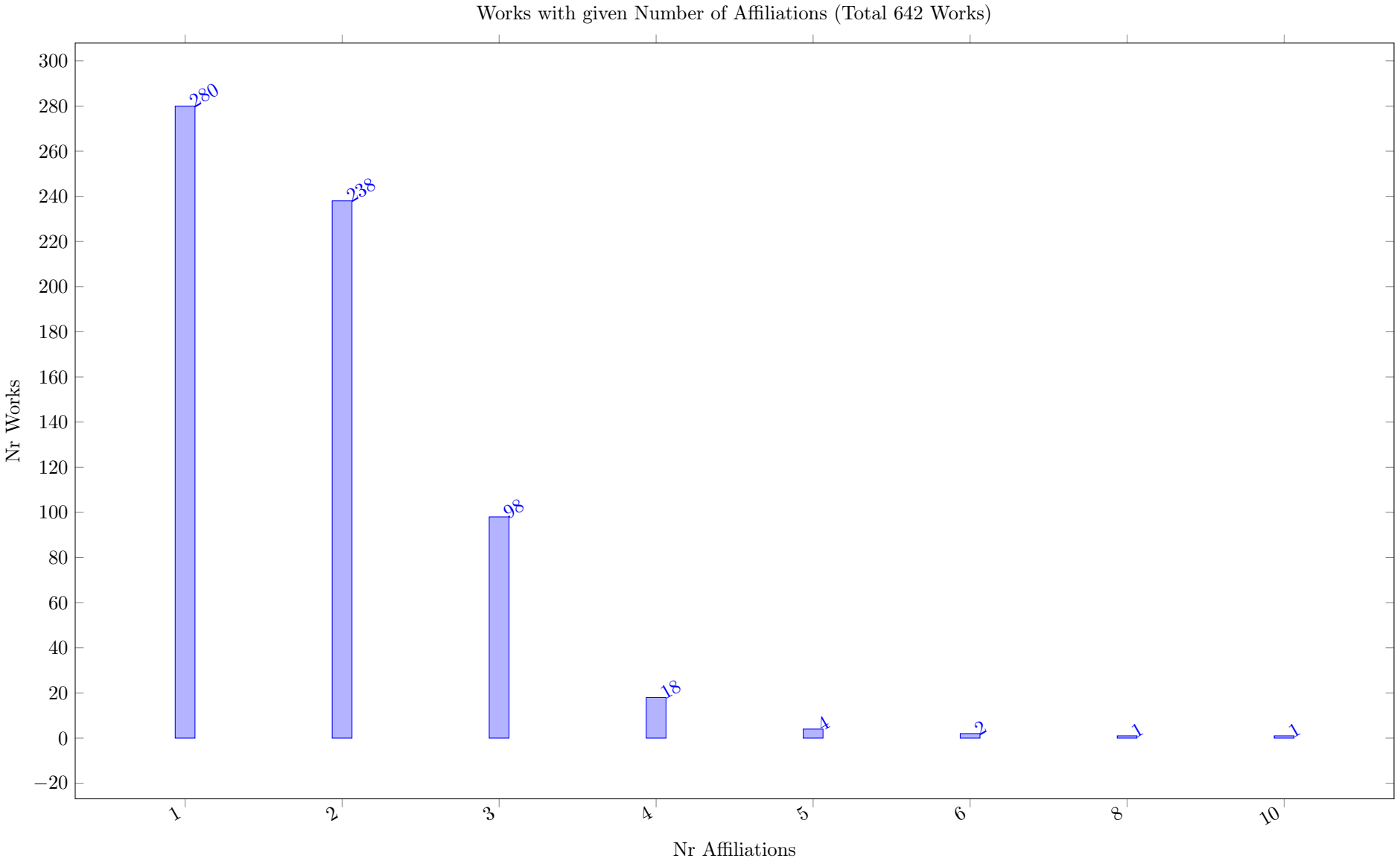
3 Collaborations

This section shows data about collaborations between multiple affiliations for the same work. This is based on Scopus data, which associates the affiliation with the work, not with each author of the work. The analysis excludes background work.



The following heatmap is not complete. It needs a symmetric option to count a collaboration for both A-B and B-A.

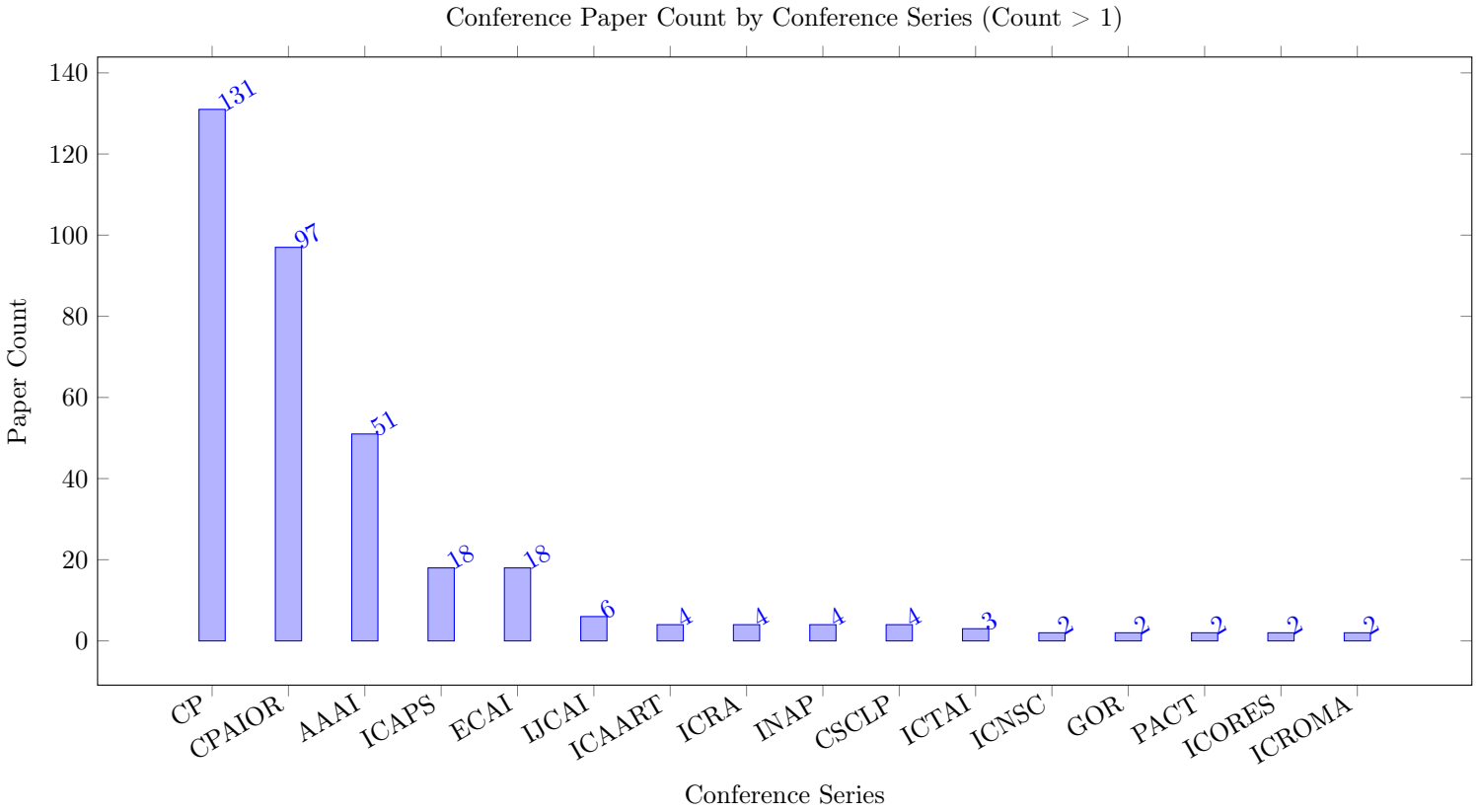
Table 6: Collaboration Data (Top 45 Inst by Decreasing Collab Fraction)

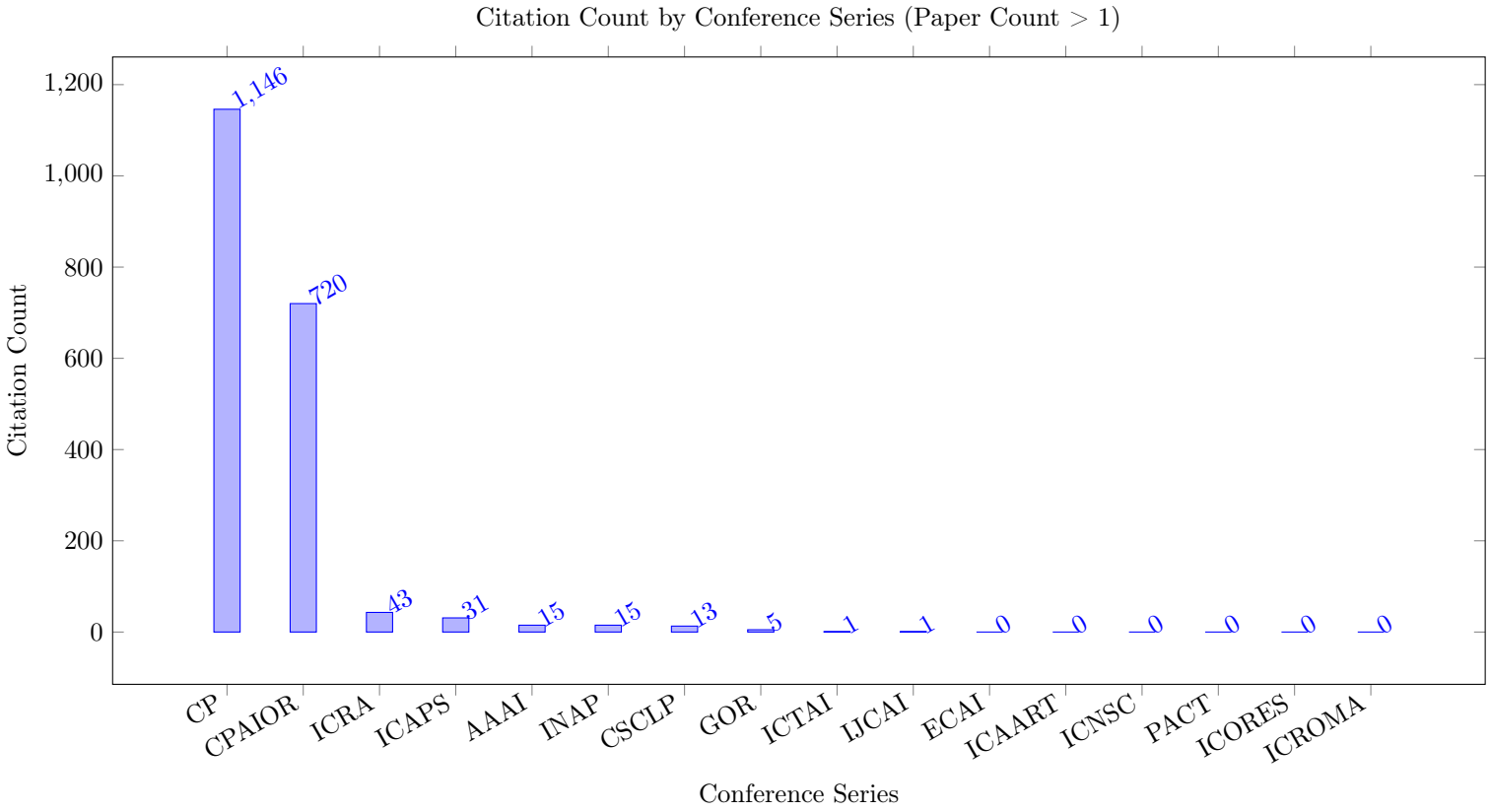
Inst	Nr Works	Collab Count	Domestic Collab	International Collab	Collab Fraction	Domestic Fraction	International Fraction	Collab Percentage	International Percentage
University of Toronto, Toronto, Canada	42	40	18	22	26.00	8.50	17.50	61.90	41.67
Université de Toulouse, Toulouse, France	28	37	19	18	21.00	14.83	6.17	75.00	22.02
University of Melbourne, Melbourne, Australia	25	32	23	9	20.00	15.00	5.00	80.00	20.00
Monash University, Clayton, Australia	20	27	18	9	18.00	12.50	5.50	90.00	27.50
Commonwealth Scientific and Industrial Research Organisation, Canberra, Australia	17	29	23	6	17.00	14.00	3.00	100.00	17.65
University College Cork, Cork, Ireland	22	31	6	25	17.00	1.76	15.24	77.27	69.26
Alma Mater Studiorum Università di Bologna, Bologna, Italy	35	22	6	16	15.00	3.83	11.17	42.86	31.90
Laboratoire d'Analyse et d'Architecture des Systemes, Toulouse, France	14	19	14	5	13.00	10.00	3.00	92.86	21.43
IMT Atlantique, Nantes, France	17	15	5	10	13.00	4.00	9.00	76.47	52.94
International Business Machines, Armonk, United States	21	16	0	16	12.00	0.00	12.00	57.14	57.14
Université Catholique de Louvain, Louvain-la-Neuve, Belgium	19	12	2	10	9.00	1.33	7.67	47.37	40.35
Polytechnique Montréal, Montreal, Canada	14	10	6	4	8.00	5.50	2.50	57.14	17.86
RISE, Swedish Institute of Computer Science, Kista, Sweden	10	10	1	9	8.00	1.00	7.00	80.00	70.00
Technische Universität Wien, Vienna, Austria	9	8	6	2	7.00	6.00	1.00	77.78	11.11
Dokuz Eylül Üniversitesi, Izmir, Turkey	9	8	6	2	7.00	5.00	2.00	77.78	22.22
Rotman School of Management, Toronto, Canada	7	16	13	3	7.00	5.50	1.50	100.00	21.43
Charles University, Prague, Czech Republic	17	10	4	6	7.00	3.50	3.50	41.18	20.59
Zuse Institute Berlin, Berlin, Germany	10	9	6	3	7.00	4.50	2.50	70.00	25.00
Universidade de São Paulo, Sao Paulo, Brazil	7	8	4	4	6.00	3.50	2.50	85.71	35.71
Tepper School of Business, Pittsburgh, United States	17	15	6	9	6.00	2.33	3.67	35.29	21.57
The Royal Institute of Technology (KTH), Stockholm, Sweden	6	9	7	2	6.00	5.00	1.00	100.00	16.67
Université d'Avignon et des Pays du Vaucluse, Avignon, France	7	7	5	2	6.00	4.00	2.00	85.71	28.57
Université de Maroua, Maroua, Cameroon	6	10	6	4	6.00	3.67	2.33	100.00	38.89
Universidad Nacional del Litoral, Santa Fe, Argentina	12	14	4	10	6.00	4.00	2.00	50.00	16.67
Technische Universität Berlin, Berlin, Germany	6	13	5	8	5.00	3.50	1.50	83.33	25.00
Université Grenoble Alpes, Saint Martin d'Heres, France	5	8	7	1	5.00	4.67	0.33	100.00	6.67
Czech Institute of Informatics, Robotics and Cybernetics, Prague, Czech Republic	5	7	3	4	5.00	2.50	2.50	100.00	50.00
University of Tehran, Tehran, Iran	7	7	1	6	5.00	1.00	4.00	71.43	57.14
University of Windsor, Windsor, Canada	5	10	9	1	5.00	4.50	0.50	100.00	10.00
Compagnie IBM France, Bois-Colombes, France	8	7	3	4	5.00	2.00	3.00	62.50	37.50
Magyar Tudomanyos Akademia, Budapest, Hungary	8	6	0	6	5.00	0.00	5.00	62.50	62.50
Bouygues, Paris, France	7	5	3	2	5.00	3.00	2.00	71.43	28.57
University of Connecticut, Storrs, United States	5	8	5	3	5.00	3.83	1.17	100.00	23.33
Université Laval, Quebec, Canada	9	9	2	7	4.00	1.00	3.00	44.44	33.33
UNSW Sydney, Sydney, Australia	5	9	3	6	4.00	2.00	2.00	80.00	40.00
Brown University, Providence, United States	6	10	4	6	4.00	2.53	1.47	66.67	24.44
Universidade Federal do Ceará, Fortaleza, Brazil	4	5	4	1	4.00	3.50	0.50	100.00	12.50
Universidad Andrés Bello, Santiago, Chile	4	11	6	5	4.00	2.40	1.60	100.00	40.00
Alpen-Adria-Universität Klagenfurt, Klagenfurt, Austria	6	5	5	0	4.00	4.00	0.00	66.67	0.00
Universitat Politècnica de València, Valencia, Spain	7	7	0	7	4.00	0.00	4.00	57.14	57.14
CNRS Centre National de la Recherche Scientifique, Paris, France	6	5	2	3	4.00	2.00	2.00	66.67	33.33
Huazhong University of Science and Technology, Wuhan, China	4	10	8	2	4.00	3.17	0.83	100.00	20.83
Sorbonne Université, Paris, France	5	6	5	1	4.00	3.00	1.00	80.00	20.00
ABB Corporate Research, Vasteras, Vasteras, Sweden	4	7	5	2	4.00	3.00	1.00	100.00	25.00
Universite Catholique de L'Ouest, Angers, France	5	8	8	0	4.00	4.00	0.00	80.00	0.00

Table 7: Heat Map based on Collaboration between Institutions (Integer Count)

From/To	Total	France	United States	Canada	Australia	China	Germany	Ireland	Sweden	Italy	Belgium	Netherlands	Turkey	Chile	Austria	Argentina	Spain	Norway	Brazil	Cameroon	Colombia	Czech Republic	United Kingdom	Iran	Russian Federation	Tunisia	Luxembourg	Singapore	Denmark	South Korea	Switzerland	Egypt	Macao	Japan	Hong Kong	Algeria	Serbia	Hungary	Portugal	Poland	Finland	Mexico	Taiwan	Iraq	Iceland	Greece	Romania	Pakistan	Other
Total		106	90	79	60	53	50	37	32	28	22	20	17	17	14	14	11	10	10	9	9	9	8	8	7	7	6	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	1	1	1	1	1	
United States	129	6	42	11	3	5	4	14	3	4	9	8	2	3	0	3	0	0	2	0	0	0	0	2	0	0	2	0	0	1	0	0	0	1	0	0	0	1	0	1	1	0	0	1	0	0	0	0
France	120	71	7	5	2	1	2	4	8	0	2	0	0	0	0	0	0	1	1	0	0	3	2	1	1	3	1	0	1	0	0	0	0	0	0	2	0	1	0	1	0	0	0	0	0	0	0	0
Canada	64	1	1	51	0	0	4	1	0	0	2	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Australia	60	1	0	1	41	2	3	1	0	4	0	1	0	0	1	0	2	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Germany	55	2	9	1	5	0	23	2	1	1	0	3	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0
China	43	0	3	0	0	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	31	8	4	3	0	0	2	10	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Italy	30	2	2	0	3	2	0	1	2	10	2	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	21	0	4	0	0	1	0	2	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spain	18	0	0	1	0	0	2	0	0	2	0	0	0	5	0	0	4	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chile	17	0	0	0	0	0	0	0	0	1	0	0	0	8	0	0	1	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Czech Republic	15	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	3	0	0	0	0	6	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Austria	14	0	0	0	1	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sweden	14	0	0	0	0	0	0	0	9	2	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	13	5	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cameroon	13	0	0	2	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Netherlands	12	0	4	0	2	0	1	0	0	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Belgium	12	2	1	0	0	0	0	0	0	0	5	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Russian Federation	9	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portugal	8	0	3	0	0	0	1	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hungary	7	1	0	3	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
United Kingdom	7	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Singapore	6	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Argentina	6	0	1	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Switzerland	6	0	0	0	0	0	1	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taiwan	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Denmark	4	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Iran	4	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
South Korea	4	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egypt	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Japan	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Poland	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Tunisia	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	3	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
United Arab Emirates	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Romania	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
Finland	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Luxembourg	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benin	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malaysia	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Hong Kong	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Algeria	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Thailand	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greece	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Other		0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

4 Conference Papers by Most Common Conference Series




Citation Count by Conference Series (Paper Count > 1)
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600
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200
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720
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15
15
13
5
1
1
0
0
0
0
0
0
CP
CPAIOR
ICRA
ICAPS
AAAI
INAP
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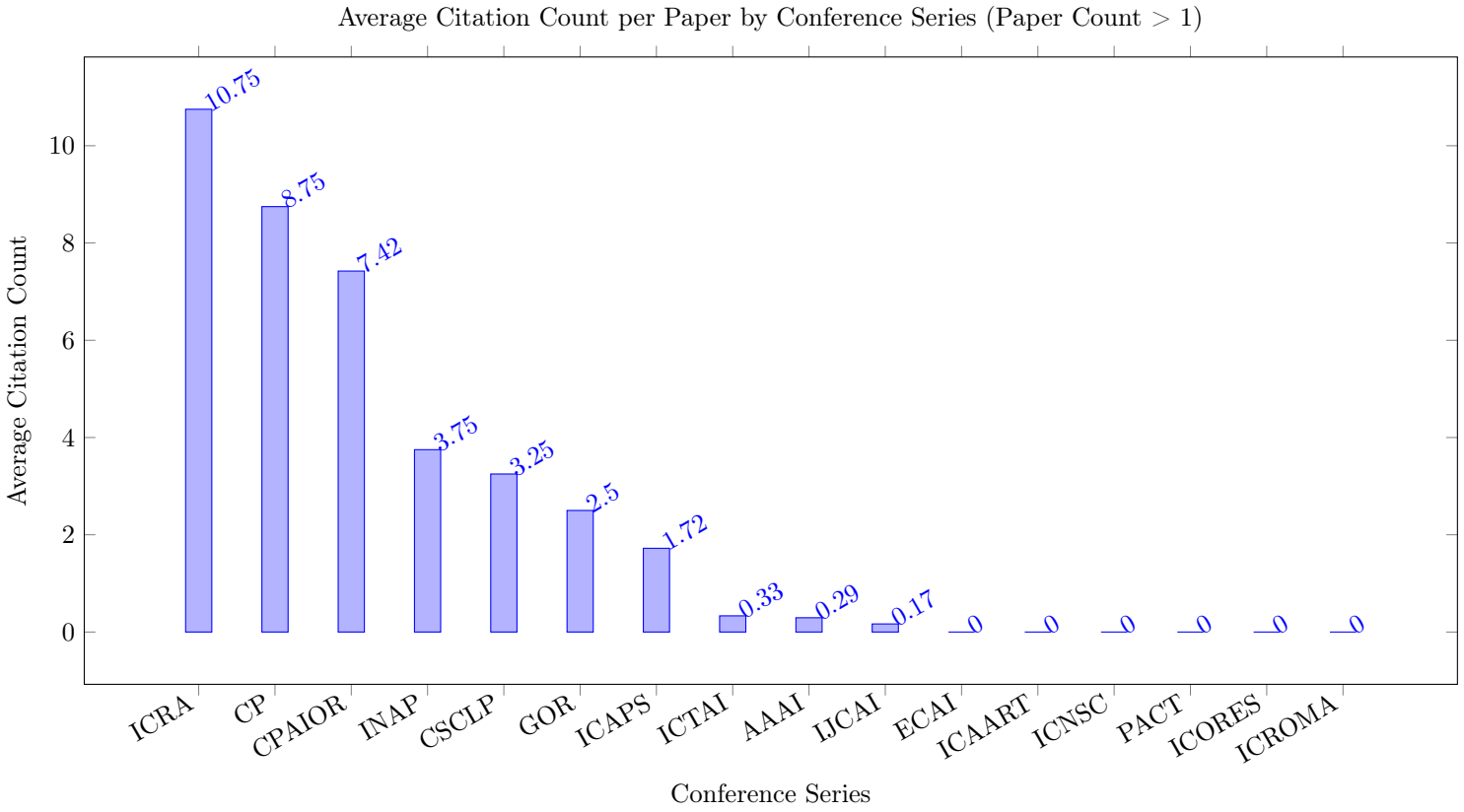
GOR
ICTAI
IJCAI
ECAI
ICAART
ICNSC
PACT
ICORES
ICROMA
Conference Series


Average Citation Count per Paper by Conference Series (Paper Count > 1)
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3.25
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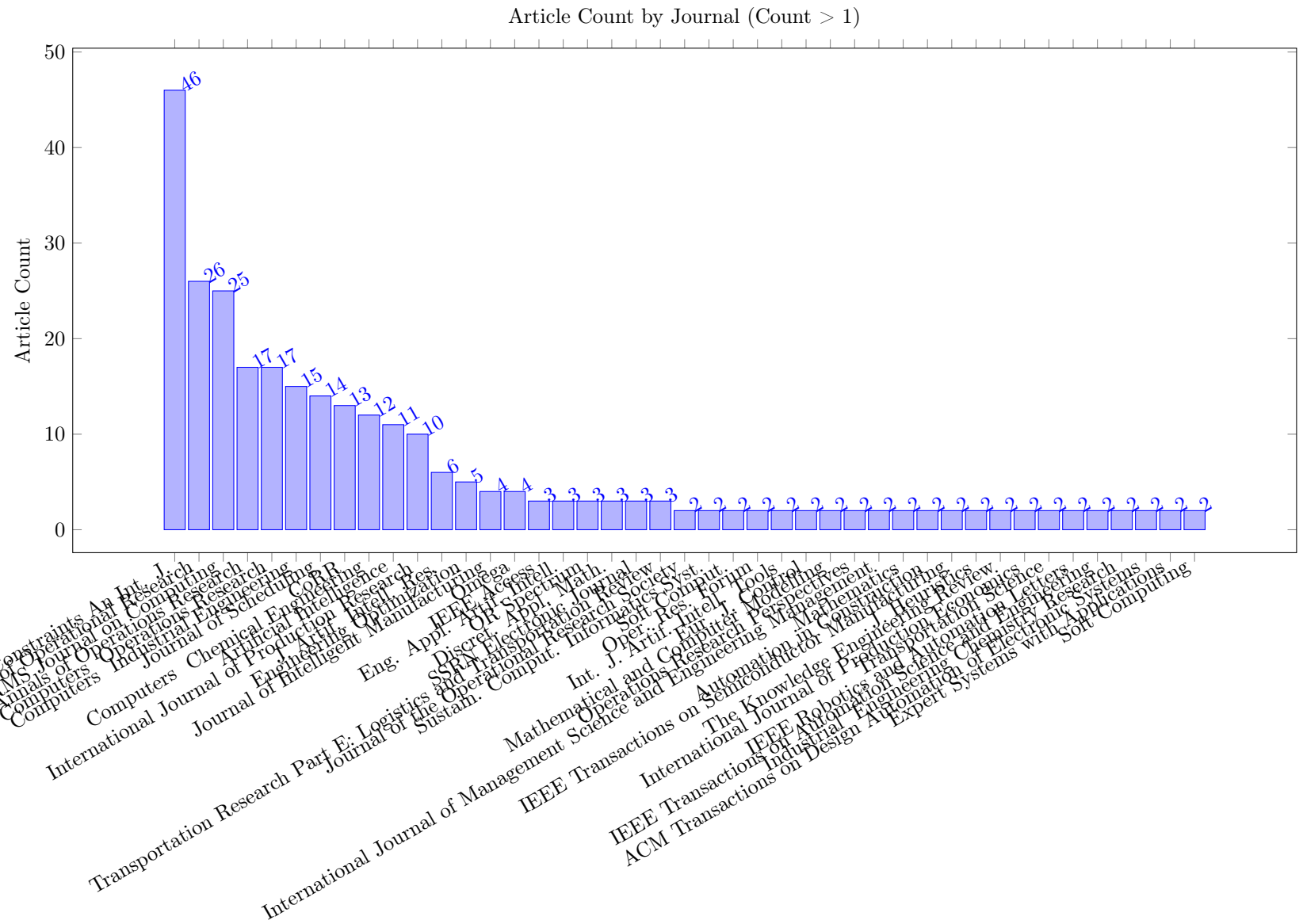
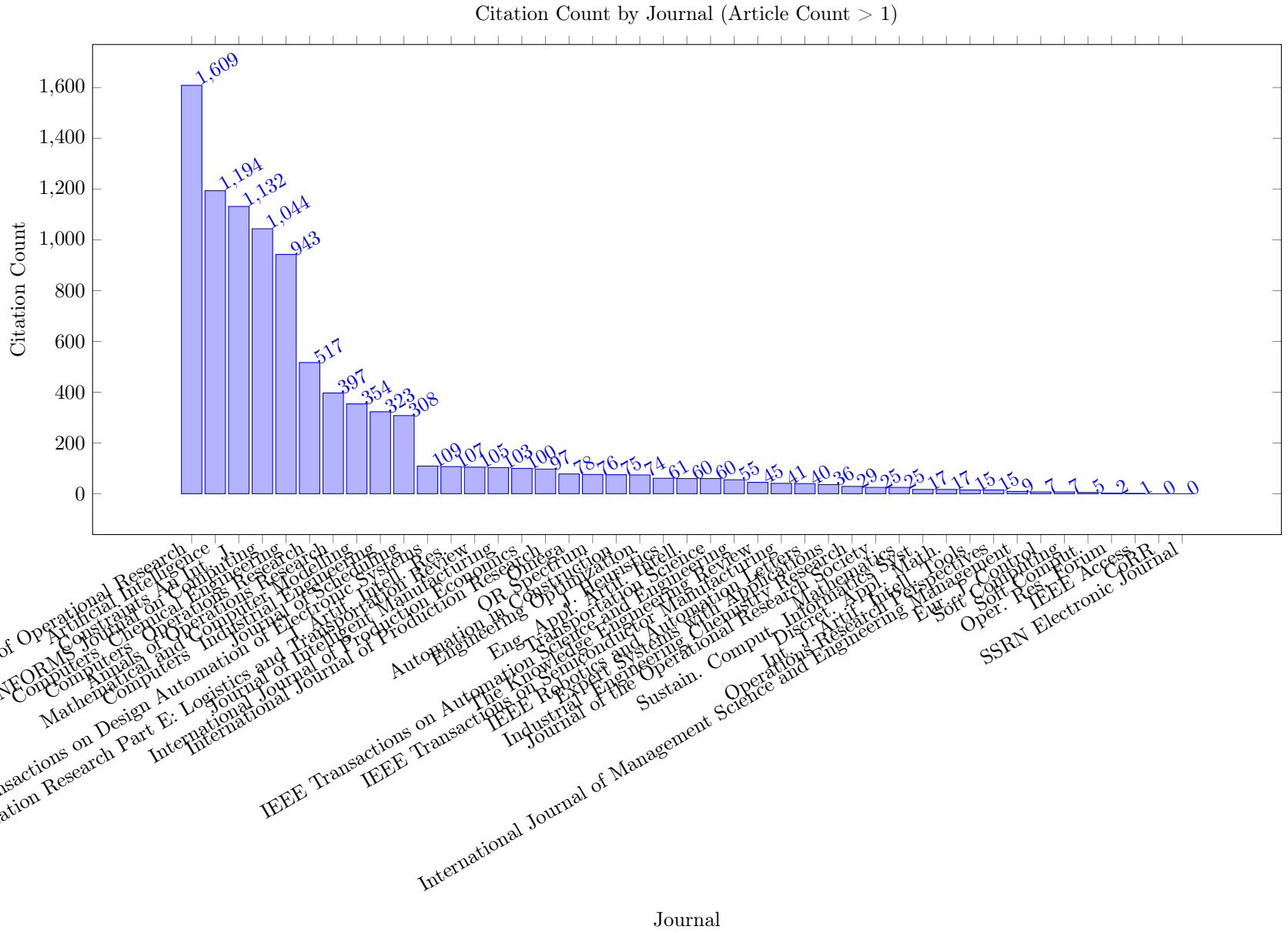
1.72
0.33
0.29
0.17
0
0
0
0
0
0
ICRA
CP
CPAIOR
INAP
CSCLP
GOR
ICAPS
ICTAI
AAAI
IJCAI
ECAI
ICAART
ICNSC
PACT
ICORES
ICROMA
Conference Series

5 Journal Articles by Most Common Journals

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517
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354
323
308
109
107
105
103
100
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75
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41
40
36
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25
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17
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15
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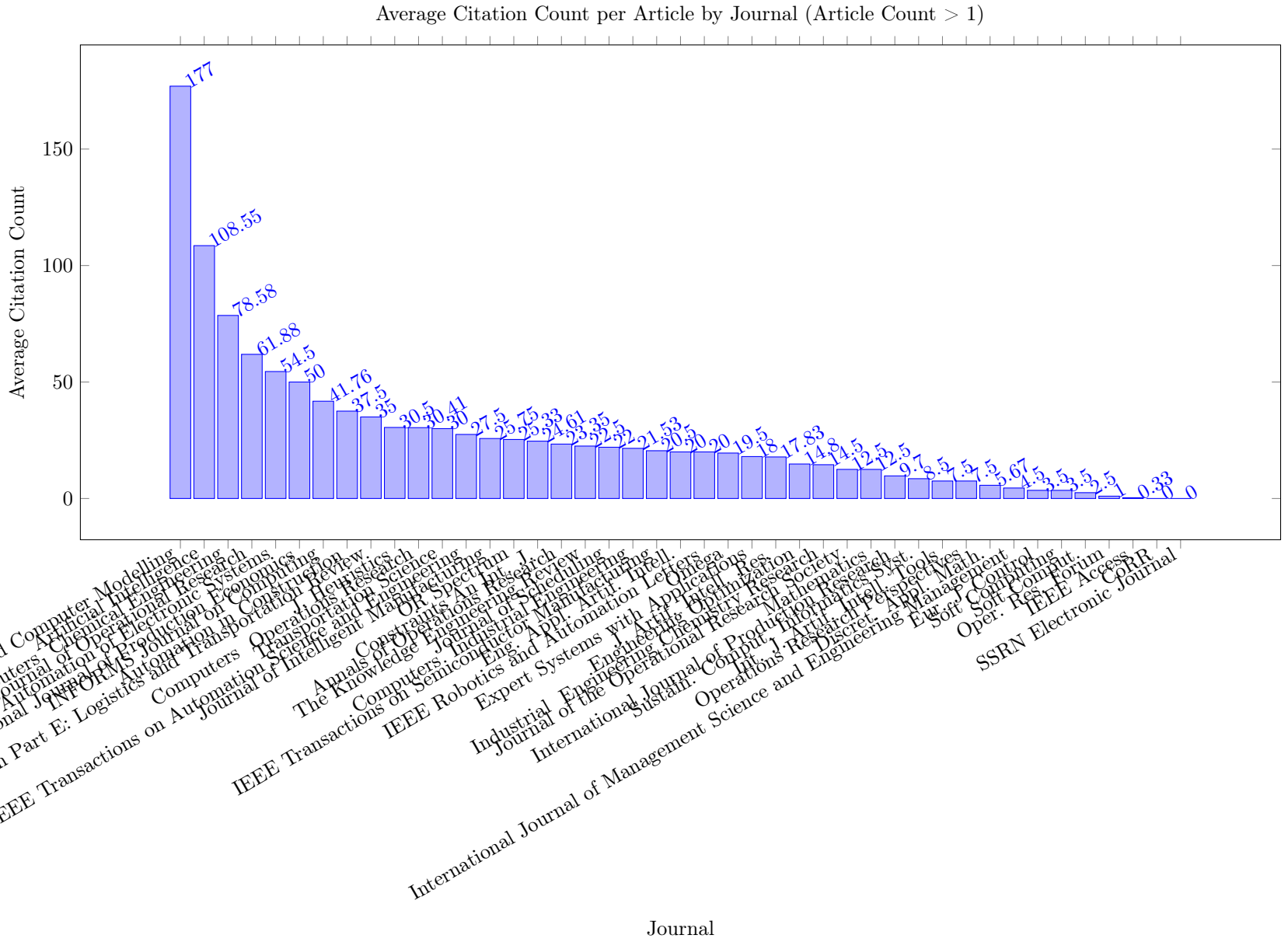
9
7
7
5
2
1
0
0
European Journal of Operational Research
Artificial Intelligence J.
Constraints An Int. J.
INFORMS Journal on Computing
Computers Chemical Engineering
Computers Operations Research
Mathematical and Computer Modelling
Annals of Operations Research
Computers Industrial Engineering
International Journal of Production Research
Transportation Research Part E: Logistics and Transportation Review
ACM Transactions on Design Automation of Electronic Systems
Journal of Intelligent Manufacturing
International Journal of Production Economics
Automation in Construction
Engineering Optimization
Omega
OR Spectrum
J. Heuristics
J. Artif. Intell. Res.
Eng. Appl. Artif. Intell.
Transportation Science
Science and Engineering Review
IEEE Transactions on Automation Science and Engineering
The Knowledge Engineering Review
IEEE Transactions on Semiconductor Manufacturing
IEEE Robotics and Automation Letters
Industrial Engineering with Applications
Expert Systems
Journal of the Operational Research Society
Sustain. Comput. Informatics Syst.
Inf. J. Artif. Intell. Tools
Operations Research Perspectives
International Journal of Management Science and Engineering Management
Eur. J. Control
Soft Comput.
Oper. Res. Forum
IEEE Access
SSRN Electronic Journal
Journal


Average Citation Count per Article by Journal (Article Count > 1)
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27.5
25.5
25.75
25.33
24.61
23.5
22.5
22
21.53
20.5
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14.5
12.5
12.5
9.7
8.5
7.5
7.5
5.67
4.5
3.5
3.5
2.5
1
0.33
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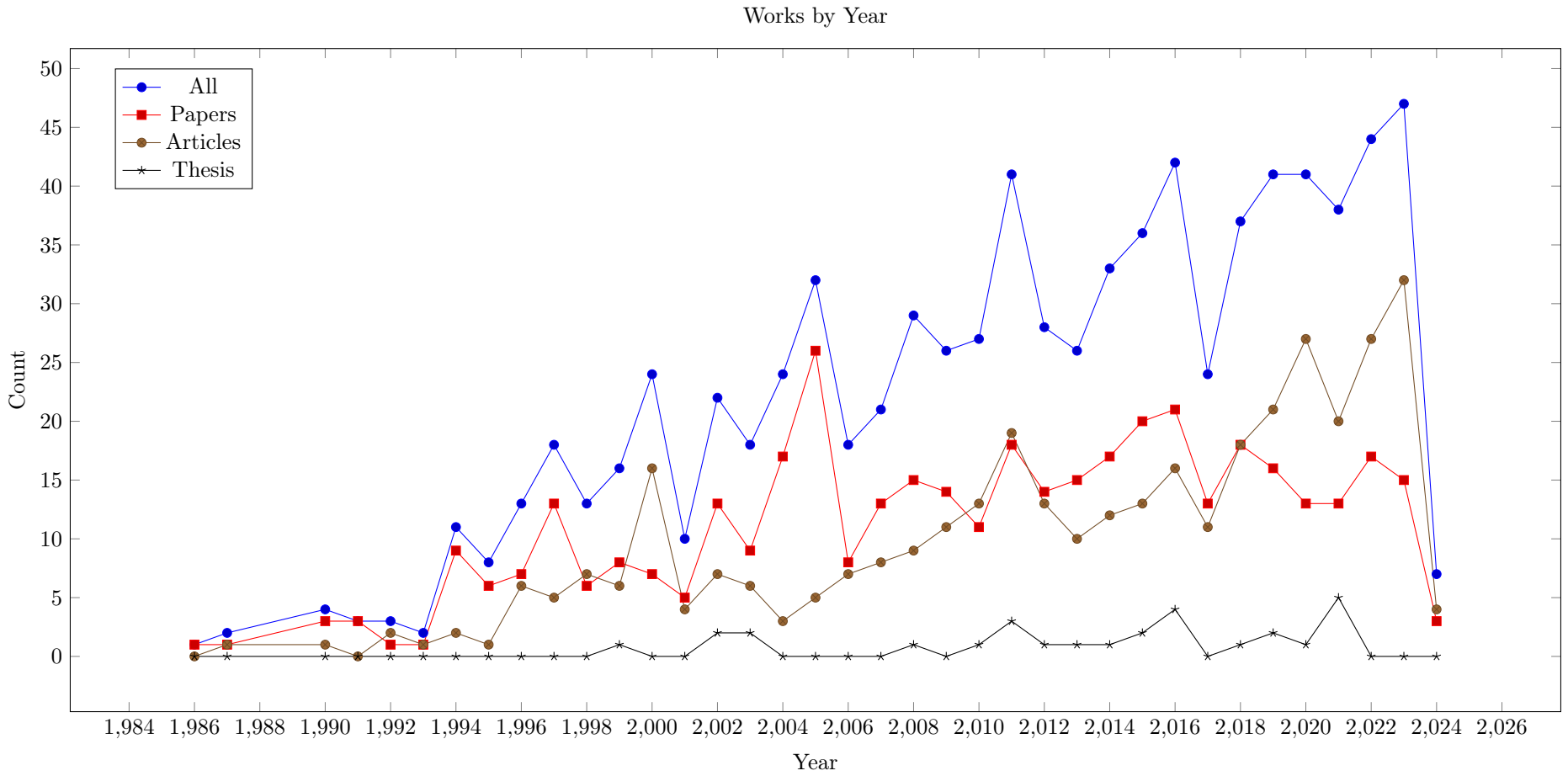
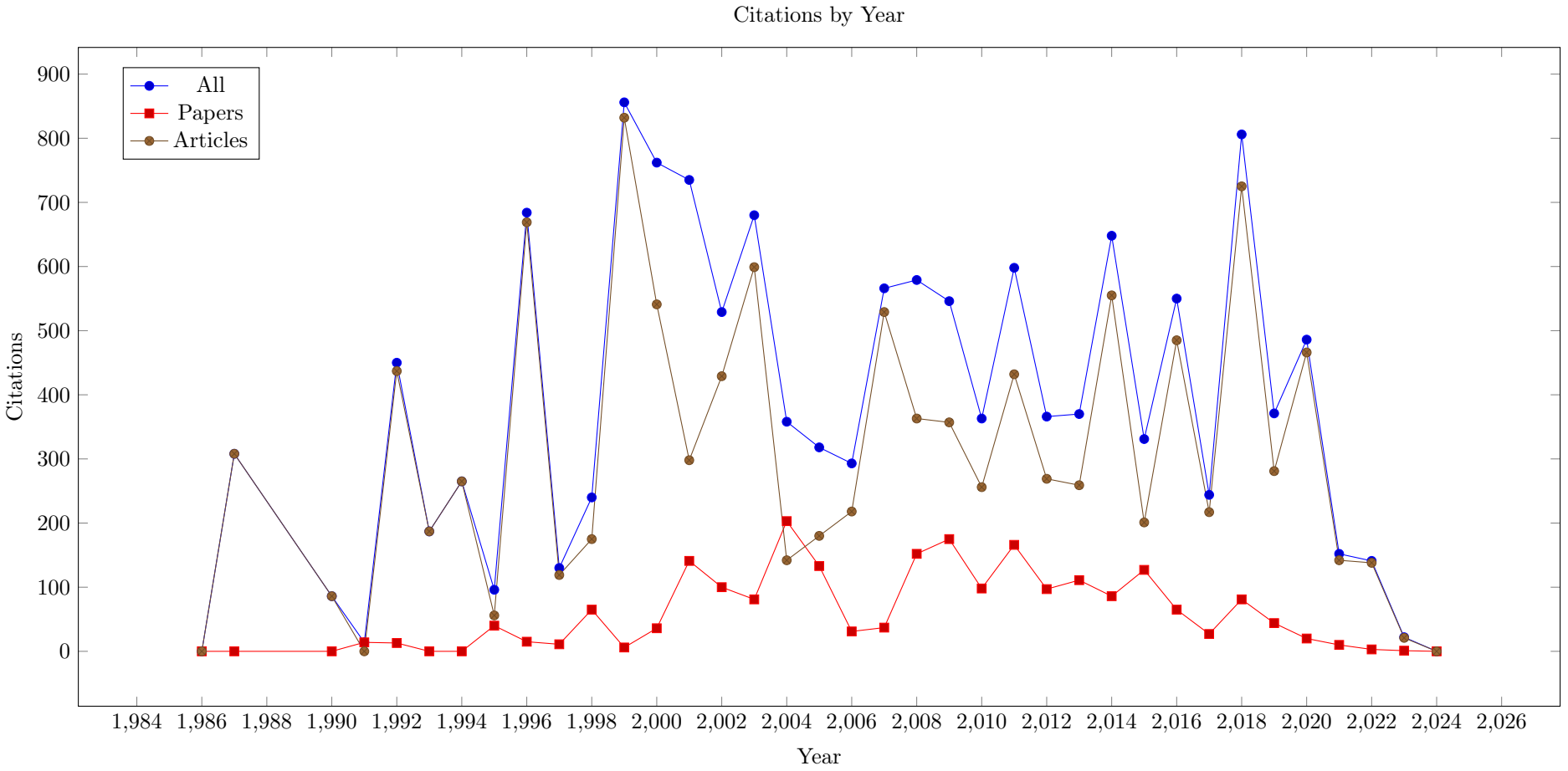
0
Mathematical and Computer Modelling
Artificial Intelligence
Computers & Chemical Engineering
European Journal of Operational Research
ACM Transactions on Design Automation of Electronic Systems
International Journal of Production Economics
Transportation Research Part E: Logistics and Transportation Review
INFORMS Journal on Computing
IEEE Transactions on Automation Science and Engineering
Computers & Operations Research
Journal of Intelligent Manufacturing
Transportation Science
OR Spectrum
Int. J. Heuristics
Constraints An Int. J.
Annals of Operations Research
The Knowledge Engineering Review
IEEE Transactions on Semiconductor Manufacturing
Computers & Industrial Engineering
Journal of Scheduling
Eng. Appl. Artif. Intell.
IEEE Robotics and Automation Letters
Omega
Expert Systems with Applications
J. Artif. Intell. Res.
Industrial Engineering Chemistry Research
Journal of the Operational Research Society
International Journal of Production Research
Sustain. Comput. Inform. Syst.
Int. J. Artif. Intell. Tools
Operations Research Perspectives
Discret. Appl. Math.
Eur. J. Oper. Res.
Soft Comput.
Oper. Res. Forum
IEEE Access
SSRN Electronic Journal
Journal

6 Works by Year




Citations by Year
All
Papers
Articles
Citations
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800
700
600
500
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200
100
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1,990
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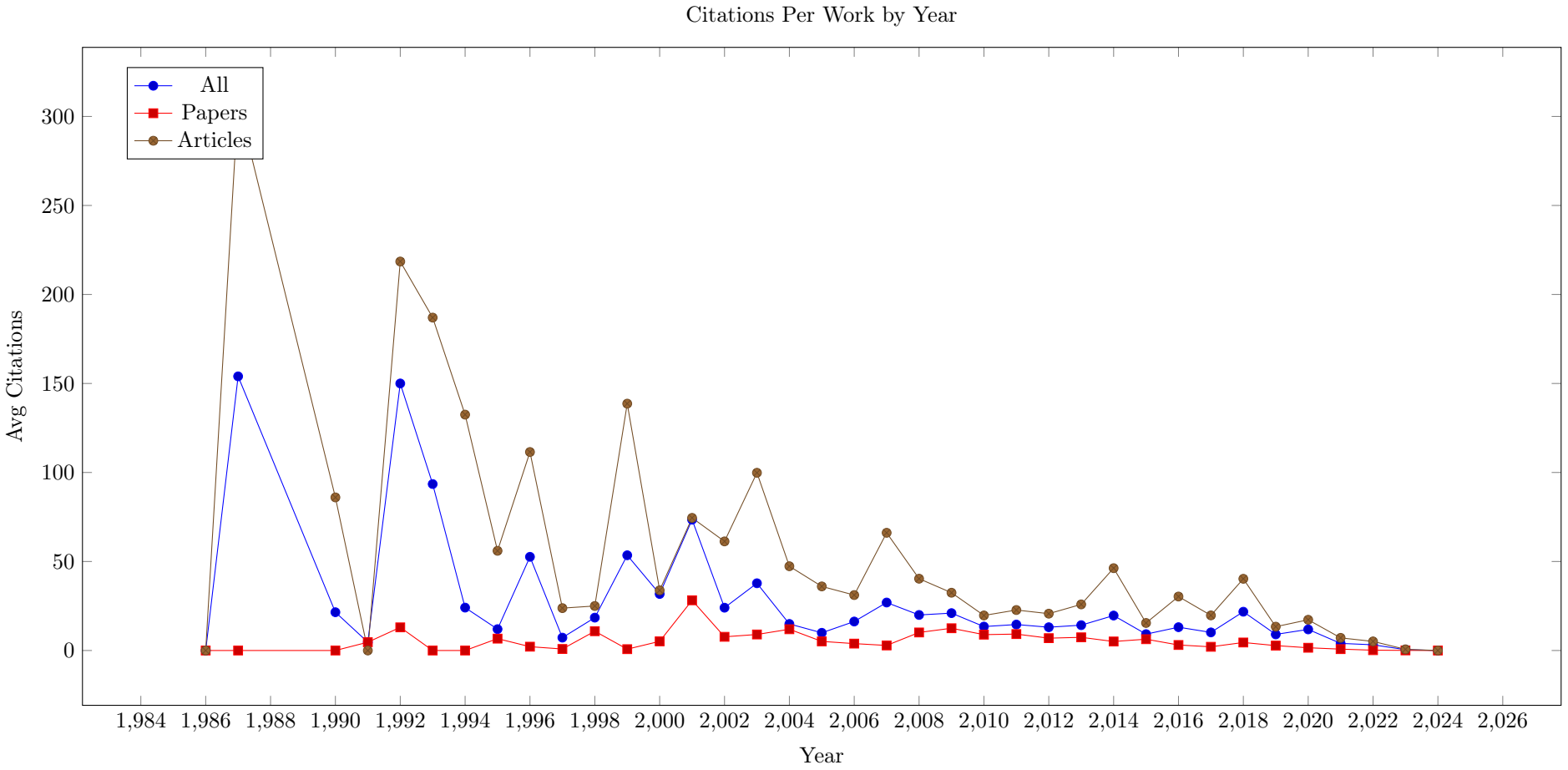
Citations Per Work by Year
All
Papers
Articles
Avg Citations
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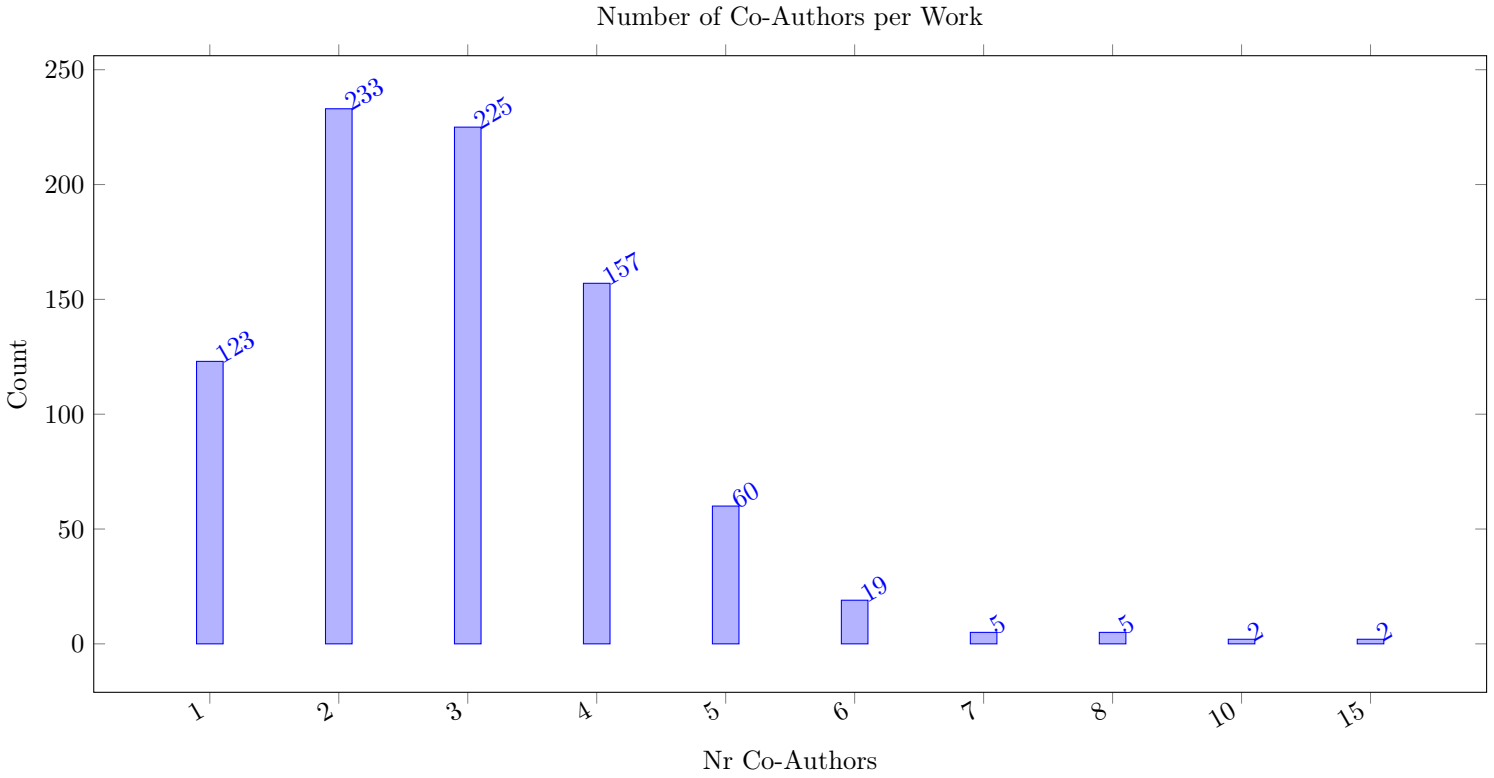
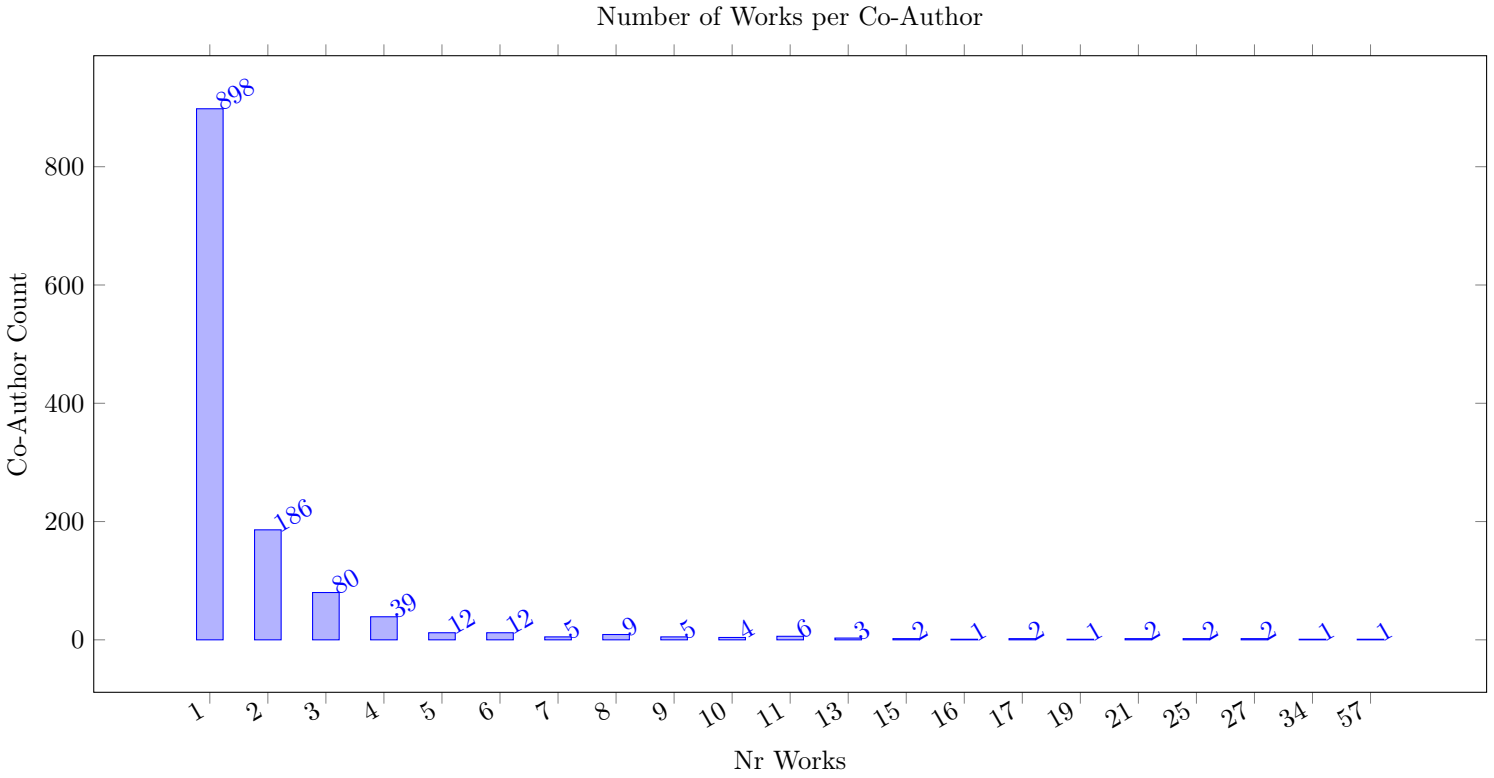
Year

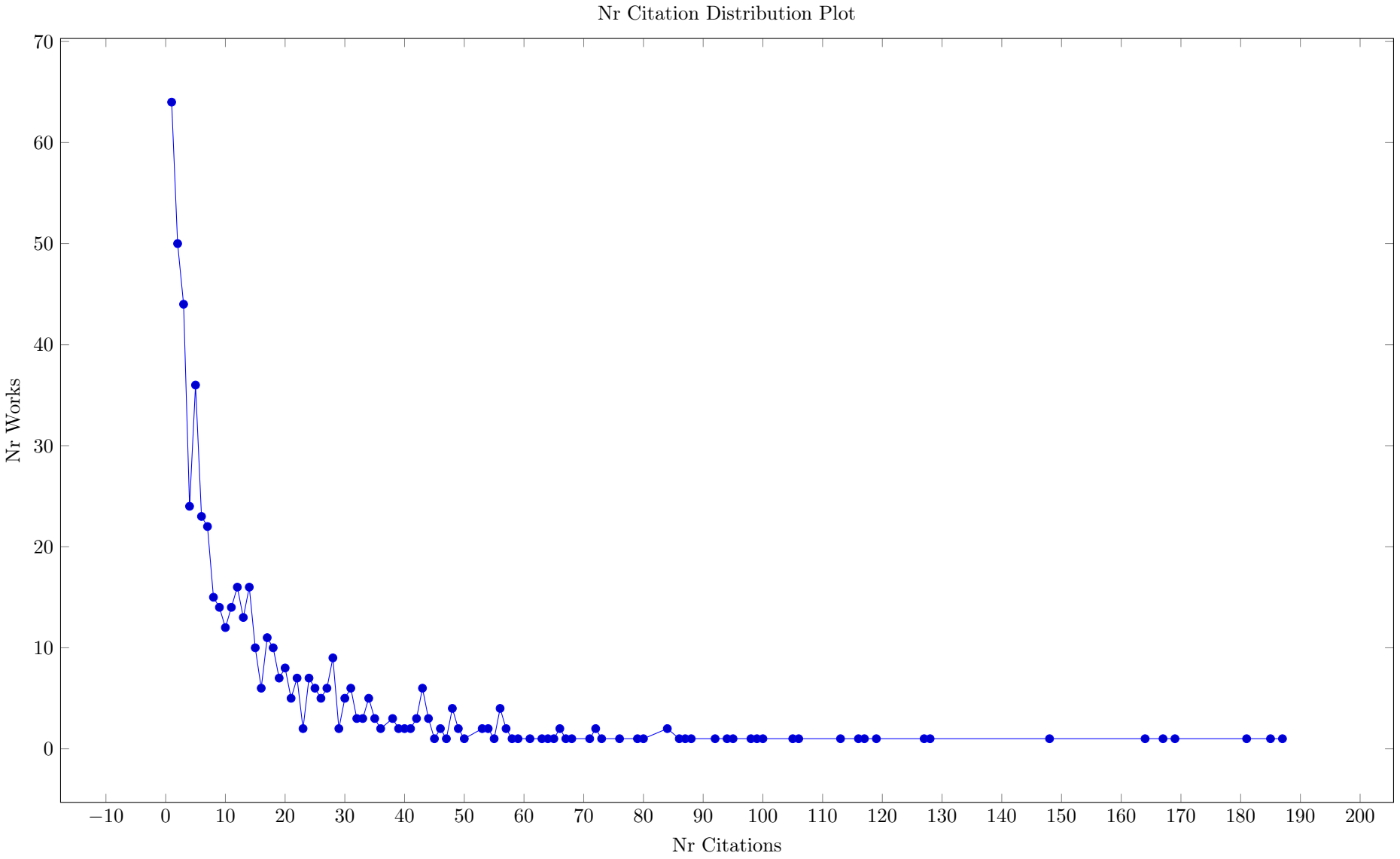
7 Number of Coauthors per Work



8 Number of Works per Author



9 Citation Distribution



10 Similarity Measures

The following distribution plot shows the similarity values between two works based on citations and references counts. If either work does not have citation and reference values, then the similarity is set to NaN. The total similarity count is the average of the similarity for citations and for references. As value we compute the ratio of non-shared references (citations) to the sum of individual references (citations). So both the citation and reference similarity range between zero and one, and the average ranges between zero and one. Low values are very rare, as they require both works to be citing the same papers, and being cited by the same papers. A larger value indicates that items are less similar according to this measure. In the plot we group values into 0.1 wide value bins, so an entry for 0.2 includes values from 0.15 to 0.25.

We observe that low values of this similarity are often found for two works by the same authors that are close in time, where we assumes that the bibliographies in both papers is based on the same literature survey. If neither paper is widely cited, the similarity value is low.

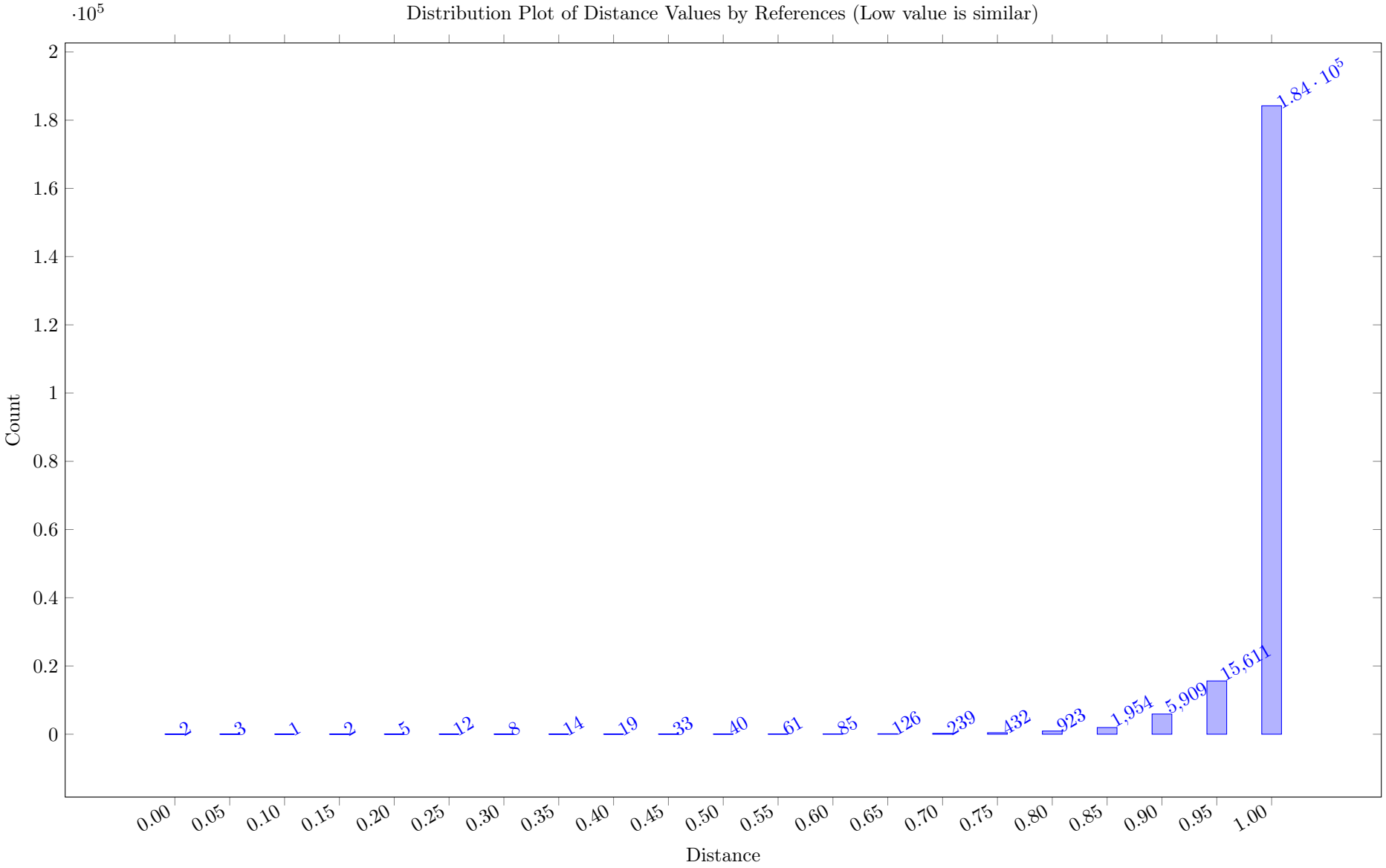
The vast majority of paper pairs has a distance close to one, as their references and citations do not overlap much.

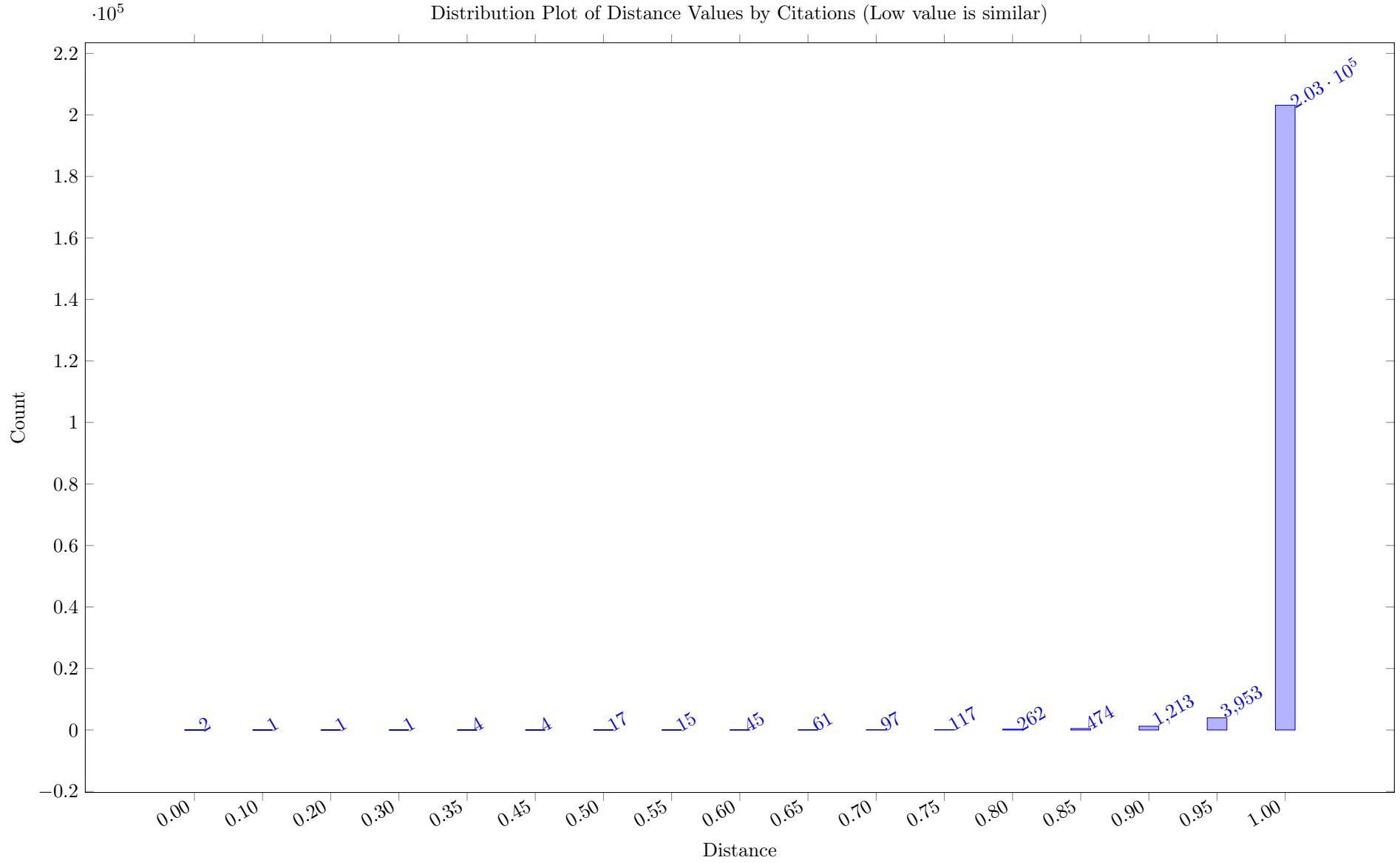
Table 8: Heat Map based on rounded DotProduct Similarity of Concepts (high = similar)

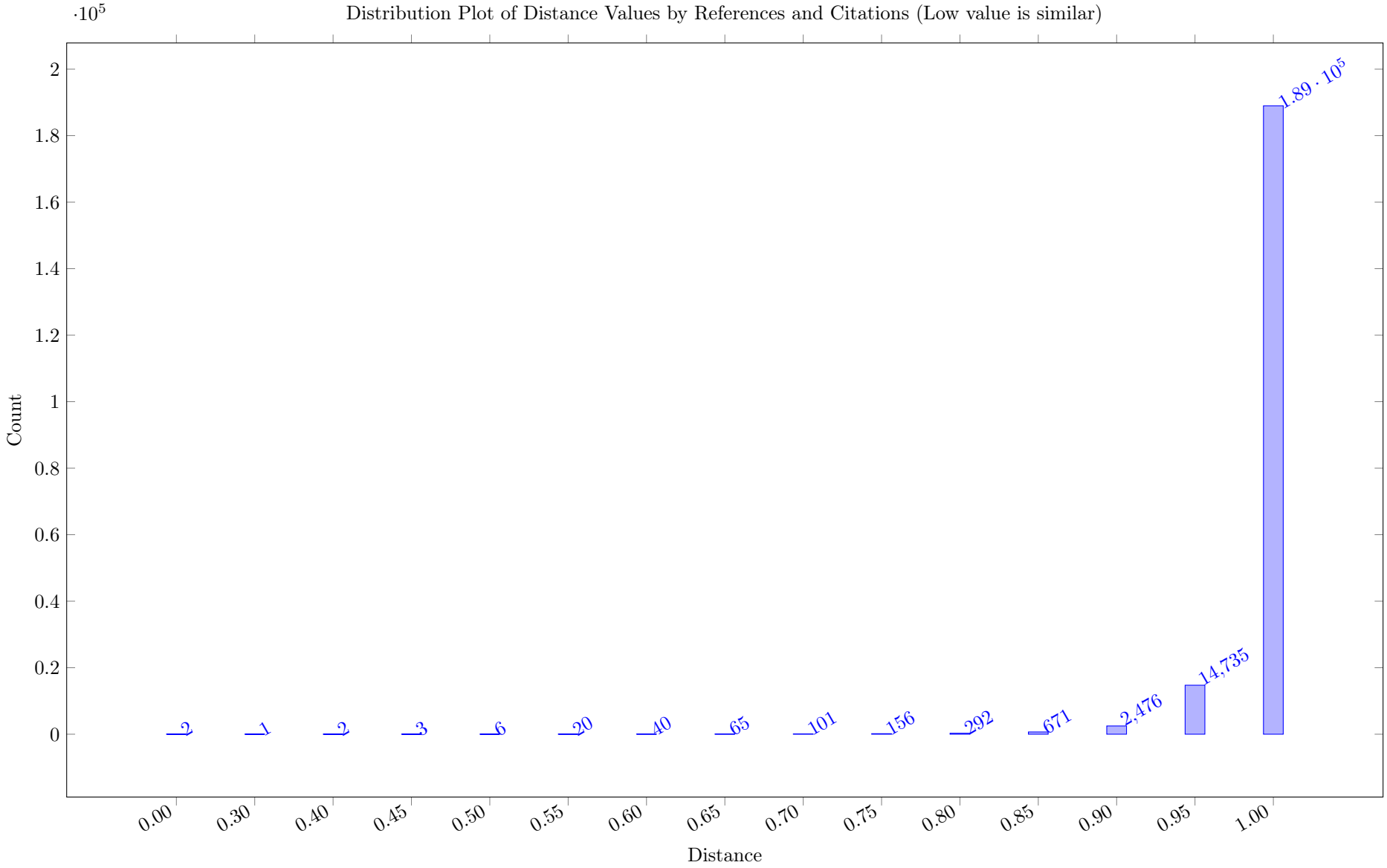
From/To	Total	ZarandiASC20	abs-1902-09244	Schutt11	YunusogluY22	abs-2211-14492	abs-1911-04766	ZhuSZW23	Siala15a	abs-2402-00459	VilimLS15	YuraszeckMCCR23	ZeballosQH10	abs-2305-19888	YuraszeckMPV22	ZeballosNH11	ZeballosH05	Zahout21	TerekhovDOB12	ZhangBB22	UnsalO13	PrataAN23	TouatBT22	Other
Total		78,691	59,022	57,634	57,409	56,086	55,535	54,851	54,653	54,199	53,668	53,560	51,718	51,136	50,906	50,855	50,369	50,304	49,769	49,644	49,458	49,057	49,047	
Baptiste02	73,789	331	167	255	192	158	148	154	210	135	157	163	149	144	187	157	134	159	199	144	144	227	159	69,916
Astrand21	71,626	306	170	213	191	148	157	157	180	140	146	144	130	147	169	130	128	149	171	138	165	211	159	67,977
Beck99	65,097	240	148	214	154	140	138	142	178	136	137	126	136	122	124	130	129	141	149	118	144	167	130	61,854
AwadMDMT22	61,669	225	152	165	174	132	129	131	132	120	129	130	130	129	131	147	122	127	148	114	129	182	141	58,550
BartakSR10	61,667	233	128	193	152	139	118	137	160	120	128	118	129	115	139	126	123	134	156	133	130	180	130	58,546
Dejemeppe16	61,328	332	191	262	209	167	171	153	232	161	156	151	156	143	156	165	137	167	177	146	168	232	167	57,329
AbreuN22	59,226	229	137	146	167	141	108	142	128	124	124	134	111	133	161	104	105	117	126	118	115	190	124	56,242
AbreuPNF23	57,097	231	144	149	173	125	105	130	119	123	108	125	107	126	159	107	104	117	137	104	118	196	127	54,163
AfsarVPG23	57,092	189	137	134	142	131	118	125	122	117	118	121	117	102	132	105	106	110	118	107	122	148	121	54,350
BeckDDF98	56,364	224	141	150	150	123	111	123	149	115	112	110	127	98	110	133	127	112	146	105	120	151	126	53,501
ArmstrongGOS21	54,078	176	119	145	142	117	124	131	118	104	113	119	110	118	116	93	103	111	103	113	113	141	107	51,442
AstrandJZ20	53,956	178	128	143	124	105	109	113	140	101	116	114	100	104	116	100	99	97	120	111	114	136	107	51,381
AbreuNP23	52,984	202	131	128	156	126	94	137	118	106	113	126	99	124	150	100	92	102	120	111	103	179	117	50,250
ArtiguesLH13	52,934	156	118	130	142	105	109	85	111	99	99	94	111	99	92	117	115	105	124	80	106	134	120	50,483
AbreuAPNM21	52,238	208	121	129	147	123	90	127	114	113	103	121	96	111	152	89	86	110	125	109	93	175	116	49,580
ColT22	52,220	249	150	158	174	145	154	150	155	138	135	142	126	136	156	133	120	133	132	126	136	179	137	48,956
Fahimi16	51,964	237	146	240	138	137	139	144	205	118	144	131	130	122	131	131	125	126	158	125	153	181	135	48,668
Groleaz21	51,938	368	192	231	218	188	172	186	219	179	180	159	144	162	201	151	128	190	202	169	155	253	180	47,711
ArkhipovBL19	51,189	140	107	160	105	96	103	95	117	92	129	114	92	94	83	84	82	101	106	99	100	110	92	48,888
BartakSR08	51,127	158	103	152	114	109	95	110	136	102	109	102	95	89	112	93	97	94	118	107	103	127	98	48,704
BeckF98	50,814	184	118	144	122	112	108	119	142	114	113	106	103	97	99	100	102	115	119	96	112	133	114	48,242
AlfieriGPS23	50,447	189	131	115	139	115	83	113	104	114	96	110	90	94	130	99	96	96	127	106	93	167	128	47,912
BlazewiczDP96	50,128	235	126	168	138	126	103	122	137	117	112	101	107	103	126	103	97	117	144	125	111	166	118	47,326
BajestaniB13	49,466	180	112	104	120	100	89	112	101	97	94	86	86	83	96	102	85	106	126	82	94	145	104	47,162
BaptistePN99	48,898	151	111	156	104	93	103	87	121	89	117	111	88	85	96	84	79	104	120	91	95	115	92	46,606
Godet21a	48,721	256	149	239	157	154	159	139	224	130	162	158	130	130	141	117	121	155	161	137	151	167	138	45,246
Caballero19	48,687	169	125	213	113	103	121	108	181	90	140	126	109	106	81	95	96	119	114	103	123	115	105	46,032
BaptisteP00	48,614	136	102	157	95	88	102	88	133	82	113	103	94	83	80	93	84	103	110	92	109	103	88	46,376
BaptisteP97	48,193	141	108	157	92	85	104	85	127	84	114	104	88	80	80	92	82	101	110	89	108	103	88	45,971
BeckF00	48,148	153	106	159	100	99	96	106	151	87	108	94	95	79	90	99	96	84	112	97	106	104	95	45,832
BonninMNE24	47,660	170	111	154	118	102	110	106	125	99	113	106	99	101	129	92	97	107	127	107	117	147	119	45,104
Astrand0F21	47,581	123	96	117	97	91	97	98	120	94	106	98	88	86	93	81	90	83	93	103	95	105	94	45,433
Adelgren2023	47,160	138	85	102	104	90	84	95	90	80	90	85	80	99	99	84	78	91	91	89	94	114	89	45,109
BidotVLB09	46,911	186	129	123	130	102	102	97	118	100	104	113	113	89	109	109	112	92	128	91	94	130	115	44,425
BeckPS03	46,520	154	123	129	118	107	97	99	122	98	107	111	107	92	97	106	110	88	115	92	99	123	111	44,115
BeckW07	46,482	168	121	132	102	100	93	94	119	94	114	117	97	87	101	89	98	105	118	94	88	123	111	44,117
ArtiguesF07	45,662	145	97	135	120	105	70	111	122	90	105	100	91	97	108	84	85	82	106	118	84	114	89	43,404
BonfiettiLBM14	44,483	132	106	141	95	93	102	98	133	92	116	105	91	85	78	90	91	96	97	89	104	99	103	42,247
BosiM2001	44,475	152	104	142	120	112	100	96	141	103	113	112	103	96	100	92	92	98	118	107	90	129	103	42,052
Bit-Monnot23	44,404	133	102	143	92	102	103	109	165	98	118	105	86	86	101	83	88	93	98	110	96	109	93	42,091
ChenGPSH10	44,057	164	95	147	99	107	96	109	136	95	109	97	101	81	100	104	100	93	112	99	111	115	89	41,698
AntuoriHHEN20	44,041	130	100	106	92	106	86	71	100	98	80	78	81	67	79	80	84	74	93	77	78	100	87	42,094
Other		70,490	53,735	50,954	51,778	51,139	50,835	49,917	48,698	49,611	48,668	48,690	47,196	46,712	45,916	46,382	46,044	45,600	44,395	45,073	44,675	42,832	44,181	

Table 9: Heat Map based on 100*Cosine Similarity of Concepts (high = similar)

From/To	Total	ZeballosH05	abs-2312-13682	ZhangYW21	VilimLS15	ZeballosQH10	abs-1901-07914	abs-2305-19888	Wolf05	abs-1902-09244	WolfS05	abs-2306-05747	VilimBC05	ZouZ20	VilimBC04	YuraszeckMCCR23	abs-2402-00459	abs-1009-0347	WikarekS19	abs-2211-14492	ZeballosNH11	WatsonB08	ZhangBB22	Other
Total		38,894	38,280	38,051	37,896	37,538	37,334	37,206	37,064	36,847	36,566	36,555	36,325	36,314	36,255	36,249	36,196	36,112	36,072	36,070	35,948	35,816	35,605	
BartakSR08	37,939	67	57	65	69	62	59	59	68	58	59	60	75	57	75	62	61	53	71	63	59	65	70	36,545
ArkhipovBL19	37,820	56	55	69	81	60	56	62	71	60	66	57	63	50	61	69	55	75	71	56	53	61	64	36,449
BeckPS03	37,704	82	62	74	74	76	67	66	73	76	55	67	71	57	71	73	64	63	71	68	73	74	65	36,182
AfsarVPG23	37,427	65	54	74	67	68	53	60	63	69	46	66	60	59	63	66	63	51	56	68	59	69	62	36,066
Bartak02a	37,353	67	60	63	71	64	64	55	64	57	61	57	68	59	70	61	61	64	67	59	59	61	59	35,982
AstrandJZ18	36,917	67	70	54	64	65	71	56	61	52	64	52	61	57	58	55	49	64	56	51	54	57	53	35,626
Astrand0F21	36,903	65	64	68	70	60	65	59	62	56	50	63	66	49	65	62	59	59	66	55	53	65	70	35,552
AstrandJZ20	36,688	63	60	68	67	60	55	63	60	67	45	64	67	52	66	64	56	57	63	56	58	67	66	35,344
AalianPG23	36,592	60	74	55	62	59	60	61	59	59	63	56	60	55	61	53	45	64	52	44	50	56	53	35,331
Adelgren2023	36,244	56	60	60	59	54	58	67	62	50	54	55	53	49	52	54	50	46	57	54	55	59	60	35,020
ArtiguesLH13	36,055	73	58	51	58	66	51	60	61	61	63	49	57	55	57	53	55	50	51	56	68	50	48	34,804
Beck07	35,961	66	58	75	73	62	56	56	67	65	46	70	67	55	74	67	63	61	64	68	58	85	71	34,534
AwadMDMT22	35,626	66	53	65	64	67	47	67	68	68	55	58	62	57	59	62	57	55	58	60	73	58	58	34,289
AngelsmarkJ00	35,380	54	49	50	55	51	59	46	58	38	65	48	51	48	50	51	51	41	55	52	52	54	47	34,255
BaptisteP97	35,362	56	53	66	71	57	48	52	69	60	61	54	69	53	72	62	50	70	62	49	58	56	57	34,057
BeckDDF98	34,765	73	57	64	59	69	61	54	60	66	50	57	63	55	64	56	58	48	65	59	70	59	57	33,441
Beck06	34,742	68	62	69	65	62	62	55	64	64	46	70	60	42	65	65	64	50	67	70	59	86	67	33,360
BeckF00a	34,718	65	52	59	65	60	60	51	69	50	58	53	79	58	78	55	49	55	64	54	61	63	54	33,406
ArtiguesBF04	34,638	58	50	71	67	61	49	65	64	54	40	62	69	39	67	65	55	52	72	61	56	75	77	33,309
BaptistePN99	34,548	52	50	66	71	55	44	53	70	60	56	54	67	43	69	64	51	63	66	52	51	57	56	33,278
BeckFW11	34,506	62	62	74	74	66	60	64	68	62	50	78	63	46	69	70	68	60	69	72	52	93	73	33,051
AkramNHRSA23	34,496	55	56	62	56	55	64	60	57	46	61	57	47	55	46	52	64	51	45	63	42	58	50	33,294
BartakSR10	34,478	64	47	62	62	64	59	57	69	55	56	55	69	50	67	55	55	49	70	61	61	56	66	33,169
BeckF98	34,388	64	48	72	65	61	62	58	66	61	50	59	66	55	68	59	62	57	65	59	58	61	57	33,055
AbreuN22	34,372	58	56	66	63	58	50	70	55	62	47	62	53	49	55	65	59	46	57	65	52	63	61	33,100
BockmayrP06	34,362	67	75	51	61	65	71	61	63	56	81	56	59	54	56	56	59	58	59	55	55	59	51	33,034
BaptisteB18	34,329	55	61	57	66	56	60	61	68	49	69	51	59	46	59	56	49	68	62	47	52	51	49	33,078
BaptisteP00	34,305	55	51	63	68	58	46	52	67	55	59	52	66	51	69	60	47	66	62	49	56	56	57	33,040
Bartak02	34,210	58	52	48	61	54	58	45	58	44	62	44	62	56	61	49	47	50	67	48	60	48	48	33,030
BenderWS21	34,200	69	70	65	70	65	70	70	68	63	62	59	62	61	63	66	48	67	64	53	60	64	56	32,805
ArtiguesF07	34,193	60	48	73	68	61	47	65	64	56	38	60	70	42	67	62	55	52	69	63	55	71	79	32,868
BeckW07	34,183	67	54	72	71	62	61	56	67	68	50	60	67	58	69	70	56	66	67	57	56	64	60	32,805
Beck99	34,054	63	52	66	61	63	56	57	65	59	54	57	68	55	68	54	58	60	60	58	58	63	54	32,745
Balduccini11	34,054	58	51	50	58	43	46	42	50	51	62	52	59	53	59	47	54	50	60	51	58	52	48	32,900
AlesioNBG14	34,017	55	51	55	52	59	57	55	65	44	64	51	49	60	49	52	48	48	49	48	57	51	50	32,848
AlesioBNG15	33,945	53	51	61	53	57	56	56	58	47	61	52	48	65	49	55	53	45	48	52	52	54	49	32,770
BeniniLMR11	33,908	68	64	59	64	65	63	60	63	59	62	54	60	65	59	58	54	71	57	53	63	57	53	32,577
BeckDSF97	33,895	58	52	61	64	56	54	48	63	56	55	55	74	53	78	57	50	54	63	54	60	59	54	32,617
BeckDSF97a	33,858	63	50	66	65	61	61	51	66	58	46	59	72	50	78	58	48	55	60	59	59	71	59	32,543
BeckF00	33,835	63	47	63	65	58	54	49	66	57	48	53	75	53	76	54	49	59	65	54	59	62	60	32,546
Astrand21	33,814	57	52	62	60	55	48	62	53	62	42	57	59	50	57	57	54	49	55	56	53	56	58	32,600
AkkerDH07	33,569	55	52	62	59	53	47	58	53	57	46	49	55	45	55	53	53	50	58	51	50	55	58	32,395
Other		36,288	35,920	35,395	35,178	35,005	34,939	34,782	34,399	34,430	34,238	34,151	33,675	34,093	33,581	33,765	33,890	33,740	33,487	33,687	33,541	33,215	33,141	

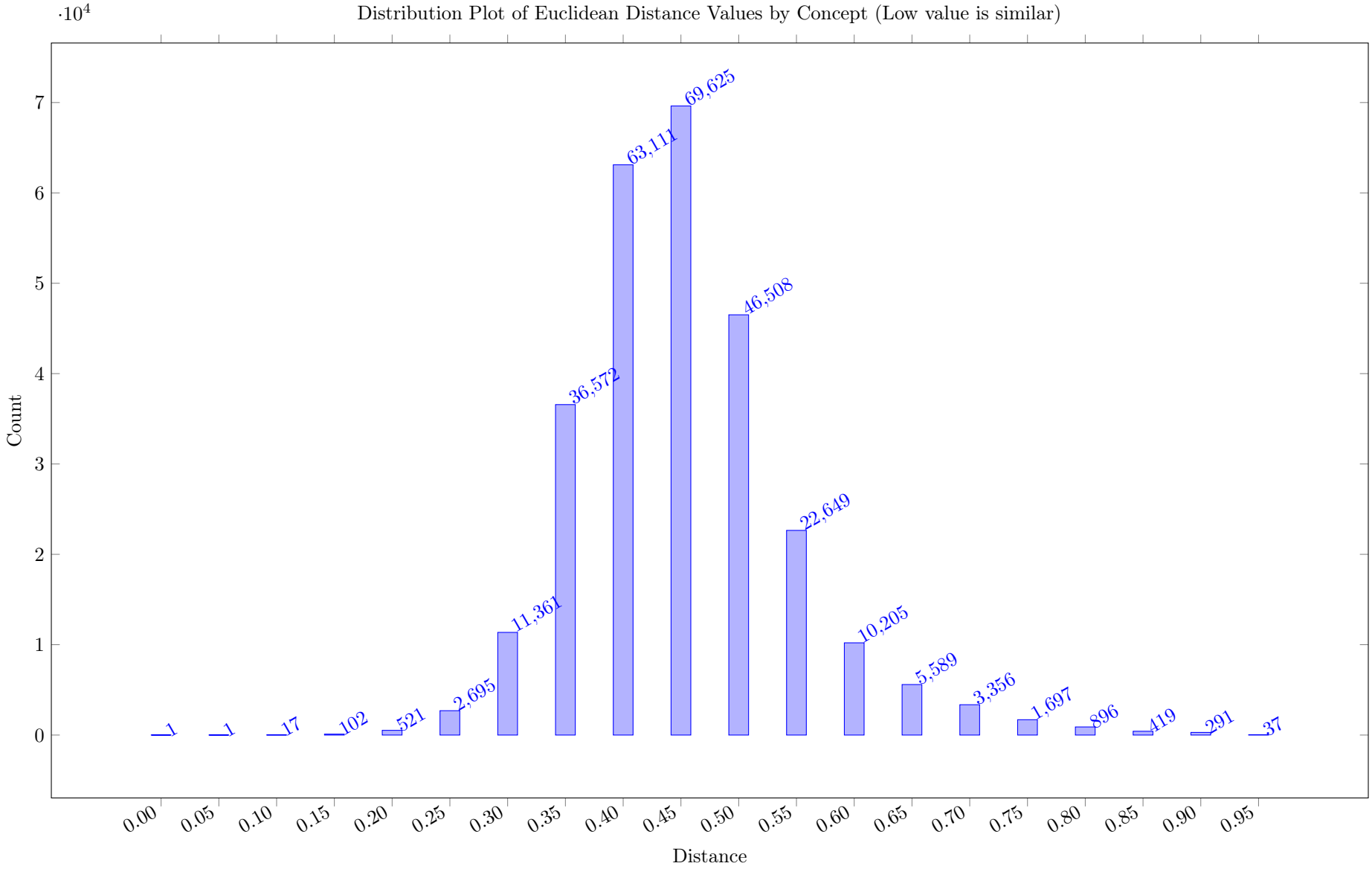

Distribution Plot of Distance Values by References (Low value is similar)
$\cdot 10^5$
Count
Distance
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0.50
0.55
0.60
0.65
0.70
0.75
0.80
0.85
0.90
0.95
1.00
2
3
1
2
5
12
8
14
19
33
40
61
85
126
239
432
923
1,954
5,909
15,611
$1.84 \cdot 10^5$

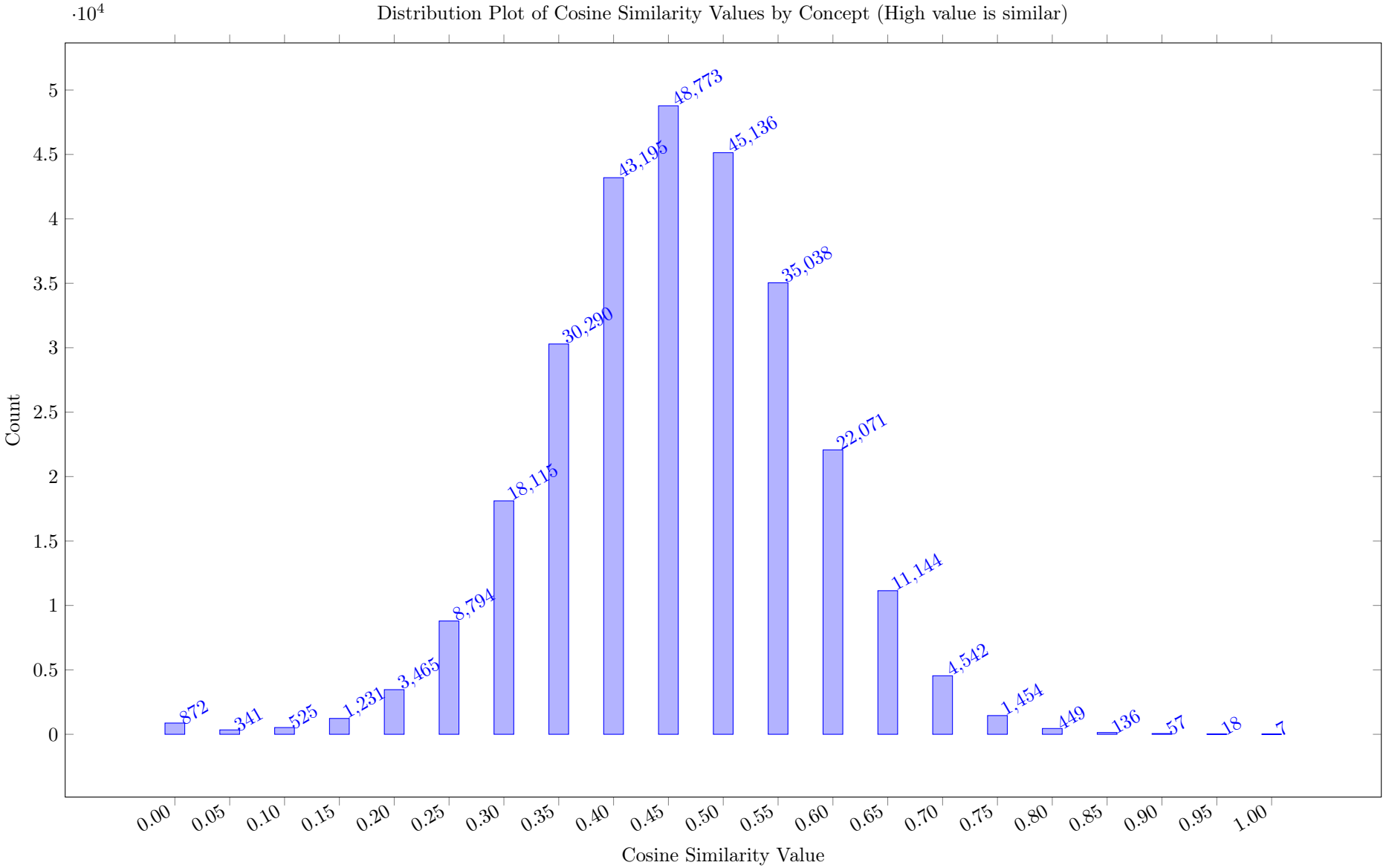

Distribution Plot of Distance Values by Citations (Low value is similar)
$\cdot 10^5$
Count
Distance
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
−0.2
0.00
0.10
0.20
0.30
0.35
0.45
0.50
0.55
0.60
0.65
0.70
0.75
0.80
0.85
0.90
0.95
1.00
2
1
1
1
4
4
17
15
45
61
97
117
262
474
1,213
3,953
$2.03 \cdot 10^5$

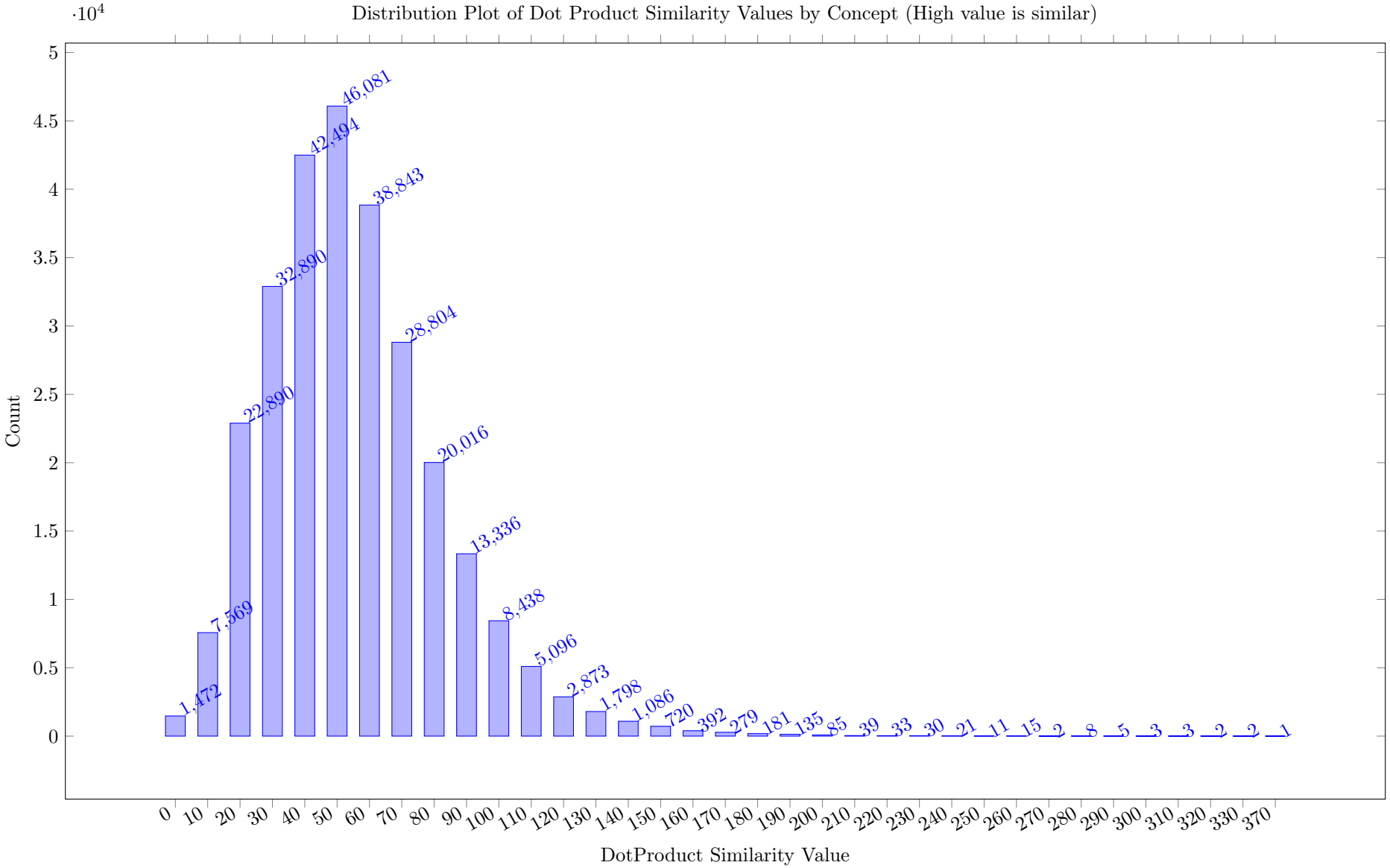


The similarity by concept uses the Euclidean distance between the feature vectors for two works. We translate the MatchLevel for each Concept into a linear

scale, and then calculate the distances as the square root of the sum of squared differences for each feature. The distribution plot below rounds the distances to integer values. Similarity values of this type are only calculated when both works have a local copy, from which we extract the features. If either work does not have a local copy, the similarity is set to be NaN.


Distribution Plot of Euclidean Distance Values by Concept (Low value is similar)
$\cdot 10^4$
Count
Distance
0
1
2
3
4
5
6
7
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0.50
0.55
0.60
0.65
0.70
0.75
0.80
0.85
0.90
0.95
1
1
17
102
521
2,695
11,361
36,572
63,111
69,625
46,508
22,649
10,205
5,589
3,356
1,697
896
419
291
37

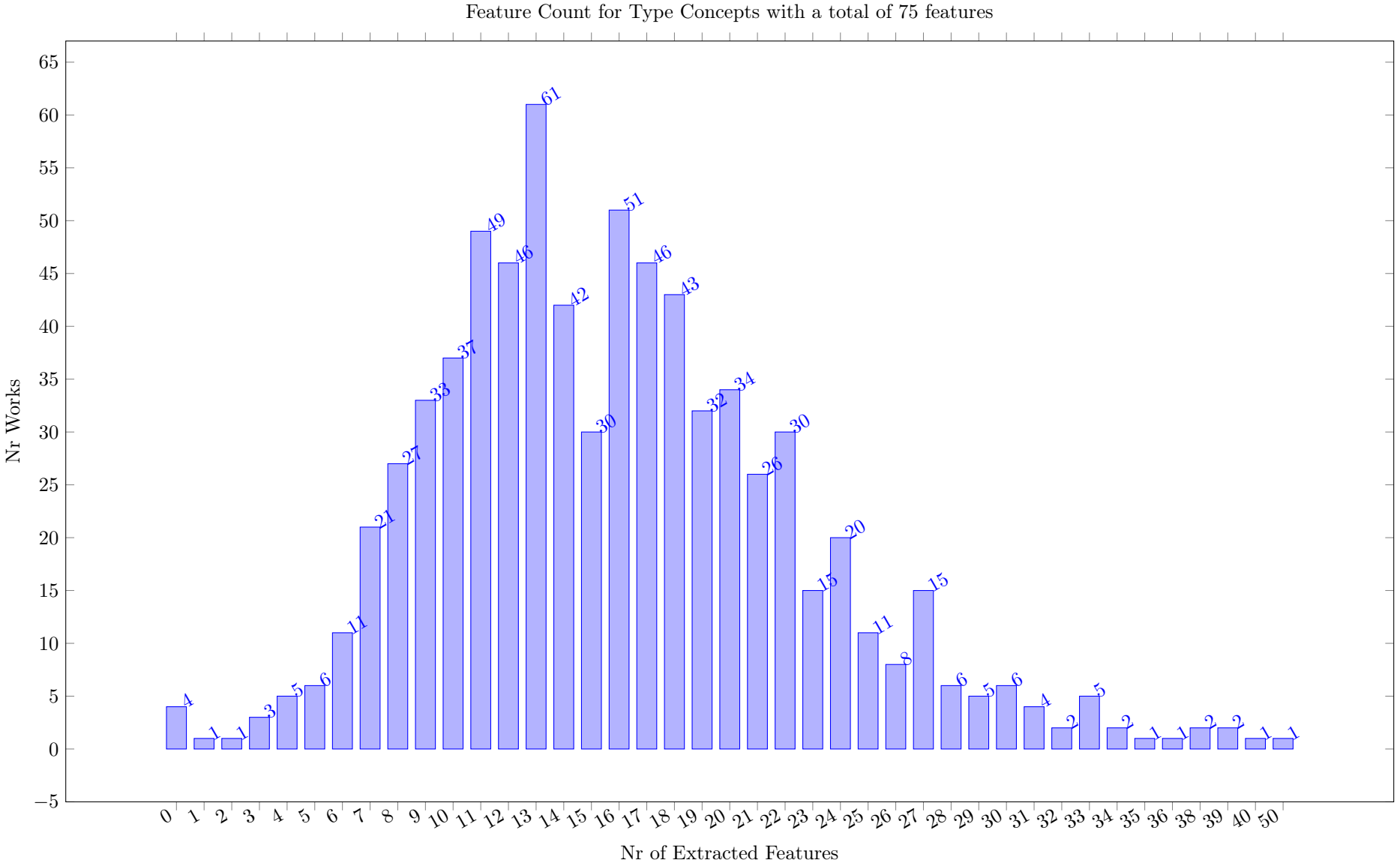

Distribution Plot of Cosine Similarity Values by Concept (High value is similar)
$\cdot 10^4$
Count
Cosine Similarity Value
0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5
0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00
872
341
525
1,231
3,465
8,794
18,115
30,290
43,195
48,773
45,136
35,038
22,071
11,144
4,542
1,454
449
136
57
18
7

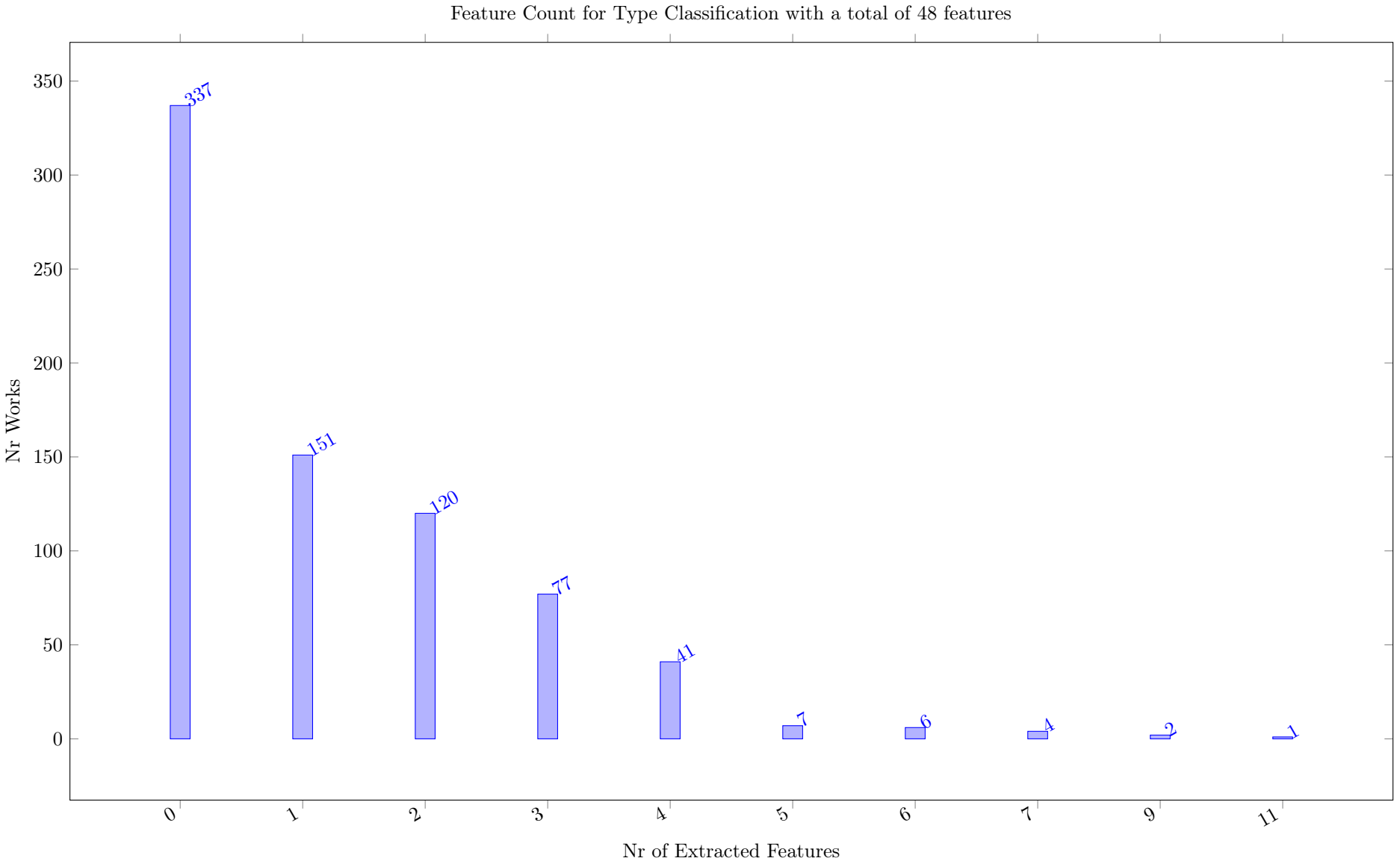

Distribution Plot of Dot Product Similarity Values by Concept (High value is similar)
$\cdot 10^4$
Count
DotProduct Similarity Value
0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 370
1,472
7,569
22,890
32,890
42,494
46,081
38,843
28,804
20,016
13,336
8,438
5,096
2,873
1,798
1,086
720
392
279
181
135
85
39
33
30
21
11
15
2
8
5
3
3
2
2
1

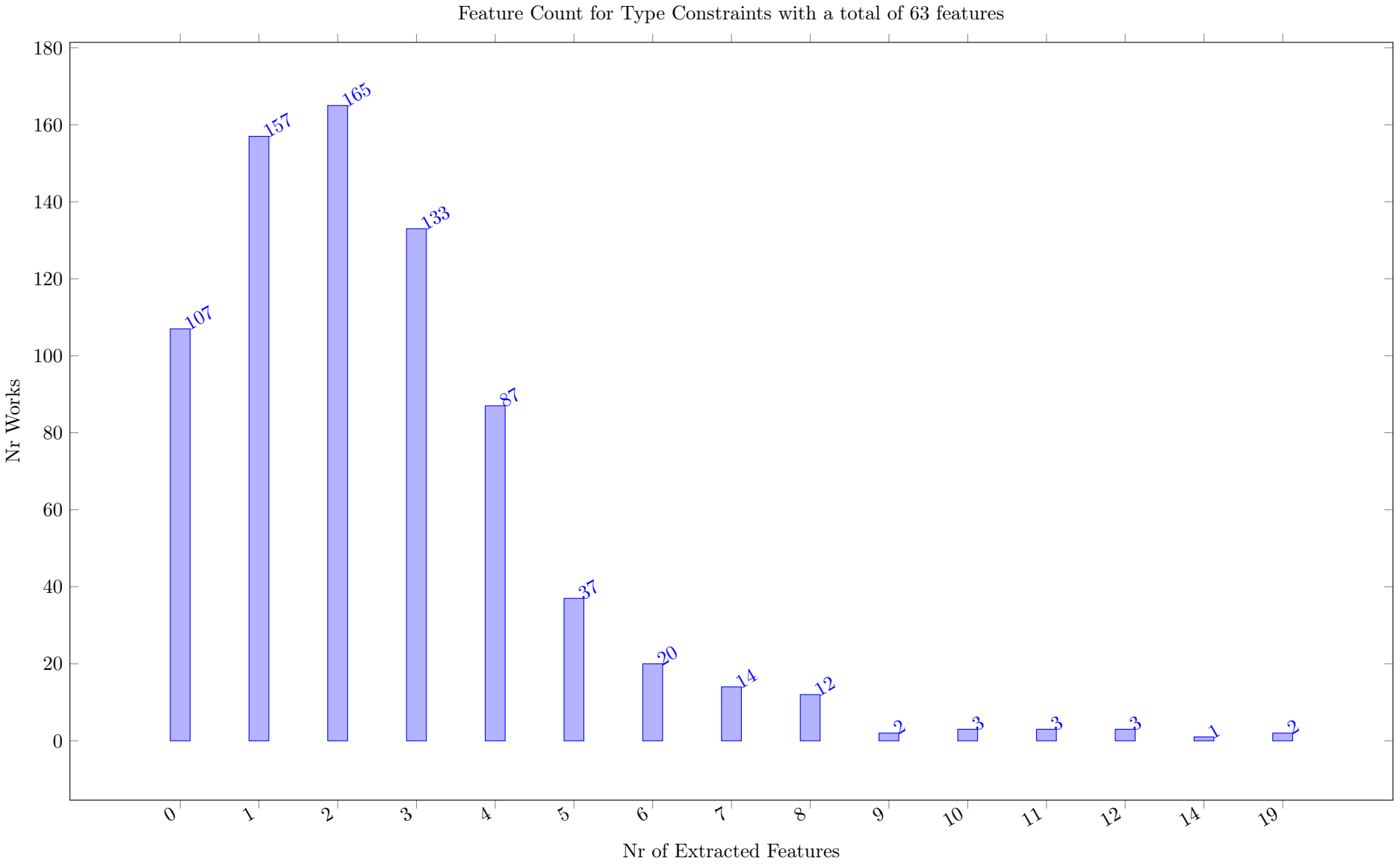
11 Concept Distribution

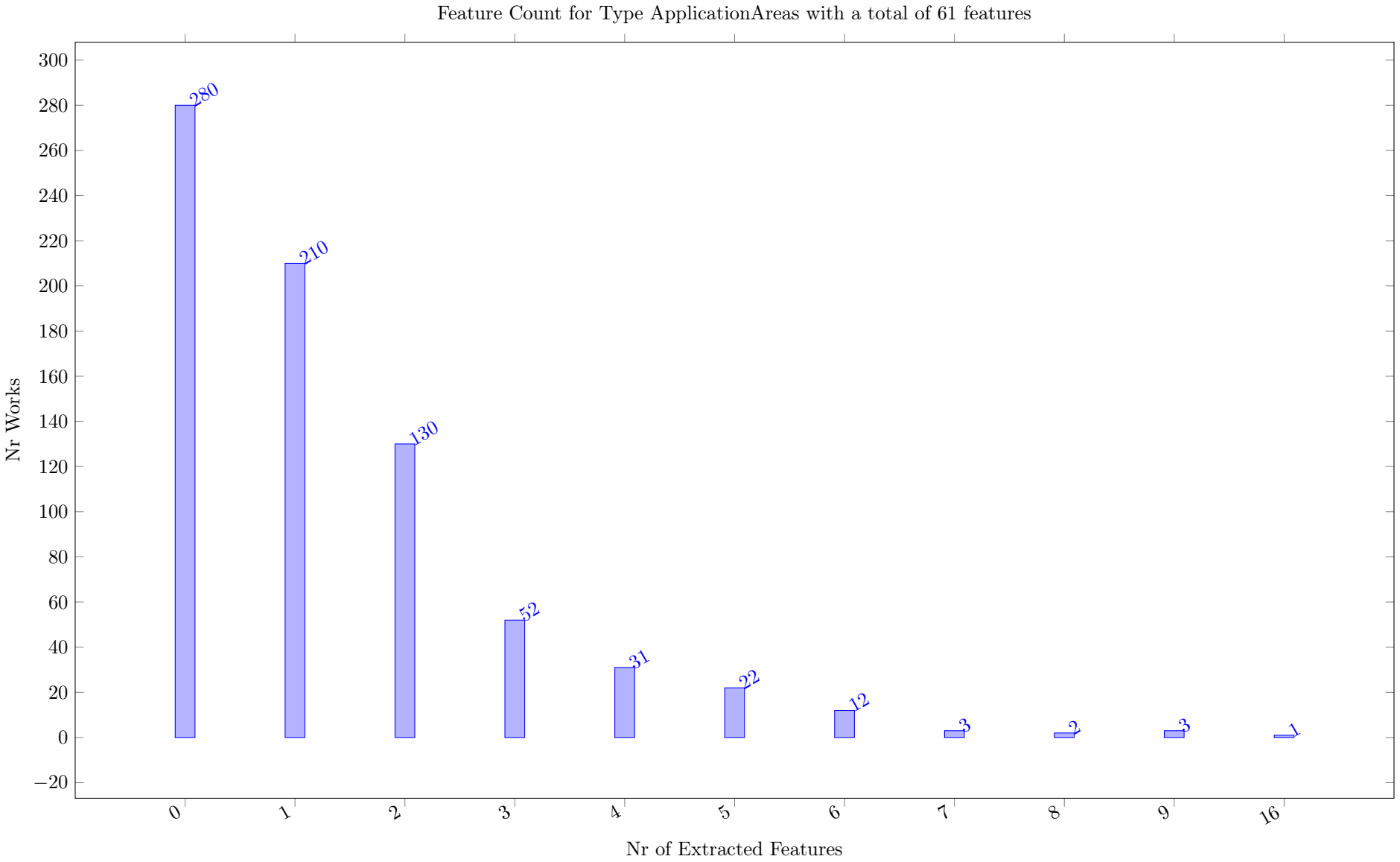
For each concept type, we count how many features are extracted by the individual works that do have a local copy, e.g. for which we can extract features. We can compare the number of features extracted to the number of concepts of a given type, which is stated in the title of the diagram.

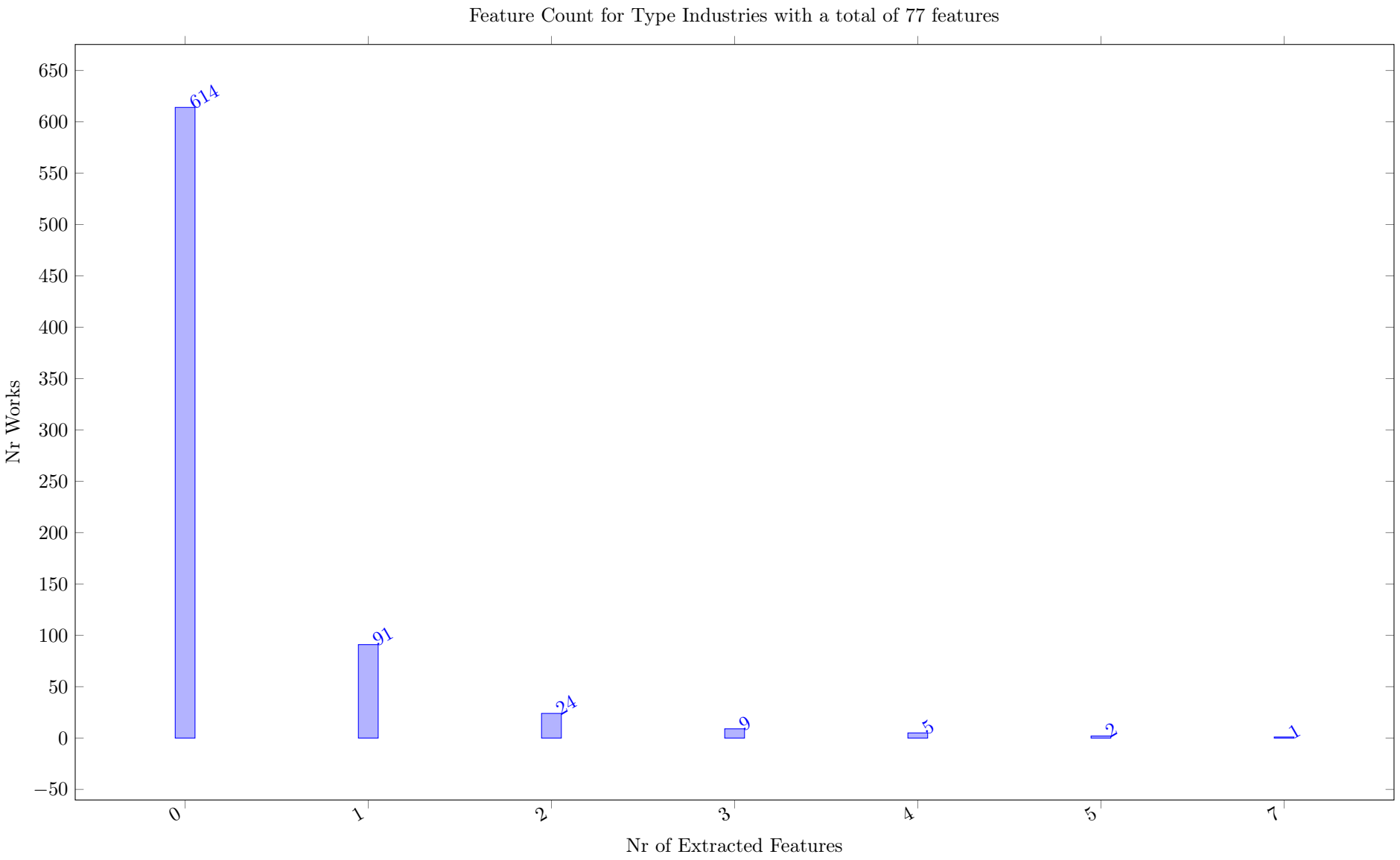
A high count indicates that a work covers many of the concepts of the given type, a low count might mean that our ontology does not have relevant concepts for that work.

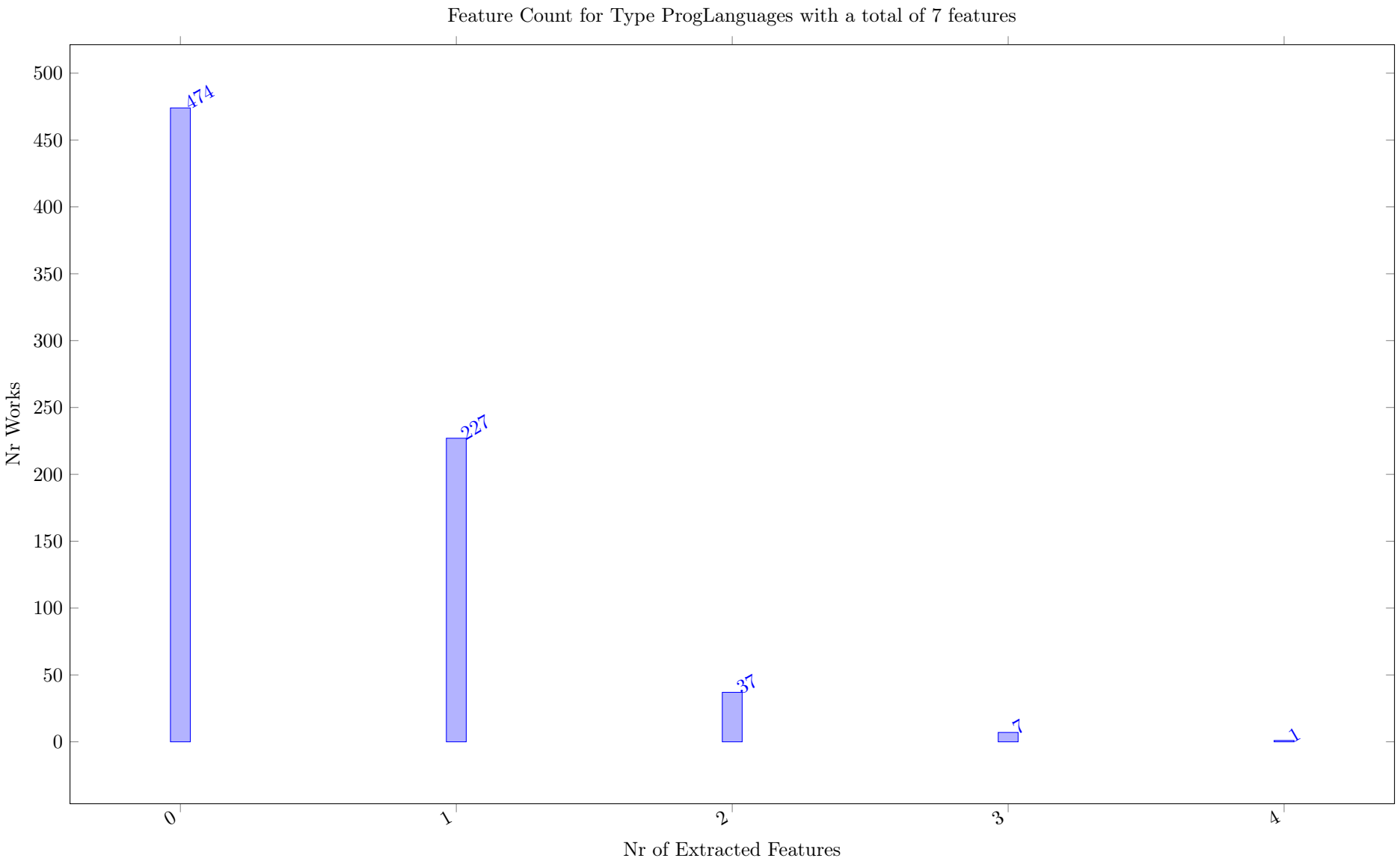

Feature Count for Type Concepts with a total of 75 features
Nr Works
Nr of Extracted Features
65
60
55
50
45
40
35
30
25
20
15
10
5
0
−5
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 38 39 40 50
4 1 1 3 5 6 11 21 27 33 37 49 46 61 42 30 51 46 43 32 34 26 30 15 20 11 8 15 6 5 6 4 2 5 2 1 1 2 2 1 1

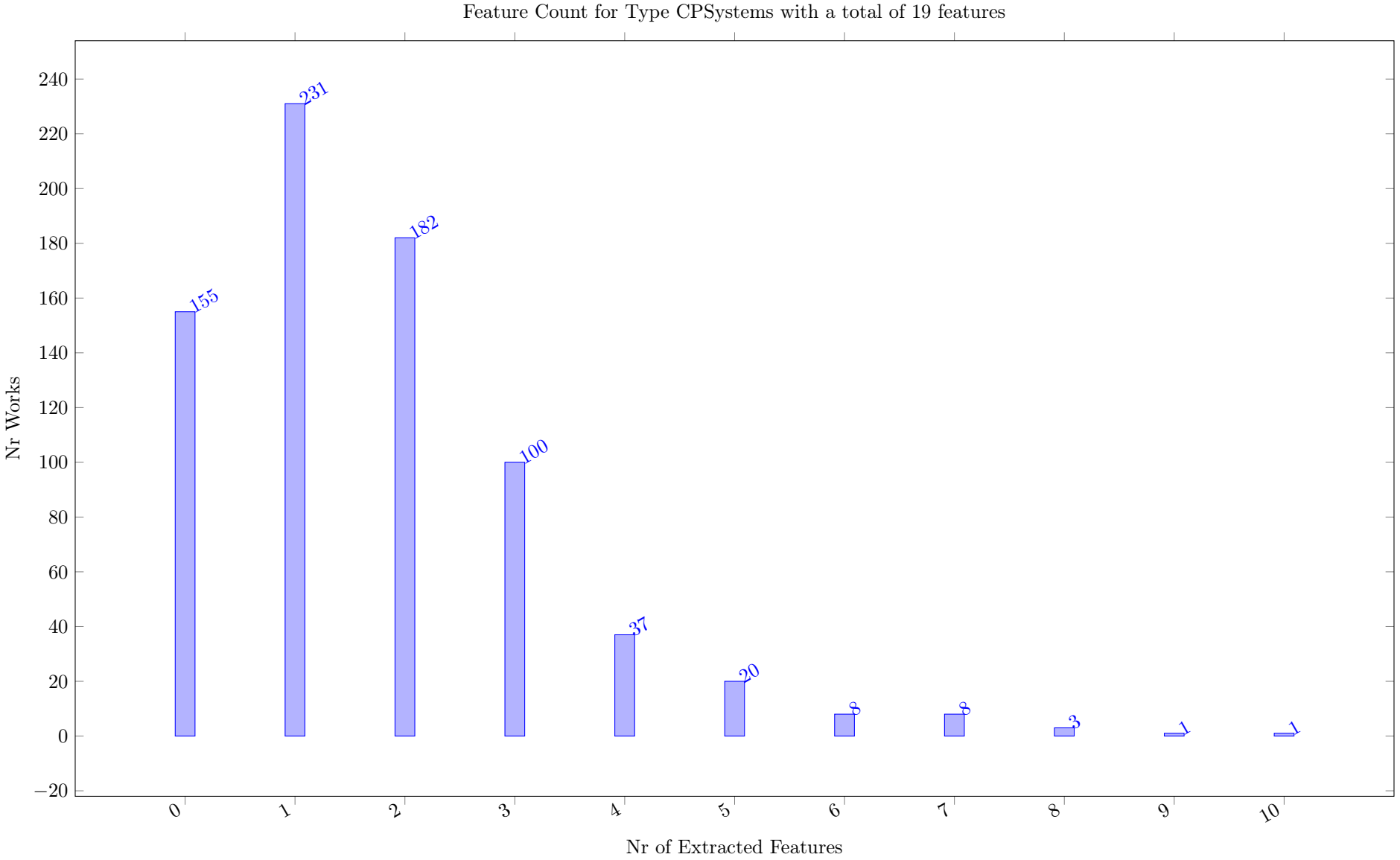

Feature Count for Type Classification with a total of 48 features
Nr Works
Nr of Extracted Features
0
50
100
150
200
250
300
350
0
1
2
3
4
5
6
7
9
11
337
151
120
77
41
7
6
4
2
1

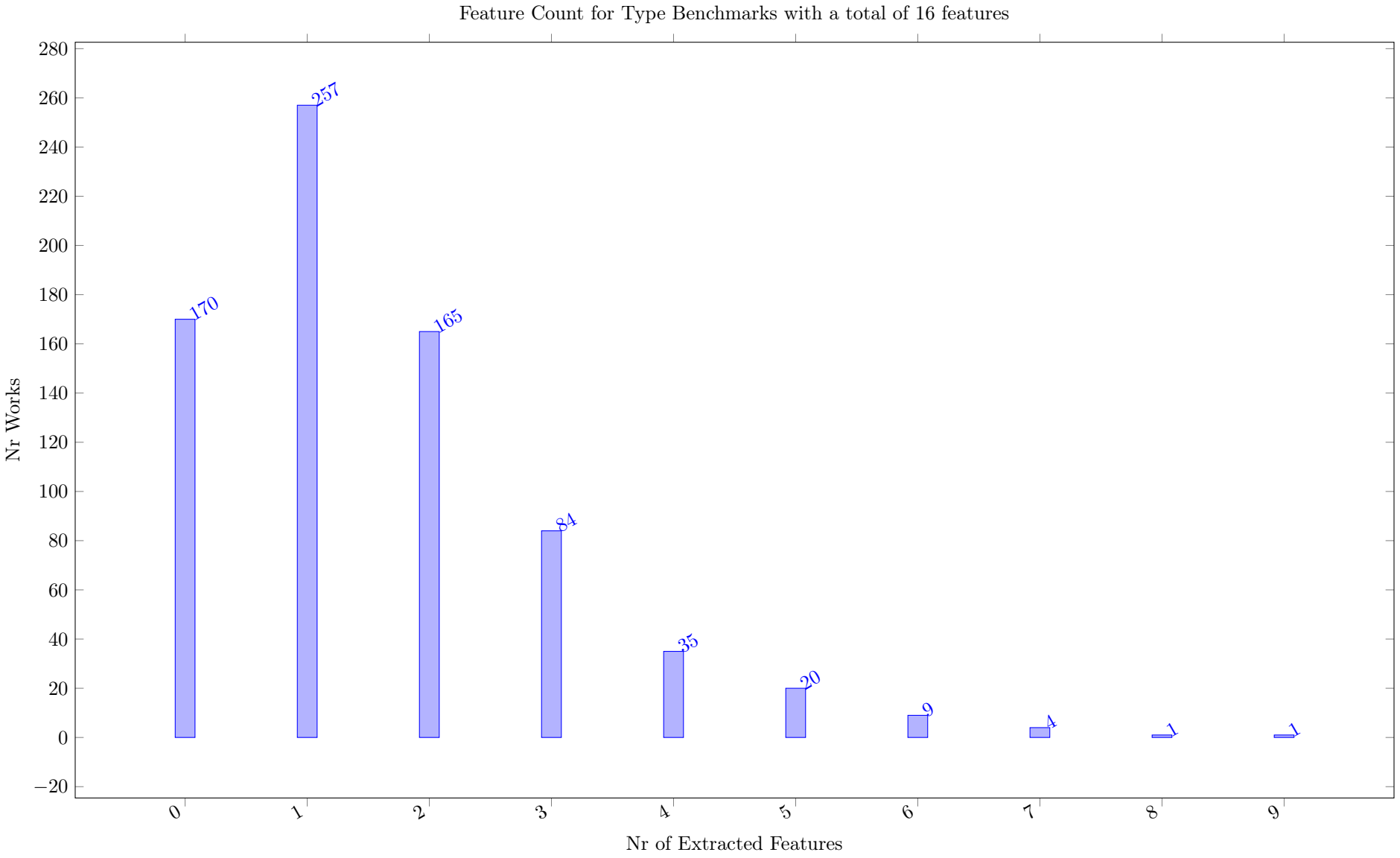

Feature Count for Type Constraints with a total of 63 features
Nr Works
Nr of Extracted Features
0
20
40
60
80
100
120
140
160
180
107
157
165
133
87
37
20
14
12
2
3
3
3
1
2
0
1
2
3
4
5
6
7
8
9
10
11
12
14
19

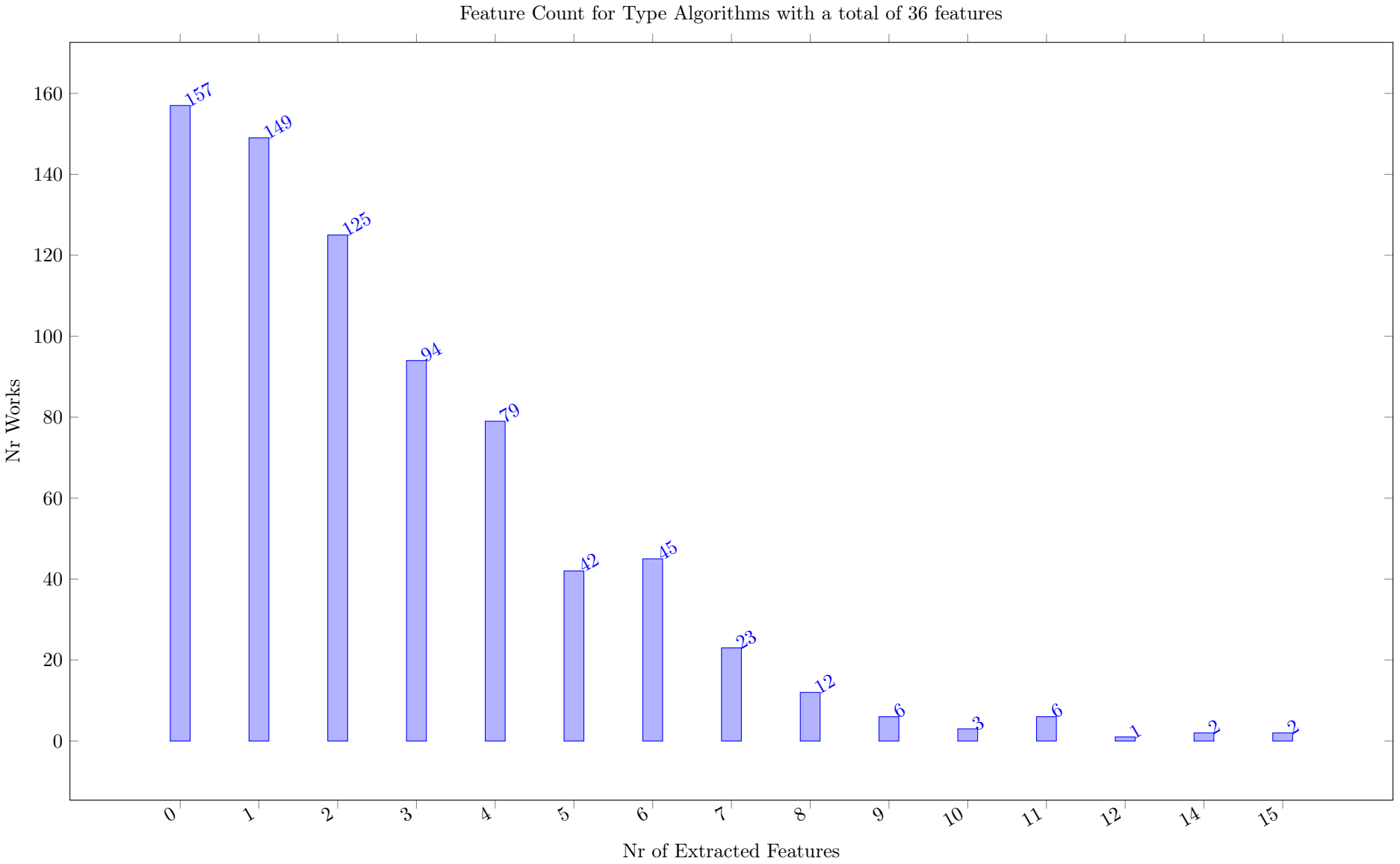

Feature Count for Type ApplicationAreas with a total of 61 features
Nr Works
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
−20
280
210
130
52
31
22
12
3
2
3
1
0
1
2
3
4
5
6
7
8
9
16
Nr of Extracted Features


Feature Count for Type Industries with a total of 77 features
Nr Works
650
600
550
500
450
400
350
300
250
200
150
100
50
0
−50
614
91
24
9
5
2
1
0
1
2
3
4
5
7
Nr of Extracted Features


Feature Count for Type ProgLanguages with a total of 7 features
Nr Works
500
450
400
350
300
250
200
150
100
50
0
474
227
37
7
1
0
1
2
3
4
Nr of Extracted Features


Feature Count for Type CPSystems with a total of 19 features
Nr Works
240
220
200
180
160
140
120
100
80
60
40
20
0
−20
155
231
182
100
37
20
8
8
3
1
1
0
1
2
3
4
5
6
7
8
9
10
Nr of Extracted Features


Feature Count for Type Benchmarks with a total of 16 features
Nr Works
Nr of Extracted Features
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
−20
0
1
2
3
4
5
6
7
8
9
170
257
165
84
35
20
9
4
1
1

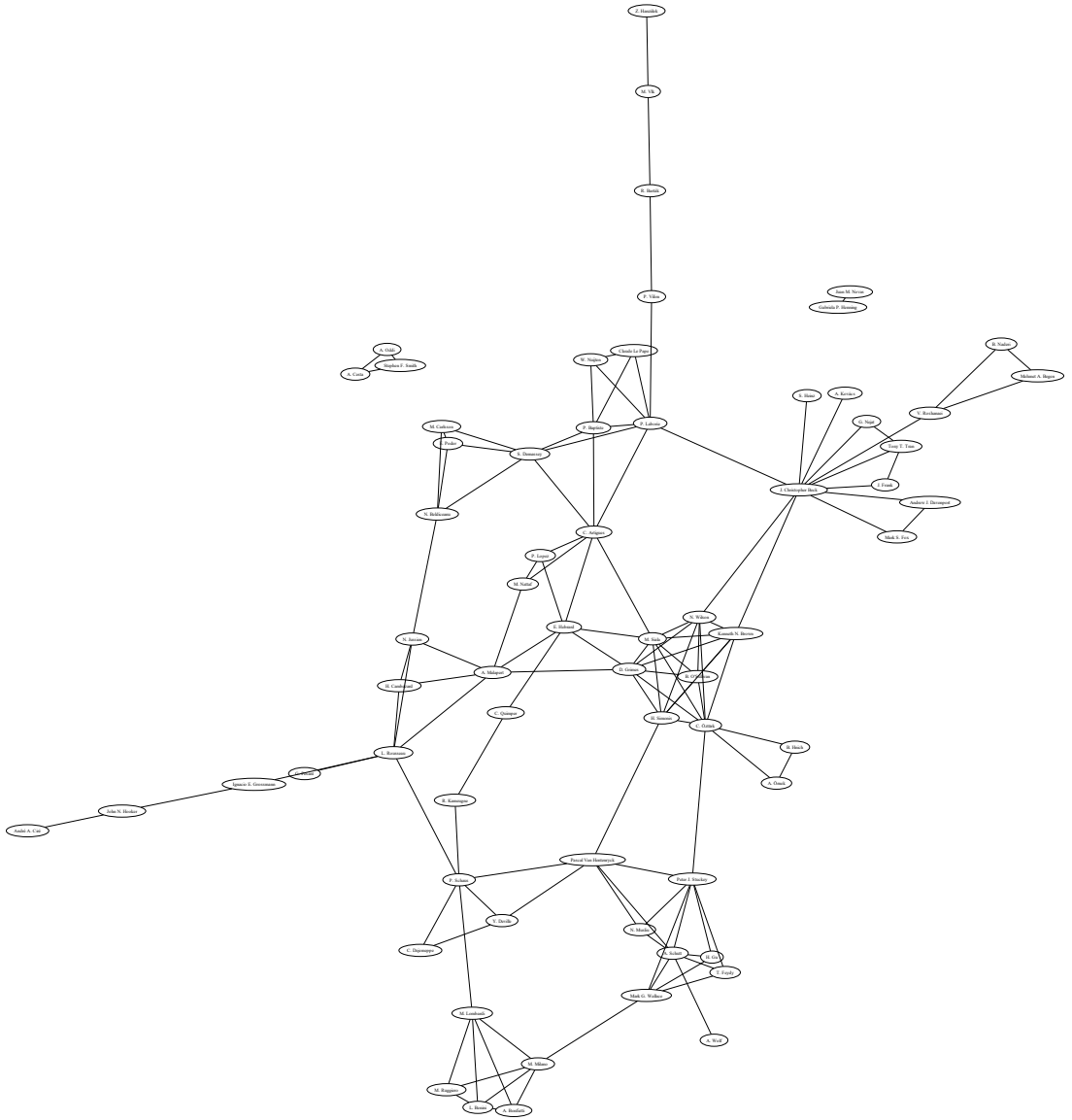

Feature Count for Type Algorithms with a total of 36 features
Nr Works
Nr of Extracted Features
0
20
40
60
80
100
120
140
160
0
1
2
3
4
5
6
7
8
9
10
11
12
14
15
157
149
125
94
79
42
45
23
12
6
3
6
1
2
2

12 Coauthor graph

The coauthor plot is created by graphviz, and is based on the coauthor relations extracted from the author fields of the works. Authors with few works are not shown, to avoid a cluttered view. Note that this analysis depends on the use of canonical forms of author names. If bib entries come from any different sources, we will need to check this manually. DBLP seems to be using ORCID values and typically identifies the authors of a work with a canonical representation of their name. Accents and umlauts are other sources of having multiple forms of the name of the same author. Note that the risk of two different authors using the same name should be low for very specific literature surveys, but cannot be checked with the data sources currently used.

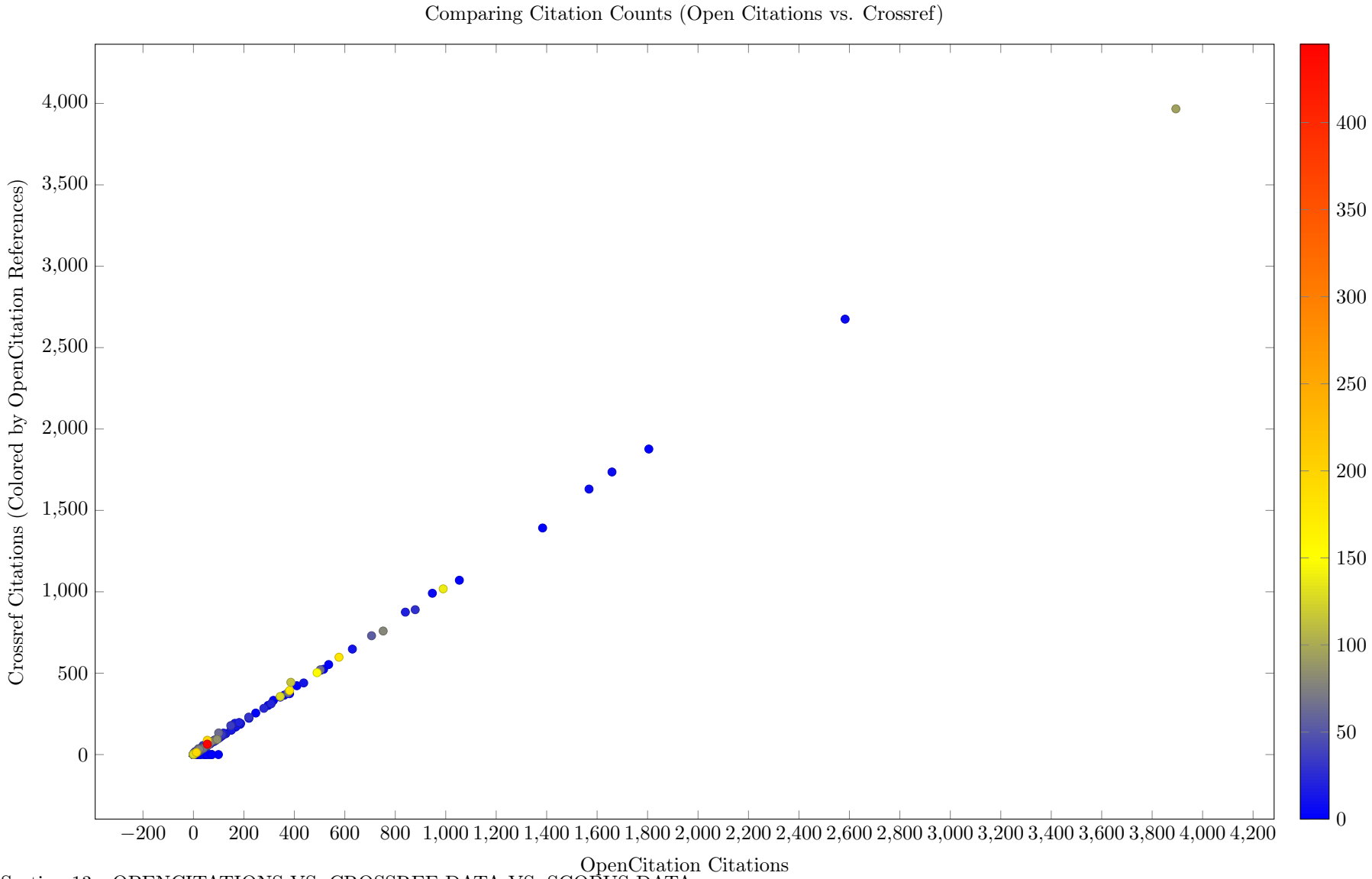
The plots can be made with different layout tools in graphviz, it seems that fdp produces the most consistent visually attractive plots for this type of display. This probably needs more work on parameter settings to be fully automated.

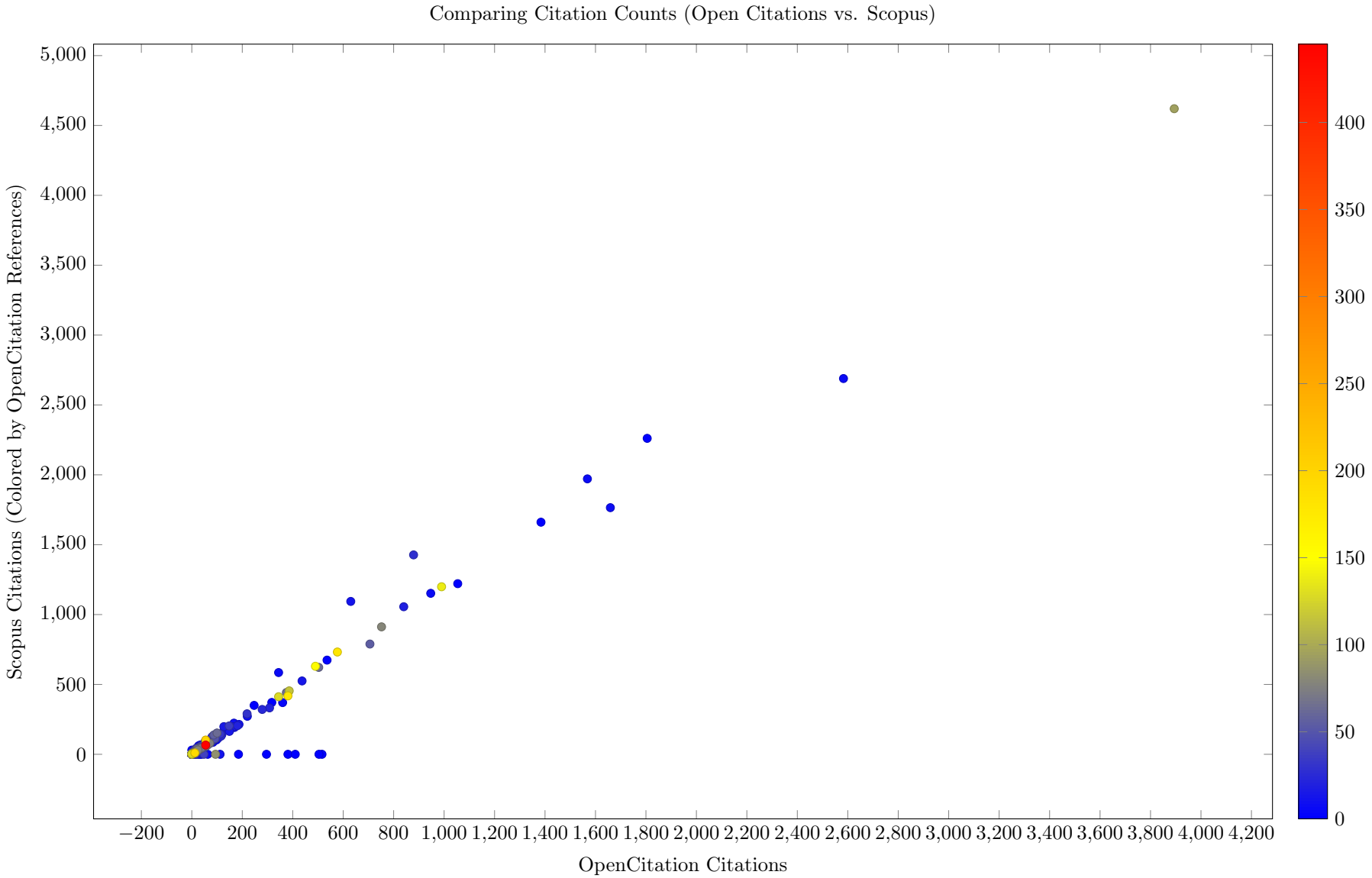
Figure 1: Coauthor Graph Drawn with fdp (Graphviz)

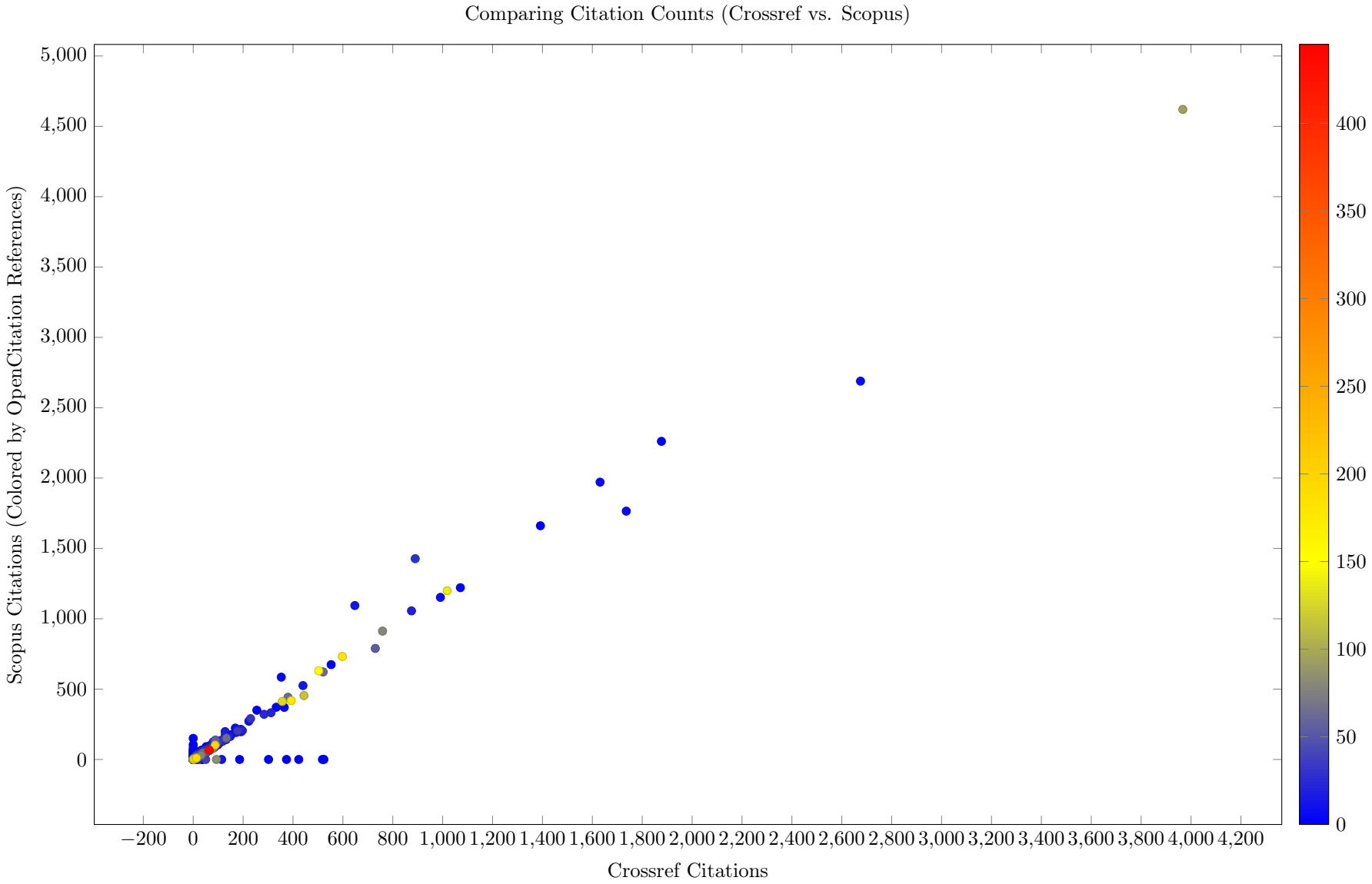


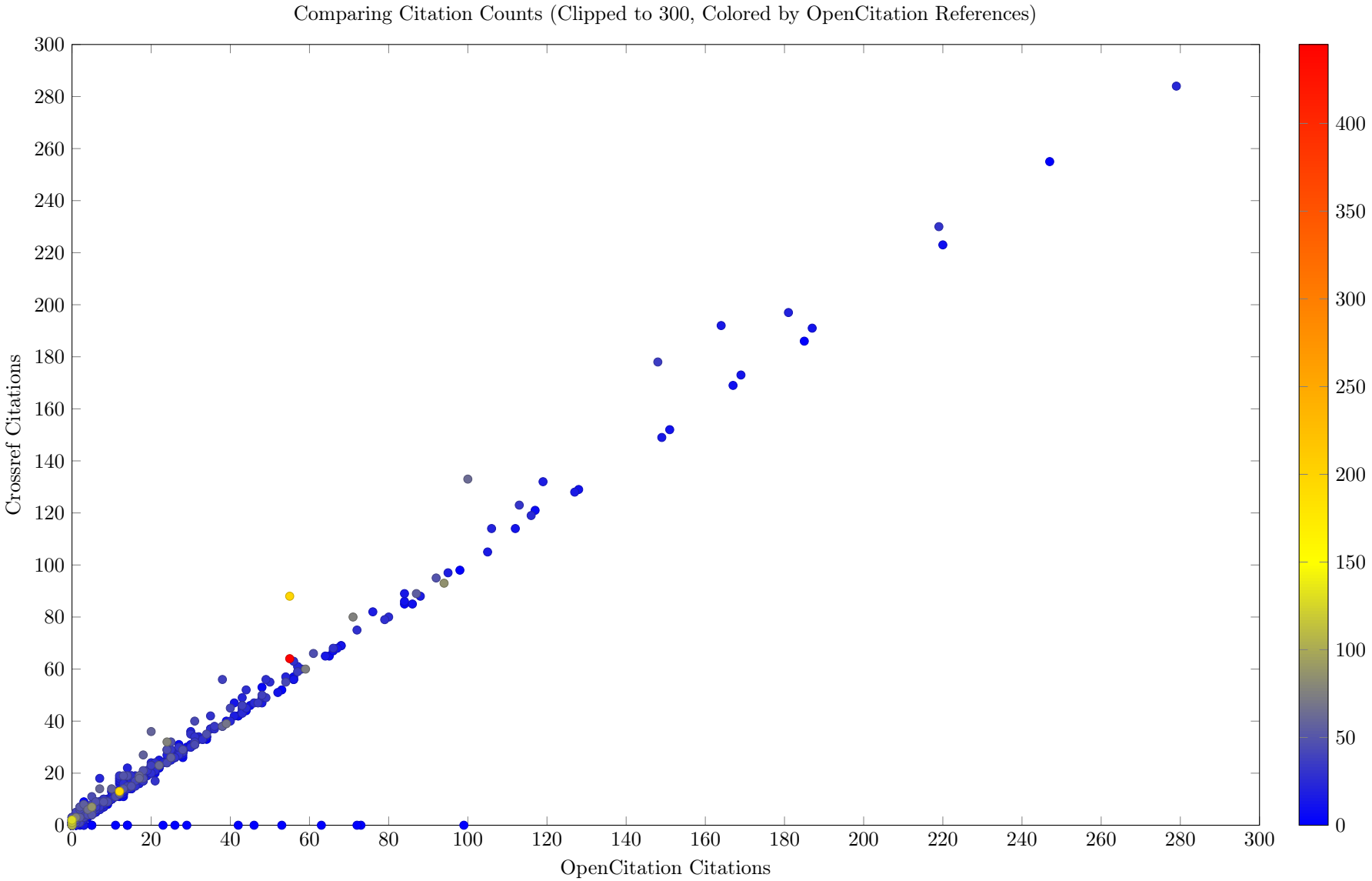
13 OpenCitations vs. Crossref Data vs. Scopus Data

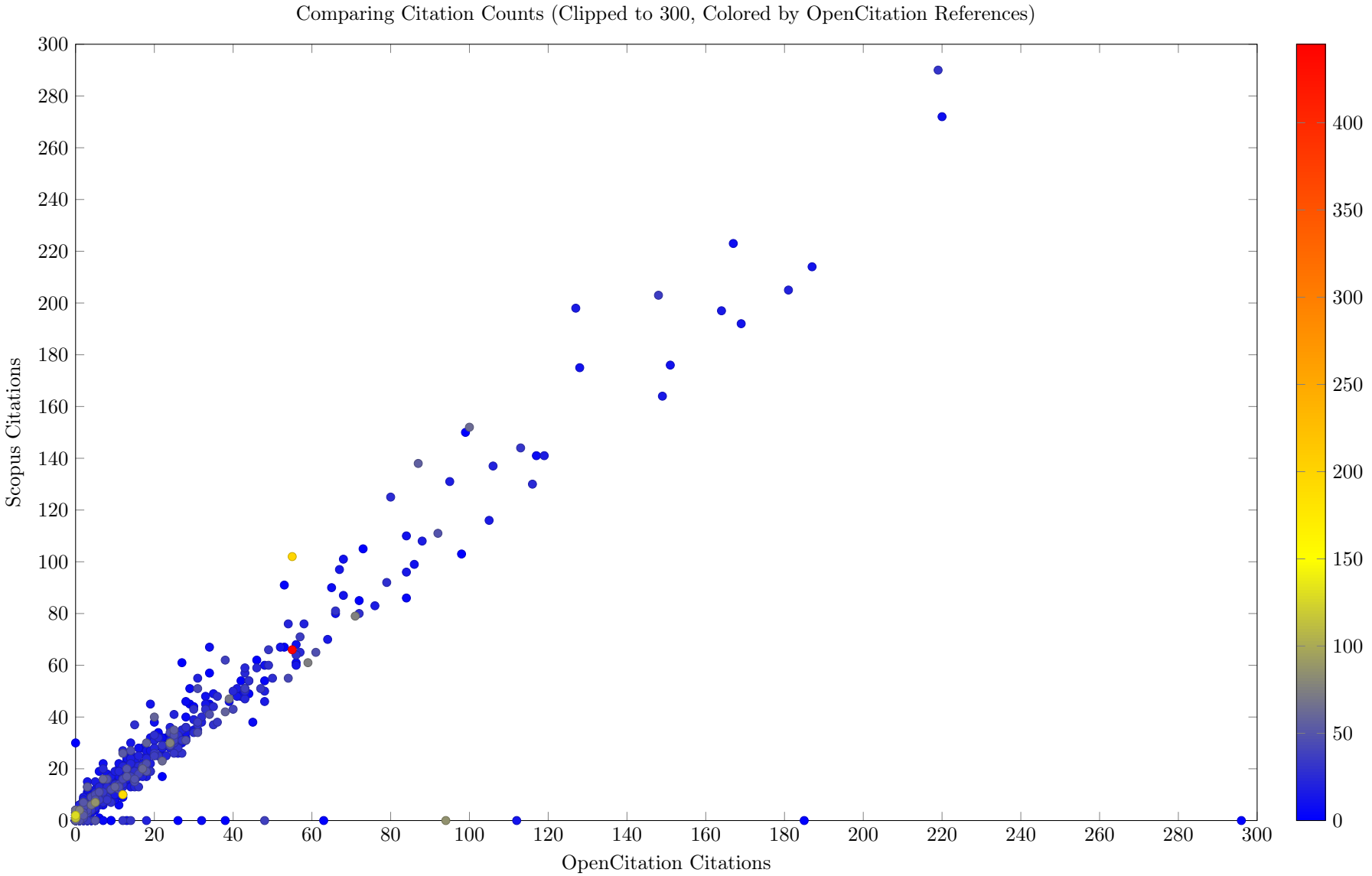
13.1 Citation Comparison

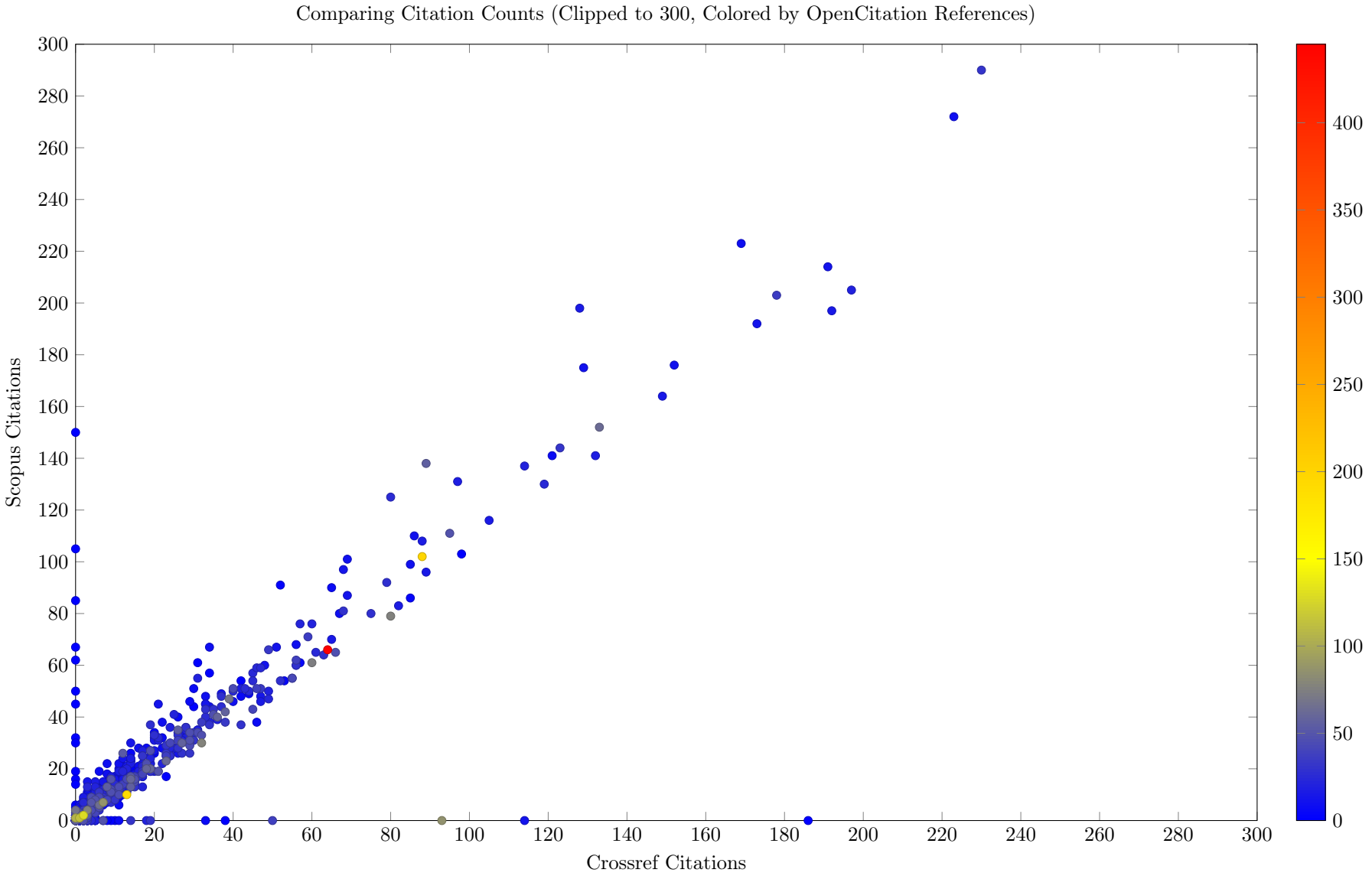



Comparing Citation Counts (Open Citations vs. Scopus)
Scopus Citations (Colored by OpenCitation References)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
−200 0 200 400 600 800 1,000 1,200 1,400 1,600 1,800 2,000 2,200 2,400 2,600 2,800 3,000 3,200 3,400 3,600 3,800 4,000 4,200
OpenCitation Citations
400
350
300
250
200
150
100
50
0

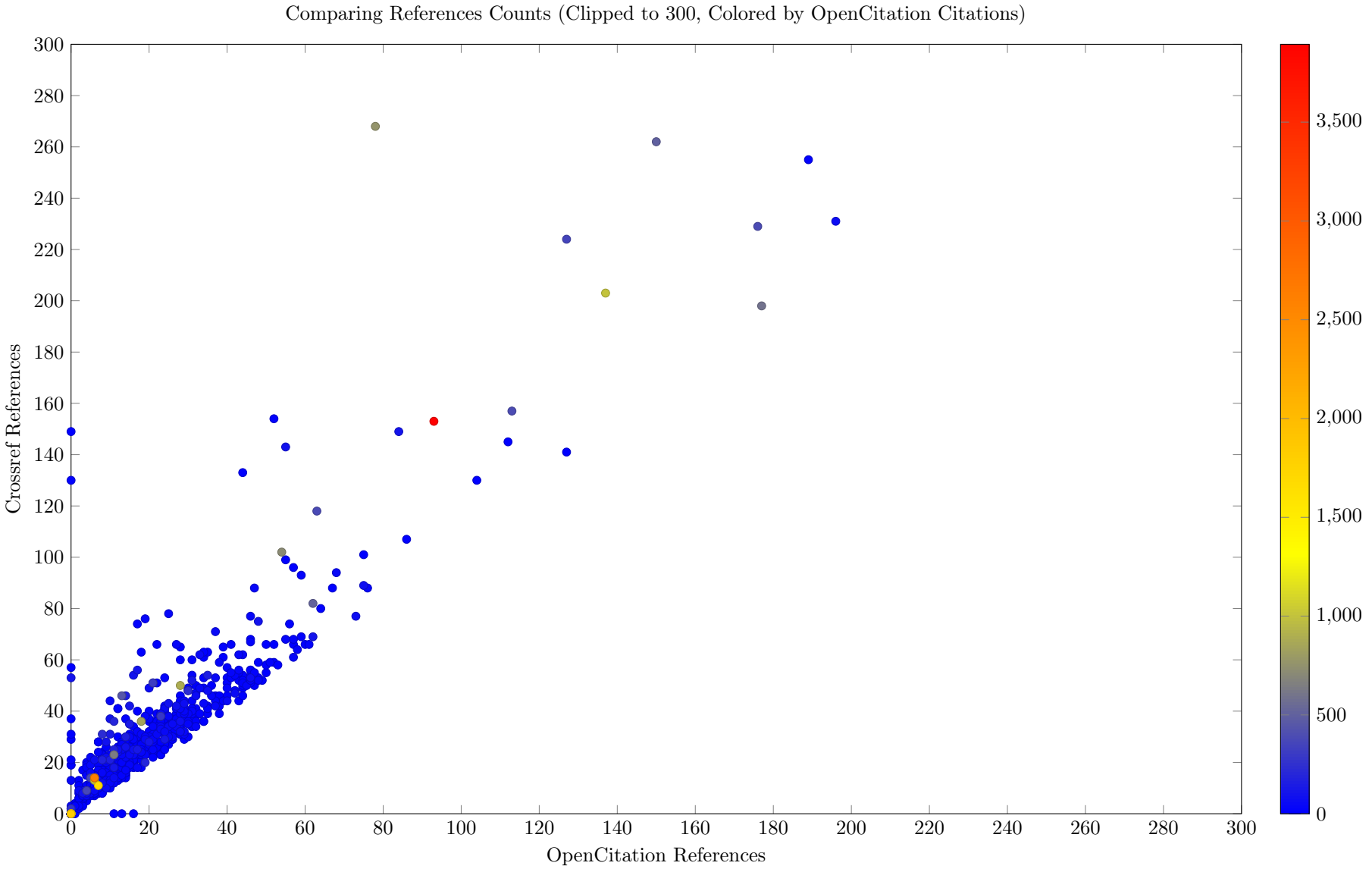

Comparing Citation Counts (Crossref vs. Scopus)
Scopus Citations (Colored by OpenCitation References)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
−200 0 200 400 600 800 1,000 1,200 1,400 1,600 1,800 2,000 2,200 2,400 2,600 2,800 3,000 3,200 3,400 3,600 3,800 4,000 4,200
Crossref Citations
400
350
300
250
200
150
100
50
0


Comparing Citation Counts (Clipped to 300, Colored by OpenCitation References)
Crossref Citations
OpenCitation Citations
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
0
50
100
150
200
250
300
350
400

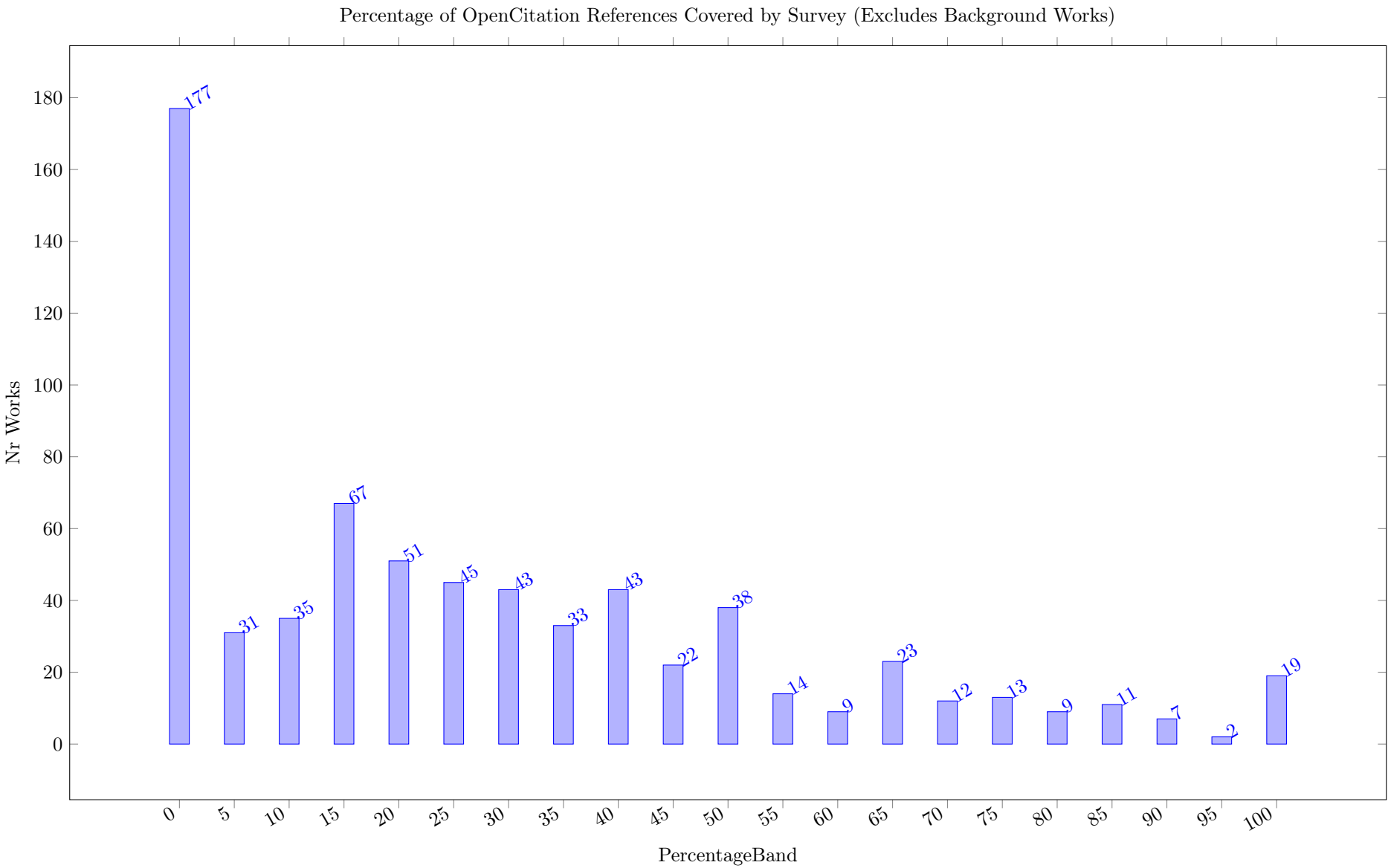

Comparing Citation Counts (Clipped to 300, Colored by OpenCitation References)
Scopus Citations
OpenCitation Citations
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
0
50
100
150
200
250
300
350
400

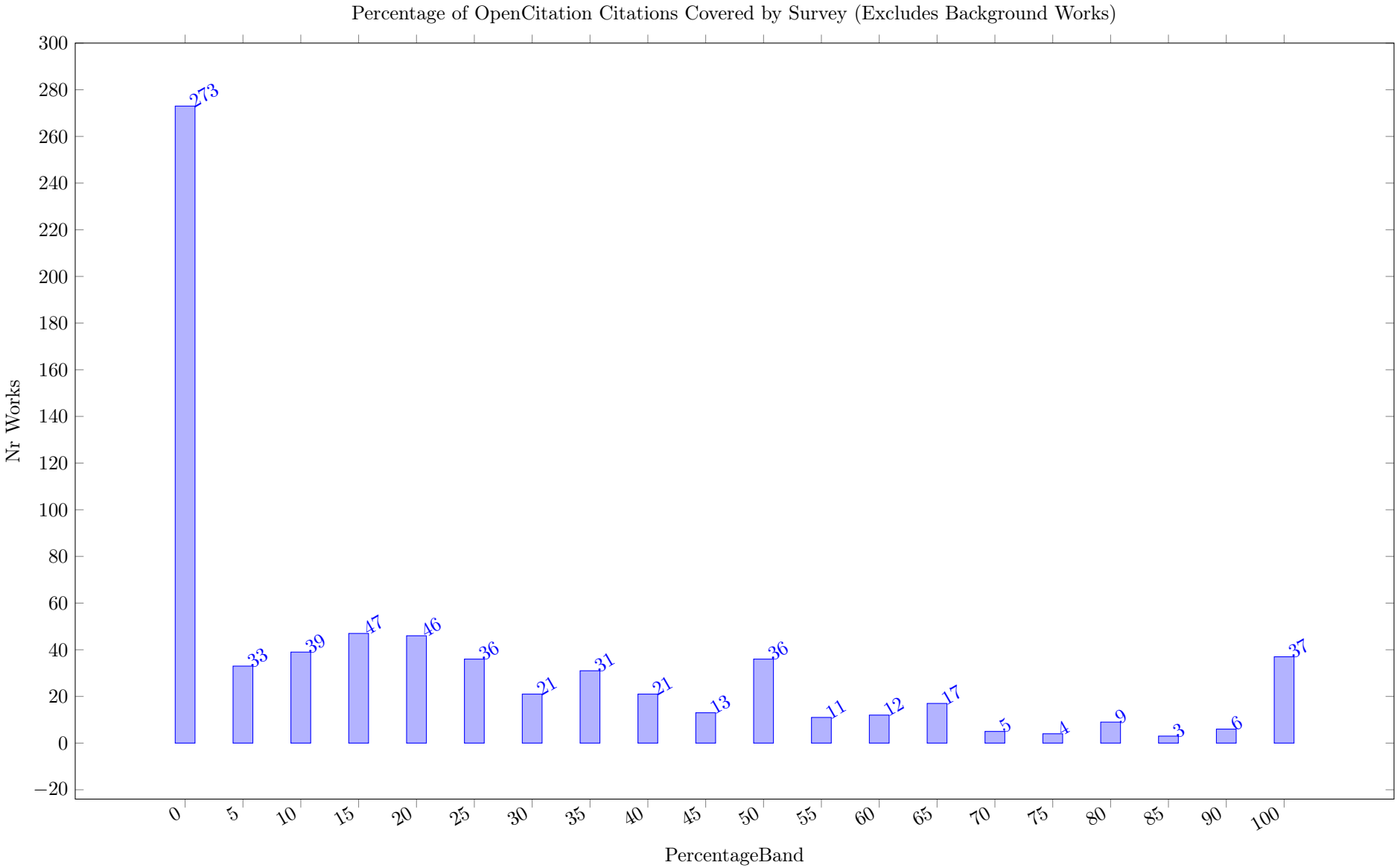

Comparing Citation Counts (Clipped to 300, Colored by OpenCitation References)
Scopus Citations
Crossref Citations
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
0
50
100
150
200
250
300
350
400

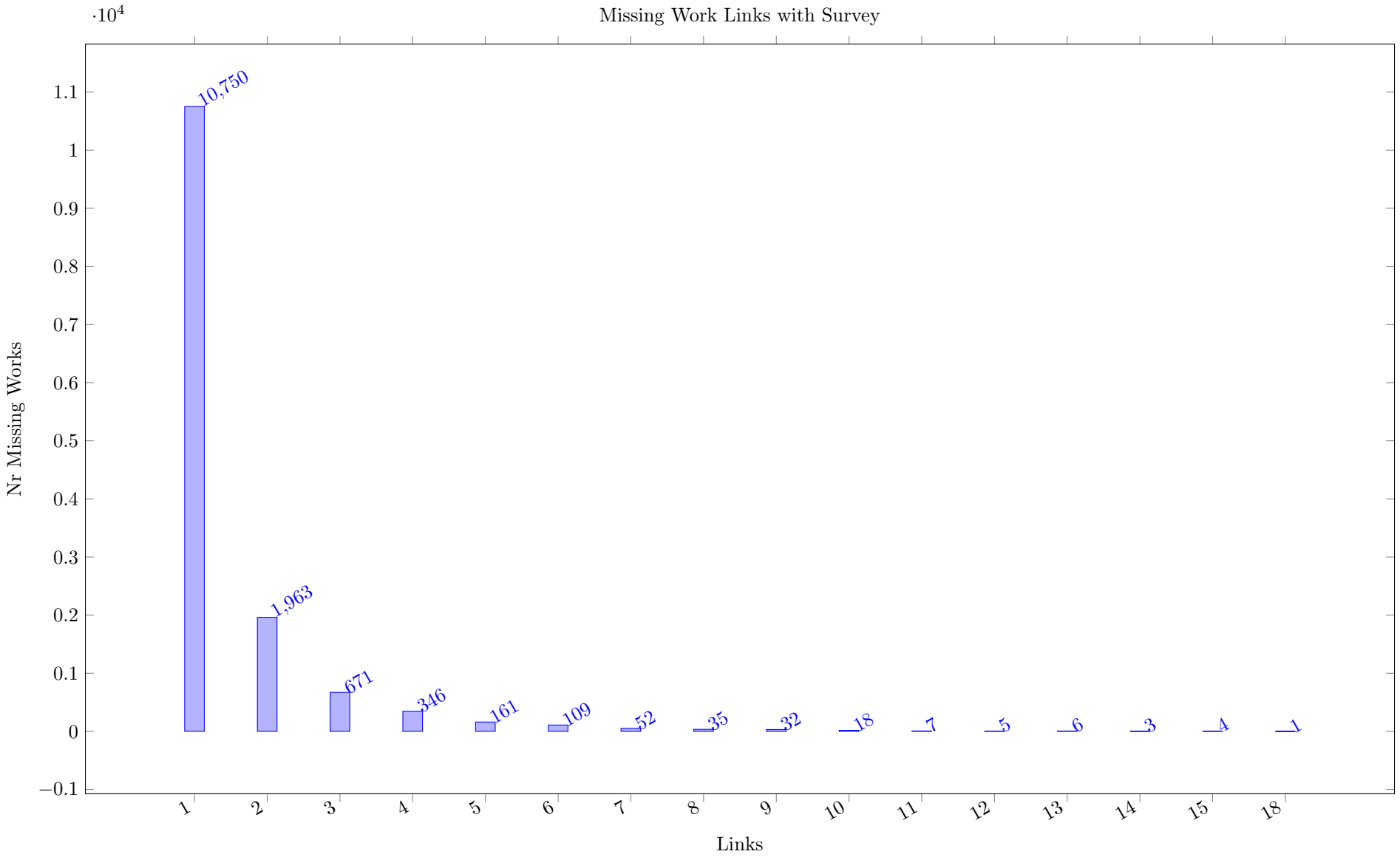
13.2 References Comparison



13.3 Percentage Cover




Percentage of OpenCitation Citations Covered by Survey (Excludes Background Works)
Nr Works
PercentageBand
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
−20
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
100
273
33
39
47
46
36
21
31
21
13
36
11
12
17
5
4
9
3
6
37


Missing Work Links with Survey
$\cdot 10^4$
Nr Missing Works
Links
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
−0.1
10,750
1,963
671
346
161
109
52
35
32
18
7
5
6
3
4
1
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
18

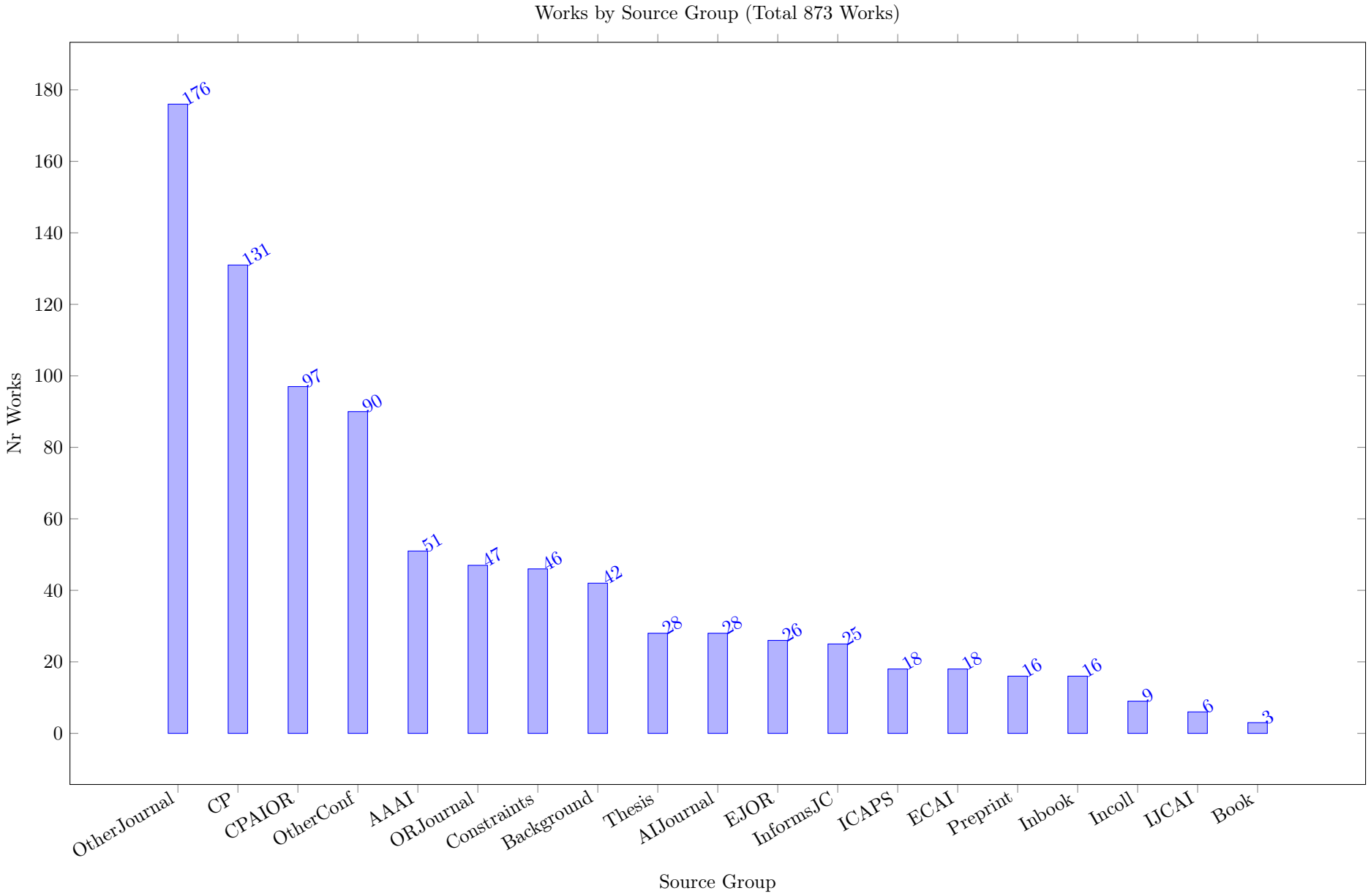
14 Citations by Year and Source Group

We have defined a number of source groups to group publications of a given type together, without using the full conference series and journal distinctions for grouping. The following table lists all defined source groups for this survey. Adding groups requires updates to the source code.

Table 10: Source Groups

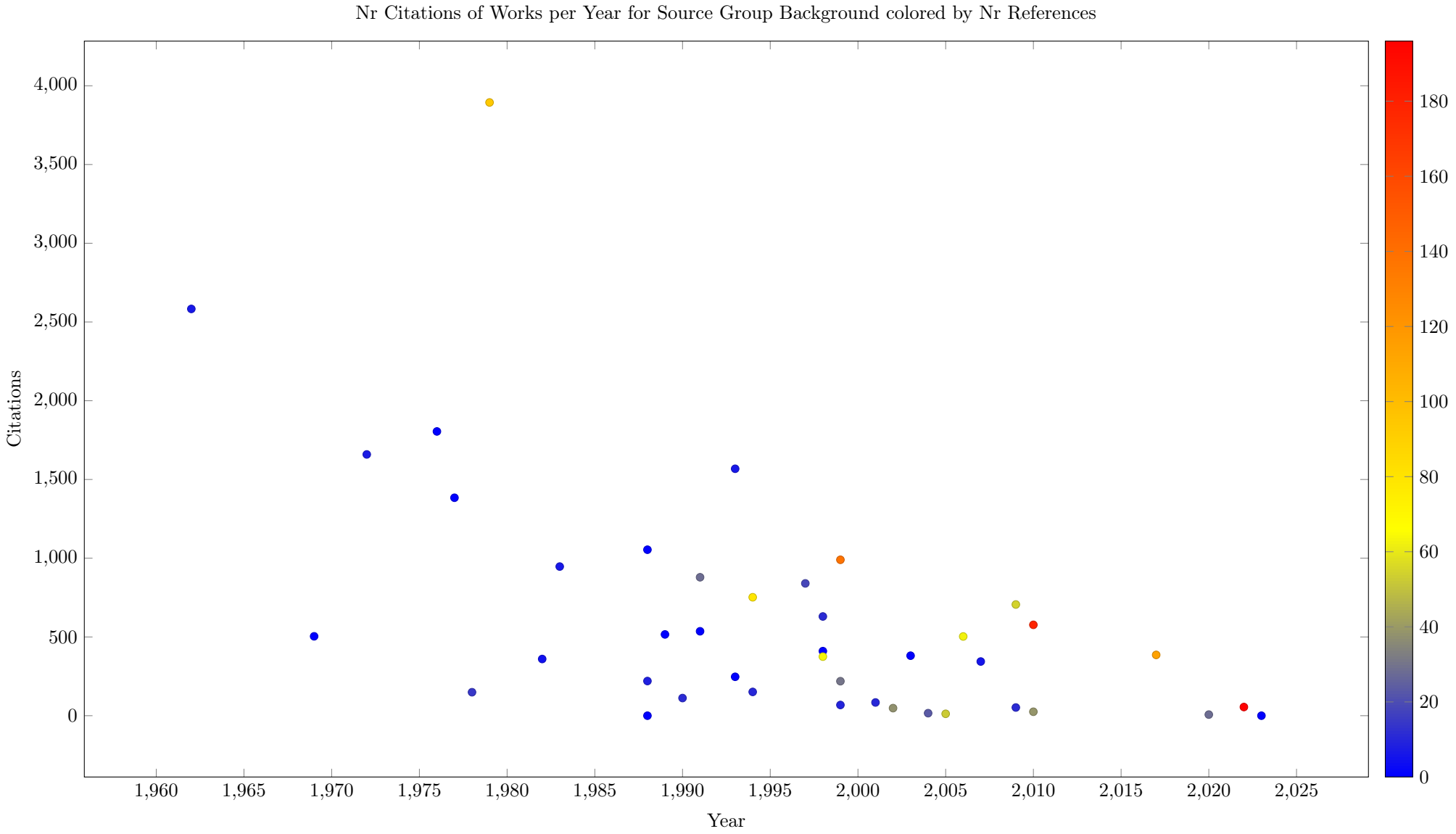
Name	Description
Background	Background material
CP	The CP conference (from 1995)
CPAIOR	The CPAIOR conference (starting 2004)
ICAPS	The ICAPS conference
AAAI	AAAI conference
IJCAI	IJCAI Conference
ECAI	ECAI Conference
OtherConf	Any other conference
Constraints	The Constraint Journal
EJOR	The European Journal on Operations Research
InformsJC	The Informs Journal on Computing
AIJournal	Other AI Journals
ORJournal	Other OR Journals
Preprint	A non reviewed preprint
OtherJournal	Any other Journal
Book	A book
Inbook	Chapter in a Book
Incoll	Chapter in a Collection
Thesis	A thesis
Other	Any other published work

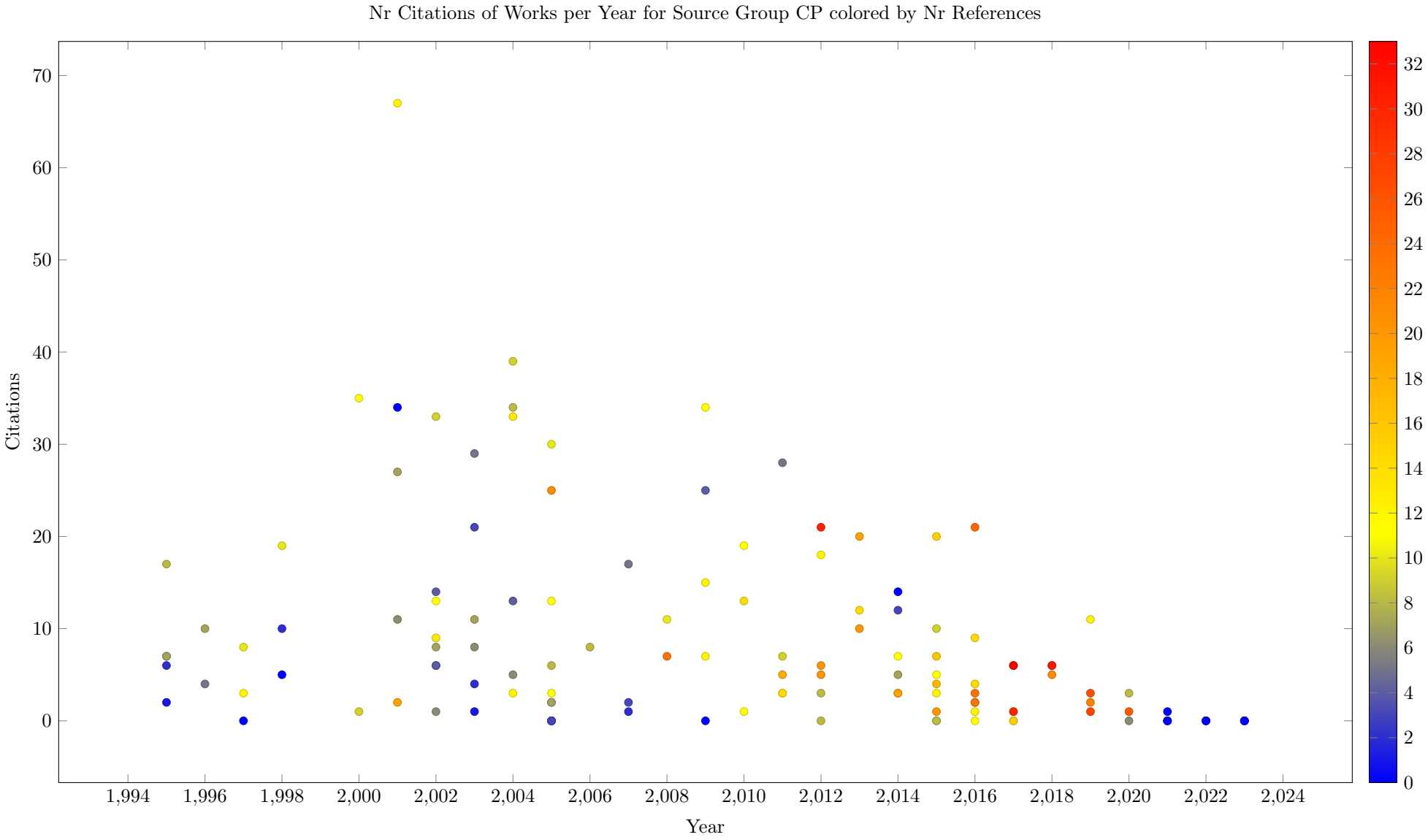
The first plot in this section shows how many works in each source group have been published. This considers the complete time period of the survey.

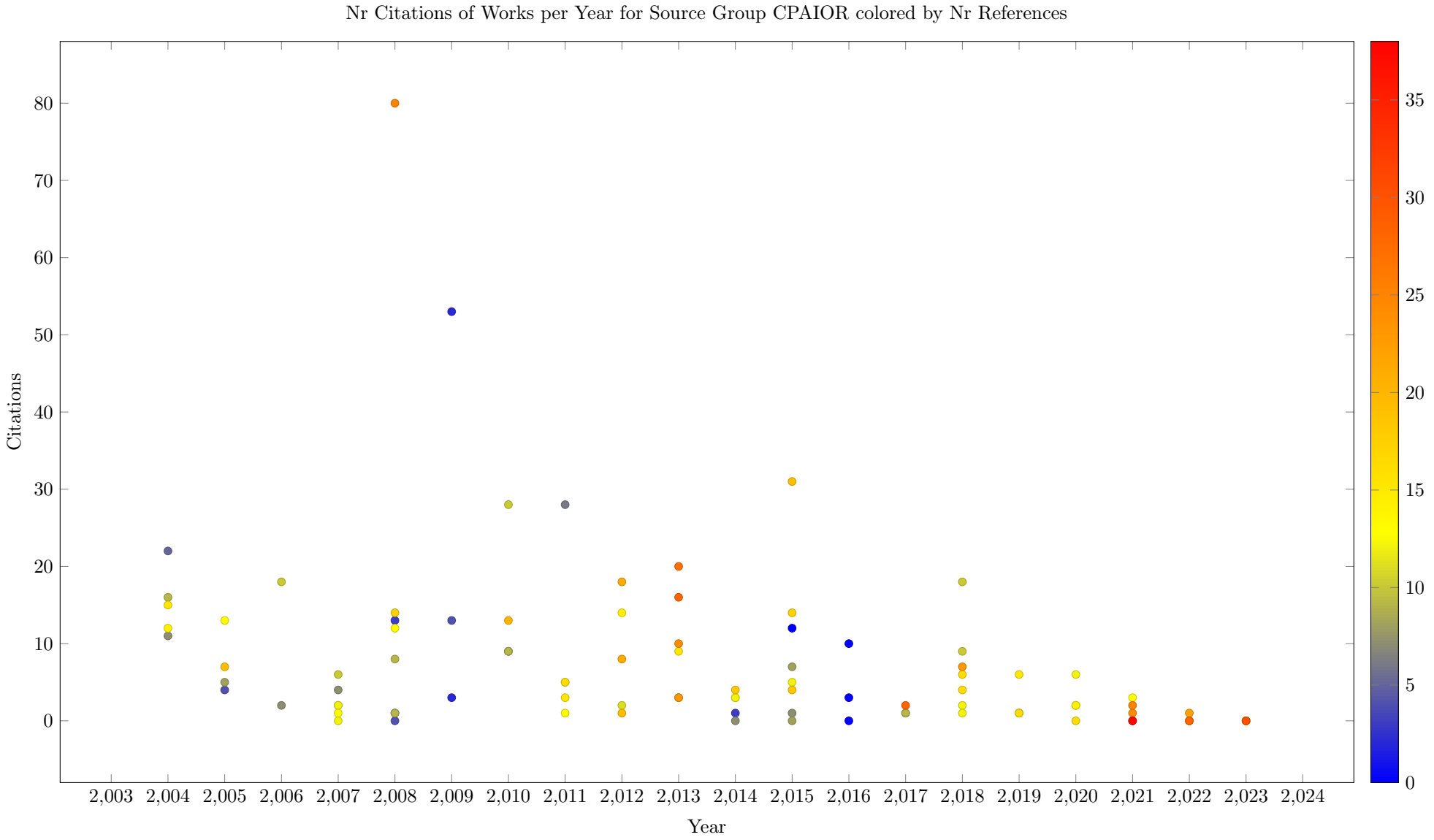

Works by Source Group (Total 873 Works)
Nr Works
0
20
40
60
80
100
120
140
160
180
176
131
97
90
51
47
46
42
28
28
26
25
18
18
16
16
9
6
3
OtherJournal
CP
CPAIOR
OtherConf
AAAI
ORJournal
Constraints
Background
Thesis
AIJournal
EJOR
InformsJC
ICAPS
ECAI
Preprint
Inbook
Incoll
IJCAI
Book
Source Group

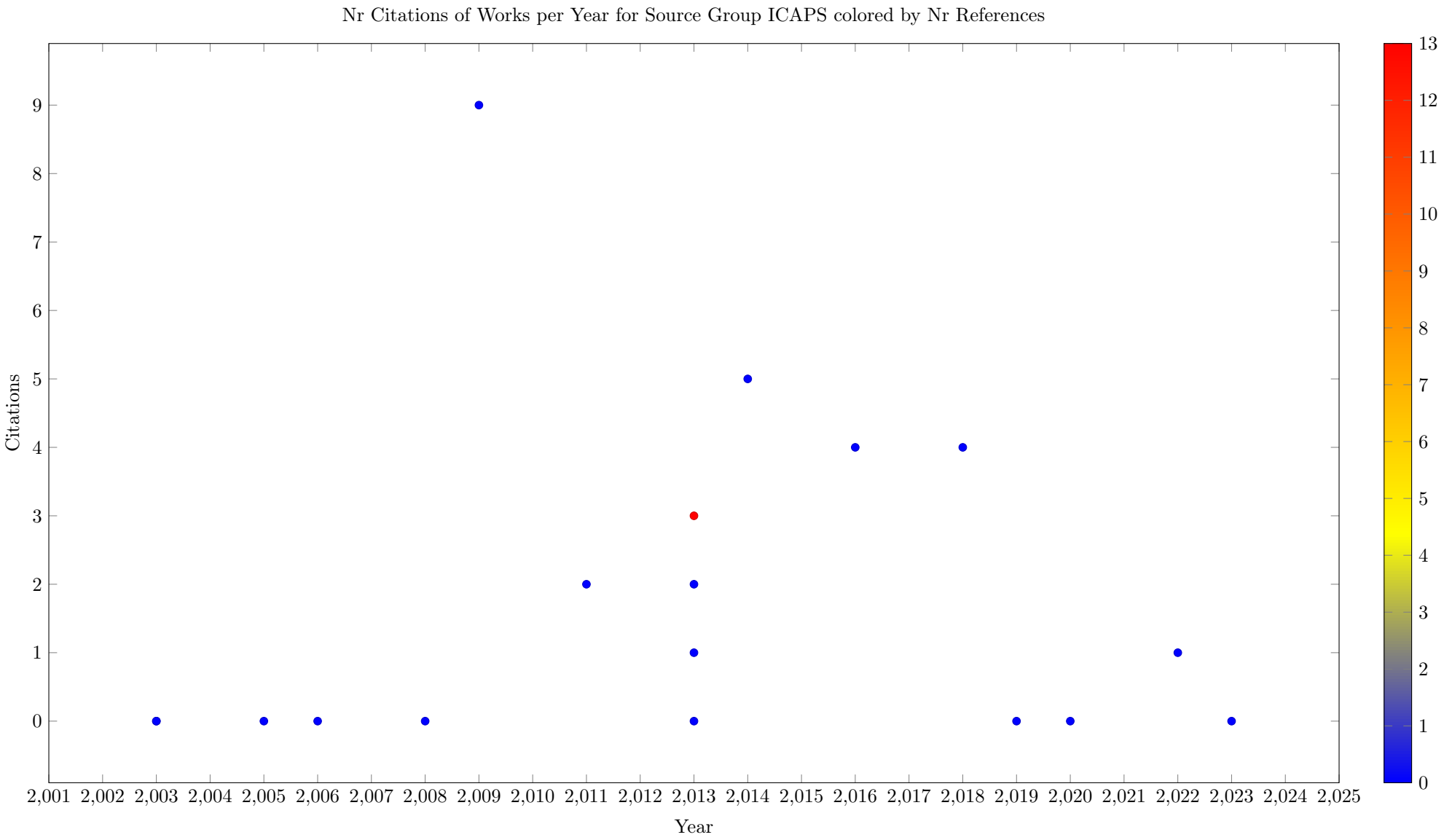
14.1 Source Group Citations by Year

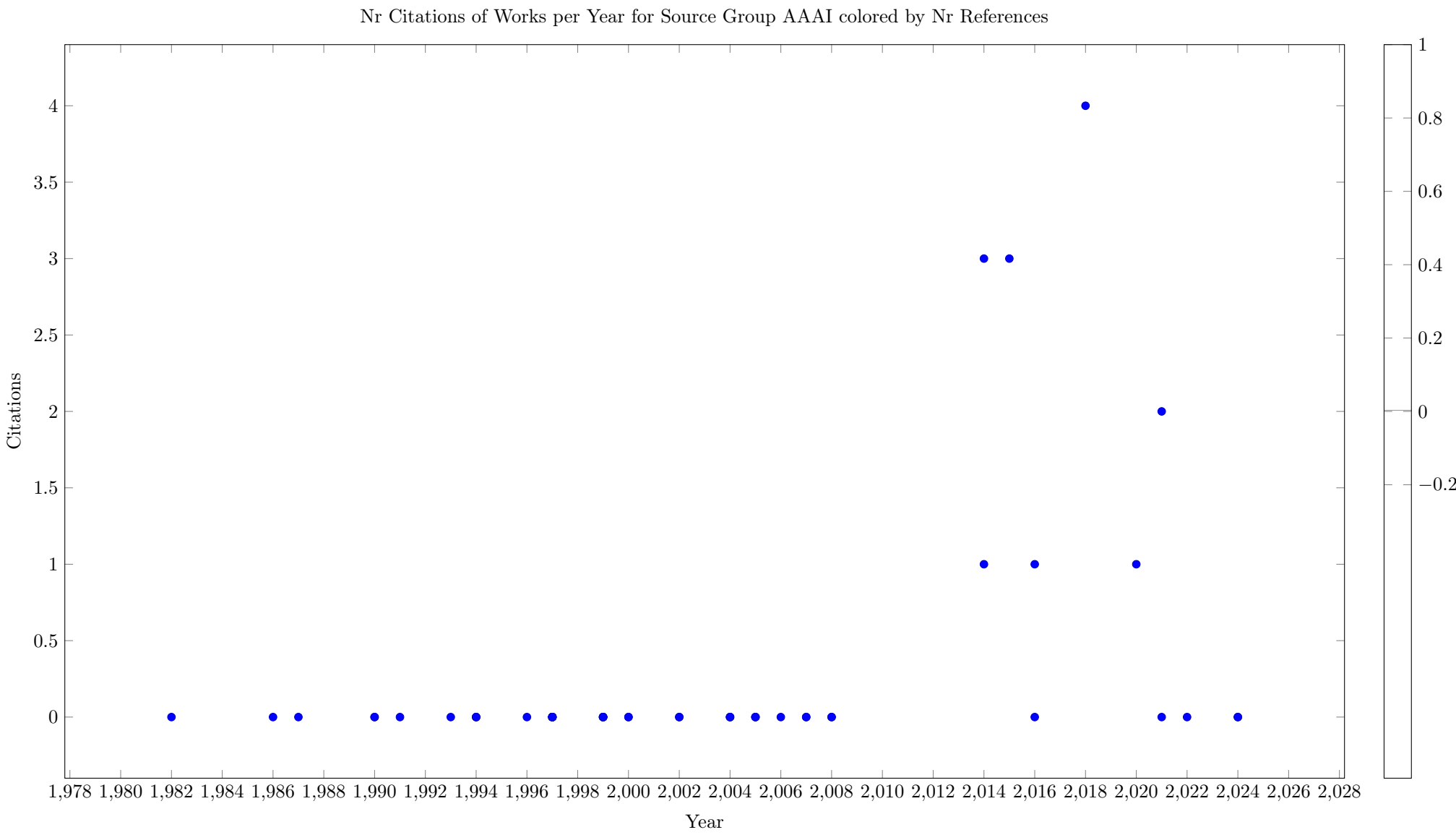
We plot for each source group the number of citations obtained by papers published in a given year. This plot gives both an indication in which period the source group was active, and how significant the works in the source are. It is of course natural that more recent papers have fewer citations than papers published many tears ago.

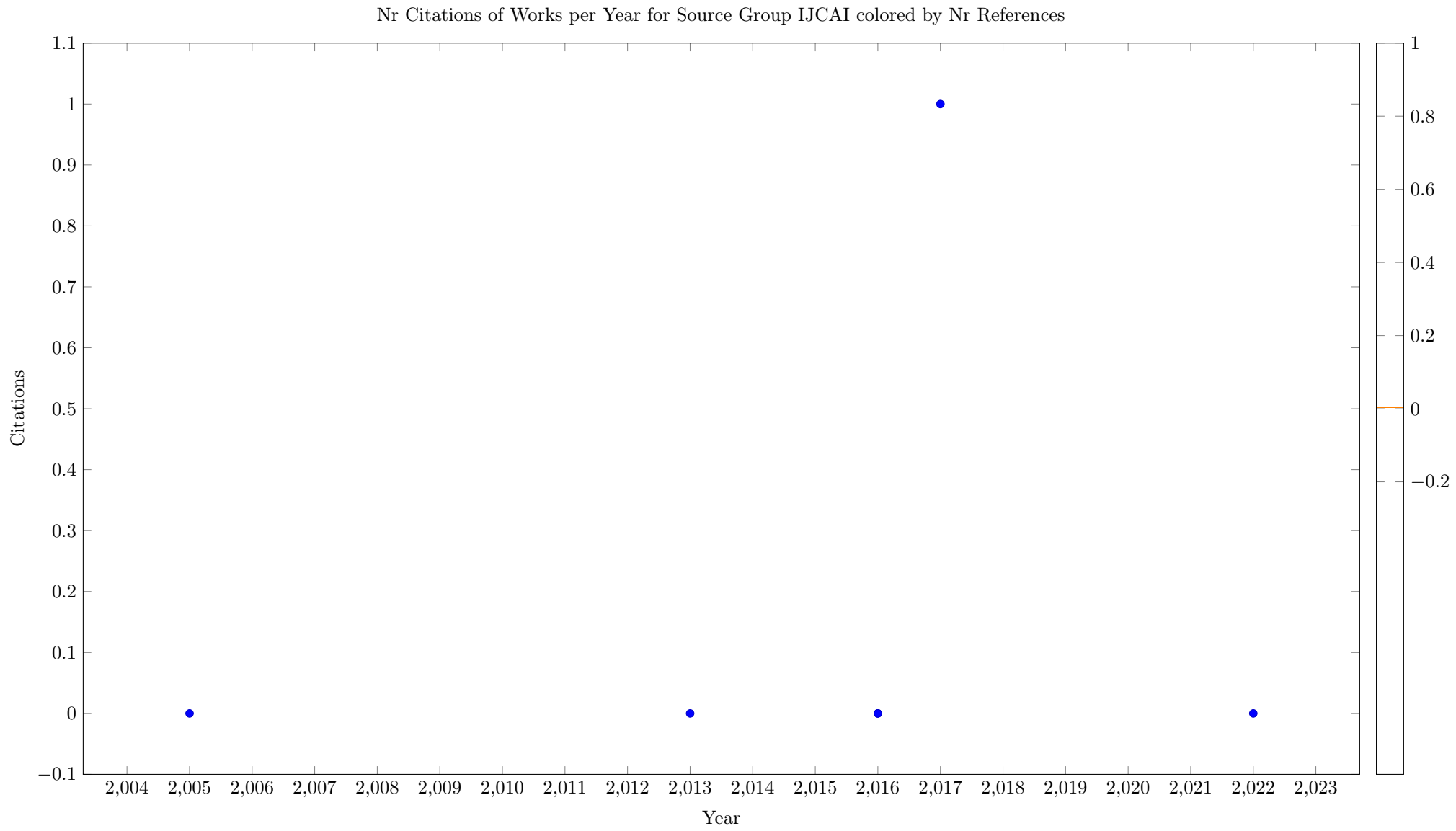

Nr Citations of Works per Year for Source Group Background colored by Nr References
Citations
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
1,960
1,965
1,970
1,975
1,980
1,985
1,990
1,995
2,000
2,005
2,010
2,015
2,020
2,025
Year
180
160
140
120
100
80
60
40
20
0


Nr Citations of Works per Year for Source Group CP colored by Nr References
Citations
70
60
50
40
30
20
10
0
1,994
1,996
1,998
2,000
2,002
2,004
2,006
2,008
2,010
2,012
2,014
2,016
2,018
2,020
2,022
2,024
Year
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0


Nr Citations of Works per Year for Source Group CPAIOR colored by Nr References
Citations
0
10
20
30
40
50
60
70
80
Year
2,003
2,004
2,005
2,006
2,007
2,008
2,009
2,010
2,011
2,012
2,013
2,014
2,015
2,016
2,017
2,018
2,019
2,020
2,021
2,022
2,023
2,024
0
5
10
15
20
25
30
35


Nr Citations of Works per Year for Source Group ICAPS colored by Nr References
Citations
0
1
2
3
4
5
6
7
8
9
Year
2,001 2,002 2,003 2,004 2,005 2,006 2,007 2,008 2,009 2,010 2,011 2,012 2,013 2,014 2,015 2,016 2,017 2,018 2,019 2,020 2,021 2,022 2,023 2,024 2,025
0 1 2 3 4 5 6 7 8 9 10 11 12 13


Nr Citations of Works per Year for Source Group AAAI colored by Nr References
Citations
0
0.5
1
1.5
2
2.5
3
3.5
4
Year
1,978 1,980 1,982 1,984 1,986 1,988 1,990 1,992 1,994 1,996 1,998 2,000 2,002 2,004 2,006 2,008 2,010 2,012 2,014 2,016 2,018 2,020 2,022 2,024 2,026 2,028
1
0.8
0.6
0.4
0.2
0
−0.2


Nr Citations of Works per Year for Source Group IJCAI colored by Nr References
Citations
Year
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0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
−0.1
2,004
2,005
2,006
2,007
2,008
2,009
2,010
2,011
2,012
2,013
2,014
2,015
2,016
2,017
2,018
2,019
2,020
2,021
2,022
2,023
1
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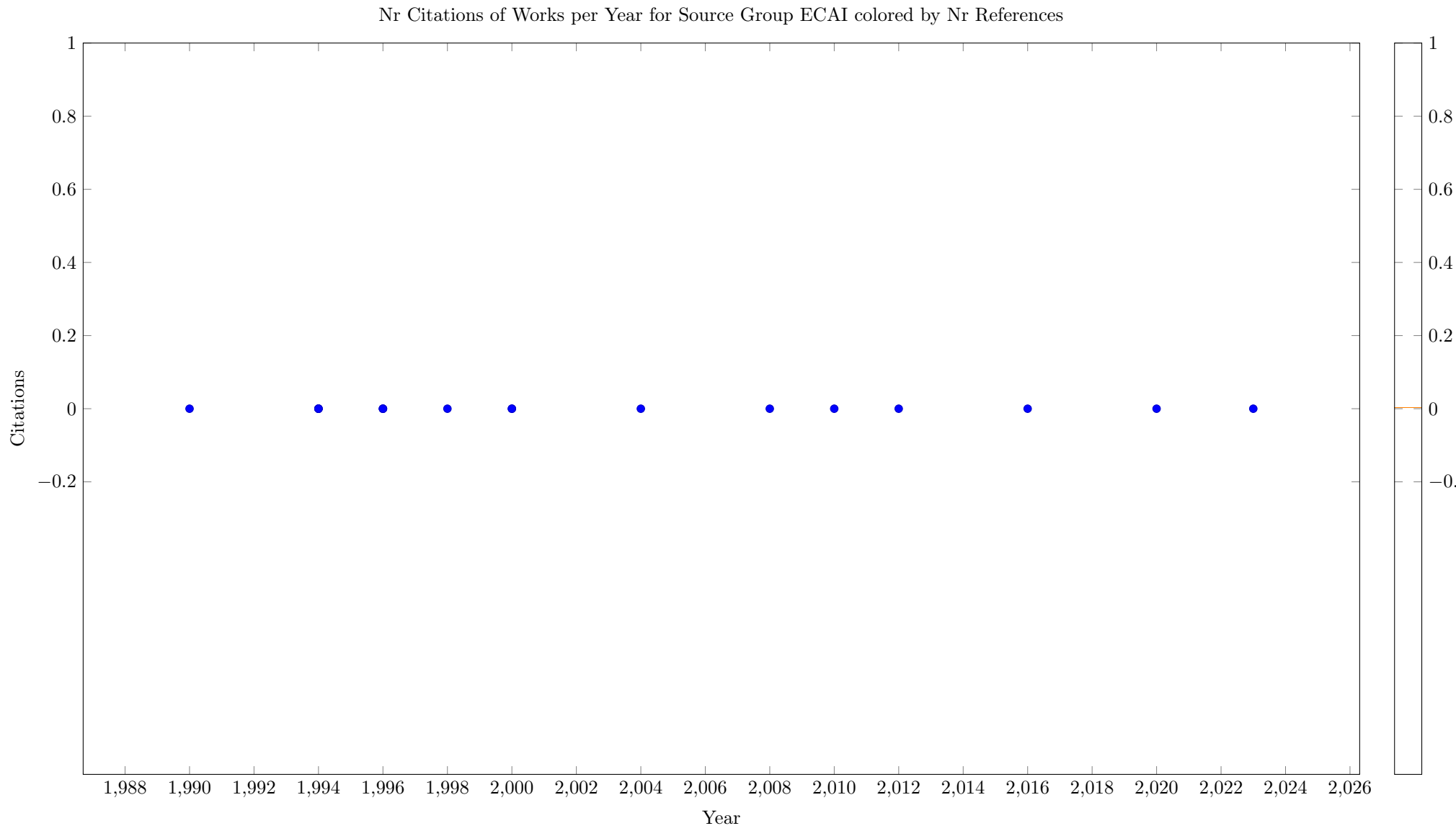
0.6
0.4
0.2
0
−0.2


Nr Citations of Works per Year for Source Group ECAI colored by Nr References
Citations
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0.6
0.4
0.2
0
−0.2
1,988
1,990
1,992
1,994
1,996
1,998
2,000
2,002
2,004
2,006
2,008
2,010
2,012
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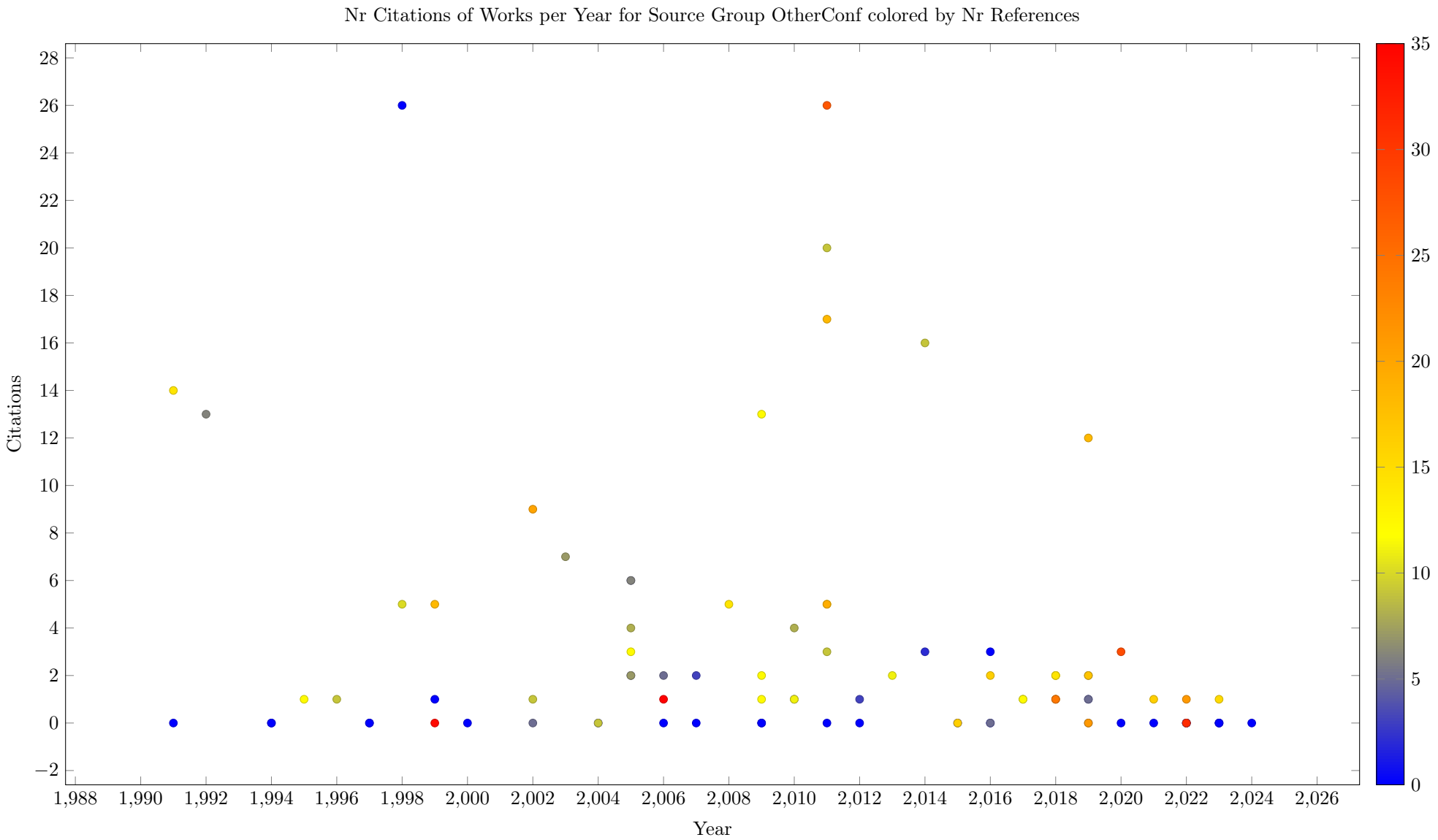
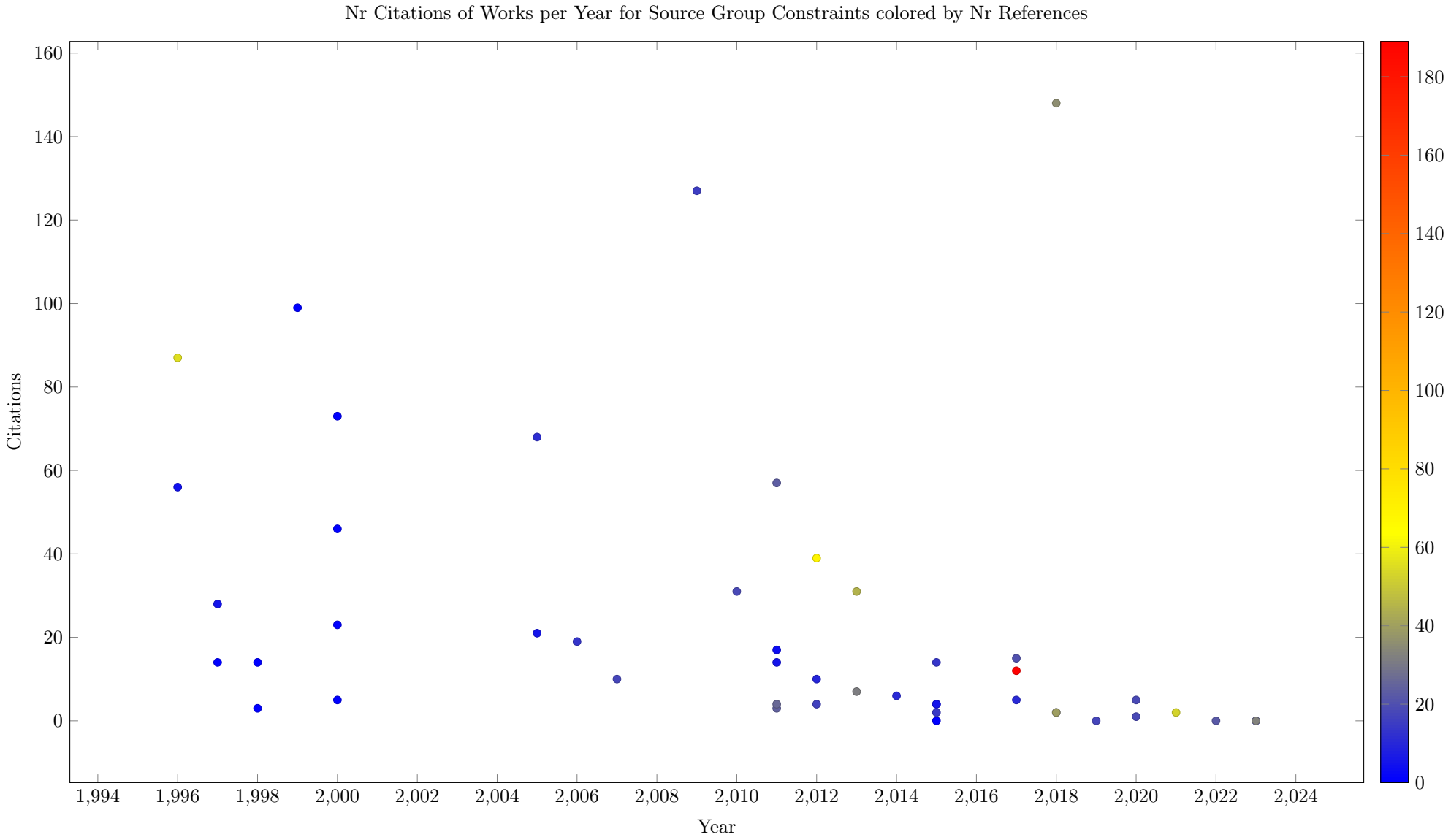
2,018
2,020
2,022
2,024
2,026
Year


Nr Citations of Works per Year for Source Group OtherConf colored by Nr References
Citations
Year
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
−2
1,988
1,990
1,992
1,994
1,996
1,998
2,000
2,002
2,004
2,006
2,008
2,010
2,012
2,014
2,016
2,018
2,020
2,022
2,024
2,026
35
30
25
20
15
10
5
0


Nr Citations of Works per Year for Source Group Constraints colored by Nr References
Citations
Year
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40
60
80
100
120
140
160
180
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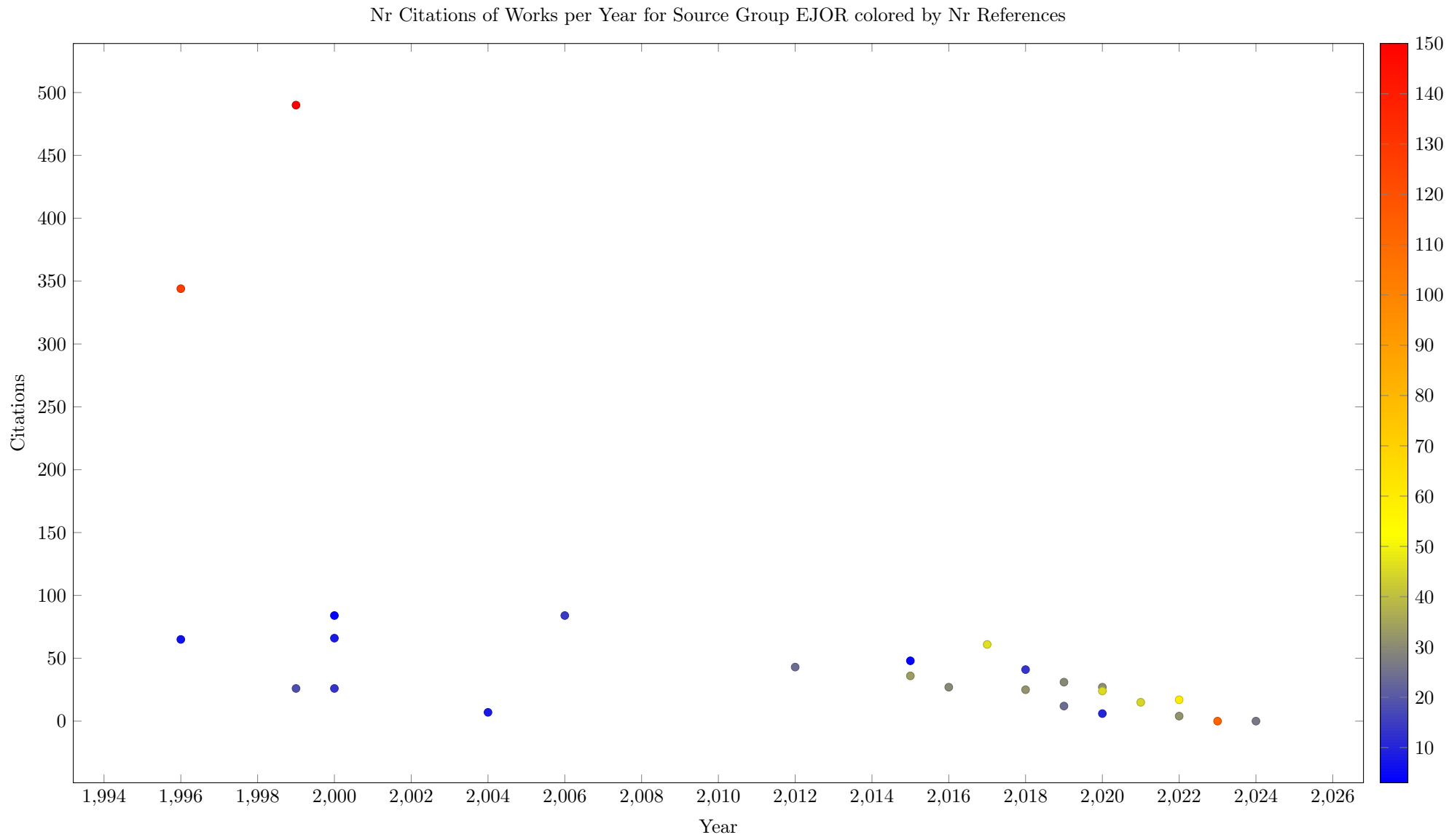
2,014
2,016
2,018
2,020
2,022
2,024


Nr Citations of Works per Year for Source Group EJOR colored by Nr References
Citations
0
50
100
150
200
250
300
350
400
450
500
Year
1,994
1,996
1,998
2,000
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2,004
2,006
2,008
2,010
2,012
2,014
2,016
2,018
2,020
2,022
2,024
2,026
10
20
30
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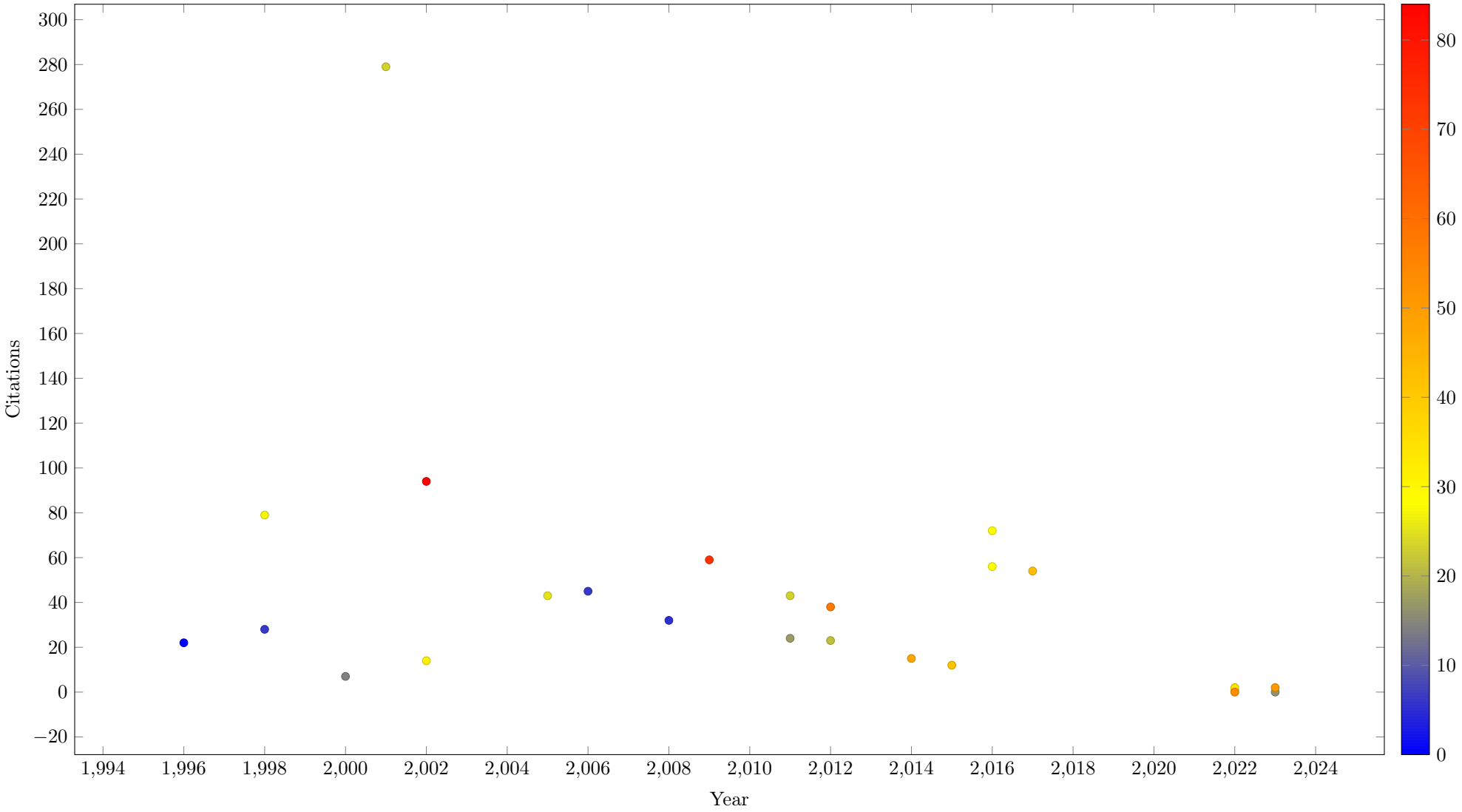
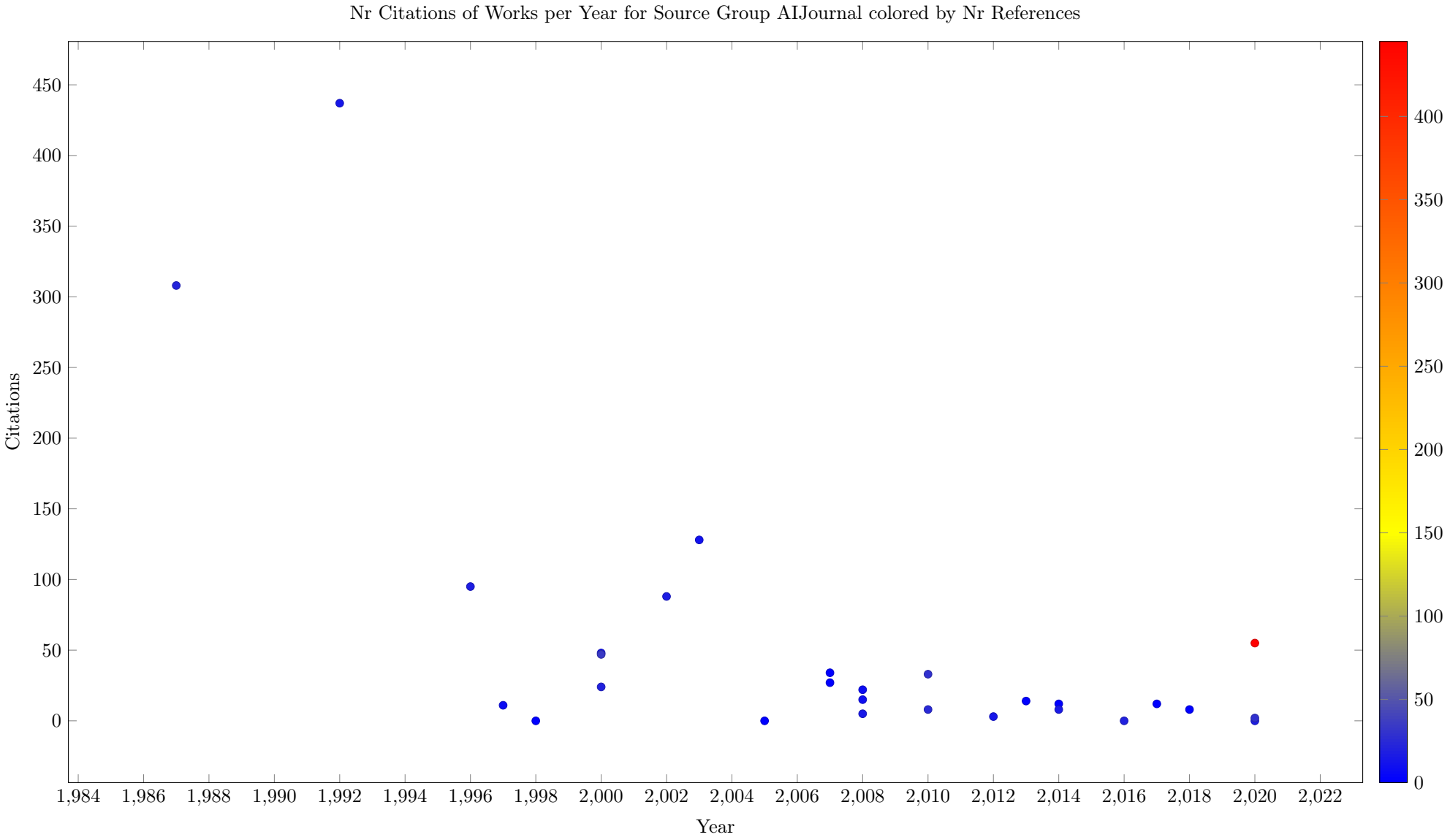
70
80
90
100
110
120
130
140
150

Nr Citations of Works per Year for Source Group InformsJC colored by Nr References




Nr Citations of Works per Year for Source Group AIJournal colored by Nr References
Citations
Year
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100
150
200
250
300
350
400
450
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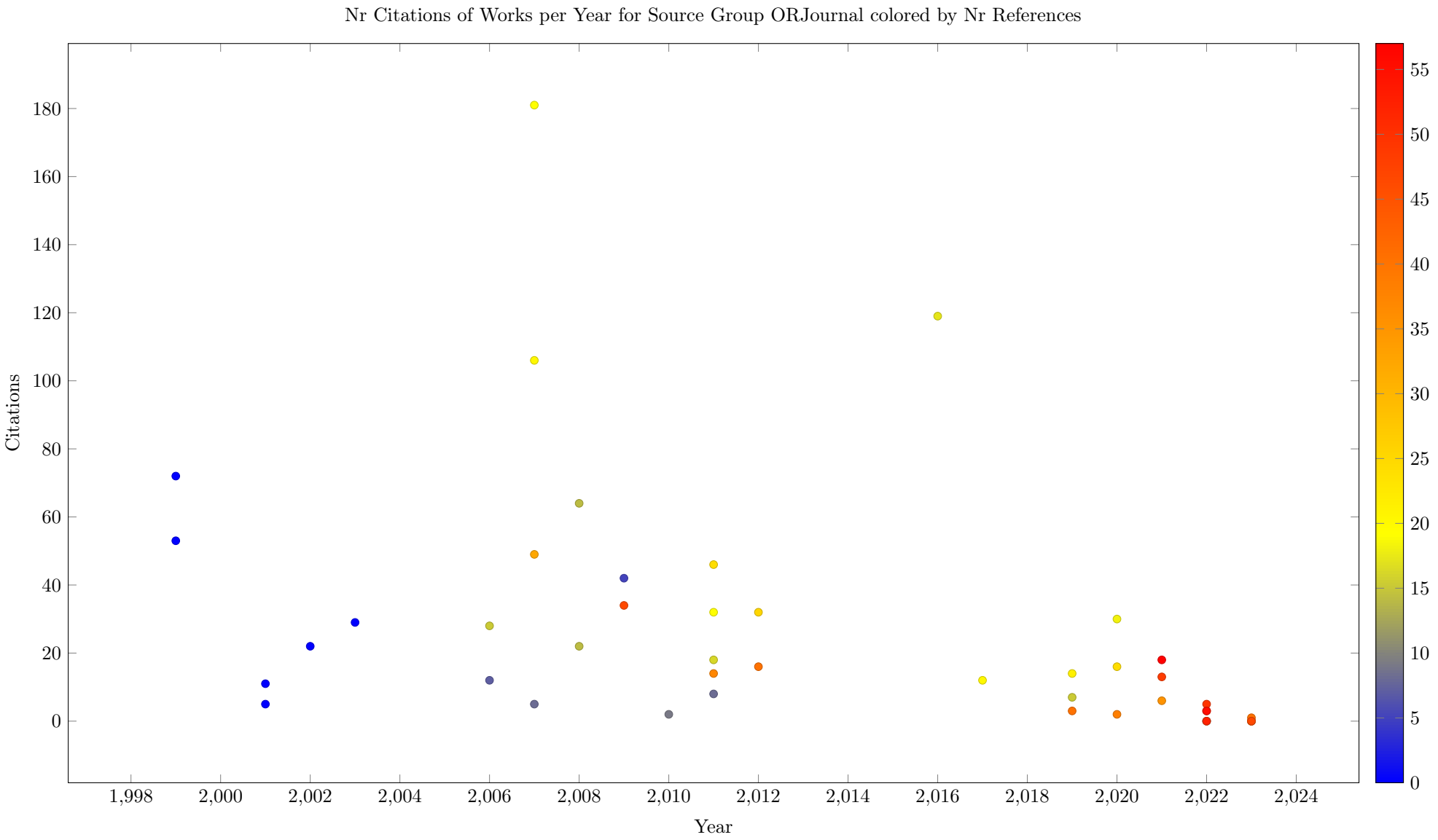
1,986
1,988
1,990
1,992
1,994
1,996
1,998
2,000
2,002
2,004
2,006
2,008
2,010
2,012
2,014
2,016
2,018
2,020
2,022
0
50
100
150
200
250
300
350
400


Nr Citations of Works per Year for Source Group ORJournal colored by Nr References
Citations
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60
80
100
120
140
160
180
Year
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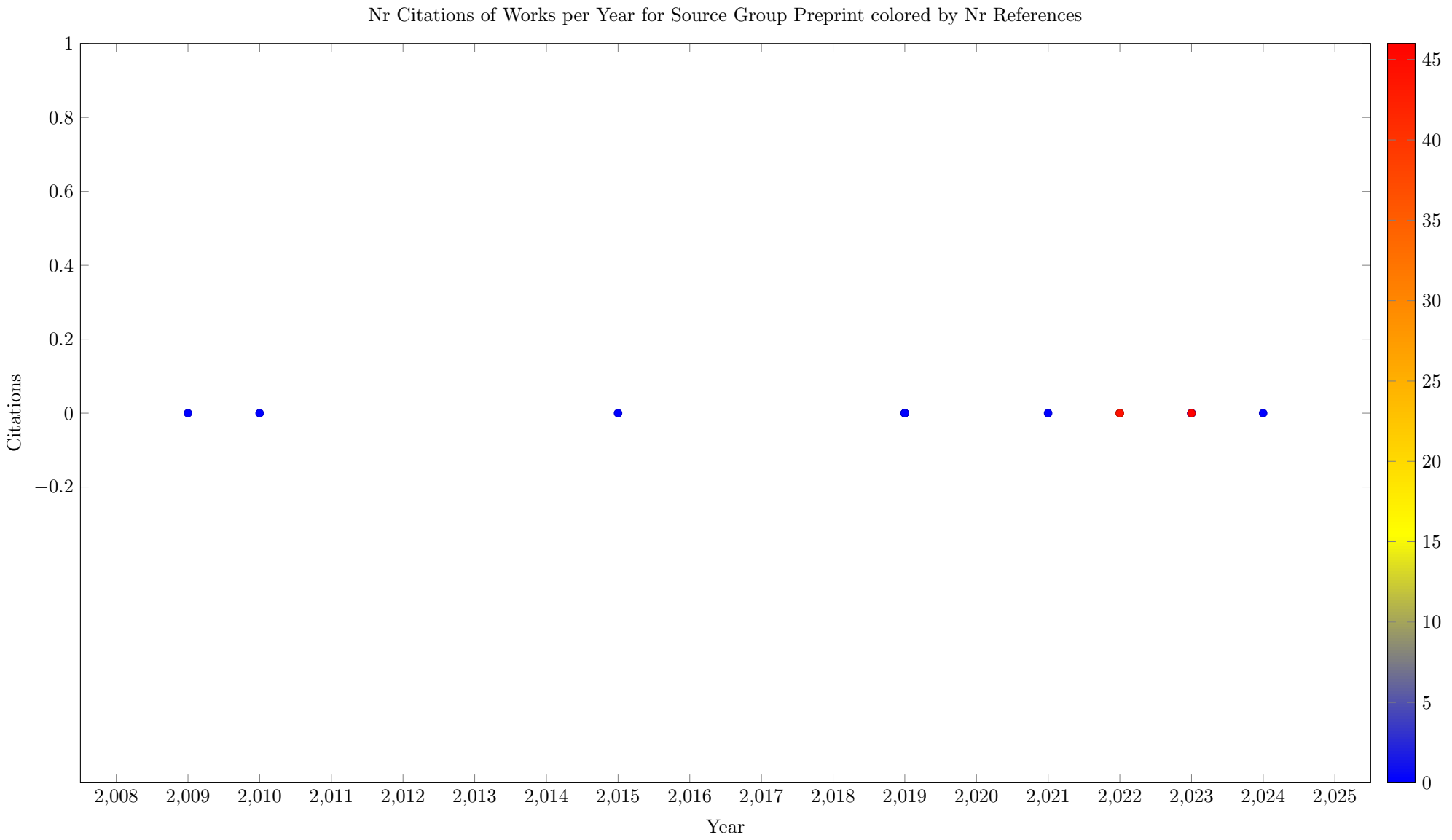
2,002
2,004
2,006
2,008
2,010
2,012
2,014
2,016
2,018
2,020
2,022
2,024
0
5
10
15
20
25
30
35
40
45
50
55


Nr Citations of Works per Year for Source Group Preprint colored by Nr References
Citations
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0.6
0.4
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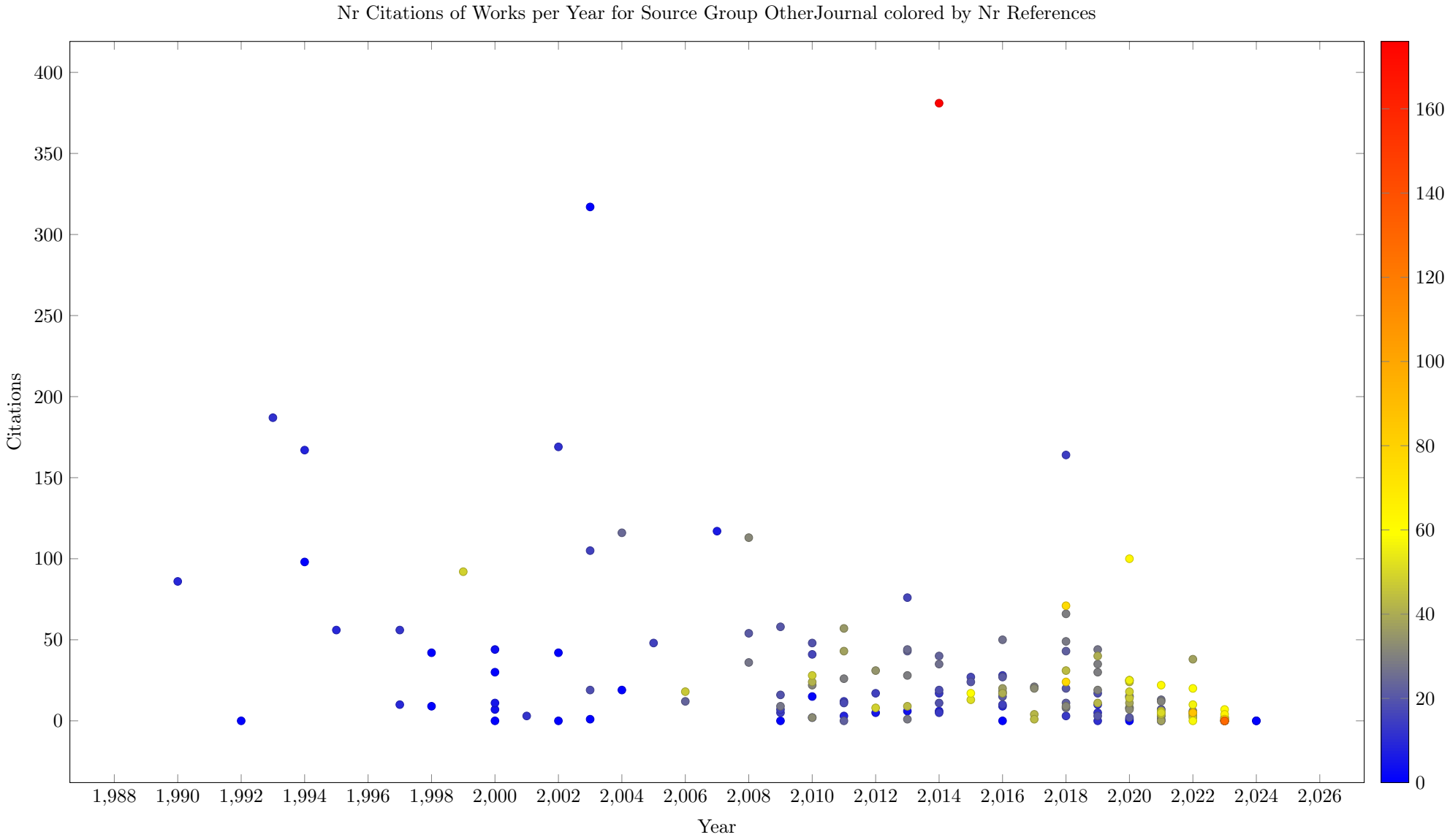
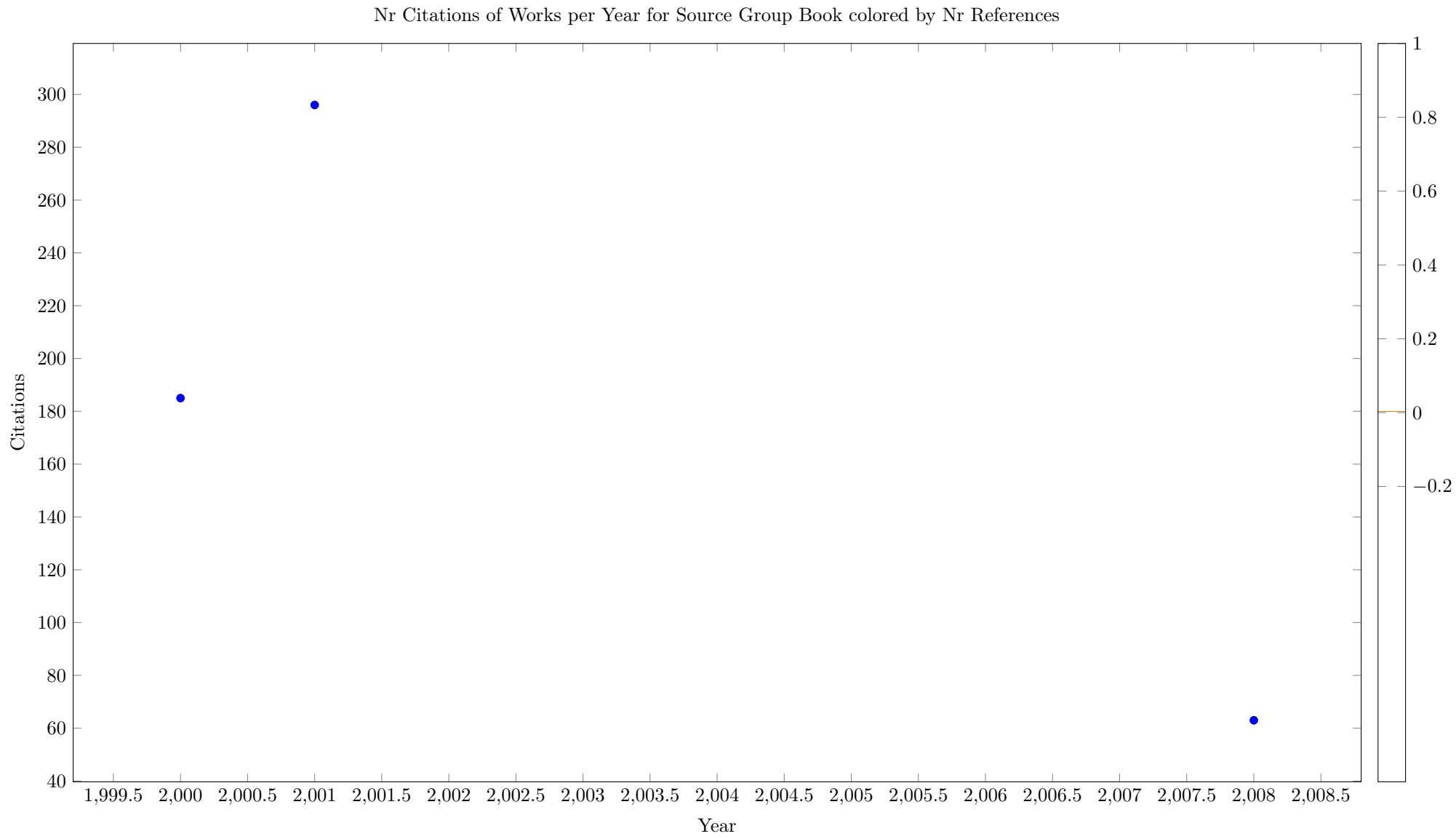
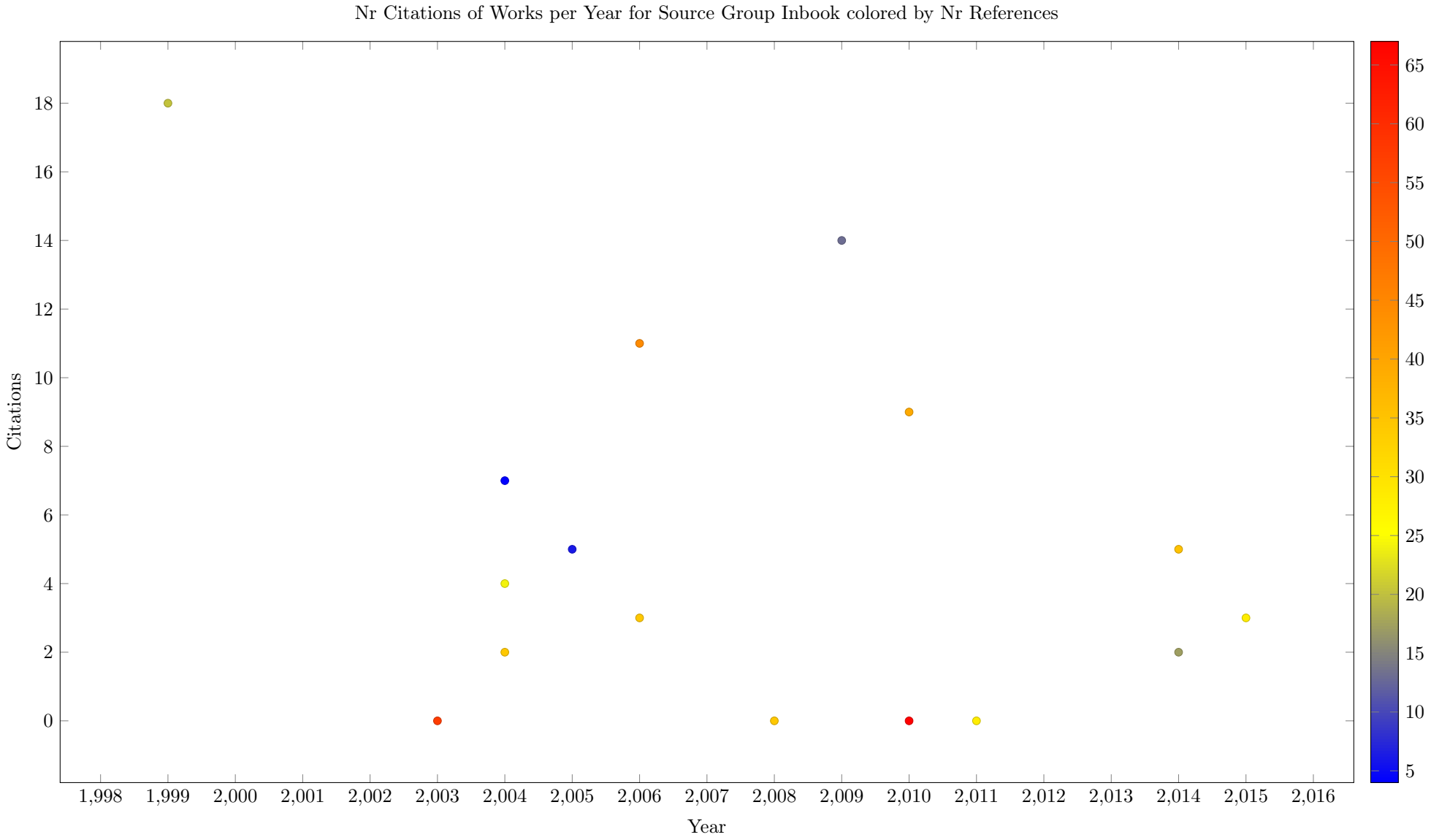
0
−0.2
2,008
2,009
2,010
2,011
2,012
2,013
2,014
2,015
2,016
2,017
2,018
2,019
2,020
2,021
2,022
2,023
2,024
2,025
Year
45
40
35
30
25
20
15
10
5
0


Nr Citations of Works per Year for Source Group OtherJournal colored by Nr References
Citations
400
350
300
250
200
150
100
50
0
1,988
1,990
1,992
1,994
1,996
1,998
2,000
2,002
2,004
2,006
2,008
2,010
2,012
2,014
2,016
2,018
2,020
2,022
2,024
2,026
Year
160
140
120
100
80
60
40
20
0


Nr Citations of Works per Year for Source Group Book colored by Nr References
Citations
300
280
260
240
220
200
180
160
140
120
100
80
60
40
1,999.5
2,000
2,000.5
2,001
2,001.5
2,002
2,002.5
2,003
2,003.5
2,004
2,004.5
2,005
2,005.5
2,006
2,006.5
2,007
2,007.5
2,008
2,008.5
Year
1
0.8
0.6
0.4
0.2
0
−0.2


Nr Citations of Works per Year for Source Group Inbook colored by Nr References
Citations
0
2
4
6
8
10
12
14
16
18
1,998
1,999
2,000
2,001
2,002
2,003
2,004
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2,006
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2,008
2,009
2,010
2,011
2,012
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2,016
Year
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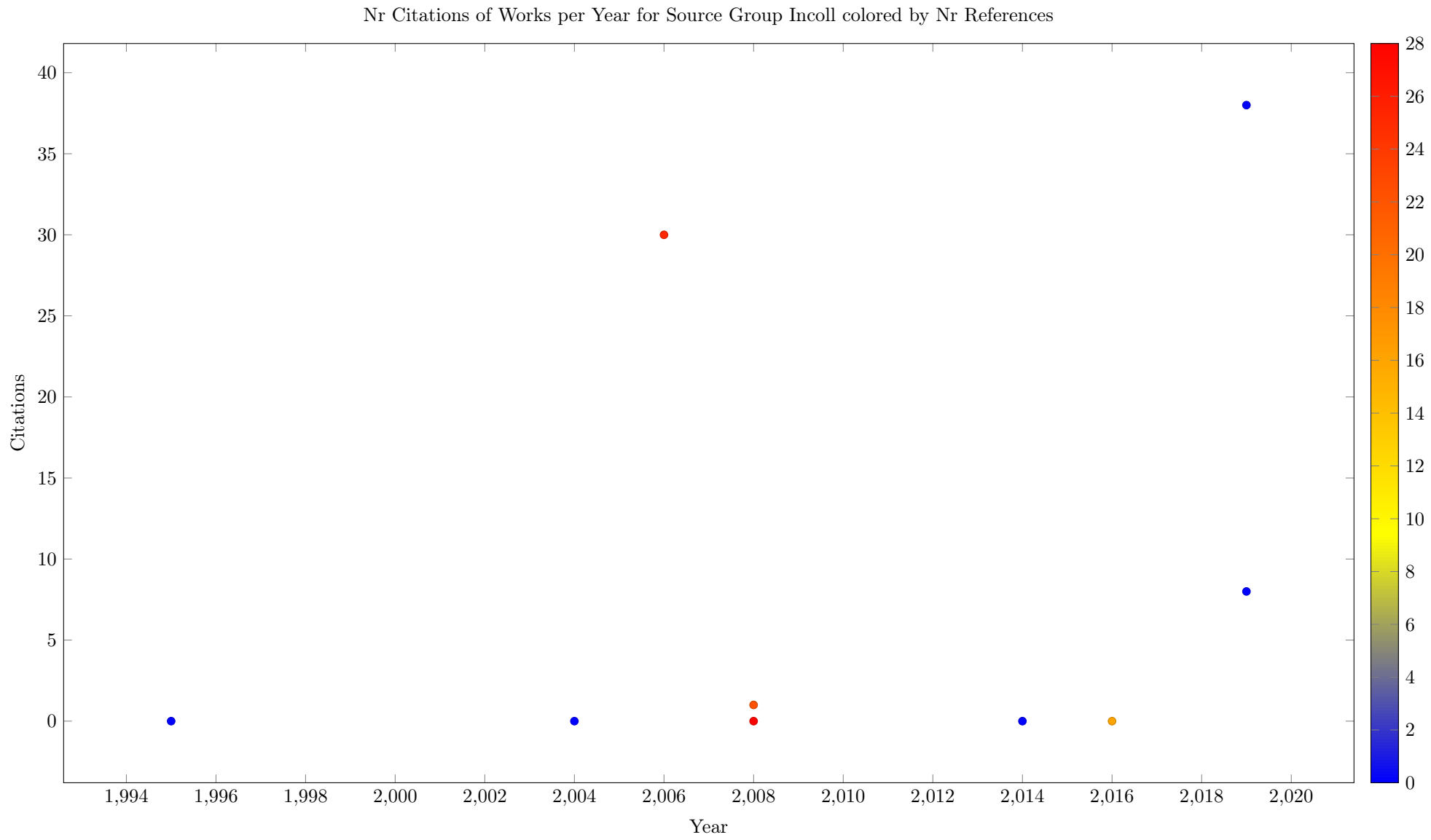
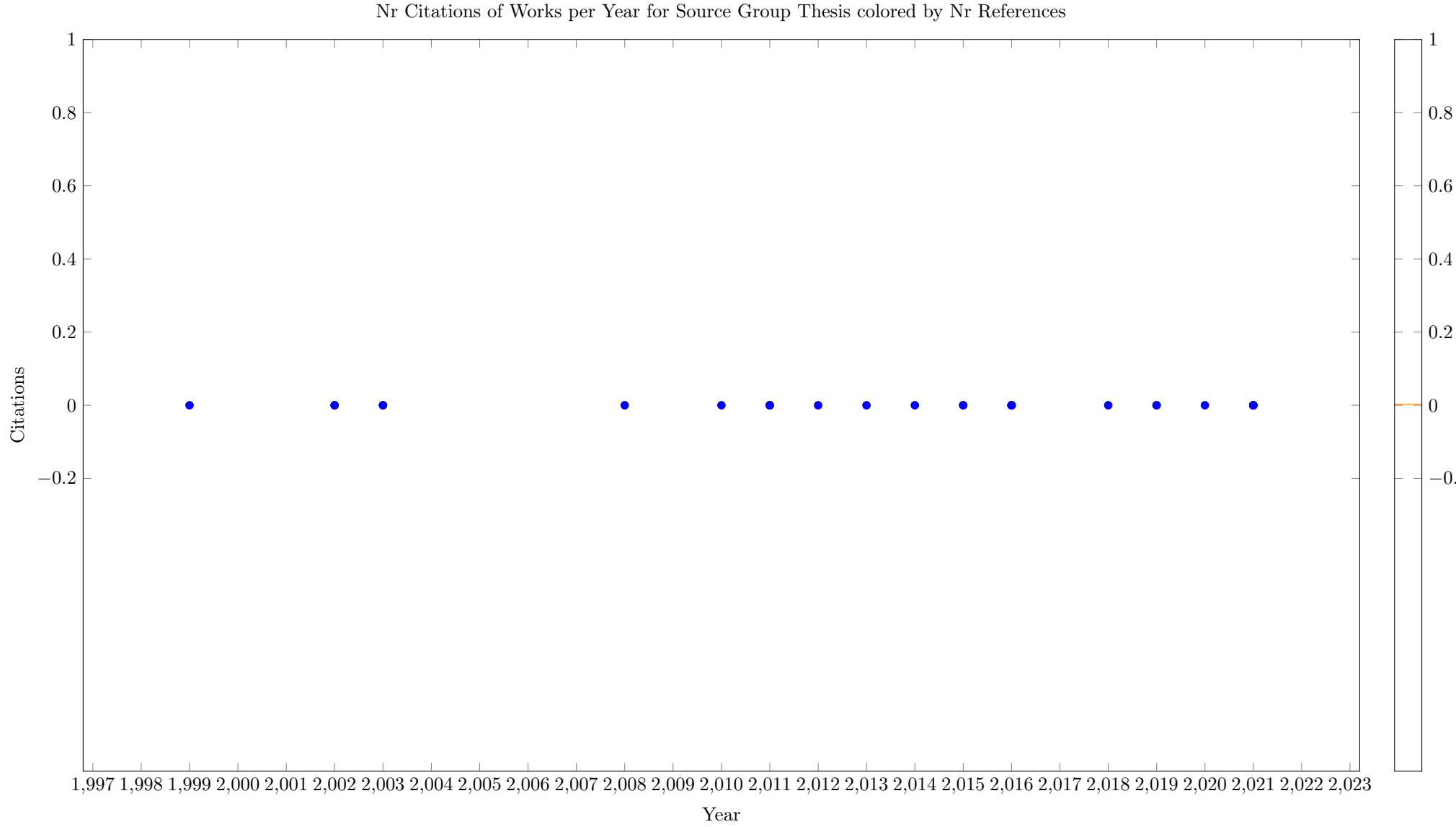
20
25
30
35
40
45
50
55
60
65


Nr Citations of Works per Year for Source Group Incoll colored by Nr References
Citations
Year
0
5
10
15
20
25
30
35
40
1,994
1,996
1,998
2,000
2,002
2,004
2,006
2,008
2,010
2,012
2,014
2,016
2,018
2,020
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28


Nr Citations of Works per Year for Source Group Thesis colored by Nr References
Citations
1
0.8
0.6
0.4
0.2
0
−0.2
1,997 1,998 1,999 2,000 2,001 2,002 2,003 2,004 2,005 2,006 2,007 2,008 2,009 2,010 2,011 2,012 2,013 2,014 2,015 2,016 2,017 2,018 2,019 2,020 2,021 2,022 2,023
Year

14.2 Reference Flows

The following table looks at references between source groups that are contained in the survey, i.e. where bot the citing and the cited work is included in the survey. We show how many papers referred to in the group on the left belong to the group in the column.

Table 11: Reference Flows

	Background	CP	CPAIOR	ICAPS	AAAI	OtherConf	Constraints	EJOR	InformsJC	AIJournal	ORJournal	OtherJournal	Book	Inbook	Incoll
Background	68	15	3				12	7	20	2	10	22	6	3	
CP	127	125	70	2	1	9	41	6	26	22	13	72	27	1	4
CPAIOR	96	110	65	1	1	14	47	12	25	10	20	65	27	2	2
ICAPS	4	3													
OtherConf	41	36	18			3	18	6	11	8	7	46	10	3	
Constraints	61	58	42	1		5	23	4	14	10	13	54	18	2	1
EJOR	55	3	1				10	17	18	4	14	34			1
InformsJC	63	21	11				19	17	26	7	15	34	15		1
AIJournal	32	9	4	1		7	3	8	5	16	3	32	1	1	
ORJournal	73	36	17				29	17	32	15	15	72	8	1	1
Preprint	4						3	11	4		4	8	1		
OtherJournal	177	67	43			8	86	63	73	46	78	303	25	2	4
Inbook	68	16	10			1	14	7	20	3	16	38	9	4	
Incoll	12	2					2	3	1	5	1	2	2		

The entries in the previous table are not directly comparable, without knowing how many works are in group. The next table presents a normalized view, where we divide the flow count by the product of the group sizes. This produces a likelihood of a paper in the source group citing a paper in the target group, given as a percentage from 0 to 100. We can see that the likelihood does not depend on the prestige of the target, e.g. papers at AAAI are cited much less than papers in CP.

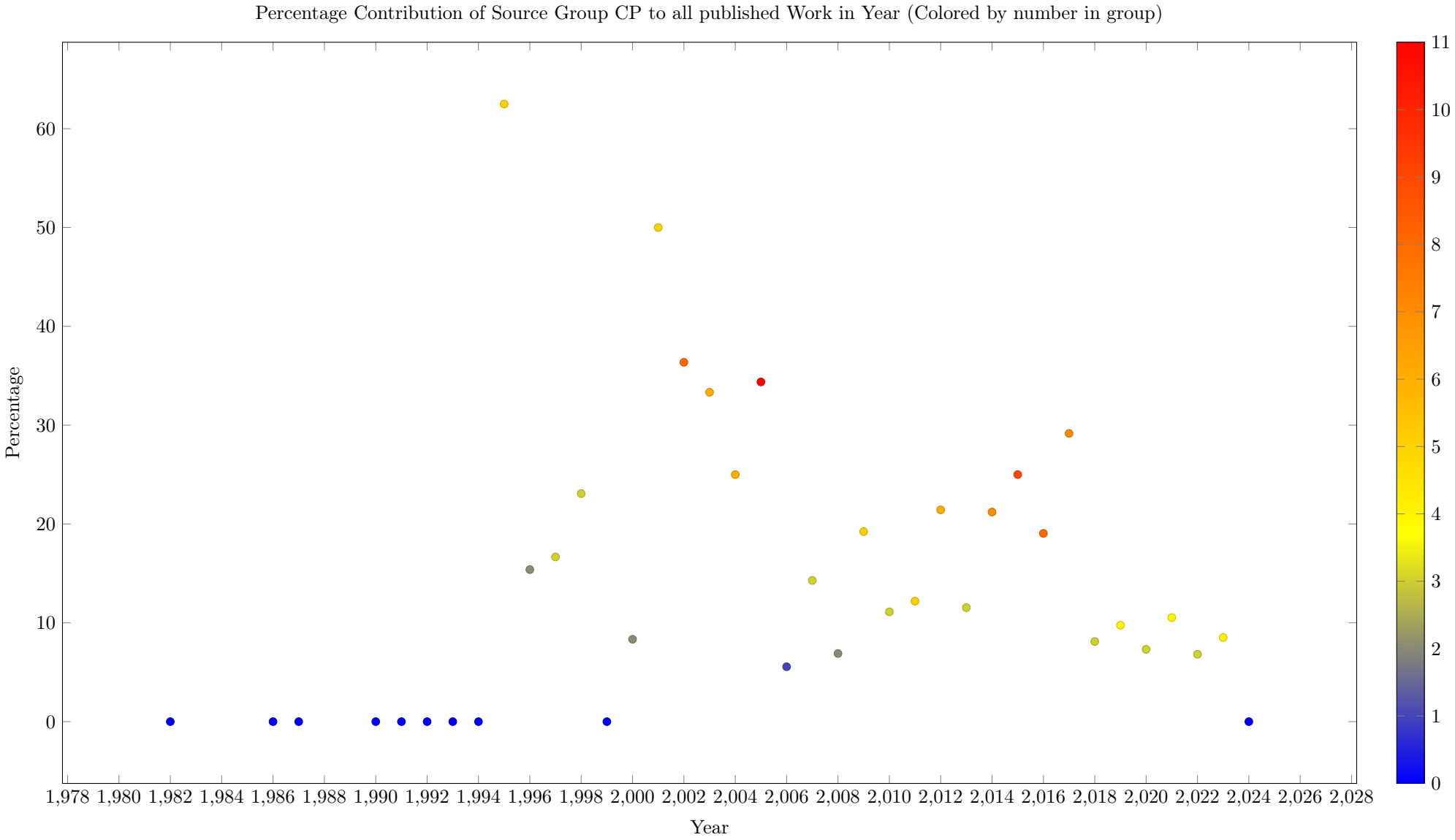
Note that the numbers are derived from the flows contained in the survey, which are based on the OpenCitation reference links. If such links are missing, or we are missing works in some group, then the results will be affected.

Table 12: Reference Flows Normalized

	Background	CP	CPAIOR	ICAPS	AAAI	OtherConf	Constraints	EJOR	InformsJC	AIJournal	ORJournal	OtherJournal	Book	Inbook	Incoll
Background	3.85	0.27	0.07				0.62	0.64	1.90	0.17	0.51	0.30	4.76	0.45	
CP	2.31	0.73	0.55	0.08	0.01	0.08	0.68	0.18	0.79	0.60	0.21	0.31	6.87	0.05	0.34
CPAIOR	2.36	0.87	0.69	0.06	0.02	0.16	1.05	0.48	1.03	0.37	0.44	0.38	9.28	0.13	0.23
ICAPS	0.53	0.13													
OtherConf	1.08	0.31	0.21			0.04	0.43	0.26	0.49	0.32	0.17	0.29	3.70	0.21	
Constraints	3.16	0.96	0.94	0.12		0.12	1.09	0.33	1.22	0.78	0.60	0.67	13.04	0.27	0.24
EJOR	5.04	0.09	0.04				0.84	2.51	2.77	0.55	1.15	0.74			0.43
InformsJC	6.00	0.64	0.45				1.65	2.62	4.16	1.00	1.28	0.77	20.00		0.44
AIJournal	2.72	0.25	0.15	0.20		0.28	0.23	1.10	0.71	2.04	0.23	0.65	1.19	0.22	
ORJournal	3.70	0.58	0.37				1.34	1.39	2.72	1.14	0.68	0.87	5.67	0.13	0.24
Preprint	0.60						0.41	2.64	1.00		0.53	0.28	2.08		
OtherJournal	2.39	0.29	0.25			0.05	1.06	1.38	1.66	0.93	0.94	0.98	4.73	0.07	0.25
Inbook	10.12	0.76	0.64			0.07	1.90	1.68	5.00	0.67	2.13	1.35	18.75	1.56	
Incoll	3.17	0.17					0.48	1.28	0.44	1.98	0.24	0.13	7.41		

15 Contribution of Source Group to Total Works per Year

The following plots show the percentage of works published in a year belonging to a specific source group. This plot helps to understand how important that group is to the field over time


Percentage Contribution of Source Group CP to all published Work in Year (Colored by number in group)
Percentage
0
10
20
30
40
50
60
Year
1,978 1,980 1,982 1,984 1,986 1,988 1,990 1,992 1,994 1,996 1,998 2,000 2,002 2,004 2,006 2,008 2,010 2,012 2,014 2,016 2,018 2,020 2,022 2,024 2,026 2,028
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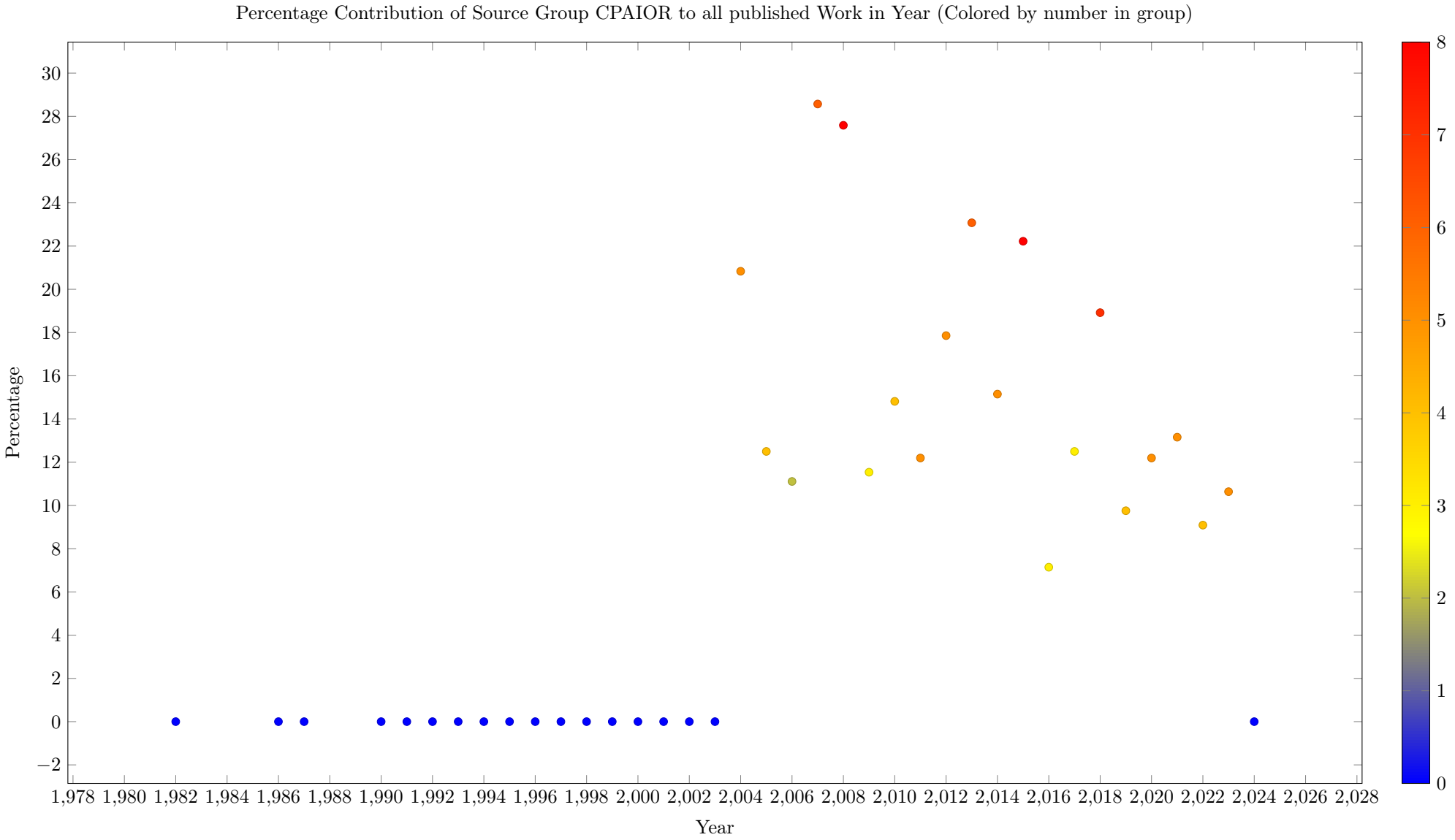
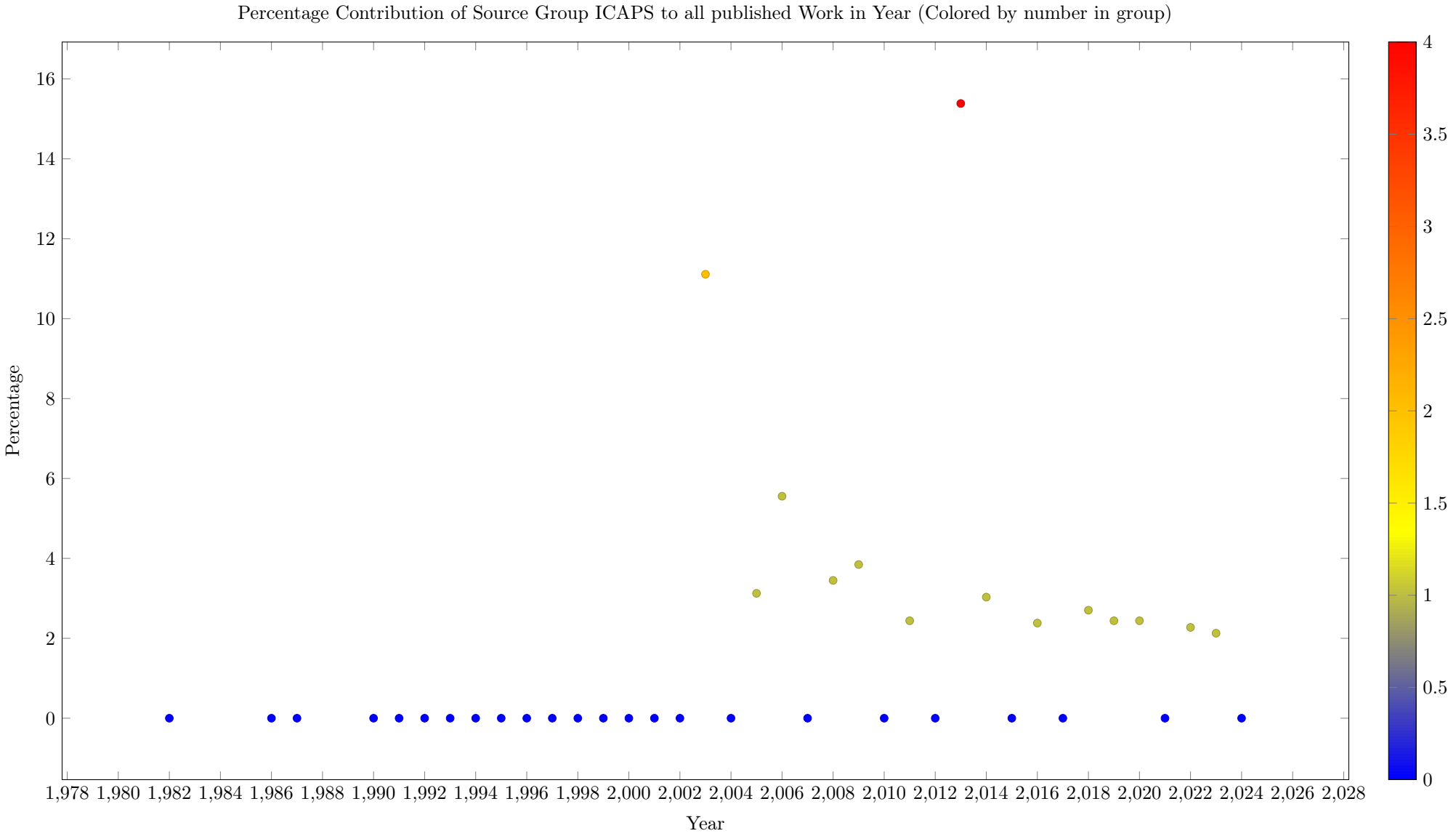
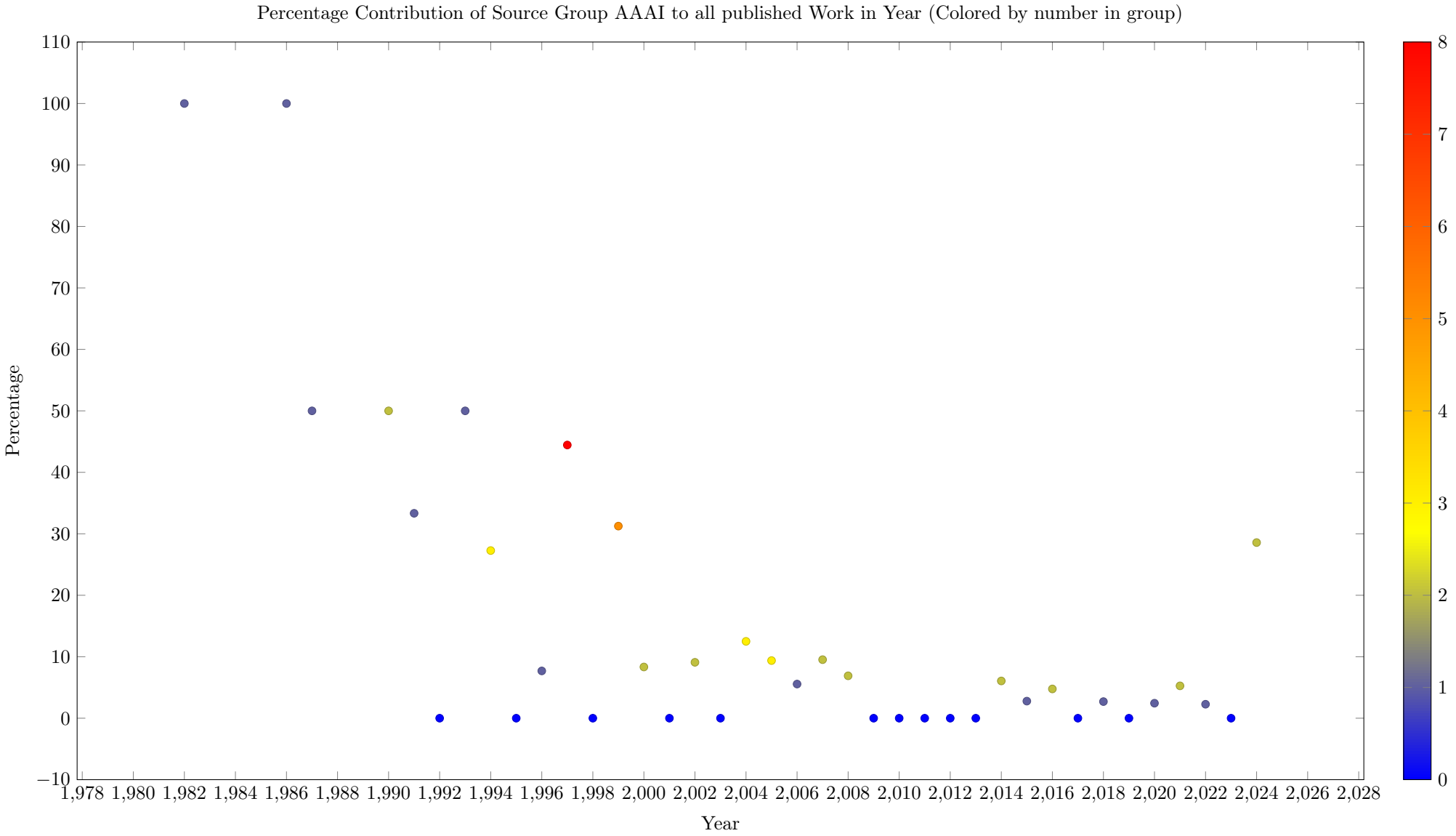
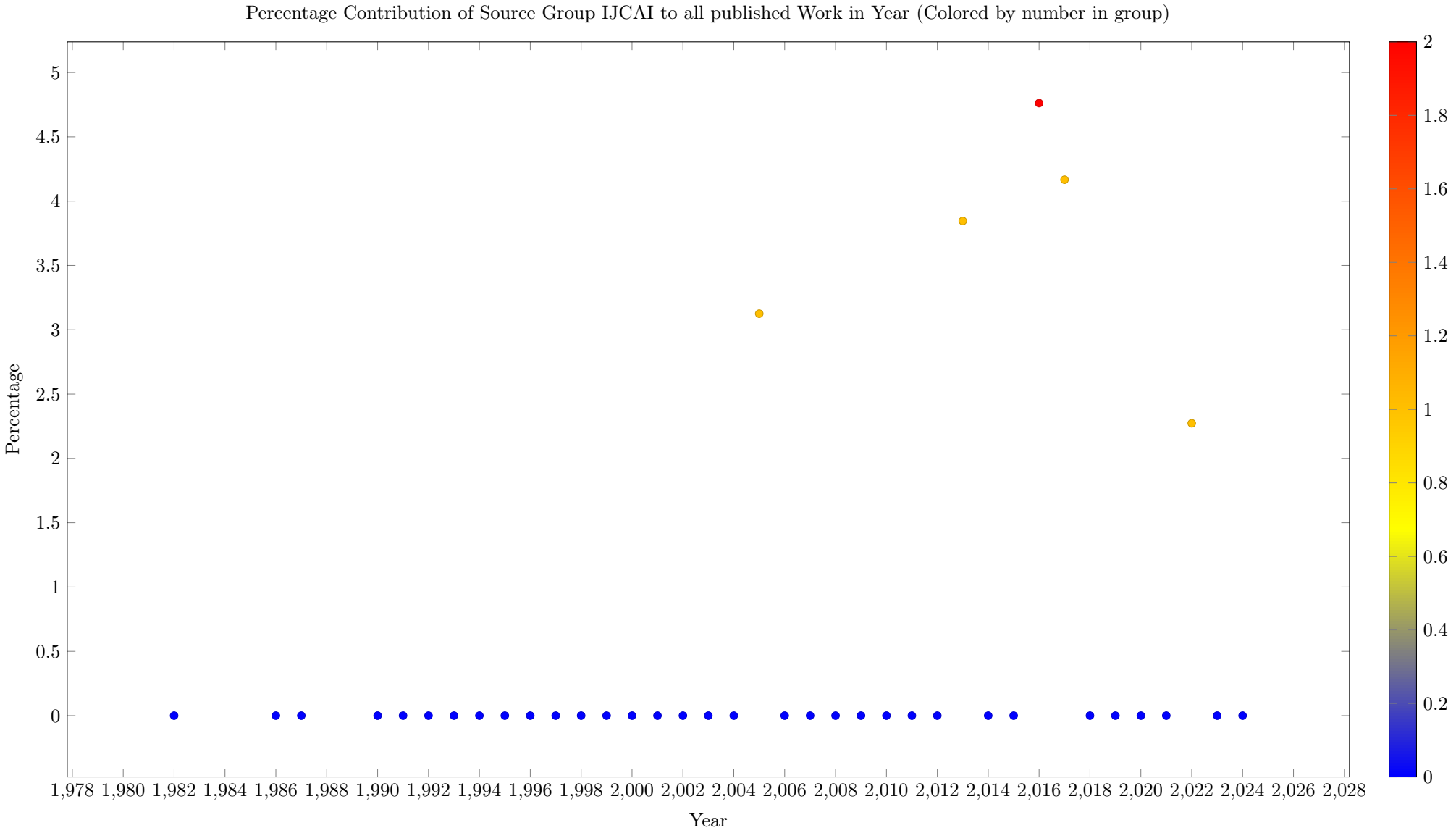
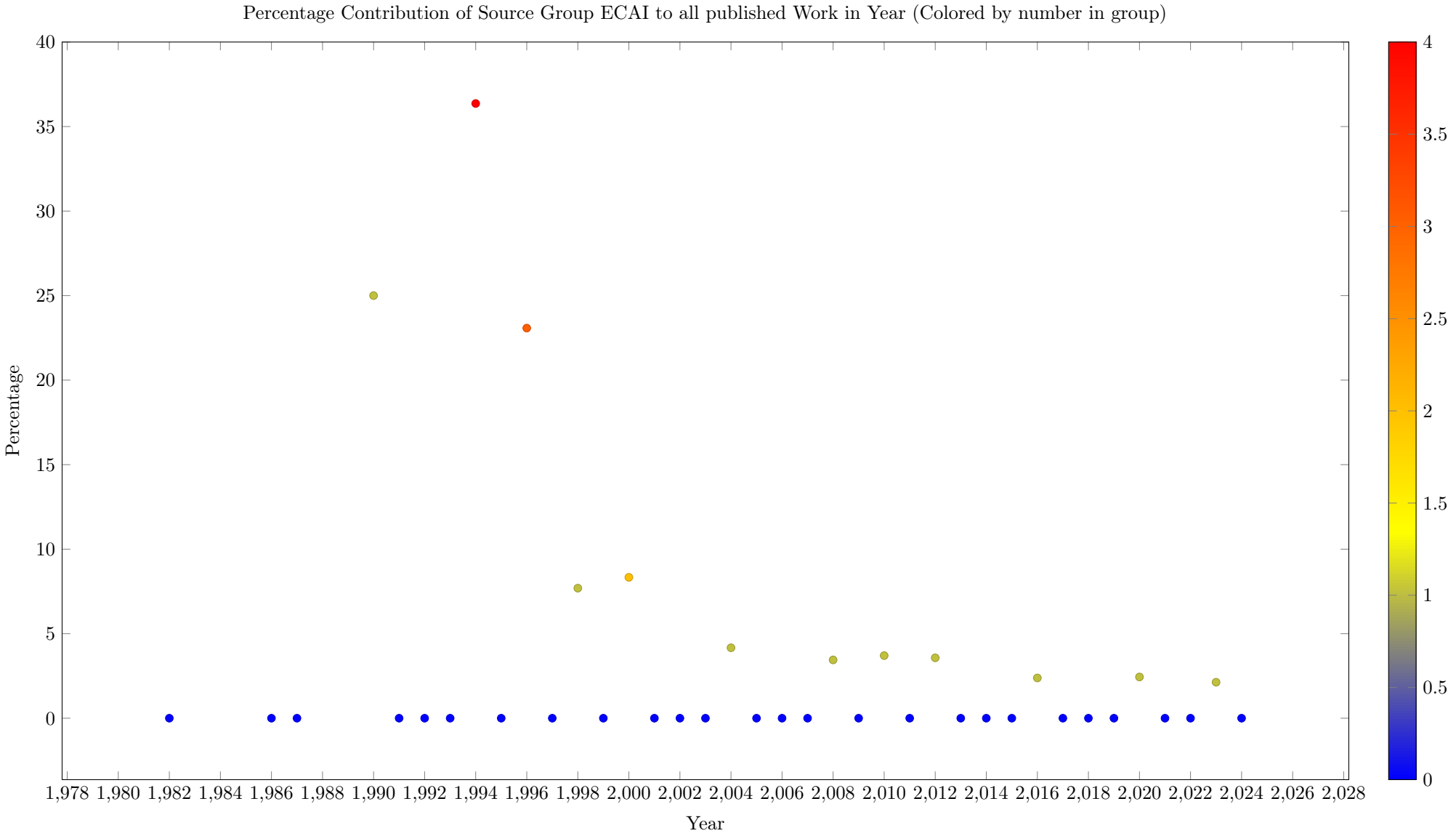
2
3
4
5
6
7
8
9
10
11


Percentage Contribution of Source Group CPAIOR to all published Work in Year (Colored by number in group)
Percentage
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
−2
1,978 1,980 1,982 1,984 1,986 1,988 1,990 1,992 1,994 1,996 1,998 2,000 2,002 2,004 2,006 2,008 2,010 2,012 2,014 2,016 2,018 2,020 2,022 2,024 2,026 2,028
Year
8
7
6
5
4
3
2
1
0


Percentage Contribution of Source Group ICAPS to all published Work in Year (Colored by number in group)
Percentage
0
2
4
6
8
10
12
14
16
Year
1,978 1,980 1,982 1,984 1,986 1,988 1,990 1,992 1,994 1,996 1,998 2,000 2,002 2,004 2,006 2,008 2,010 2,012 2,014 2,016 2,018 2,020 2,022 2,024 2,026 2,028
0
0.5
1
1.5
2
2.5
3
3.5
4


Percentage Contribution of Source Group AAAI to all published Work in Year (Colored by number in group)
Percentage
Year
110
100
90
80
70
60
50
40
30
20
10
0
−10
1,978 1,980 1,982 1,984 1,986 1,988 1,990 1,992 1,994 1,996 1,998 2,000 2,002 2,004 2,006 2,008 2,010 2,012 2,014 2,016 2,018 2,020 2,022 2,024 2,026 2,028
8
7
6
5
4
3
2
1
0


Percentage Contribution of Source Group IJCAI to all published Work in Year (Colored by number in group)
Percentage
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
1,978 1,980 1,982 1,984 1,986 1,988 1,990 1,992 1,994 1,996 1,998 2,000 2,002 2,004 2,006 2,008 2,010 2,012 2,014 2,016 2,018 2,020 2,022 2,024 2,026 2,028
Year
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2


Percentage Contribution of Source Group ECAI to all published Work in Year (Colored by number in group)
Percentage
Year
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1,978 1,980 1,982 1,984 1,986 1,988 1,990 1,992 1,994 1,996 1,998 2,000 2,002 2,004 2,006 2,008 2,010 2,012 2,014 2,016 2,018 2,020 2,022 2,024 2,026 2,028
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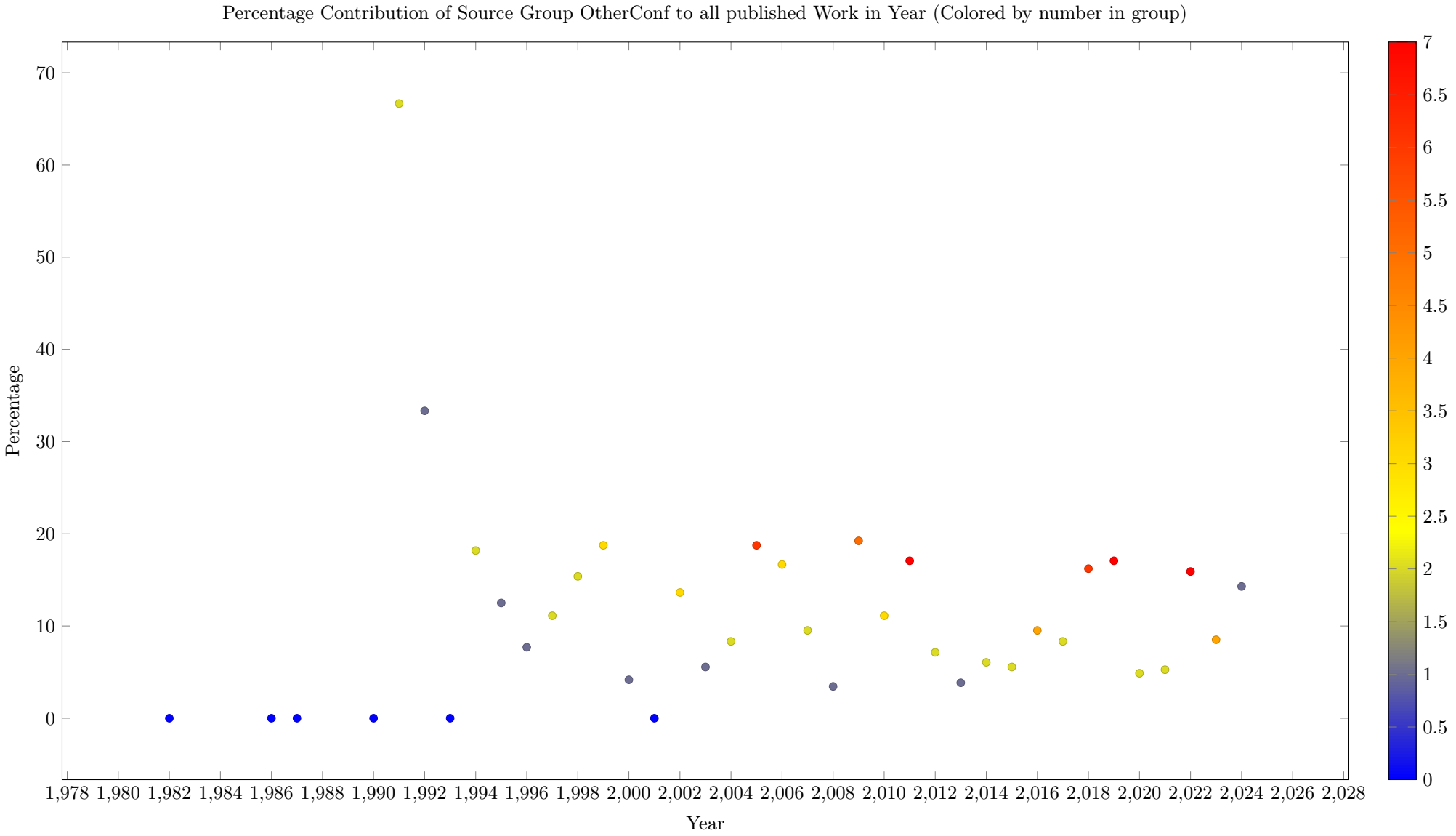
Percentage Contribution of Source Group OtherConf to all published Work in Year (Colored by number in group)
Percentage
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Year
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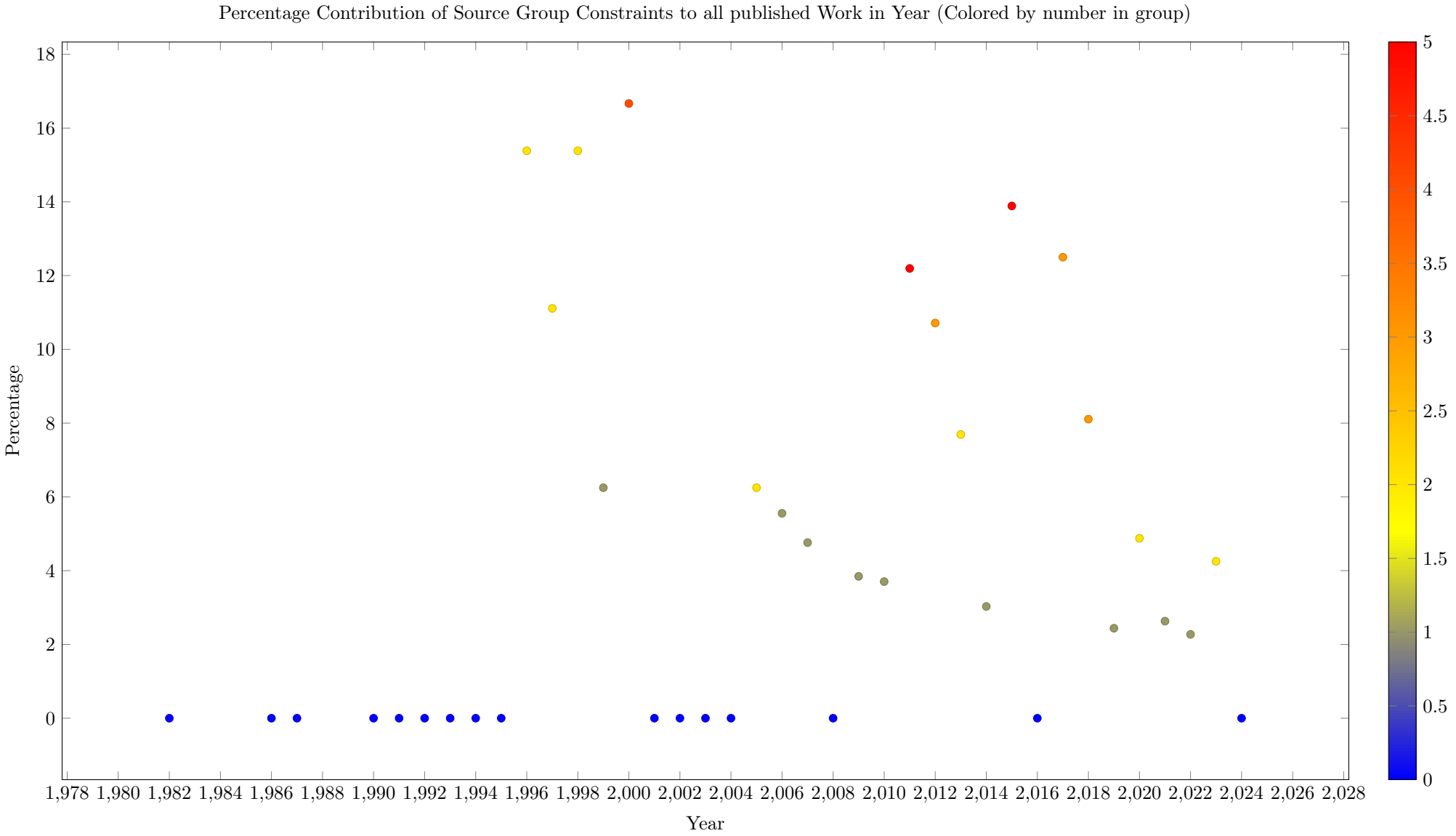
Percentage Contribution of Source Group Constraints to all published Work in Year (Colored by number in group)
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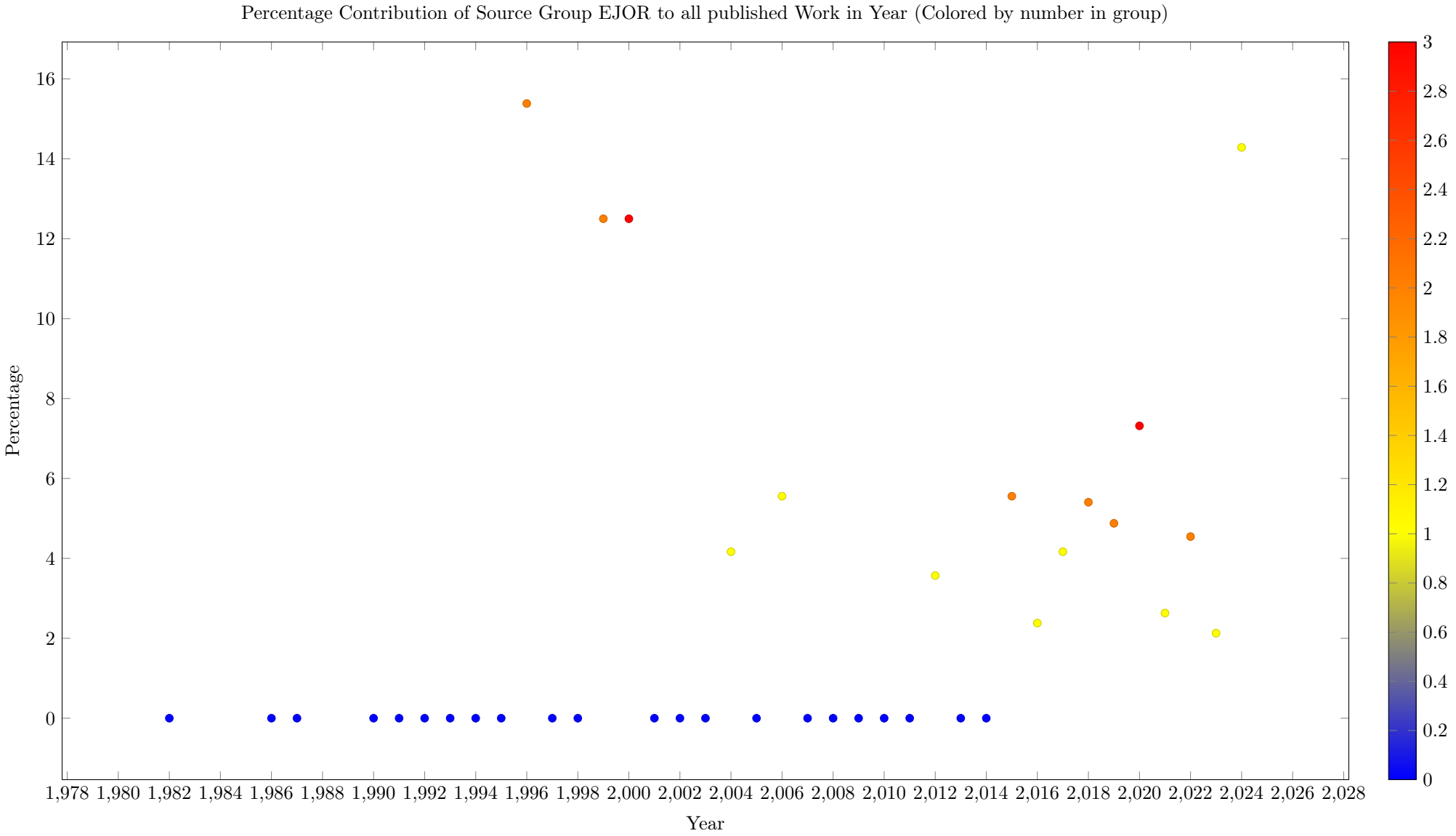
Percentage Contribution of Source Group EJOR to all published Work in Year (Colored by number in group)
Percentage
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Year
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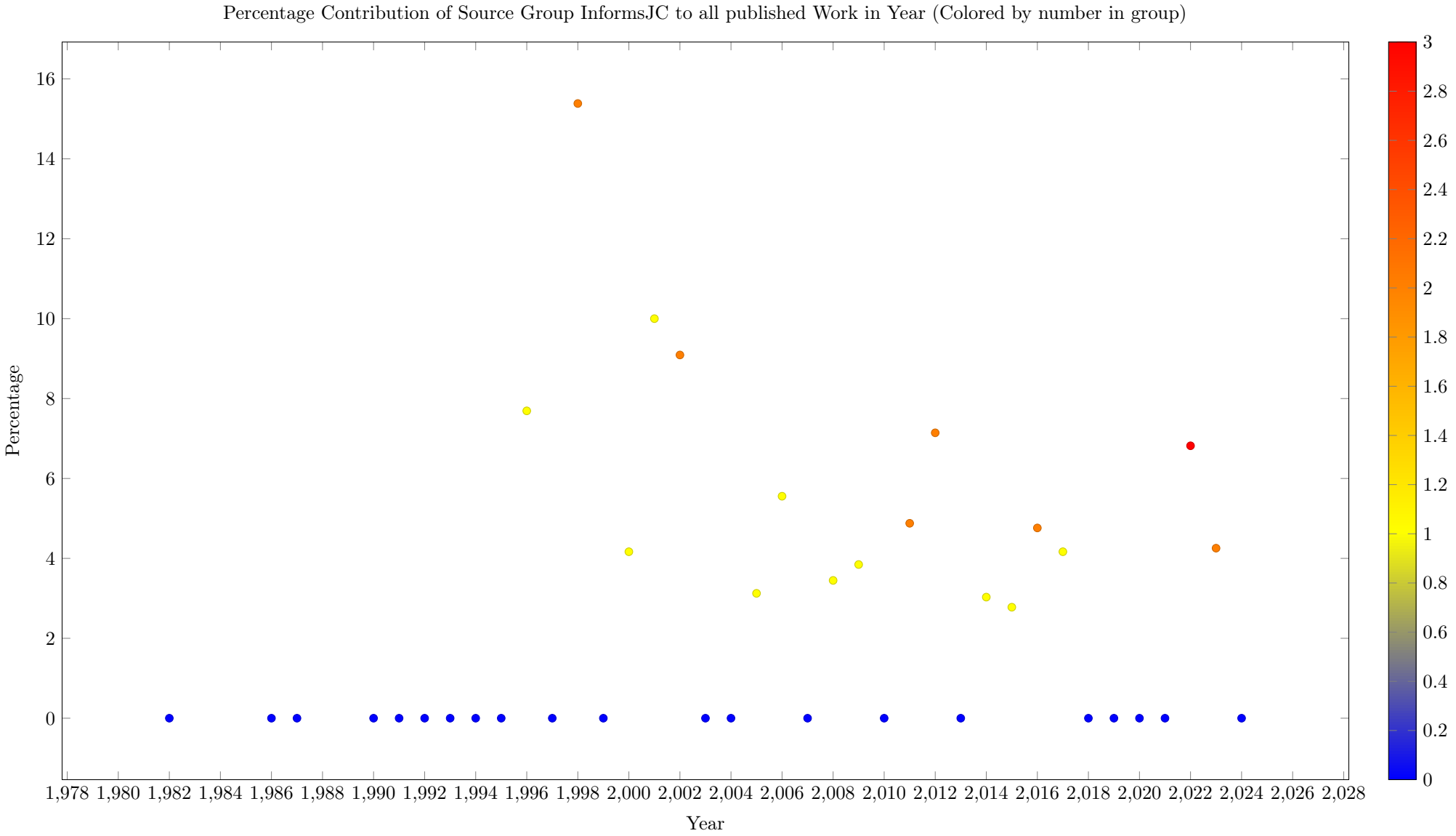
Percentage Contribution of Source Group InformsJC to all published Work in Year (Colored by number in group)
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Year
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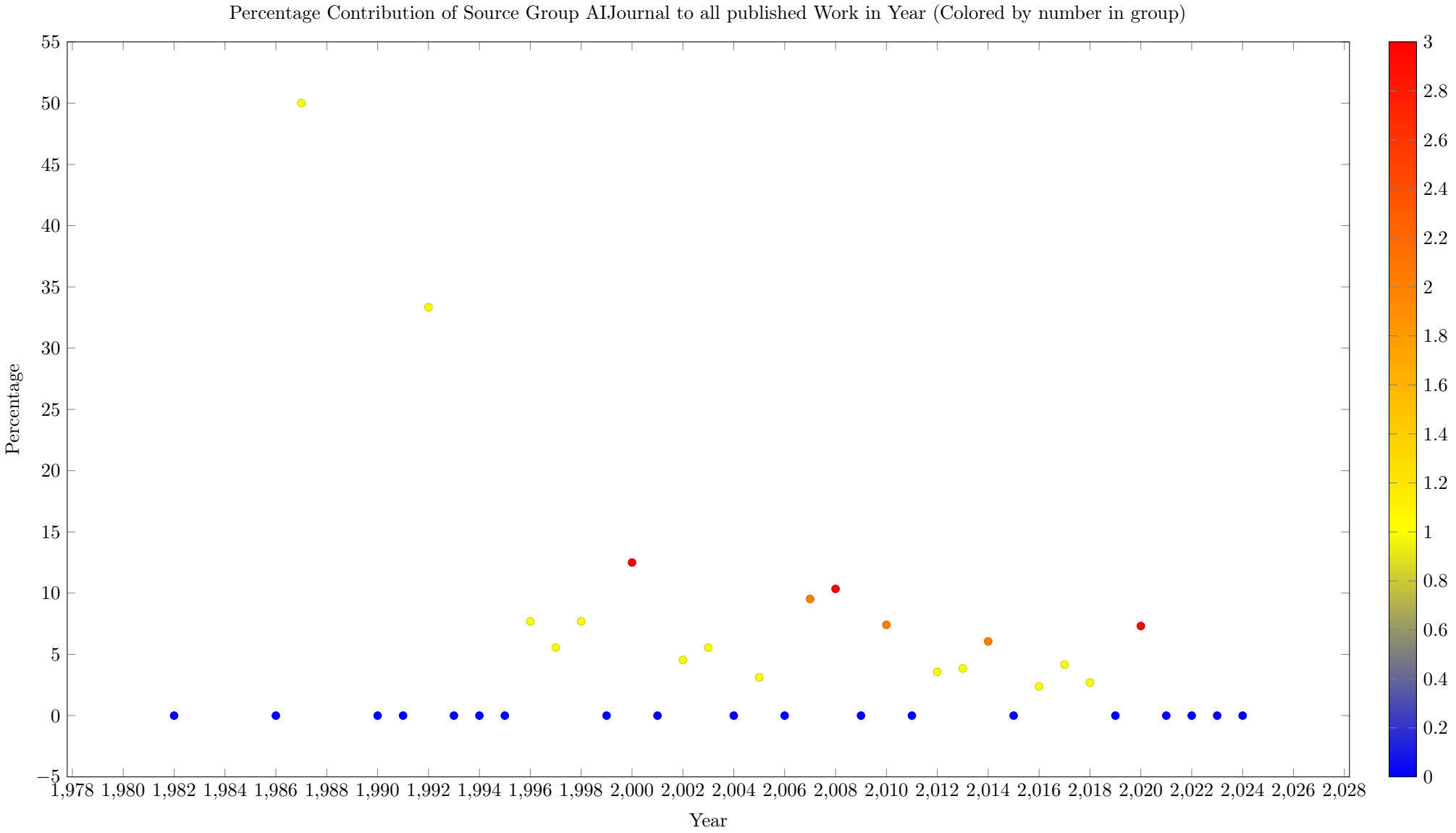
Percentage Contribution of Source Group AIJournal to all published Work in Year (Colored by number in group)
Percentage
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Year
3
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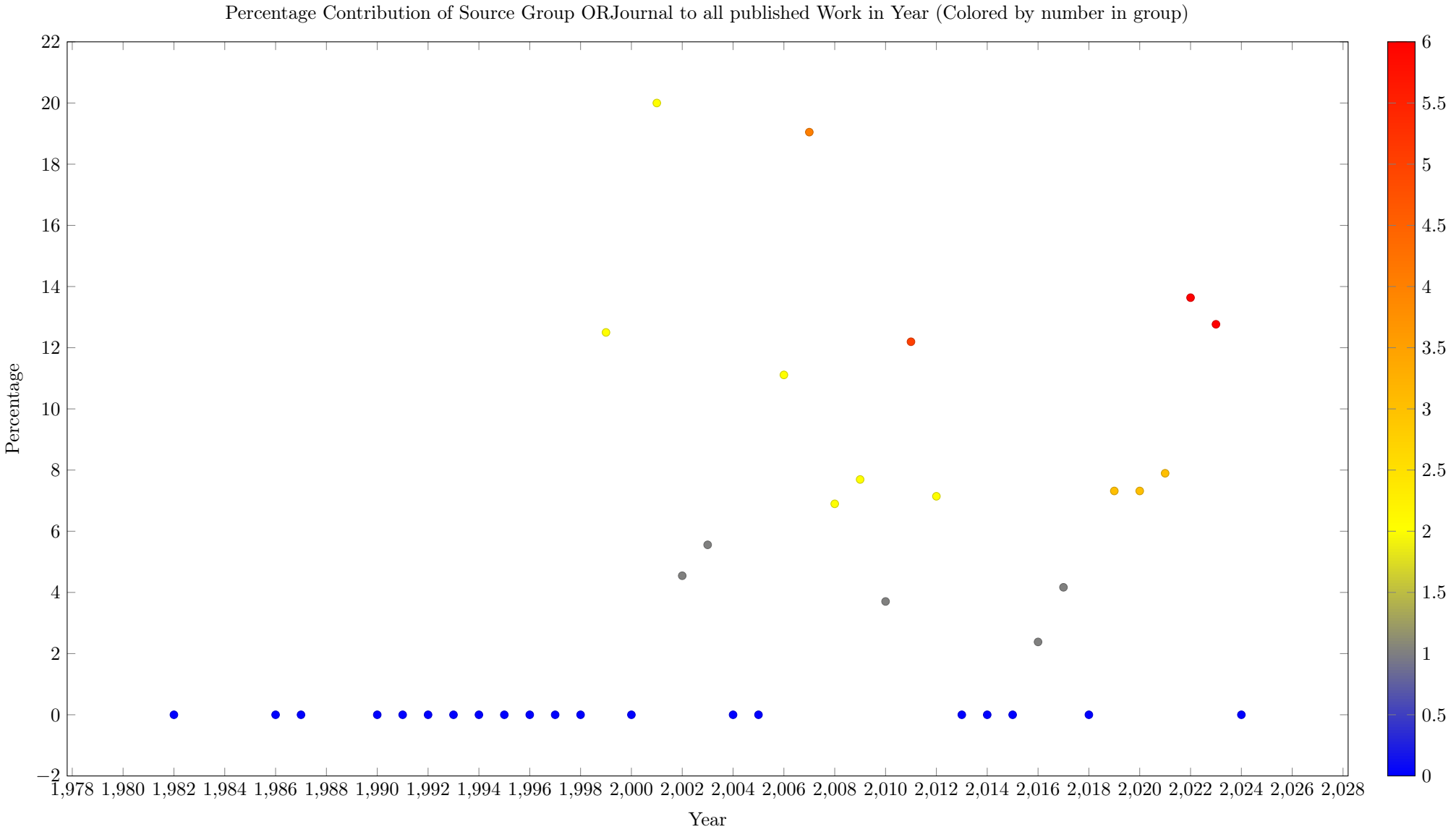
Percentage Contribution of Source Group ORJournal to all published Work in Year (Colored by number in group)
Percentage
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18
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1,978 1,980 1,982 1,984 1,986 1,988 1,990 1,992 1,994 1,996 1,998 2,000 2,002 2,004 2,006 2,008 2,010 2,012 2,014 2,016 2,018 2,020 2,022 2,024 2,026 2,028
Year
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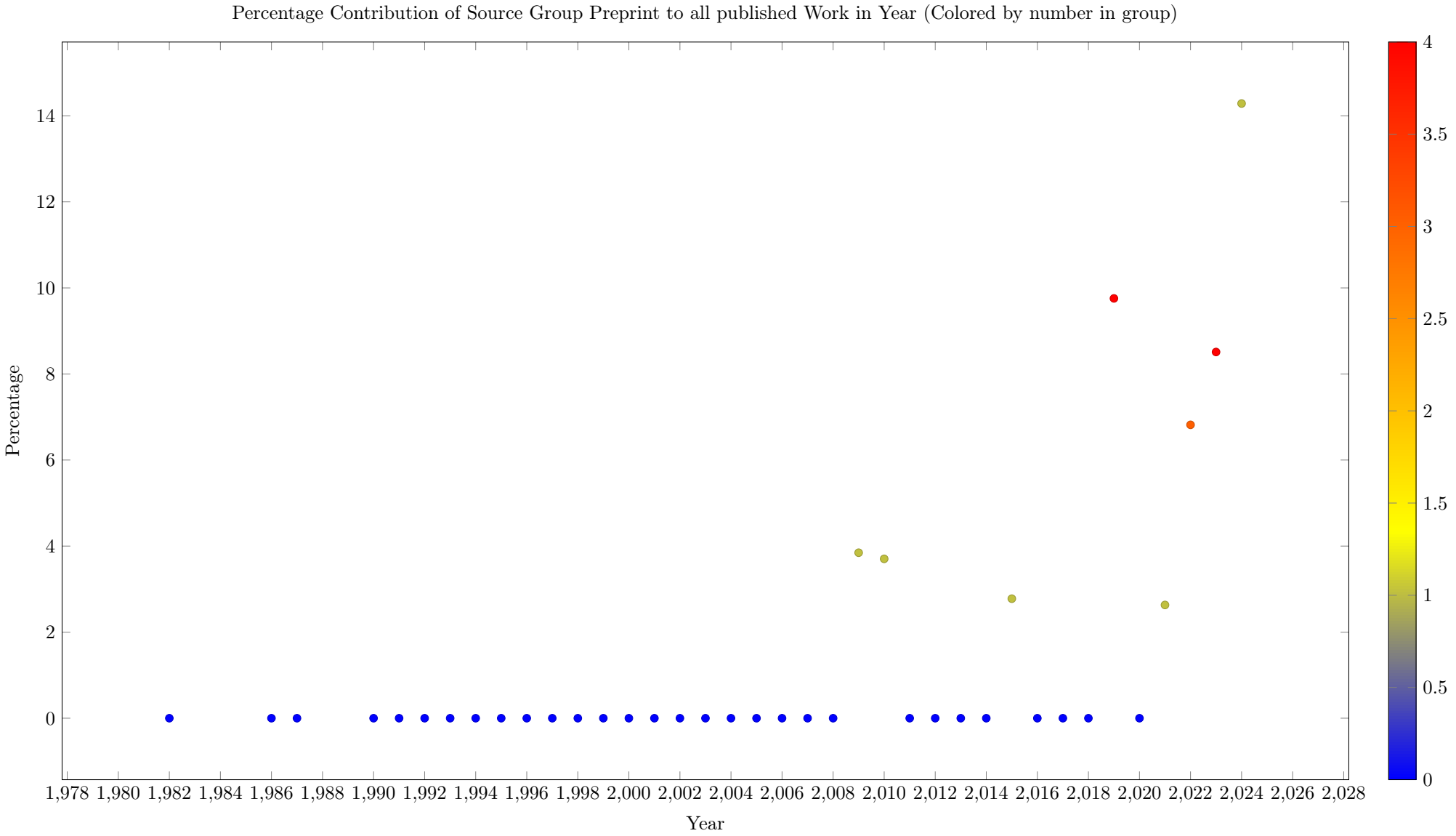
Percentage Contribution of Source Group Preprint to all published Work in Year (Colored by number in group)
Percentage
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Year
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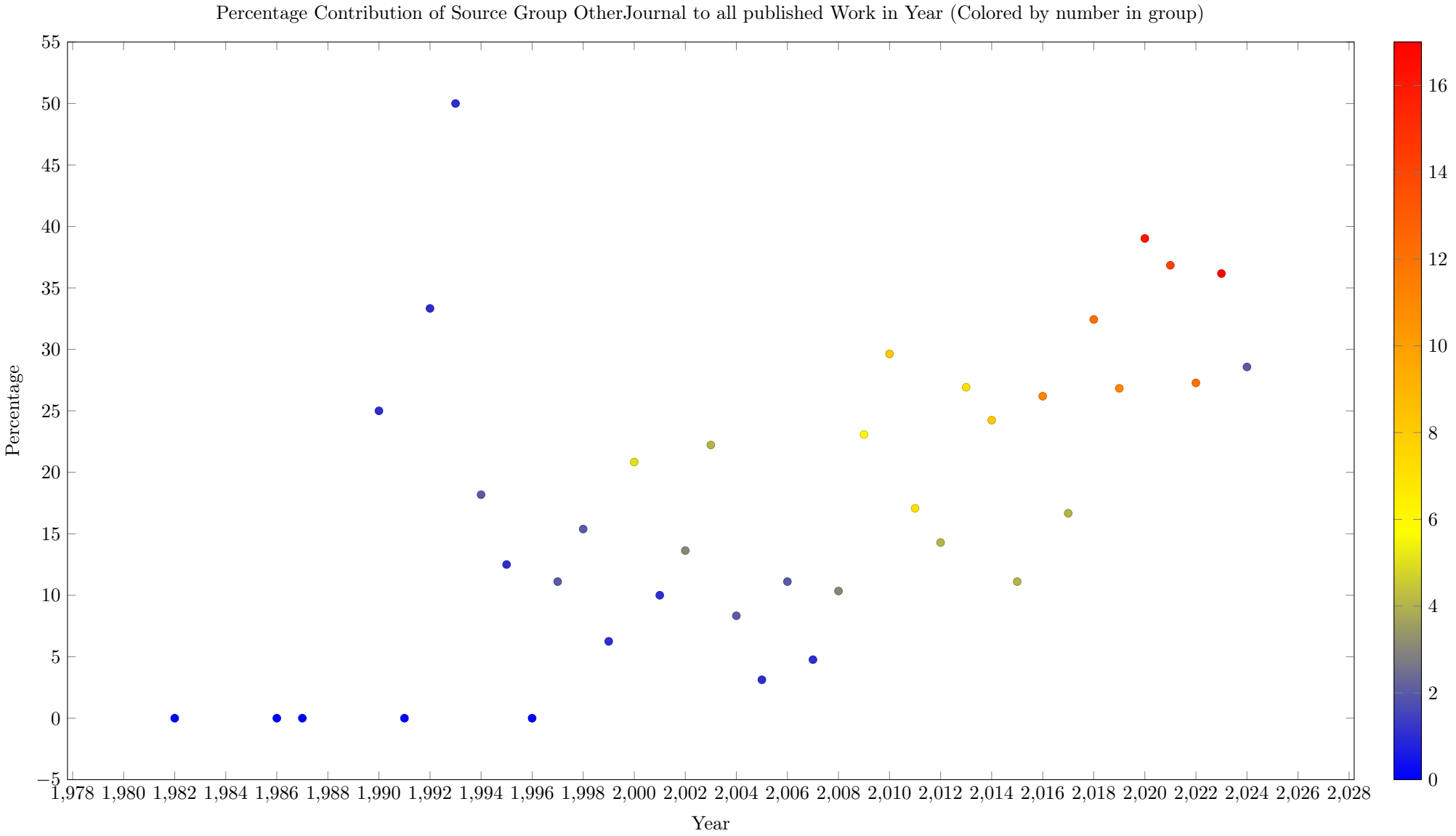
Percentage Contribution of Source Group OtherJournal to all published Work in Year (Colored by number in group)
Percentage
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1,978 1,980 1,982 1,984 1,986 1,988 1,990 1,992 1,994 1,996 1,998 2,000 2,002 2,004 2,006 2,008 2,010 2,012 2,014 2,016 2,018 2,020 2,022 2,024 2,026 2,028
Year
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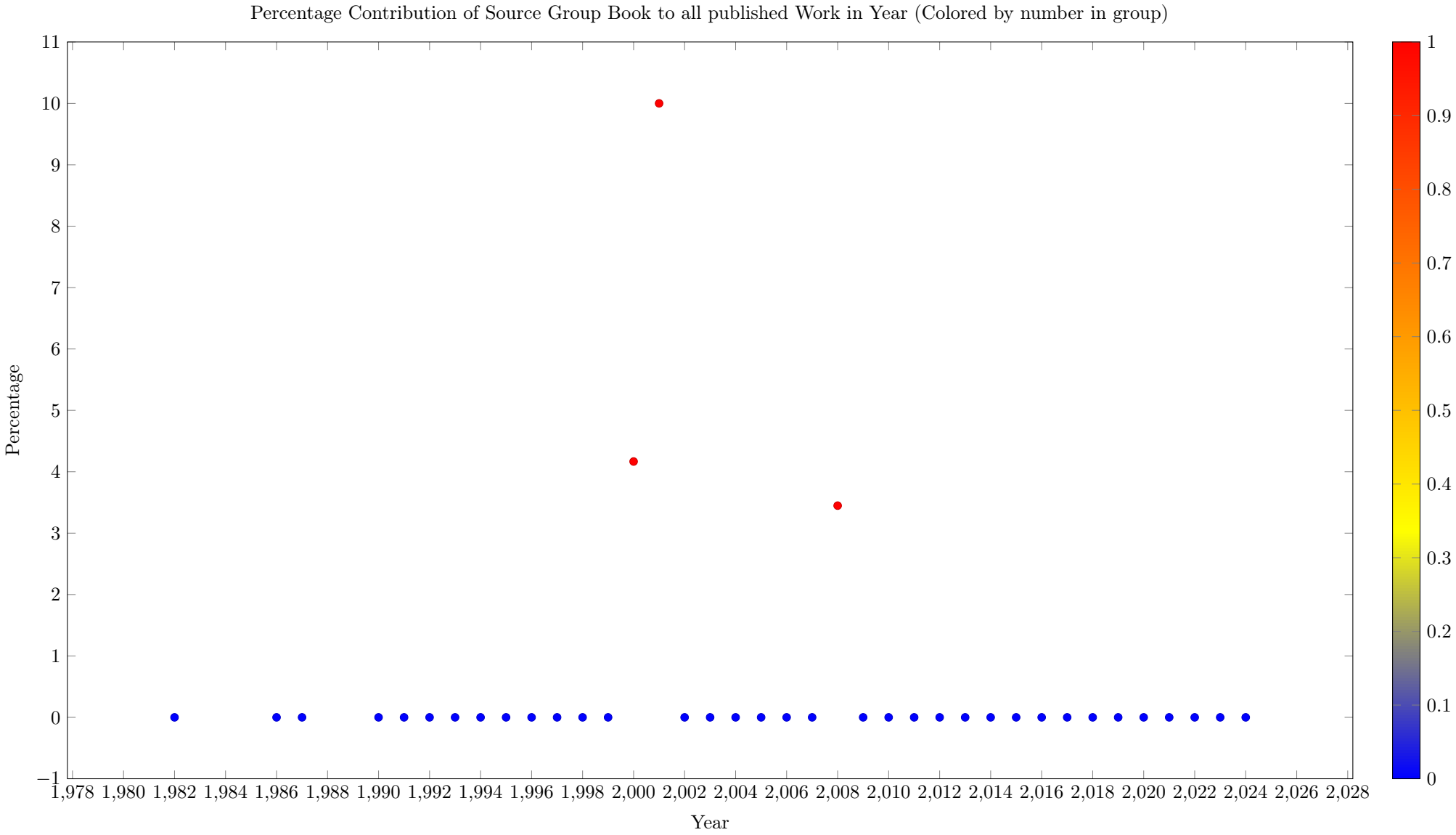
Percentage Contribution of Source Group Book to all published Work in Year (Colored by number in group)
Percentage
Year
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1,978 1,980 1,982 1,984 1,986 1,988 1,990 1,992 1,994 1,996 1,998 2,000 2,002 2,004 2,006 2,008 2,010 2,012 2,014 2,016 2,018 2,020 2,022 2,024 2,026 2,028
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Percentage Contribution of Source Group Inbook to all published Work in Year (Colored by number in group)
Percentage
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Year
1,978 1,980 1,982 1,984 1,986 1,988 1,990 1,992 1,994 1,996 1,998 2,000 2,002 2,004 2,006 2,008 2,010 2,012 2,014 2,016 2,018 2,020 2,022 2,024 2,026 2,028
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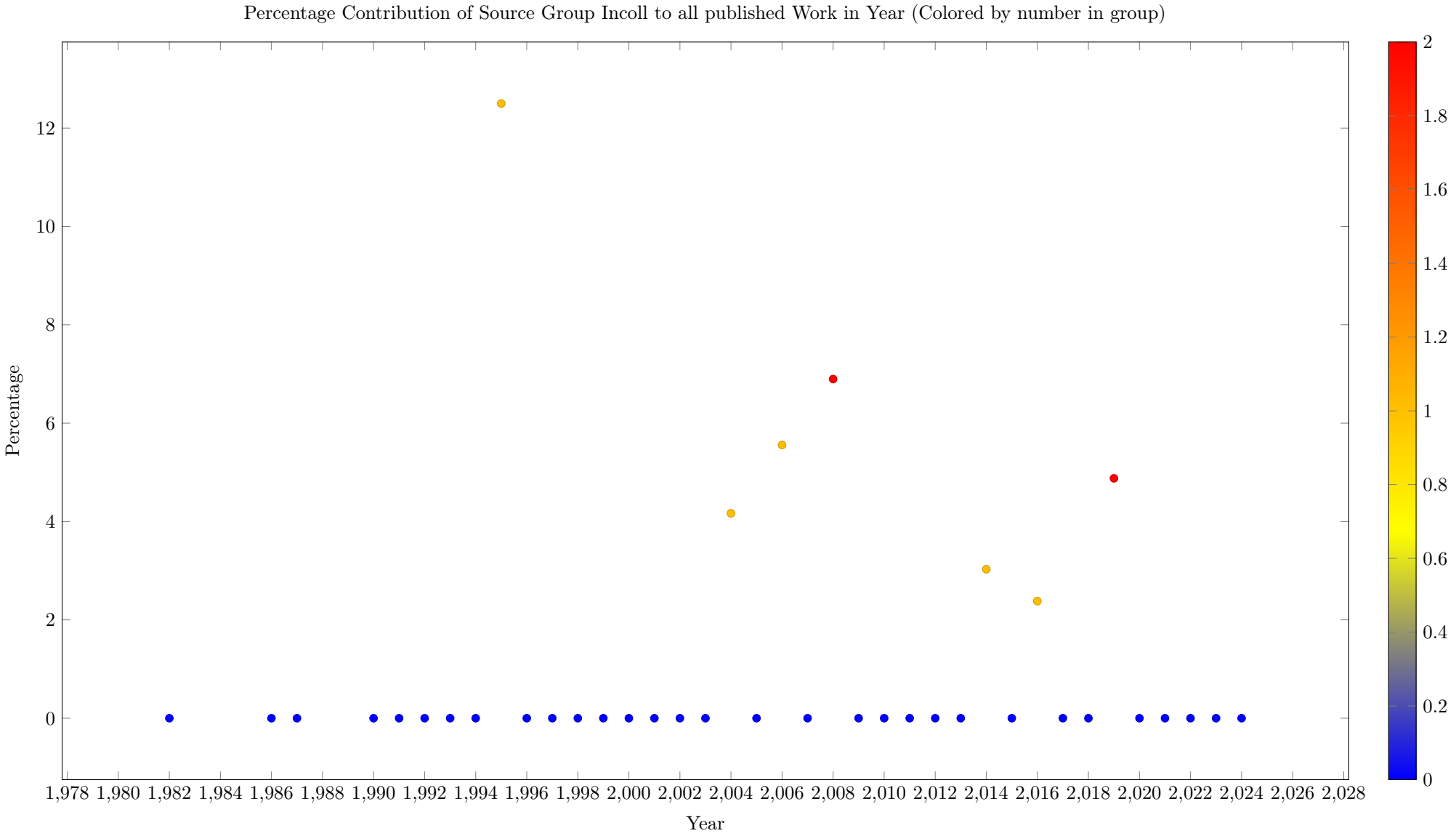
Percentage Contribution of Source Group Incoll to all published Work in Year (Colored by number in group)
Percentage
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Year
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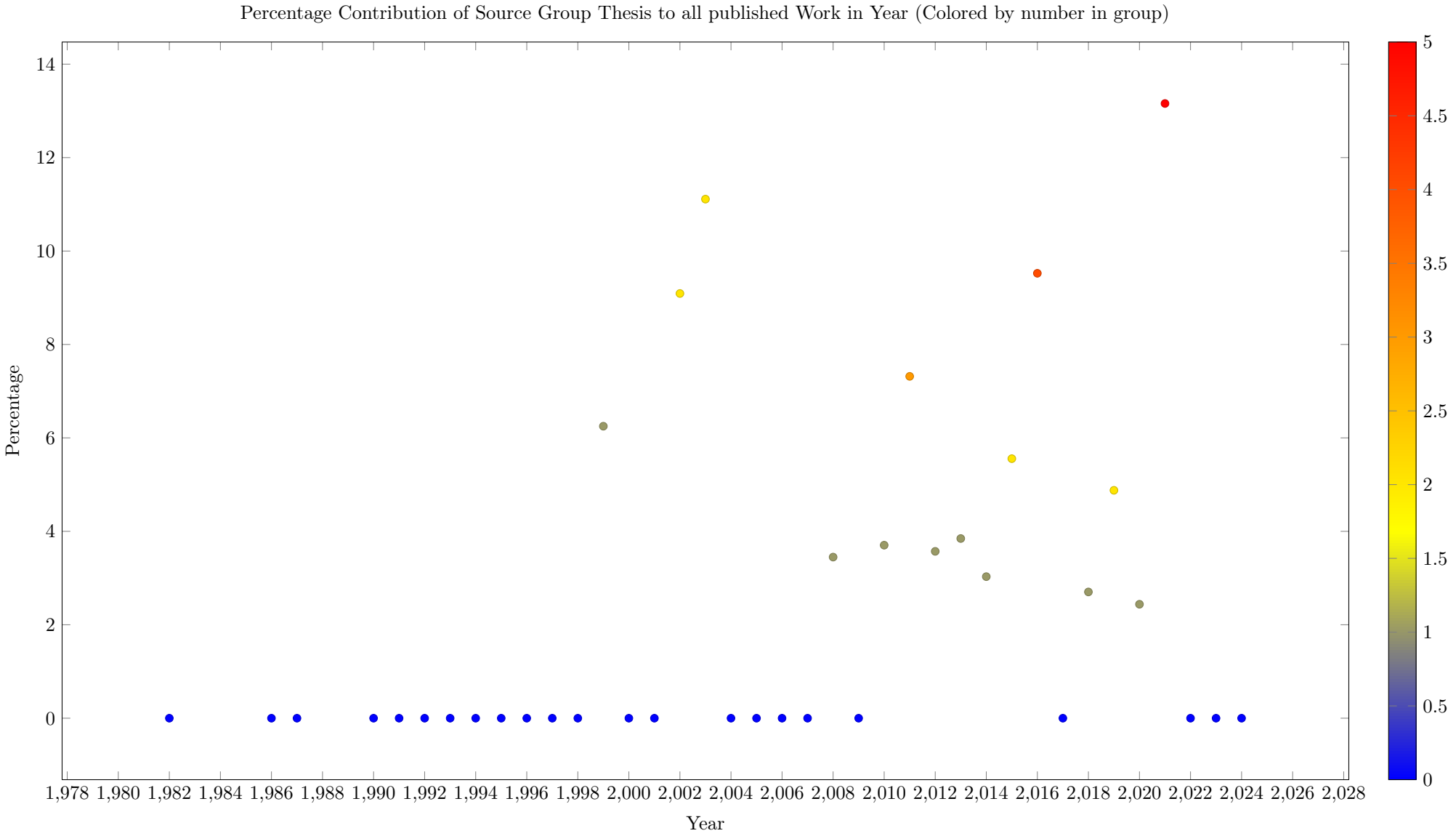
Percentage Contribution of Source Group Thesis to all published Work in Year (Colored by number in group)
Percentage
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Year
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