MASARYKOVA UNIVERZITA

Arnošt Farin

Individual portfolio analysis for Habilitation Procedure

July 2018

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About the analysis

Bibliometrics is extensively being used as supporting technique in a process of research assessment worldwide. **Centre for Scientometric Support (CSS)** offers bibliometric service to assist the Masaryk University community in utilizing quantitative methods for various purposes (individual portfolios, multidimensional analysis of research performance of a certain unit, analysis and recommendations for improving publishing strategies and others).

This report is a result of the summary individual bibliometric analysis. Although bibliometrics serves as a quantitative support for evaluation purposes, we must consider the limitations of bibliometrics. With respect to international good practice, indicators should never be used as the sole criteria for making final decisions, especially if the decision can influence individual promotion and rewarding.[1] Quantitative data should always be used in combination with other forms of evaluation, such as peer review, to provide critical insight. Indicators must not substitute for informed judgment. Best practice also uses multiple indicators to provide a robust and pluralistic picture.

The dataset for this report was provided by Arnošt Farin (A.F. or the "Author") itself and completed by M.P. All publications were identified by searching Web of Science/Scopus. Web of Science assigns subject categories to articles automatically according to the journal where the article is published in. An article may be assigned to multiple subject categories. Our citation analyses are based on data obtained from InCites. In several cases (normalized citation scores) we limited the analysis to original research publications (article, review, proceeding paper).

This analysis aims to replace the list of citations as defined in the Annex No. 6 ("Citations and Additional Responses to Published Works") to the MU Directive on Habilitation Procedures and Professor Appointment Procedures. Therefore, it focuses preferably on the structure of the set of scientific outputs, coverage and especially on **analysis of citing sources**. Other necessary information about applicant´s scholarly work is provided in other respective documents by applicant himself. The analyses

[1] HICKS, D, et al. Bibliometrics: The Leiden Manifesto for research metrics. Nature. 2015, vol. 520, 7548, 429–431. doi: http://dx.doi.org/10.1038/520429a. Dostupné z: http://www.nature.com/news/bibliometrics-the-leiden-manifesto-for-research-metrics-1.17351; San Francisco Declaration on Research Assessment (DORA), Dostupné z: http://www.ascb.org/dora/.

presented in this report are categorized into themes: production, journals, citation impact and author´s audience (citing articles).

Sources	Author´s CV, Web of Science, Scopus, InCites
Document Types limitation	All (unless stated otherwise)
Publication Window	All (1999–2018), unless stated otherwise
Citation Window	Not defined
Data retrieved	23th July 2018

Information about the author

Name
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Ústav teoretické fyziky a astrofyziky,
Přírodovědecká fakulta

Affiliations (WoS)
Masaryk Univ, Ust Teor Fyz & Astrofyz
Université Paul Sabatier

Researcher's visibility (persistent identifiers & social networks)

Website	...
ResearcherID	-
ORCID	...
Google Scholar profile	-
ResearchGate profile	-
Academia.edu profile	-
Scopus Author ID	12345678

General observations

We recommend focusing on attributes as following and to **measure performance and evaluate these observations against the discipline-specific publication patterns and citation practices**:

- Analysis of citing articles and sources – this is the most important part according to the setting of this report.
- Production, activity in the observed period (rising, declining, constant), coverage in databases.
- How many citations articles attracted in comparison with typical citation rates in the field? Do the citation count and normalized citation scores (citation impact, percentiles) correspond with typical patterns in the field? A number of highly cited articles. See the Chapter 3 Citation Impact). Consider that lack of citation cannot be interpreted as these articles are valueless. Data from the Web of Science give an incomplete picture; many papers WoS shows with zero citations could have been cited elsewhere or could have had an influence on society.

- Internationalization (articles in international collaboration), inter-disciplinarity.
- Publishing strategies (reputation of sources compared with the reputation of citing sources).
- Author´s roles: corresponding author, first author; contributorship; the average number of co-authors, …
- Consider other aspects of candidate´s work (awards, societal impact, …)

We found several issues during the dataset preparation process. 95 out of 240 outputs archived as journal articles in the MU Information System were in fact **meeting abstracts or editorials**. We strongly suggest fixing this in the IS MU in spite of the fact that most of these outputs are relatively old (more than 10 years). We enclose the list of these publications as a separate appendix. Further, we found several journal articles in the MU Information System, where A.F. is **not listed as an author in the Web of Science author´s byline**. This is usual in clinical trials, where investigators are named in the acknowledgment. However, for the purposes of this analysis, we did not count these articles to the Author´s publication record, since A.F. is not considered as an author due to the common definition of Authorship. We list these articles separately.

As for **utilized journals**, the biggest share of journals is in quartile Q1 (69%) and quartile Q2 (18%) of the journal ranking sorted by the journal Impact Factor throughout the whole publishing period. This signifies the ability to have papers being accepted in the most prestigious journals. See the Chapter 2 Journals. Compared to the **Quartile Rank of citing papers**, citations also come from the most influential journals in Q1 and Q2 (50% and 24% respectively). The high share of citing journals in Q1 and Q2 indicates the interest of the scientific community using the high visibility journals. (see the Chapter 4 Citing Documents). However, these findings reflect just the visibility of sources and must not serve as a proxy for research quality! Broad range of citing organizations without any dominance is to be seen in the visualization of citing organizations. This indicates the interest of scientific community worldwide. Due to the high number of citations, the visualization only demonstrates the variability of affiliated organizations and there is no need to analyze it in detail.

As it can be observed from the **coverage overview**, the vast majority of outputs is in international journals. According to the MU Information System record, the applicant hardly ever publishes in local journals and in local language. However, this is to be particularly observed from the Annex no. 5 and is not the subject of this analysis.

The structure of disciplines measured by the number of documents (all types and years) remains in related WoS fields … (17); … (15). Other research fields occurring in the dataset seem to be rather complementary according to multiple categories assigned to certain journals. As for articles and reviews, the **choice of journals** indexed in WoS is diverse, there is not a focus on a particular journal.

Self-citation rate (author self-citations) is about 13% (WoS and Scopus). Average normalized **citation impact** across all fields and publication years is on (1,09) the disciplines´ averages (= 1). See the Chapter 3 Citation Impact. This number has grown in recent years (1,25 in the 2008-2017 period). However, only ca. 4% of publications remain uncited.

A theoretically average publication set would have 10% of its articles ranked in the top 10% for citation counts and so on. In his publication set, A.F. slightly exceeds (12,77%) the percentile threshold for the 10% (excellent) most cited publications in the respective field in recent years which indicates scientific acceptance or impact.

We appreciate using Google Scholar profile – the rough analysis shows that citation tracking here goes beyond traditional citation indexes (two publications with more than 1000 citations). However, we were not able to check the citing data for accuracy; especially what is and what should not be considered as a scholarly publication.

ONCOTARGET journal (frequently appearing in citing sources) and INTERNATIONAL JOURNAL OF ELECTROCHEMICAL SCIENCE (frequently appearing in used sources and also citing sources) had been analysed by Jeffrey Beall as problematic, due to questionable journals' editorial and reviewing practice, high self-citation proportion and high publication charges.

1. Production and general overview

First publication year in WoS / Scopus	1999 / 1999
Web of Science Documents (dataset for analysis)	77
Scopus Documents (dataset for analysis)	68*

h-index WoS	24
h-index Scopus	25

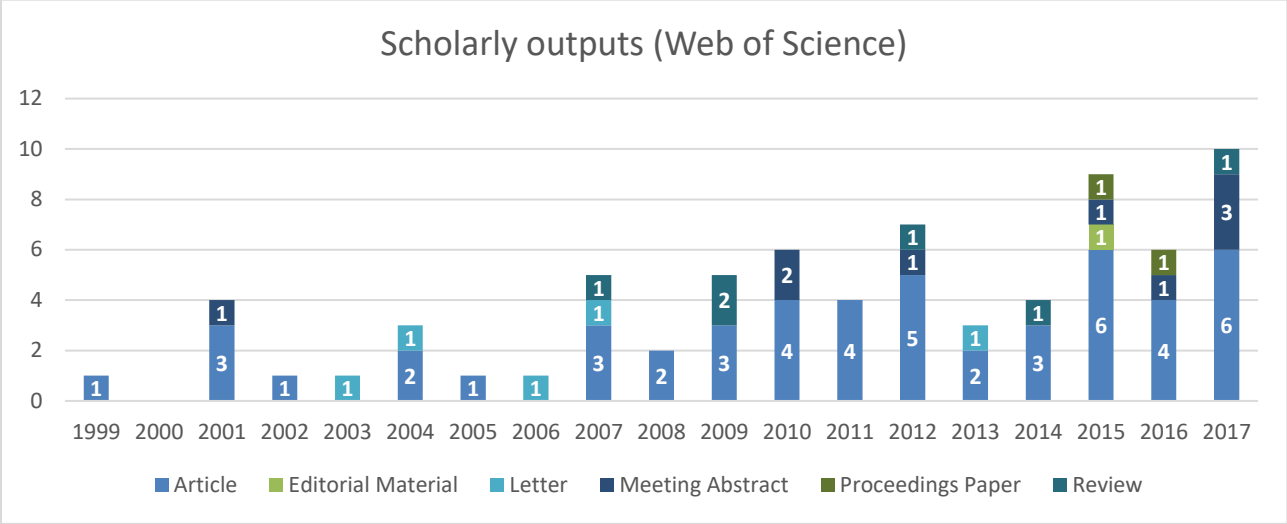
*One publication was missing in the author profile. We submitted the request to add this publiication to the current A.F.´s account.

Coverage

Source	# All Docs	Article	Review	Other	Proceedings	Patents	Abstract
IS MU*	83	64 (all types)			2	3	12
Web of Science**	77	54	6	Letter: 5; Editorial material: 1	2	-	9
Scopus	68	55	6	Letter: 4; Editorial: 1	2	-	-

***Three Scopus- and WoS-indexed publications were missing in the Information System.*

***Web of Science Core Collection (SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI, Chemical Indexes, Book Citation Index).*



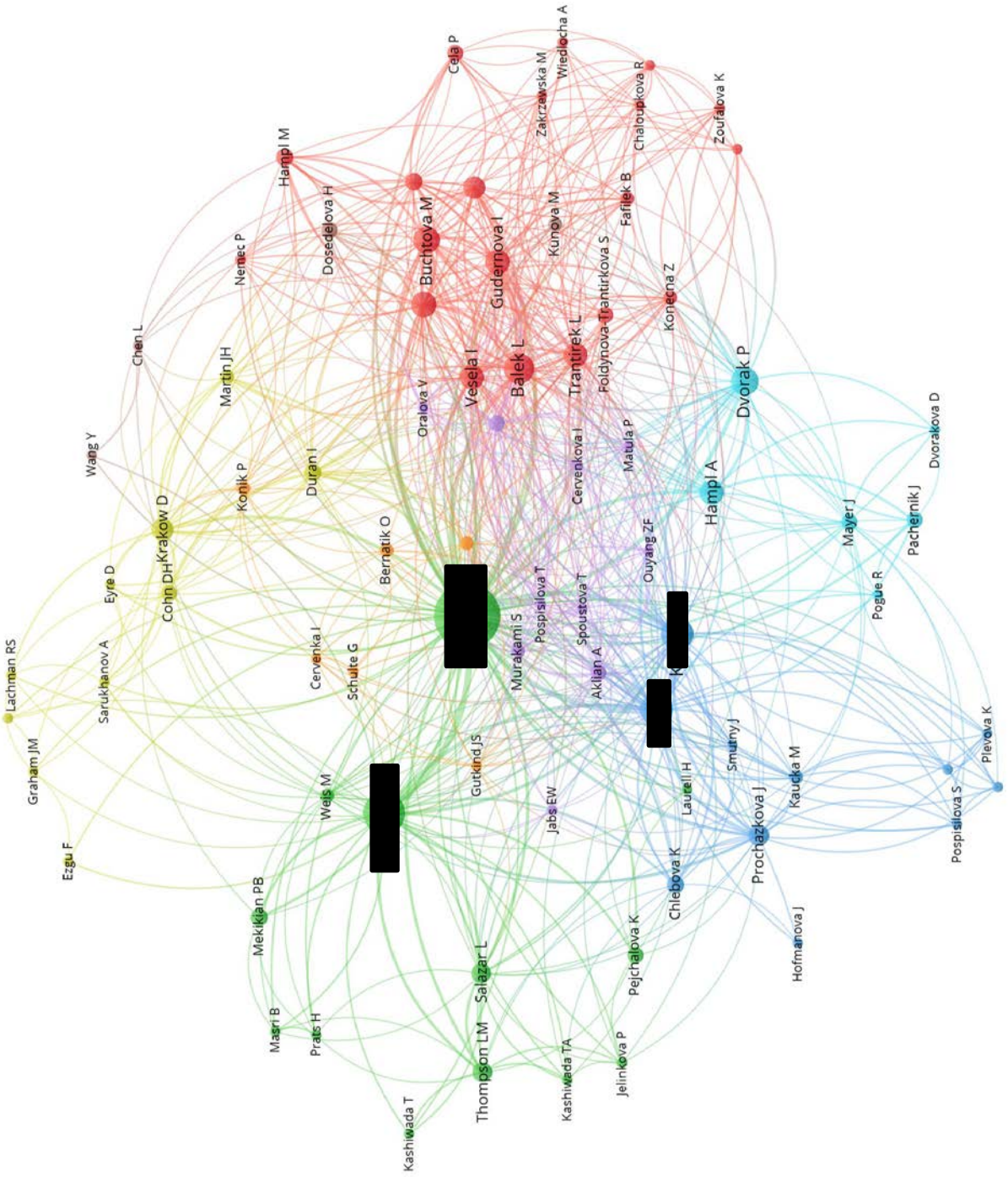
Author's role (Web of Science)

Only articles, reviews, letters and proceedings throughout the whole publication period are counted.

Author´s role	Web of Science Documents (N=67)	% of 67
Corresponding author	26	39%
First author	18	27%
Other	37	55%

Collaboration network (Web of Science)

Articles, reviews, letters, proceedings. N=67. Visualization: VOSViewer.



2. Journals (visibility) – Web of Science

In this part, we focus on journals where results (all types) were published in the whole period. This analysis is useful for tracking the reputation of sources or for observing the ability of the Author to publish in highly influential journals; however, we cannot assess the quality of certain research (on the level of the article) with journal-level indicators. This analysis usually reveals author´s publication patterns and the common publication patterns in the field. Since we do not work with normalized indicators, we count the whole publication period (1999-2018) and all publication types.

For the simplicity, Quartile Rank and JIF were extracted for the actual year of Journal Citation Reports (2017), i.e. not for the year in which the citing article was published.

Quartile Rank	Quartiles are derived for each journal in each of its subject categories according to which quartile of the IF distribution the journal occupies for that subject category. Q1 denotes the top 25% of the IF distribution, Q2 between top 50% and top 25%, Q3 top 75% to top 50%, and Q4 bottom 25% of the IF distribution.
JIF	The impact factor is a measure of the frequency with which the average article in a journal has been cited in a particular year. It is used to measure the importance or rank of a journal by calculating the times its articles are cited. The calculation is based on a two-year period and involves dividing the number of times articles were cited by the number of articles that are citable.

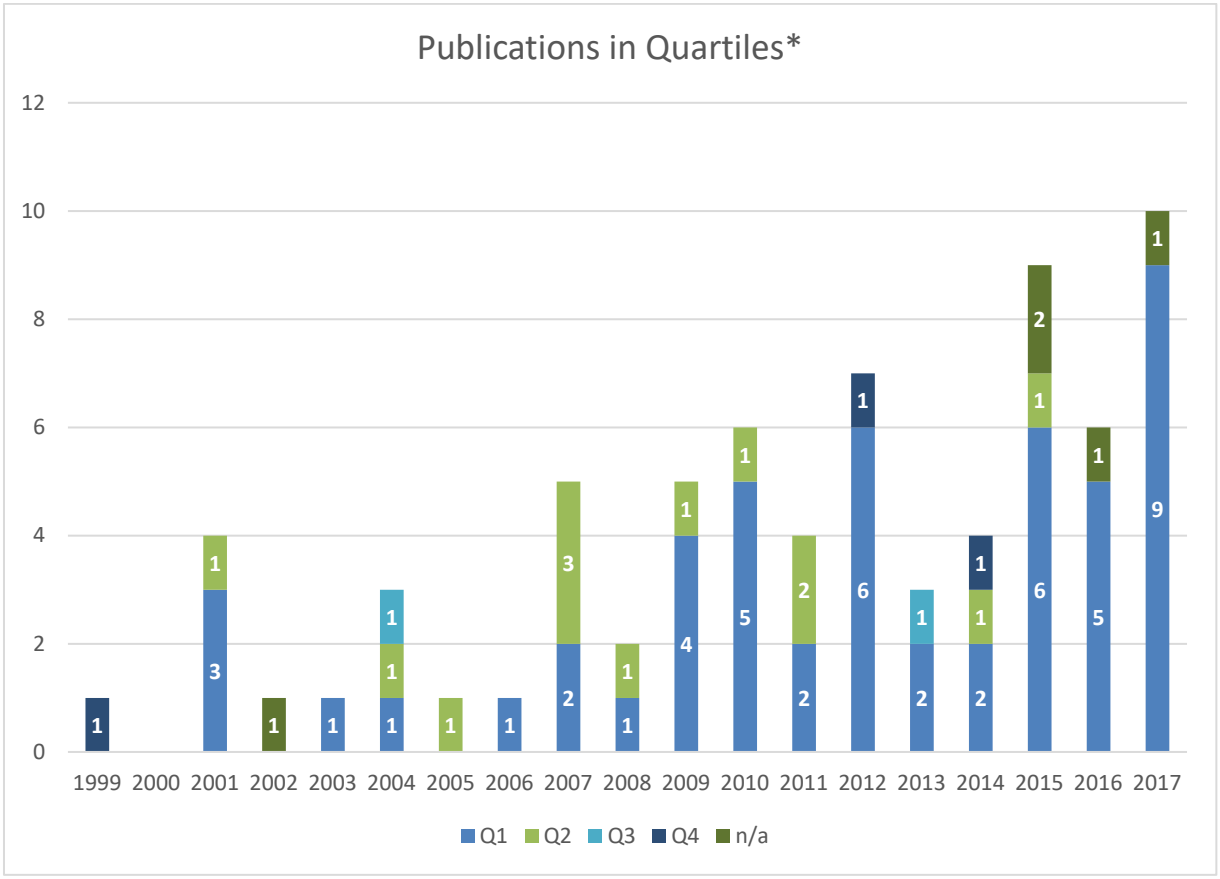
Journals – sorted by # Web of Science Documents

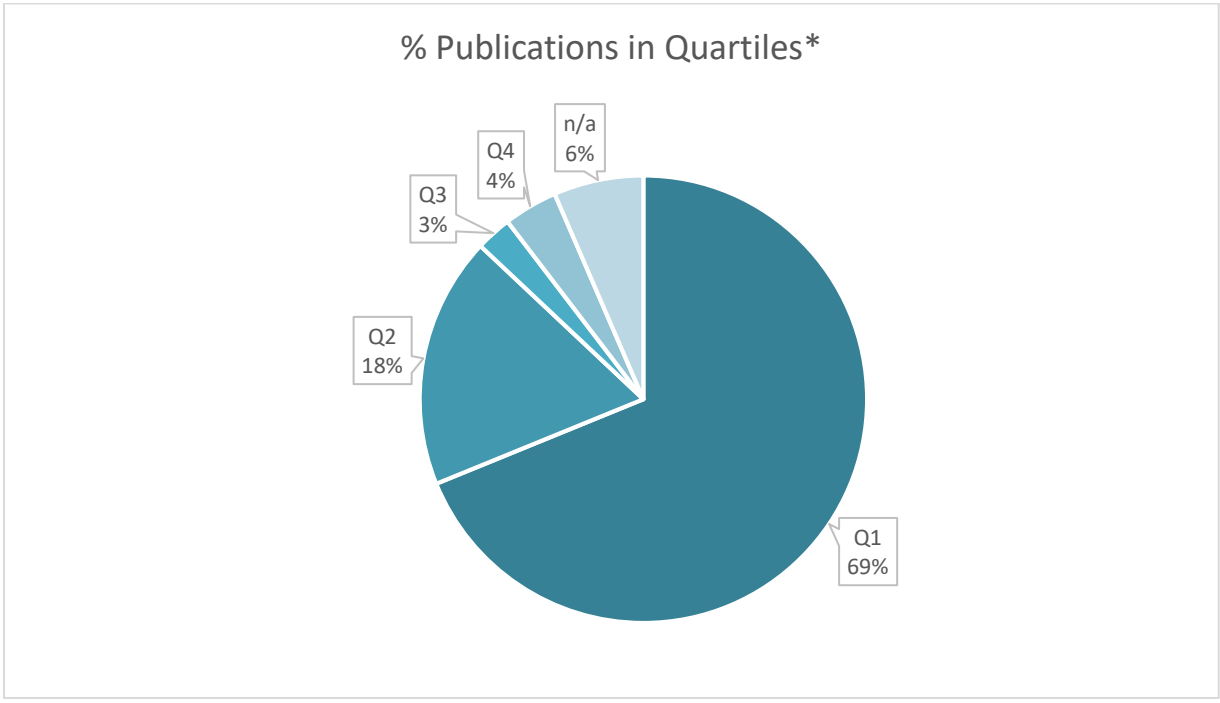
A-article; R-review; MA-Meeting Abstract; Other=Letter, Editorial, Proceedings Paper.

Journal Name	WoS Docs	A	R	MA	Other	Times Cited	JIF	Q
Journal 1	6	6				97	5,34	Q1
Journal 2	4	2			2	122	11,702	Q1
Journal 3	4	4				106	2,806	Q1
Journal 4	3	1		2		38	5,498	Q1
Journal 5	3			3		0	4,53	Q1
Journal 6	3	3				99	4,125	Q2
…	1	1				35	2,882	Q1

Publications in Quartiles* (all years)

The graph shows the distribution of publications in quartiles based on the rank of journals in the certain field according to the impact factor. The current year 2018 is not counted. N=73.
n/a = Sources with JIF not assigned (retracted journals, Emerging Sources Citation Index, proceedings).





*See the definition of Quartile Rank.

3. Citation Impact – Web of Science

In this section, we provide multiple indicators derived from citations in Web of Science. According to the data validity and to follow the same pattern across people and fields, we most commonly work only with **"citable" items** (article, review, letter, proceeding paper) in the **last 10-year period** 2008-2017 (the year 2018 is supposed to be very recent to obtain citations). The 10-year period is a usual timeframe for evaluation purposes.

Indicators:

Category Normalized Citation Impact (CNCI)	CNCI determines the citation impact of the article relative to the average number of citations of all articles of the same type in the same field and in the same publication year as the article under review. A value greater than 1 indicates that the number of citations is greater than the average of the field.
Average Percentile	The percentile in which the paper ranks in its category and database year, based on total citations received by the paper. The higher the number citations, the smaller the percentile number. The maximum percentile value is 100, indicating 0 citations received. Average percentile is the mean of the percentiles for articles in the set.
% Documents in Top xx% (PP (top x%))	Percentage of publications performing in the x % (percentiles 1% and 10%) most cited publications in the respective field and year.

Summary Metrics (all document types, all years)

This tab shows the **total number of obtained citations**. This number is always higher than the count of citing articles (single article can refer to multiple articles of an analyzed unit). We use the count of citing articles only for analysis of citing sources (e.g. Quartile Rank). In this type of analysis (total counts) we accept all publication types including "non-citable" items – typically editorials, book reviews, …

	Web of Science	Scopus
Sum of Times Cited	1410	1463
Without self-citations*	1225	1275
% self-citations**	13,1%	12,9%

*Obtained from Web of Science Cited Reference Search / Scopus Citation report.

**Self-citations of given author.

Summary Metrics (A-R-L-PP, all years)

N=66 (1 out of 67 publications was not transferred to InCites). According to this type of analysis (normalized metrics), we count only citations to "citable items" (Articles, Reviews, Letters, Proceedings papers) in a given timeframe.

WoS Docs	CNCI	Times Cited*	% Docs Cited	PP (top 1%)	PP (top 10%)	Average Percentile	Highly Cited Papers	% Intl. Collab.
66	1,09	1338	92,42	0	10,61	40,12	0	72,73

Summary Metrics (A-R-L-PP, 2008–2017)

N=47 (all publications were transferred to InCites). According to this type of analysis (normalized metrics), we count only citations to "citable items" (Articles, Reviews, Letters, Proceedings papers) in a given timeframe.

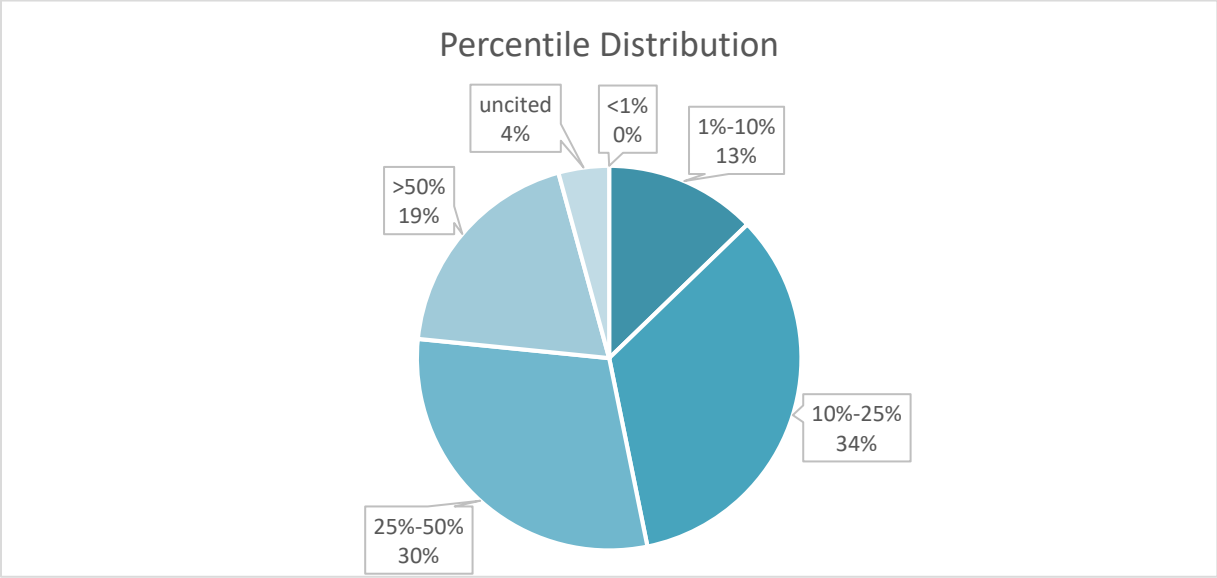
WoS Docs	CNCI	Times Cited*	% Docs Cited	PP (top 1%)	PP (top 10%)	Average Percentile	Highly Cited Papers	% Intl. Collab.
47	1,25	962	95,74	0	12,77	34,7	0	80,85

*Number of citations is always lower than in Web of Science due to the InCites dataset update frequency.

Percentile Distribution (A-R-L-PP, 2008–2017)

This graph shows the distribution of publications with **actual citations above the threshold for the percentiles 1%, 10%, 25% and 50% in the whole set** (the sum is 100%). Percentiles are normalized for the discipline, type of the publication and the publication year. A theoretically average publication set would have 1% of its articles ranked in the top 1% for citation counts, 10% articles in the top 10% and so on. Articles with actual citation count above the threshold for 10% most cited articles can point to highly influential research topics. Articles with actual citation count above the threshold for 1% most cited articles can indicate the cutting-edge research.

It is useful to compare the percentile distribution with another metrics (typically Category Normalized Citation Impact and the total count of citations) to investigate the influence of very few highly cited articles.



Top 10 cited documents – Web of Science (all years)

Article	Type	Quartile Rank	Times Cited	CNCI
Publication 1	Article	Q2	83	1,42

Article	Type	Quartile Rank	Times Cited	CNCI
Publication 2	**Review (corresponding author)**	Q1	81	1,51
Publication 3	Article	Q1	72	2,66
Publication 4	**Article (corresponding author)**	Q1	67	3,13
Publication 5	Article	Q1	62	2,77
Publication 6	Article	Q2	53	1,75
Publication 7	Article	Q1	50	1,47
Publication 8	**Review (corresponding author)**	Q1	50	0,58
Publication 9	Article	Q2	48	1,85
Publication 10	Article	Q2	46	0,85

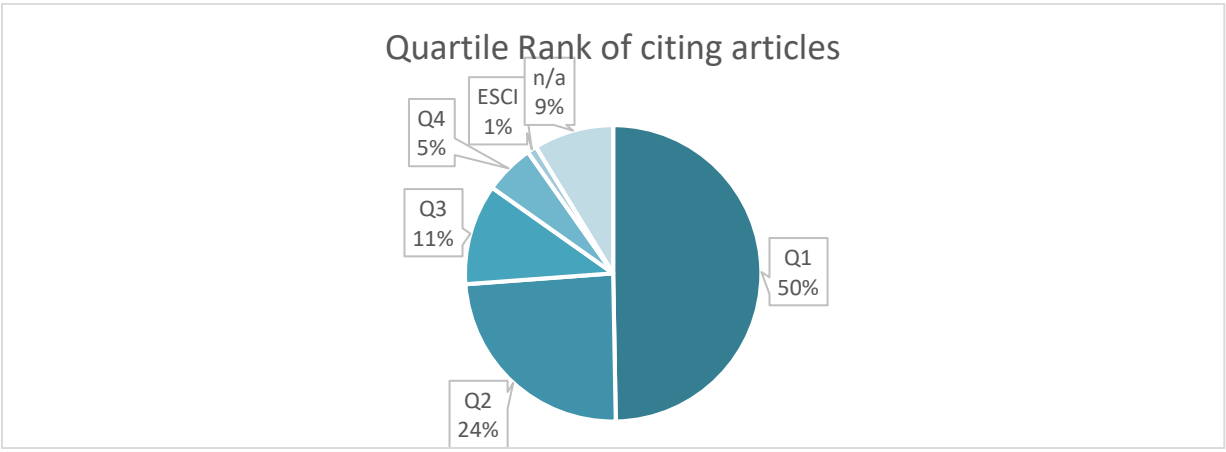
4. Citing Documents

Depending on a type of analysis, there is a need to consider the difference between the total count of citations (always higher) and the number of citing documents (always lower) – a single article can refer to multiple articles of an analyzed unit.

Citing articles – Quartile Rank

This graph shows the structure of citing articles according to the Quartile Rank of their sources. This analysis reveals the reputation of journals used by analyzed Author´s audience. For this analysis, the number of citing **articles** serves as the source dataset (n=1093). Self-citations are included. The Quartile Rank is derived for each journal only for the best performing subject categories according to which quartile of the IF distribution the journal occupies for that subject category (i.e. if the journal is assigned to Subject Category 1 in Q1 and Subject Category 2 in Q3, we count this journal as Q1).

For the simplicity, Quartile Rank was extracted for the actual year of Journal Citation Reports (2017), i.e. not for the year in which the citing article was published.



ESCI = Emerging Sources Citation Index (journals with JIF yet not assigned)

n/a = JIF not assigned (conference papers, journals retracted from Journal Citation Reports, Book Citation Reports)

Top citing authors – Web of Science

Authors with the highest occurrence in citing documents dataset (n=1066). Statistically, the candidate´s name appearing in the top of the rank is a usual phenomenon.

Authors	Records	% of 1066
FARIN A	48	4,503
NEMO K	36	3,377
HOLAN P	24	2,251
…	23	2,158

Top citing journals – Web of Science

Journals with the highest occurrence in citing documents dataset (n=1066).

Source Titles	Records	Quartile Rank	% of 1066
PLOS ONE	44	Q1	4,128
NATURE	24	Q1	2,251
SCIENCE	23	Q1	2,158
ASTRONOMY & ASTROPHYSICS	22	Q1	2,064
…	9	Q1	0,844

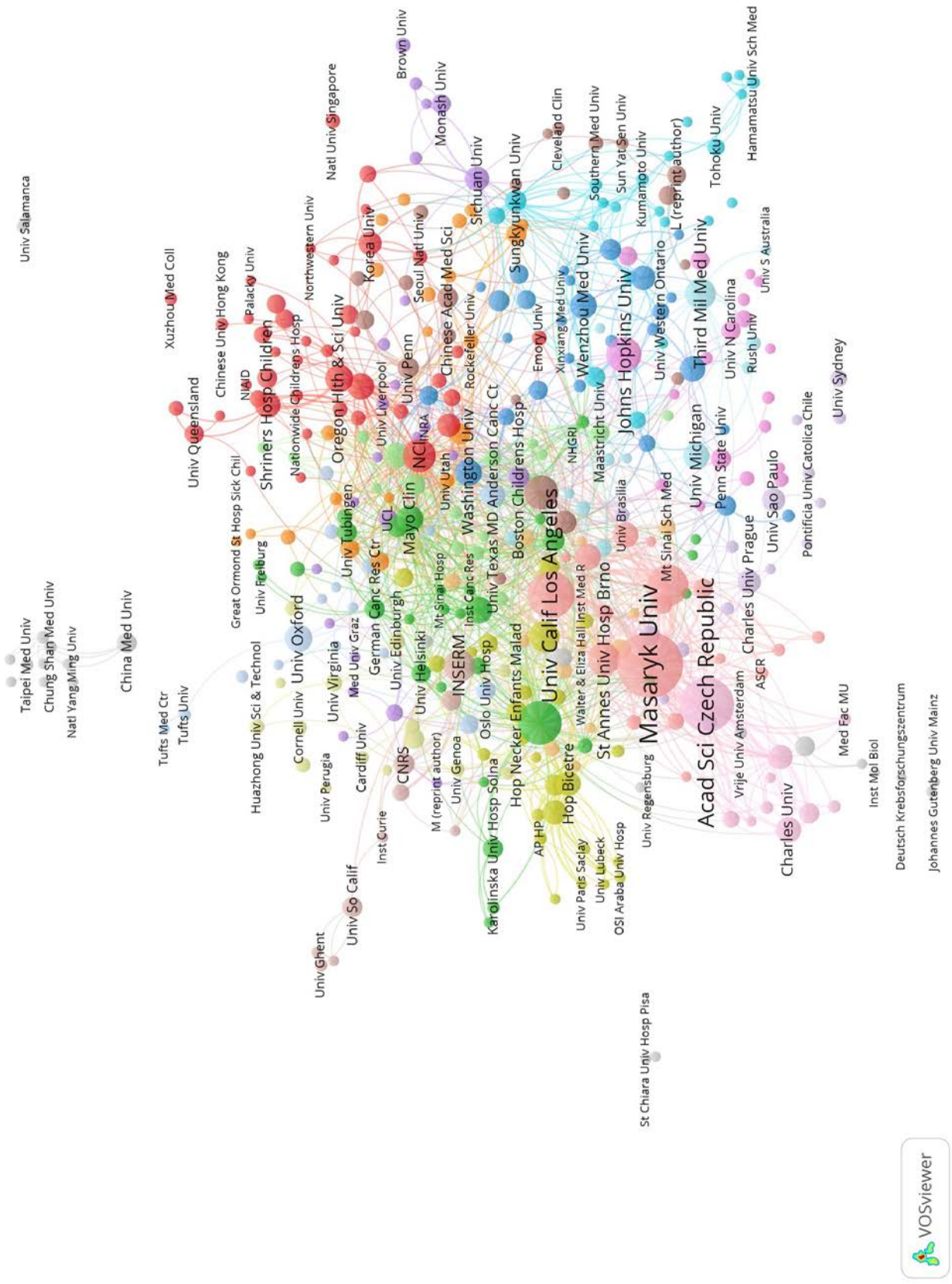
Top citing organizations – Web of Science

Organizations with the highest occurrence in citing documents dataset (n=1066).

Organizations-Enhanced	Records	% of 1066
MASARYK UNIVERSITY BRNO	72	6,754
UNIVERSITY OF CALIFORNIA SYSTEM	67	6,285
CZECH ACADEMY OF SCIENCES	66	6,191
…	46	4,315

Citing articles analysis – Affiliation Organizations

The size of the nodes reflects the number of institution´s occurrence (duplicates removed), the thickness of edges reflects the intensity of co-occurrence (number of connections – collaborations on article level). Only the most frequently occurring addresses have been cleaned and disambiguated. The whole network with zooming option can be investigated in the online tool on demand.



5. Indicators

Category Normalized Citation Impact (CNCI) – determines the citation impact of the article relative to the average number of citations of all articles of the same type in the same field and in the same publication year as the article under review. A value greater than 1 indicates that the number of citations is greater than the average of the field.

Journal Impact Factor (JIF) – is defined as all citations to the journal in the current JCR year to items published in the previous two years, divided by the total number of scholarly items published in the journal in the previous two years. The Journal Impact Factor Percentile transforms the rank in a category by Journal Impact Factor into a percentile value, allowing more meaningful cross-category comparison.

Percentiles – The percentile in which the paper ranks in its category and database year, based on total citations received by the paper. The higher the number citations, the smaller the percentile number. The maximum percentile value is 100, indicating 0 citations received. Average percentile is the mean of the percentiles for articles in the set.

Quartile Rank (Q) - Quartiles are derived for each journal in each of its subject categories according to which quartile of the IF distribution the journal occupies for that subject category. Q1 denotes the top 25% of the IF distribution, Q2 between top 50% and top 25%, Q3 top 75% to top 50%, and Q4 bottom 25% of the IF distribution. Data from Journal Citation Report 2016 are used.