



A MATTER OF CITATIONS

how scientific research is evaluated: from Impact Factor to CiteScore

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6 November 2017

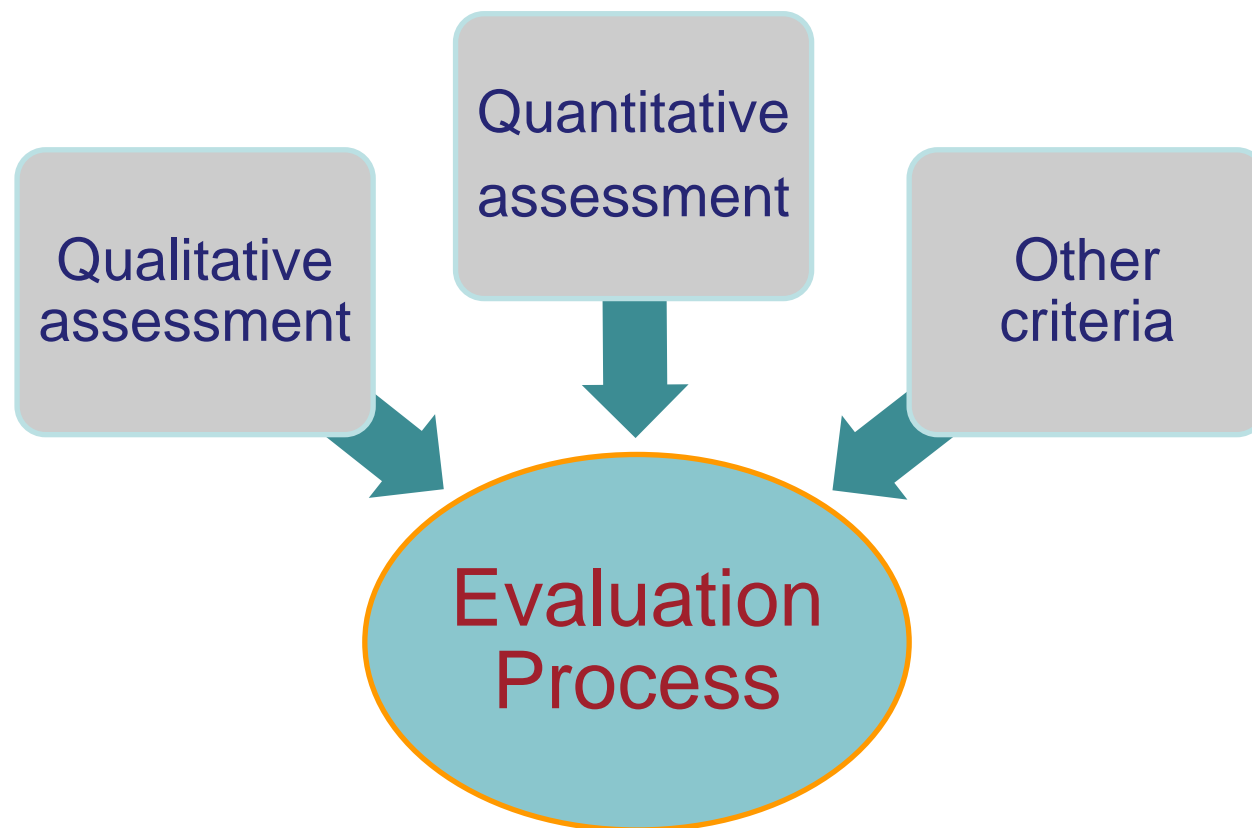


SUMMARY

- ✓ Citation databases (Scopus, Web of Science)
- ✓ Impact Factor and Journal of Citation Reports
- ✓ CiteScore
- ✓ SJR and SNIP
- ✓ Hirsch index
- ✓ Article metrics
- ✓ Applications of bibliometric indicators



EVALUATION OF SCIENTIFIC RESEARCH





EVALUATION OF SCIENTIFIC RESEARCH

Qualitative assessment

before publication: editorial board of the journal, referees
after the publication: scientific community

Quantitative assessment: analysis of bibliographic citations
(Bibliometric indicators)

Other criteria: congress participation as invited speaker,
awards, grants, patents, software etc.



EVALUATION OF SCIENTIFIC RESEARCH

The analysis approach is conducted at multiple levels:

Single researcher (recruitment, promotion, grant awarding career)

Research groups (same department, faculty, university, research organization, nation)

Scholarly journals



WHAT IS BIBLIOMETRICS?

The branch of library science concerned with the application of mathematical and statistical analysis to bibliography; the statistical analysis of books, articles, or other media of communication

<http://www.oxforddictionaries.com/definition/english/bibliometrics>

That is...data about publications, or **citation frequency**



WHAT IS BIBLIOMETRICS?

In a few words, the focus of bibliometrics are

bibliometric indicators

bibliometric indicators are numbers built up counting
citations



DO CITATIONS MEAN EVALUATION?

The listing of references in publications is a convention among scientists for giving credit or recognition to the value of previous works.

Assuming that scientists cite the work that they have found useful in pursuing their own research, the number of citations received by a publication is seen as a quantitative measure of the resonance and impact that this publication has created in the scientific community.



WHO COUNTS CITATIONS?

Scopus

Web of Science

Google Scholar

They are indexes of citations (as well) to (most of)
scholarly publications



CITATION DATABASES = BIBLIOGRAPHIC DATABASES

contain:

- ✓ bibliographic records of the published works
- ✓ citations to the published works
- ✓ references of the published works



CITATION DATABASES = BIBLIOGRAPHIC DATABASES

are tools:

- ✓ for scientific information retrieval
(they index the scientific literature)
- ✓ for the evaluation of the scientific research
(they count the number of citations to documents, to authors, to journals)



CITATION DATABASES

Scopus (University network)

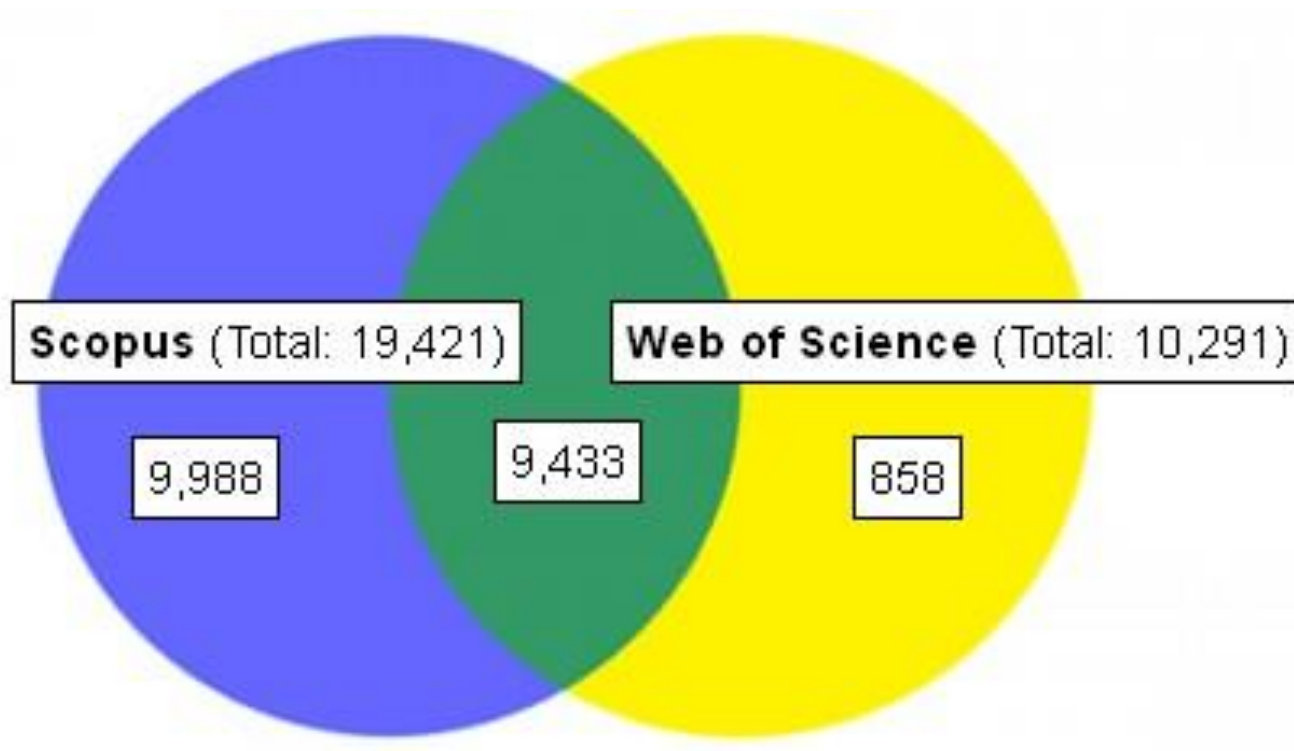
Web of Science (University network)

Google Scholar (free)

(pay attention to data accuracy, it's Google anyhow)



COMPARISON OF JOURNALS INDEXED BY WEB OF SCIENCE AND SCOPUS (May 2012)



from: JISC Academic Database Assessment Tool <<http://www.jisc-adat.com/adat/home.pl>>



COMPARISON OF WEB OF SCIENCE AND SCOPUS

	WEB OF SCIENCE	SCOPUS
coverage	multidisciplinary	multidisciplinary
time range	1985-	1823- the oldest records may not have the abstract
bibliometrics	1990-	1970-



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	WEB OF SCIENCE	SCOPUS
updates	weekly?	daily



WHO COUNTS CITATIONS?

The counting of citations in those databases and its elaboration produce all the bibliometric indicators that we have used until today

impact factor, sjr, snip, hirsch index, citescore etc.



WHY TO USE BIBLIOMETRIC INDICATORS?

We can use bibliometric indicators to get to know:

- what are the best journals in the field of my discipline?
- who is citing my articles? how many times have I been cited?
- how do I know this article is important?
- in which journal should I publish?



WHY TO USE BIBLIOMETRIC INDICATORS?

We can use bibliometric indicators to:

- assess the most influential journals in a research area
- track the impact of a published research
- support applications for promotion and grant funding



CITATION ANALYSIS. LIMITS

Factors that compromise the correlation between citations and the quality of research

TIME

Citations are symmetrically but not uniformly distributed over time

SIZE OF RESEARCH COMMUNITY

Number of scholars working in the same research field

EDITORIAL PRACTICE IN THE DISCIPLINE

Number of coauthors, editorial strategy (articles or books), prevailing language, average citation «life» of publications in the research field



CITATION ANALYSIS. LIMITS

Factors that compromise the correlation between citations and the quality of research

CITATION ETHICS

Manipulation through strategic quoting

PUBLICATION TYPE

Reviews are always more cited than research articles



CITATION ANALYSIS. LIMITS

Factors that compromise the correlation between citations and the quality of research

TYPING ERRORS IN THE BIBLIOGRAPHY

TECHNICAL DIFFICULTIES IN MANAGING CITATION DATABASES

Difficulty to eliminate homonymies, multiple surnames/names and spelling symbols (e.g. apostrophe, dash and subscripts)



CITATION ANALYSIS. LIMITS

Factors that compromise the correlation between citations and the quality of research

ATYPICAL MEANING

e.g. «negative» citation

SLEEPING BEAUTIES OR «MENDEL'S SYNDROME»

Underestimation of an original scientific publication



Citations cannot represent «the» measure of the value/utility of a research product, but is «a» **good indicator of the impact of a research output**, within a precise interval of time

Evaluation should balance quantitative and qualitative information

Bibliometrics should complement peer review



BIBLIOMETRIC INDICATORS

JOURNAL METRICS

AUTHOR METRICS

ARTICLE METRICS



JOURNAL METRICS

Impact factor

5-year impact factor

Eigen factor

Immediacy index

Scimago journal ranking

CiteScore



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AUTHOR METRICS

HIRSCH INDEX



ARTICLE METRICS

Number of citations

Field-Weighted Citation Impact

Altmetrics



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DI PADOVA

SBA SISTEMA BIBLIOTECARIO
DI ATENEIO

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JOURNAL METRICS



IMPACT FACTOR (JIF)

It is the average number of citations received in a year by works published in a journal in the previous 2 years

2016 citations to 2015+2014 articles

----- = JIF

Total no. of articles* published in 2015+2014

* **research papers, research notes, reviews** (not included: editorials, letters, comments etc.)



IMPACT FACTOR (JIF)

The Impact Factors of about 12,000 scholarly and technical journals and conference proceedings are published **yearly** in

The Journal Citation Reports (JCR)

a subscription database that calculates and publishes the impact factors for journals

<https://jcr.incites.thomsonreuters.com/>

°° *University of Padova has access to JCR back to 1997 (IF back to 1997)*



IMPACT FACTOR (JIF): SOME CRITICISMS

- ❖ There are many journals ** not included in the *Thomson Reuters* citation indexes (no Impact Factor)
- ❖ Some subject areas accept and assimilate new research rapidly, e.g., biotechnology versus pure mathematics research (introduced 5-Year Impact Factor)
- ❖ Journal Impact factors cannot assess the quality of individual articles in a journal
- ❖ A small percentage of articles from a small subset of journals are highly cited. This small percentage accounts for a large proportion of the total citations

**The Thomson Reuters Journal Selection Process: <https://clarivate.com/essays/journal-selection-process/>

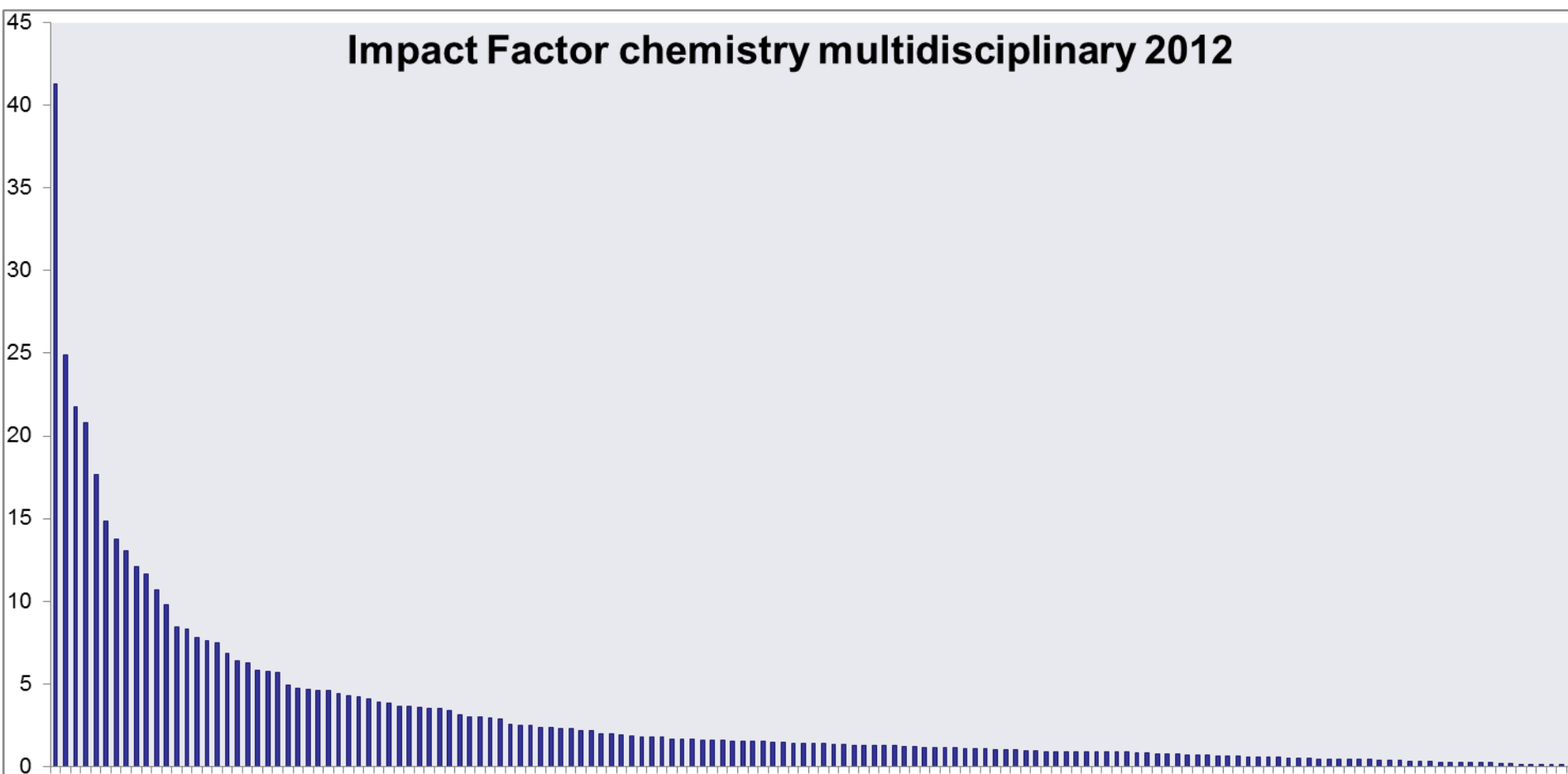


IMPACT FACTOR (JIF): SOME CRITICISMS

- ❖ Non-English language journals are less accessible to researchers worldwide and therefore may be cited less
- ❖ Review articles and review journals may be cited more frequently than items which contain new concepts or research
- ❖ Editorials, letters, new items and meeting abstracts are usually not included in article counts
- ❖ Sudden changes in a journal's size can affect the impact factor
- ❖ Title changes effect the impact factor. JCR does not unify the old and new titles for minor title change and if the title position in alphabetic order does not change

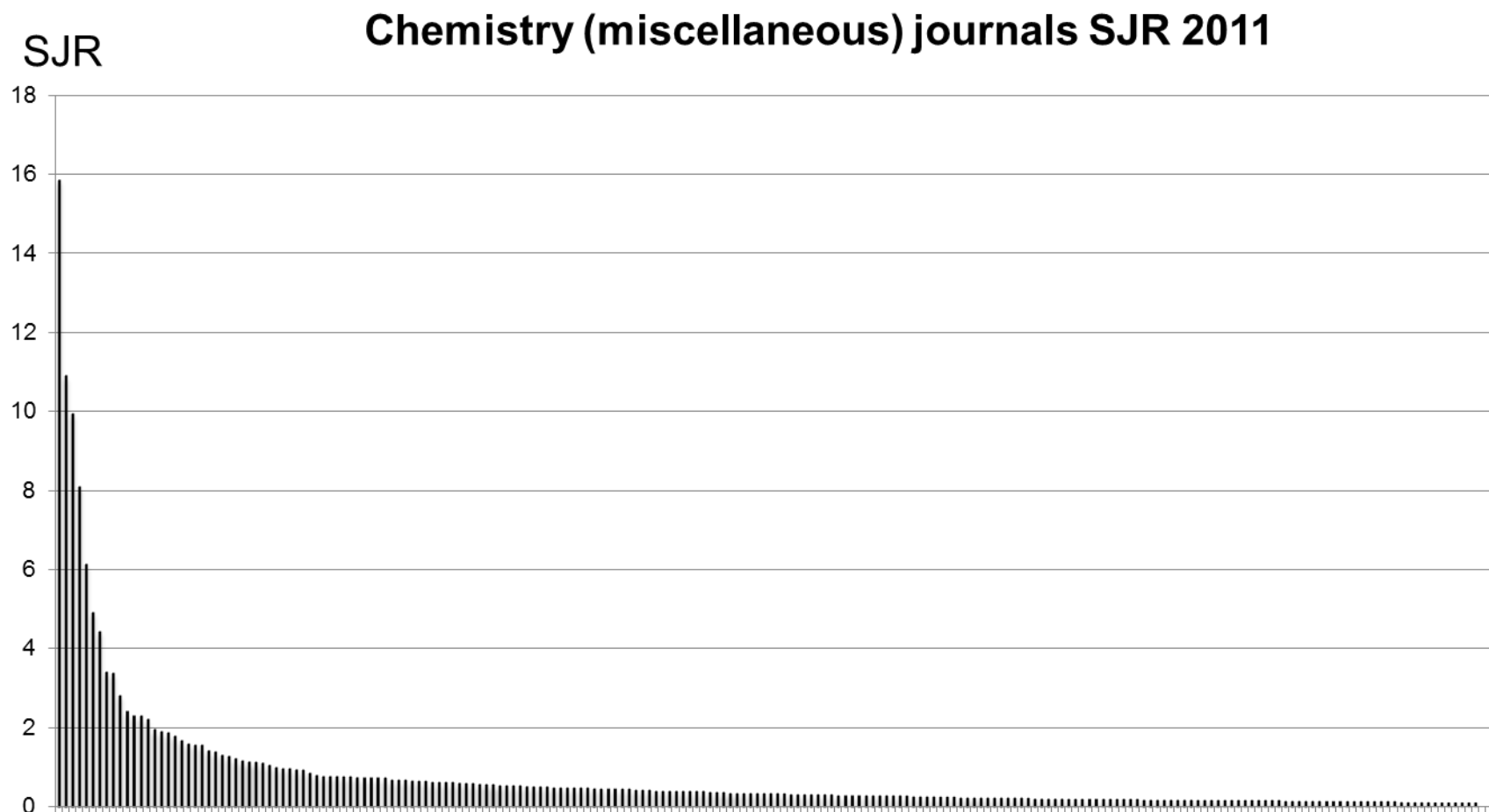


SKEW DISTRIBUTION OF THE IF





SKEW DISTRIBUTION OF THE SJR





IMPACT FACTOR: ISSUES

the impact factor is an arithmetic fraction: it has a numerator
and a denominator

one can increase it
either by increasing the numerator
or
decreasing the denominator



IMPACT FACTOR: ISSUES

INCREASING THE NUMERATOR: COMMON PRACTICES

the editor in charge of the publication of an article explicitly asks its author to cite articles published in his journal (self citation)

increasing the number of reviews published in the journal

mutual citation of authors who are also members of two different editorial boards



IMPACT FACTOR: ISSUES

DECREASING THE DENOMINATOR

it seems that the number of *citable documents* (i.e. the denominator) -- at least in certain circumstances -- can be negotiated between Thomson Scientific and the editor of a journal.

it is possible to «disguise» citable documents as non citable ones in order to exempt them from being taken into consideration in the calculation of *citable documents* (non citable documents with abstract and/or limited bibliography do receive citations but are not counted in the calculation of the denominator)

The *PLoS Medicine* Editors (2006) The Impact Factor Game. *PLoS Med* 3(6): e291.



IMPACT FACTOR: ISSUES

DECREASING THE DENOMINATOR

even though editorials, news, letters and commentaries are considered as *non citable documents* – and so do not have any effect on the denominator -- the citations they receive are counted and have a positive influence on the numerator

▪



IMPACT FACTOR AND REVIEWS

reviews usually do receive more citations than research articles. This fact is reflected in the impact factor of journals containing more or solely reviews.

IF, CiteScore, SJR and SNIP are no exceptions to this



THE *AFFAIR ACTA CRYSTALLOGRAPHICA A*

IF 2008 =	2,051 (8° in the category Crystallography)
IF 2009 =	49,926 (1° in the category Crystallography)
IF 2010 =	54,333 (1° in the category Crystallography)
IF 2011 =	2,076 (8° in the category Crystallography)
IF 2012 =	2,244 (7° in the category Crystallography)
IF 2013 =	2,069 (8° in the category Crystallography)



"PUMPING UP" THE IF

<http://link.springer.com/article/10.1007/s12471-012-0336-0/fulltext.html>

An editorial of *Heart Journal* published at the end of 2012 has a bibliography with 24 (out of 25) references to 2010/2011 articles of the same journal

citations 2012 = 206 (IF 1,411, 77° in the category)

citations 2012 without the editorial = 182 (IF 1,246, 85° in the category)



IMPACT FACTOR MANIPULATION

journals with no metrics in 2016 JCR

[http://ipscience-
help.thomsonreuters.com/incitesLiveJCR/JCRGroup/title
Suppressions.html](http://ipscience-help.thomsonreuters.com/incitesLiveJCR/JCRGroup/titleSuppressions.html)

because of "anomalous citation patterns"



OTHER INDICATORS IN JCR

5-Year Journal Impact Factor

It is calculated on a *5-year citation window*. By using a larger citation window than the traditional IF, the 5-year journal IF is more appropriate to evaluate theoretical fields with a more “durable” literature

Immediacy index

This index is calculated by taking the *number of times that articles published in a given journal are cited by others and then dividing this number by the number of articles published in that journal in that same year*. It is a useful indicator to identify journals publishing in emerging areas of research.



OTHER INDICATORS IN JCR

Eigenfactor Score (EF)

It measures the number of times articles from the journal published in the past 5 years have been cited in a year

It assigns a greater weight to those citations coming from influential journals

It is a measure of the prestige and impact of a scientific journal

It eliminates self-citations: every reference from one article in a journal to another article from the same journal is discounted

Eigenfactor scores are scaled so that the sum of EF scores of all journals listed in Journal Citation Reports (JCR) database is 100.



OTHER INDICATORS IN JCR

Article Influence Score

It determines the average influence of a journal's articles over the first 5 years after publication.

It calculates/measures the relative importance of the journal on a per-article basis.

$$\text{Article Influence Score} = \frac{0.01 * \text{Eigenfactor score}}{X}$$

X = 5-year Journal Article Count divided by the 5-year Article Count from All Journals



Google Scholar Metrics

<http://scholar.google.com/intl/en/scholar/metrics.html>

Scholar Metrics currently cover articles *published between 2012 and 2016 (both inclusive)*

The metrics are based on citations from *all articles* that were *indexed in Google Scholar as June, 2017*

The **h5-index** for Google Scholar Top 100 publications was calculated for only those articles that were published in the last 5 complete calendar years

http://scholar.google.it/citations?view_op=top_venues&hl=en



Google Scholar Metrics – h5-index

The **h-index** of a publication is the largest number h such that at least h articles in that publication were cited at least h times each.

For example, a publication with five articles cited by, respectively, 17, 9, 6, 3, and 2, has the **h-index=3**

Rank	Articles	Citations
1	Article 1	17
2	Article 2	9
3	Article 3	6
4	Article 4	3
5	Article 5	2



Bibliografia

Bibliometria ed indicatori bibliometrici

De_Bellis, Nicola 1969- Introduzione alla bibliometria dalla teoria alla pratica Nicola De Bellis Roma : Associazione italiana biblioteche, 2014

Hicks, D., Wouters, P., Waltman, L., de Rijcke, S., and Rafols, I. (2015) 'Bibliometrics: The Leiden Manifesto for research metrics.' *Nature*. 520, 429-431.

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DOI: 10.13140/RG.2.1.4929.1363

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Responsible Metrics <https://responsiblemetrics.org/> (Accessed July 2015)

Editoria scientifica

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<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0127502>

Blobaum, Paul M., "Blobaum's Checklist for Review of Journal Quality for Submission of Scholarly Manuscripts" (2013). *Faculty Research and Creative Activity*. Paper 27.

<http://opus.govst.edu/faculty/27>



CITESCORE

It is a new bibliometric indicator (launched in December 2016)

Calculated using data from Scopus, it is the average citations per document that a title* receives over a 3-year period.

*title = most active serial titles in Scopus: peer-reviewed journals, trade journals, book series, conference proceedings



CITESCORE

Citescore covers 22,000 titles

JIF covers 12,000 titles

Van Noorden R. 2016. Controversial impact factor gets a heavyweight rival.
Nature 540(7633):325.



CITESCORE

CiteScore 2016 counts the citations received in 2016 to documents published in 2013, 2014 or 2015, and divides this by the number of documents published in 2013, 2014 and 2015



CITESCORE



$$\text{CiteScore 2016} = \frac{\text{Citations in 2016}}{\text{Number of documents published in 3 years}}$$



CITESCORE

CiteScore 2016 of a journal is:

number of citations in 2016 to documents
published in the period 2013-2015

number of documents published in the journal in
the period 2013-2015 (and indexed in Scopus)



CITESCORE

documents in
CiteScore

=

all types of documents (research articles, review articles, conference proceedings, editorials errata, letters, notes, and short surveys) are included in the calculation. Although articles in press are included in Scopus, they are not included in the calculation



CITESCORE

You can access CiteScore:

✓ in Scopus > ■ Sources
■ Compare Sources

✓ in <https://journalmetrics.scopus.com/> (free)



CITESCORE TRACKER

CiteScore 2016 has been calculated through the number of citations and documents indexed by Scopus until 31 May 2017. From then on it has no longer changed (no update).

So CiteScore is calculated annually, like IF.
But, unlike IF, you can see how CiteScore is growing in the current year, with **CiteScore Tracker (monthly updates)**.



CITESCORE

If you will have to cite the CiteScore of the journal you have published in (e.g. in your C.V.), cite it this way:

CiteScore™ 2016 for Chembiochem. Calculated by Scopus on 23 May 2017.

Available from <https://www.scopus.com/sourceid/16944>



CITESCORE vs IMPACT FACTOR

IMPACT FACTOR

number of citations in 1 year
to documents published in
the previous **2 or 5 years**

documents* published in the
previous 2 or 5 years

* **articles and reviews** indexed
by Web of Science

CITESCORE

number of citations in 1 year
to documents** published in
the previous **3 years**

documents** published in the
previous 3 years

** **all kinds of documents**
indexed by Scopus



SJR: SCIMAGO JOURNAL RANKING

it is a journal metrics that measures the scientific influence of scholarly journals, developed from **Scopus data**

it is based on the number of citations received by the journal and on the prestige of journals where citations come from

It is like a prestige measure



SJR: SCIMAGO JOURNAL RANKING

in other words, SJR “weights” citations:
citations are **weighted**, worth more or less,
depending on the source they come from

the important journals will be those which receive
many citations from other important journals



SJR: SCIMAGO JOURNAL RANKING

It is calculated from citations given in the present year to the publications of a journal in the past three years

there is a limit to self citations (33%) [from the journal to the same journal]

counted citations are from and to articles, reviews, conference proceedings only



SJR: SCIMAGO JOURNAL RANKING

average number of weighted citations
received in a year by the documents
published in the past 3 years

number of documents published in the past
3 years



SNIP: SOURCE NORMALIZED IMPACT PER PAPER

it's a journal metrics that measures contextual citation impact. It weights citation based on the total number of citations in a subject field (Scopus citation data)

subject areas have different behaviour in citing: some cite more, some cite less

SNIP normalizes citations values, depending on subject area



SNIP: SOURCE NORMALIZED IMPACT PER PAPER

$$\text{SNIP} = \frac{\text{impact}}{\text{citation potential}^*}$$

$$\text{impact} = \frac{\text{citations}}{\text{articles (3 y)}}$$

e.g high in biology, low in mathematics



SNIP: SOURCE NORMALIZED IMPACT PER PAPER

it's calculated from citations given in the present year to the publications of a journal in the past three years

citations counted are from and to articles, reviews, conference proceedings only



SCIMAGO

<http://www.scimagojr.com/> (free access)

- ✓ journals rankings by SJR, h-index and other citation parameters
- ✓ comparison of two or more journals (various parameters)
- ✓ country rankings



SCIMAGO: JOURNAL RANKING

	Title	SJR	H index	Total Docs. (2011)	Total Docs. (3years)	Total Refs.	Total Cites (3years)	Citable Docs. (3years)	Cites / Doc. (2years)	Ref. / Doc.	Country
1	Annual Review of Biochemistry	Q1 23,856	202	42	94	6.209	3.209	94	34,60	147,83	
2	Annual Review of Biophysics	Q1 11,204	105	18	71	1.867	1.232	70	13,30	103,72	
3	Annual Review of Genomics and Human Genetics	Q1 9,38				458	1.005	62	15,20	136,56	
4	Trends in Biochemical Sciences	Q1 7,039	195	75	258	5.737	2.593				
5	Acta Crystallographica Section D: Biological Crystallography	Q1 6,277	93	129	462	4.773	4.267				
6	Critical Reviews in Biochemistry and Molecular Biology	Q1 5,163	67	34	84	4.763	636	71	7,51	140,09	
7	Current Opinion in Chemical Biology	Q1 3,984	116	132	300	5.778	2.761	272	9,86	43,77	
8	Molecular Biology and Evolution	Q1 3,352	140	301	808	17.029	4.852	777	5,41	56,57	

h-index

«impact factor»
based on
Scopus data

SJR quartile



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SCIMAGO: JOURNAL RANKING

	Title	SJR	H index	Total Docs. (2011)	Total Docs. (3years)	Total Refs.	Total Cites (3years)	Citable Docs. (3years)	Cites / Doc. (2years)	Ref. / Doc.	Country
1	Annual Review of Biochemistry	Q1 23,856	202	42	94	6.209	3.209	94	34,60	147,83	
2	Annual Review of Biophysics	Q1 11,204	105	18	71	1.867	1.232	70	13,30	103,72	
3	Annual Review of Genomics and Human Genetics	Q1 9,388	70	18	62						
4	Trends in Biochemical Sciences	Q1 7,039	195	75	258	5.737	2.593	218	11,63	76,49	
5	Acta Crystallographica Section D: Biological Crystallography	Q1 6,277	93	129	462	4.773	4.267	447	12,70	37,00	
6	Critical Reviews in Biochemistry and Molecular Biology	Q1 5,163	67	34	84	4.763	638	71	7,51	140,09	
7	Current Opinion in Chemical Biology	Q1 3,984	116	132	300	5.778	2.761	272	9,86	43,77	
8	Molecular Biology and Evolution	Q1 3,352	140	301	808	17.029	4.852	777	5,41	56,57	

number of references per paper (mean)



CWTS JOURNAL INDICATORS

<http://www.journalindicators.com/> (free access)

journals rankings by:

- ✓ **SNIP**
- ✓ **IPP** (Impact Per Publication): number of citations given in the present year to publications in the past three years / total number of publications in the past three years (in other words, it is a 3 years IF)



COMPARE SOURCES IN SCOPUS

tool of Scopus to analyze and compare up to 10 journals on these parameters:

- ✓ **SJR**
- ✓ **CiteScore**
- ✓ **SNIP**
- ✓ number of citations
- ✓ number of documents
- ✓ % not cited
- ✓ % reviews



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AUTHOR METRICS



HIRSCH INDEX (h-index)

- ✓ measures the output of a scientist through: the number of citations of his published works and the number of published works
- ✓ It is applied to journals, research teams, institutions, nations as well (see Scimago)
- ✓ It is always a whole number

Hirsch, J. E. (2005). An index to quantify an individual's scientific research output. *Proc.Nat.Acad.Sci.*, 46, 16569.



HIRSCH INDEX (h-index)

" A scientist has index h if h of his/her N_p papers have at least h citations each, and the other $(N_p - h)$ papers have no more than h citations each"

Eg. I have an h -index = 12: it means that I have published 12 works that have been cited 12 times at least:

I have published 50 works: 12 have received 12 or more citations, 38 have received less than 12 citations

The h -index of an author cannot be more than the number of his published works



HIRSCH INDEX (h-index)

The h-index looks to be a disadvantage to young researchers (with few publications even though highly cited) with respect to their older colleagues



HIRSCH INDEX (h-index)

other properties:

- ✓ can only increase to a maximum
- ✓ highly cited works have little influence
- ✓ the influence of less cited works can be very low



HIRSCH INDEX (h-index)

Nobel Prize in Chemistry

	papers	h index*
[2017] Jacques Dubochet (1942)	140	51 (43)
[2016] Fraser Stoddart (1942)	1006	139 (138)
[2016] Bernard Feringa (1951)	798	105 (100)

* h index from Scopus (h index from Web of Science)



DERIVATIVES OF THE H-INDEX

✓ **g-index**

derivative of the h-index which gives more priority to highly cited works

✓ **contemporary h-index (hc-index)**

derivative of the h-index which prioritizes recent works.

It is calculated like the h-index; it takes into account the number of publications and the corresponding number of citations of each single work as shown below:

$$\text{Effective number of citations to the work} \times \frac{4}{\text{Number of years elapsed after the publication}}$$



H INDEX: WHERE?

you can find the h-index of a researcher in:

- ✓ Scopus
- ✓ Web of Science
- ✓ Publish or Perish (free software based on Google Scholar data)
- ✓ Google Scholar (only if the author has a profile)

Scopus' analysis is based on data from 1996*

Web of Science data from 1985

*Scopus is in progress of updating pre-1996 cited references going back to 1970. The h-index might increase over time



H INDEX: WHERE?

Quite often, the h index changes, depending on the database you are using

e.g.

F. Rastrelli: 20 from GS, 18 from Scopus, 18 from Web of Science

L. Armelao: 38 from GS, 34 from Scopus, 34 from Web of Science

L. Nodari: 17 from GS, 15 from Scopus, 17 from Web of Science



H INDEX: GOOGLE SCHOLAR

You can create your own profile in GS, so you will have an h index there as well

Web of Science [v.5.25.1] - W | Scopus - Author search result | Google Scholar

https://scholar.google.it/schhp?hl=it&as_sdt=0,5

Più visitati | Come iniziare | Save to RefWorks

SBArra | Link | Cerca in: » Parole chiave:

Il mio profilo | La mia biblioteca

Google Sch

Qualsiasi lingua | Pagine in It



H INDEX

h-index can be calculated for

- ✓ a researcher
- ✓ a group of researchers
- ✓ a department
- ✓ an institution
- ✓ a country
- ✓ a journal

see <http://www.scimagojr.com/>



ORCID ID

ORCID is an international nonprofit organization
it is supported by some of the most important publishers, institutions,
professional associations

Registration for an ORCID ID is free

you can register for
an ORCID ID and add details of the articles to your profile

<http://orcid.org/>

You can link your ORCID record to other identifiers (e.g. ResearcherID,
LinkedIn, Scopus id)



ORCID ID

It is a unique digital identifier: it reliably and persistently distinguishes researchers and their work from each other

that is it distinguishes research activities of a researcher from those of others with similar names

Most of journals usually ask now authors of papers to submit, their ORCID ID

ORCID ID is an alphanumeric code like
0000-0000-0000-0000



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ARTICLE METRICS



Number of citations received (obviously)

Field-Weighted Citation Impact (in Scopus)

is the ratio of the article's citations to the average number of citations received by all similar articles over a three-year window.

Field-Weighted Citation Impact shows how well cited this article is when compared to similar articles. A FWCI greater than 1.00 means the article is more cited than expected according to the average.



Altmetrics

- Altmetrics are non-traditional metrics proposed as an alternative to traditional citation metrics.
- They can be applied to people, journals, books, presentations, videos, web pages, etc.
- They covers other aspects of the impact of a work, such as how many data and knowledge bases refer to it, article views, downloads, or mentions in social media and news media new way of measuring different, non-traditional forms of impact, potentially of non-traditional outputs



Major Altmetrics Trackers:



Altmetric.com <http://www.altmetric.com/>

Altmetric.com is used by Scopus and PLOS, on social media sites like Twitter and Facebook, science blogs, news sites and reference managers like Mendeley. Big publishers joined Altmetric.com: Springer, Nature Publishing Group, Wiley, BiomedCentral, Highwire etc.

ImpactStory <https://impactstory.org/>

Free, open source web application collecting data from a variety of sources related to a broad set of resources including preprint, datasets, presentation slides etc. It allows users to create a personal profile and track the web impact of their work (academic and/or public)

PlumX <https://plu.mx>

Compares impact not only of individual researchers but of research centers, departments and institutions too

<http://altmetrics.org/tools/>

Special issue on alternative metrics. Research Trends Issue 37 June 2014

<http://www.researchtrends.com/issue-37-june-2014/a-brief-history-of-altmetrics/>





Databases and Altmetrics

SCOPUS



PlumX

Web of Science



Altmetrics



Altmetrics metrics

PROS

- Immediacy
- Coverage of different types of research output
- Impact on the general public (not only scholarly community)
- Harvesting of more reliable data

CONS

- Immediacy and quality of research evaluation
- Social media and usage statistics vulnerability to manipulation
- Lack of standardization across different metrics
- Obsolescence of data

Barbaro A., D. Gentili, C. Rebuffi. Altmetrics as new indicators of scientific impact. Journal of EAHIL 2014, vo. 10(1), 3-6.

NISO Alternatives Assessment Metrics (Altmetrics) Initiative

http://www.niso.org/topics/tl/altmetrics_initiative

NISO Altmetrics Standards Project White Paper

http://www.niso.org/apps/group_public/download.php/13295/niso_altmetrics_white_paper_draft_v4.pdf



AND, AT LAST, SOME TIPS FOR INCREASING THE VISIBILITY OF YOUR WORKS AND THEIR CITATION IMPACT

- ✓ Load your articles on your institutional repository or webpage
- ✓ Load your articles (preprint version) in a subject repository. Most publishers allow that (the new ChemRxiv?)
- ✓ Announce your articles on Twitter or Facebook or Google+. Post the link to the full text of the articles



AND, AT LAST, SOME TIPS FOR INCREASING THE VISIBILITY OF YOUR WORKS AND THEIR CITATION IMPACT

- ✓ Create your ORCID account and add your articles to it
- ✓ Save your articles in your personal profile linked to the academic networks of citation managers like Mendeley, Zotero, CiteULike
- ✓ Create a Google Scholar profile and track citations to your articles



RESEARCH QUALITY ASSESSMENT (VQR) 2011-2014

Every researcher of a department had to submit his/her "best" works published over the years 2011-2014: 2 for professors (3 if he/she comes from a research institution), 2 or 1 or 0 for researchers, depending on the starting date of the career

Works = articles, letters, reviews, conference papers, book chapters and so on

How was the assessment?

- ✓ Bibliometrics, that differ from GEV to GEV
- ✓ Informed peer review



BIBLIOMETRICS IN RESEARCH QUALITY ASSESSMENT (VQR) 2011-2014

GEV Scienze chimiche

the journal indicators were:

from WoS: 5-year Impact Factor (5YIF) as indicator of popularity and Article Influence (AI), as indicator of prestige

in Scopus: Impact per Publication (IPP), as indicator of popularity, and SCImago Journal Rank (SJR), as indicator of prestige

every researcher/department indicated from which database should be the two indicators



BIBLIOMETRICS IN RESEARCH QUALITY ASSESSMENT (VQR) 2011-2014

GEV Scienze chimiche

the article indicator was:

number of citations received



National scientific qualification to function as a university professor, full or associate

Candidates had to have a higher value than the median (calculated on all candidates in the same discipline) in two at least of the following three parameters

- 1) total number of papers published (indexed by the international databases) in a 10 years period, parametrized only if the "academic age" of the candidate is less than ten years (the parametrization is calculated multiplying the total number of papers per ten and dividing by the academic age)
- 2) total number of citations parametrized by the academic age
- 3) Hirsch index parametrized by the academic age (contemporary h-index)



BIBLIOMETRICS IN THE CALLS FOR ADMISSION: AN EXAMPLE FOR A RESEARCH ASSISTANT

- ✓ total number of citations for all papers published
- ✓ average number of citations per paper
- ✓ total impact factor (sum of the IF of the journals that published the papers)
- ✓ average impact factor of the journals that published the papers



“L’uso del solo indicatore citazionale costituisce un obiettivo facile per possibili future manipolazioni, inducendo comportamenti fuorvianti quali l’estensiva autocitazione e la citazione mutua all’interno di un gruppo ristretto, non giustificate da considerazione di natura tecnica”

ANVUR, bando VQR 2004-2010



“Si ritiene importante comunicare ai giovani ricercatori il messaggio che esiste un livello qualitativo anche profondamente diverso tra le varie riviste e che ci si debba cimentare con severe procedure di peer review e avere, quale obiettivo, quello di pubblicare nelle migliori riviste del proprio settore”

ANVUR, bando VQR 2004-2010