

What is Impact? Bibliometrics for Editors

ISMTE

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ROADMAP

Key Concepts & History Databases

- Web of Science
- Scopus
- Google Scholar

Types of Metrics

- Journal-level (Impact Factor, CiteScore, SJR)
- Article-level (Citation counts, RCR, Altmetrics)
- Author-level (h-index, i10-index, m-para)

Citation Analysis

- Citation Peaks
- Networks of Influence



SESSION OBJECTIVES

Following this session, you will:

- Be familiar with a range of metrics available for evaluating journal and content performance.
- Emerge with some guidelines to help you select appropriate sets of metrics for different cases.
- Know how to translate bibliometric data findings to actionable editorial strategy.





KEY CONCEPTS

CITATIONS

Inflated, conflated, and often manipulated.



'Game of Thrones': The major battle scenes, ranked

Washington Post · 20h ago

RELATED COVERAGE

Game of Thrones: Daenerys' Stand-In Is the Spitting Image of the Khaleesi Herself

Highly Cited · People Magazine · Apr 22, 2015



Giant dinosaur slims down... a bit

BBC News · 2h ago

RELATED COVERAGE

New giant titanosaur from Patagonia | Proceedings of the Royal Society of London B: Biological Sciences

Most Referenced · Proceedings of the Royal Society B - Journals · 7h ago



HOW DO YOU DEFINE IMPACT?

Number of publications?

Number of citations?

Rate of citation growth?

Recognition of peers? Prizes?

Career progression? Early tenure?

Practical application of findings?

$$F = \frac{m(v - u)}{\Delta t}$$



?



CITATIONS AND IMPACT

Why it has become more difficult to predict Nobel Prize winners: a bibliometric analysis of Nominees and Winners of the Chemistry and Physics Prizes (1901–2007)

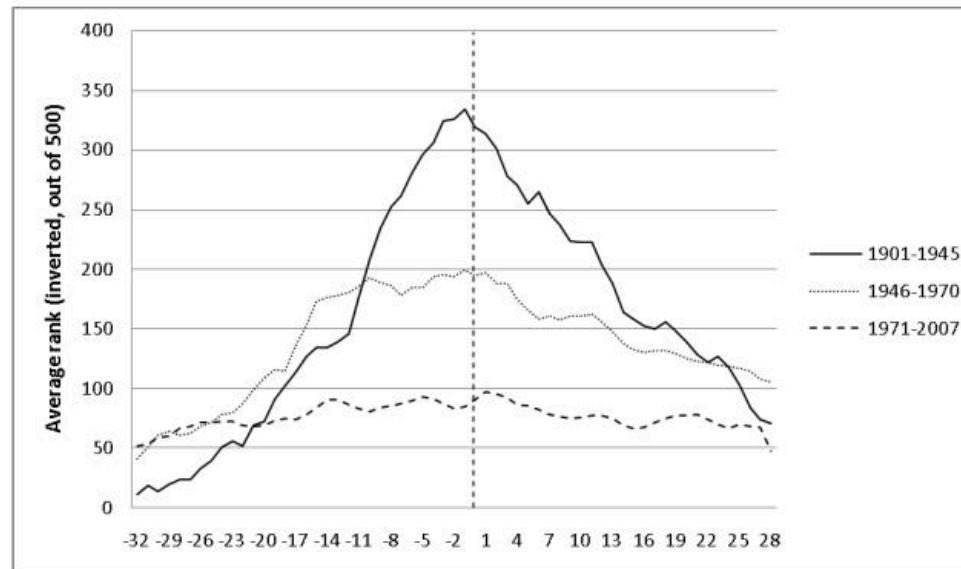


Figure 3 : Physics prizewinners' citation rankings, averaged over all years for three different periods. Once again, the vertical dashed line represents the year "0", when the Prize is won.

Source: arXiv:0808.2517v1 [physics.soc-ph]

METRICS

Bibliometrics

- Origin in print
- Citation-based
- Lagging indicators



Altmetrics

- Digital genesis
- Data derived from social media
- Immediate



WHAT ARE BIBLIOMETRICS?

“...the application of mathematics and statistical methods to books and other media of communication”

— Alan Pritchard (1969)



Source: *Journal of Documentation*.
1969 Dec;25(4):348-349.



BIBLIOMETRICS PROVIDE

Tools to track articles, authors, organizations, funders

A statistical approach to normalize publication performance against that of its cohort

Analysis of structure and dynamics of the field

Rationale for design of editorial processes and policies

Adapted from:
NIH Library <https://nihlibrary.nih.gov>



CITATION INDEX

- Citation indexes for science; a new dimension in documentation through association of ideas.
(*Science*. 1955;122(3159):108-11)
- Institute for Scientific Information (ISI) established in 1961 – began to publish Science Citation Index.
- Journal Citation Reports by Clarivate (formerly Thomson Reuters)



IMPACT FACTOR



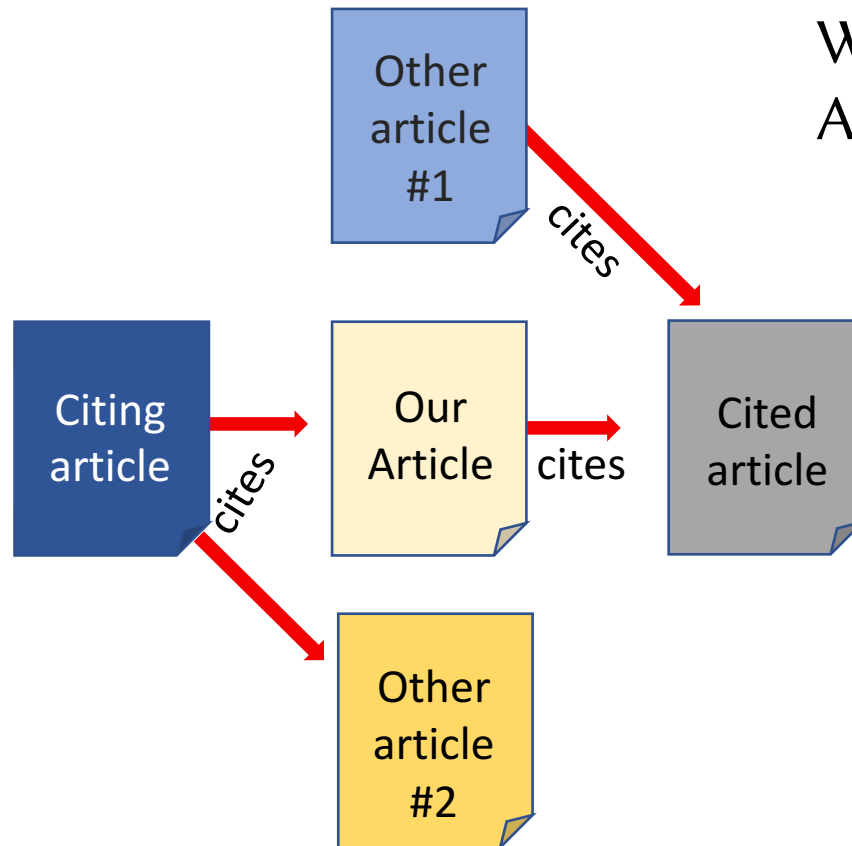
“Like nuclear energy, the impact factor is a mixed blessing. I expected it to be used constructively while recognizing that in the wrong hands it might be abused.”

—Eugene Garfield (1999)

Source: *CMAJ*. 1999;161(8): 979-980



WHAT IS CITATION ANALYSIS?



Who is citing what and when?
Also, why?

Our Article & Other Article #1
are **bibliographically coupled**
(i.e. by virtue of the article we
both cite)

Our Article & Other Article #2
are **co-cited** (i.e. in the article
that cited us both)





DATA SOURCES

DATABASES

Clarivate Analytics

Web of Science
Journal Citation Reports

Impact Factor
Immediacy Index
Eigenfactor

Elsevier

Scopus

CiteScore
SNIP/IPP
SJR

Google

Google
Scholar

Google
Journal
Rank
(h5-index)



WEB OF SCIENCE

[Web of Science](#) [InCites](#) [Journal Citation Reports](#) [Essential Science Indicators](#) [EndNote](#) [Publons](#) [Sign In](#) [Help](#) [English](#)

Web of Science

Clarivate Analytics

[Search](#) [Search Results](#) [My Tools](#) [Search History](#) [Marked List](#)

Results: 797
(from Web of Science Core Collection)

You searched for: TOPIC: ("JOURNAL IMPACT FACTOR") ...[More](#)

[Create Alert](#)

Refine Results

Search within results for...

Filter results by:

☐ Highly Cited in Field (7)

[Refine](#)

Publication Years

☐ 2016 (80)

☐ 2015 (79)

☐ 2012 (78)

Sort by: Publication Date -- newest to oldest

Page 1 of 80

☐ Select Page **5K** [Add to Marked List](#)

[Create Citation Report](#)

[Analyze Results](#)

Times Cited: 0
(from Web of Science Core Collection)

[Usage Count](#)

☐ 1. **Impact factor distribution revisited**

By: Huang, Ding-wei
PHYSICA A-STATISTICAL MECHANICS AND ITS APPLICATIONS Volume: 482 Pages: 173-180 Published: SEP 15 2017

ARTICLE LINKER [Full Text from Publisher](#)

[View Abstract](#)

☐ 2. **The emerging landscape of scientific publishing**

By: Fiala, Clare; Diamandis, Eleftherios P.
CLINICAL BIOCHEMISTRY Volume: 50 Issue: 12 Pages: 651-655 Published: AUG 2017

ARTICLE LINKER [Full Text from Publisher](#)

[View Abstract](#)

<https://www.webofknowledge.com/>



JOURNAL CITATION REPORTS

The screenshot shows the InCites Journal Citation Reports interface. At the top, there is a navigation bar with links to Web of Science, InCites, Journal Citation Reports, Essential Science Indicators, and EndNote. The main header features the InCites logo and the Thomson Reuters logo. Below the header, there is a 'Home' button and a download icon. The main content area is divided into two tabs: 'Journals By Rank' and 'Categories By Rank'. Under 'Journals By Rank', there is a search bar labeled 'Master Search' and a 'Show Visualization +' button. Below the search bar, there are three buttons: 'Compare Selected Journals', 'Add Journals to New or Existing List', and 'Customize Indicators'. The main table displays a list of journals ranked by impact factor. The table has columns for 'Select All', 'Full Journal Title', 'Total Cites', 'Journal Impact Factor', and 'Eigenfactor Score'. The first three rows of the table are visible, showing the New England Journal of Medicine, Lancet, and JAMA Journal of the American Medical Association.

| Select All | | Full Journal Title | Total Cites | Journal Impact Factor | Eigenfactor Score |
|--------------------------|---|--|-------------|-----------------------|-------------------|
| <input type="checkbox"/> | 1 | NEW ENGLAND JOURNAL OF MEDICINE | 315,143 | 72.406 | 0.70077 |
| <input type="checkbox"/> | 2 | LANCET | 214,732 | 47.831 | 0.40493 |
| <input type="checkbox"/> | 3 | JAMA JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION | 141,015 | 44.405 | 0.28091 |

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

SCOPUS

Powered by Scopus®

Help ▾

Journal Metrics

Get involved >

CiteScore 2016 values are here!

CiteScore metrics from Scopus are comprehensive, transparent, current and free metrics for serial titles in Scopus.

Read more >

Refine titles ⓘ

ⓘ CiteScore 2016 methodology ⬇ Download all metrics

Refine by subject areas...



Search titles...



2016



Show more filters

Showing 22,618 titles

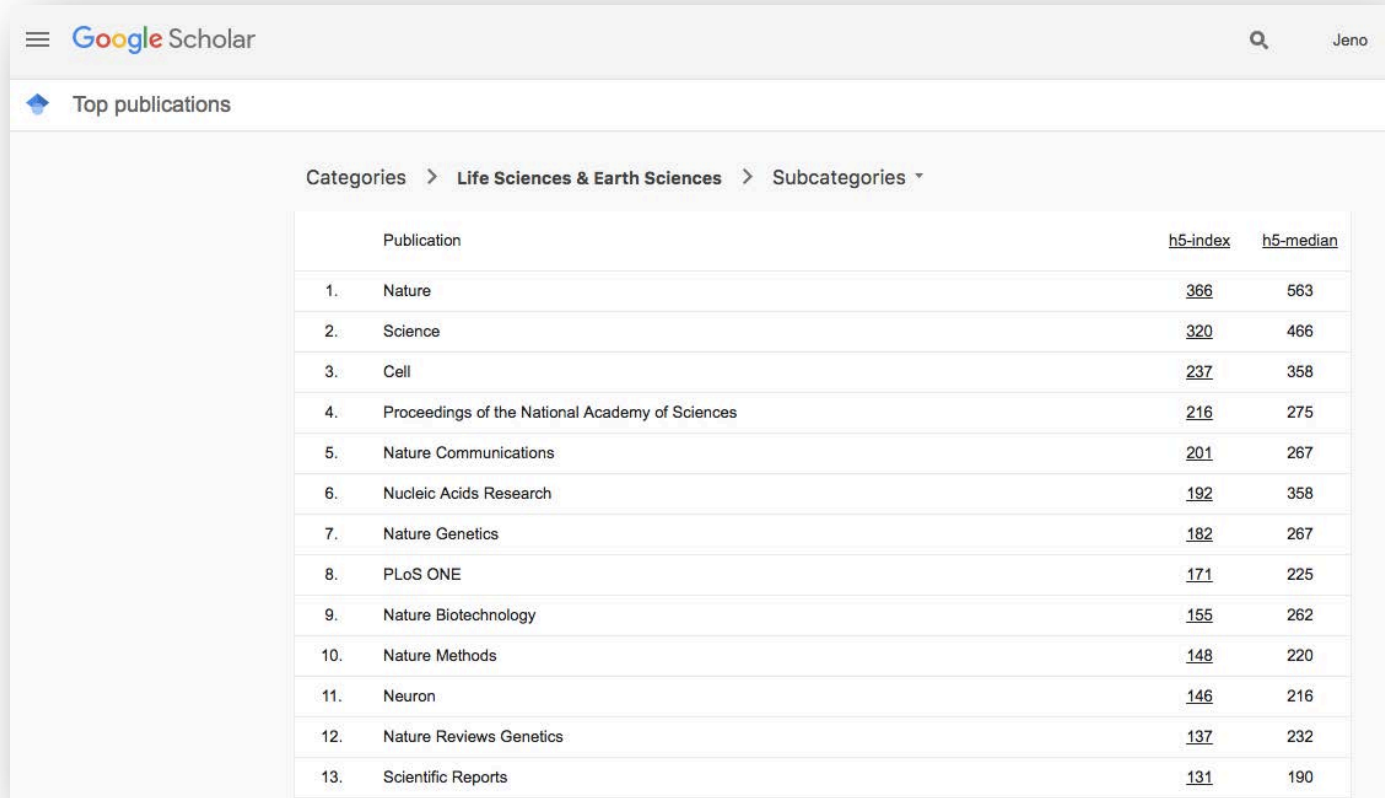
Clear Filters

CiteScore metrics calculated on 31 May, 2017. SNIP and SJR calculated on 27 June, 2017

| ⓘ | Title | CiteScore ▾ | Highest CiteScore Percentile | CiteScore Rank | Citations 2016 ⚙ | Documents 2013-15 ⚙ | % Cited | SNIP | SJR |
|---|---|-------------|------------------------------|----------------|------------------|---------------------|---------|--------|--------|
| 1 | Ca-A Cancer Journal for Clinicians <i>Hematology</i> | 89.23 | 99% | 1/117 | 11,957 | 134 | 72% | 67.564 | 39.285 |

<https://journalmetrics.scopus.com/>

GOOGLE SCHOLAR



The screenshot shows the Google Scholar interface. At the top, there is a search bar and the user's name 'Jeno'. Below the search bar, the 'Top publications' section is active. The breadcrumb trail indicates the path: 'Categories > Life Sciences & Earth Sciences > Subcategories'. A table lists the top 13 publications, ranked by citation count. The table has three columns: 'Publication', 'h5-index', and 'h5-median'. The publications are listed in descending order of citation count, with 'Nature' at the top and 'Scientific Reports' at the bottom of the list.

| | Publication | h5-index | h5-median |
|-----|---|--------------------------|---------------------------|
| 1. | Nature | 366 | 563 |
| 2. | Science | 320 | 466 |
| 3. | Cell | 237 | 358 |
| 4. | Proceedings of the National Academy of Sciences | 216 | 275 |
| 5. | Nature Communications | 201 | 267 |
| 6. | Nucleic Acids Research | 192 | 358 |
| 7. | Nature Genetics | 182 | 267 |
| 8. | PLoS ONE | 171 | 225 |
| 9. | Nature Biotechnology | 155 | 262 |
| 10. | Nature Methods | 148 | 220 |
| 11. | Neuron | 146 | 216 |
| 12. | Nature Reviews Genetics | 137 | 232 |
| 13. | Scientific Reports | 131 | 190 |

https://scholar.google.com/citations?view_op=top_venues/

EMERGING...

Microsoft Academic

Sign in or Sign up

1-8 of 50000+ results (1.4 seconds) Sort by: Relevance

Date Range
1945 to 2017

Author

- ☐ Katherine M. Flegal
- ☐ Margaret D. Carroll
- ☐ Cynthia L. Ogden
- ☐ Jackson T. Wright
- ☐ JoAnn E. Manson

[Show more](#)

Affiliation

- ☐ Harvard University
- ☐ National Institutes of Health
- ☐ Johns Hopkins University
- ☐ Centers for Disease Control and Prevention
- ☐ University of California, San Francisco
- ☐ University of Washington
- ☐ Duke University

The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: The JNC 7 Report
2003, *JAMA*, volume 289, issue 19, pp 2560-2572
Aram V. Chobanian (Boston University),
George L. Bakris (Rush University Medical Center),
Henry R. Black (Rush University Medical Center),
William C.ushman (University of Tennessee Health Science Center),
Lee A. Green (University of Alberta) +6 others
"The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: The JNC 7 Report"

JAMA
JAMA: The Journal of the American Medical Association is a peer-reviewed medical journal published 48 times a year by the American Medical Association.
jama.ama-assn.org
en.wikipedia.org
bing.com
Fields of Study: Medicine, Pathology, Surgery, Diabetes Mellitus, Public Health, Intensive Care Medicine, Epidemiology, Geriatrics, Physical Therapy

Initiative for Open Citations

The Initiative for Open Citations I4OC is a collaboration between scholarly publishers, researchers, and other interested parties to promote the unrestricted availability of scholarly citation data.



METRICS



“Journal performance is a complex, multidimensional concept that cannot be fully captured in one single metric.”

—Henk F. Moed et al. Citation-based metrics are appropriate tools in journal assessment provided that they are accurate and used in an informed way. *Scientometrics*. 2012;92(2):367–376



METRICS FOR ALL

- **Researchers:** Metrics focused on individual scholarly contribution
- **Editors & Publishers:** Metrics focused on the journals that produce individual scholarly contributions.
- **Administrators:** Metrics focused on research output over time.
- **Various:** Metrics focused on group, institutional, or national output over time.



METRICS FOR EDITORS



- **Field-level:** Aggregate Impact Factor, manual cohort clustering
- **Journal-level:** Impact Factor, Immediacy, Eigenfactor; CiteScore, SJR, SNIP, IPP; h5-index
- **Article-level:** Citation counts, RCR, Altmetrics
- **Author-level:** Citation counts, h-Index, i10-Index, m-Index



IMPACT FACTOR

How is it calculated?

2016 Impact Factor =

$$\frac{\text{Number of cites in 2016 to all papers published in 2014 \& 2015}}{\text{Total number of citable articles published in 2014 \& 2015}}$$

When is it calculated?

Annually, typically released mid-June

What does it mean?

Average frequency of citations to recent articles.

What is a “good” impact factor?

Difficult to say. IFs are highly field specific – one must compare a journal to its citation cohort to determine performance.

Source of data?

Web of Science citation data



IF CONSIDERATIONS

- Impact Factor can be affected significantly by a small number of papers in a journal (skewness).
- Editors can also manipulate the score – through both legal (frontloading, early online) and improper (coercive citation) methods.
- IFs should not be used to compare journals across disciplines.

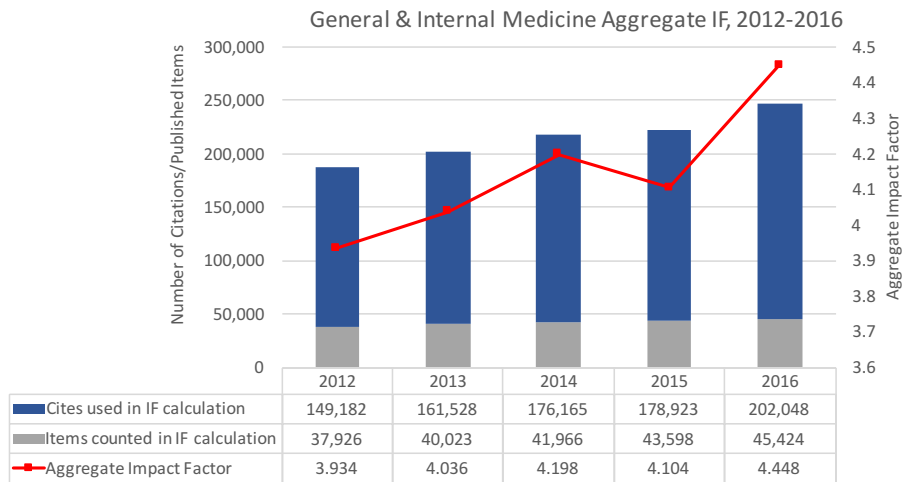
“...impact factors don't tell us as much as some people may think about the respective quality of the science that journals are publishing.”

“Not-so-deep impact”
Nature. 435:1003-1004
(23 June 2005)



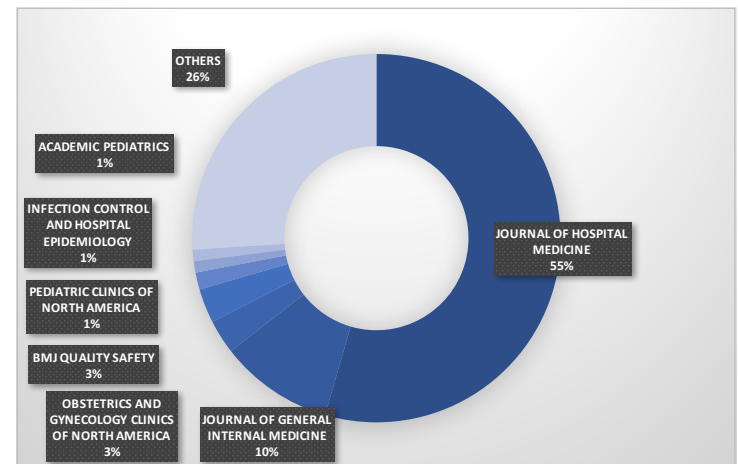
CONSIDER FIELD-LEVEL CONTEXT

Aggregate Impact Factor (JCR Subject Category)



Individual journal impact factors should be considered in light of JCR subject category...

Subfield Norms (Web of Science)



...as well as that of titles publishing within the same citation space.

IMMEDIACY INDEX

How is it calculated?

2016 Immediacy Index =

Number of citations received in 2016
Total number of articles published in 2016

When is it calculated?

Annually, alongside IF in mid-June

What does it mean?

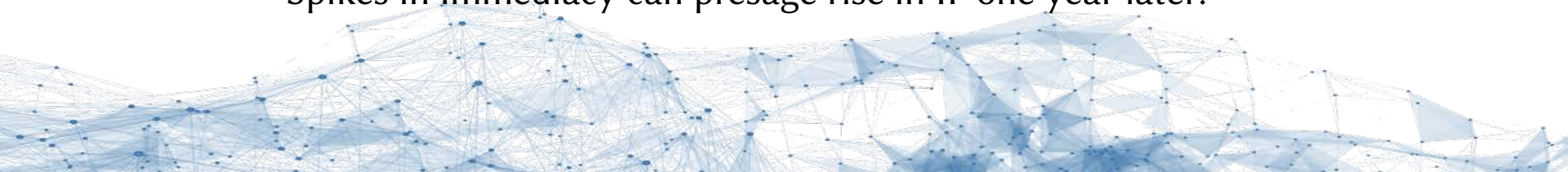
The average number of times an article is cited in the year it is published.

What editorial practices affect it?

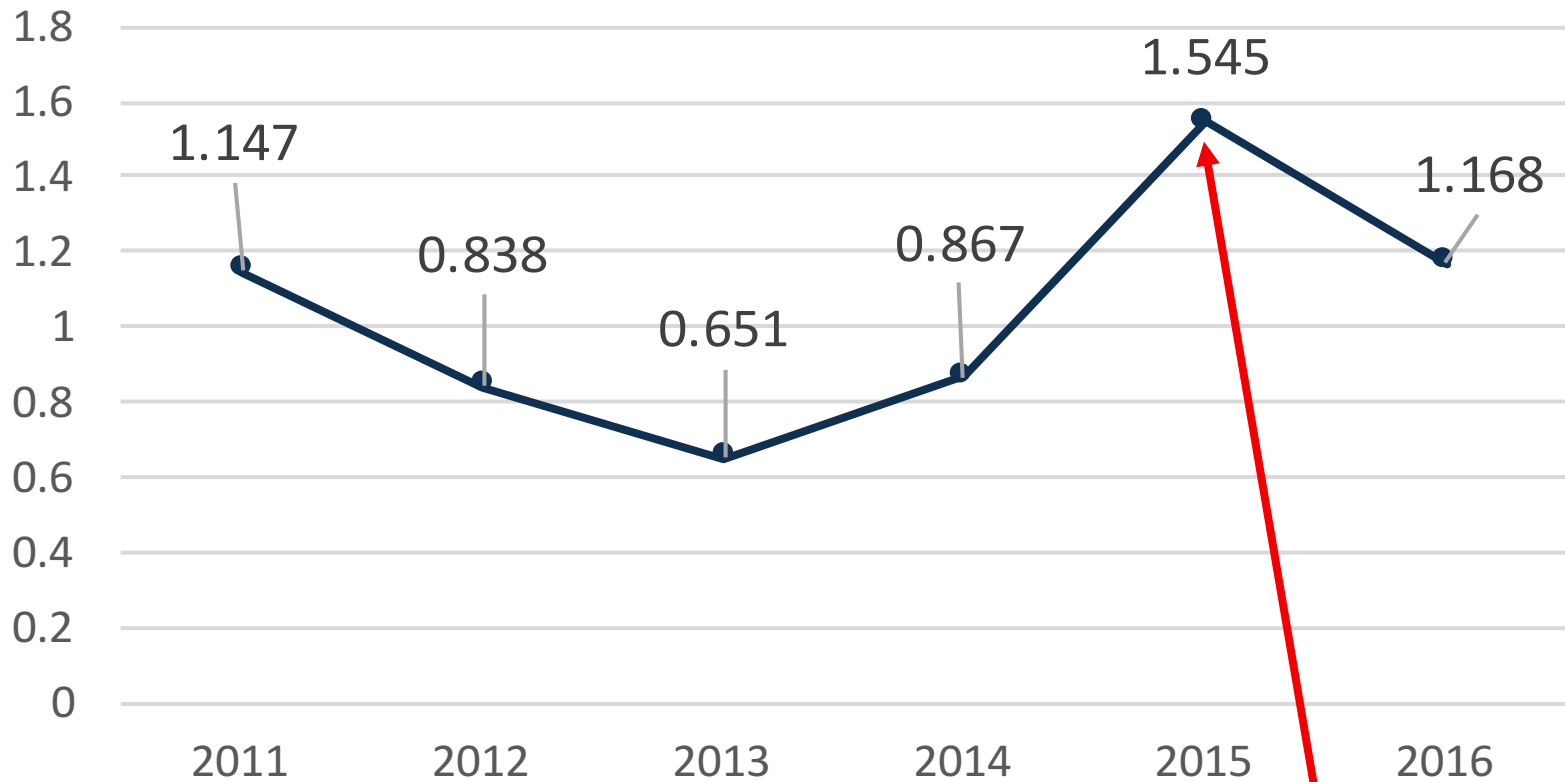
Special issues published early in the year. Publishing content online ahead of print and engaging online readers.

Why does it really matter?

Spikes in immediacy can presage rise in IF one year later.



IMMEDIACY EXAMPLE



This journal published several successful, topical issues in 2015

EIGENFACTOR & ARTICLE INFLUENCE

How are they calculated?

2016 Eigenfactor =

- a) Constructs citation matrix consisting of 2016 citations *from* each journal in JCR *to* each journal (using articles from 2011-2015, not including self-citations).
- b) Scale so that the sum of all journal scores is 100.

2016 Article Influence =
$$\frac{\text{Eigenfactor score for 2016}}{\text{Total number of articles published in 2016}}$$

What do they measure?

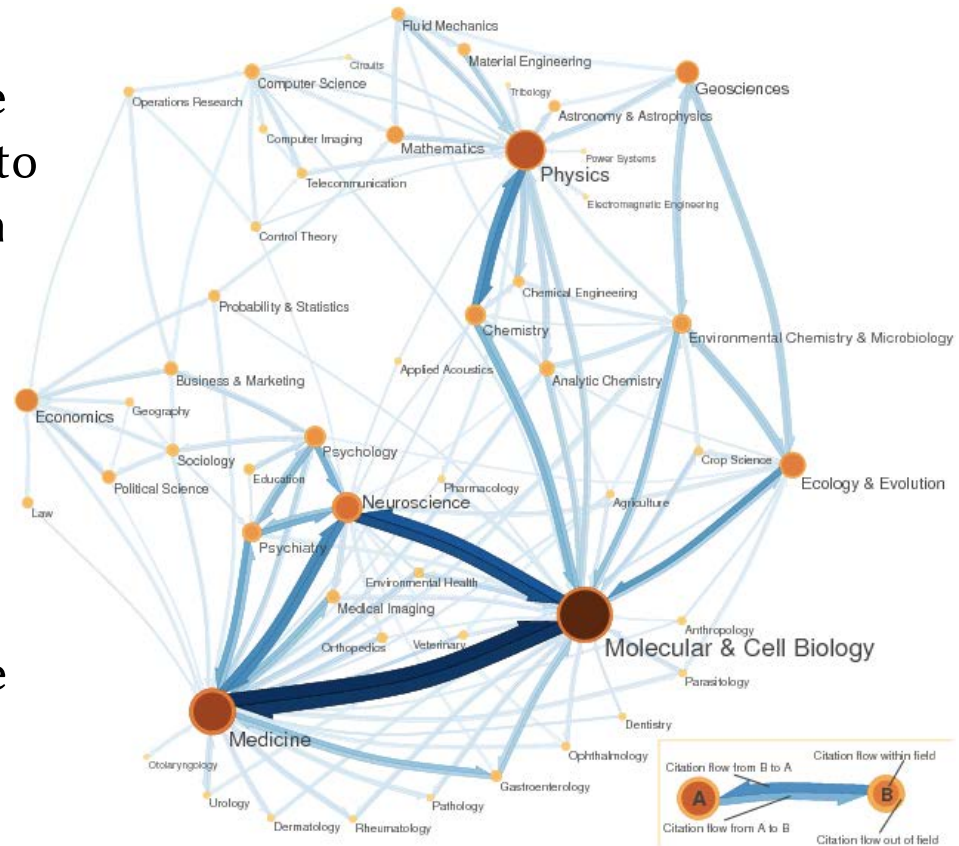
Eigenfactor measures relationships between journals within the scientific community (defined as all journals in JCR). Intended to reflect the influence and prestige of journals.

Article influence measures the average influence, per article, of the papers published in a journal. An Article Influence score greater than 1.00 indicates that the articles in a journal have an above-average influence.



EIGENFACTOR RELATIONSHIPS

- Eigenfactor's algorithm uses the structure of the entire network to evaluate the importance of each journal, regardless of discipline. Self-citations are excluded.
- This corresponds to a mathematical model mimicking the action of a reader following chains of citations as they move from journal to journal.



An abstract graphic at the top of the slide featuring a complex network of blue lines and dots, resembling a molecular structure or a data network, set against a white background.

DEMO: WoS/JCR METRICS

Web of Science:
Eigenfactor:

<http://login.webofknowledge.com>
<http://eigenfactor.org/>



CITEScore

How is it calculated?

2016 CiteScore =

$$\frac{\text{Number of cites in 2016 to articles published 2013-2015}}{\text{Total number of **all** articles published 2013-2015}}$$

When is it calculated?

Monthly updates until annual final score (released in late May).

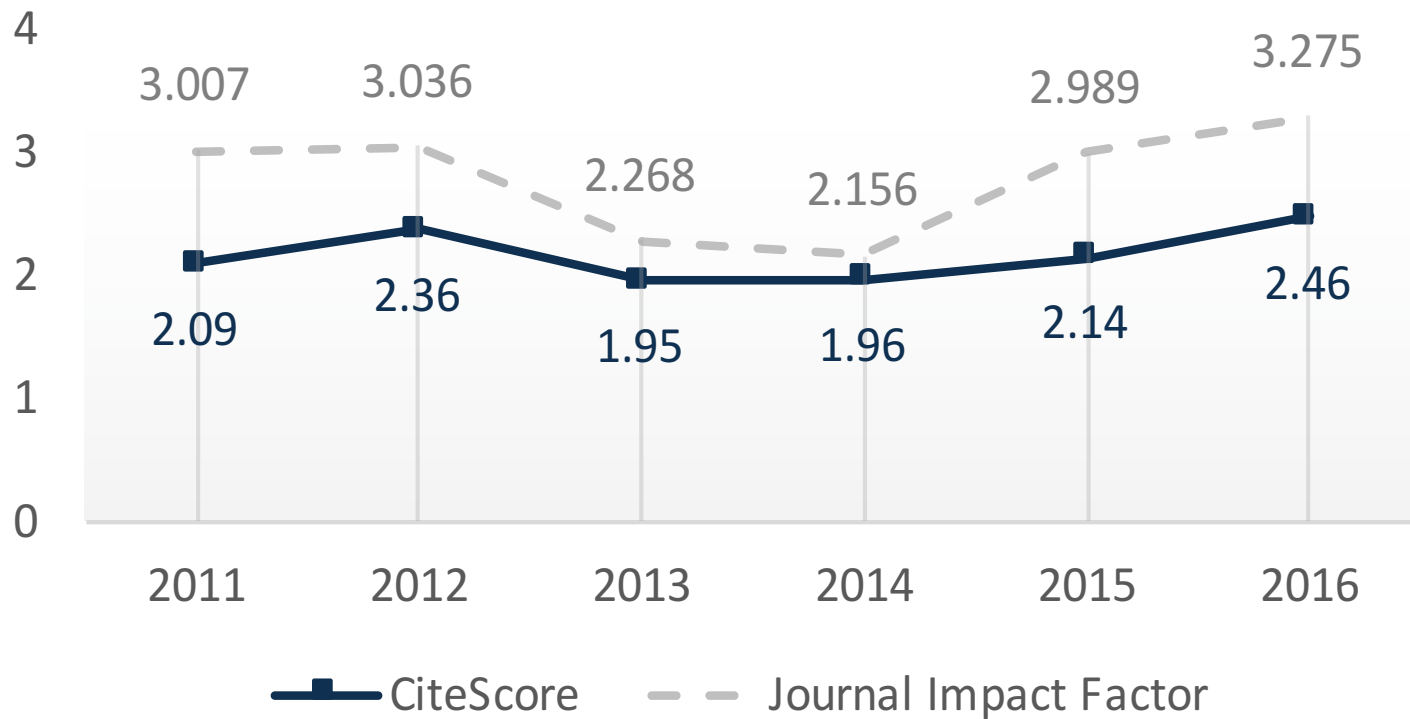
How does it differ from IF?

- Calculated from Scopus journal list, which includes more social sciences and humanities journals.
- Uses 3-year citation window, rather than the 2-year window of the Impact Factor.
- Does not differentiate between article types in denominator – eliminates advantage of publishing large number of editorials, news items, etc
- Free



CITEScore VS IF

This journal publishes a fair number of “noncitable” items (editorials, commentary, letters). The boost seen in IF is not captured by CiteScore. Likewise, pure research journals tend to have CiteScores higher than their IF.



SCIMAGO JOURNAL RANK

How is it calculated?


2016 SJR =

Measures weighted citations received in 2016 to documents published in a journal in years 2013-2015.

Cool. What does that mean?

SJR is a prestige metric that assigns relative scores to all of the sources in a citation network. Similar to Article Influence, a citation from a journal with a high SJR is “worth” more.

How does it differ from Eigenfactor?

- **Size of source network:** SJR is based on Scopus, which contains more journals than WoS, especially in social sciences, engineering, and arts.
 - **Citation window:** SJR uses three years of citation data, vs Eigenfactor’s five-year window.
 - **Self-citation:** SJR allows self-citation, within limits of 1/3 all incoming cites. Eigenfactor eliminates self-citation.
- 
- A decorative graphic at the bottom of the slide featuring a complex network of blue lines and dots, resembling a molecular structure or a citation network, with a wavy, undulating base.

SNIP & IPP

What are these?

2016 Impact per Publication (IPP) =

$$\frac{\text{Number of citations in 2016 to papers published 2013-2015}}{\text{Number of papers published 2013-2015}}$$

2016 Source Normalized Impact per Publication (SNIP) =

SNIP measures actual 2016 citations received relative to citations expected for the serial's subject field

Where are these located?

SNIP is included alongside CiteScore. It is also calculated annually by Leiden University's Centre for Science and Technology Studies, which also curates IPP.

How are these useful?

IPP is essentially CiteScore, minus a few article types. SNIP accounts for differences in citing behavior across fields (the longer the reference list of a citing publication, the lower the value of a citation from it).





DEMO: SCOPUS METRICS

CiteScore:

<https://journalmetrics.scopus.com/>

SJR:

<http://www.scimagojr.com/index.php>

SNIP/IPP:

<http://www.journalindicators.com/indicators>

GOOGLE SCHOLAR JOURNAL RANKING

What metric(s) does Google use to rank journals?

Google Scholar relies on h5-index and h5-median to rank journals. Top-20 lists are provided by subject category.

How are these metrics calculated?

Algorithmically (citation counts provided by computer program).

h5-index is the h-index for articles published in the last 5 complete years. It is the largest number h such that h articles published in 2012-2016 have at least h citations each

h5-median for a journal is the median number of citations for the articles that make up its h5-index.



GOOGLE SCHOLAR EXAMPLE

Categories > Chemical & Material Sciences > Chemical & Material Sciences (general) ▾

| | Publication | <u>h5-index</u> | <u>h5-median</u> |
|-----|--|-----------------|------------------|
| 1. | Chemical Society reviews | <u>241</u> | 346 |
| 2. | Journal of the American Chemical Society | <u>219</u> | 288 |
| 3. | Chemical Reviews | <u>211</u> | 339 |
| 4. | Accounts of Chemical Research | <u>150</u> | 206 |
| 5. | Chemical communications (Cambridge, England) | <u>137</u> | 171 |
| 6. | Nature Chemistry | <u>114</u> | 169 |
| 7. | The Journal of Physical Chemistry Letters | <u>109</u> | 157 |
| 8. | Physical chemistry chemical physics: PCCP | <u>106</u> | 136 |
| 9. | Chemical engineering journal | <u>93</u> | 118 |
| 10. | Chemistry-A European Journal | <u>92</u> | 115 |





CITATIONS



“In the construction and interpretation of journal citation measures it is crucial to take into account differences in communication and citation practices between research fields.”

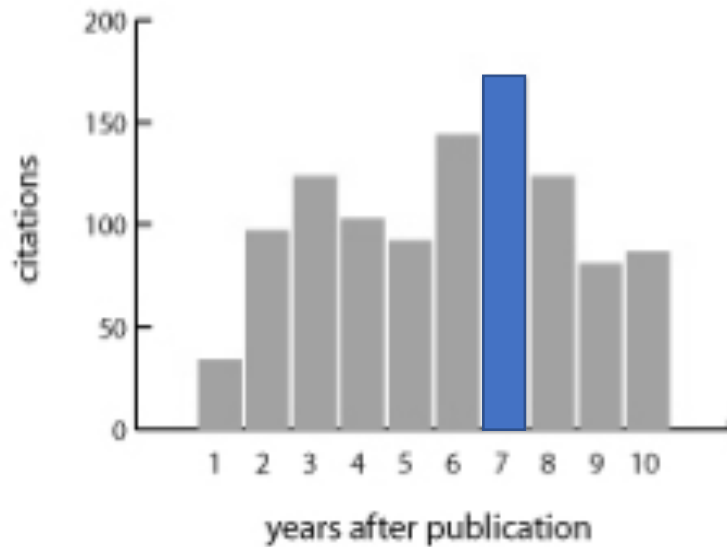
—Moed et al. *Scientometrics*. 2012;92(2):367–376



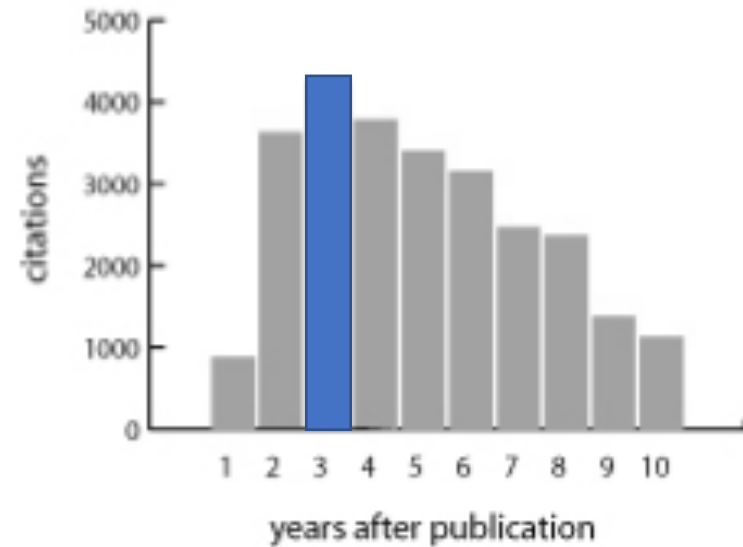
CITATION PEAKS – JOURNALS

number of citations vs. time in years

annals of mathematics

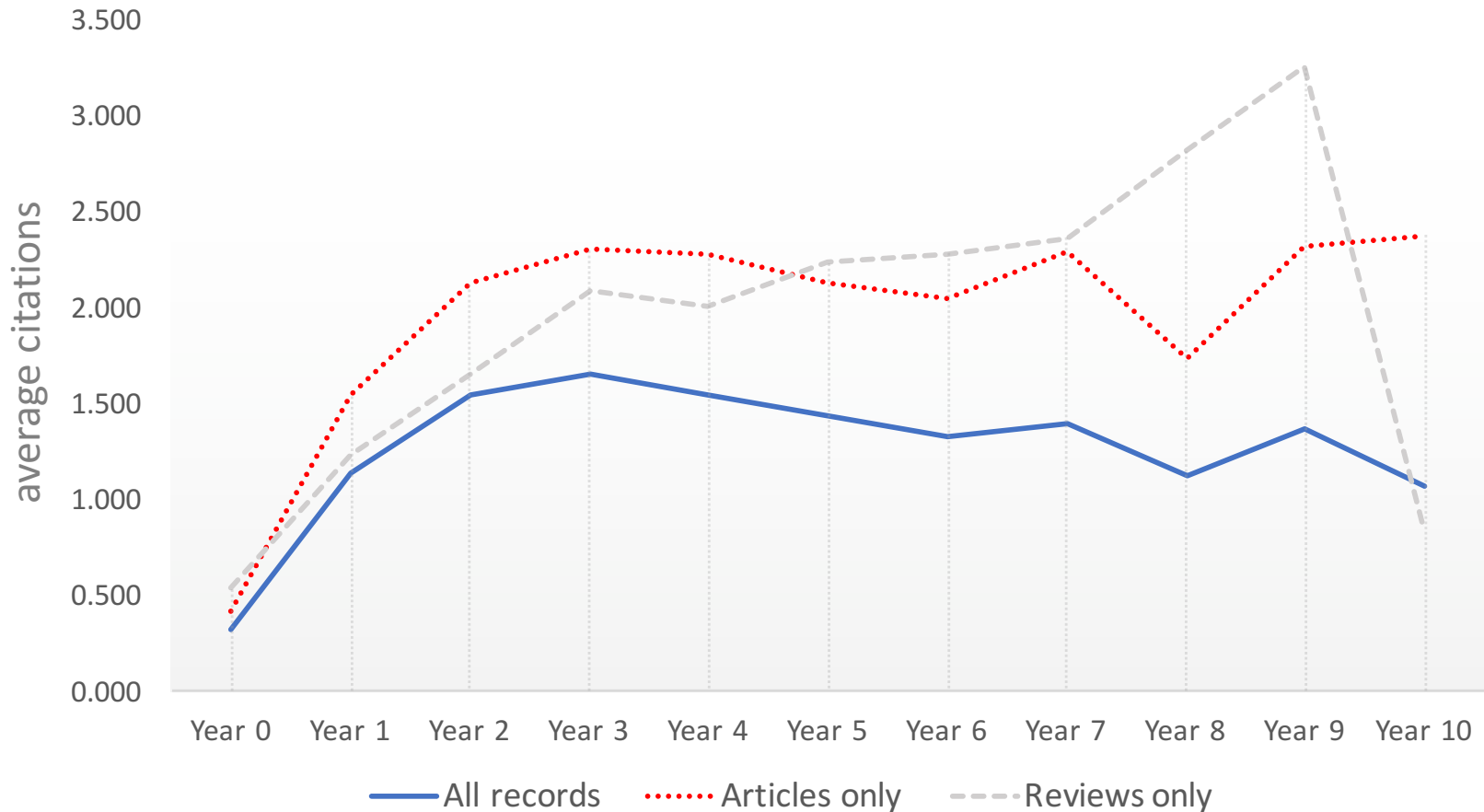


current biology



Source: Eigenfactor.org

CITATION PEAKS – ARTICLE TYPES

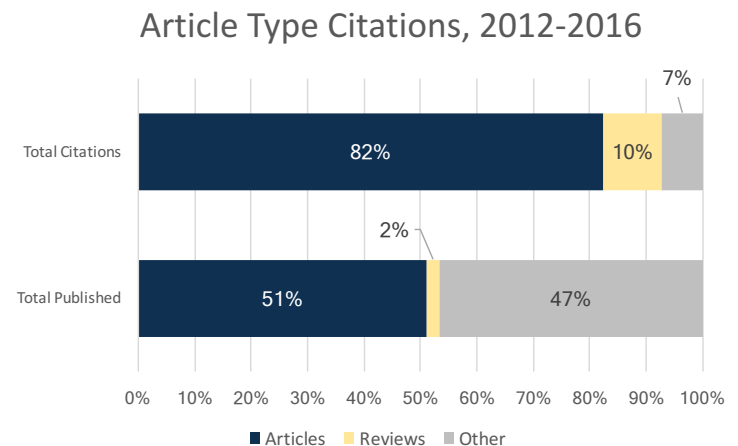
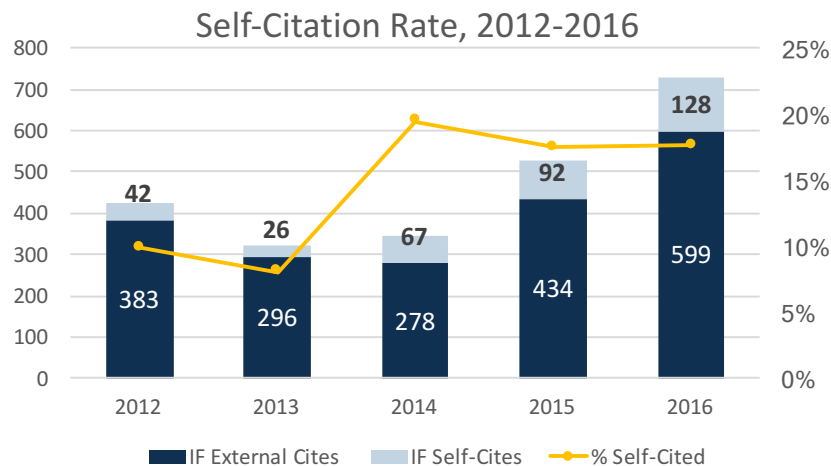


ARTICLE-LEVEL CITATIONS

Web of Science & Scopus:

What? Examine citation rates through time. Partition by article type to gain resolution on the breakdown of citations. Identify highly- or never-cited content.

How? Download citation sets and sort by parameter of interest. Can also retrieve full bibliographic records for visualization of larger patterns.



ARTICLE-LEVEL CITATIONS

Google Scholar:

What? Google Scholar contains high citation counts, as it includes references from diverse sources. For papers not indexed in WoS or Scopus (i.e. historical classics), can look at accrued citations to date.

How?

Use Publish or Perish software to retrieve and analyze citation information. Includes h-index and related parameters.

Publish or Perish Software

The screenshot displays the 'Publish or Perish' software interface. The 'Author impact analysis' tab is active, showing a citation analysis for 'A. Harzing'. The 'Results' section lists various metrics: Papers (131), Citations (254), Cites/paper (24.83), h-index (30), i10-index (35), AIJR (419.96), Years (18), Papers/year (13.56), Cites/year (14.11), h-index (30), i10-index (35), and AIJR (419.96). The 'Citations' metric is highlighted with a red circle. The 'h-index' is also highlighted with a red circle. The 'Results' table lists the top 10 papers, with the first paper, 'Managing the multinational: An international study of control m...', highlighted with a red circle. The 'Citations' column is also highlighted with a red circle. The 'Citations' column is also highlighted with a red circle.

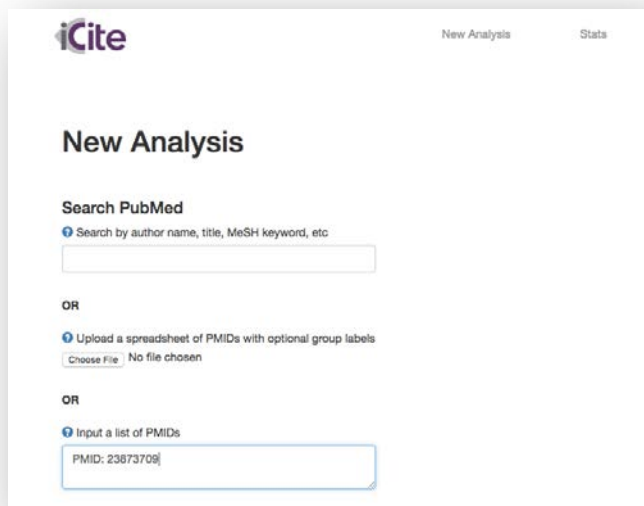
| Cites | Year | Authors | Title | Year | Publication |
|-------|-------|---------------------|---|------|--|
| 231 | 12.77 | AWK Harzing | Managing the multinational: An international study of control m... | 1999 | Cheltenham, England |
| 206 | 20.60 | AWK Harzing | Acquisitions versus greenfield investments: International strat... | 2002 | Strategic Management Journal |
| 205 | 17.08 | AWK Harzing | An empirical analysis and extension of the Bartlett and Ghoshal t... | 2000 | Journal of International Business Studies |
| 188 | 11.06 | AWK Harzing | The persistent myth of high expatriate failure rates | 1995 | International Journal of Human Resource... |
| 185 | 11.00 | AWK Harzing | Response rates in international mail surveys: results of a 22-co... | 1997 | International Business Review |
| 146 | 36.50 | AWK Harzing | Google Scholar as a new source for citation analysis | 2008 | Ethics in Science and Environmental... |
| 140 | 12.73 | AWK Harzing | Of bears, bumble-bees, and spiders: The role of expatriates in c... | 2001 | Journal of World Business |
| 134 | 14.89 | AWK Harzing | The relative impact of country of origin and universal contingenc... | 2003 | Organization Studies |
| 117 | 14.63 | AWK Harzing | International human resource management | 2004 | |
| 110 | 10.00 | AWK Harzing | What's in charge? An empirical study of executive staffing practic... | 2001 | Human Resource Management |
| 106 | 35.33 | NJ Adler | When knowledge wins: Transcending the sense and nonsense of... | 2009 | The Academy of Management |
| 83 | 6.92 | AWK Harzing | Cross-National Industrial Mail Surveys: Why Do Response Rates... | 2000 | Industrial Marketing Management |
| 78 | 8.67 | AJ Peely | Language management in multinational companies | 2003 | Cross Cultural Management: An... |
| 77 | 7.70 | AWK Harzing | Are our referencing errors undermining our scholarship and cred... | 2002 | Journal of Organizational Behavior |
| 73 | 12.17 | AWK Harzing | Response styles in cross-national survey research | 2006 | International Journal of Cross Cultural... |
| 72 | 6.55 | AWK Harzing | An analysis of the functions of international transfer of manager... | 2001 | Employee Relations |
| 70 | 14.00 | AWK Harzing | Publish or perish | 2007 | Retrieved December |
| 69 | 7.67 | AWK Harzing | The role of culture in entry mode studies: from neglect to myopia | 2003 | |
| 65 | 8.12 | JB Harding, M Br... | A knowledge transfer perspective of strategic assignment purpo... | 2004 | Management |
| 59 | 3.69 | AWK Harzing | Planned change in organizations: The influence of national culture | 1996 | Research in the Sociology of Organizations |
| 55 | 11.00 | J Mingers | Ranking journals in business and management: a statistical analy... | 2007 | European Journal of Information... |
| 46 | 7.67 | AWK Harzing | Knowledge flows in MNCs: An empirical test and extension of Gu... | 2006 | International Business Review |
| 43 | 10.75 | AWK Harzing | The language barrier and its implications for HQ subsidiary relat... | 2008 | Cross Cultural Management: An... |
| 42 | 5.25 | AWK Harzing | Expatriate failure: time to abandon the concept? | 2004 | Career Development |
| 41 | 8.20 | M Puddles | Country-of-origin, localization, or dominance effect? An empiric... | 2007 | Human Resource Management |
| 37 | 12.33 | AWK Harzing | A Google Scholar h-index for journals: An alternative metric to m... | 2009 | Journal of the American Society... |
| 33 | 1.94 | M Bora | Composing an international staff | 1995 | International Human Resource Manage... |

ARTICLE-LEVEL CITATIONS

Relative Citation Ratio:

What? RCR is the only metric specifically designed to measure the influence of individual articles. Field-independent measure that shows influence relative to the average NIH-funded paper.

How? Capture PMIDs in PubMed and run through NIH's iCite Tool.



The iCite New Analysis interface shows options for searching PubMed, uploading a spreadsheet, or inputting a list of PMIDs. The PMID 23673709 is entered in the input field.

iCite New Analysis Stats

New Analysis

Search PubMed

Search by author name, title, MeSH keyword, etc

OR

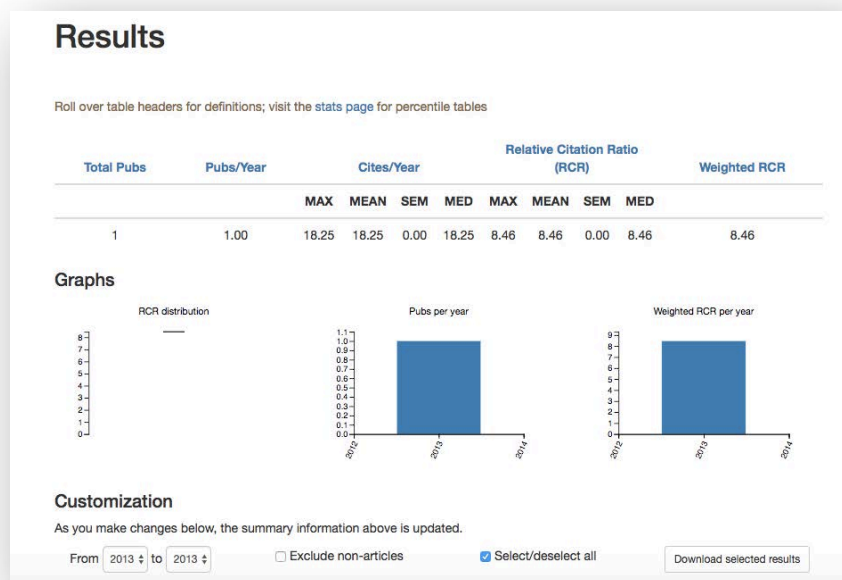
Upload a spreadsheet of PMIDs with optional group labels

Choose File No file chosen

OR

Input a list of PMIDs

PMID: 23673709



ARTICLE- OR AUTHOR-LEVEL

Altmetrics:

What? Altmetrics track usage stats and social media/press attention. These immediate measures complement traditional bibliometrics and are increasingly important to stakeholders.

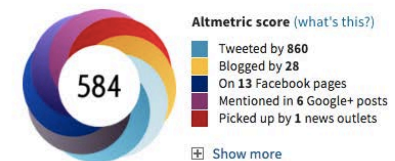
How? Use what's available (i.e. Twitter analytics, social influence metrics, etc).

Contact your publisher to see whether Altmetric or similar API in effect. If yes, request the data.

Total citations



Online attention



This Altmetric score means that the article is:

- in the 99th percentile (ranked 508th) of the 280,932 tracked articles of a similar age in all journals
- in the 95th percentile (ranked 1st) of the 23 tracked articles of a similar age in *Scientific Data*

Mentions in news, blogs & Google+

News articles (1) Scientific blogs (28) Google+ posts (6)

Guidelines for best practices in the publication of scientific data
Phys.org

Twitter demographics



TRACKING ALTMETRICS BY HAND

The screenshot shows the arXiv.org website for the article "Relative Citation Ratio (RCR): An empirical attempt to study a new field-normalized bibliometric indicator" by Lutz Bornmann and Robin Haunschild. The article is in the "Computer Science > Digital Libraries" category. The DOI is 10.1002/asi.23729. The article has been submitted on 25 Nov 2015 (v1) and last revised on 1 Feb 2016 (this version, v5). The abstract states: "Hutchins, Yuan, M., and Santangelo (2015) proposed the Relative Citation Ratio (RCR) as a new field-normalized impact indicator. This study investigates the RCR by correlating it on the level of single publications with established field-normalized indicators and assessments of the publications by peers. We find that the RCR correlates highly with established field-normalized indicators, but the correlation between RCR and peer assessments is only low to medium." The article is accepted for publication in the Journal of the Association for Information Science and Technology. The subjects are Digital Libraries (cs.DL). The citation is arXiv:1511.08088 [cs.DL].

Annotations on the screenshot include:

- A red box around the "Altmetric it!" bookmarklet in the browser's toolbar.
- A red arrow pointing from the "Altmetric it!" bookmarklet to the article's DOI.
- A red box around the "DOI: 10.1002/asi.23729" link.
- A red box around the altmetric widget on the right side of the page, which shows a blue circular graphic with the number 4 and the text "Tweeted by 7".

*Altmetric bookmarklet can be downloaded from
<https://www.altmetric.com/products/free-tools/bookmarklet/>*

INCREASING ALTMETRICS

- ❑ If press team available, use them! Funnel papers flagged as interesting during review. No press team? Serve as conduit for journalists directly.
- ❑ Encourage board members to Tweet, post, blog about articles of interest to them in each issue.
- ❑ Work with societies or institutional groups to start online journal clubs.
- ❑ Encourage board members to follow the journal's social media accounts and RT/share.
- ❑ Board members with large social media followings could give a presentation at ed board meeting with tips for other members.
- ❑ When article is accepted, acceptance letter should encourage authors promote the link through their social media accounts.
 - ❑ Provide template for visual abstracts.



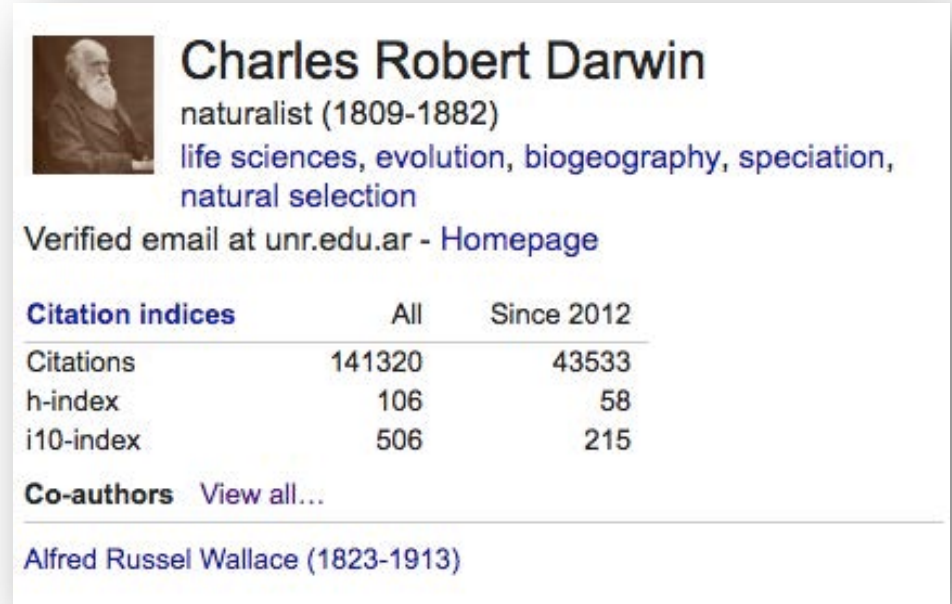
AUTHOR-LEVEL METRICS

Citation Counts

Straight counting. Identify productive or impactful authors by publication or citation counts. Web of Science generally returns lower counts than Google Scholar and Scopus.

H-index

Author with an index of **h** has published **h** papers, each of which has been cited at least **h** times. Benefits longer publication histories. Normalize by dividing h-index by years active (m-parameter).



A screenshot of a Google Scholar profile for Charles Robert Darwin. The profile includes a portrait of Darwin, his name, birth and death years (1809-1882), and a list of his research interests: life sciences, evolution, biogeography, speciation, and natural selection. It also shows a verified email address (unr.edu.ar) and a link to his homepage. Below this, a table displays citation indices for 'All' time and 'Since 2012'. The table shows 141,320 citations, an h-index of 106, and an i10-index of 506 for the entire period, and 43,533 citations, an h-index of 58, and an i10-index of 215 since 2012. A section for co-authors is also visible, with a link to 'View all...' and a mention of Alfred Russel Wallace (1823-1913).

| Citation indices | All | Since 2012 |
|------------------|--------|------------|
| Citations | 141320 | 43533 |
| h-index | 106 | 58 |
| i10-index | 506 | 215 |

Co-authors [View all...](#)

Alfred Russel Wallace (1823-1913)

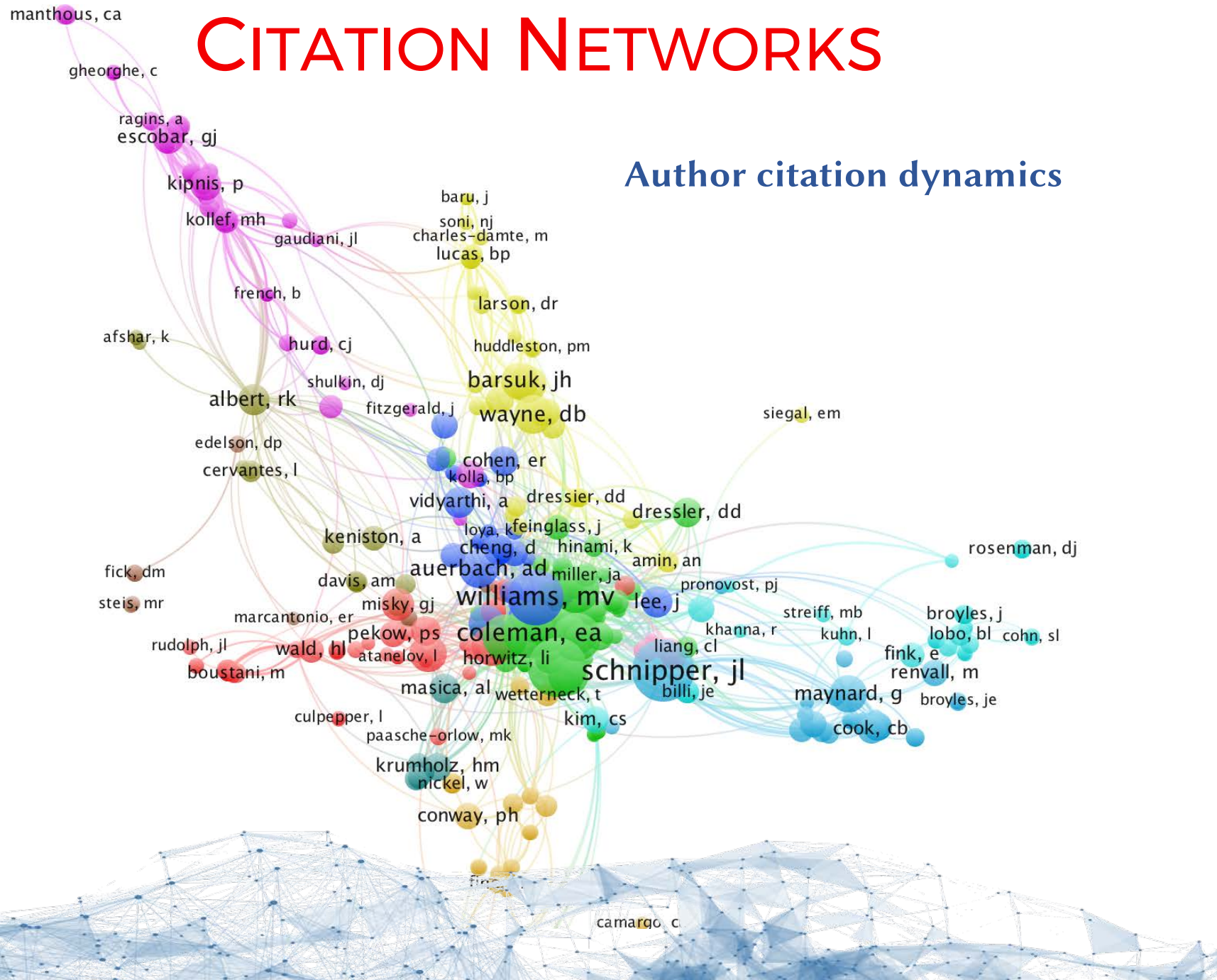
I10-index

The number of publications with at least 10 citations. Used only by Google Scholar.

[illegible][illegible]

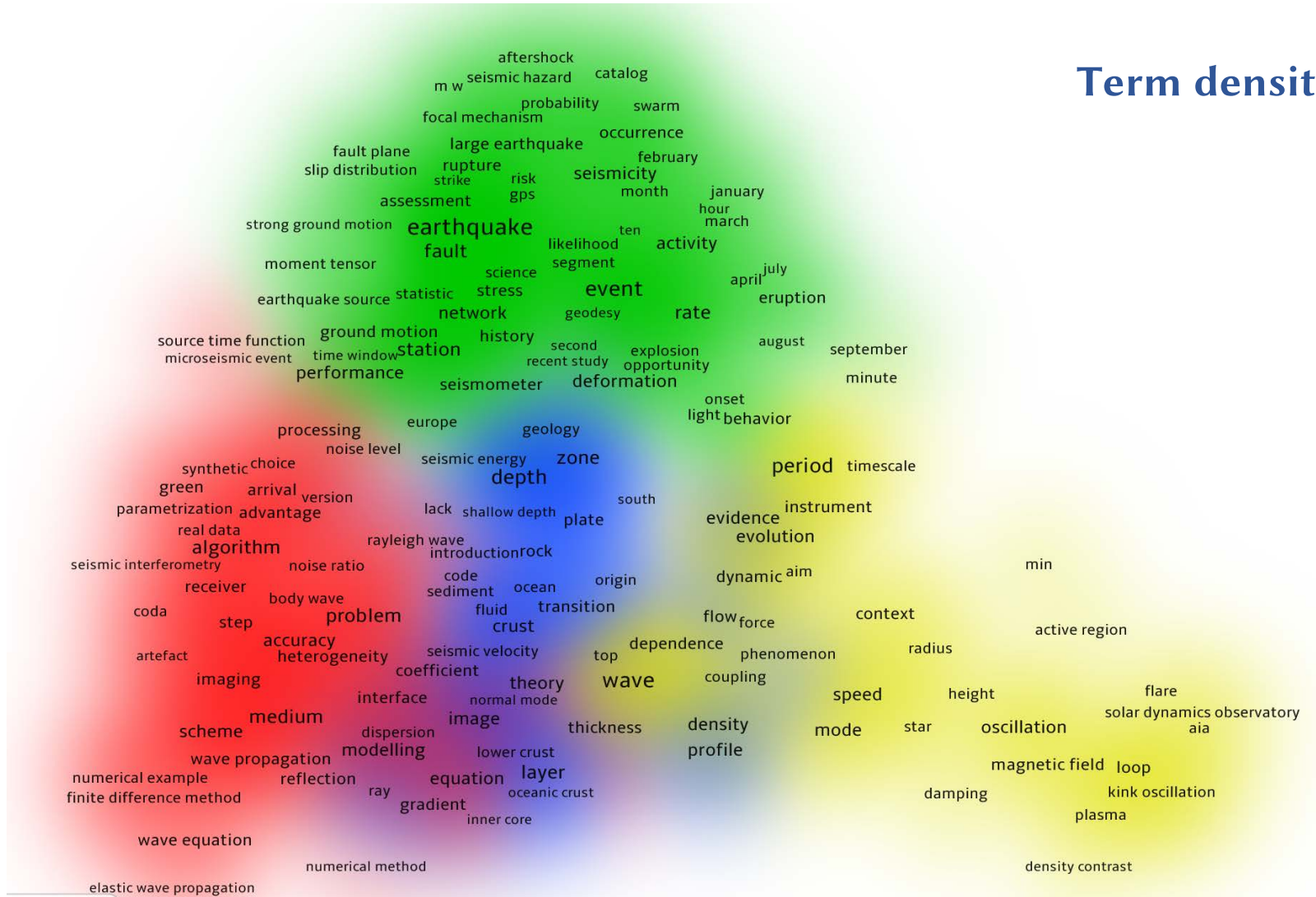
CITATION NETWORKS

Author citation dynamics



CITATION NETWORKS

Term density



Term citations



USING BIBLIOMETRICS WELL

Metrics must be normalized.

- Citation and publication behavior varies widely according to discipline. If a journal's scope bridges fields, its actual peers may not be who you think they are. For this, you need citation dynamics.
- Likewise, if using metrics at the author-level, be sure to normalize by career age.

Do not conflate journal-level metrics with performance of individual articles.

- Ready-made metrics are meaningless on their own – they can be skewed by a small number of articles. Go back to the source!

There is no such thing as a one-size-fits-all metric

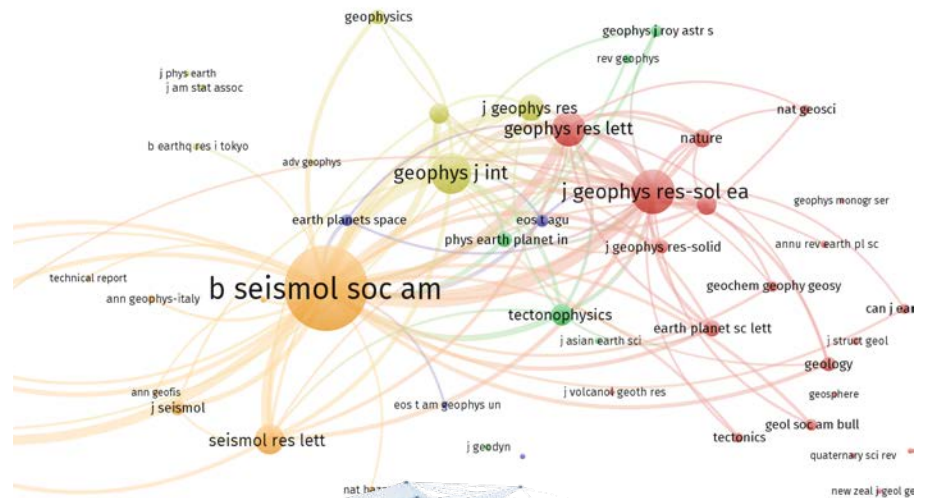
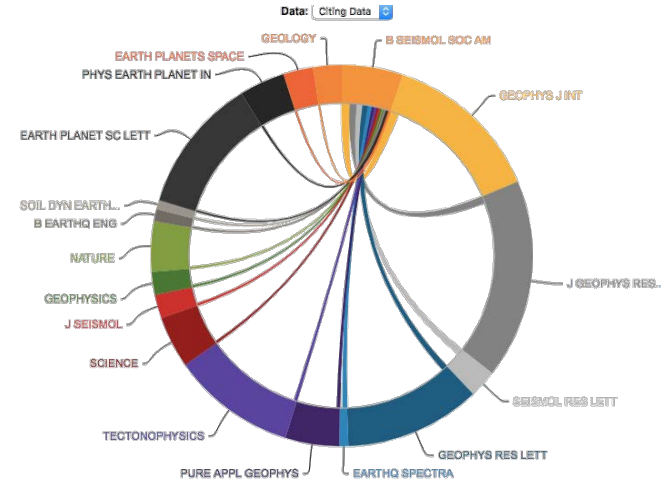
- Use a set of metrics to gauge all levels of journal health, especially when undertaking new initiatives. Track early and often.



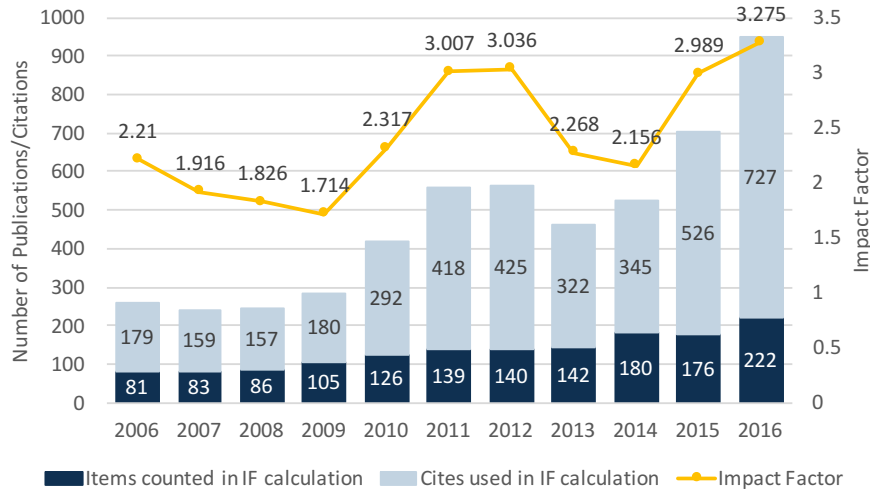
EDITORIAL APPLICATIONS

How does your journal stack up against its peers?

- Find its cohort. Which journals do your authors cite? Which journals cite your journal's content?
- Either look at the citing/cited journals in JCR/Scopus or consider visualizing its co-citation universe.
- Can run a topic search to see if highly cited content in your journal's scope is being published/cited elsewhere.

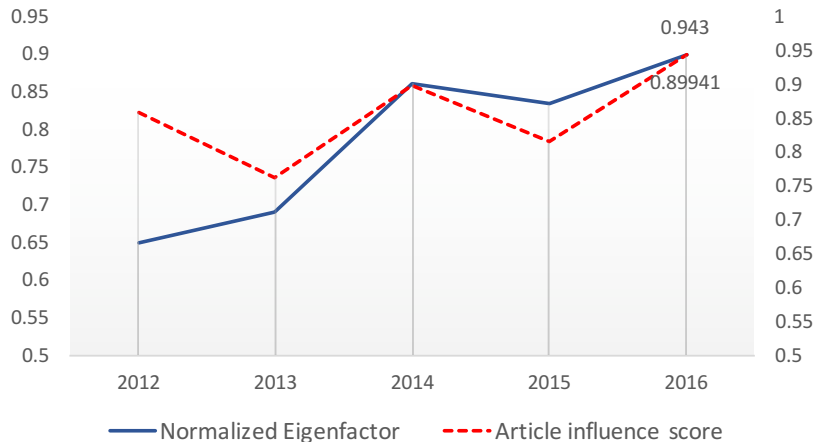


EDITORIAL APPLICATIONS



Why did our impact factor (or other metric) rise/fall?

- Go back to the source – examine lists of citation data feeding into the metric.
- Impact factor will be affected by **volume** of citable content and **timing** of print publication.
- Eigenfactor and SJR will register increased citations from top-tier journals (overall or closely related)
- Think about meaning of metric changes before making any decisions regarding content or process.



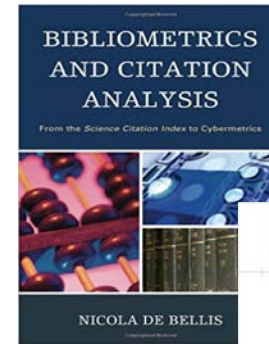
CHEAT SHEET

| Editorial interest | What to look at |
|---------------------------------|---|
| Classic papers | <ul style="list-style-type: none">• Citation count• Citation peak map |
| Competitor title identification | <ul style="list-style-type: none">• Cited by/citing data• Network co-citation map |
| Competitor analysis | <ul style="list-style-type: none">• Article type breakdowns & citation counts• Lists of highly cited articles• Never-cited rates and h-indices |
| Editorial board candidates | <ul style="list-style-type: none">• H-index corrected for career maturity• Altmetrics and community engagement• Centrality in journal network space |
| Digital efficacy | <ul style="list-style-type: none">• Altmetrics, backlinks, and conversion to views• Immediacy index |
| Highly cited topics | <ul style="list-style-type: none">• Browse through highly-cited lists (but know your peak!)• Topical citation maps |

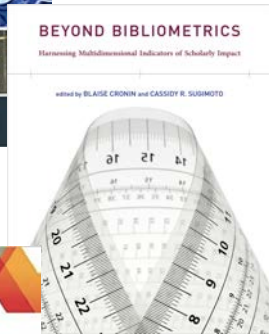


FURTHER READING

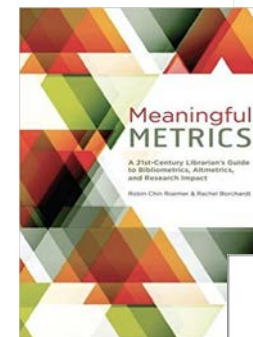
- *Bibliometrics and Citation Analysis* by Nicola De Bellis
- *Beyond Bibliometrics* by Blaise Cronin and Cassidy R. Sugimoto
- *Meaningful Metrics* by Robin Chin Roemer and Rachel Borchardt
- *An Introduction to Bibliometrics: New Development and Trends* by Rafael Ball (upcoming release! Sept 28, 2017)



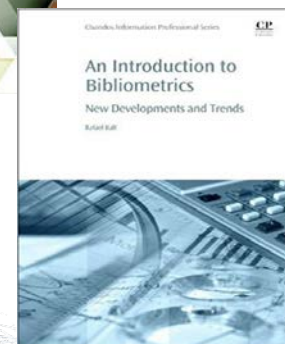
2009



2014



2015



2017



THANK YOU!

jmavzer@gmail.com
consult@coronisgroup.com