



The Responsible Use of Scholarly Metrics

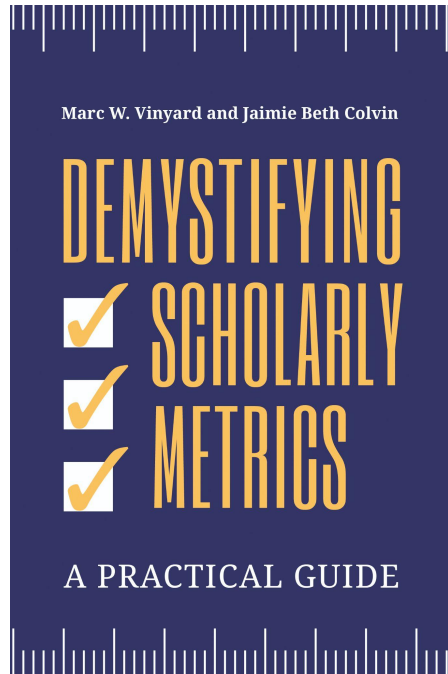
Jaimie Beth Colvin and Marc Vinyard

Introduction

- ▶ Our journey into scholarly metrics began with questions about the Journal Impact Factor and citations to professors' works.



Demystifying Scholarly Metrics



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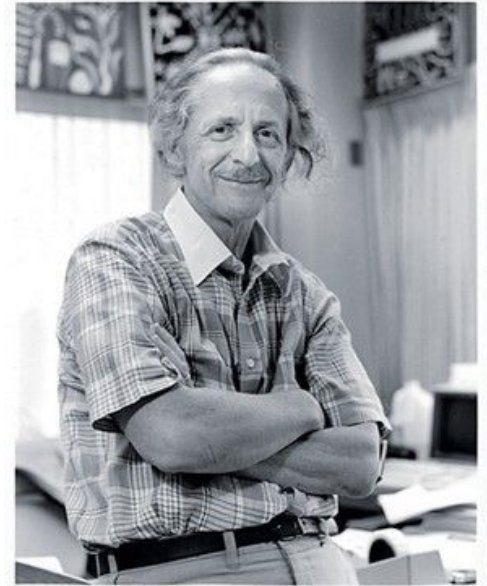
Journal Impact Factor

- ▶ The most famous (infamous?) scholarly metric
- ▶ A measurement of journal prestige
- ▶ It's the Kleenex of scholarly metrics



Journal Impact Factor: An Origin Story

- ▶ Eugene Garfield created the Journal Citation Reports in 1969 to evaluate journals
- ▶ The *Journal Impact Factor* was used for **two** purposes
 1. For faculty to identify top journals and for
 2. Help librarians make selection decisions for journal subscriptions



The Journal Impact Factor Repurposed

- ▶ Garfield intended for the Journal Impact Factor to evaluate journals rather than researchers



Categories of Scholarly Metrics

1. **Artifact level:** How many times has my work been cited/downloaded
2. **Journal level:** Journals are ranked by how often they are cited by other journals
3. **Author level:** An H-index of h-index of seven, means that they have published seven papers that have been cited seven times or more
4. **Department/institution level:** Artifact, journal level and author metrics applied to entire departments

Misunderstandings and Misuses of Metrics

1. **Confusing the categories of metrics**

- ▶ Journal level metrics should be used to evaluate journals rather than researchers. Artifact and author level metrics are better for evaluating researchers.

Misunderstandings and Misuses of Metrics

1. Confusing the categories of metrics
2. **Not accounting for disciplinary differences and the experience of the researchers**
 - ▶ Researchers in the medical and life sciences receive a lot more citations than humanities authors.
 - ▶ The H-index of an early-career researcher shouldn't be compared with a professor who's been publishing for 20 years.

Misunderstandings and Misuses of Metrics

1. Confusing the categories of metrics
2. Not accounting for disciplinary differences and the experience of the researchers
3. **Is a metric more appropriate for formal review or self-evaluation?**
 - ▶ Many altmetrics indicators, like downloads or social media mentions, are great for self-evaluation, but shouldn't be required for formal review.

Misunderstandings and Misuses of Metrics

1. Confusing the categories of metrics
2. Not accounting for disciplinary differences and the experience of the researchers
3. Is a metric more appropriate for formal review or self-evaluation?
4. **Failing to place metrics in context**
 - ▶ Is an H-Index of 12 good? Is 32 citations impressive? Is 3 a good Journal Impact Factor? There isn't a one-size fits all answer.

Midpoint Review

1. **Artifact level** - the goal is to understand if that scholarly work is contributing to the scholarly conversation
2. **Journal level** - is this journal prestigious, and if not “top tier,” is it a credible journal?
3. **Author** - is this researcher contributing to the scholarly conversation?
4. **Institutional or Departmental level**- Are the researchers in this (Inst./Dept.) contributing to scholarship, or is there one hot shot researcher?

Journal Level Metrics- A Deep Dive



Journal ranking services:

- Journal Citation Reports
- SCImago
- Scopus Journal List



Journal Citation Reports



Journal Impact Factor



How is the Journal Impact Factor Calculated?

- ▶ It's the average number of articles in a journal that were cited 1-2 years ago.
- ▶ If a journal has an impact factor of four in 2020, articles published in 2018 to 2019 were cited an average of four times.

400 citations in 2020 to articles published in the journal in 2018 and 2019 = JIF of 4
100 citable articles published in the journal in 2018 and 2019

Is the Journal Impact Factor the best match for your institution?

- ▶ Does your institution subscribe to **Journal Citations Reports**?
- ▶ The free website ((mjl.clarivate.com) only provides embargoed data and doesn't provide rankings
- ▶ Many legitimate journals don't have Journal Impact Factors
- ▶ Journal Impact Factors aren't available for arts & humanities journals

 Clarivate
Analytics

**Journal
Citation
Reports**

The logo graphic for Journal Citation Reports features a stylized 'C' shape formed by two curved lines, one purple and one green, intersected by a vertical black line.

Alternatives to the Journal Impact Factor: SCImago

SJR

Scimago Journal & Country Rank

SCIMago is free resource ranking journals.

- ▶ Ranks almost three times as many journals as the Journal Citation Reports
- ▶ Covers every academic discipline
- ▶ If a journal is in the top 25% it's in the first quartile, top 50% if it's in the second quartile and so forth.
- ▶ Journals are ranked by the SCImago Journal Rank (SJR)
 - ▶ The SJR is the average number of citations from a journal 1-3 years ago. A SJR of three in 2020 means that papers from 2017, 2018 or 2019 were cited an average of three times.
 - ▶ Normalized by discipline

Alternatives to the Journal Impact Factor: Scopus Journal List

The Scopus logo is displayed in orange text on a white rectangular background. A green vertical bar is visible in the top right corner of the slide.

Scopus journal is a free resource (you don't have to subscribe to the citation index)

- ▶ Created by Elsevier, which is also a journal publisher.
- ▶ Evaluates over twice as many journals as Journal Citation Reports
- ▶ Covers every academic discipline
- ▶ The **CiteScore** is a similar calculation to the impact factor except citations are analyzed over a four year window instead of a two year period.
- ▶ A metric called the **Source Normalized Impact Per Paper (SNIP)** is normalized by discipline!

Scopus Journal List: transparency

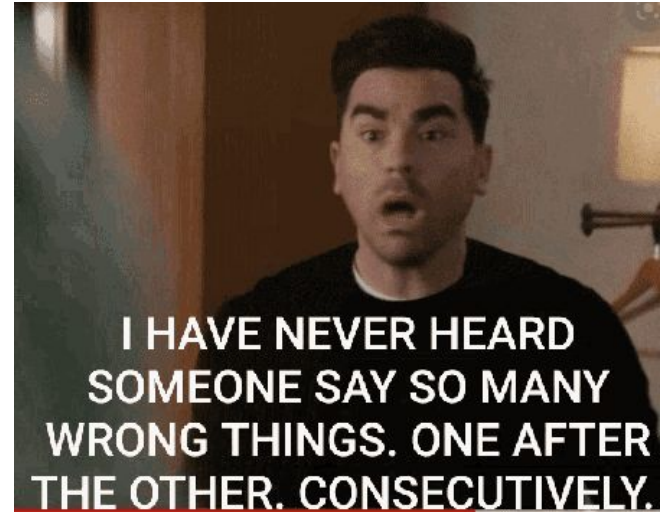
	Source title ↓	CiteScore ↓	Highest percentile ↓	Citations 2017-20 ↓	Documents 2017-20 ↓	% Cited ↓
<input type="checkbox"/> 1	International Journal of Information Management Find Full Text	18.1	99% 1/235 Library and Information Sciences	10,563	583	93
<input type="checkbox"/> 2	Journal of the Academy of Marketing Science Find Full Text	17.0	99% 4/661 Economics and Econometrics	3,577	210	91
<input type="checkbox"/> 3	Journal of Supply Chain Management Find Full Text	12.9	99% 1/159 Economics, Econometrics and Finance (miscellaneous)	905	70	87
<input type="checkbox"/> 4	Journal of Marketing Find Full Text	12.3	98% 4/185 Marketing	2,352	191	89

Journal acceptance rates are *not* a scholarly metric

- ▶ Acceptance rates are the percentage of submitted articles to a journal that are accepted for publication. Some academic departments use journal acceptance rates to evaluate faculty for tenure.

There are so many things wrong with this practice:

- ▶ Journal acceptance rates apply to journals rather than people
- ▶ There is no transparency- a publisher's stated acceptance rate can't be verified
- ▶ Journal metrics are based on how many times articles are cited by other journals



An example of a bogus acceptance rate



3. Is IJSPE an indexed journal?

Answer: IJSPE is indexed with and included in Ulrich's, Cabell's, DOAJ, EBSCO, JournalSeek/Genamics and IndexCopernicus International. The journal is under the indexing process with Econlit, ERIC, Scopus and ISI.

False claims about being indexed in DOAJ, Cabell's, Scopus, Econlit, ERIC, etc.

14. What is the acceptance rate of papers?

Answer: 25% -35%.

Why should we believe this acceptance rate?

Proper uses of journal metrics

- ▶ Helpful for journal selection
- ▶ Journal metrics can help identify predatory journals
- ▶ Many professors that we assist aren't looking for the top 10 journals, but mid-level, respectable journals.
- ▶ A ranking of the top 10 universities isn't useful to most prospective students



Why are journal metrics used to evaluate researchers?

- ▶ It takes about three years for papers to accumulate many citations
- ▶ With journal level metrics, professors have an immediate metric to add to their tenure portfolio (administrators also have an instant metric)

So which journal metric should I use?

- ▶ The **Journal Impact Factor** shouldn't be the primary journal metric unless your institution subscribes to the Journal Citation Reports database
- ▶ **Journal Impact Factor** scores for individual journals doesn't provide context- rankings are required
- ▶ For many libraries, **SCImago** or the **Scopus journal rankings** might be better options.

Artifact level metrics

Why the term artifact rather than journal?

- ▶ Scholarly metrics should evaluate books, datasets, software programs, etc. in addition to journals

Artifact level metrics are essential for evaluating researchers' works.

Which researcher had a bigger role in the scholarly conversation?



1. Researcher A was published in a **first quartile journal** and was cited two times.
2. Researcher B was published in a **third quartile journal**, but they were cited fourteen times over the same time period.

Artifact metrics: Bibliometrics

Bibliometrics, which is based on counting citations, is the traditional method for evaluating scholarly works.

- ▶ Citation indexes are the best way to locate citations:
 - ▶ Web of Science
 - ▶ Scopus
 - ▶ Google Scholar

Scopus®



 Clarivate
Web of Science™

Web of Science



Web of Science is the oldest and best known citation index. It's owned by Clarivate, which also publishes the Journal Impact Factor.

- ▶ Highly selective about the journals it indexes which means that fewer citations will be located
- ▶ This exclusivity can be an advantage or disadvantage depending on which faculty author you speak with
- ▶ Poor coverage of humanities journals and books

Google Scholar: the wild west of citation indexes

Google Scholar has the most comprehensive coverage which is both a pro and a con.



- Early career researchers will find the most citations to their works
- Strongest coverage of citations to books



- Citations to lower quality sources like predatory journals and unpublished working papers
- Lack of transparency about the sources indexed
- Only has raw citation counts and citation metrics lack context

Scopus: citations in context

The Scopus logo is displayed in orange text on a white rectangular background. A green vertical bar is visible in the top right corner of the slide.

- ▶ Provides fewer citations than Google Scholar, but more than Web of Science
- ▶ Weak coverage of books
- ▶ Better coverage of the humanities than Web of Science
- ▶ Metrics place citations in context!

BEST PRACTICE

Field Weighted Citation Impact

- ▶ Scopus has our favorite artifact level metric: the **Field Weighted Citation Impact (FWCI)**
 - ▶ Measures how many citations a work receives compared to other works with similar years, disciplines and document types
 - ▶ A value greater than 1.00 means that it is cited more often than similar documents.
 - ▶ Placing metrics in context is the gold standard

Reference and User Services Quarterly • Open Access • Volume 56, Issue 4, Pages 257 -

Why do students seek help in an age of DIY?

[Vinyard, Marc](#)  ; [Mullally, Colleen](#)  ; [Colvin, Jaimie Beth](#) 

 Save all to author list

^a Instruction Librarian at Pepperdine University Libraries, Pepperdine University, Malibu, CA, Un

17 89th percentile
Citations in Scopus

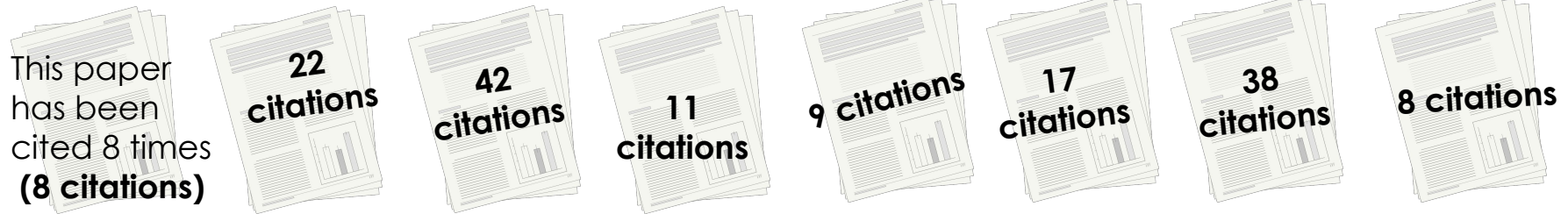
2.22
FWCI 

37
Views count  

[View all metrics >](#)

Author level metrics: H-Index

- ▶ The **h-index** is the primary citation based metric to evaluate authors
- ▶ It measures productivity and impact
- ▶ A professor with an **h-index of eight** has written eight papers that each have eight or more citations:



H-indices vary Scores vary by citation Index and Web of Science scores are lower.

H-Index caveats



- ▶ Designed to avoid “one-hit wonders”

Even if one paper had hundreds of references, an author could have a low h-index if their remaining papers weren't cited more than a few times
- ▶ The humanities have lower h-indices than other disciplines
- ▶ A *very* inappropriate metric to evaluate early career researchers
- ▶ A researcher can't be reduced to a single number

Institutional Level Metrics

- ▶ Citation indexes like Scopus or Web of Science are essential
- ▶ Filters by institution
- ▶ Designed to locate citations and h-indices

Pepperdine University

24255 Pacific Coast Highway, Malibu
CA, United States
Affiliation ID: 60026451

Other name formats: [Pepperdine University](#) [Pepperdine University School Of Law](#) [Pepperdine Univ.](#) [Pepperdine Univ](#)
[Pepperdine University Libraries](#)

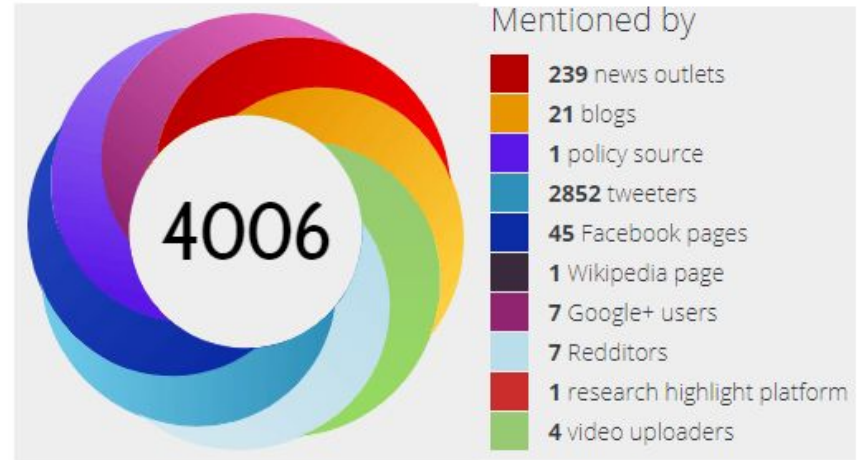
Documents, affiliation only	Authors
2,762	1,071

[Documents by subject area](#) [Collaborating affiliations](#) [Documents by source](#)



Artifact metrics: altmetrics

- ▶ Alternatives to citation based metrics
- ▶ Designed for a web-based environment
- ▶ A compliment to bibliometrics *not* a replacement



Altmetrics: much faster than citation metrics



- Citations usually take about three years to accumulate
- Even our favorite citation-based metrics, like the Field Weighted Citation Impact, are tied to the time-consuming peer review process
- Early career researchers need more immediate metrics

Altmetrics: scholarly activity

- ▶ Usage statistics like views and downloads are almost immediate
- ▶ References saved to reference managers like Mendeley are rapidly accumulated
- ▶ Research shows a correlation between usage data and saves to reference managers and future citations



Altmetrics: social activity

Social activity refers to mentions on social media.

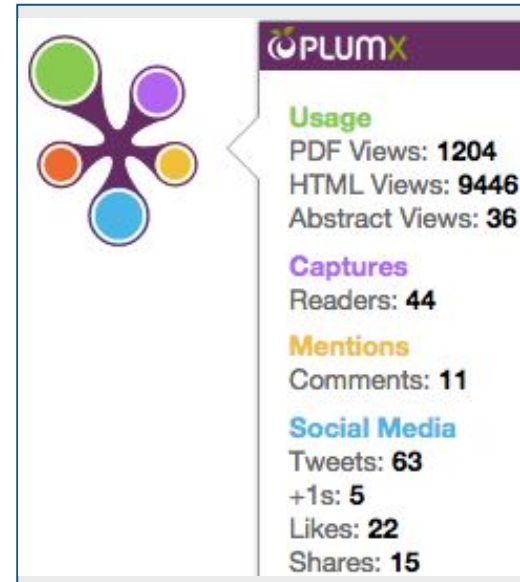


- ▶ Mentions on Twitter and Facebook are example of social activity
- ▶ Media's impact on female body image Vs. Experiments Using Artificial Flowers to study Hummingbird Foraging Patterns
- ▶ Research shows a correlation between sharing articles on Twitter and increased citations
- ▶ Faculty should receive credit for social media activity. However, social media attention at this point isn't suitable for **formal evaluation**.

Altmetrics harvesters: helpful, but not comprehensive

Altmetrics harvesters like Altmetric.com and PlumX pull several types of altmetrics data, but none of them are comprehensive.

Altmetrics sources are fragmented, and even with subscription tools you will have look in several places to locate altmetrics data



Altmetrics and books

- ▶ Libcitations refers to the number of libraries that owns a book in a union catalog
- ▶ Measures that reach and popularity of books

1		Demystifying scholarly metrics : a practical guide Authors: Marc W Vinyard (Author), Jaimie Beth Colvin (Author) Santa Barbara, California : Libraries Unlimited, an imprint of ABC-CLIO, LLC, [2022]	 eBook	2022	English	Pepperdine University and 40 Libraries Worldwide
2		Demystifying scholarly metrics : a practical guide Authors: Marc W Vinyard (Author), Jaimie Beth Colvin (Author) Santa Barbara, California : Libraries Unlimited, an imprint of ABC-CLIO, LLC, [2022]	 Print Book	2022	English	Pepperdine University and 16 Libraries Worldwide

Author level metrics: altmetrics



- ▶ Altmetrics doesn't have any author level metrics that are the equivalent of the h-index
- ▶ Academic social networks like ResearchGate provide author level metrics
- ▶ ResearchGate is a source for authors to share their academic work
- ▶ Metrics have been problematic
- ▶ Not suitable for formal review

Altmetrics tools are siloed off

- ▶ Regardless of which metrics ResearchGate highlights, it will still have a big limitation: the metric will only be associated with ResearchGate and have little meaning outside that platform.

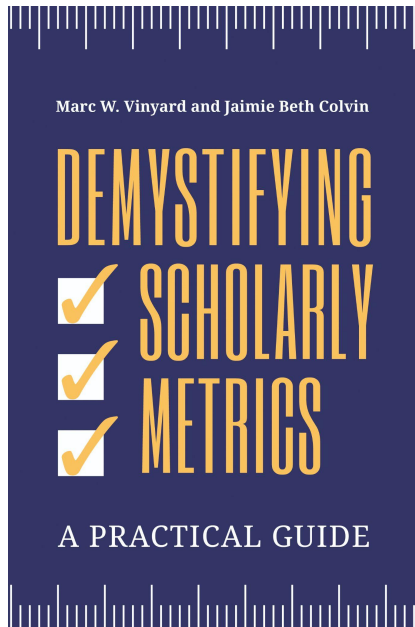


- ▶ This is an issue with altmetrics sources: they are siloed off
- ▶ Even though the h-index scores will vary with Google Scholar, Scopus and Web of Science, it's an agreed upon metric.

Summary

- ▶ Familiarity with core scholarly metrics sources like Web of Science or Scopus, will make it easier to interpret emerging metrics sources.
- ▶ **Questions to ask about any scholarly metrics source:**
 - What is the metric measuring:
 - (1) Artifacts
 - (2) Journals
 - (3) Authors
 - (4) Departments/Institutions
 - Can the metric be placed in context?
 - Is the metric normalized for discipline, publication type, and time since publication ?
 - Is the metric transparent; do you know how it is calculated and what is being counted?

Demystifying Scholarly Metrics



Our new book *Demystifying Scholarly Metrics* covers these topics in a lot more depth.

Here's the book's URL:

<https://www.abc-clio.com/products/A6307P/>

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