UNDERSTANDING JOURNAL METRICS

How Editors Can Use Analytics to Support Journal Strategy

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Marianne Kerr
Wolters Kluwer Health
TOPICS FOR TODAY’S DISCUSSION

Journal, Article & Author Level Metrics: Best Practices

Journal Metrics
- Impact Factor
- 5 Year Impact Factor
- Other Journal Metrics

Article Level Metrics
- Altmetrics
- Relative Citation Ratio
- H Index

Author Level Metrics
- Author Bibliometric’s
- Citations
We are drowning in information but starved for knowledge.

(John Naisbitt)
78.8% increase
In 10 Years
BEST PRACTICES: BIBLIOMETRIC ANALYSIS & JOURNAL STRATEGIES

Authors, Researchers and Academics
- Utilize bibliometric analysis by assessing the influence of published research
- Supporting research funding, academic departments, personal career development

Librarians
- Utilize metrics to choose journals and content for their institutions
- Assist academics or library patrons assess the impact of research published in an article

Publishers & Journal Editors
- Utilize metrics to create an editorial strategy supporting author acquisition
- Identifying editorial goals for the Journal Impact Factor
- And improved funding from publishers because of the increased value of the content
EVALUATING THE WHOLE PICTURE

Traditional Bibliometric Data

ACADEMIC ATTENTION
Impact Factor
Citation Counts
H-index
Number of Publications

&

Alternative Metrics “Altmetrics”

BROADER ATTENTION
News Reports
Social Media
Wikipedia Citations
Reference Manager Readers...
And More
JOURNAL METRICS

Journal Impact Factor
5-Year Impact Factor
Other Journal Metrics
**JOURNAL IMPACT FACTOR**

*Journal Citation Reports (JCR)* were developed in the 1970s by Dr. Eugene Garfield and Dr. Irving Sher. The main use case at the time remains the strongest use case today, and that is to assist librarians in managing their journal collections—to which journals should they subscribe, which ones are the strongest or most popular in their fields. Over the years, the use cases have expanded; JCR has become a valuable tool for publishers and for researchers as well.

The most well-known indicator in the JCR is the **Journal Impact Factor (JIF)**. The Journal 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 **5-Year Impact Factor** can be a more stable metric for smaller titles as there are a larger number of articles and citations included and is useful for journals or subject areas where it takes longer for work to be cited.

Clarivate™ Analytics is the current owner of the Web of Science™ (WOS). The WOS began in the 1960s as the Institute for Scientific Information, or ISI. In the 1990s, it became part of Thomson (referred to as Thomson, Thomson Scientific, or Thomson ISI), and then Thomson Reuters.
JOURNAL IMPACT FACTOR

Number of citations in one year to content published in the previous two years \( \div \) Number of articles and reviews published within the previous two years = Journal Impact Factor

5-Year Journal Impact Factor is the average number of times articles from the journal published in the past five years have been cited in the given Journal Citation Report (JCR) year. It is calculated by dividing the number of citations in the JCR year by the total number of articles published in the five previous years.
OTHER JOURNAL METRICS

- Immediacy Index
- Cited Half-Life
- Eigenfactor
- Article Influence Score
- Citesscore
- Snip
- SJR(Scimago Journal Rank)
- And more!
ARTICLE LEVEL METRICS

Altmetrics
h-Index
Relative Citation Ratio
ARTICLE LEVEL METRICS

There are various tools and methods upon which to measure the impact of an individual or their scholarship. Today we will focus on:

**Altmetrics:** Altmetrics is a quantitative measure of the quality and quantity of attention that a scholarly work is receiving through social media, citations, and article downloads.

**h-index:** The h-index is an index to quantify an individual’s scientific research output. There are several databases (Web of Science, Scopus, and Google Scholar) that will provide an h-index for an individual based on publications indexed in the tools.

**RCR:** A field-normalized metric that shows the scientific influence of one or more articles relative to the average NIH-funded paper.
WHAT IS ALTMETRICS?

• Altmetrics is a broad term that encapsulates the collection of *multiple digital indicators* related to scholarly work. These indicators are derived from activity and engagement among diverse stakeholders and scholarly outputs in the research ecosystem, including the public sphere.

• A *real-time measure* of online conversations around research – helps you understand how it is being received and used

• A metric that combines a selection of online indicators – including *non-traditional sources* (blogs, social media, etc.)

• A measure *complementary* to traditional citation-based analysis
WHO IS ALTMETRIC?

About Altmetric
Altmetric is a London based company that tracks and analyses the online activity around published articles, books, datasets and other scholarly outputs. We work with some of the world’s biggest publishers, funders, and institutions to deliver actionable insights using high-quality data.

Altmetric is supported by Digital Science. Visit http://www.altmetric.com or follow us on Twitter @altmetric for more information.
Score is weighted to reflect the relative importance of each type of source. It's easy to imagine that the average newspaper story is more likely to bring attention to the paper than the average tweet. This is reflected in the default weightings.

Example default score contributions for different sources:

<table>
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<tr>
<th>News</th>
<th>Blogs</th>
<th>Q&amp;A forums</th>
<th>Twitter</th>
<th>Google+</th>
<th>Facebook</th>
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<tbody>
<tr>
<td>8</td>
<td>5</td>
<td>2.5</td>
<td>1</td>
<td>1</td>
<td>0.25</td>
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</table>
ALTMETRIC AND REACH

- Article Level Performance Metrics
- Timely
- Data on Multiple Channels
<table>
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<tr>
<th>Summary</th>
<th>News</th>
<th>Blogs</th>
<th>Twitter</th>
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<tbody>
<tr>
<td>So far, Altmetric has seen 22 news stories from 19 outlets.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Energy drinks linked to cardiac events**

*Nutraingredients.com, 11 Aug 2016*

Related tags: Cardiac arrhythmia, Energy drinks, Taurine, Guarana, Caffeine. A new study of a patient with cardiac arrhythmia...

**2 canettes de boisson énergisante chaque jour peuvent mener aux Urgences**

*Top Santé, 05 Aug 2016*

Un Américain de 28 ans qui buvait deux canettes de boisson énergisante chaque jour s'est retrouvé aux Urgences, victime de problèmes...

**What energy drinks could do to your heart**

*The Indian Express, 04 Aug 2016*

By: IANS | New York | Published: August 4, 2016 2:07 pm Energy drinks contain a high level of caffeine which could cause heart...

**Cardiac complications from energy drinks? Case report adds new evidence**

*Today Topics, 04 Aug 2016*

The high levels of caffeine in energy drinks may lead to cardiac complications, suggests a case report in the July/August...
The data shown below were collected from the profiles of 16 tweeters who shared this research output. Click here to find out more about how the information was compiled.
This research output has an Altmetric Attention Score of 185. This is our high-level measure of the quality and quantity of online attention that it has received. This Attention Score, as well as the ranking and number of research outputs shown below, was calculated when the research output was last mentioned on 15 August 2016.

Altmetric has tracked 5,492,496 research outputs across all sources so far. Compared to those this one has done particularly well and is in the 99th percentile: it's in the top 6% of all research outputs ever tracked by Altmetric.
ALTMETRICS: KEY TAKEAWAYS

- Monitor all the conversations and mentions on social media and mainstream news
- Know who you’re reaching and where you’re reaching them
  - Which blogs
  - Which news outlets
  - Which Twitter feeds
  - What countries
  - What topics/article types
- In real time
ALTMETRIC AND EDITORIAL

Gather evidence for future strategy decisions, e.g. competitor analysis

Gain a more complete picture of the journal’s reach and influence

Identify high profile authors to attract

Enrich author feedback/reporting to encourage future submissions

Track activity surrounding a hot topic
The **h-index** is an author-level metric that attempts to measure both the productivity and citation impact of the publications of a scientist or scholar. The index can also be applied to the productivity and impact of a scholarly journal as well as a group of scientists, such as a department or university or country. The index was suggested in 2005 by Jorge E. Hirsch, a physicist at UCSD, as a tool for determining theoretical physicists' relative quality and is sometimes called the *Hirsch index* or *Hirsch number*.

The **h-index** is based on the set of a researcher's most cited papers and the number of citations that the researcher has received in other people's publications.

A researcher has index \( h \) if \( h \) of \([\text{his/her}]\ N_p\) papers have at least \( h\) citations each, and the other \((N_p - h)\) papers have at most \( h\) citations each.
**h-INDEX - SERVICES**

**Web of Science:** Web of Science™ provides citation counts for articles indexed within it. It indexes over 10,000 journals in the arts, humanities, sciences, and social sciences.

**Scopus:** Scopus provide citation counts for articles indexed within it (limited to article written in 1996 and after). It indexes over 15,000 journals from over 4,000 international publishers across the disciplines.

**Other Services:** Google Scholar, CINAHL, CSA Illumina Databases, EBSCOhost Databases, EMBASE, PubMed, Central Science Direct, SciFinder Scholar
h-INDEX
JOURNAL LEVEL
**h-INDEX**

**AUTHOR LEVEL**
**h-Index**

**Author Level**

- Total Publications: 300
- h-index: 33
- Sum of Times Cited: 3,333
- Citing articles: 2,497
- Average citations per item: 11.11
- Without self-citations: 3,010
- Without self-citations: 2,358

Graph showing the sum of times cited per year from 2002 to 2017.
Despite recognized limitations, bibliometric assessments of scientific productivity have been widely adopted.

An improved method to quantify the influence of a research article by making novel use of its co-citation network to field-normalize the number of citations it has received has been introduced by NIH Office of Portfolio Analysis.

A beta version of iCite, the web tool for calculating Relative Citation Ratios of articles listed in PubMed, is available at https://icite.od.nih.gov.
RELATIVE CITATION RATIO (RCR)

Relative Citation Ratio: a field-normalized metric that shows the scientific influence of one or more articles relative to the average NIH-funded paper.

Article citation rates are divided by an expected citation rate that is derived from performance of articles in the same field and benchmarked to a peer comparison group.

The resulting Relative Citation Ratio (RCR) is article level and field independent and provides an alternative to the invalid practice of using journal impact factors to identify influential papers.
<table>
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<th>PubMed ID</th>
<th>Total Citations</th>
<th>Citations per Year</th>
<th>Expected Citations per Year</th>
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<th>Relative Citation Ratio</th>
<th>NIH Percentile</th>
<th>Year</th>
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<td>2016</td>
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</tr>
</tbody>
</table>
Author Bibliometric: Simplest metric and includes the total number of papers published by an author.

Citations: The number of citations of each article

Altmetric Scores by Article for the Author: Authors have included Altmetric references in their CVs.
AUTHOR

BIBLIOMETRIC - SAMPLE SEARCH
RESULTS
ANALYSIS
NEXT GENERATION
JOURNAL LEVEL METRICS — KEY TAKEAWAYS

Use the information to establish editorial goals for your journal

- Clearly define the focus of the analysis
- Be consistent in data sources
- Is the competitive Journal Peer Reviewed?
- Is the competitive Journal Listed in PubMed/MEDLINE?
- Comparison of the Journal to titles in the same category

Transform the goals into strategies into deliverables

Measure the results at your annual editorial board meeting
## JOURNAL STRATEGIC PLANNING CYCLE

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term Strategic Goals</td>
<td>Usually span a two- to five-year time horizon. They answer the question of what you must focus on to achieve your vision.</td>
</tr>
<tr>
<td>Strategies</td>
<td>Umbrella methods you intend to use to achieve your vision.</td>
</tr>
<tr>
<td>Short-term Goals/ Initiatives</td>
<td>Convert the strategic objectives and strategies into specific performance targets that fall within the two-month to two-year time horizon. They state what, when, and who and are measurable.</td>
</tr>
<tr>
<td>Tactical Action Plans</td>
<td>These specific statements explain how a goal will be accomplished. They are the areas that move the strategy to operations and are generally executed by teams or individuals within one to two years.</td>
</tr>
<tr>
<td>Timelines/ Scorecards</td>
<td>Projected time and resources to complete each action item or short-term goal; track against targets and refine as necessary.</td>
</tr>
</tbody>
</table>
REFERENCES

http://wokinfo.com/essays/impact-factor/


https://www.digital-science.com/blog/perspectives/relative-citation-ratio-rcr-leap-forward-research-metrics/

http://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.1002541

http://wokinfo.com/training_support/training/journal-citation-reports/?utm_source=false&utm_medium=false&utm_campaign=false

https://www.youtube.com/watch?v=wmnqCge-h_M
Altmetrics
Impacting more than just our curiosity
Nick Scheponik, Michelle Brewer

What are Altmetrics?
A real-time measure of the online conversations around research, combining a selection of online indicators (both scholarly and non-scholarly) to give a measurement of digital impact and reach.

What do they do?
- Quantify the online attention for an article by looking at non-traditional channels
- Measure impact of data sets and videos and other information not currently indexed

- Altmetrics are not article citations or webmetrics, but a measure of the societal impact of content
- Cannot separate the positive & negative
- Articles published pre-2011, total mentions will be incomplete (esp. Tweets)
- Many different providers

What is the donut?
- Graphical representation of Altmetric score plus distribution of sources
- Scores are derived from:
  - Volume – 1 mention per person per source
  - Sources – weighted contributions
    - Newspaper > Blog > Tweet
  - Authors – how often the mention author talks about scholarly articles

How are they used?
- Publishers
  - Provide as an author service
  - Early indication of impact for new articles
- Editors
  - Track the success of your papers
  - Observe trends across all journal from multiple publishers
- Marketers
  - Direct campaigns efforts towards socially-trending articles
  - Track publicity efforts, social reach
- Libraries
  - Teach & train faculty
  - Help inform research efforts
  - Track attention to papers by institution

Impact for libraries
- Help librarians understand the impact of non-traditional scholarly outputs
- Provide hard evidence of usage beyond ‘hits’ and downloads - very useful when making arguments for increased budgetary and administrative support
- Assists with the promotion of Open Access content
- Helps promote institutional scholar profiles managed by libraries

Wolters Kluwer Integration
- Currently have reporting capabilities across LWW portfolio
- Tracks Twitter, Facebook (page posts, not “likes”), 500 news sources, 5,000 blogs across 21 disciplines, reader counts from reference managers
- We are in the process of working with an altmetrics partner, looking the technical requirements of having altmetrics data directly visible on our journal websites. More to come soon...