Measuring research impact: what bibliometrics can do for you

Research Bites 2019

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Today’s session

✓ Understand what is meant by ‘research impact’
✓ Overview of bibliometrics
✓ Overview of altmetrics
✓ Learn about some tools to help you
Related Research Bites

► Author IDs and author profiles
  ▶ RB on 21st August: Online Researcher Profiles – Malcolm Horne

► Meeting funder requirements

► Benefits of Open Science
  ▶ RB on 7th August: Plan S and the changing landscape of Open Access – Leigh Stork (recording available)
Defining research impact
What do we mean by impact?
So, what IS research impact?

**UKRI: academic impact**

“The demonstrable contribution that excellent research makes to academic advances, across and within disciplines, including significant advances in understanding, methods, theory and application”

**UKRI: economic & societal impact**

“The demonstrable contribution that excellent research makes to society and the economy and the benefits to individuals, organisations and/or nations.”

UKRI = UK Research and Innovation
The elements of research impact

WHAT IMPACT IS MY RESEARCH HAVING?

WHAT IS MY H-INDEX?

WHO IS CITING ME?

MY RESEARCH IMPACT

PUBLISHING FOR IMPACT

WHAT ARE THE ALTERNATIVES TO TRADITIONAL PUBLISHING?

HOW CAN I FIND QUALITY JOURNALS TO PUBLISH IN?

WHAT ARE THE TOP JOURNALS IN MY FIELD?

HOW CAN I EXPAND MY READERSHIP?

CAN I INCREASE MY CITATION COUNT?

CAN I EXTEND THE INFLUENCE OF MY RESEARCH?
Measuring research impact
Bibliometrics: The process of extracting measurable data through the statistical analysis of texts, and information about how the texts are being used.

- A means of measuring patterns of authorship, publication, and the use of literature.
- To determine how many times a researcher's work has been cited in key literature.
- To help guide or influence publication strategies.
- To help identify if an author is attracting citations from outside their main field of study.

- BUT:
  - It is not possible to compare between disciplines.
  - Bibliometrics are only as good as the database they come from.
Why use bibliometrics?

- Bibliometrics can help with activities such as
  - demonstrating the impact of research
  - looking at highly cited journals in a subject area - helpful for deciding where to publish
  - identifying top researchers in a subject area - identifying potential collaborators
What metrics can’t tell

► Why it is cited
► The quality of the paper regardless of the journal title
► If everything has been included in the calculation
► Differences of publication speed and quantity between disciplines
► It takes time to develop an academic career
Key tools
Citation reports
• use **Author search** to locate your publication list
• click **Create Citation Report**

**Note:** on your Citation report page, restrict the report to a **specific time period** using the drop down boxes at the top of your publication list. Citation data is available since 1980.
use **Author search** to locate your publication list and click **View citation overview**

**Note 1:** restrict overview to a specific time period using the drop down boxes at the top of the page

**Note 2:** citation data in Scopus is available from 1996 to present. For publications prior to 1996 the citation information may not be accurate.
Google citations

► Keep of track of citations of your articles
► Graph citations over time
► Make your profile public to increase search results

Get started with Google Scholar Citations

► Your name
► Keywords of research interest
► Generated citation metrics
► Citations (including links to citing articles)
Key tools

h-index
**h-index**

**Can apply to:** Authors who have published scholarly outputs that have been cited in other scholarly outputs.

**Metric definition:** An author-level metric (although it can also be calculated for any aggregation of publications, e.g. journals, institutions, etc.) calculated from the count of citations to an author's set of publications.

**Metric calculation:** In his 2005 paper proposing the h-index, Hirsch describes the measure thusly: “A scientist has index h if h of his or her $N_h$ papers have at least h citations each and the other $(N_h - h)$ papers have fewer than $h$ citations each.” For example, an author with an h-index of 6 has at least six publications that have each been cited at least six times each.

[https://www.metrics-toolkit.org/](https://www.metrics-toolkit.org/)
Author metrics: find my h-index

- Use Web of Science, Scopus or Google Scholar to calculate your h-index
- Might be different in each database due to difference in content coverage and update frequency

It is a measure of an individual's impact based upon the number of papers published and the number of citations these papers have received.
Strengths

- relies on citations to your paper, not the journals which is considered as a truer measure of quality
- the h-index is not skewed by a single well-cited paper nor by a large number of poorly-cited papers
- a high-impact paper counts regardless of the journal it is published in
- use the h-index to compare individuals, departments or groups is good for comparing in the same field

Weaknesses

- counts highly-cited paper regardless of why it is being referenced and ignores number and position of authors on the paper
- does not account for the fact that some authors traditionally publish more or cite less in their field
Key tools
Journal rankings
Finding top journals

► Helpful when deciding where to publish
► Learn more about a subject area

Note: there is no definitive metric or ranking and information should be gathered and considered from a range of sources. Think about what
► subject you are investigating
► decision you are trying to make
► comparison you make
Tools for journal impact factor

- a quantitative tool for evaluating the relative importance of a journal
- a measure of the frequency with which its published papers are cited up to two years after publication

WEB OF SCIENCE
Journal Citation Reports

Scopus
CiteScore
A way of measuring the citation impact of serial titles such as journals. Serial titles are defined as titles which publish on a regular basis (i.e. one or more volumes per year).

CiteScore calculates the average number of citations received in a calendar year by all items published in that journal in the preceding three years.

In Scopus, click ‘Sources’ to access CiteScore.
Journal rankings and metrics (WoS)

- In Web of Science, **Open Journal Citation Reports (JCR)**
- Select ‘Browse by category’
- Select a category

For each journal you can see a number of metrics, including ‘Impact Factor’. This is the average number of times articles from the journal published in the past two years (f.e. 2016+2017) have been cited in the reporting year (f.e. 2018).
Journal rankings and metrics

- Ulrichsweb can help
  - identify coverage in a discipline
  - Find out if it is peer-reviewed
  - Find out where a journal is indexed (f.e. in Scopus or Web of Science)
Journal ranking and metrics

- Google Scholar provides list of top publications for broad subject areas, scholar.google.co.uk
- Click on ‘Metrics’ and choose subject
- Ranked by h5 index

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 2014-2018 have at least h citations each.
Altmetrics, the creation and study of new metrics based on the social web for analyzing and informing scholarship.

Altmetrics

- alternative to more traditional citation impacts; complements bibliometrics
- broad group of metrics, capturing various parts of impact a paper or work can have
- can be applied to all scholarly outputs (articles, books, blogs, social media, data etc.)

A classification of altmetrics was proposed by ImpactStory in September 2012:

- HTML views and PDF downloads
- Discussed on Wikipedia, Twitter, Facebook and other social media
- Saved with Mendeley, CiteULike and other social bookmarks
- Cited - tracked by Web of Science, Scopus, CrossRef
Components of Altmetrics

The Colors of the Donut

- Policy documents
- News
- Blogs
- Twitter
- Post-publication peer-reviews
- Facebook
- Sina Weibo
- Syllabi
- Wikipedia
- Google+
- LinkedIn
- Reddit
- Faculty1000
- Q&A (Stack Overflow)
- Youtube
- Pinterest
- Patents

How it began: http://altmetrics.org/manifesto/
How it’s going: https://www.altmetric.com/
Altmetric Tools

Altmetric watch a range of social media sites, newspapers, government policy documents and other sources for mentions of scholarly articles. Altmetric tracks what people are saying about papers online.

Article Level Metrics are available upon publication for every article published in PLOS. It tracks usage, citations and social web activity.
PlumX Metrics on Scopus
1. Add bookmarklet to your bookmarks toolbar
2. Visit any paper
3. Get article level metrics with a single click

*The Bookmarklet* only works with PubMed, arXiv or pages containing a DOI. Twitter mentions beyond 2011 and it needs Google Scholar friendly citation metadata.
Free Altmetrics resources

► https://www.altmetric.com/audience/researchers/

► https://www.altmetric.com/products/free-tools/free-badges-for-researchers/

► https://www.altmetric.com/research-access/
Associations of fats and carbohydrate intake with cardiovascular disease and mortality in 18 countries from five continents (PURE): a prospective cohort study

Overview of attention for article published in The Lancet, August 2017

The data shown below were collected from the profiles of 8,494 tweeters who shared this research output. Click here to find out more about how the information was compiled.
Bibliometrics resources

► Metrics toolkit

► MyRI

► The Bibliomagician

► The Forum for Responsible Research Metrics

► Report - UK Progress Towards the Use of Metrics Responsibly

Responsible metrics

Metrics can be a useful tool but are not sufficient on their own to assess research fairly.

Research can impact the world in a number of ways. This can be difficult to measure or quantify.

A controversial paper might receive a high amount of negative citations. Metrics can reflect bias within the scholarly community.

Take home message

► **Use more than one metric** to build up a richer picture: citation counts will only tell part of a story. If you include the number of outputs in top citation percentiles you might start to get a better idea of an institution's research profile.

► Normalise if you want to compare entities: try to base judgements on a level playing field to **account for any differences in subject area**, year of publication and document types.

► When making decisions always use quantitative metrics in combination with qualitative inputs, such as expert knowledge or peer review.
Further reading and references


Yuret, T. (2016) Is it easier to publish in journals that have low impact factors? Doi: 10.1080/13504851.2015.1109034


*The Metric Tide*

Blog: The Bibliomagician
Discussion

Any questions, comments or experience you would like to share?
Next week:
Online Researcher Profiles
Malcolm Horne

Library Workshop A, 1pm