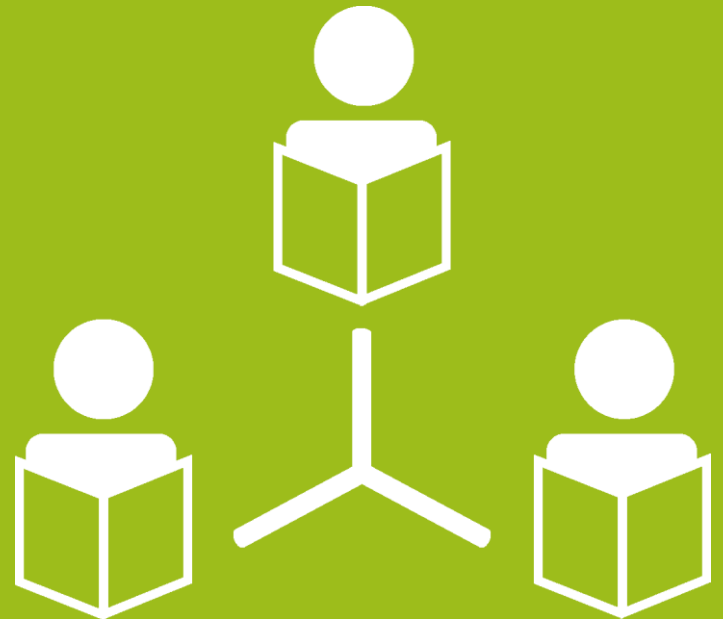


An Introduction to Bibliometrics



What are bibliometrics

- Bibliometrics is about applying quantitative methods to bibliographic data, often focussing on how many times research outputs and publications are cited.
- There are a number of limitations associated with using bibliometrics to assess research, so they are generally most useful in conjunction with other information like peer review of research.
- Bibliometrics can help with activities like:
 - Demonstrating the impact of research.
 - Looking at highly cited journals in a subject area - which can be helpful for deciding where to publish.
 - Identifying top researchers in a subject area - for identifying potential collaborators etc

What metrics are available?

- Authors/Institutions
- *Citation counts, publication counts, h-index*
- Articles
- *Citation counts, Citation mapping, Google Scholar 'classic papers', Facebook/Twitter mentions*
- Journals
- *Journal impact factor, Google Scholar h-5 index*

Limitations of bibliometrics

- Not established for all disciplines
- Citation practices vary from one discipline to another
- High number of citations does NOT imply high value or quality
- Potential manipulation, e.g. “group” citing, splitting research between multiple articles
- Coverage of sources other than journal articles can be poor

Bibliometrics and the REF

In April 2014 HEFCE commissioned a review of the role of metrics in research assessment. The reports and findings of the review were published on the 9th July 2015 and can be found at:

<http://www.hefce.ac.uk/pubs/rereports/Year/2015/metricide/Title,104463,en.html>

The key message from the report is that metrics cannot and should not replace peer review within research assessment.

Output

The review did support the use of some metrics to complement peer review, in particular citations. However, the review was very dismissive of “journal-level indicators” such as impact factors.

Impact

The panel found that impact metrics would be inadequate to replace impact case studies. However, they do state that there is the potential to use more metrics as evidence within the impact case studies.

Environment

The review recommends that metrics should not replace the environment section of REF, but that more data could be supplied.

Bibliometric tools

- At the University of Cumbria the two main bibliometric tools at our disposal are:
- **Journal Citation Reports (JCR)**, contained in [Web of Science](#).
- [Google Scholar](#).

The main metrics

1. Publication Counts - This is simply the number of publications produced by an individual, a research group or an institution. This is the most basic metric used to measure productivity.

2. Citation Counts - Citations are used to measure the impact or influence of a paper or group of papers. It is important to understand that the 'count' will vary depending on the database used.

The main metrics

3. Journal Impact Factors - JIFs are created by an algorithm that produces a score based on number of citations of published items in a particular journal divided by the number of items published in that journal over a preceding two year period:

- Cites in 2014 to papers published in 2012 and 2013 = 165
- Number of papers published in 2012 and 2013 = 67
- Calculation: $165 \text{ divided by } 67 = 2.463$
- $\text{JIF} = 2.463$

The main metrics

Why JIFs should be used with caution:

Here are JIF scores for two journals:

- *Journal of Criminal Justice*: 3.154
- *New England Journal of Medicine*: 55.873

Both journals represent the title with the highest JIF in their subject category. Therefore it is essential that journals are compared like for like within the context of the title's JIF data.

The main metrics

4. H-index

The H-index (a single number) is used to assess an individual, a research group or institution by taking into account productivity (paper counts) AND impact (citations).

If an individual has a has a h-index of 7, this means that 7 of their papers have been cited at least 7 times each.

As with other metrics, the h-index can only be used effectively for comparing like with like, for example: individuals in a similar discipline and at a similar stage in their career.

The main metrics

5. Google Scholar h5 index

Google scholar provides a journal metric as an alternative to the impact factor called the h5 index.

It is the equivalent to the Hi-index above, but calculated for a journal rather than an author, over a 5 year period. So, an h5 of 10 means that during the past five years a journal has published 10 articles which were each cited at least ten times (and many more articles which were cited fewer than 10 times).

Altmetrics

Altmetrics are metrics and qualitative data that are complementary to traditional, citation-based metrics. They can include:

- Citations on Wikipedia
- Citations in public policy documents
- Discussions on research blogs
- Mainstream media coverage
- Bookmarks on reference managers like Mendeley
- Mentions on social networks such as Twitter.

Altmetrics



<https://www.youtube.com/watch?v=M6XawJ7-880>

Altmetrics

A new feature called Plum Metrics on Ebsco databases provides information on social media mentions for some articles. Where this information is available, the Plum Print icon will show and you can click on this to get further details.



How to raise your research profile

- Use a consistent form of your name wherever possible
- Use an author ID system, the University recommends [ORCID](#)
- ORCID provides a persistent digital identifier that distinguishes you from every other researcher and, through integration in key research workflows such as manuscript and grant submission, supports automated linkages between you and your professional activities ensuring that your work is recognized.