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Research Metrics Information Sheet | May 2021

What are research metrics?

Research metrics attempt to describe the quality or impact of research publications through numbers. They try to offer an objective and consistent methodology for comparing research publications and the authors of research publications.

Research metrics are sometimes used to inform decisions, e.g. authors choosing which journal to submit their article to, research funders choosing which grant application to fund, and - most controversially - institutions choosing which researcher to appoint or promote.

Are research metrics a good way to measure the quality of research?

People and organisations can be tempted to use metrics because they seemingly offer an objective and time-efficient approach to evaluating research when compared to the slower and more seemingly subjective approach of peer review. However, whilst research metrics can sometimes offer a useful perspective on the reach of research publications they can also be misunderstood and misapplied.

Initiatives such as the San Francisco Declaration on Research Assessment (https://sfdora.org/), also known as DORA, and the Leiden Manifesto for Research Metrics (http://www.leidenmanifesto.org/) argue for the responsible use of metrics in research assessment.

The responsible use of research metrics typically means:

- Considering research metrics as an *indicator* rather than metric (because an actual metric is a direct measurement).
- The use of research metrics to inform decisions being transparent to all parties.
- Research metrics being used alongside contextual information and peer review, and never independently.

Oxford Brookes University is a signatory of DORA and is fully committed to implementing the principles of open, responsible and fair research assessment: https://www.brookes.ac.uk/research/research-integrity-statement/

Should I use metrics?

That depends on what you are trying to achieve and if you have the time and resources to follow DORA's 'responsible' use of research metrics that Oxford Brookes has agreed to follow.

A vital point is that research metrics are not a shortcut to making a decision. The investigation and implementation of appropriate research metrics in a 'responsible' way may be more time consuming than not using them.

What research metrics offer is a numerical perspective on research productivity and readership that may be a useful counterpoint to other sources of information such as peer review.

What are different types of metrics?

There are two main types of research metrics: bibliometrics and altmetrics.

Bibliometrics are a way to describe the readership of research publications in the academic community as a number, based on the number of times that the publications are referenced in other academic publications.

Altmetrics are similar to Bibliometrics in that they try to describe the reach of research publications in numbers, but instead of relying on academic citations they instead draw upon how often the publication is mentioned on social media, in the news, in governmental documents, and on other online platforms.

What metrics are available to Oxford Brookes researchers?

There are many **bibliometrics**, but here are some of the most commonly used that are available to Oxford Brookes researchers:

- Citations: an article-level metric that is a basic count of the number of times an article is cited. This metric is easy to understand, but it is simplistic (it does not take account of the year or discipline of the article) and is limited by the size and accuracy of the database providing the metric. Citation counts are available from most databases, e.g. Google Scholar (https://scholar.google.com/) is free and provides a 'cited by' count, and Oxford Brookes Library has a subscription to Web of Science (http://oxfordbrookes.idm.oclc.org/login?url=http://wok.mimas.ac.uk/) that provides a 'Times Cited' count.
- Field Normalized (or Weighted) Citation Impact: an article-level metric based upon the number of citations, but adjusted to compensate for differences between disciplines, publication types, and publication year (more detail is available from https://www.metrics-toolkit.org/field-normalized-citation-impact/). This metric is limited by the size of the database and the accuracy and meaningfulness of assigning articles into different 'fields' of research. The free-to-use database Dimensions (https://app.dimensions.ai/discover/publication) provides two kinds of 'adjusted' research metrics: a Field Citation Ratio and a Relative Citation Ratio.
- Journal Impact Factor: a journal-level metric that is commonly misapplied - it was designed to show the average *number of citations* across a whole *journal* but is instead often misused as a proxy measure for the *quality* of individual *articles*. This research metric is available from Oxford Brookes Library's subscription to Web of Science (http://oxfordbrookes.idm.oclc.org/login?url=http://wok.mimas.ac.uk/).
- *h*-index: an author-level metric for comparing rates of how quickly different authors have accrued citations. There are considerable concerns about how useful the *h*-index is (e.g. https://doi.org/10.1016/j.acalib.2017.08.013). The methodology for calculating an author's *h*-index is freely available on Wikipedia (https://en.wikipedia.org/wiki/H-index),

Some **altmetric** services available to Oxford Brookes researchers include Altmetric.com (available via Oxford Brookes' institutional repository RADAR for any research publication that has a DOI) and PlumX (available on Elsevier's ScienceDirect platform https://www.sciencedirect.com/).

What is the best research metric to use?

There is no one ‘best’ research metric (though some research metrics are less likely to be recommended than others because of concerns around the methodology of their calculation). Choosing the most appropriate metric will depend upon what indicator would be most useful to the evaluation (citations, impact, quality, funding, etc.) and the specifics of the publications or authors being evaluated (articles, books, discipline, date range, etc.). It is also important to remember that most research metrics undervalue research in forms other than the typical research publications of articles and books.

Even then, the chosen metric may well have known weaknesses or biases, reinforcing the idea of DORA and the Leiden Manifesto that the research metric should be used alongside other contextual information and peer review.

Who can I ask for further help with metrics?

The Metrics Toolkit is an excellent resource for learning more about research metrics: https://www.metrics-toolkit.org/

Your Research Lead may be able to advise on the most commonly used and most appropriate metrics for your discipline, and the situations where their use is most valid.

The Scholarly Communications Team (based in Oxford Brookes Library) can also advise on understanding the use of metrics: openaccess@brookes.ac.uk

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