

Bibliometrics

Key findings from a report on the theory and practice of bibliometrics in health research

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Abstract

Bibliometrics, an evaluation methodology to assess the impact of research, is an increasingly important tool in public policy evaluation, with clear advantages over other methods. Bibliometric methods have some shortcomings but are adaptable to specific evaluation requirements, and remain most useful in combination with other evaluation methods such as systematic peer review and case studies.

Key Finding 1: Bibliometrics, an evaluation methodology assessing the impact of research, has been increasingly used as the demand for public policy evaluation increases. Bibliometrics employs quantitative analysis to measure patterns of scientific publication and citation, typically focusing on journal papers. It is used to measure scientific collaboration, assess interdisciplinary research and look for quality and excellence in research. Bibliometric analysis is an increasingly important part of a broader 'toolbox' of evaluation methods available to R&D policymakers to support decision-making.

Key Finding 2: Bibliometric analysis can offer clear advantages over other evaluation methods. Bibliometric methods can be used to generate quantitative indicators assessing interdisciplinary and collaborative research, as well as a more general indication for 'quality' and 'excellence' in research. Such indicators

include citation volume, citations per paper and normalised measures, and highly cited papers. Robust bibliometric analysis requires a clear understanding of the strengths and limitations of each of these measures, and sensitivity to the contexts in which they are used.

Key Finding 3: Bibliometrics show some theoretical and methodological shortcomings. From a theoretical perspective, some doubts remain as to the ability of bibliometric methods to capture abstract concepts such as research 'quality'. Methodological challenges include issues of journal coverage in major bibliometric databases, adequately identifying author affiliations and choosing the right timeframe for analysis. Finally, caveats to bibliometric analyses include variations in citation behaviour between fields and individuals, and a difficulty in evaluating attribution.

Key Finding 4: Bibliometrics is a flexible tool that is easily adapted to specific evaluation requirements. For example, RAND Europe used bibliometric methods to help inform selection procedures at the National Institute for Health Research (NIHR). In this instance, bibliometrics were used to help reduce the transaction costs incurred in a large-scale assessment exercise, which otherwise might have incurred higher costs in time-intensive peer review processes.

Key Finding 5: Bibliometrics is most useful when used in combination with other evaluation methods, such as systematic peer review and case studies. The results of bibliometric analysis may be used to challenge peer reviewers and offer explanations for unusual or unexpected patterns, or as an initial short-listing or qualification phase. They may also be particularly useful for high-level or multi-factorial analysis during research evaluation exercises, or when an alternative form of validation of peer review decisions may be required. ■



Measuring publications and citations can be helpful for research policy

This product is part of the RAND Europe research brief series. A Project REsource note presents a policy-oriented summary of completed project work.

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This Project Resource note summarises the RAND report TR685:

Ismail, S., Nason, E., Marjanovic, S. & Grant, J., *Bibliometrics as a tool for supporting prospective R&D decision-making in the health sciences: Strengths, weaknesses and options for future development*, RAND Europe (TR-685-DH), 2009. www.rand.org/pubs/technical_reports/TR685.html

Associated resources are available on the PRiSM website at:

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