NAVIGATING KNOWLEDGE

Assessing Productivity and Impact Using Publication Data

By Cathy C. Sarli, Bernard Becker Medical Library, Washington University in Saint Louis, School of Medicine

SAMPLE METRICS	PROS	CONS
Eigenfactor Score: formula based on citations from a journal over a five year period, with citations from highly ranked journals given more weight. Use for **source** level assessment.	✓ eigenFACTOR is freely available. ✓ Journal self-citations are not included in the scoring.	✓ Does not measure quality of research. ✓ Citation data is from Journal Citation Reports (JCR).
***h*-Index**: formula based on the number of publications and citations. An author with an *h*-index of eight has at least eight publications that have been cited at least eight times. Use for **author or group** level assessment.	✓ Useful metric for productivity and impact. ✓ Automatically calculated in select resources (*h*-index will vary among resources).	✓ Favors authors who have published over an extended period of time. ✓ Does not factor in the "context" of citations.
Second Generation Citations: citations to publications that cite a specific publication. Use for **author**, **document,** or **group** level assessment.	✓ Useful metric for impact. ✓ Allows for analysis of countries, institutions, document types, languages, authors, subject areas, etc., represented by citations.	✓ Available only in select resources. ✓ Self-citations skew results. ✓ Exporting of data may be required for analysis.
Funding Acknowledgement Networks: analysis of grant funding acknowledgements as noted in publications and/or citations. Use for **author**, **document,** or **group** level assessment.	✓ Useful metric for impact. ✓ Allows for analysis of influence of grant funding on published research.	✓ Available only in select resources. ✓ Excludes non-grant funded publications.

STRATEGIC IMPORTANCE

Evaluation of scholarly productivity to assess research impact as a result of translational research efforts is a growing trend that has gained traction since the inception of the Clinical and Translational Science Awards (CTSA). Publication data alone does not provide a full narrative of research impact, nor is it predictive of meaningful health outcomes. Unpublished research output such as gray literature, grant awards, data, intellectual property, outreach efforts, invited talks, patents, and qualitative data collected from surveys or interviews used in tandem with publication data provides a more robust overview of productivity and impact of biomedical research. Examples of analyses generated from quantitative and qualitative data include grant award activity patterns; evidence of translational research collaborations; utilization of data or intellectual property; synthesis of research outputs into clinical or public health practice applications; to name a few.

CAVEATS

- A single metric is not sufficient for measuring productivity or impact.
- Publication data provides a limited overview of productivity and impact.
- Resources vary as to indexing from publication sources and citations, as well as date coverage.
- Some resources include non-publication data such as grant awards, academic awards, and teaching efforts.
- Some resources are narrow in focus; others cover multiple disciplines.
- Be aware of multiple name variants for authors or institutions.
- Be aware of duplicate results and/or different versions of the same publication.
- Manipulation of data may be required to assess productivity and impact.
- Some resources automatically generate visual graphics based on data; others require social network analysis (SNA) software to display data in a visual format.

RESOURCES

SUBSCRIPTION
Academic Analytics
Essential Science Indicators
InCites
SciVerse Scopus
SciVerse Spotlight
SciVerse Strata
Web of Knowledge/Web of Science

FREE
Google Scholar
Google Scholar Citations
gopubmed
Microsoft Academic Search
Publish or Perish
PubMed
PubReminer

SOFTWARE
Network Workbench
NodeXL
Pajek
Sci2

READINGS
Zotero: Bibliometrics_AAHSL collection of readings

AAHSL
Association of Academic Health Sciences Libraries
Better Health Through Better Information