Research metrics reference

Metrics illuminate the impact of your research outputs. Promotion and tenure committees, funders, advisors, research team leaders and potential collaborators are all interested in information about impact.

But where to start?

Your library can advise you on metrics that can help you to:

Decide where to publish
- CiteScore
- SJR: SCImago Journal Rank
- SNIP: Source Normalized Impact per Paper
- Journal Impact Factor

Add to online profile
- *h*-index
- Percentile benchmark
- Usage
- Captures
- Mentions
- Social media

Enrich promotion & tenure portfolio
- *h*-index
- Percentile benchmark
- Usage
- Captures
- Mentions
- Social media
- Citations

Apply/report to funders[1]
- Percentile benchmark
- Journal metrics (e.g., CiteScore)
- Usage
- Captures
- Mentions
- Social media
- Citations

Benchmark a collection of research outputs *(for team leaders)*
- Percentile benchmark
- Field-Weighted Citation Impact
- *h*-index (if in the same field)
- Field-Weighted Download Impact[2]

Document* Author Journal Snowball Metrics** PlumX metrics

Citation count

# of citations accrued since publication

A simple measure of attention for a particular article, journal or researcher. As with all citation-based measures, it is important to be aware of citation practices. The paper "Effective Strategies for Increasing Citation Frequency"[3] lists 33 different ways to increase citations.

Document count

# of items published by an individual or group of individuals

A researcher using document count should also provide a list of document titles with links. If authors use an ORCID iD—a persistent scholarly identifier—they can draw on numerous sources for document count including Scopus, ResearcherID, CrossRef and PubMed.

Register for an ORCID iD at https://orcid.org

Field-Weighted Citation Impact (FWCI)

# of citations received by a document
expected # of citations for similar documents

Similar documents are ones in the same discipline, of the same type (e.g., article, letter, review) and of the same age. An FWCI of 1 means that the output performs just as expected against the global average. More than 1 means that the output is more cited than expected according to the global average; for example, 1.48 means 48% more cited than expected.

h-index

# of articles in the collection (h) that have received at least (h) citations over the whole period

For example, an *h*-index of 8 means that 8 of the collection's articles have each received at least 8 citations. *h*-index is not skewed by a single highly cited paper, nor by a large number of poorly cited documents. This flexible measure can be applied to any collection of citable documents. Related h-type indices emphasize other factors, such as newness or citing outputs' own citation counts.[4]

Citescore

citations in a year to documents published in previous 3 years
# of documents in previous 3 years

This comprehensive, current and open metric for journal citation impact is available in a free layer of Scopus.com. It includes a yearly release and monthly CiteScore Tracker updates.

Find CiteScore metrics for journals, conference proceedings, book series and trade journals at https://www.scopus.com/sources

SCImago Journal Rank (SJR)

average # of weighted citations received in a year
# of documents published in previous 3 years

Citations are weighted—worth more or less—depending on the source they come from. The subject field, quality and reputation of the journal have a direct effect on the value of a citation. Can be applied to journals, book series and conference proceedings.

Calculated by SCImago Lab (http://www.scimagojr.com) based on Scopus data.

Source Normalized Impact Per Paper (SNIP)

journal's citation count per paper
citation potential in its subject field

The impact of a single citation will have a higher value in subject areas where citations are less likely, and vice versa. Stability intervals indicate the reliability of the score. Smaller journals tend to have wider stability intervals than larger journals.

Calculated by CWTS (http://www.journalindicators.com) based on Scopus data.

Journal Impact Factor

citations in a year to documents published in previous 2 years
# of citable items in previous 2 years

Based on Web of Science data, this metric is updated once a year and traditionally released in June following the year of coverage as part of the Journal Citation Reports®. JCR also includes a Five-year Impact Factor.

Percentile benchmark (articles)

compares items of same age, subject area & document type over an 18-month window

The higher the percentile benchmark, the better. This is available in Scopus for citations, and also for Mendeley readership and tweets. Particularly useful for authors as a way to contextualize citation counts for journal articles as an indicator of academic impact.

Outputs in top percentiles

extent to which a research entity's documents are present in the most-cited percentiles of a data universe

Found within SciVal, outputs in top percentiles can be field weighted. It indicates how many articles are in the top 1%, 5%, 10% or 25% of the most cited documents. Quick way to benchmark groups of researchers.

Usage

a way to signal if anyone is reading the articles or otherwise using the research

Examples: clicks, downloads, views, library holdings, video plays.

Read more about PlumX metrics: https://plumanalytics.com/learn/about-metrics/

Captures

indicates that someone wants to come back to the work. Captures can be a leading indicator of future citations

Examples: bookmarks, code forks, favorites, readers, watchers.

Mentions

measurement of activities such as news articles or blog posts about research

Mentions is a way to tell that people are truly engaging with the research. Examples: blog posts, comments, reviews, Wikipedia references, news media.

Social media

includes tweets, Facebook likes, etc. that reference the research

Social media can help measure "buzz" and attention. Social media can also be a good measure of how well a particular piece of research has been promoted. Examples: shares, likes, comments, tweets.

*"Document" in the definitions refers to primary document types such as journal articles, books and conference papers.

**Indicates that the Snowball Metrics group agreed to include as a standardized metric, which is data source and system agnostic. https://www.snowballmetrics.com

1. Metrics selected will depend on the funders' interests and project strengths.

2. Plume, A. & Kamalski, J. (March 2014). "Article downloads: An alternative indicator of national research impact and cross-sector knowledge exchange," *Research Trends*, http://www.researchtrends.com/issue-36-march-2014/article-downloads/

3. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2344585

4. See a good explanation at http://www.harzing.com/pop_hindex.htm

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ELSEVIER

Scopus is a source-neutral abstract and citation database curated by independent subject matter experts with content from over 5,000 publishers. https://www.scopus.com

CiteScore™, SNIP and SJR are provided free at: https://www.scopus.com/sources

SciVal offers data-based insights into 14,600 research institutions and 230 nations worldwide to visualize research performance, benchmark relative to peers, develop collaborative partnerships and analyze research trends. https://www.scival.com

MENDELEY is a free reference manager and academic social network where you can organize your research, collaborate with others online and discover the latest research. https://www.mendeley.com

PLUM ANALYTICS provide insights into the ways people interact with individual pieces of research output (articles, conference proceedings, book chapters, and many more) in the online environment. https://plumanalytics.com/learn/about-metrics/