

BIBLIOMETRICS AND IMPACT METRICS

- Bibliometrics is a set of **statistical methods** that measures and analyses the **impact, quality, and trends** of scientific and academic production.
- It allows us to understand the impact and contribution of scientific production over time, compare performance and **promote best practices** (benchmarking), and **support decision-making** in the distribution of funds and resources among scientific areas.

BIBLIOMETRIC INDICATORS

- Used to analyse the performance of researchers, journals, scientific fields, institutions, or countries, providing objective and reproducible data to evaluate and compare research.



Document count

Counts the number of publications (articles, books, patents, technical reports, etc.) as well as their increase over a given period of time.

H-index

Combines the number of publications with the number of received citations.

Example: an h-index of 10 means that the researcher has 10 articles cited at least 10 times each.

Journal quartile

Ranking system that divides scientific journals into four groups (Q1, Q2, Q3, Q4).

→ Q1 – Top 25% of journals in terms of citations.

Citation count

Measures the impact of a publication, author, or journal through the number of citations accumulated since the date of publication.

Field-Weighted Citation Impact

$$\frac{\text{\# of citations for a document}}{\text{\# Number of expected citations for similar documents}}$$

Estimates the citation impact of a publication compared to similar publications in the same field, type, and year.

Journal impact factor

It calculates the citation frequency of the "average article" in a journal. Based on data from Web of Science, updated annually.

BIBLIOMETRIC DATABASES

Multidisciplinary databases with bibliometric information (number of publications, citations, h-index)



Scopus

Clarivate
Web of Science™

Bibliometric databases dedicated to journals (metrics such as quartile or impact factor).



SCImago
Journal & Country Rank Journal Citation Reports™

RESPONSIBLE USE OF METRICS

Avoid evaluating solely based on single metrics, considering other factors (career stage and the specifics of the field of study).

Combining **quantitative and qualitative evaluation criteria**, such as peer review, participation in research projects, mentoring activities, and social impact.

Bibliometrics tend to **favor established fields** compared to newer fields that have not yet had time to accumulate citations.

Align metrics
with values

- Metrics should promote **transparency, rigour, collaboration, and social impact**, not just highlight the volume of publications.
- They guide decisions, but **should not replace human judgment**.
- **Inappropriate use**, such as excessive self-citation or "salami slicing," can encourage dubious and unethical practices.