



# HOW ARE CITATION COUNTS USED TO BENCHMARK?

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It is possible to compare the citation counts of individual scientists, schools or research institutes, universities and even countries.

[Essential Science Indicators](#) (ESI) can be used to benchmark within broad subject disciplines (based on Web of Science data), and can provide answers to the questions below:

- What is the 10-year average citations per papers for field x?
- How do I compare the 10-year average citations per papers in a field to the citations per paper for a scientist in that field?
- How does the total citation count for a paper compare to the average rate for its field and year of publication?
- What percentile group does my paper fall into?
- How can I determine if a paper is cited among the top 10% of papers in its field?

## BENCHMARKING USING OTHER BIBLIOMETRIC ANALYSIS

- [Web of Science](#) and [Scopus](#) allow you to analyse search results. For example, you may be able to analyse by **author**, **year published**, **journal**, and **keyword** or **subject category**.
- **Web of Science** and **Scopus** automatically **analyse** a search on a topic by:
  - author (which authors have published the most on the topic)
  - institution (after Uni of Florida, UQ publishes the most on turtles)
  - country (Australia publishes the most on coral bleaching)
  - journals (which journals publish the most on the topic)
  - years (the distribution of publications over time on the topic).

## LEVELS OF BENCHMARKING:

### INTERNAL LEVEL

- for an academic unit to compare its progress over time;

- generic level
- the academic unit compares itself against 'best industry practices' or 'ideal' standards.

### EXTERNAL LEVEL

- the academic unit comparing itself against other academic units within the same university as well as outside the university where they are not direct competitors;

Ahmed, PK and Rafiq, M (1998) Integrated Benchmarking: a Holistic Examination of Select Techniques for Benchmarking Analysis. *Benchmarking for Quality Management and Technology*, 5 (3), pp. 225–242.

### COMPETITIVE LEVEL

- the academic unit comparing itself with its direct competitors in other universities; and

## GOLDEN RULES WHEN BENCHMARKING:

- Choose a time period to benchmark; for an individual scientist this could be whole career, since last promotion, or last 'n' years.
- Choose which publication types will be included, e.g. journal articles and reviews, conference proceedings, patents, etc.
- Decide if you will use all publications, selected 'top' publications, all researchers in an academic unit, or selected 'top' researchers.
- Decide what you are measuring – number of publications, number of cites, cites per paper, h-index.
- Decide if you will include or remove self-citations
- Decide on whole or fractional counting:
  - Whole counting – full counts to all co-authors
  - Fractional counting – proportionate counts to co-authors; weighting first author/ last author
- Consider if disciplinary differences of citation patterns skew results.

