Focus on bibliometrics and altmetrics
Background to bibliometrics
Background to bibliometrics

Citation Indexes for Science
A New Dimension in Documentation through Association of Ideas
Eugene Garfield

"The uncritical citation of disparaged data by a writer, whether it be deliberate or not, is a serious matter. Of course, knowingly propagating unsubstantiated claims is particularly distressing, but just as many novice students may be swayed by unsubstantiated assertions presented by a writer who is unaware of the criticism. Buried in scholarly journals, critical ideas are increasingly likely to be overlooked with the passage of time, while the matters to which they pertain, having been repeated more widely, are approach to subject control of the literature of science. By virtue of its different conclusion, is likely to bring together material that would never be collated by the usual subject indexing. It is best described as an association of ideas index, and it gives the reader as much leisure as he requires. Suggestions through association of ideas is offered by conventional subject indexes but only within the limits of a particular subject heading.

Citation Analysis as a Tool in Journal Evaluation
Journals can be ranked by frequency and impact of citations for science policy studies.
Eugene Garfield

1955

1972

1975
A ratio between citations and recent citable items published in a journal; the average number of citations received per published article.

Citations to non-source items (editorials, letters, news items, book reviews, abstracts, etc) may inflate the IF.
Cumulative contribution of articles (with different citation rates) to total journal impact.
<table>
<thead>
<tr>
<th>Rank</th>
<th>Abbreviated Journal Title (linked to journal information)</th>
<th>ISSN</th>
<th>Total Cites</th>
<th>Impact Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NEW ENGL J MED</td>
<td>0028-4793</td>
<td>232068</td>
<td>53.298</td>
</tr>
<tr>
<td>2</td>
<td>LANCET</td>
<td>0140-6736</td>
<td>158906</td>
<td>38.278</td>
</tr>
<tr>
<td>3</td>
<td>JAMA-J AM MED ASSOC</td>
<td>0098-7484</td>
<td>117668</td>
<td>30.026</td>
</tr>
<tr>
<td>4</td>
<td>ANN INTERN MED</td>
<td>0003-4819</td>
<td>45683</td>
<td>16.733</td>
</tr>
<tr>
<td>5</td>
<td>PLOS MED</td>
<td>1549-1277</td>
<td>12574</td>
<td>16.269</td>
</tr>
<tr>
<td>6</td>
<td>BRIT MED 1</td>
<td>0959-535X</td>
<td>74759</td>
<td>14.093</td>
</tr>
<tr>
<td>7</td>
<td>ARCH INTERN MED</td>
<td>0003-9926</td>
<td>37598</td>
<td>11.462</td>
</tr>
<tr>
<td>8</td>
<td>CAN MED ASSOC 1</td>
<td>0820-3946</td>
<td>11413</td>
<td>8.217</td>
</tr>
<tr>
<td>9</td>
<td>BMC MED</td>
<td>1741-7015</td>
<td>1835</td>
<td>6.035</td>
</tr>
<tr>
<td>10</td>
<td>COCHRANE DB SYST REV</td>
<td>1469-493X</td>
<td>29593</td>
<td>5.715</td>
</tr>
<tr>
<td>11</td>
<td>MAYO CLIN PROC</td>
<td>0025-6196</td>
<td>9150</td>
<td>5.698</td>
</tr>
<tr>
<td>12</td>
<td>J INTERN MED</td>
<td>0954-6820</td>
<td>7706</td>
<td>5.483</td>
</tr>
<tr>
<td>13</td>
<td>AM J MED</td>
<td>0002-9343</td>
<td>22346</td>
<td>5.430</td>
</tr>
<tr>
<td>14</td>
<td>ANN FAM MED</td>
<td>1544-1709</td>
<td>2351</td>
<td>5.355</td>
</tr>
<tr>
<td>15</td>
<td>BRIT MED BULL</td>
<td>0007-1420</td>
<td>3064</td>
<td>4.543</td>
</tr>
<tr>
<td>16</td>
<td>MEDICINE</td>
<td>0025-7974</td>
<td>4821</td>
<td>4.350</td>
</tr>
<tr>
<td>17</td>
<td>AM J PREV MED</td>
<td>0749-3797</td>
<td>11729</td>
<td>4.044</td>
</tr>
<tr>
<td>18</td>
<td>CLEV CLIN J MED</td>
<td>0891-1150</td>
<td>1513</td>
<td>3.773</td>
</tr>
<tr>
<td>19</td>
<td>ANN MED</td>
<td>0785-3890</td>
<td>3306</td>
<td>3.516</td>
</tr>
<tr>
<td>20</td>
<td>PREV MED</td>
<td>0091-7435</td>
<td>9643</td>
<td>3.216</td>
</tr>
</tbody>
</table>
Impact Factor window

Citations vs. Years after publication

- Reviews
- Notes
- Articles

Impact Factor (IF)
The Number That’s Devouring Science

The impact factor, once a simple way to rank scientific journals, has become an unyielding yardstick for hiring, tenure, and grants

By RICHARD MONASTERSKY

Science Journals Artfully Try To Boost Their Rankings

By SHARON BEGLEY

Is the impact of journal impact factors decreasing?

Jan Reedijk
Leiden Institute of Chemistry, Leiden University, Leiden, The Netherlands, and
Henk F. Moed
Centre for Science and Technology Studies (CWTS), Leiden University,
Leiden, The Netherlands
Elsevier’s philosophy on the Impact Factor

“Elsevier uses the Impact Factor as one of a number of performance indicators for journals. It acknowledges the many caveats associated with its use and strives to share best practice with its authors, editors, readers and other stakeholders in scholarly communication. Elsevier seeks clarity and openness in all communications relating to the IF and does not condone the practice of manipulation of the IF for its own sake.”
Elsevier’s policy on journal self-citations

“We can never conduct any practice that obliges authors to cite his or her journal either as an implied or explicit condition of acceptance for publication. Any recommendation regarding articles to be cited in a paper should be made on the basis of direct relevance to the author’s article, with the objective of improving the final published research. Editors should direct authors to relevant literature as part of the peer review process, however this should never extend to blanket instructions to cite individual journals.”

“Part of your role as Editor is to try to increase the quality and usefulness of the journal. Attracting high quality articles from areas that are topical is likely the best approach. Review articles tend to be more highly cited than original research, and letters to the Editor and editorials can be beneficial. However, practices that ‘engineer’ citation performance for its own sake, such as forced self-citation are neither acceptable nor supported by Elsevier.”
Immediacy Index

Looks at citations to papers published in the same year.

Publication year = Citing year

ISI Web of Knowledge™
Journal Citation Reports® 2012 JCR Science Edition

Journal Immediacy Index

Cites in 2012 to items published in 2012 = 55
Number of items published in 2012 = 154
Calculation: \[
\frac{\text{Cites to current items}}{\text{Number of current items}} = \frac{55}{154} = 0.357
\]

- Topicality
- Publication frequency/schedule has greater effect
5-year Impact Factor (IF5)

Considers articles published in the five previous years.

- Longer-term impact
- Still unable to compare across subject fields
Citations *weighted* by the EF of the citing journal
Same time window as the IF5
Self-citations excluded
Freely available at [eigenfactor.org](http://eigenfactor.org); on the JCR

**Eigenfactor**: size dependent

**Article Influence**: size independent
Citations weighted by the SJR of the citing journal
Considers 3 years of publications
Self-citations limited (33%)
Uses Scopus data
Source Normalized Impact per Paper (SNIP)

- Citations weighted by the likelihood of citation in the subject field of source
- Raw Impact per Paper ÷ Relative Database Citation Potential
- Allows for comparison between subject fields
- Also considers 3 years of publications
- Uses Scopus data
Rates individuals based on career publications
Incorporates both quantity and quality
Productivity and age constraints
Available on Scopus, also calculated from many sources

Hirsch, J. (August 2005)
“An index to quantify an individual’s scientific research output”
Common properties of bibliometric indicators

- Journal-level analysis
- Citation-based
- Medium/short-term
  - Citation window (1 year)
  - Publication window (1 to 5 years)
- Ratio of citations ÷ papers
  - Size independence
- Advantage to highly-cited fields, article types, etc.
Alternatives to citation metrics
Usage

![UKSG COUNTER logo]

Graph showing the trend of downloads and citations over the age (months). The x-axis represents the age in months, ranging from 0 to 30. The y-axis shows the percentage, ranging from 0% to 20%.

- **Downloads**: Peaks sharply in the first few months and then stabilizes.
- **Citations**: Shows a steady increase, with minor fluctuations, over the months.
Altmetrics

Up to now this article has been mentioned 313 times by 305 sources.

Sources
- 2 Facebook users
- 2 science blogs
- 1 Google+ user
- 1 news outlet
- 299 tweeters

Saved to reference managers
- 0 CiteULike
- 1 Mendeley

This app provided by Altmetric. Learn more here.

Scopus
So what?

Metrics can help you decide what to read, decide where to publish, benchmark yourself.

No single number is going to give the complete picture.

Advice: Use with care and use in combination.