Impact Factor

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What is Impact Factor?

The **impact factor is only one of three standardized** measures created by the Institute of Scientific Information (ISI) which can be used to measure the way a journal receives citations to its articles over time.

- **Impact factor**
- **Immediacy index**
- **Cited half-life**

Impact Factor

- ***How to calculate impact factor?***

A:The citations in 2010 to articles published in 2009 and 2008
B:The number articles published in 2009 and 2008

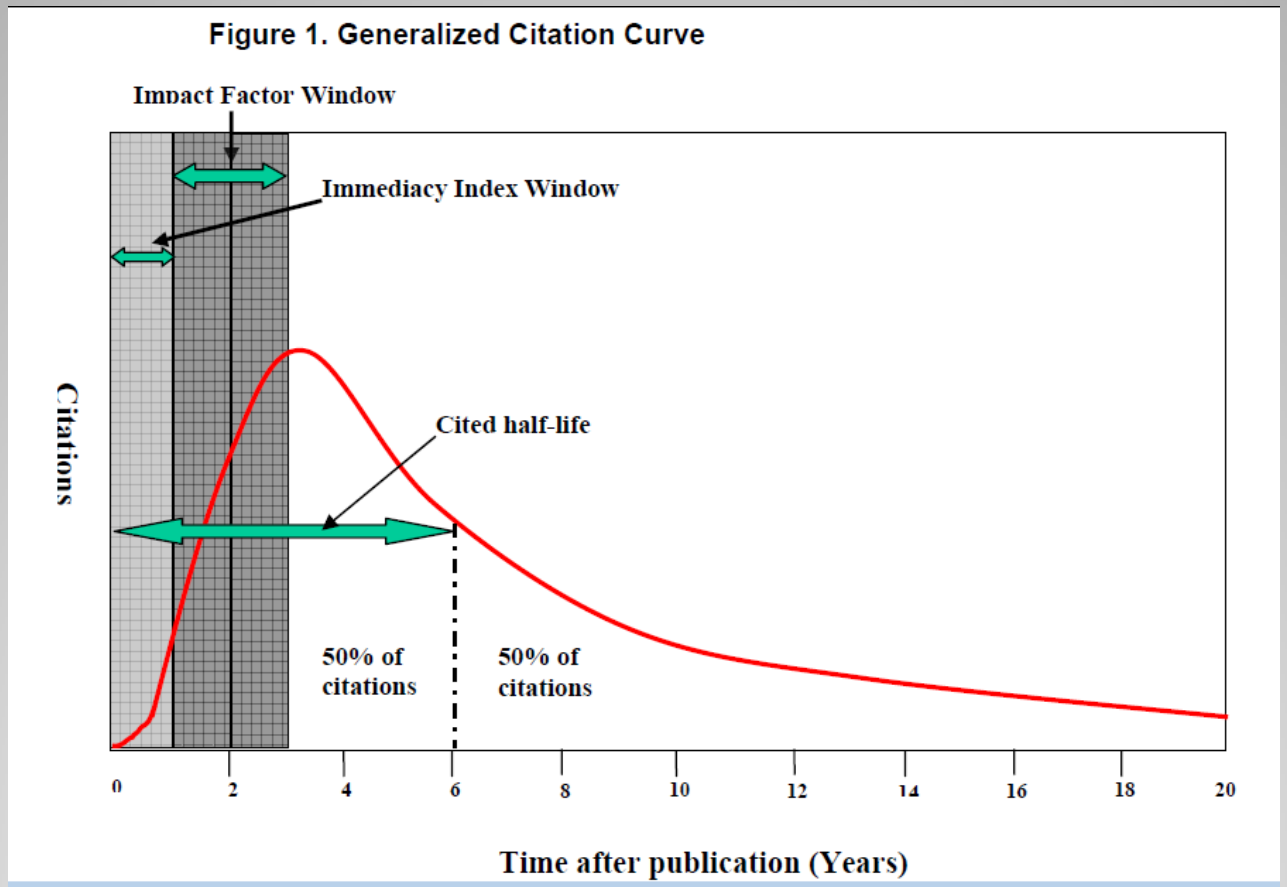
The 2010 impact factor= A/B

Source Items

- Original research articles
- Reviews
- Full length proceedings papers
- Rapid or short communications, and so on

- Non-source items, such as editorials, short meeting abstracts, and errata, are not counted in the denominator although any citations they might receive will be included in the numerator.

Five year impact factor



Immediacy index

Cited half-life

Immediacy index

- The **immediacy index gives a measure of the skewness** of the curve, that is, the extent to which the peak of the curve lies near to the origin of the graph. It is calculated by dividing the citations a journal receives in the current year by the number of articles it publishes in that year.

- The number that results can be thought of as the initial gradient of the citation curve, a measure of how quickly items in that journal get cited upon publication.

Figure

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Cited half-life

- The **cited half-life is a measure of the rate of decline of** the citation curve. It is the number of years that the number of current citations takes to decline to 50% of its initial value (the cited half-life is 6 years in the example given in Figure 1).

- It is a measure of how long articles in a journal continue to be cited after publication.

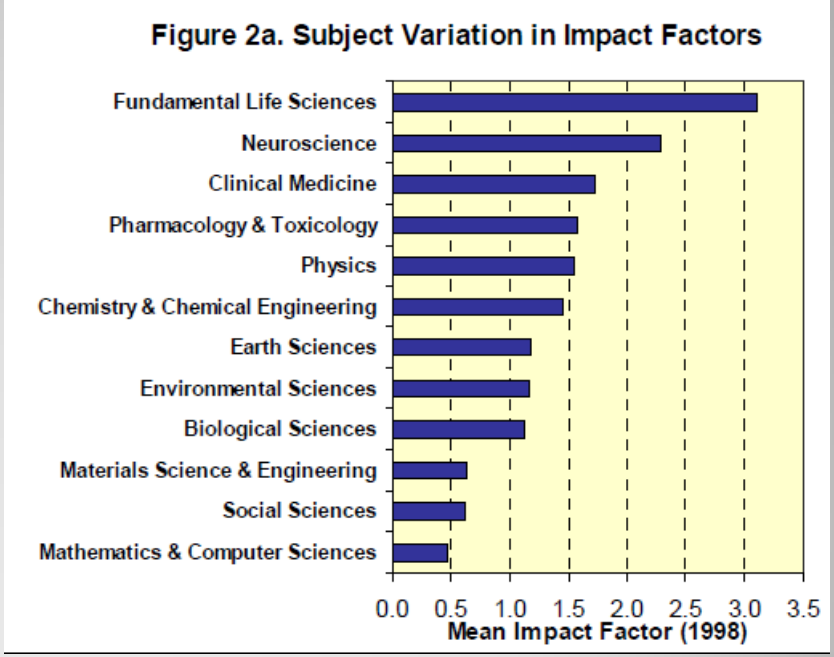
How variable is the impact factor?

The value of the impact factor is affected by sociological and statistical factors.

- Sociological factors
  - Subject area of the journal
  - Type of journal (letters, full papers, reviews)
  - Average number of authors per paper (which is related to subject area).
- Statistical factor
  - Size of the journal

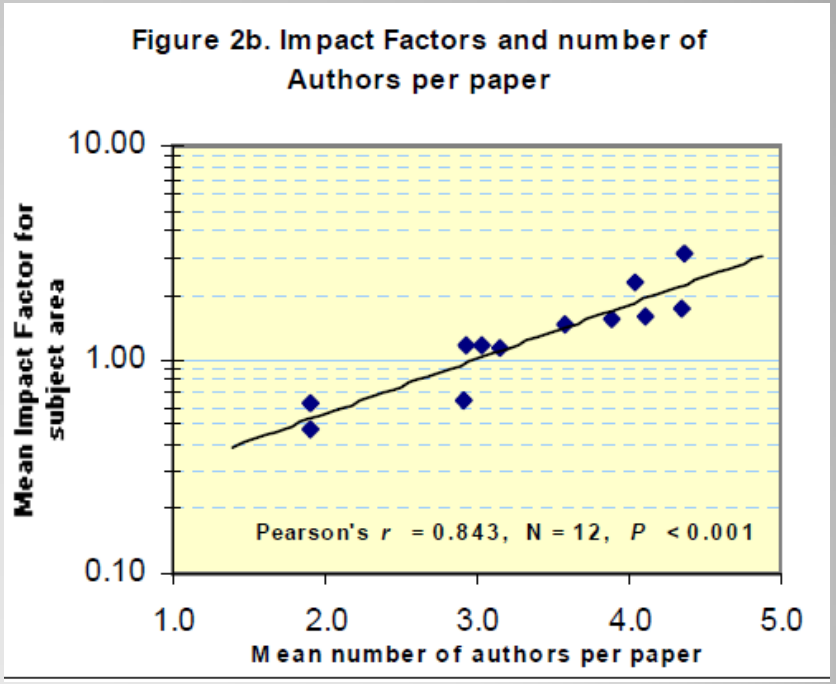
Subjectivity

Figure 2a shows how the absolute value of the mean impact factor exhibits significant **variation according to subject field. In general, fundamental and pure subject** areas have higher average impact factors than specialized or applied ones. The variation is so significant that the top journal in one field may have an impact factor lower than the bottom journal in another area.



Average number of authors per paper

The average number of collaborators on a paper varies according to subject area, from social sciences (with about two authors per paper) to fundamental life sciences (where there are over four). Not unsurprisingly, given the tendency of authors to refer to their own work, there is a strong and significant correlation between the average number of authors per paper and the average impact factor for a subject area (Figure 2b).



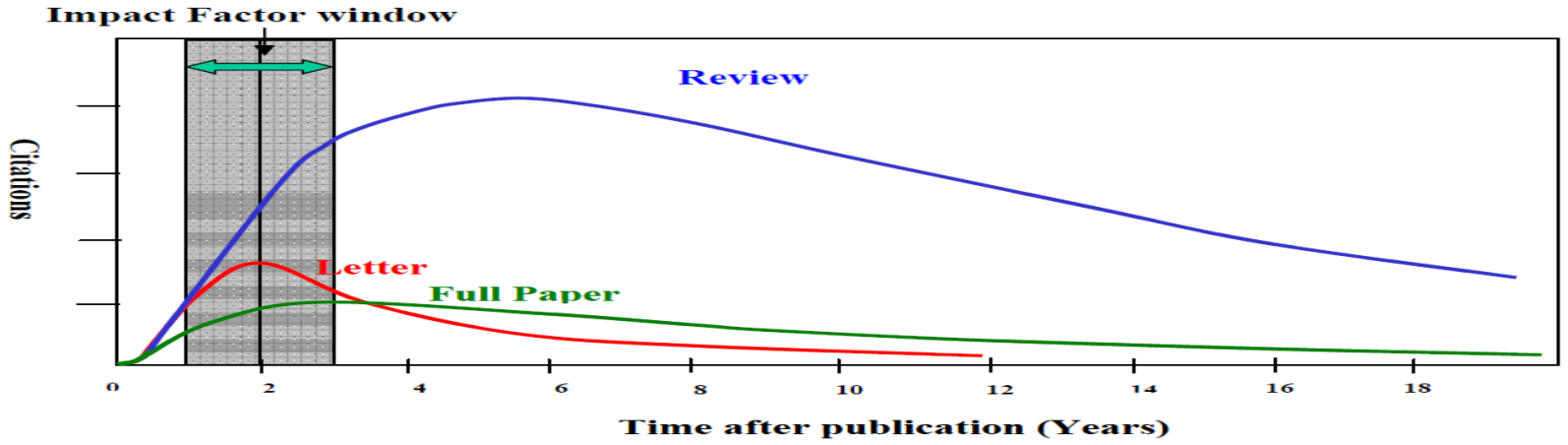
Article and Journal Type

A short or rapid publication journal or "Letters" journal
- Greater immediacy
- Lower cited half-life

Full paper journal
- Citation peak around three years after publication
- Lower immediacy than the rapid or short paper journal
- Larger cited half-life
- Smaller impact factor

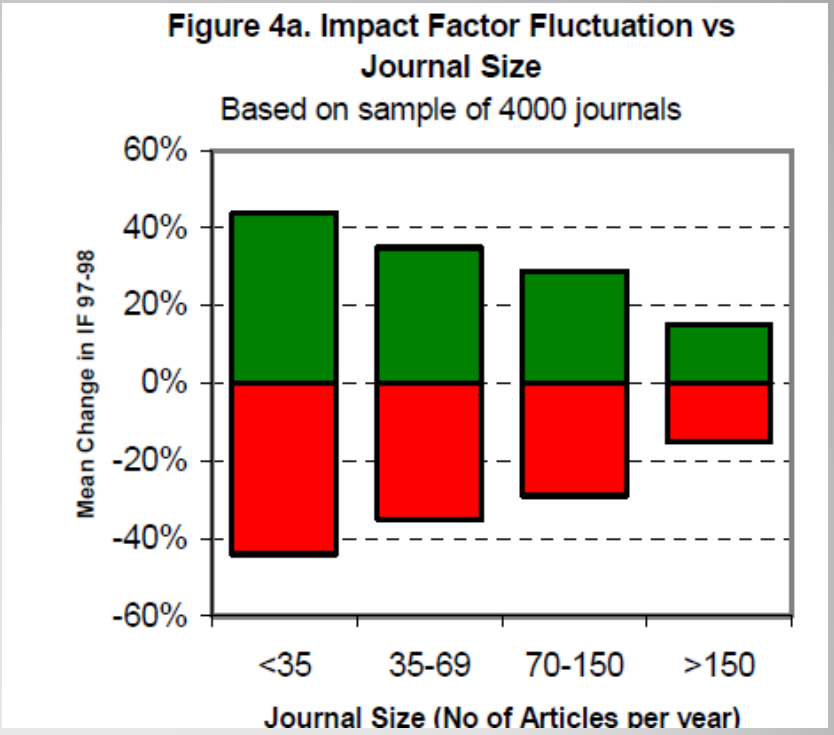
Review journal
- Very low *immediacy index*
- *Citations* slowly rising to peak many years after publication
- The *cited half-life is also correspondingly long*
- Absolute number of citations to reviews is usually very high

Figure 3. Impact Factors and Journal Type



Size Matter

The effects of journal size can be seen quite clearly in Figure 4a. If a large number of journals (4000, arranged in quartiles based on size of journal) are examined and the mean variation in impact factor from one year to the next is plotted against size of the journal, there is a clear correlation between the extent of the impact factor fluctuation and the size of the journal. This means that when impact factors are compared between years it is important to consider the size of the journal under consideration.



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