# Guidance on using metrics to compare journals

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bibliometrics@ucl.ac.uk

## Overview

The UCL bibliometrics policy sets out some principles for the use of citation metrics in research assessment at UCL. As part of the overall guidance, this paper sets out some general advice on appropriate ways to use citation metrics for analysing and comparing journals as a whole, rather than individual papers.

It is sometimes useful to compare a group of journals against each other, for example to help select a desirable publication venue, or to confirm that a journal is seen as reputable. A wide range of metrics are available which aggregate citations on a per-journal basis. It should, however, be emphasised that these metrics are only useful at an aggregate level, and there is a very wide range of variation among the papers that make up an individual journal. They are *not* suitable for assessing or predicting citation numbers for individual papers, and will give misleading results if used this way.

As they are focused on post-publication results, they also do not show some of the things we are most interested in knowing – such as time to acceptance or acceptance rate. There are no generally applicable metrics available for this, though some individual journals do occasionally disclose this information.

Other than the impact factor, journal metrics are not widely used or analysed. In general, we would discourage you from putting very much weight on them, or making any decisions on the basis of them. However, this guide is provided to give an outline of how the metrics work should you still wish to investigate them.

## Metrics for comparing journals

The traditional metric for this is the **journal impact factor (JIF)**, which can be found through Web of Science/InCites. For 2017 onwards, this service also provides graphs of the citation distribution, showing how the impact factor is calculated and whether it reflects a meaningful and representative picture of the journal's output. Impact factors are not comparable between different disciplines, but for comparing a group of similar titles, they can still be useful. **JIF quartiles** are also sometimes used, giving the journal's approximate position in its discipline. This has the advantage of avoiding spurious precision – the JIF is normally given to three decimal points, which is much more detail than is reasonably necessary.

A group of conceptually similar but more complex metrics are also available. InCites provides the **Eigenfactor**, with weighting based on the citing journal, and the field-normalised **Article Influence Score**. Scopus gives the **CiteScore**, similar to the JIF but with a slightly different calculation,[1] the **SCImago Journal Rank** (SJR), where citations are weighted by the citing journal, and the **Source Normalized Impact per Paper** (SNIP), normalised by field. Be cautious when using these indicators – some can be easily skewed by journals that only publish a few dozen articles per year, or focus heavily on review papers. The CiteScore can also be found as a **percentile rank**, with the same advantage as using quartiles for the JIF.

[1] Note that the CiteScore algorithm was changed to cover a different time period in summer 2020, and older CiteScore values are no longer comparable.

Note that other factors – such as turnaround time and acceptance rate – may be equally or even more important than the expected number of citations. These are rarely indexed and in some cases may not be easily discoverable. The **journal immediacy index** (InCites), which shows the average number of citations in the year of publication, can sometimes be informative here.

As always, it is important to reiterate that journal metrics do not necessarily reflect the individual papers in the journal, and should *never* be used as proxies to assess individual publications.

## Where can we find appropriate metrics?

Journal metrics are mostly proprietary, and so are provided by specific services.

The **CiteScore**, **SCImago Journal Rank** (SJR), and the **Source Normalized Impact per Paper** (SNIP) are all available from Scopus.[2] These can be accessed by using the "Sources" tab at the top of the page on Scopus, and then searching by journal or by subject area. Clicking on a journal name will give all three metrics for that journal, with historical data and a detailed calculation presented for CiteScore. It is also possible to download the metrics for all entries in your search result.

The journal view also lists the CiteScore percentile rank for each category the journal is assigned to; by default, it shows the category in which the journal has its best result. Note that percentiles in Scopus are expressed as an inverse percentile, where 99$^{th}$ percentile is the top 1%, 75$^{th}$ percentile the top 25%, and so on. The specific position (eg 34$^{th}$ of 120) is also listed.

The **Journal Impact Factor**, **Eigenfactor**, and **Journal Immediacy Index** are available through the Journal Citation Reports (accessible from within Web of Science) or through InCites.[3]

InCites can be accessed through a link in the top bar of Web of Science, or else by going to https://incites.clarivate.com. It requires registration when you first use it – we recommend you use your UCL address here. You will need to be on the UCL network when you first register, so be sure to use a remote desktop or VPN if you are off-site. The Journal Citation Reports can likewise be accessed through the Web of Science top bar, or directly at https://jcr.clarivate.com/. It may also have issues with authentication if you are not on the UCL network, although it does not require specific registration.

The Journal Citation Reports can be searched by title, or browsed by category. Clicking on a journal title will give a detailed breakdown for how the impact factor was calculated, historical trends, and other key indicators.

In InCites, select the "Journal, Books, Conference Proceedings" view; by default it will only display the total times cited and total papers, but the other metrics can be selected using the gear icon above the table of results. You can then filter the results to individual titles, by discipline, or by using any of the standard InCites filters – for example, only journals which have published more than a certain number of papers from a given country. InCites results can be downloaded (the download-

[2] The SCImago Journal Rank is calculated by an independent group and available from https://www.scimagojr.com/

[3] The Eigenfactor is calculated by an independent group, and data up to 2015 is available from http://eigenfactor.org/projects/journalRank/journalsearch.php

arrow icon), as can lists of papers in a given journal (click the number of results in the relevant line of the table).

Finally, Google Scholar, the third common database, provides two metrics for journals – an "h5 index" and "h5 median" – but we would recommend not using either of these. They are not particularly meaningful metrics.

## Interpreting the metrics

As noted earlier, these metrics are only meaningful when used to describe journals. They should not be used for individual papers. They are also not usually comparable across different disciplines.

- **Journal Impact Factor**. This is the most widely quoted metric. It gives an overall value indicating the average number of times articles published in the previous two years have been cited. While this is straightforward in principle, it is widely debated whether the resulting metric is particularly meaningful, and it is often challenged. See our guidance on the issues with the impact factor.

- **Eigenfactor**. The eigenfactor attempts to calculate the significance of a journal on the basis of incoming citations over the past five years. Citations from highly ranked journals are weighted more highly than those from low-ranked journals. This is similar to the page-rank approach used to weight web search results. However, it is not normalised, and so tends to be higher for large journals – as they publish more papers, they appear to have more "influence" than a smaller journal, even if the individual articles are comparable. The **normalised eigenfactor** uses the same underlying technique, but is recalculated so that the average for all journals is 1, and the relative scores for each journal are more easily visible – a score of 2 is twice the total level of influence, and so on.

- **Article Influence Score**. This attempts to address the key issue of the eigenfactor, by normalising it to the size of the journal. The eigenfactor is divided by the number of articles published, and then normalised. Again, the "average" journal scores 1, and an influence score greater than 1 is above-average.

- **Journal Immediacy Index**. This metric is calculated in a similar way to the impact factor, but only takes account of citations in the same year that the cited item was published. This gives an indication of how quickly material in the journal was cited, with faster-moving fields scoring highly. However, the calculation has limitations; as it is based on the calendar year, it can easily be skewed if items are not published evenly through the year, or by the growing prevalence of "early online" material.

- **CiteScore**. The CiteScore is broadly similar to the impact factor, but calculated over a longer time window and with a slightly different set of papers assessed in the calculation.[4] Technically, this makes it a slight improvement on the impact factor, but many of the issues found with the impact factor are still present here.

[4] This is based on the 2020 version of the algorithm; see https://blog.scopus.com/posts/citescore-2019-now-live

- **SCImago Journal Rank**. This metric is also derived using a page-rank type system. The published metric is normalised to take account of the number of items in the journal, and is thus comparable to the article influence score. The two calculations are different, however; SJR allows some self-citation and uses a longer time period.

- **Source Normalised Impact Per Paper**. This metric is calculated on the basis of average citations to papers in a given journal, as with the Impact Factor or CiteScore, but is then normalised on the basis of the average level of citations in a field. In principle, therefore, unlike these two metrics, it can be used in comparing journals in different disciplines.

As noted, we do not generally recommend the use of journal metrics. However, there are some recommendations if you do wish to use them.

When using a metric such as the Impact Factor or CiteScore to compare two journals, make sure to do so only within the same field. Otherwise, journals in "high-citation" fields will appear to be more highly ranked. Do not directly compare Impact Factor and CiteScore numbers to each other, as they are calculated differently.

Network-based metrics such as the SCImago Journal Rank or Article Influence Score are more complex, but may be more reliable than simple averages. Again, making a comparison between journals in different fields should be avoided, and the two metrics should not be treated as interchangeable.

**FAQS:**

1. *This journal is very highly ranked – surely that means the papers must be good?*

   There is a very wide variability between papers in any given journal, which makes this approach quite unreliable. Even in very prominent journals with high average citation rates, a sizable chunk of papers do not get cited. Conversely, individual highly cited papers are often found in more low-ranked journals.

   To give a concrete example, in 2016, the top-ranked journal in economics published the most highly cited paper in the field that year – but also one paper that was completely uncited three years later.[5] The second most highly cited paper was published in the 49$^{th}$-ranked journal, and the fourth most highly cited was published in the 28$^{th}$-ranked journal. An assessment based purely on journal rank would have failed to identify these.

[5] Ranked on the basis of the impact factor; this was the Quarterly Journal of Economics