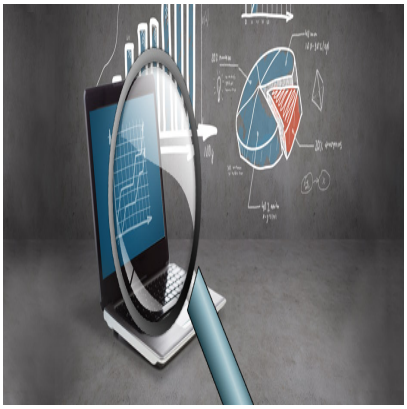

Description

Open science is an effort that aims to make scientific research, data, and its distribution accessible to all. This involves practices like publishing open research and campaigning for open access. It encourages scientists to have an open notebook policy and make it less cumbersome to publish and convey scientific knowledge. Open science embodies an innovative way to conduct research, collaborate with other scientists and share information with a wider audience. Both digital technology and social changes fuel the push towards open science. These changes vastly affect everyone around the world. This also affects the accumulation and dissemination of scientific knowledge.

In addition, if scientific knowledge is dispersed openly then there has to be a new way to evaluate science. This is because the traditional metrics will no longer hold up. As such, the European Commission established an Expert Group on Altmetrics and they produced a report that describes what is known as next-generation metrics. Here, we provide a summary of that report.

Outdated Current Metrics

Considering the increasing numbers of applicants, especially for federal grants, it is not surprising that review committees are gradually turning to numerical approaches or metrics to assess scientific work. For instance, a very simple approach is to just count the number of first or corresponding author publications; this is considered a bibliometric approach. Additionally, these decision makers also use the impact factor of the journals in which the publications appear, and another approach entails computing the h-index. Determined every year, the impact factor of an academic journal focuses on the average number of citations that journal receives. Often the impact factor becomes associated with the relative importance of a journal within its field.

The h-index is a metric that assesses the authors of the articles. It is based on personal productivity and the citation impact of the scientist. Its calculation constitutes of a set of the scientist's most cited papers and the total number of citations received in other publications. In general, journals with higher impact factors often are considered as more important than those with lower impact factors.
When used properly, these conventional bibliometric indicators provide useful information about the scientific impact of research publications. However, with the changes taking place in open science, many feel the need for a new set of metrics for evaluating science and research studies.

Emergence of Altmetrics

With a growing need for the development of new metrics came the idea of developing next-generation metrics to assess scientific and scholarly publishing. This brought about the emergence of altmetrics in 2010. This new form of assessment is proposed as an alternative metric compared to the traditional citation impact metrics, such as impact factor and the h-index, which were discussed above. Altmetrics is not for just assessing the “impact” of scientific publications, but is also a means for measuring the broader societal impacts of scientific research.

Overall, metrics are going to play an essential role in the successful transition to open science. Altmetrics may then become novel indicators for web-based and network research. The questions that statisticians face now are what are the prospects for altmetrics? And will they replace or supplement the traditional indicators of research quality and impact?

Currently, there are three major altmetric trackers. These include Altmetric.com, PlumX, and ImpactStory. Each of these collects a slightly different set of indicators from primary sources. It then capitalizes on the fact that open science and altmetrics both rely primarily on open web-based platforms and encourage user input. Thus, altmetrics are both the drivers and outcomes of open science practices. Indeed, altmetrics can inspire the adoption of open science principles, such as collaboration, sharing, and networking. Altmetrics can also assess interdisciplinary research and the impact of the results on society as a whole.

Future of Altmetrics

Altmetrics are beneficial because they are broad, diverse, and multifaceted and appear faster than conventional metrics. However, there are still some limitations to these metrics. Currently, we do not know the meaning of these metrics, which need to integrate into traditional metrics and peer review. Altmetrics should not be the end for assessing open science. In fact, there should be an “open metrics” that makes up the idea that next-generation metrics should continue to evolve and improve.

Category

1. Industry News
2. Publishing News

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daveishan