

The Effect of Open Access on Citation Impact



Intelligence, Agents,
Multimedia Group
University of Southampton
<http://www.iam.ecs.soton.ac.uk/>

Tim Brody, Heinrich Stamerjohanns, François Vallières, Stevan Harnad, Yves Gingras, Charles Oppenheim
<tdb01r@ecs.soton.ac.uk, stamer@uni-oldenburg.de>

Method

This preliminary data is derived from the ISI® CD-ROM* citation database (a database of the tables of content and references from 7000 leading journals from 1991 to 2001) and arXiv.org (a repository of author self-archived e-prints in physics, maths, and computer science started in 1991). ISI CD-ROM contains metadata and references from 14 million articles, arXiv.org (as of Jan 2004) contains 260,000 full-text e-prints.

To find the Citation Impact of articles using the ISI data *citation links* were made. A citation link is a directional link between two articles, where a *citing* article has cited a *cited* article. These are found by matching every reference (part of the reference list of a citing article) against a citation (the bibliographic data for a cited article). These were linked by author name, publication year, volume and starting page (or id for e-

prints). Citation links are then counted for each cited article, excluding author self-citations (where one or more authors are the same in the citing and cited articles).

The intersection of articles contained in both ISI and arXiv.org was found by matching articles by author name and a normalised title (longest three words kept in order). These articles are defined as being *Open Access*, while all other articles are defined as being *Non-Open Access*. 95,012 articles were found to be in both the ISI and arXiv databases.

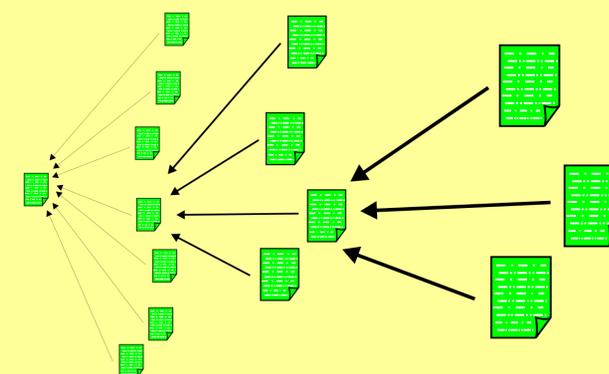
The mean citation impacts of Open Access and Non-Open Access articles can then be compared by various criteria, e.g. by journal, discipline, or author.

* Hosted by the *Observatoire des sciences et des technologies* (<http://www.ost.qc.ca/>)

Citation Impact

Citation Impact is a count of the number of citations (or 'references to') to an article. The average per-article Citation Impact can also be used for collections - the authors, journal, institution, etc.

Citation Impact can be used as a measure of the *impact* an article has had within its particular field. If an article is widely read and cited, it is an indication that article has had influence with other researchers and research within the field.



Open? Access?

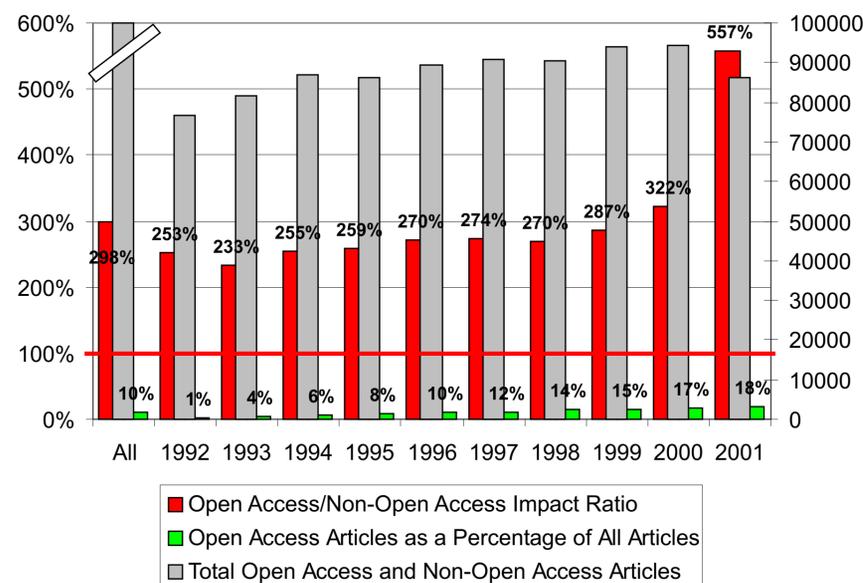
For this study Open Access is defined as full-text pre- or post-prints available toll-free on the Web, of which a version was published in a peer-reviewed journal.

The study will use smart Web crawlers to find full-text e-prints on the Web, e.g. in departmental or personal archives. The aim is to expand this analysis to all fields, including humanities disciplines.

arXiv.org is an existing collection of free, online Physics, Maths, and Computer Science e-prints and has been used to get some initial results.

Results

Open Access vs. Non-Open Access Citation Impact Ratios
All Physics Fields



Open Access vs. Non-Open Access Citation Impact Ratios
Nuclear and Particle Physics

