The H-index and Journal Impact Factors

Learning outcomes
At the end of the course you will be able to:

- Find your h-index in the SCOPUS database
- Find your h-index in the Web of Science database
- Find journal Impact Factors using the Journal Citation Reports database

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Researcher metrics: The h-index

Definitions:

- The h-index “gives an estimate of the importance, significance, and broad impact of a scientist’s cumulative research contributions”

- “A scientist has an index h if h of his or her Np papers have at least h citations each and the other (Np – h) papers have less than or equal to h citations each.”

- “If an h-graph for an author has an h index of 12, it means that of the total number of documents selected to produce the graph, 12 of the documents have been cited at least 12 times. Published documents with fewer citations than h, in this case less than 12, are considered, but would not count in the h index.”

- “The value of h is equal to the number of papers (N) in the list that have N or more citations.”

Complicating factors:

The value for the h-index depends on the range of papers being examined, and how comprehensively the citations for each have been indexed. An author’s h-index can vary with:

- The number of his/her papers included in the database being used
- The number of citations for those papers included in the database
  - Both of these may vary with number of years and/or journals covered in the database

Also, obtaining a comprehensive listing of an author’s papers is complicated by the need to:

- Identify variant spellings of an author’s name
  - eg Mc or Mac; names ending in ff, ii, v; names including punctuation or spaces; names that are not standard English
- Identify alternative names for an author (eg married names)
- Avoid combining different authors who share the same name
- Identify single authors who have been mis-identified as multiple authors due to multiple institutional affiliations
- Identify Study groups the author has published as part of eg ISAAC. **Note:** The Scopus database ‘unpacks’ study groups to list all authors. To search for publications with the group as the author, use the Web of Science database and type in the author variant as indexed by Web of Science eg ISAAC Phase One Study Group.
MyRI: Measuring your Research Impact

http://www.ndlr.ie/myri/

This open access tool kit on citation analysis includes a tutorial with information and visuals on finding your h-index in Scopus, Web of Science, and Publish or Perish.

Research outputs

The H-index provided in Research Outputs (RO) comes from either Scopus or Web of Science records that have been approved from a trawled search.

Finding an h-index using SCOPUS

SCOPUS calculates the h-index of an author or a group of authors using journal publications from 1996-current, ie papers published before 1996 are not included in the calculation (see p. 5 for how to include earlier papers). Publications such as book chapters are not included in the list of publications or as sources for the citation count.

Start with the Author Search:

1. In the default search screen, select the Author Search tab:

   ![Author Search Screenshot]

2. Enter the surname plus initials(s)/first name. It is often best to use just the first initial as most authors do not use exactly the same version of their name on all publications.

3. Click in the Show exact matches only tick box if desired.

4. Include the institutional affiliation if desired. This helps to differentiate authors of the same name. You can type just a single word from the institution’s name eg Toronto, Auckland. Results are presented as an alphabetical listing of matching
authors, showing variant names, subject area, affiliation, city, and country to help identify the correct author.

Note: the same author may have more than one entry in this initial results list. To include all an author’s publications, you may need to combine several entries for the same author (see below).

To view an author’s details: Click on his/her name to see the Author Details page. This page summarises information about a given author, including: the h-index (with a link to the relevant graphs and lists of subject areas, document types and co-authors); known variants of the author’s name; the author’s current affiliation and known affiliation history; citation information taken from the database.

If there are other names you think are the same person in the initial results list:

1. For a quick look, select all the variant names of the same author. Then click **View citation overview**.

2. **OR** click on each name to see details to help decide which entries are really your author

3. **OR** Find the entry for your author which has the largest number of documents, then click on that author name to open the Author Details page

4. Click on the *Find potential author matches* link on the Author Details page

5. Up to the first 6 possibilities are listed. There may still be more, if so there will be a **View full list** link, click on it to see all possibilities.

6. Select all names that refer to the same author and click on **View Grouped with author**.

7. Citation information and statistics are now updated to include all grouped authors. The aggregate details are shown to the right of the original author’s details.
To see a graphical representation of the h-index covering all authors you grouped:

1. Click on the view h-graph button.

Determining an h-index in SCOPUS which includes papers published prior to 1996:

1. **Either:** In the Author Search results, tick the boxes for your author then click Show documents

![Author results screenshot](image1)

**OR:** click on the number of papers (Documents) for the author on the Author details page (good when you have just grouped several name variations together)

![Research table screenshot](image2)

2. In the Results table, click and choose Cited by in the Sort by box.

3. Scan down the list of results. The h-index is the first record number (on the left hand side of the title of the paper) where the number of citations for that paper (right hand side) is greater or equal to the record number:
To find the h-index of an author who has two dissimilar surnames (e.g., unmarried name Smith, married name Jones):

1. Obtain a complete list of documents for both names:
   a. Search for each name separately using Author Search, as described above

2. At the end of each search, be sure to either click the View documents for this author button
   OR tick the box by the author name and click the Show documents link on the grey bar above the list of authors to put this search into the Search History.

3. When the last list of papers is showing, click the View Search History link (located on the blue Your Query bar)

4. In the Search History list, combine the searches for each author using the OR operator in the Combine box, e.g., #1 OR #2:
e. The subsequent results table consolidates all papers for the searches included in step d.

2. Find the h-index:

   a. In the Results table, click on the label of the Citations column to sort the papers by number of citations

   b. Scan down the list of results. The h-index is the first record number (on the left hand side of the title of the paper) where the number of citations for that paper (right hand side) is greater or equal to the record number.

Correcting your own details in SCOPUS:

Either:

1. Perform an Author Search. Click in the tick boxes beside variations of your name

2. Click on Request to merge authors

Or:

1. From the Author Details page: Click Request author detail corrections
Finding an h-index using Web of Science

Web of Science calculates the h-index of an author using journal publications from 1900-current. For comprehensive coverage it is best to search all variations of an author’s name. View videos including Author search and Citation report and the h-index at http://wokinfo.com/training_support/training/web-of-science/

A quick method is to

1. Type surname initial and select Author. An initial* (eg malpas s*) is optional as the system seems to automatically apply a *. Additionally, type Auckland in the next search box and search in Address.

![Basic Search](image)

Alternatively search using an author’s ResearcherID (Access the ResearcherID database from the Database link on the Library homepage to find a ResearcherID) or ORCID identifier (http://orcid.org/).

![Basic Search](image)

2. Click the Create Citation Report link at the top right of the results list.

![Create Citation Report](image)

3. The Citation Report screen shows various citation statistics for the list of papers, including the h-index. It also displays the list of papers sorted by number of citations.

4. Identifying articles you know have been written by the author but that are missing from the list will alert you to possible variations in the way the author’s name has been cited.

5. When you look through the list of papers, you may find that some are “aliens” – ie they are by another researcher with the same name. This is easiest to spot when you are looking at a list of your own papers, as you will recognise ones that you did not author. Such papers can be removed from the list one at a time as follows:
   - Click in the check box beside an “alien” paper
   - Click the Go button at the top of the list where it says “Use the checkboxes to remove individual items from this Citation Report”
   - The checked record is removed, all subsequent records are renumbered, and the Results total goes down by one
   - Repeat for any other “alien” papers in the list.
Method 2: Working from a single paper

If you are reasonably certain an author’s name is unique, you can identify all papers by that author starting with a single paper:

1. In the default search screen, enter the exact title of the paper (or a large portion of it) into the search box

2. Use the drop-down box beside the search box to change from Topic to Title

   ![Search Box](image)

3. Click on the Search button. The list of results will usually consist of only one paper.

4. Click on the title of the paper. The subsequent record screen includes the hyperlinked names of the authors.

5. Click on the name of the author you are interested in. This produces a list of all of the papers known to be by that author; however, it will not include papers for variant spellings of the author’s name, or papers where the author has been otherwise mis-identified.

6. Click on the Create Citation Report link (top right, just above the list of papers)

Method 2a: Working from single papers for an author with two dissimilar surnames (eg “smith”, married name “jones”)

1. Obtain a complete list of documents for each name using Method 1 as above

2. After doing the second search, click on the Search History link

![Search History](image)

3. On the Search History screen, select the searches for the two names by clicking in the tick boxes to the right of them in the Combine Sets column, click in the OR radio button at the top or bottom of the Combine column, and click on the Combine button:

![Combine button](image)

4. The resulting list of papers consolidates the results from both names. Find the h-index for this list by clicking on the Create Citation Report link.
Method 3: Using the Author Finder

1. In the default search screen, click the drop down arrow next to Basic Search and select Author Search.

2. Enter the last name of the author and the first initial.

3. Follow through with the choices allowed.

4. Click on the Create Citation Report link (top right, just above the list of papers) to see the h-index for this list of publications.

h-index considerations:

- Researchers in specialist areas of research may have lower h-indexes than those in more popular or currently-topical areas.
- Researchers who produce a small number of influential papers with high citation rates will have low h-indexes if citations to their other papers are low, even though their contribution to a discipline may be high.
- Researchers with short publishing careers might appear disadvantaged by low h-indexes, even though their impact in a discipline may be high.
- Researchers may boost their h-indexes by manually noting citations to their work that have not been recorded by Web of Science or Scopus. Some New Zealand titles may fall into this field.
- Average h-indexes may vary significantly between disciplines.
- Self citations may increase h-indexes.
- Researcher metrics describe the number of citations to your publications (or those of your department or institution), rather than describing the journals in which they are published. Authors may have high h-indexes for items published in low impact journals, and vice versa.
- Neither the h-index nor g-index decreases with time, so they may appear to undervalue the work of younger authors, but in context, a g-index is a measure of an author's contribution to the research environment.
- It is unfair to compare g or h-indexes of two researchers working in different disciplines eg a discipline that uses more references per paper will be expected to have higher indexes.

**h-index variants:**

For information on the m-quotient, g-index, contemporary h-index, individual h-index and normalisation for fields see:

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**Journal Metrics**

**Journal h-index**

Use Google Scholar metrics

Click ![Metrics](http://scholar.google.co.nz/intl/en/scholar/metrics.html)


Thanks to Simon C. Malpas, University of Auckland, who has given permission for the use of his details for demonstration purposes.
**Journal Impact Factors**

Journal Impact Factors are calculated on a yearly basis by the Journal Citation Reports database. The Impact Factor of a journal is the average number of times that articles published in that journal in a two year period have been cited in the following “JCR year”.

A “JCR year” is one year of citation data; you can choose which JCR year you wish to examine. For example, when you search for the 2009 journal Impact Factor for a particular journal, you are looking at the citations made in 2009 to papers published in that journal in 2007 and 2008.

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2009 \text{ Impact factor} = \frac{\text{total citations made in 2009 to papers published in the journal in 2007 & 2008}}{\text{total papers published in the journal in 2007 and 2008}}
\]

The Journal Impact factor is used as a proxy for the general quality/significance/influence of the papers published in a journal.

However, it is worth noting that:

- The Journal Impact Factor is a retrospective metric, eg the 2009 Impact Factor looks at citations to papers from 2007/2008, but is not available until 2010 (after all the citations for 2009 have been made).

- Not all journals have Impact Factors as calculated by JCR
  - For comparison, JCR indexes over 8,000 journals while SCOPUS indexes over 15,000.
  - As a minimum of three years’ data are required, new journals do not have Journal Impact Factors.
  - Non-English language journals are only included if they include at least a table of contents in English.

- Journal Impact Factors can be influenced by factors other than the quality of the publications:
  - Self-citation can distort low Journal Impact Factors (but the degree of legitimate self-citation varies with subject area).
  - Journals publishing a large proportion of non-citable items (such as editorials) can have lower Journal Impact Factors, regardless of the quality of the material, if these items are considered “articles” by JCR.
  - Journals vary in the kinds of papers they publish – review articles are often highly cited, so journals can raise their Journal Impact Factor by publishing more of these.

- Citations to a paper may not reflect its quality or significance.

- The Impact Factor of a journal does not necessarily reflect the quality of papers published by a particular author in that journal.
• Journal Impact Factors vary wildly between and even within academic disciplines, depending on how popular a particular topic is, or how narrowly a journal is focussed.

• A Journal Impact Factor carries little meaning without comparison to Impact Factors of other journals centred on the same topic.

Note that JCR does index open source journals, and non-English journals that include a table of contents in English.

**Finding Journal Impact Factors using Journal Citation Reports**

**Searching by Subject Category**

1. In the Welcome screen, select the JCR edition and year you want (the default is Science and the latest year). Make sure the dot is next to View a group of journals by Subject Category.

   **Note the 2 Editions: Science OR Social Sciences.**

   ![Select a JCR edition and year](image)

2. Click on the **Submit** button.

3. In the Subject Category Selection screen, choose the category you want from the drop-down list. (You can use the **Subject Category Scope Notes** link to find out more about what a category means. You can also select more than one category using Ctrl-click in Windows® or Command-click in Macintosh®.)

4. To view data for individual journals:

   a. Beside the **View Journal Data** radio button, choose a sort option from the drop-down box (journal title is usually the most useful)
b. Click on the *Submit* button.

c. The Journal Summary List can be re-sorted using the *Sort Again* button and the drop-down list, eg sort by impact factor.

5. To view aggregated data for the selected category/categories:

   a. Click in the *View Category Data* radio button
   
   b. Choose a sort option from the drop-down box
   
   c. Click on the *Submit* button
   
   d. The Subject Category Summary List can be re-sorted using the *Sort Again* button and the drop-down list.

6. To return to the welcome screen, click on the *Welcome* button.
Searching by individual journal title

1. In the Welcome screen, click in the Search for a specific journal radio button. **Note the 2 Editions: Science OR Social Sciences.** A journal such as Health Psychology is listed in the Psychology category in the JCR Science Edition and in the Psychology, Clinical category of the JCR Social Sciences edition. As it has a different ranking in each edition it is recommended both editions are searched.

2. Click on the Submit button.

3. Choose a search option from the Search by drop-down box.

4. If searching by Full Journal Title (the default option):
   
a. *Either* type in the full title (or truncated title of the journal (see the examples below the search box));

b. *Or* click on the list of full journal titles link, then copy and paste the title from the list (this option means you are definitely searching for the exact title used in the JCR database)

5. You can also search by abbreviated title, title word, or ISSN (see the examples below the search box).

6. Click on the Search button.

7. If you have searched for the full journal title, the resulting Journal Summary List should only display the information, including the impact factor, for a single journal.
8. To see more information about this journal click the journal name.

9. To see where the journal fits in the list of journals in the subject category click View Journal Summary List. The default results list is ordered alphabetically by journal title. The Journal Summary List can be re-sorted using the Sort Again button and the drop-down list, eg sort by impact factor.

10. To see data for the subject Category eg the median impact factor and if Health Psychology has a higher impact factor click the View Category Data button.

Scopus Journal Analyzer

JCR does not cover every journal eg the New Zealand Medical Journal is not included. Scopus uses the SCImago Journal Rank (SJR). This measure covers a wider range of journals than JCR, and weighs the prestige of the journal in which the citations appear.

Scopus also has a Source-Normalized Impact per Paper (SNIP) which ‘measures contextual citation impact by weighting citations based on the total number of citations in a subject field.’

http://info.scopus.com/journalmetrics/snip.html

Access SJR and SNIP data at JournalM3trics http://www.journalmetrics.com/ or use the Analytics link in Scopus to view data.

Finding Impact Factors using an Internet search engine

Searching the Internet with a search engine such as Google will often find the Impact Factor of a journal, often on the home page of the journal (eg, search for the journal name and “impact factor”). However:
• Journals are not obliged to advertise their Impact Factor.

• The Impact Factor found for a journal may not be the latest:
  o If it is from a web site other than the journal home page.
  o If the journal has not updated the information on its home page.

**Information Sheets:**

• *Journal Impact Factors:*
  [http://www.library.auckland.ac.nz/docs/helpsheets/journalimpactfactors.pdf](http://www.library.auckland.ac.nz/docs/helpsheets/journalimpactfactors.pdf)

• *Measuring and evaluating science research.*
  [http://www.library.auckland.ac.nz/docs/helpsheets/Bibliometrics.pdf](http://www.library.auckland.ac.nz/docs/helpsheets/Bibliometrics.pdf)

**Journal impact factor & citation databases available through the library:**

*Journal Citation Reports (JCR); Web of Science; Scopus; Google Scholar*

**Journal Impact Factor & Citation Websites:**


• *Citation Impact Center* from Thomson Reuters. Blog and comments, including the H index
  [http://science.thomsonreuters.com/citationimpactcenter/](http://science.thomsonreuters.com/citationimpactcenter/)

• [eigenfactor.org](http://www.ndlr.ie/myri/) uses the same citation data as Journal Citation Reports.

• *Harzing.com* for Publish or Perish software and white papers on citation analysis, the h-index and the g-index


• *Article-level metrics* from PLoS 'articles should be considered on their own merits, and ... the impact of an individual article should not be determined by the journal in which it happened to be published' [http://article-level-metrics.plos.org/](http://article-level-metrics.plos.org/)

• *Journal Evaluation Tool* for nursing and midwifery journals.

• *F1000 – Faculty of 1000* has post-publication peer review of articles. Most of the rankings pages require a subscription.
  [http://f1000.com/](http://f1000.com/)

**Complementary measure: Top downloaded articles**

• *Top 25 hottest articles in SciVerse ScienceDirect*

For more information on research impact see the journal *Scientometrics*