Citation analysis: Web of science, scopus

Golestan University of Medical Sciences
Information Management and Research Network

Citation Analysis

- **Citation analysis is the study of the impact and assumed quality of an article, an author, or an institution based on the number of times works and/or authors have been cited by others**

- **Citation analysis is the examination of the frequency, patterns, and graphs of citations in documents. It uses the pattern of citations, links from one document to another document, to reveal properties of the documents. A typical aim would be to identify the most important documents in a collection. A classic example is that of the citations between academic articles and books.[1][2] The judgements produced by judges of law to support their decisions refer back to judgements made in earlier cases so citation analysis in a legal context is important. Another example is provided by patents which contain prior art, citation earlier patents relevant to the current claim.**

Citation Databases

- **Citation databases** are **databases** that have been developed for evaluating publications. The **citation databases** enable you to count citations and check, for example, which articles or journals are the most cited ones

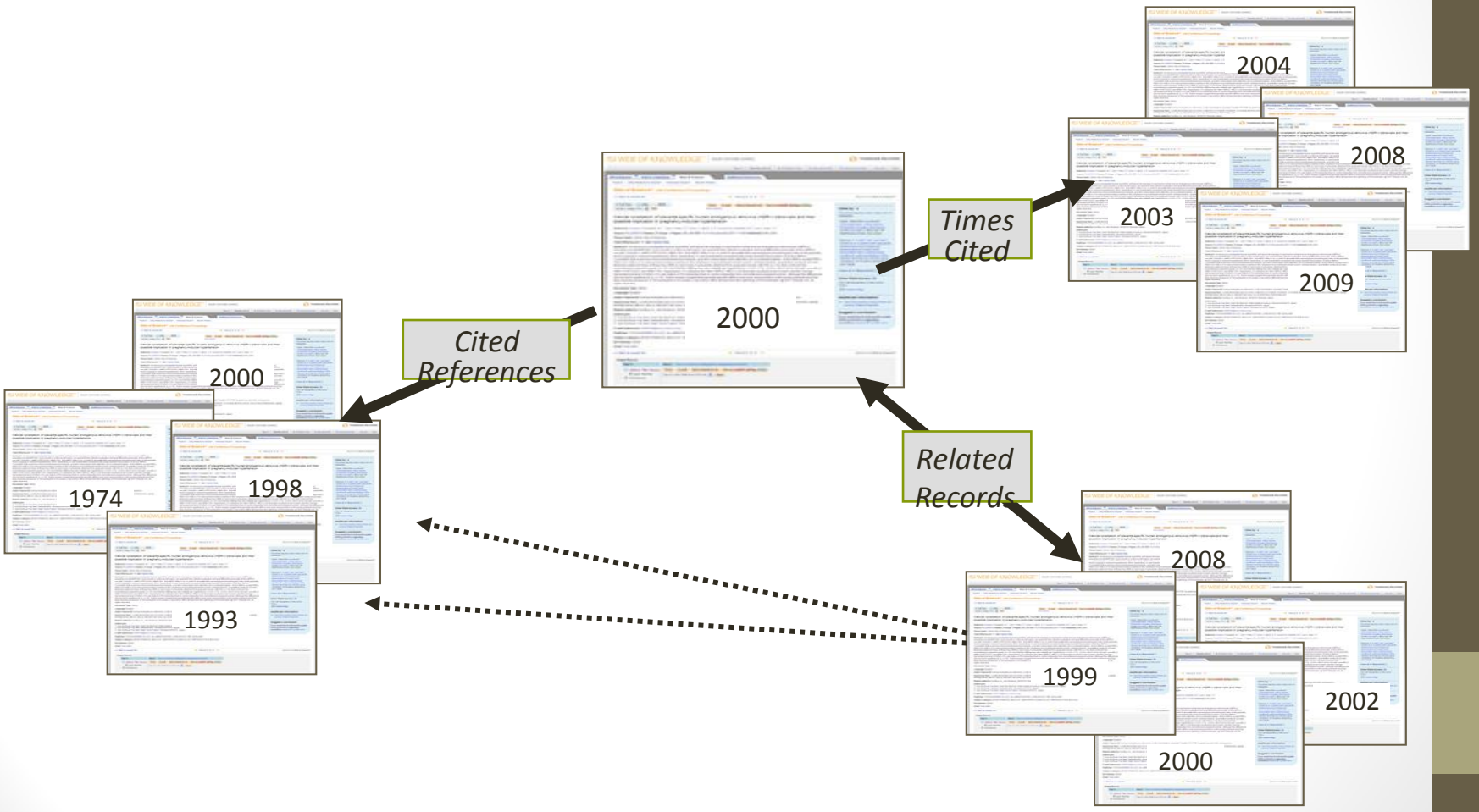
- In a citation database you get information about who has cited an article and how many times an author has been cited. You can also list all articles citing the same source.

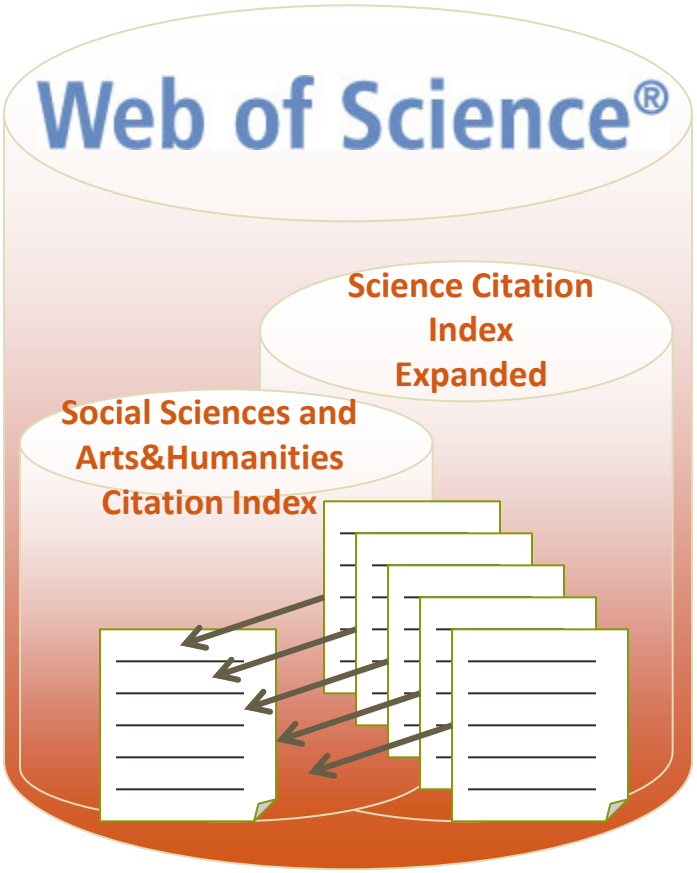
- Most important citation database are
- "***Web of Science***",
- "***Scopus***"
- "***Google Scholar***"

Web of Sciences

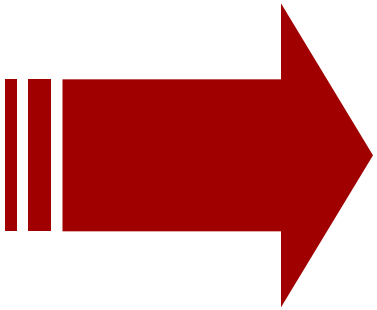
- **Web of Science is owned and produced by Thomson Reuters. WoS is composed of three databases containing citations from international scientific journals:**
  - Arts & Humanities Citation Index - AHCI
  - Social Sciences Citation Index - SSCI
  - Science Citation Index - SCI
- **Journal Coverage:**
  - Aims to include the best journals of all fields. Included journals are for example: European Journal of Marketing, Journal of Finance, Strategic Management Journal
- **Citation Coverage:**
  - Includes citations starting from the year 1945
  - Citations can be counted in a simple or complex manner, with different results
  - The Citation Report is easy to generate, but only counts references to articles that are also in the database.
  - Searching based on authors by using Cited Reference Search is more cumbersome, but will also return references to items outside of the database, including articles, conference proceedings, books, reports etc.

Web of Science – What is a citation?





Article-level data



Journal-level data
Researcher-level data
Institution-level data
Country/region-level data
Field/discipline-level data

Journal Citation Reports®

- **The Journal Citation Reports module within InCites allows you to evaluate and compare journals using citation data drawn from approximately 12,000 scholarly and technical journals and conference proceedings from more than 3,300 publishers in over 60 countries. Journal Citation Reports is the only source of citation data on journals, and includes virtually all specialties in the areas of science, technology, and social sciences.**

- **JCR provides dynamic, interactive features supported by visualizations of JCR indicators that allow researchers and librarians, as well as publishers, to compare, evaluate and inform their decisions on published research in varying fields.**

Key features in the Journal Citation Reports allow you to:

- **Focus on desired subject categories, enabling you to review journal titles and key performance indicators in the category;**
- **Compare multiple journals based on a chosen indicator;**
- **Evaluate the performance of journals in which you or your organization has published research;**
- **Recognize trending journals in key research categories;**
- **Identify the ideal journal in which to publish your forthcoming research;**

Journal Information Provided by JCR

- Total Cites
- Impact Factor
- 5-Year Impact Factor
- Immediacy Index
- Cited Half-Life
- Citing Half-Life
- Eigenfactor Score
- Article Influence

Below is only a simplified explanation of the metrics. For definitions and details, click the help in the JCR journal report pages

Total Cites	*Total number of citations for this journal in the JCR year*
Impact Factor	*On average, how many times an article in this journal is being cited – based on articles published in the two previous years*
5-Year Impact Factor	*On average, how many times an article in this journal is being cited – based on articles published in the five previous years*
Immediacy Index	*On average, how many times an article in this journal is being cited in the same year – based on last year's data (reflects more about the nature of the subject than journal quality)*
Cited Half-Life	*Indicates how far back the older articles in this journal are still being cited (reflects more about the nature of the subject than journal quality)*

Below is only a simplified explanation of the metrics. For definitions and details, click the help in the JCR journal report pages

Citing Half-Life	*Indicates how recent or how old the bibliography referred by articles in this journal are (reflects more about the nature of the subject than journal quality)*
Eigenfactor Score	*The Eigenfactor Score is some kinds of enhanced 5-year impact factor – by giving higher score for getting cited in more influential journals and eliminates self-citation*
Article Influence Score	*The Article Influence Score is derived from the Eigenfactor Score based on matching the share of the journal's influence against the share of the journal's share of articles. The neutral influence score is 1.00 – thus a journal with article influence score greater than 1.00 indicates that each article in the journal has above-average influence and vice versa*

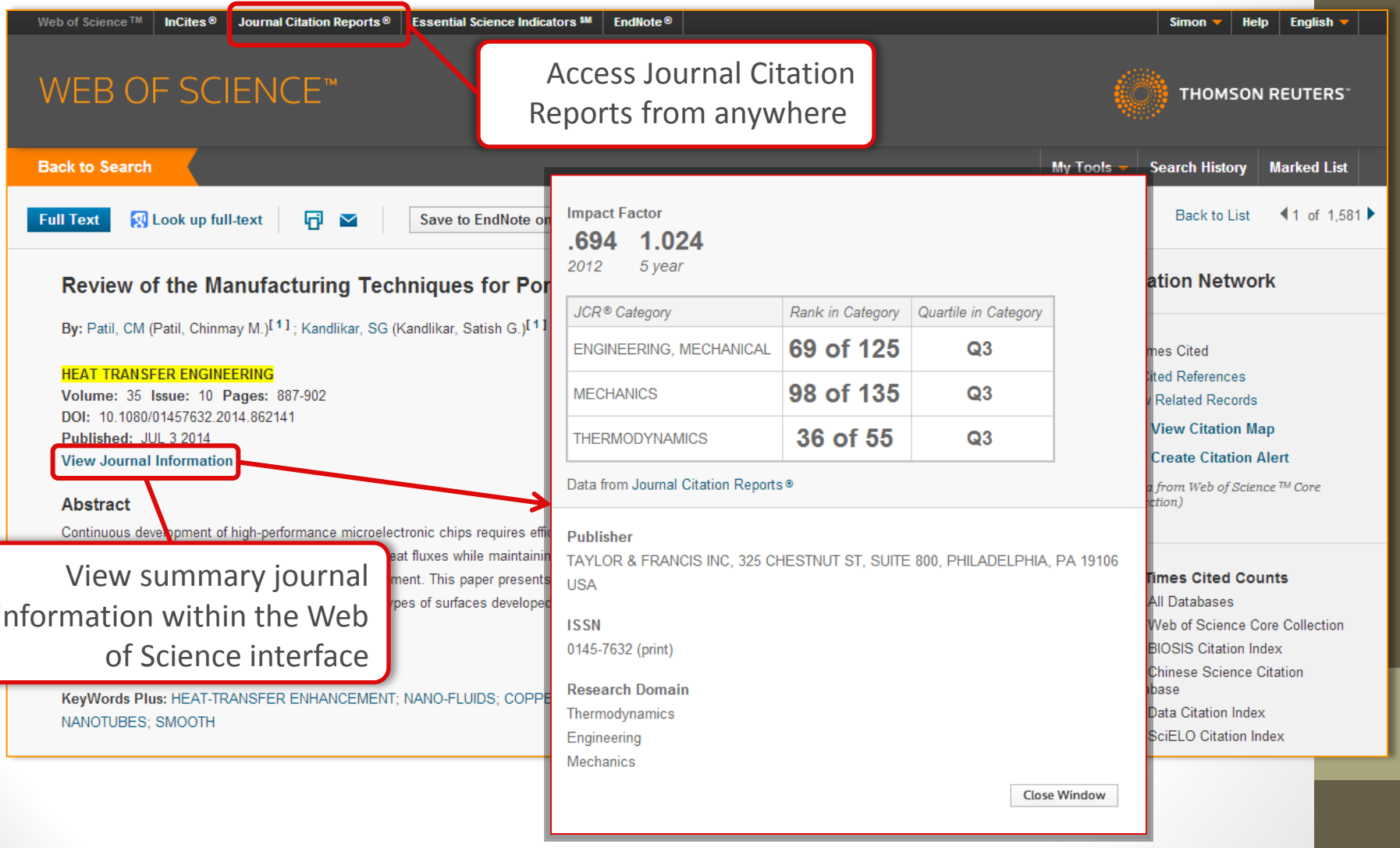
Quartile Comparison (Q)

- Quartile Comparisons enable users to compare various quartile ranks from metrics for chosen journals within a given subject category. Users can see how each journal ranks within a given quartile, compared with other journals of their choosing, so long as each is categorized within the same subject. The ability to select multiple quartile metrics simultaneously allows for a comprehensive view of how each journal ranks within metrics for a given year.

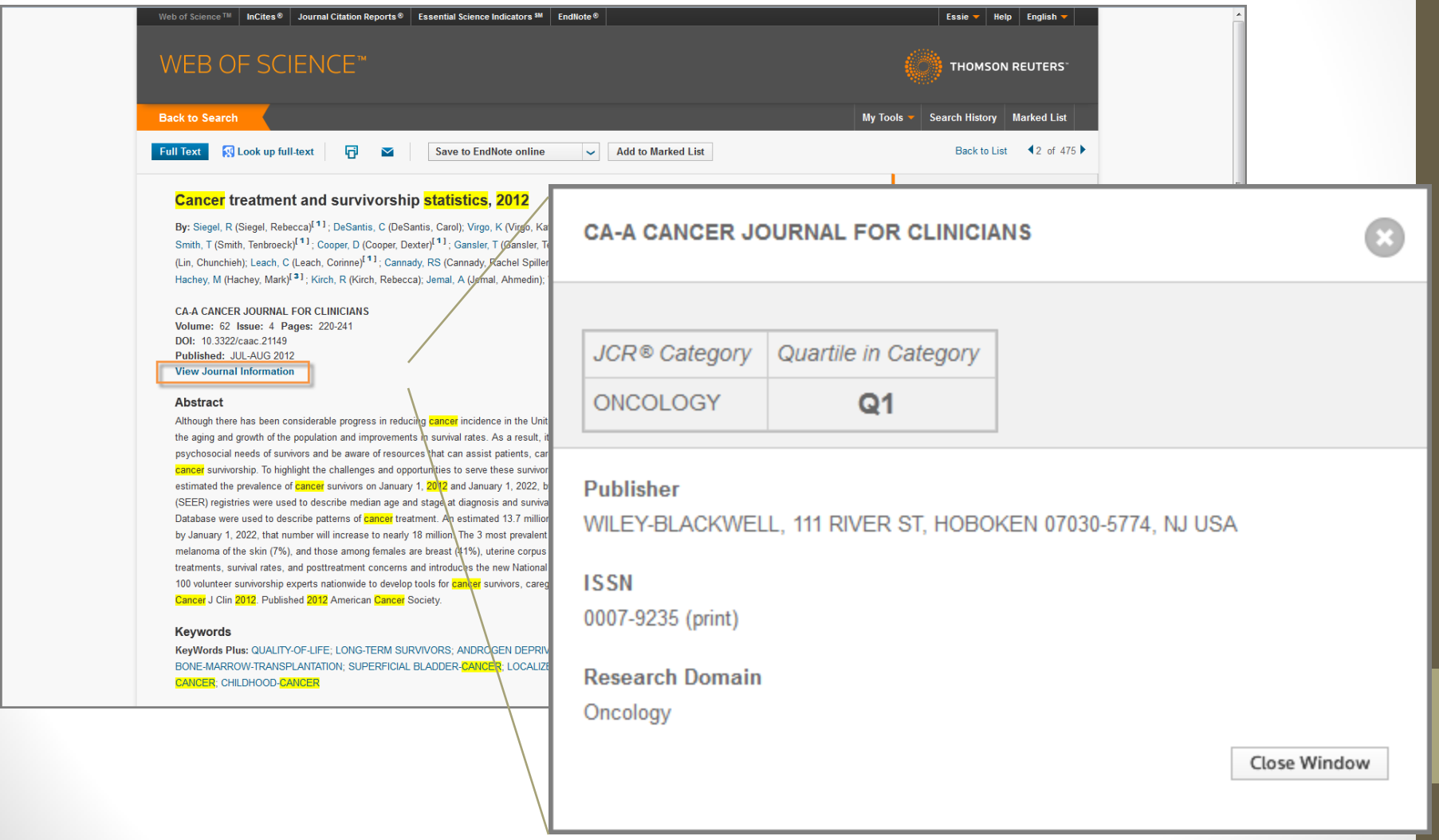
The following example surveys three journals categorized within Food Science & Technology and quartile rankings for each of the available metrics.

Journal	JIF Quartile	JIF-JSC Quartile	5 Year IF Quartile	Immediacy Index Quaritle	Eigenfactor Quartile	Article Influence Score
Critical Reviews in Food Science and Nutrition	Q1	Q1	Q1	Q1	Q1	Q1
Food Biotechnology	Q4	Q4	Q3	Q4	Q4	Q3
Food Chemistry	Q1	Q1	Q1	Q1	Q1	Q1

JOURNAL CITATION REPORT

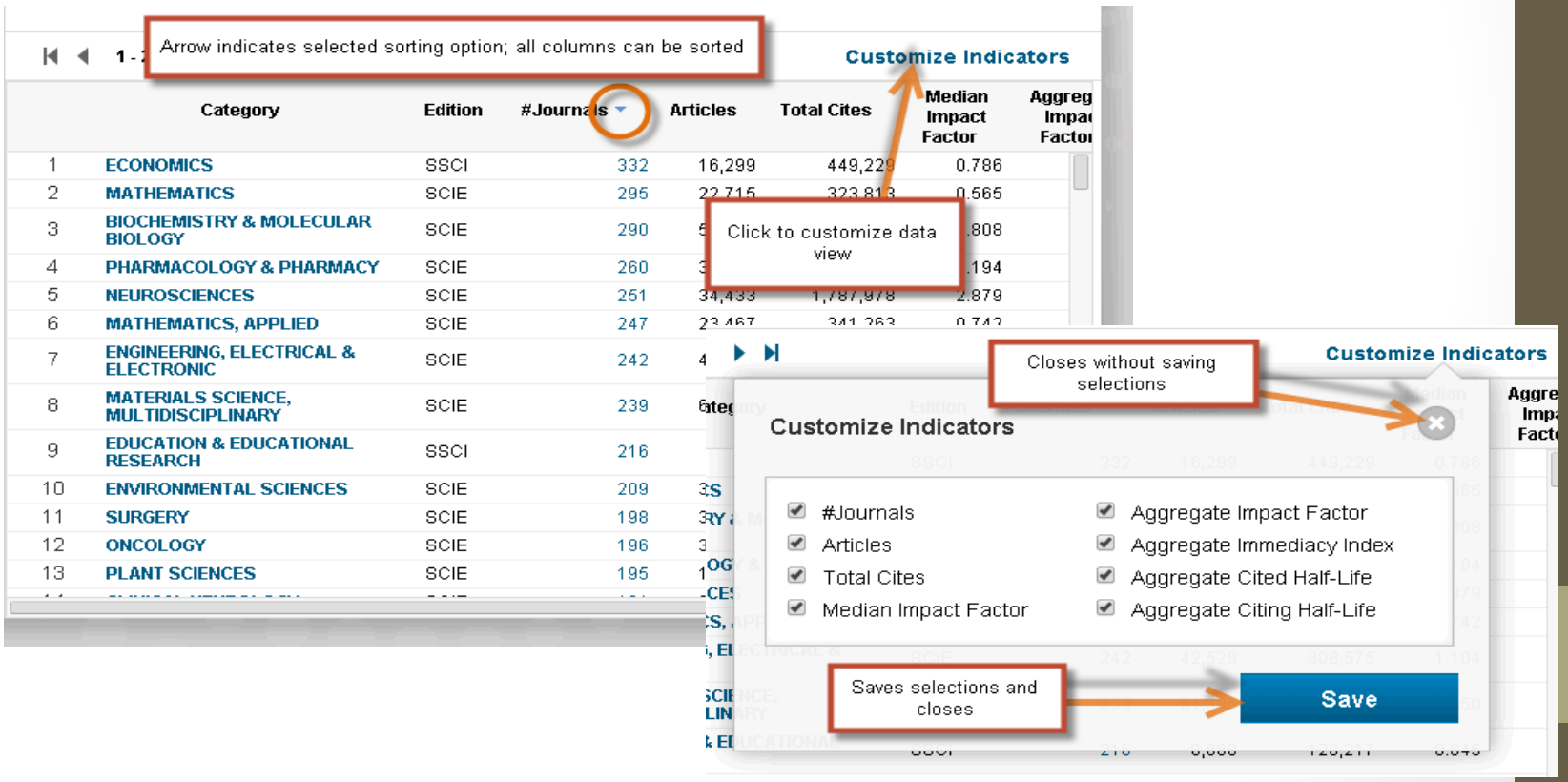


JOURNAL CITATION REPORTS



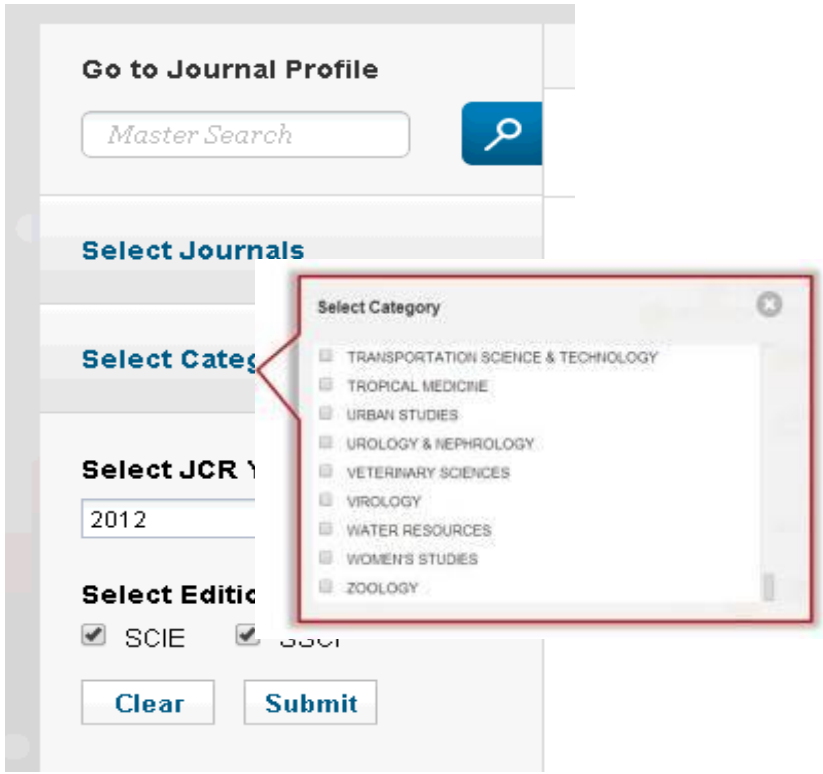
JOURNAL CITATION REPORTS
CATEGORIES BY RANK

The data grid will always be the area that displays user's choices. The default view is the categories, ranked by number of journals (to correspond to the default visualization). This list can be sorted or customized. For users signed in with UNP, these selections are preserved from session to session.



JOURNAL CITATION REPORTS
CATEGORIES BY RANK – filtering options

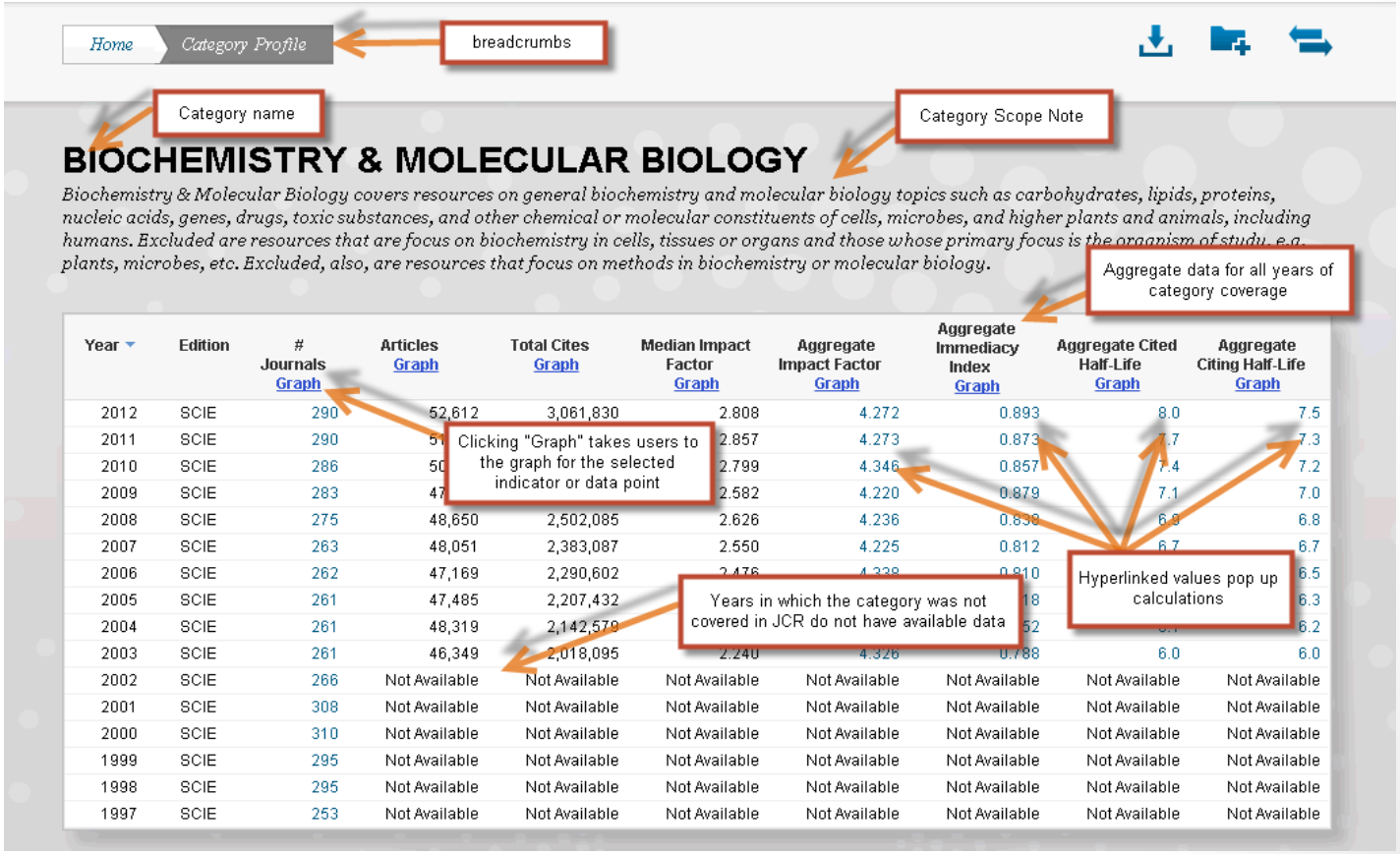
On Categories by Rank, this is the left navigation bar:



- "Go to Journal Profile" is a master search tool.
- "Select Journals" and "Select Categories" allow the user to filter the data grid based on journal title or category name. Please note that in the Categories by Rank section, the resulting data grid will contain category-level data and the visualization will also display at the category level.
- "Select JCR Year" allows users to choose the year of the category-level data they wish to view.
- "Select Edition" allows users to choose which edition, Science Citation Index-Expanded or Social Science Citation Index, they wish to browse.
- Clicking "Clear" will restore the default view; clicking "Submit" will submit the selections and refresh the data grid.

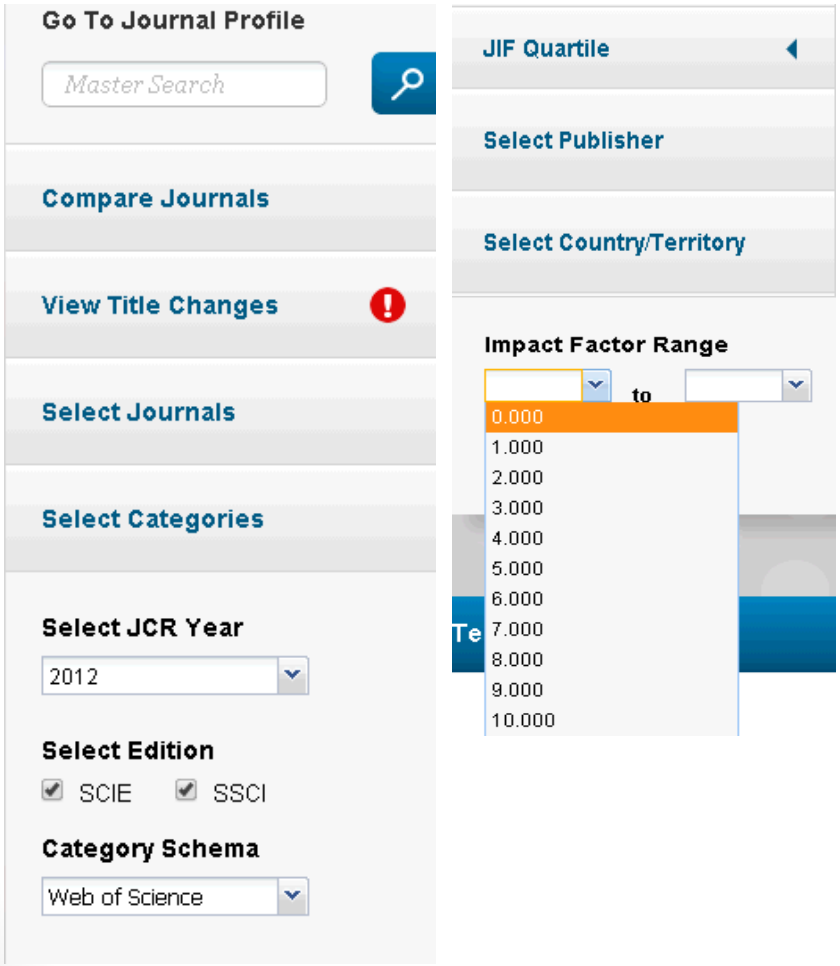
JOURNAL CITATION REPORTS
CATEGORIES BY RANK

Clicking any hyperlinked value will pop up a window displaying the calculations behind that value. Clicking on "Graph" in any column will bring up a graph of the relevant indicator or data point in the space below the table.



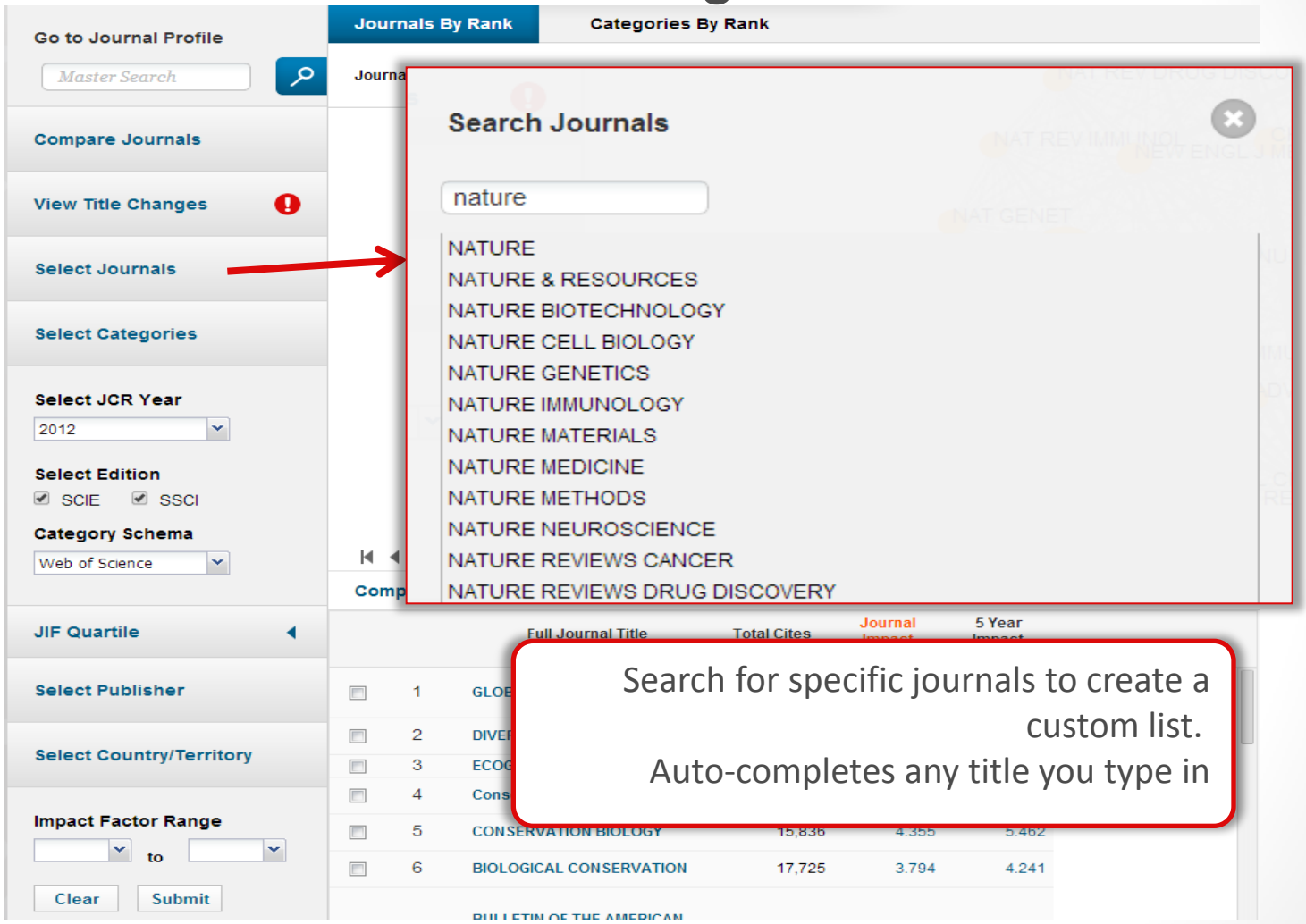
Year	Edition	# Journals Graph	Articles Graph	Total Cites Graph	Median Impact Factor Graph	Aggregate Impact Factor Graph	Aggregate Immediacy Index Graph	Aggregate Cited Half-Life Graph	Aggregate Citing Half-Life Graph
2012	SCIE	290	52,612	3,061,830	2.808	4.272	0.893	8.0	7.5
2011	SCIE	290	51		2.857	4.273	0.873	7.7	7.3
2010	SCIE	286	50		2.799	4.346	0.857	7.4	7.2
2009	SCIE	283	47		2.582	4.220	0.879	7.1	7.0
2008	SCIE	275	48,650	2,502,085	2.626	4.236	0.838	6.9	6.8
2007	SCIE	263	48,051	2,383,087	2.550	4.225	0.812	6.7	6.7
2006	SCIE	262	47,169	2,290,602	2.476	4.338	0.810		6.5
2005	SCIE	261	47,485	2,207,432			18		6.3
2004	SCIE	261	48,319	2,142,579			52		6.2
2003	SCIE	261	46,349	2,018,095	2.240	4.326	0.788	6.0	6.0
2002	SCIE	266	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
2001	SCIE	308	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
2000	SCIE	310	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
1999	SCIE	295	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
1998	SCIE	295	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
1997	SCIE	253	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available

JOURNAL CITATION REPORTS
JOURNAL BY RANK – filtering

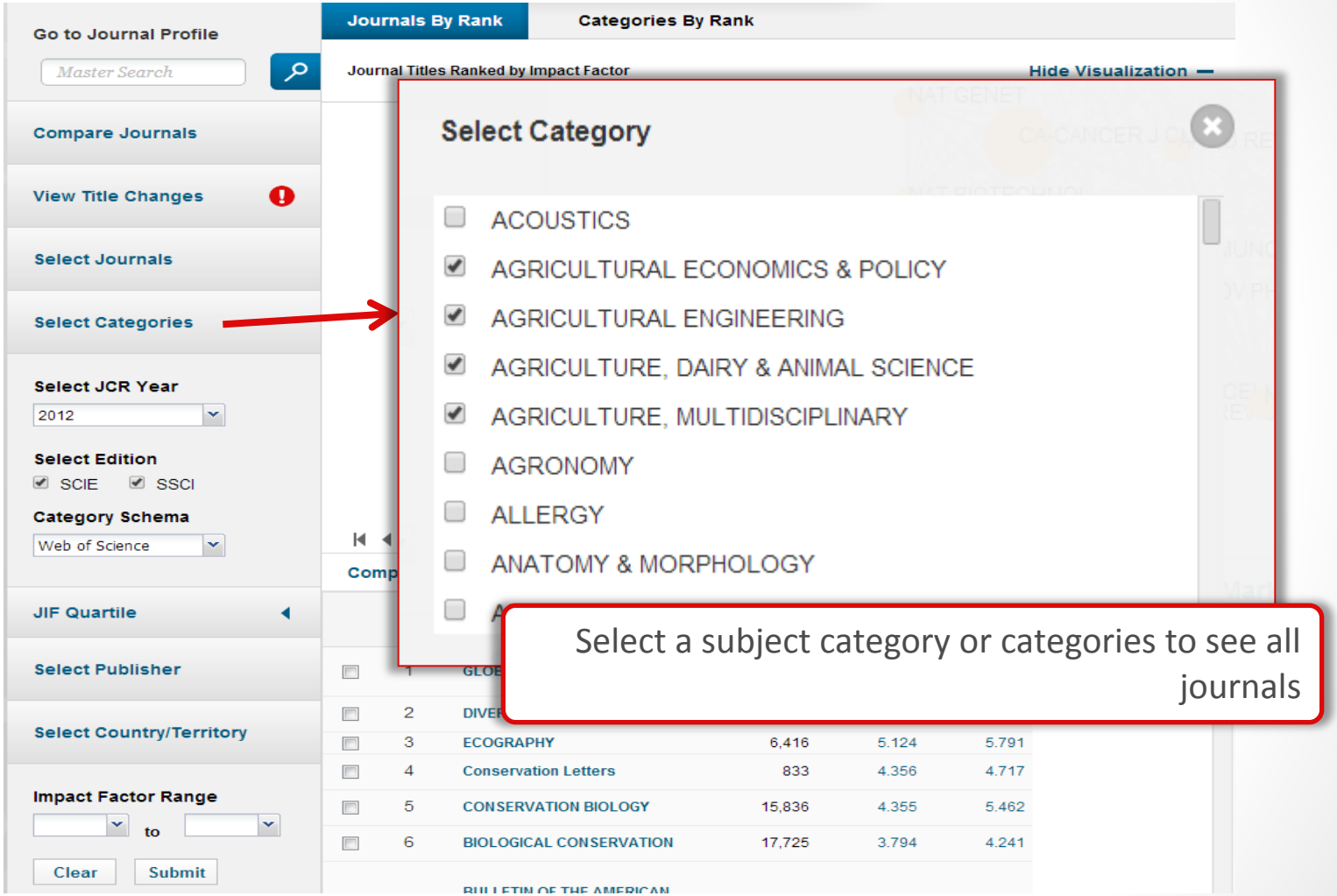


- Many filtering options (Journal Profile, Journals, Categories, JCR Year, & Edition) are the same as on the Categories by Rank page.
- "Compare Journals" will take users to the Compare Journals component.
- "View Title Changes" shows the title changes **for the selected JCR Year.**
- "Select Category Scheme" allows users to view ranked lists of journal using either the WOS or ESI category scheme.
- "JIF Quartile" allows users to choose which quartile's journals to view
- "Select Publisher" and "Select Country/Territory" allow users to filter based on publisher or country of origin.
- "Impact Factor Range" allows users to choose their preferred range of Impact Factor via a drop-down list.

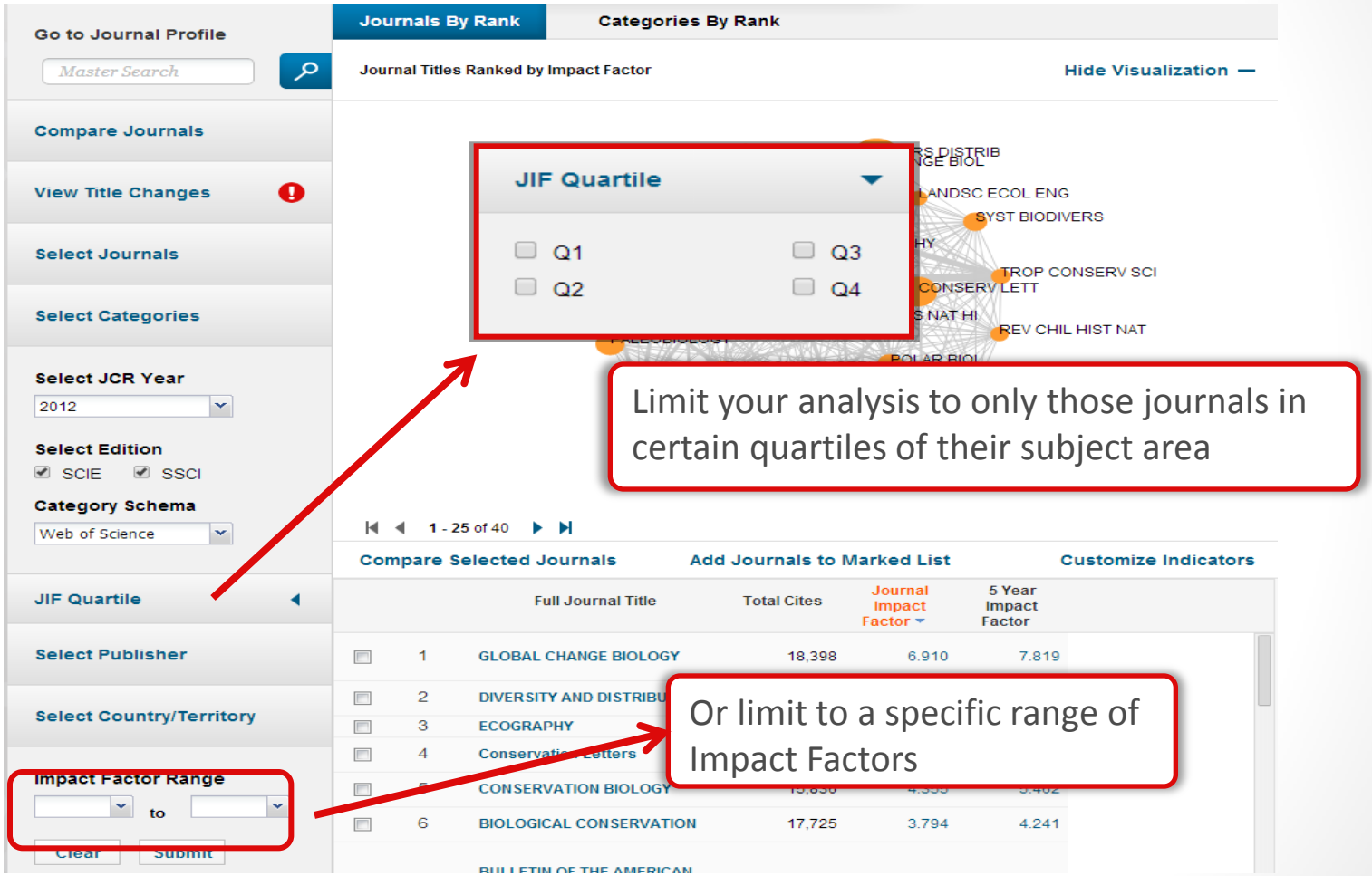
JOURNAL CITATION REPORTS
JOURNAL BY RANK – filtering



JOURNAL CITATION REPORTS
JOURNAL BY RANK – filtering

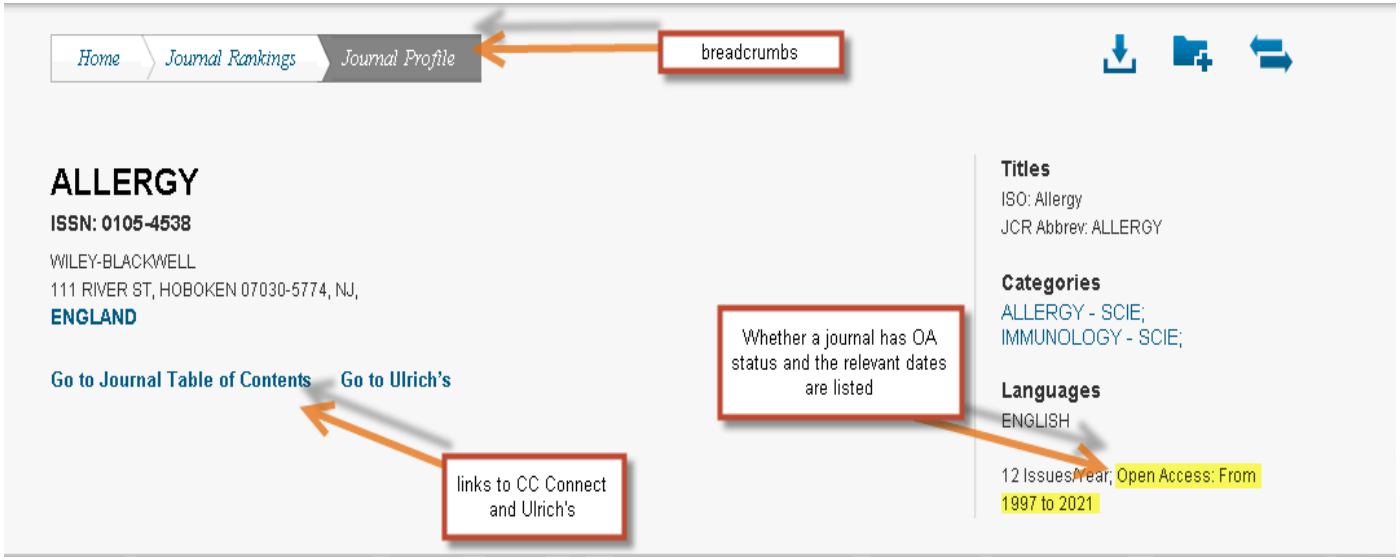


JOURNAL CITATION REPORTS
JOURNAL BY RANK – filtering



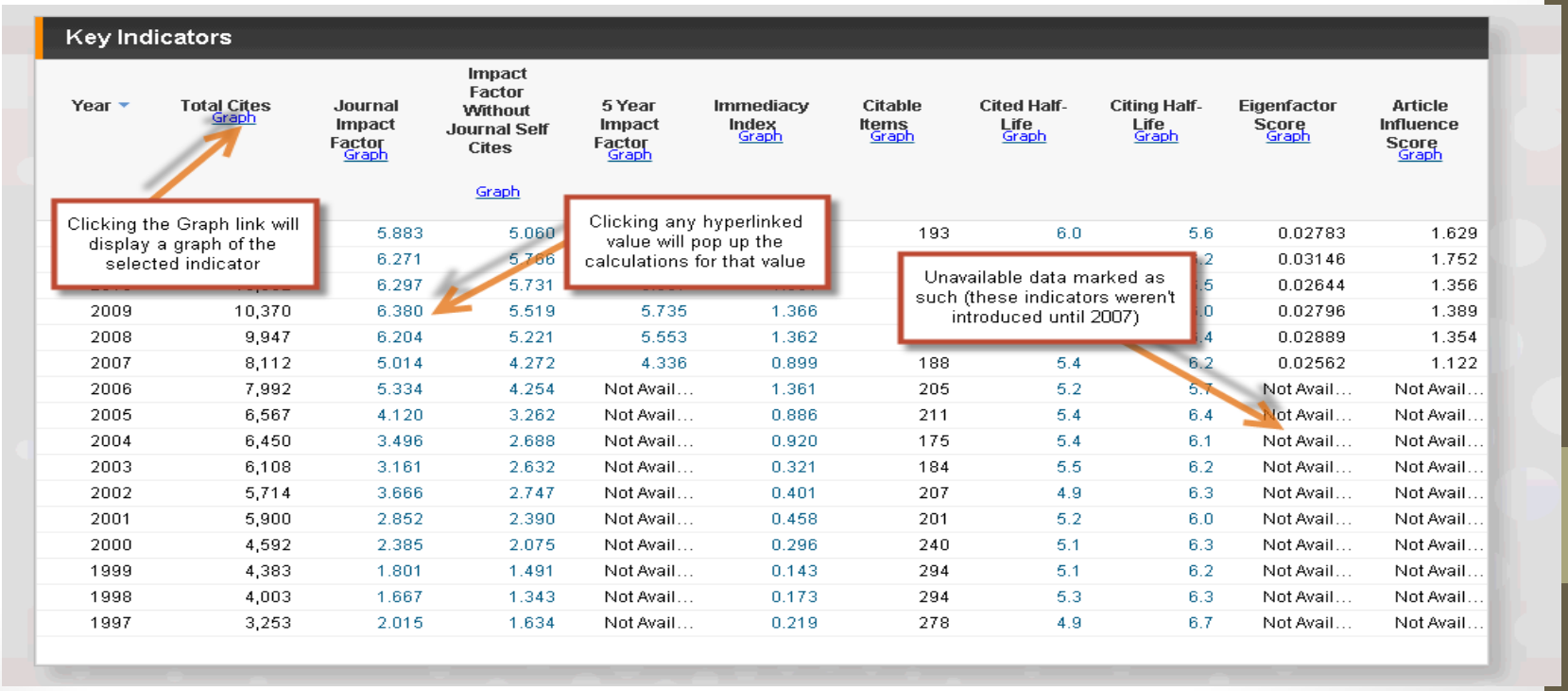
JOURNAL CITATION REPORTS
JOURNAL BY RANK – journal profile page

The top of the Journal Profile Page contains the name of the journal, publishing information, title information, category listings (hovering over the category name will pop up Scope Notes for that category), languages, publication frequency, and whether or not that journal is an Open Access (OA) title. Links to Current Contents Connect and Ulrich's also appear in this section.



JOURNAL CITATION REPORTS
JOURNAL BY RANK – key indicators

- Directly below the journal information is a table containing all of the key indicators for that journal. This table contains data for all the years of coverage. For years the journal was not covered or was suppressed, data columns are marked as "Not Available." Also, data columns may indicate "Not Available" if the particular indicator had not yet been included in JCR.



Analysis Tools

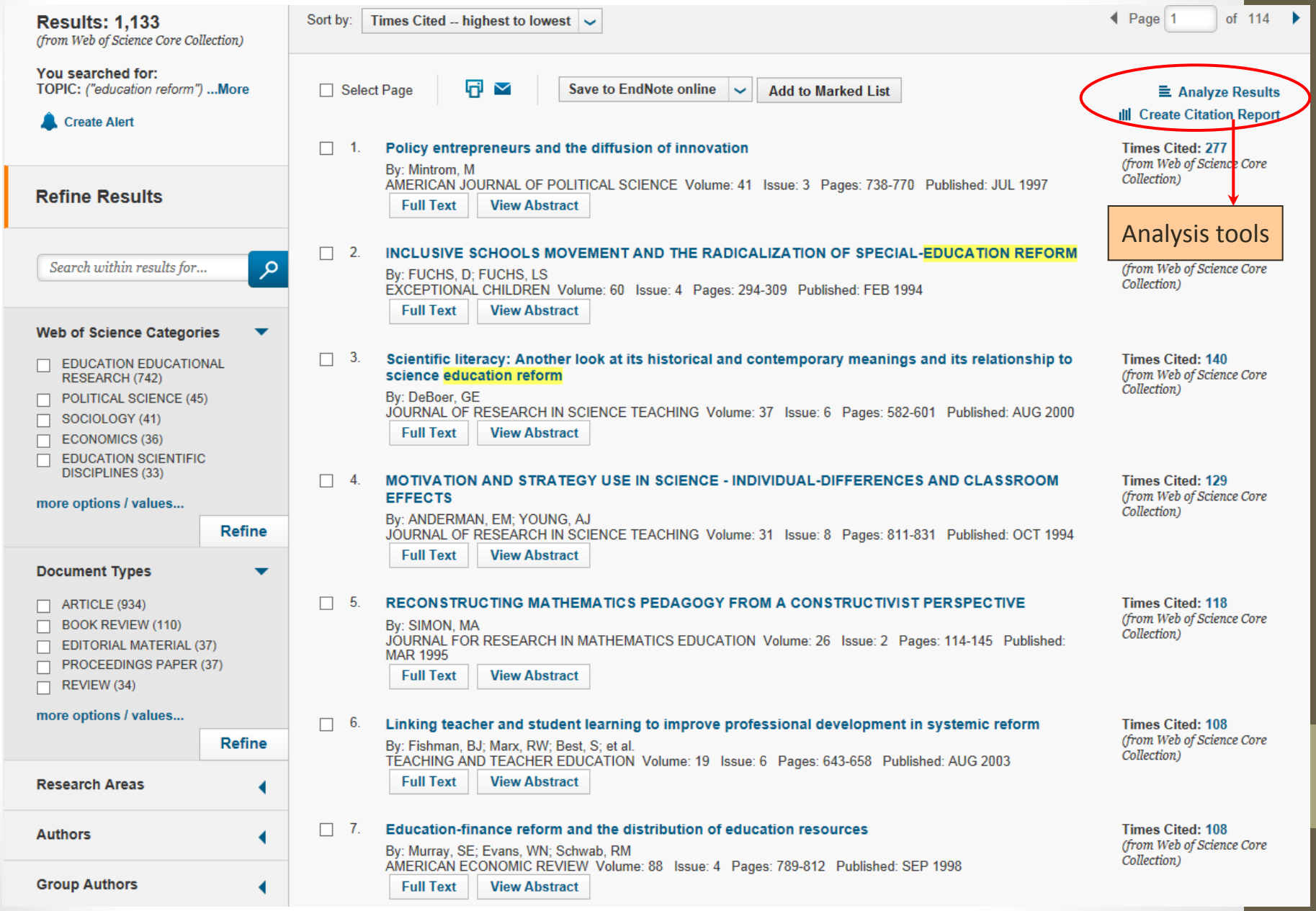
Analyze Results

- extract citation data from a selected field (e.g. source title, country, author), and produces a report showing the values in ranked order

Create Citation Report

- view aggregate citation statistics for a set of search results
- e.g. breakdown of citations over years, average citations per year

Analysis Tools



1. Analyze Results

Results Analysis

<<Back to previous page

1,133 records. TOPIC: *("education reform")*

Max number of items to display: top 500 results

Rank the records by this field:	Set display options:	Sort by:
Publication Years Research Areas Source Titles Web of Science Categories	Show the top 10 Results. Minimum record count (threshold): 2	Record count Selected field

Analyze

You can rank the search results with different field options, e.g. source titles

Use the checkboxes below to view the records. You can choose to view those selected records, or you can exclude them (and view the others).

View Records | Exclude Records

Field: Source Titles	Record Count	% of 1133	Bar Chart
JOURNAL OF RESEARCH IN SCIENCE TEACHING	41	3.619 %	
EDUCATIONAL POLICY	35	3.089 %	
PHI DELTA KAPPAN	28	2.471 %	
INTERNATIONAL JOURNAL OF EDUCATIONAL DEVELOPMENT	27	2.383 %	
JOURNAL OF EDUCATION POLICY	24	2.118 %	
SCIENCE EDUCATION	24	2.118 %	
TEACHING AND TEACHER EDUCATION	24	2.118 %	
COMPARATIVE EDUCATION REVIEW	23	2.030 %	
JOURNAL OF TEACHER EDUCATION	22	1.942 %	
TEACHERS COLLEGE RECORD	22	1.942 %	

Save Analysis Data to File
Data rows displayed in table
All data rows (up to 200,000)

e.g. Rank the journals by number of articles on this topic

View Records | Exclude Records

Field: Source Titles | Record Count | % of 1133 | Bar Chart

Save Analysis Data to File
Data rows displayed in table
All data rows (up to 200,000)

(144 Source Titles value(s) outside display options.)

2. Create Citation Report

Citation Report: 1133

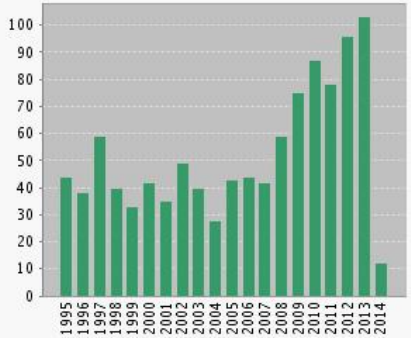
(from Web of Science Core Collection)

You searched for: TOPIC: *("education reform")* ...More

This report reflects citations to source items indexed within Web of Science Core Collection. Perform a Cited Reference Search to include citations to items not indexed within Web of Science Core Collection.

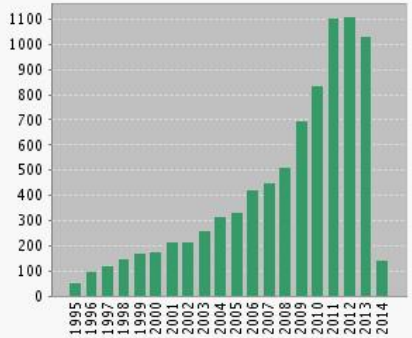
Citation statistics of records found

Published Items in Each Year



The latest 20 years are displayed.
View a graph with all years.

Citations in Each Year



The latest 20 years are displayed.
View a graph with all years.

Results found:	1133
Sum of the Times Cited [?] :	8476
Sum of Times Cited without self-citations [?] :	8108
Citing Articles: [?] :	7195
Citing Articles without self-citations [?] :	6982
Average Citations per Item [?] :	7.48
h-index [?] :	38

Sort by: Times Cited -- highest to lowest

Page 1 of 114

Use the checkboxes to remove individual items from this Citation Report
or restrict to items published between 1992 and 2014 Go

	2010 ◀	2011	2012	2013	2014 ▶	Total	Average Citations per Year
	835	1107	1109	1033	144	8476	368.52
1. **Policy entrepreneurs and the diffusion of innovation** By: Mintrom, M AMERICAN JOURNAL OF POLITICAL SCIENCE Volume: 41 Issue: 3 Pages: 738-770 Published: JUL 1997	25	41	31	25	1	277	15.39
2. **INCLUSIVE SCHOOLS MOVEMENT AND THE RADICALIZATION OF SPECIAL-EDUCATION REFORM** By: FUCHS, D; FUCHS, LS EXCEPTIONAL CHILDREN Volume: 60 Issue: 4 Pages: 294-309 Published: FEB 1994	4	13	9	3	1	221	10.52
3. **Scientific literacy: Another look at its historical and contemporary meanings and its relationship to science education reform** By: DeBoer, GE JOURNAL OF RESEARCH IN SCIENCE TEACHING Volume: 37 Issue: 6 Pages: 582-601 Published: AUG 2000	16	22	18	14	1	140	9.33

Most highly cited article

Scopus

- Scopus is owned and produced by Elsevier.
- **Journal Coverage:**
  - Indexes more journals than Web of Science, including some conference proceedings, which results in better coverage for Economics and IT. Includes journals such as International Journal of Entrepreneurship and Innovation Management, Human Resource Management Journal, Journal of Economics and Business, Journal of International Financial Markets, Institutions and Moey.
- **Citation Coverage:**
  - Only indexes citations starting from 1996
  - Only counts references to publications that are also in the database
  - Use Citation Tracker to generate analyses on up to 5000 publications
  - Citations per year and per publication (with or without self-citations), h-index

SCImago

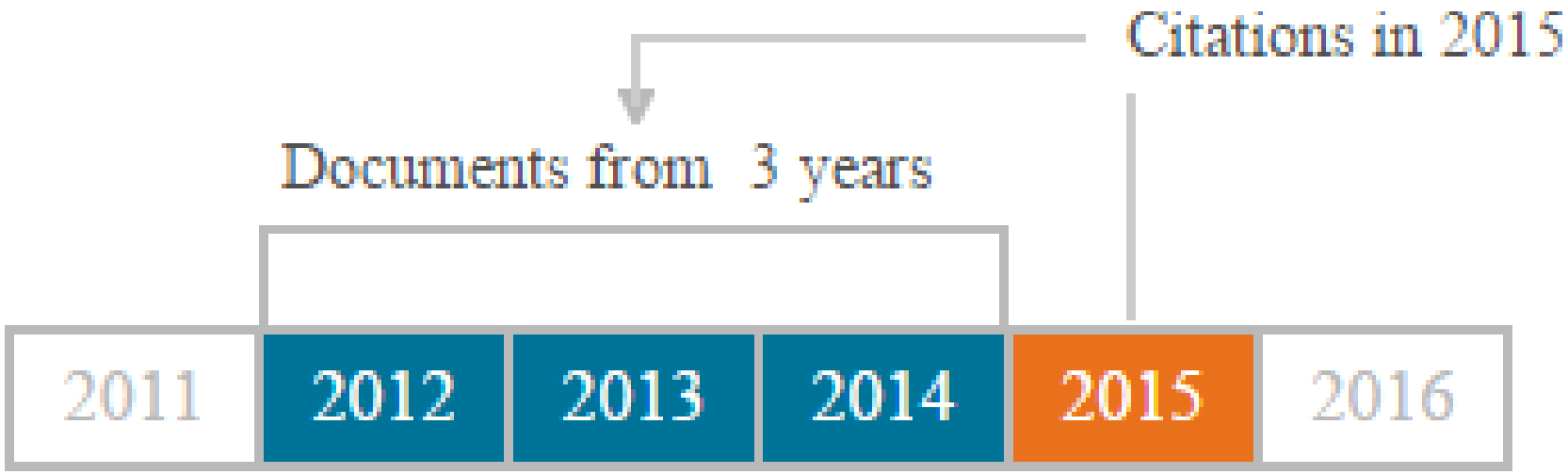
- **The SCImago Journal & Country Rank is a publicly available portal that includes the journals and country scientific indicators developed from the information contained in the Scopus® database (Elsevier B.V.). These indicators can be used to assess and analyze scientific domains. Journals can be compared or analysed separately. Country rankings may also be compared or analysed separately. Journals can be grouped by subject area (27 major thematic areas), subject category (313 specific subject categories) or by country. Citation data is drawn from over 21,500 titles from more than 5,000 international publishers and country performance metrics from 239 countries worldwide. The SJCR allows you also to embed significative journal metrics into your web as a clickable image widget**

Scopus Metrics

- **CiteScore**
- **Snip**
- **SJR**
- **…**

CiteScore

- Calculating CiteScore is simple and is based on the average citations received per document. CiteScore is the number of citations received by a journal in one year to documents published in the three previous years, divided by the number of documents indexed in Scopus published in those same three years.



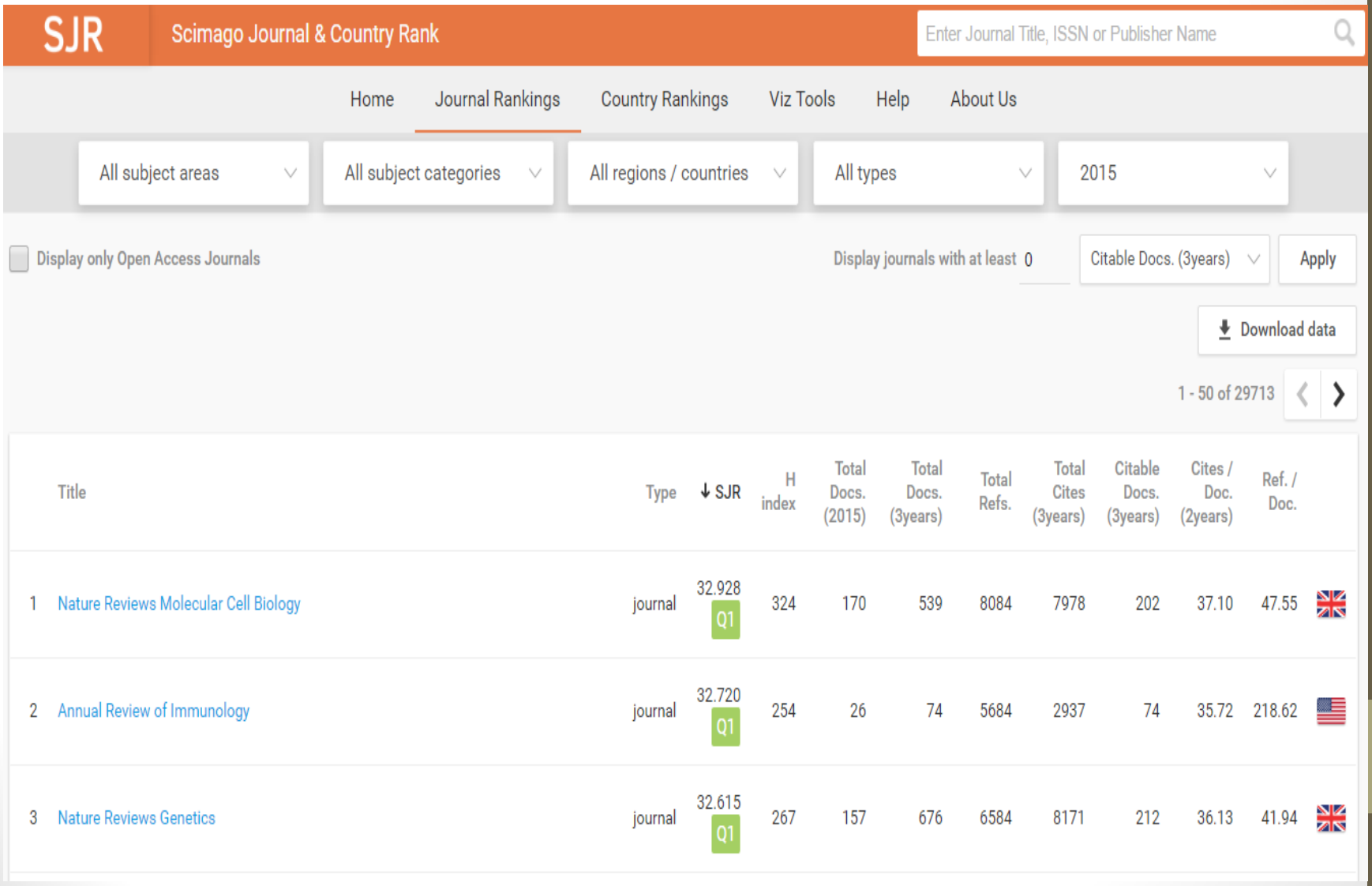
SJR (SCImago Journal Rank)

- *SJR* is weighted by the prestige of a journal. Subject field, quality, and reputation of the journal have a direct effect on the value of a citation.
- *SJR* assigns relative scores to all of the sources in a citation network. Its methodology is inspired by the Google PageRank algorithm, in that not all citations are equal. A source transfers its own 'prestige', or status, to another source through the act of citing it. A citation from a source with a relatively high *SJR* is worth more than a citation from a source with a lower *SJR*.

SNIP (Source Normalized Impact per Paper)

- *SNIP* measures a source's contextual citation impact by weighting citations based on the total number of citations in a subject field. It helps you make a direct comparison of sources in different subject fields.
- *SNIP* takes into account characteristics of the source's subject field, which is the set of documents citing that source. *SNIP* especially considers
  - the frequency at which authors cite other papers in their reference lists
  - the speed at which citation impact matures
  - the extent to which the database used in the assessment covers the field's literature
- *SNIP* is the ratio of a source's average citation count per paper and the citation potential of its subject field.

Journal Rank



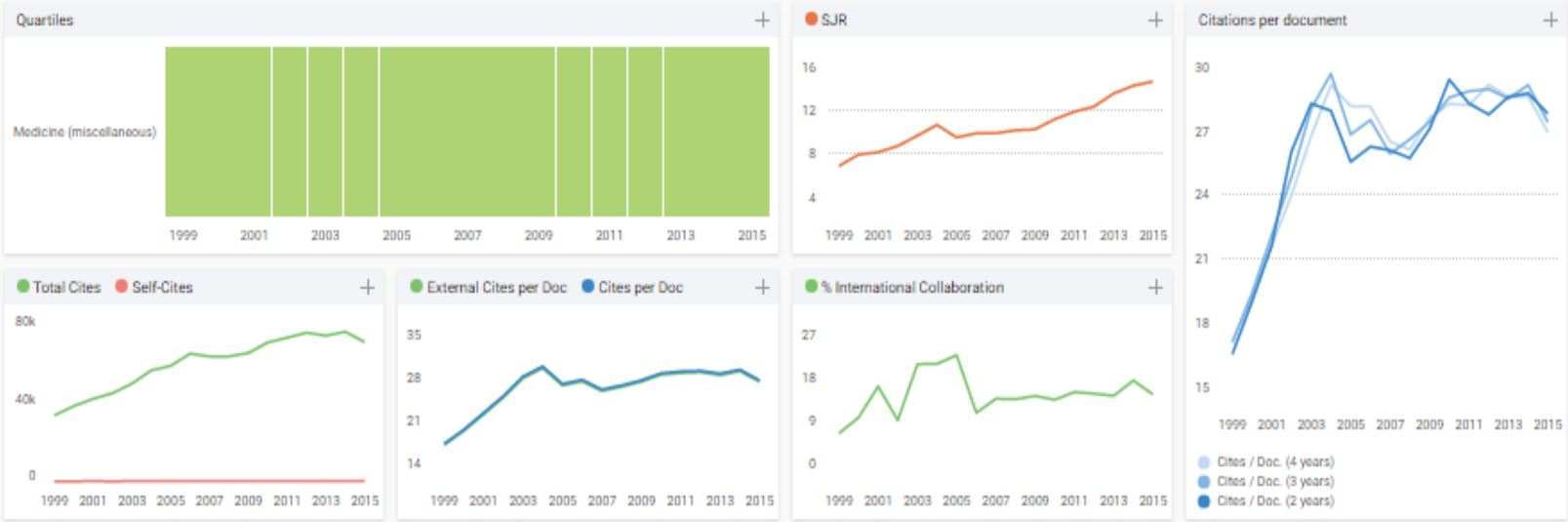
	Title	Type	SJR	H index	Total Docs. (2015)	Total Docs. (3years)	Total Refs.	Total Cites (3years)	Citable Docs. (3years)	Cites / Doc. (2years)	Ref. / Doc.	
1	Nature Reviews Molecular Cell Biology	journal	32.928 Q1	324	170	539	8084	7978	202	37.10	47.55	
2	Annual Review of Immunology	journal	32.720 Q1	254	26	74	5684	2937	74	35.72	218.62	
3	Nature Reviews Genetics	journal	32.615 Q1	267	157	676	6584	8171	212	36.13	41.94	

New England Journal of Medicine

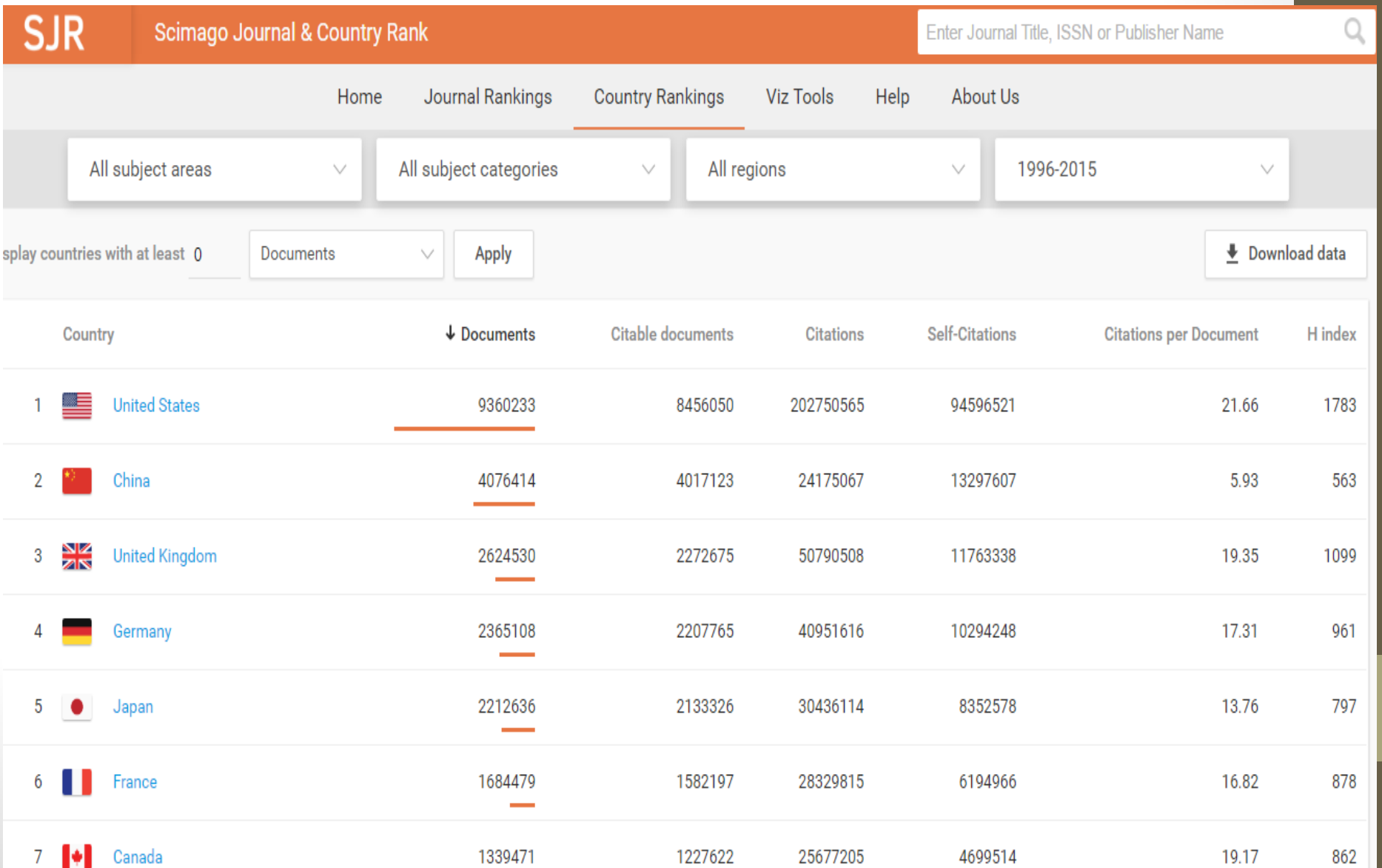
Country	United States
Subject Area and Category	Medicine Medicine (miscellaneous)
Publisher	Massachusetts Medical Society
Publication type	Journals
ISSN	00284793, 15334406
Coverage	1945-ongoing

801

H Index



Country Rank



	Country	Documents	Citable documents	Citations	Self-Citations	Citations per Document	H index
1	United States	9360233	8456050	202750565	94596521	21.66	1783
2	China	4076414	4017123	24175067	13297607	5.93	563
3	United Kingdom	2624530	2272675	50790508	11763338	19.35	1099
4	Germany	2365108	2207765	40951616	10294248	17.31	961
5	Japan	2212636	2133326	30436114	8352578	13.76	797
6	France	1684479	1582197	28329815	6194966	16.82	878
7	Canada	1339471	1227622	25677205	4699514	19.17	862

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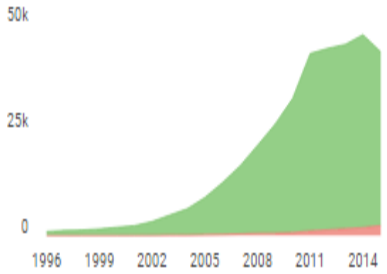

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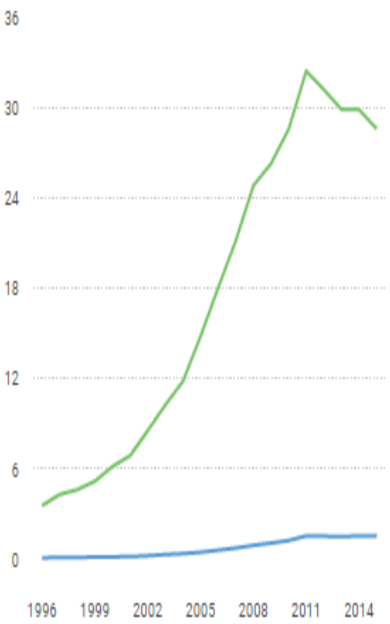

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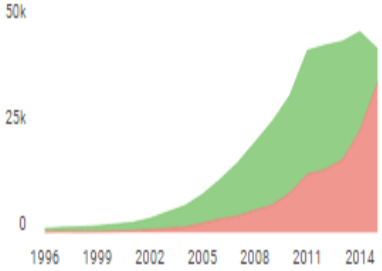

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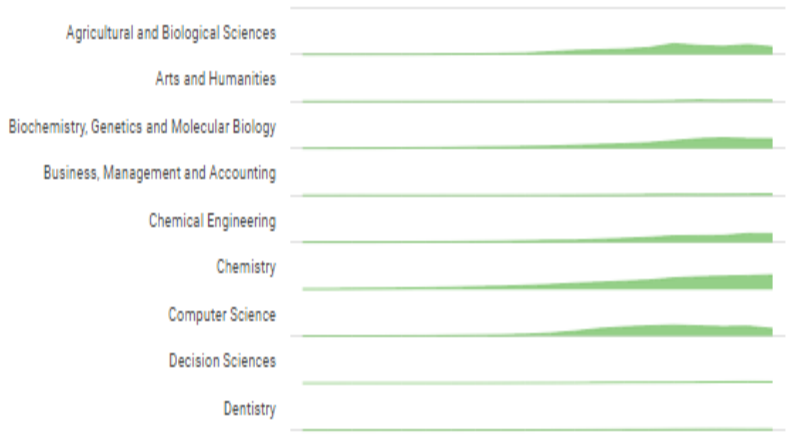

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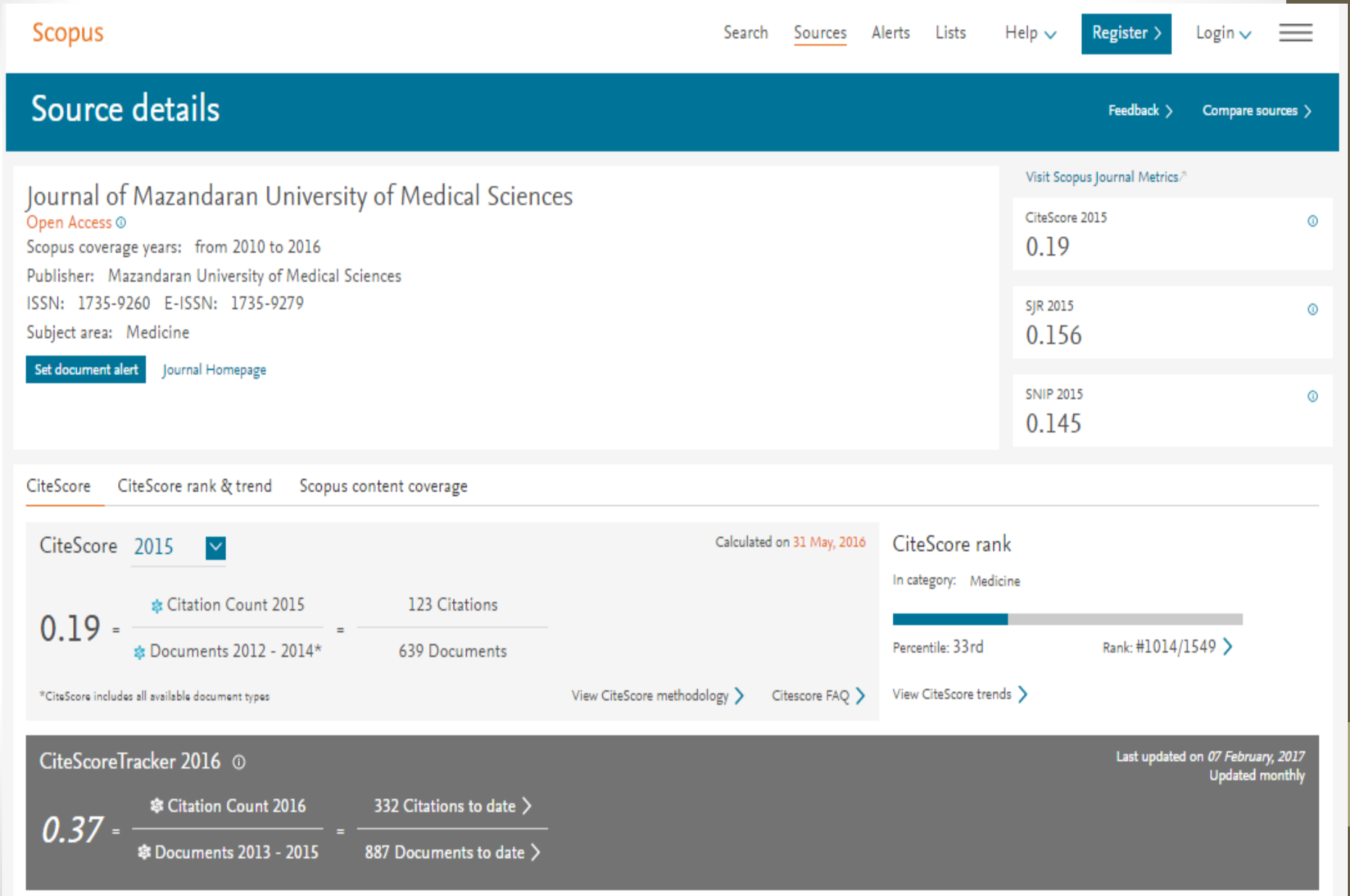
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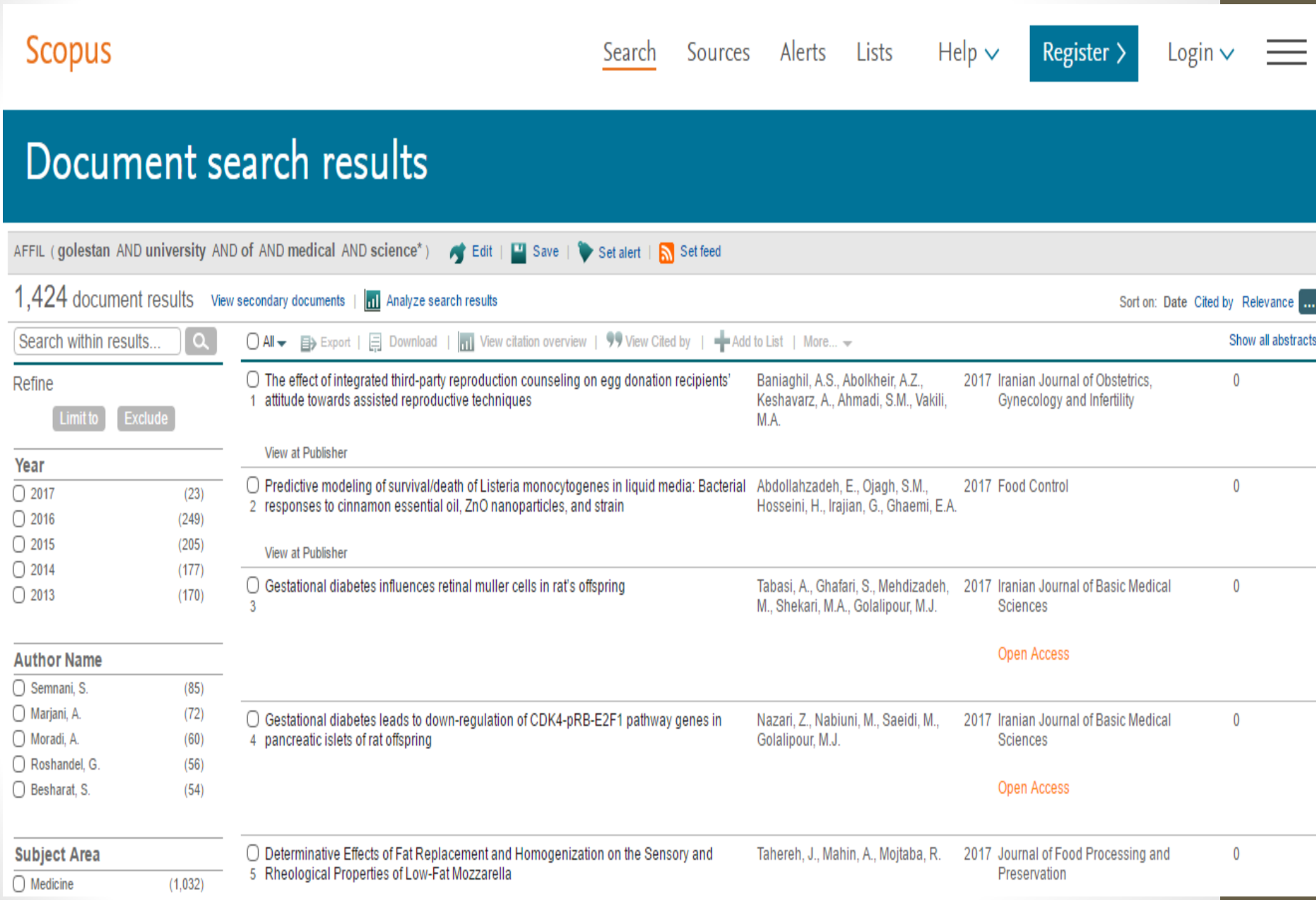
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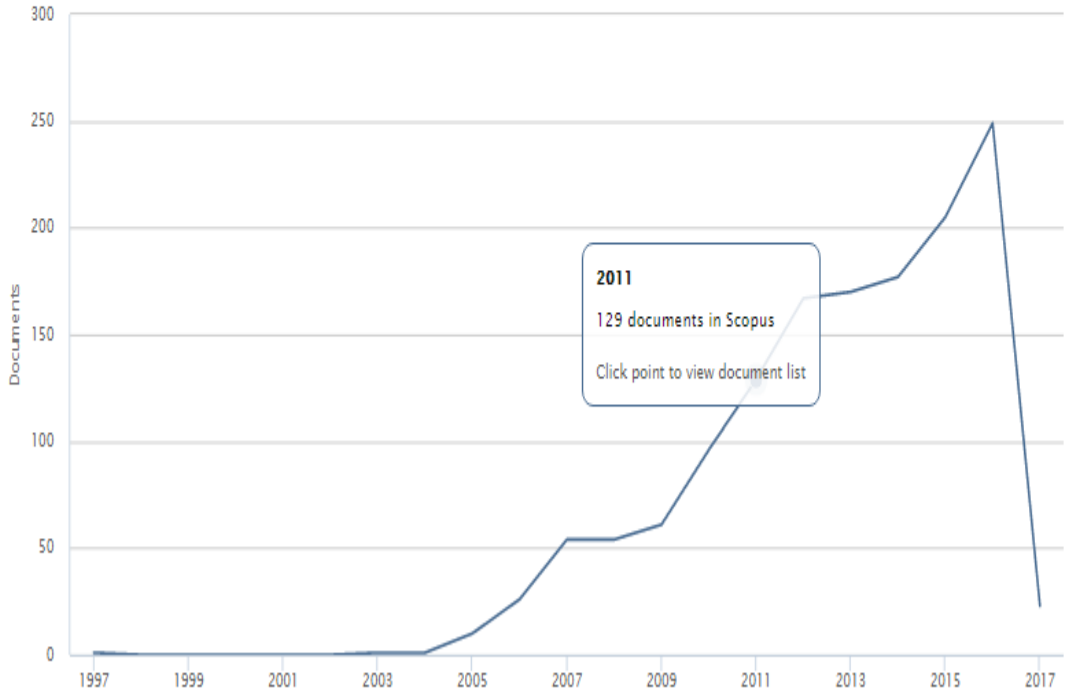
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