

Elsevier Research Intelligence

World university rankings and metrics that count

Lucia Schoombee Consultant, Research Management (Africa) 31 July 2017





Kaveel Singh, News24

The 2018 Quacquarelli Symonds (QS) World University Rankings, released yesterday, 8 June 2017, include nine South African universities in its African list of 18 institutions. University of Cape Town (UCT) remains at the top of that ranking, at position 191 and the

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Contents

- General overview
- Useful
- Broad-based methodologies of THE and QS
- A deeper look at metrics and recents changes
- Influence/correctness of affiliation information
- Scopus as primary data source
- Scopus's basket of metrics as applied to individual researchers





To rank or not to rank...



Do rankings matter?



Students & Parents



Project of competitiveness improvement of Leading Russian Universities among the leading world scientific and educational centers

University Management



85% of **students** find university ranking important in their selection of a university

33% of students find university ranking as the <u>most</u> important factor, followed by employer recognition 21%

The Russian 5/100 program aims to have at least 5 Russian universities in the top 100 universities ranked by QS by 2020

David Willets (former UK Universities & Science minister):

"We broadly accept the criteria used by the THE, which is why our policies are focused on the same areas."

According to the 2015 *International Student Survey* rankings are a <u>key factor</u> in the decision-making process for students



Source: Hobsons, INTERNATIONAL STUDENT SURVEY 2015, Value and the Modern International Student

32.6%

30.0%

29.1%

27.8%

30%

43.0%

50%

40%

Students primarily use a small number rankings systems



Source: Hobsons, INTERNATIONAL STUDENT SURVEY 2015, Value and the Modern International Student

The Preferred ranking system varies by nationality



China – ARWU & QS





India – THE & QS

USA – USN & THE

Source: Hobsons, INTERNATIONAL STUDENT SURVEY 2015, Value and the Modern International Student



Scopus position







Elsevier's position on university rankings and metrics in general

- All rankings have their strengths and disadvantages
- "Basket of indicators"
- Metrics complement peer opinion
- Informed decisions are better decisions
- Metrics should complement, not replace human judgment
- Well-selected metrics drive positive behaviours
- Metrics can help monitor and eliminate biases

The various ranking organisations use the data (and analytics) differently based on their methodology, and respective agreements



Global University Rankings are varied in approach

		'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16		Academic performance with
1	ARWU/Shanghai																league table
2	Webometrics																Academic performance without
3	QS															_	league table
4	4icu																Broad based league table
5	NTU/HEEACT																"Multidimensional" ranking
6	Leiden																Employability based league table
7	URAP																Web presence league table
8	SCImago							R	R	R	R	R	R	R			
9	THE															D	Detropotivo
10	Trendence/Emerging															ĸ	Retroactive
11	RUR								R	R	R					E	Environmental Focus
12	U-Multirank															1	Innovation Focus
13	UI GreenMetric										E	E	E	E	E		
14	CWUR																
15	Youth Incorporated																
16	nature INDEX																
17	RankPro																
18	US News																
19	Reuters													1	1	Sou	rce: Illuminate Consulting Group

University rankings using Scopus data

Ranking Agency		Type of Ranking	Period
Times Higher Education	•	All world and regional rankings	2014-2019
QS	•	All world and regional rankings	2015-2025
US News & World Report	•	Arab Region Ranking	2014-2017
Shanghai Ranking Consultancy	•	Mainland China Ranking Top Cited Researchers Subject specific global ranking	2015-2020
Maclean's	•	World University Ranking	2015-2017
Financial Times	•	MBA Ranking	
Frankfurter Allgemeine Zeitung	•	German Economists Ranking	





THE Overview



Times Higher Education



- Multiple rankings e.g. World University Rankings, BRICS & Emerging Economics, Young University Rankings
- Ranks 980 universities (previously 400 / 800+)
- Evaluation across universities' core missions
- The performance indicators are grouped into <u>five</u> areas:
 - Teaching (the learning environment)
 - Research (volume, income and reputation)
 - Citations (research influence)
 - International outlook (staff, students and research)
 - Industry income (knowledge transfer)

THE and Elsevier



- Use Scopus:
 - 2007-2009: Under QS partnership
 - Since Oct. 2014: Directly from Elsevier
- Data provided:
 - Bibliometrics (not raw data):
 - citation score
 - o number of papers per faculty
 - \circ number of internationally co-authored papers
- Affiliations: curated SciVal institutions
- Other support:
 - **Reputation data:** Elsevier runs the reputation survey using Elsevier author list for THE
 - **Affiliation handling:** Affiliation corrections, mergers, split, etc. handled with THE for the respective universities

THE's minimum requirements to be ranked





(*): 500 papers for large disciplines, 250 for smaller disciplines

How is data collected?



- Self-submitted data (portal)
 - A named representative from each institution submits and authorises its institutional data for use in the rankings via THE's designated online portal
 - In global terms, the most complete data available for all institutions has been found to be from 2 years ago
 - Therefore all institutions reported 2014 data for 2016/17 ranking

Reputation survey

- An annual survey sent to researchers asking to nominate the top 15 institutions for Teaching and the top 15 institutions for Research.

Reference data

- Reference datasets are incorporated to convert country-level data to a single comparable dataset for all institutions:
 - foreign exchange rates, World Bank Purchase Power Parity ("PPP"), currency strengths



An example of how weighting is changed for different rankings



		V	Veighting
Category	Indicator	WUR	Top 100 under 50
	Reputation survey	15.00%	10.00%
	Staff to student ratio	4.50%	6.00%
Teaching	Doctorate to bachelor ratio	2.50%	3.00%
reaching	Doctorates awarded to academic staff ratio	6.00%	8.00%
	Institutional Income	2.50%	3.00%
	Total	30.00%	30.00%
	Reputation survey	18.00%	12.00%
Pesearch	Research Income	6.00%	9.00%
Nesearch	Research productivity	6.00%	9.00%
	Total	30.00%	30.00%
Citations	Citations	30.00%	30.00%
Citations	Total	30.00%	30.00%
	International to domestic student ratio	2.50%	2.50%
International Outlook	International to domestic staff ratio	2.50%	2.50%
International Outlook	Research	2.50%	2.50%
	Total	7.50%	7.50%
Industry Incomo	Industry Income	2.50%	2.50%
maustrymcome	Total	2.50%	2.50%
TOTAL		100.00%	100.00%

* Top 100 universities under 50 years old

Bibliometrics



- Field-Weighted Citation Impact (FWCI) score, per subject and overall.
- Total number of publications with international co-authorship
- Total number of publications overall, per institution (scaled and normalised)

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Main changes between 2015-16 and 2016-17 THE's WUR











A closer look at...



- **Rankings**: World University, World University Rankings by Subject, Asia, Arab Region, BRICs, EECA, Latin America, Top 50 Under 50
- Data provided:
 - Scopus raw data
 - Sharing SciVal institution profiles
 - (Re)classification of multidisciplinary articles
- Affiliations: Scopus profiles
- **Support is provided** at the level of Scopus data corrections incl. those related to affiliations

QS Methodology

QS	World University Rankings: Methodology What information is collected, and how is this used to compile the ranking?
40%	Academic reputation Based on a global survey of academics
10%	Employer reputation Based on a global survey of graduate employers
20%	Faculty/student ratio An indication of commitment to teaching
20%	Citations per faculty An indication of research impact
5%	International student ratio Measuring international diversity of the student community
5%	International staff ratio Measuring international diversity of the academic faculty

Four areas:

- Research,
- Teaching,
- Employability
- International outlook

Six indicators

Scopus data accounts for 20%



QS and Elsevier

- Switch to Scopus in 2007
 - Better journal coverage
 - Better non-English language coverage
 - Transparency
- Scopus data used:
 - World rankings Citations per faculty normalised by subject
 - Regional rankings Citations per paper (10%) and papers per faculty (10%)
 - Subject rankings: Citations per paper / H index (weighted according to subject)
 - Normalization

COMPARING THODOLOGIES

MET

QS methodologies adjusted for various rankings

5% 5%		10%	5%	10%	10%
		100/	100/	C 0/	3%
20%	■ Web	Impact		5% 5%	5%
	Outb	ound Exchar	ige Students	5%	10%
	Inbou	ind Exchange	e Students		5%
20%		national Stud	lents	20%	15%
		national Fac			
10%			iity	200/	200/
	Citat	ions per Pape	er	20%	20%
	Pape	rs per Faculty	У		
40%	Citat	ions per Facu			
	Staff	with PhD		30%	30%
	Facul	ty Student			
	Empl	over Reputat	tion		
WORLD (2004)	■ Acad	emic Reputa	tion	ARAB REGION (2014)	EECA REGION (2014)

Other changes include:

- Self-citation exclusion
- Papers with 10+ co-authoring affiliations omitted*
- Some publication types are excluded (e.g. letter, short survey)

For clarity, QS bibliometric analysis excludes self-citations and, from 2015, excludes publications carrying more than ten institutional affiliations (at time of introduction this represents approximately 0.34% of publications in Scopus). Affiliated hospitals are included.

Furthermore, after consultation with Elsevier, some content types have been excluded from our analysis this year:

IN	OUT
Article Review Conference Paper Book Book Chapter Article in Press Business Article	Abstract Report Conference Review Editorial Erratum Letter Note Press Release Short Survey

Main methodology change: Subject area normalization



BEFORE



1% 17% 51% 24% 6%

AFTER



15% 23% 26% 24% 11%





Scopus over view



Scopus includes content from more than 5,000 publishers and 105 different countries

68M records from 22K serials, 100K conferences and 150K books

- Updated daily
- Records back to 1823
- "Articles in Press" from > 3,750 titles
- 40 different languages covered
- 3,715 active Gold Open Access journals indexed

	JOURNALS	CONFERENCES	BOOKS	PATENTS*
Physical Sciences 7,443	21,568 peer-reviewed	90K conference	531 book series	27M patents
Health Sciences <mark>6,795</mark>	journals 361 trade journals	events 7.3M conference papers	30K Volumes / 1.2M items	From 5 major
Social Sciences 8,086	 Full metadata, abstracts and cited references (ref's post-1995 only) 		119,882 stand- alone books 974K items	patent offices - WIPO - EPO
Sciences 4,492	 Funding data from acknowledgements Citations back to 1970 	Mainly Engineering and Computer Sciences	Focus on Social Sciences and A&H	- USPTO - JPO - UK IPO

Source: November 2015 title list at https://www.elsevier.com/solutions/scopus/content

The THE WUR 2016-17 Scopus Citation dataset



THE WUR 2016-17 Scopus dataset

	Engineering & Technology 3.5M		
	Clinical, Pre-clinical & Health 3.8M	DOCUMENT TYPES	PERIOD
CTS	Physical Sciences 3.5M	Article 8.61M	2011-2015
JBJEC	Social Sciences 1.2M	Article Review 685K	
VLL SU	Arts & Humanities 579K	 Conference Proceeding 2.06M Books (series) 	
٩	Life Sciences 2.4M	 69K Book chapters 	
	Computer Science 1.5M	451K	
	Business and Economics 400K		

Not included: 263,841 publications from 118 suspended titles

WUR 2016-17 Scopus dataset – general statistics



Molecular Biology and Evolution

Volume 28, Issue 10, October 2011, Pages 2731-2739

MEGA5: Molecular evolutionary genetics analysis using maximum likelihood and maximum parsimony methods (Article)

Tamura, K.ª, Peterson, D.^b, Peterson, N.^b, Stecher, G.^b, Nei, M.º, Kumar, S.^{bd} 🖬 👗

^a Department of Biological Sciences, Tokyo Metropolitan University, Hachioji, Tokyo, Japan

^b Center for Evolutionary Medicine and Informatics, Biodesign Institute, Arizona State University, United States

C Department of Biology, Institute of Molecular Evolutionary Genetics, Pennsylvania State University, United States

Please be aware: 1 very successful paper can have quite a big positive impact now, but also negatively when it will no longer be included in the time frame

Analysis - Changes in Citation Score 2015 vs 2016







Importance of International Collaboration



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FWCI vs. International Collaboration

What we observe: For higher position on the Ranking, you need to get higher impact/citations, che which will lead to higher FWCI. To get higher impact / bel FWCI you need more International Collaboration swe which increases quality and engagement with more fra international communities for citation potential deu esp Average Collaborate 6'0 8'0 usa bra 0,2 Correl=0.903202 The question is: 0,1 With whom to best collaborate? How attractive is your institution for collaboration? 0 1,4 1,8 0.2 0.4 0.6 0,8 1 1.2 1,6 2 Average FWCI

FWCI is a generally accepted way to measure the impact of research

- It normalizes the number of citations per publication, per publication year, subject category and document type
- >1 is above world average



Scopus Affiliations



Affiliations

Scopus			Search	Sources	Alerts	Lists	Help 🗸	SciVal ↗	Lucia Schooml	Dee ∨	
Affiliatio	n sear	ch								Compare sources 义	
Documents	Authors	Affiliations Advanced								Search tips 🥐	
Affiliation	name of Toronto										
Search for d		Affiliation name				<u> </u>	_ C	ocuments	City	C	ountry/Territory
Brought to you I Scopus Team	1	Universiteit Stellenbosch Stellenbosch University University of Stellenbosch						30012	Stellenbosch		South Africa
	2	Tygerberg Hospital Stellenbosch University Tygerberg Hospital						2849	Tygerberg		South Africa
	3	ARC Infruitec-Nietvoorbij ARC Infruitec-Nietvoorbij						482	Stellenbosch		South Africa
	4	Stellenbosch Institute for Advanced Stu Stellenbosch Institute for Advanced Studies Stellenbosch Institute for Advanced Study ST	idy TAS					292	Stellenbosch		South Africa
	5	Cape Nature Conservation Western Cape Nature Conservation Board CapeNature						157	Stellenbosch		South Africa

Affiliation correction programme



Scopus Metrics



Basket of metric





Researcher-level metrics

Find evidence of a researcher's productivity, impact, mobility and network

How to track the impact of your publications?

2. <u>The citations per year</u> : the total number of citations received per year for an author's published work

Oboh, (Federal Un	Ganiyu Back to au iversity of Technolog	ithor details page v. Akure. Departmer	t of Biochemistry, Akure, Nic	ieria	
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Docu	ments (115)	h-index (18)	Citations (1163)	Co-auth	thors (63)
Analyze doc	uments published b	etween: 1970 🔻	to 2014 🔻 Up	date Graph	
Year y	Citations			Citati	tions by year
2015	4		<u>^</u>	250	50
2014	196				
2013	218			200	
2012	189			SL	
2011	162			:월 150 :반	50
2010	103			r of C	
2009	118			aq 4 100	
2008	67			ź	
2007	59			50	50
2006	35				
2005	11			0	• • • • • • • • • • • • • • • • • • • •
2004	2				1970 1972 1974 1976 1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 1971 1973 1975 1977 1979 1981 1983 1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007 2009 2011 2013 2015
2003	3				Year
2002	0				Oboh, Ganiyu
2001	0			Note: So	Scopus is in progress of updating pre-1996 cited references going back to 1970. Pre-1996 citation counts might increase over time.

Documents (115)

Documents

1

2

3

Δ

5

7

8

9

10

11

12

13

14

15

16

Analyze documents published between:

Citations =

118

84

69

54

52

40

37

30

29

27

25

25

25

24

22

20

The h-index: Hirsch index or Hirsch number

Co-authors (63)

Oboh, Ganiyu Back to author details page Federal University of Technology, Akure, Department of Biochemistry, Akure, Nigeria

Citations (1163)

2014 🔻

to

Inhibitory effect of polyphenol-rich.

h-index (18)

Title

1970

In other words: An author has an index of 18 if he has published at least 18 papers; each of which has been cited at least 18 times (Published by Jorge E. Hirsch in August 2005)

This author's *h*-index is 18

The *h*-index is based upon the number of documents and number of citations.



Update Graph

Note: Scopus is in progress of updating pre-1996 cited references going back to 1970. The h-index might increase over time.



Journal Metrics

Use journal-level metrics to identify the reputation of journals and select the right journal to publish your research

CiteScore

On the Source page – click on the journal title

Scopus	Search <u>Sources</u>	Alerts Lists	Help 🗸 Lucia Schoombee 🗸 📃
Source details			Feedback > Compare sources >
Emerging Infectious Diseases Open Access © Scopus coverage years: from 1995 to 2016 Publisher: Centers for Disease Control and Prevention (CDC) ISSN: 1080-6040 E-ISSN: 1080-6059 Subject area: Medicine: Infectious Diseases	Visit Scopus Journal Metrics CiteScore 2015 0 4.23 0 SJR 2015 0 3.023 0		
Set document alert Journal Homepage P ^{CC} Webcat Plus Copac More >		SNIP 2015 0 1.927	
CiteScore CiteScore rank & trend Scopus content coverage			
CiteScore 2015 © Citation Count 2015 6883 Citations	Calculated on 31 May, 2016	CiteScore ran	k ious Diseases
4.23 = = =		Percentile: 94th	Rank: #14/246 >
*CiteScore includes all available document types	View CiteScore methodology \blacktriangleright Citescore FAQ \blacktriangleright	View CiteScore trend	ds >
CiteScoreTracker 2016 ①			Last updated on <i>07 February, 2017</i> Updated monthly
$4.70 = \frac{\text{Citation Count 2016}}{\text{Comments 2013 - 2015}} = \frac{7765 \text{ Citations to date }}{1652 \text{ Documents to date }}$			

🕸 Metrics displaying this icon are compiled according to Snowball Metrics 🖉 , a collaboration between industry and academia.

www.journalmetrics.com

Powered by Scopus[®]

Journal Metrics

Introducing CiteScore metrics for serials We are proud to introduce CiteScore metrics from Scopus – comprehensive, current and free metrics for serial titles in Scopus. Search or filter below to find the sources of interest and see the new metrics. Report using these annual metrics and track the 2016 metrics via the links to each title's Scopus source details page. Be sure to use qualitative as well as the below quantitative inputs when presenting your research impact, and always use more than one metric for the quantitative part.	Critations in 2015 Documents from 3 years 2011 2012 2013 2014 2015 2016
Refine titles 🕥	① CiteScore 2015 methodology 소 Download all metrics

Refine by subject areas	Q	Search titles	Q	2015	~	Show more filters

Showing 22,256 titles

CiteScore metrics calculated on 31 May, 2016. SNIP and SJR calculated on 27 April, 2016

()	Title	CiteScore ∽	Highest CiteScore Percentile	CiteScore Rank	Citations 2015 🎄	Documents 2012-14 🕸	% Cited	SNIP	SJR
1	Ca-A Cancer Journal for Clinicians Hematology	66.45	99%	1/117	8,904	134	63%	50.569	32.242
2	Chemical Reviews General Chemistry	45.92	99%	1/371	31,824	693	98%	11.241	19.143
3	Annual Review of Immunology Immunology and Allergy	41.20	99%	1/162	3,049	74	99%	9.071	32.720
4	Chemical Society Reviews General Chemistry	35.79	99%	2/371	45,030	1,258	97%	7.638	15.228
5	Annual Review of Astronomy and Astrophysics Astronomy and Astrophysics	34.55	99%	1/67	1,382	40	90%	7.673	27.065

Help 🗸

Clear Filters

Get involved >

SNIP: Source-normalized impact per paper

All **20K** journals have **a Source-normalized impact per paper** (SNIP) measuring contextual citation impact by weighting citations per subject field

- Peer-reviewed papers only
- Three year citation window
- Field's frequency and immediacy of citation
- Database coverage
- Journal's scope and focus
- Measured relative to database median

+-+

Impact per Publication (IPP)

Citation potential in its subject field

Journal	IPP	Cit. Pot.	SNIP (RIP/Cit. Pot.)
Inventiones Mathematicae	1.5	0.4	3.8
Molecular Cell	13.0	3.2	4.0



SJR: SCImago Journal Rank



All **20K** journals have a **SCImago Journal Rank** (SJR) a prestige metric based on the idea that not all citations are equal

- SJR is a variant of the eigenvector centrality measure used in network theory and is inspired by the PageRank algorithm used in Google.
- Prestige transferred when a journal cites
 - · Citations are weighted depending on where they come from
 - journal's prestige is shared equally between its citations



SJR normalizes for differences in citation behaviour between subject fields

Compare sources







Article-level metrics

Useful metrics to demonstrate the impact of specific research articles and which can be used to enhance grant applications and CVs





272 69	Citations in Scopus
6.86 🕌	Field-Weighted Citation Impact
PlumX Met Usage, Captur Social Media a beyond Scopu	rrics ~ res, Mentions, and Citations s.
	 PlumX Met Usage, Captur Social Media a beyond Scopu

Volume 38, Issue 6, December 2004, Pages 797-806

Evidence for complex system integration and dynamic neural regulation of skeletal muscle recruitment during exercise in

humans (Review)

St. Clair Gibson, A.ªb 🖾, Noakes, T.D.^b 옷

^aUniversity of Cape Town, Res. U. Exercise Sci./Sports Med., Sports Science of South Africa, P O Box 115, Newlands 7725, South Africa ^bRes. U. Exercise Sci./Sports Med., University of Cape Town, Newlands, South Africa

Abstract

View references (143)

A model is proposed in which the development of physical exhaustion is a relative rather than an absolute event and the sensation of fatigue is the sensory representation of the underlying neural integrative processes. Furthermore, activity is controlled as part of a pacing strategy involving active neural calculations in a "governor" region of the brain, which integrates internal sensory signals and information from the environment to produce a homoeostatically acceptable exercise intensity. The end point of the exercise bout is the controlling variable. This is an example of a complex, non-linear, dynamic system in which physiological systems interact to regulate activity before, during, and after the exercise bout.

Metric Details

Physiological models to understand exercise fatigue and the adaptations that predict or enhance athletic performance Back to article (2000) Scandinavian Journal of Medicine and Science in Sports, 10(3), pp. 123-145

Scopus Metrics @



🖂 Email

Usage (e.g. views, downloads)

Metric	Source(s)	Description
Abstract Views	Airiti Library, bepress, CABI, DSpace, EBSCO, ePrints, PLOS, RePEc, SSRN	The number of times the abstract of an article has been viewed
Clicks	bit.ly	The number of clicks of a URL
Collaborators	GitHub	The number of collaborators of an artifact
Downloads	Airiti Library, bepress, Dryad, DSpace, ePrints, Figshare, Github, Institutional Repositories, Pure, RePEc, Slideshare, SSRN	The number of times an artifact has been downloaded
Full Text Views	CABI, EBSCO, OJS Journals, PLOS	The number of times the full text of an article has been viewed
Holdings	WorldCat	The number of libraries that hold the book artifact
HTML Views	EBSCO, Forbes, PLOS, PubMedCentral	The number of times the HTML of an article has been viewed
Link Outs	EBSCO	The number of times an outbound link has been clicked to a library catalog or link resolver
Plays	Vimeo, YouTube, SoundCloud	The number of times the video or audio has been played.
PDF Views	EBSCO, PLOS, PubMedCentral	The number of times the PDF of an artifact has been viewed
Sample Downloads	EBSCO	The number of times an artifact's content has been sampled (e.g. pages, MP3)
Supporting Data Views	EBSCO, PLOS	The number of times the supporting data of an artifact has been viewed
Views	Dryad, EBSCO, figshare, Slideshare	The number of times the artifact has been viewed.

http://plumanalytics.com/learn/about-metrics/usage-metrics/

Captures (e.g. favourites)

Metric	Source(s)	Description
Bookmarks	Delicious	Number of times an artifact has been bookmarked
Favorites	Slideshare, YouTube, SoundCloud	The number of times the artifact has been marked as a favorite
Followers	GitHub	The number of times a person or artifact has been followed
Forks	Github	The number of times a repository has been forked
Readers	Goodreads, Mendeley	The number of people who have added the artifact to their library
Exports/Saves	EBSCO	This includes the number of times an artifact's citation has been exported direct to bibliographic management tools or as file downloads, and the number of times an artifact's citation/abstract and HTML full text (if available) have been saved, emailed or printed.
Subscribers	Vimeo, YouTube	The number of people who have subscribed for an update
Watchers	Github	The number of people watching the artifact for updates

http://plumanalytics.com/learn/about-metrics/capture-metrics/

Mentions (e.g. blogposts, Wikipedia)

Metric	Source(s)	Description
Blog Mentions	Blog lists curated by PlumX	The number of blog posts written about the artifact
Comments	Reddit, Slideshare, Vimeo, YouTube	The number of comments made about an artifact
Economic Blog Mentions	Blog lists curated by PlumX	The number of blog posts written about the artifact within the economics discipline
Forum Topic Count	Vimeo	The number of topics in a forum discussing the artifact
Gist Count	GitHub	The number of gists in the source code repository
News Mentions	News source lists curated by PlumX	The number of news articles written about the artifact
Links	StackExchange, Wikipedia	The number of links to the artifact
Reviews	Amazon, Goodreads, SourceForge	The number of reviews written about the artifact

http://plumanalytics.com/learn/about-metrics/mention-metrics/

Social media (e.g. Facebook, Twitter)

Metric	Source(s)	Description
Likes	Vimeo, YouTube	The number of times an artifact has been liked
+1	Google Plus	The number of times an artifact has gotten a +1
Shares, Likes & Comments	Facebook	The number of times a link was shared, liked or commented on
Ratings	Amazon, Goodreads, SourceForge	The average user rating of the artifact.
Recommendations	Figshare, SourceForge	The number of recommendations an artifact has received
Scores	Reddit	The number of upvotes minus downvotes on Reddit
Tweets	Twitter via Gnip	The number of tweets and retweets that mention the artifact

http://plumanalytics.com/learn/about-metrics/social-media-metrics/

Citations

Metric	Source(s)	Description
Citation Indexes	CrossRef	The number of articles that cite the artifact according to CrossRef
Citation Indexes	PubMed Central	The number of PubMed Central articles that cite the artifact
Citation Indexes	PubMed Central Europe	The number of PubMed Central Europe articles that cite the artifact
Citation Indexes	RePEc	The number of RePEc works that cite the artifact as computed by CiTEc
Citation Indexes	SciELO	The number of SciELO articles that cite the artifact
Citation Indexes	Scopus	The number of articles that cite the artifact according to Scopus
Citation Indexes	SSRN	The number of SSRN works that cite the artifact
Patent Citations	USPTO	The number of patents that reference the artifact according to the United States Patent and Trademark Office
Clinical Citations	Dynamed Plus Topics	The number of Dynamed Plus Topics that reference the artifact
Clinical Citations	PubMed Clinical Guidelines	The number of Clinical Guidelines from PubMed that reference the artifact
Clinical Citations	National Institute for Health and Care Excellence (NICE) – UK	The number of Clinical Guidelines from NICE that reference the artifact
Policy Citations	Policy document source lists curated by PlumX	The number of policy documents that reference an artifact

http://plumanalytics.com/learn/about-metrics/citation-metrics/

Re-cap on metrics

- Informed decisions are better decisions
- Metrics as used for university rankings and individuals are useful to complement peer opinion
- Metrics should complement, not replace human judgment
- Metrics can help monitor and eliminate biases





THANK YOU!

I.schoombee@elsevier.com