Altmetrics: noves formes d'avaluar la informació científica

Ángel Borrego

Universitat de Barcelona
Facultat de Biblioteconomia i Documentació
www.ub.edu/biblio
bd.ub.edu/pub/borrego

borrego@ub.edu

Sumari

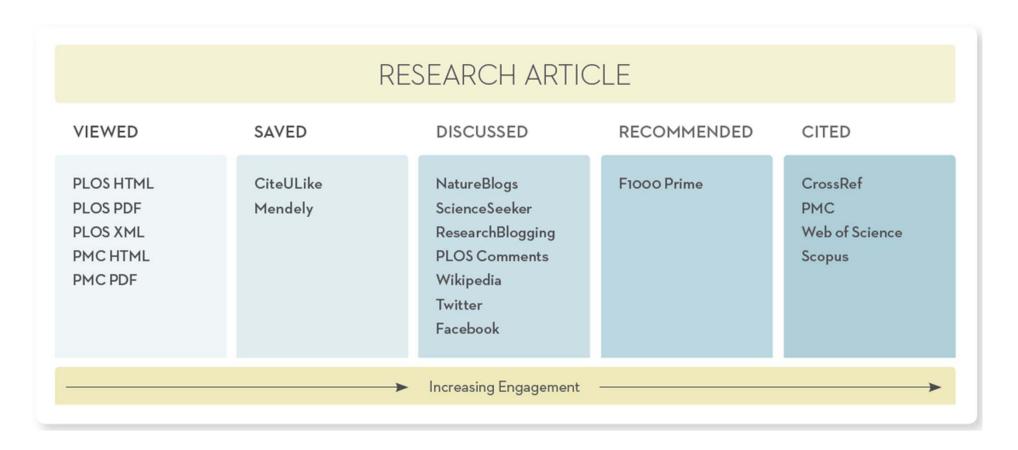
- 1) Introducció: definicions i classificació
- 2) Crítiques a l'anàlisi de citacions i possibilitats de les altmetrics d'ajudar a superar algunes d'aquestes limitacions
- 3) Aplicacions de les *altmetrics* a biblioteques de recerca

Altmetrics: algunes definicions

- "Altmetrics—short for alternative metrics—aims to measure Web driven scholarly interactions, such as how research is tweeted, blogged about, or bookmarked." (J. Howard, 2012, Chronicle of Higher Education).
- "Altmetrics are new measurements for the impact of scholarly content, based on how far and wide it travels through the social Web (like Twitter), social bookmarking (e.g. CiteULike) and collaboration tools (such as Mendeley) [...] What altmetrics hope to do is provide an alternative measure of impact, distinct from the Journal Impact Factor." (F. Galligan, 2012, Swets blog).
- "Altmetrics go beyond traditional citation-based indicators as well as raw usage factors (such as downloads or click-through rates) in that they focus on readership, diffusion and reuse indicators that can be tracked via blogs, social media, peer production systems, collaborative annotation tools (including social bookmarking and reference management services)" (Taraborelli, Mendeley Altmetrics Group).

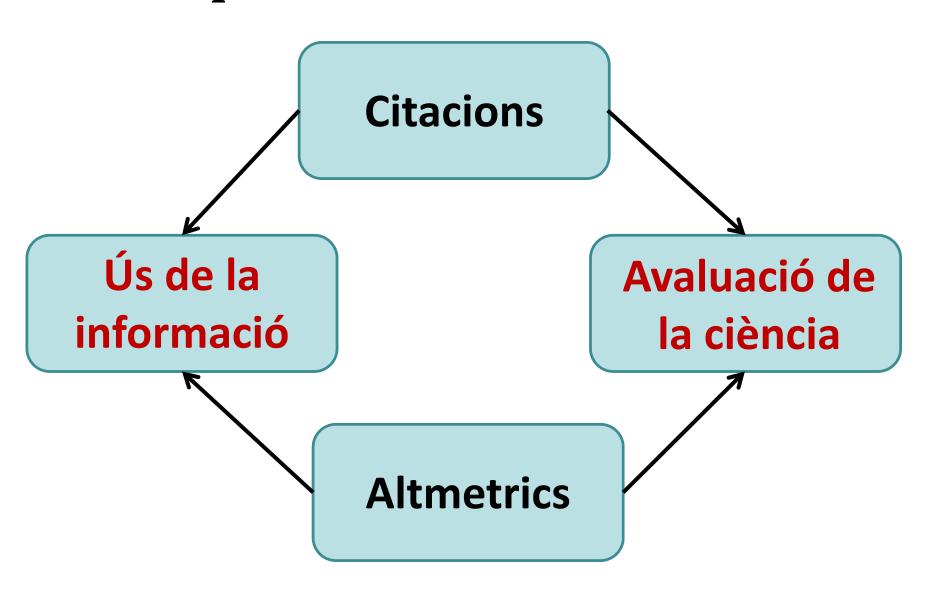
Podem concloure que les *altmetrics* analitzen els continguts de la web social per oferir mètriques alternatives o complementaries als indicadors d'impacte per mesurar el valor de les publicacions acadèmiques.

Quines mètriques?



Font: Lin, J & Fenner, M (2013). Altmetrics in evolution: defining and redefining the ontology of article-level metrics. *Information Standards Quarterly* 25(3), 20-26

Per a què serveixen les citacions?



Crítiques a l'anàlisi de citacions

Cobertura de les fonts (WoS i Scopus)

Metodologia:

- Només mesuren l'impacte entre els autors
- Es necessita força temps per acumular dades
- L'avaluació se centra en les revistes

• Interpretació dels indicadors: impacte ≠ qualitat

Table 1 Presence of IS altmetrics from data sources

Data source	Papers with metrics	%
Mendeley	12,380	62.6
Twitter	324	1.6
Wikipedia	289	1.4
Delicious	72	0.3

Mostra aleatòria de 20.000 articles indexats al Web of Science entre 2005 i 2009

Zahedi, A; Costas, R & Wouters, P (2014). How well developed are altmetrics? A cross-disciplinary analysis of the presence of 'alternative metrics' in scientific publications, *Scientometrics*, in press.

Discipline	Articles	Jnique	Duplicate	Articles	Articles
	indexed	WoS	WoS	with	without
	by WoS	articles	records in	readership	readership
	in 2008	covered	Mendeley	statistics	statistics
		by		in	
		Mendeley		Mendeley	
Clinical Medicine	145.524	71 60/	1.50/	62.10/	0.50/
Chincal Medicine	145,536	71.6%	1.5%	62.1%	9.5%
Engineering and	109,390	34.8%	1.5%	32.6%	2.2%
Technology	207,27				
Tromiciogy					
Social Science	23,878	46.8%	4.8%	45.9%	0.9%
Physics	101,581	31.4%	1.2%	29.7%	1.8%
	100.504	22.50/	1.50/	20.60/	2.10/
Chemistry	100,594	33.7%	1.7%	30.6%	3.1%
Total	480,979	45.6%	1.7%	41.1%	4.4%
10(a)	700,979	45.070	1./70	41.170	4.470

480.979 articles indexats al Web of Science en 2008

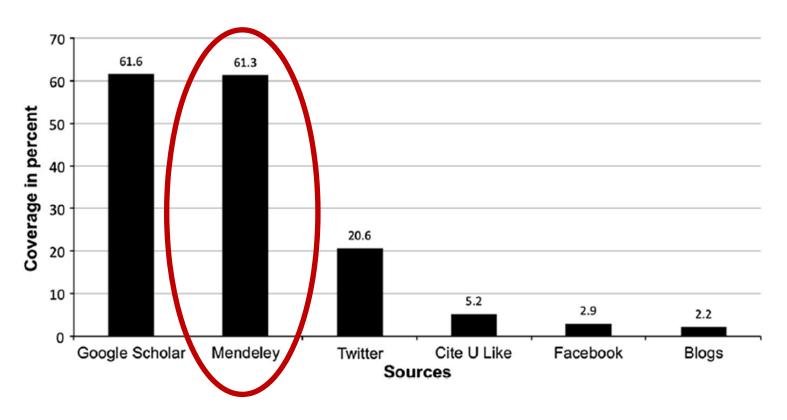
Mohammadi, E et al. (2014). Who reads research articles? An altmetrics analysis of Mendeley user categories. *JASIST*, in press.

TABLE 1. Coverage of WoS articles from social sciences and humanities disciplines in Mendeley.

WoS discipline	Articles indexed by WoS in 2008	WoS articles covered by Mendeley	Articles with readership statistics
Psychology	23,811	14,757 (62%)	12,804 (54%)
Social sciences other subjects	6,366	3,763 (59%)	2,416 (38%)
Education & educational research	7,208	3,839 (53%)	2,796 (39%)
Information science & library science	2,552	1,617 (63%)	1,343(53%)
Business & economics	22,710	12,337 (54%)	8,100 (36%)
Social sciences total	62,647	36,313 (58%)	27,558 (44%)
Philosophy	2,833	1.060 (37%)	408 (17%)
History	2,882	756 (26%)	253 (9%)
Linguistics	2,245	1,046 (47%)	773 (34%)
Literature	4,622	643 (14%)	165 (4%)
Religion	2,058	640 (31%)	255 (12%)
Humanities total	14,640	4,145 (28%)	1,914 (13%)

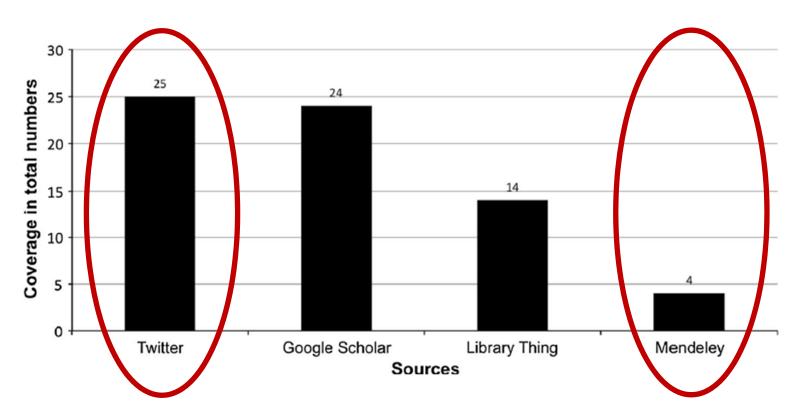
Articles de ciències socials i humanitats indexats al Web of Science en 2008

Mohammadi, E & Thelwall, M (2014). Mendeley readership altmetrics for the social sciences and humanities: research evaluation and knowledge flows, *JASIST*, in press.



310 articles sobre humanitats en anglès d'investigadors suecs

Hammarfelt, B. (2014). Using altmetrics in Humanities for assessing research impact in the humanities, *Scientometrics*, in press.



54 llibres sobre humanitats en anglès d'investigadors suecs

Hammarfelt, B. (2014). Using altmetrics in Humanities for assessing research impact in the humanities, *Scientometrics*, in press.

Crítiques a l'anàlisi de citacions

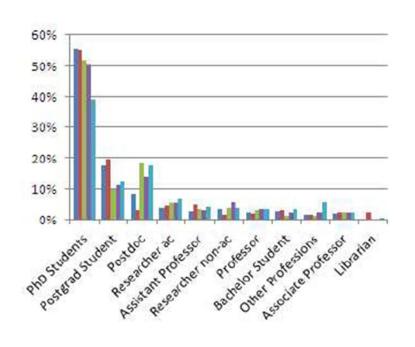
Cobertura de les fonts (WoS i Scopus)

Metodologia:

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Qui són els usuaris de Mendeley?



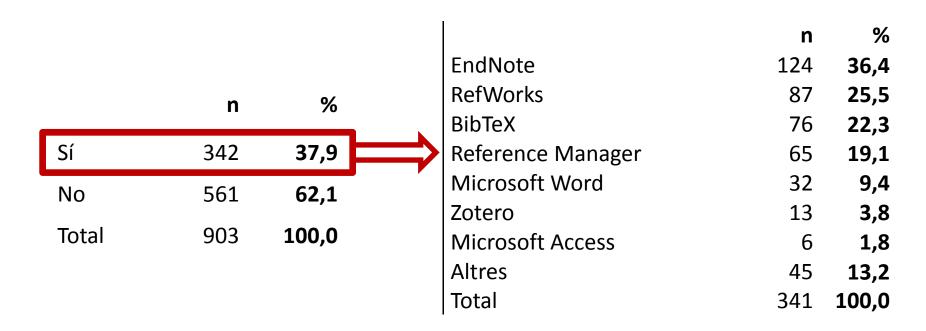
"Most readers of Clinical Medicine, Engineering and Technology, Social Science, Physics and Chemistry papers in Mendeley are PhD students. Postgraduate students and postdoctoral researchers are the two most common readers of papers in Mendeley across different disciplines, after PhD students."

"Finally, from the perspective of using Mendeley as a data source for altmetrics, the biggest limitation is that probably the users of Mendeley form a small and biased minority of the readers of academic articles."

Categories de lectors de 215.000 articles indexats a WoS en 2008

Mohammadi, E et al. (2014). Who reads research articles? An altmetrics analysis of Mendeley user categories. *JASIST*, in press.

Gestors bibliogràfics a les universitats catalanes



Enquesta entre febrer i març de 2011 a 903 investigadors catalans que havien publicat almenys un article al WoS durant 2008

Borrego, A et al. (2012). Use and availability of scholarly journals in Catalan academic libraries. *Serials Review*, 38 (4), 243-249.

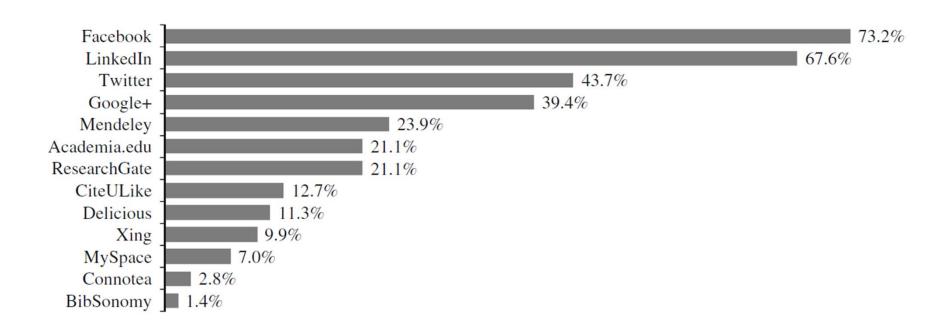
Usuaris de BibSonomy

"Of the 3,168 users, 17 were responsible for creating more than 1,000 records each and these users were analysed individually. The records associated with 14 out of these 17 users had been uploaded within a narrow time period —always less than five days— and referred to a highly limited range of information resources—usually a single catalogue or digital repository. It was assumed that records created by these 14 users had been uploaded by managers of digital libraries in order to enhance use and did not represent typical behaviour of researchers using BibSonomy, therefore, such records were removed from the sample."

"The 81,683 bookmarks in BibSonomy had been created by 3,154 users. There is a high degree of concentration of use amongst a few of these users: 15% of the most active users (472 people) are responsible for 80% of the bookmarks."

Borrego, A & Fry, J (2012). Measuring researchers' use of scholarly information through social bookmarking data: a case study of BibSonomy. *Journal of Information Science*, 38 (3), 297-308

Presència a les xarxes socials



Presència de 71 investigadors en bibliometria a les xarxes socials

Haustein, S (2014). Coverage and adoption of altmetrics sources in the bibliometric community. *Scientometrics*, in press.

Presència a les xarxes socials

		n	%
	Cet in touch with other researchers	197	67.2
	Disseminate research output (papers, conference presentations, etc.)	180	61.4
	Follow other researchers' activities	172	50.
	Disseminate curriculum vitae	116	39.6
	No specific aim, signed up because other researchers from the department/		
	faculty are there	64	21.8
	Find collaborators for research projects	49	16.7
Table IV.	Disseminate teaching material (notes, class slides, etc.)	33	11.3
Reasons for using an	Search for a job	25	8.5
academic social network	Other	18	6.2

293 investigadors catalans amb perfil a Academia.edu

Nández, G & Borrego, A (2013). Use of social networks for academic purposes: a case study. *The Electronic Library*, 31 (6), 781-791.

Not-so-deep impact

"Nature's latest impact factor is 32.2, an increase on last year and a high number that we're proud of, but it's one that merits a closer look....

... For example, we have analysed the citations of individual papers in *Nature* and found that 89% of last year's figure was generated by just 25% of our papers."

Nature (2005), 435, 1003-1004



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RESEARCH ARTICLE

97,695	141	388	17
VIEWS	CITATIONS	SAVES	SHARES

Citation Advantage of Open Access Articles

Gunther Eysenbach

Published: May 16, 2006 • DOI: 10.1371/journal.pbio.0040157 • Featured in PLOS Collections

Article	About the Authors	Metrics	Comments	Related Content
*				

Abstract

Introduction

Results

Discussion

Materials and Methods

Acknowledgments

Author Contributions

References

Reader Comments (3)

Figures

Abstract

Open access (OA) to the research literature has the potential to accelerate recognition and dissemination of research findings, but its actual effects are controversial. This was a longitudinal bibliometric analysis of a cohort of OA and non-OA articles published between June 8, 2004, and December 20, 2004, in the same journal (PNAS: Proceedings of the National Academy of Sciences). Article characteristics were extracted, and citation data were compared between the two groups at three different points in time: at "quasi-baseline" (December 2004, 0–6 mo after publication), in April 2005 (4–10 mo after publication), and in October 2005 (10–16 mo after publication). Potentially confounding variables, including number of authors, authors' lifetime publication count and impact, submission track, country of corresponding author, funding organization, and discipline, were adjusted for in logistic and linear multiple regression models. A total of 1,492 original research articles were analyzed: 212 (14.2% of all articles)



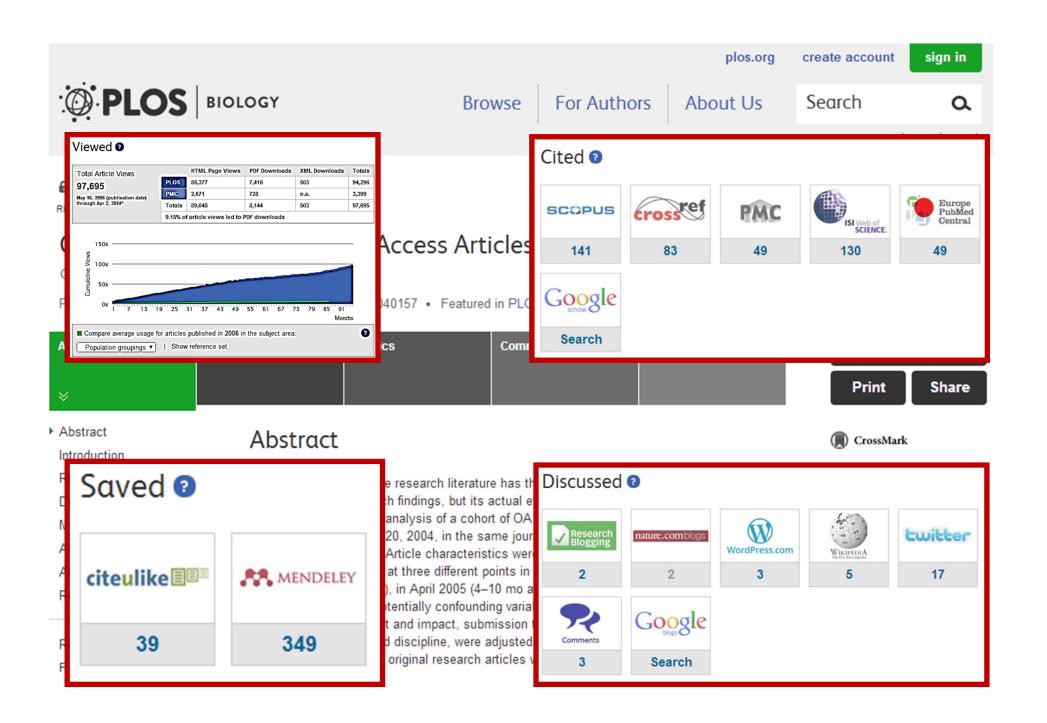


Related PLOS Articles

Open Access Increases Citation Rate

Included in the Following Collection

Open Access Collection



Agregadors de dades almètriques

Altmetric.com: propietat de Macmillan Publishers, implementat a les revistes de Nature o Scopus



Altmetric score (what's this?)

Tweeted by 222
On 32 Facebook pages
Mentioned in 6 Google+ posts
Picked up by 26 news outlets
4 Reddit
View more

This Altmetric score means that the article is:

in the 99 percentile (ranked 24th) of the 70,010 tracked articles of a similar age in all journals
in the 98 percentile (ranked 15th) of the 957 tracked articles of a similar age in Nature

Plum Analytics: adquirida per EBSCO el febrer de 2014

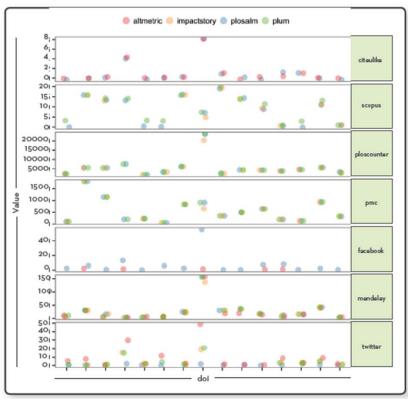
Impact Story: desenvolupat amb un ajut de la Sloan Foundation

Use and Users of Electronic Journals at Catalan Universities: The Results of a Survey 🛭	highly cited highly saved
(2007) Borrego, Anglada, Barrios et al The Journal of Academic Librarianship	
Measuring researchers' use of scholarly information through social bookmarking data: A case study of BibSonomy 🖾	highly saved highly discussed
(2012) Borrego, Fry. Journal of Information Science	
A qualitative study of the impact of electronic journals on scholarly information behavior	cited highly saved saved
(2010) Ollé, Borrego. Library & Information Science Research	
Response Rates and Data Quality in Web and Mail Surveys Administered to PhD Holders 🛛	highly saved cited
(2011) Barrios, Villarroya, Borrego et al Social Science Computer Review	
Scientific production in psychology: a gender analysis - Springer 🕗	cited saved discussed
Scientific output and impact of postdoctoral scientists: a gender perspective - Springer	cited saved

Consistència?

Figure 3: A comparison of seven different article-level metrics on a set of 20 DOIs from Altmetric, ImpactStory, and PLOS.

Note: This demonstrates how article-level metrics can be very similar across providers for some DOIs, but very dissimilar for others. See Figure 1 for explanation of the specific article-level metrics.



"Findings on data consistency suggest that article-level metrics are inconsistent among aggregate data providers of aggregate article-level metrics. Casual readers, and especially those conducting article-level metrics research, should use caution when using article-level metrics data from different providers."

Dades d'Altmetric.com, Impact Story and PLOS per a 565 articles publicats per PLOS

Chamberlein, S (2013). Consuming article-level metrics: observations and lessons from observing aggregator provider data. *Information Standards Quarterly* 25(3), 4-13

NISO Alternative Assessment Metrics (Altmetrics) Project

In June 2013, the Alfred P. Sloan Foundation awarded NISO a grant to undertake a two-phase initiative to explore, identify, and advance standards and/or best practices related to a new suite of potential metrics in the community.

This project is an important step in the development and adoption of new assessment metrics, which include usage-based metrics, social media references, and network behavioral analysis. In addition, this project will explore potential assessment criteria for non-traditional research outputs, such as data sets, visualizations, software, and other applications.

http://www.niso.org/topics/tl/altmetrics initiative/

Journal Usage Factor



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Usage Factor

Last updated: March 2014

Introduction to Release 1 of the COUNTER Code of Practice for Usage Factors

The widespread availability of reliable usage data for online journals has made it feasible to develop usage-based measures of journal impact, value and status. Since 2002 COUNTER (www.projectCounter.org) has provided a standard for the recording and reporting of vendor-generated usage statistics for individual libraries and library consortia.

While the ISI journal Impact Factor (IF), based on citation data, has become generally accepted as a valid measure of the quality of scholarly journals, and is widely used by publishers, authors, funding agencies and librarians as a measure of journal impact and quality, there are misgivings about an over-reliance on Impact Factor alone in this respect. The availability of the majority of significant scholarly journals online, combined with the availability of credible COUNTER-compliant online usage statistics, has made possible a parallel usage-based measure of journal performance. This measure is termed 'Usage Factor: Journals' (UFJ).

The UFJ provides information about the average use of the items in an online journal. Like Impact Factor, it is scale independent. In other words it can be used to compare journals irrespective of their size.

The Usage Factor (UF) metric may, in principle, be applied to any category of online publication, and it is planned to extend the scope of this Code of Practice beyond journals to other products in subsequent Releases. This Release, however, focuses firmly on journals, where the demand for UF is strongest and where the other standards, such as DOI, on which the efficient and accurate calculation of UF depends, are well-established.

http://www.projectcounter.org/usage factor.html

Crítiques a l'anàlisi de citacions

Cobertura de les fonts (WoS i Scopus)

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Correlació entre altmetrics i citacions?

Table 4 Spearman correlations for Nature articles (* statistically significant at the 5% level, ** statistically significant at the 1% level, n = 793)

	WoS_citations	GS_citations	CiteULike	Mendeley
WoS_citations	1	0.957**	0.366**	0.559**
GS_citations		1	0.396**	0.592**
CiteULike			1	0.586**
Mendeley				1

Table 5 Spearman correlations for Science articles (* statistically significant at the 5% level, ** statistically significant at the 1% level, n = 820)

	WoS_citations	GS_citations	CiteULike	Mendele
WoS_citations	1	0.931**	0.304**	0.540**
GS_citations		1	0.381**	0.603**
CiteULike			1	0.605**
Mendeley				1

"Statistically significant correlations were found between the user counts and the corresponding WoS citation counts, suggesting that this type of influence is related in some way to traditional citation-based scholarly impact but the number of users of these systems seems to be still too small for them to challenge traditional citation indexes"

1.613 articles publicats a Nature i Science en 2007

Li, X; Thelwall, M & Giustini, D (2012). Validating online reference managers for scholarly impact measurement. *Scientometrics* 91 (2) 461-471

Entre recomanacions i citacions?

Table 1. Average number of citations and average JCS of publications with a maximum recommendation score of 0 (no recommendation), 1 ('good'), 2 ('very good'), or 3 ('exceptional'). 95% confidence intervals are reported between brackets.

Max. recommendation score	No. of publications	Mean no. of citations	Mean journal citation score
0	1,669,304	7.2 [7.1, 7.2]	6.9 [6.9, 7.0]
1	22,862	20.7 [20.4, 21.1]	17.4 [17.2, 17.6]
2	12,838	37.6 [36.8, 38.6]	27.9 [27.5, 28.3]
3	2,627	68.6 [65.5, 72.3]	44.6 [43.7, 45.6]

"There turns out to be a clear correlation between F1000 recommendations and citations. However, the correlation is relatively weak, at least weaker than the correlation between journal impact and citations."

Waltman, L.; Costas, R. (2014). F1000 Recommendations as a Potential New Data Source for Research Evaluation: A Comparison With Citations. *Journal of the Association for Information Science and Technology*, 65 (3), 433-445.

Entre *tweets* i citacions?

• Un 9,4% dels articles havien estat mencionats a Twitter:

- Diferències per revistes i disciplines
- Baixa correlació entre tweets i citacions

1,4 milions de documents a PubMed i WoS publicats entre 2010 i 2012

Haustein, S et al. (2014). Tweeting biomedicine: an analysis of tweets and citations in the biomedical literature. *Journal of the Association for Information Science and Technology*, 65 (4), 656-669.

Entre mencions a blogs i citacions?

TABLE 6. Results of the Mann-Whitney tests, 2009.

Journal	p Values for the citation period 2009–2011
PLoS One	.002**
PNAS	.000**
Science	.975
Nature	.044*
Psychological Science	.833
Journal of Neuroscience	.000**
Journal of the American Chemical Society	.059
Current Biology	.253
PLoS Biology	.988
New England Journal of Medicine	.000**
Pediatrics	.004**
Nature Neuroscience	.003**

^{*}p < .05; **p < .01.

TABLE 7. Results of the Mann-Whitney tests, 2010.

Journal	p Values for the citation period 2010–2012
PLoS One	.000**
PNAS	.000**
Nature	.001**
Science	.040*
Psychological Science	.468
Journal of Neuroscience	.001**
PLoS Biology	.001**
New England Journal of Medicine	.000**
Physical Review Letters	.004**
JAMA	.742
Proceedings of the Royal Society B Biological Sciences	.674
Conservation Biology	.924
Ecological Applications	.027*
Lancet	.006**
Biological Conservation	.206
Cell	.006**
Pediatrics	.000**
PLoS Computational Biology	.603
Biology Letters	.042*

p < .05; **p < .01.

Correlació significativa per a 7 de 12 revistes en 2009-2010 i per a 13 de 19 revistes en 2010.

"Blog citations are worth pursuing as an altmetrics source, in part because of the effort put into them. Blog posts covering scholarly research that are written by humans and have real content (rather than advertisement or spam) take a great deal more time and thought than microblogging, bookmarking, or downloading, even if the latter activities are not automated."

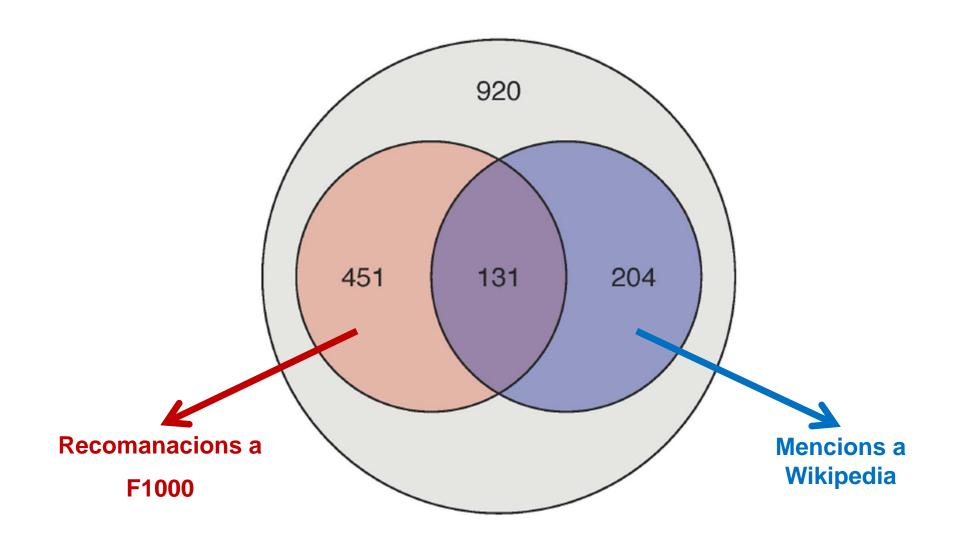
Shema, H, Bar-Ilan, J & Thelwall, M. (2014). Do blog citations correlate with a higher number of future citations? Research blogs as a potential source for alternative metrics. *Journal of the Association for Information Science and Technology*, in press.

Altmetrics vs Citacions

- 1) Cobertura: "In 2012 around 24% of all the publications with a DOI presented some altmetric scores, while in the same year 26% of the publications had already received at least one citation in the same year [...] However, over the next months and years we can expect an increase in the number of citations for 2012 publications, while the number of publications from 2012 with altmetrics scores is not expected to increase significantly over time."
- **2)** Correlació: "The analysis of the relationships between altmetrics and citations confirms previous claims of positive correlations but relatively weak, thus supporting the idea that altmetrics do not reflect the same concept of impact as citations [...] Bibliometric indicators correlate the most among them and the same holds for altmetric indicators [...] It is remarkable that altmetrics coming from mentions in blogs and news outlets have a relatively stronger correlation with citations compared to the other altmetrics measures."

718.315 articles indexats a WoS amb DOI

Costas, R; Zahedi, Z & Wouters, P. (2014). *Do 'altmetrics' correlate with citations? Extensive comparison of altmetric indicators with citations from a multidisciplinary perspective*. CWTS Working Paper Series. http://arxiv.org/abs/1401.4321.



920 articles publicats a *PLOS Biology* (revista PLOS amb més mencions a les dues fonts) fins al 20 de maig de 2013

Fenner, M. (2013). What can article-level metrics do for you? *PLOS Biology,* 11 (10), e1001687

No una... sinó moltes altmetrics







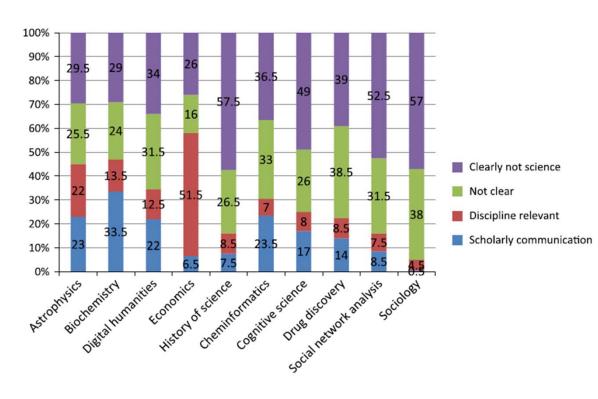








Com usen Twitter els investigadors?



Tweets de 447 investigadors

"When analyzing the scholarly communication tweets only a fraction of all tweets were like citations in the sense of linking to an academic article. The results suggest that Twitter is for many researchers important tool in scholarly communication. but it is frequently used to share information about scientific publications. It is perhaps more likely that Twitter is used for popularizing science, as many links investigated in this research lead to science blogs and articles in news sites and popular science magazines, that in their turn link to scientific content."

Holmberg, K; Thelwall, M (2014). Disciplinary differences in Twitter scholarly communication. *Scientometrics*, in press.

Pros...

- Diversitat resultats de recerca (datasets, presentacions, divulgació...)
- Noves dimensions d'impacte (social, professional, educatiu)
- Immediatesa de dades
- Avaluació d'ítems individuals

... i contres

- Cobertura: esbiaixada
- Manca de consistència, necessitat d'estandarditzar indicadors i eines
- Dificultat d'interpretació
- Manipulació

Què queda pendent?

Characteristics	Tools/Sources														
	F1000	Peer Evaluation	Paper Critic	GC	GS	MAS	Arnet- miner	Mendeley	CiteULike	Zotero	Reader- meter	Total- impact	Science- Card	Plos- ONE	SURE2
Metrics for papers	Yes (d)	Yes (a)(d)	Yes (a)(d)	Yes	Yes	Yes	Yes	Yes (a)	Yes (a)(e)	No (c)	Yes	Yes (a)	Yes (a)	Yes	Yes (f)
Metrics for individual	i au-	ivan	Lau	V	l au c	i v a	V //	i v	i.u.	i	i v		i	No	Yes (f)
Metrics for institution	onstr	uir un	marc	con	cept	ual:	aue i	mesure	en les	altm	etrics	s? Oi	ıines İ	No	Yes
Metrics for countries					•		•							No	Yes (a)
Metrics for Journals	dimensions de la comunicació científica representen? Com es relacionen														No
Data download & management	els diferents indicadors entre si? Es complementen alguns d'ells? Poden														Yes (b)
API possibilities	, s														Yes
	alguns ser substituïts per d'altres? Quin poder predictiu tenen? Existeixen													Yes	No
Altmetrics - Readers	iferèr	ncies pe	r disci	nlines	:7									Yes	No
Altmetrics - U Bookmarks/Tags	iicici	icics pc	i disci	pillics	,									Yes	No
Altmetrics - Commer														Yes	No
Perfeccionar la metodologia: millorar la recollida i estandardització de les														Yes	Yes
Altmetrics - Others					_									Yes	No
Peer review/Discussion Discussion	ades	de ma	nera d	que s	iguin	Suti	cientr	nent e	estable	s cor	n per	cons	struir	Yes	No
Coverage - Transparency	ndicac	dors.												Yes	Yes
Coverage - Multidisciplinary		20.0.												Yes (b)	Yes
Free access											ā			Yes	Yes
Registration necessal Propietats d'aquests nous indicadors: consistència i aplicacions.														No	No
Searching/Filtering options	-		_							•				No	Yes
Normalisation option														No	No
Data standardisation/ cleansing	No	No	No	No	No	Yes (b)	Yes (b)	No	No	No	No	No	Yes	No	Yes
Easy/friendly/intuitive interface	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes (b)	No	Yes	Yes

Wouters, P.; Costas, R. (2012). Users, narcissism and control – tracking the impact of scholarly publications in the 21st century.

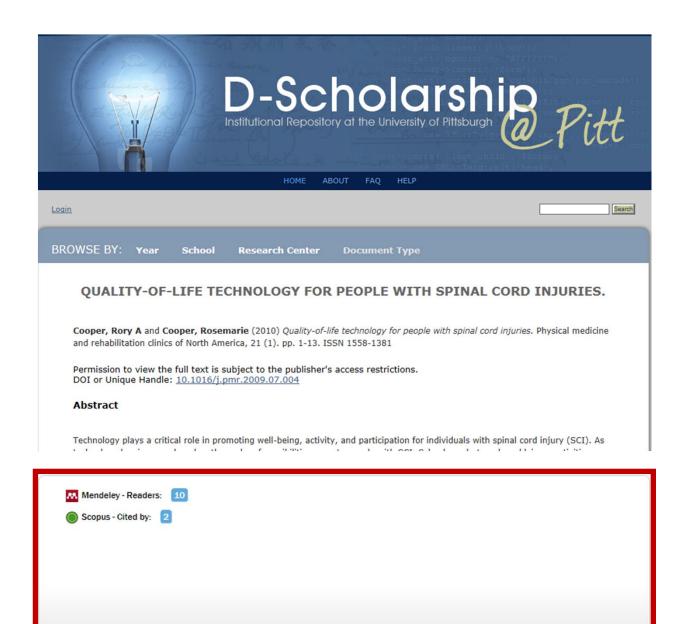
http://www.surf.nl/nl/publicaties/Documents/Users%20narcissism%20and%20control.pdf

Altmetrics per a bibliotecaris

• Les *altmetrics* ja apareixen a molts productes subscrits per la biblioteca

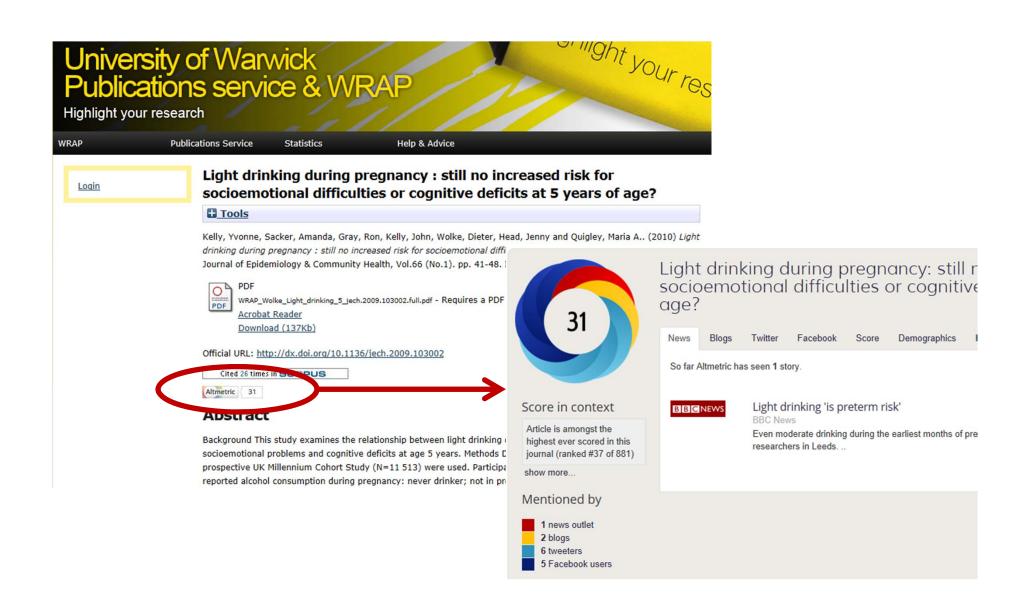
• Integració en repositoris institucionals

 Font d'informació sobre els hàbits i necessitats dels usuaris



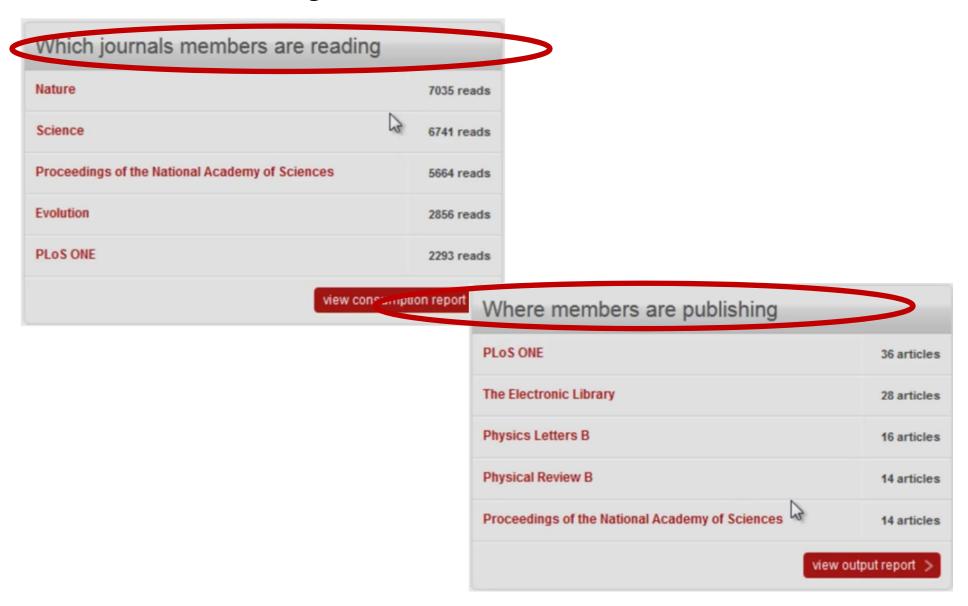
http://d-scholarship.pitt.edu/15634/

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http://wrap.warwick.ac.uk/3695/

Mendeley Institutional Edition





Exemple de registre a BibSonomy

Moltes gràcies per la seva atenció!

Preguntes?