

ALTERNATIVE METRICS TO DRIVE RESEARCH PRIORITIES: USEFUL OR NOT?

EAHIL2021 Virtual Workshop, "Crossing the Bridge: New Challenges, New Opportunities"

Marmara University, 8th of July 2021

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AGENDA

- Introductions and presentations
- Presentation by Valeria and Alicia about the development of metrics
- Presentation by Luigia and Annalisa about the use of metrics to help improvement in research and decrease of research waste
- Questions and comments. Group working
- Wrap-up of the session

FROM TRADITIONAL METRICS TO ALTMETRICS

Valeria Scotti, PhD

INTRODUCTION

- The problem of measuring the scientific and social impact of research publications has been of extreme interest to scientists and scholars since the inception of modern science, but it has always been hard to answer..



- Evaluating the importance of an article before reading it is crucial for researchers that lack of time to read all relevant papers.

METHODOLOGY

There are two main methodologies for the evaluation of academic research output quality:

- **Qualitative:** Peer review
- **Quantitative:** Metrics
- ***Why is measuring research quality important?***

PEER REVIEW

- A group of expert scholars, working in the same scientific area (**peers**) that evaluate submitted research works and academics' performance, and assess scientific journals in a particular field.
- Peer review can be used as an objective and reliable evaluation measure and is seen by many as the “**gold standard**”
- However:
 - It is (extremely) time consuming as well as expensive;
 - Experts can genuinely disagree (referees);
 - It is surrounded with mysticism and may create an elite club which can be difficult to enter.

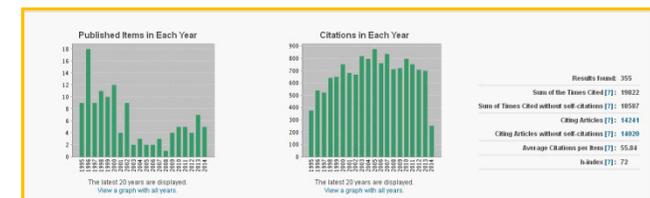
BIBLIOMETRICS

Bibliometrics is the application of **quantitative analysis** and statistics to publications such as journal articles and their accompanying citation counts.

The main tool of bibliometrics is citation analysis:

- ✓ Applies to journals (**impact factor**)
- ✓ individuals (**h-index**)
- ✓ and articles (**citation impact**)

Journal Impact Factor ⓘ	
Cites in 2011 to items published in: 2010 =641	Number of items published in: 2010 =106
2009 =648	2009 =106
Sum: 1289	Sum: 212
Calculation: $\frac{\text{Cites to recent items}}{\text{Number of recent items}} = \frac{1289}{212} = 6.080$	



BIBLIOMETRICS TOOLS

- **Impact Factor** was invented in 1955 by Eugene Garfield founder of the Institute for Scientific Information (ISI),
- The IF is only known by consulting the **Journal Citation Reports** on Web of Science database.
- Journal impact factor is a measurement applied only **to journals**

H-Index

Jorge Hirsch introduced in 2005 the **H-Index**;

- H-index measures both the productivity and impact of the published work;
- Number of an **author's papers** that have been cited at least h times by other publications;
- H-index is known by consulting Web of Science or Scopus, or free tools like Google Scholar and Publish or Perish

TRADITIONAL INDICATORS LIMITS

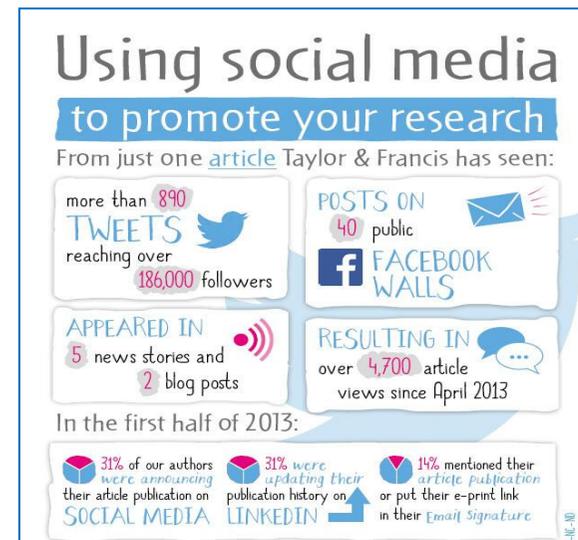
- Not all journals are indexed in the Journals Citation Reports, a new edition of which is updated once a year;
- The inability to compare journals belong to different subject as subject fields citations varies widely based on discipline ;
- The auto-citations (an author who quotes himself) and the real "exchange of courtesies" ;
- Peer Review: it is time consuming and expensive;
- Young researchers are disadvantaged since they have published less articles than senior researchers;

NEW TOOLS

- The main scientific communication is conditioned by web-based tools, particularly by e-only journals.
- The development of tools even more Web 2.0 oriented has profoundly changed the scientific communication process



http://en.wikipedia.org/wiki/File:Web_2.0_Map.svg



- *New tools emerge..like Social Media*

ALTMETRICS

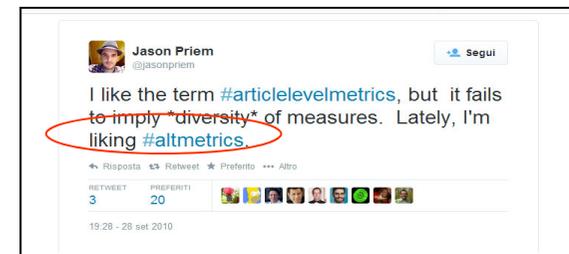
- Altmetrics or Alternative Metrics combines the traditional Bibliometrics tool with the use of the web
- In this context, many web tools are often referred as 'social media' due to their role in supporting communication and building communities



ALTMETRICS TERMS

- The term *Altmetrics* was proposed for the first time in 2010 with a 'Tweet' posted by Jason Priem.

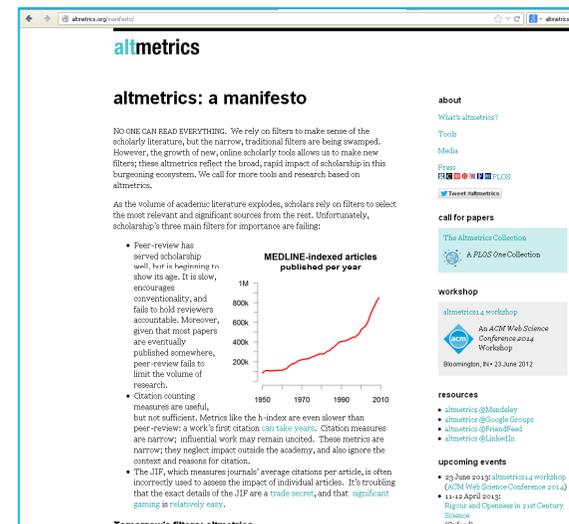
(<https://twitter.com/jasonpriem/status/25844968813>)



NO ONE CAN READ EVERYTHING...

altmetrics is the creation and study of new metrics based on the Social Web for analyzing, and informing scholarship.

<http://altmetrics.org/manifesto/>



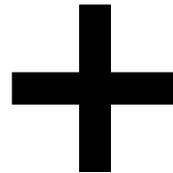
WHAT ARE ALTMETRICS?

- Attention to research outputs in non-traditional sources, e.g. policy documents, news, blogs and social media
- *Indicators* of research impact
- Help understand how research is being received and used
- Complementary to traditional citation-based analysis

ACADEMIC ATTENTION

Journal Impact Factor
Citation counts
H-index
Number of publications

Traditional bibliometrics



BROADER ATTENTION

Mentions in news reports
References in policy
Mentions in social media
Wikipedia citations
Reference manager
readers... etc.

Alternative metrics
“altmetrics”

RESPONSIBLE USE OF METRICS

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Twitter: @fagomsan

THE MOVEMENT FOR RESPONSIBLE USE OF METRICS



San Francisco Declaration on Research Assessment
<http://am.ascb.org/dora/>

16/12/2012



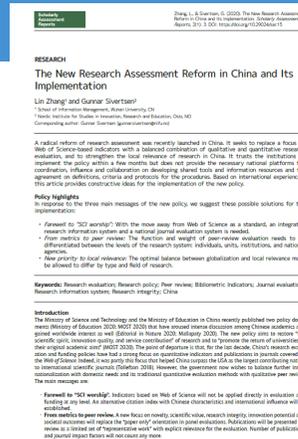
Bibliometrics: The Leiden Manifesto for research metrics. Hicks, D., et al. (2015) *Nature*. 520, 429-31. DOI: [10.1038/520429a](https://doi.org/10.1038/520429a)

04/2015



The Metric Tide: Role of Metrics in Research Assessment and Management. Wilsdon, J., et al. (2015). DOI: [10.13140/RG.2.1.4929.1363](https://doi.org/10.13140/RG.2.1.4929.1363)

07/2015



The New Research Assessment Reform in China and Its Implementation. Zhang, L., & Sivertsen, G. (2020). *Scholarly Assessment Reports*, 2(1): 3. DOI: <https://doi.org/10.2902/4/sar.15>

12/05/2020

SAN FRANCISCO DECLARATION ON RESEARCH ASSESSMENT



Declaration On Research Assessment

sfdora.org
@DORAssessment

Signed by >1,975 organizations and >16,000 researchers

Supporting organizations



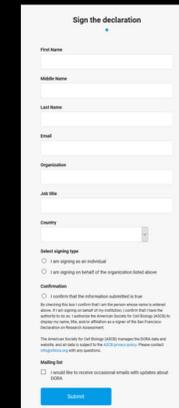
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What can you do?

1. Sign DORA
2. Ask your institution/employer to review assessment practices
3. Use our collection of good practices to implement change
4. Tell us about how you improved assessment so we can share your ideas with others

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@DORAssessment #AssessingResearch



Resource Library

A collection of materials to facilitate the development of responsible research and researcher assessment policies and practices.

Search and Filter

Keywords

Per page

1 2 3

Resource type

- Advocacy resources (8)
- Case studies (11)
- Good practices (34)
- Initiatives (9)
- Journal articles (13)
- Policies and guidance (12)
- Position papers (15)
- Tools (13)
- DORA-produced (19)

Intended audience

- Funders (33)
- Journals and publishers (4)
- Professional societies (11)
- Research institutes (43)



GOOD PRACTICES POSITION PAPERS FOR: RESEARCH INSTITUTES

Academia In Motion: Recognition & Rewards at Leiden University

In support of the Dutch Recognition and Rewards Programme, Leiden University published a position paper "Academia in Motion: Recognition & Rewards at Leiden University" in 2021. In 2020, Leiden University's Executive Board established a Recognition Rewards steering committee made up of staff from a variety of positions and roles. The goals of the Recognition...



JOURNAL ARTICLES FOR: RESEARCH INSTITUTES

Academic criteria for promotion and tenure in biomedical sciences faculties: cross sectional analysis of international sample of universities

To improve research assessment practices in academic institutions, it is critical to understand the institutional metrics used to assess research quality for promotion. This article examines traditional and non-traditional criteria used to assess biomedical scientists for promotion and tenure in 92 randomly selected international institutions. The study found that the evaluation scientists emphasizes traditional...



GOOD PRACTICES POSITION PAPERS FOR: RESEARCH INSTITUTES

Academic Incentives and Research Impact: Developing

RETHINKING RESEARCH ASSESSMENT
SPACE TO EVOLVE ACADEMIC ASSESSMENT
 A RUBRIC FOR ANALYZING INSTITUTIONAL PROGRESS INDICATORS AND CONDITIONS FOR SUCCESS

Research and researcher assessment is a systems challenge, suggesting that institutions that prioritize developing infrastructures to support their efforts may be better positioned to achieve their goals than those focused only on individual solutions.

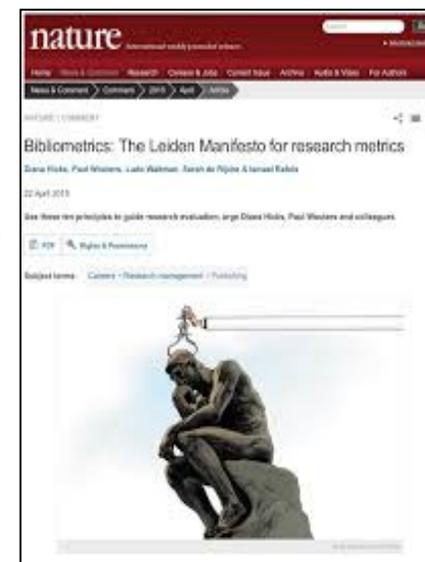
	FROM FOUNDATION... ALIGNMENT TO VALUES AND GOALS	TO EXPANSION... INCREASED FACILITY AND QUALITY DEVELOPMENT	TO SCALING ACCELERATED UPGRADE AND CONTINUOUS IMPROVEMENT
STANDARDS FOR SCHOLARSHIP	Standards are explicitly designed and articulated to align with institutional values and values, with an increasing equity and support for individual and organizational, societal goals. New standards for scholarly work consider the broader research, teaching, and service goals of the institution. Specific indicators and targets of support with regard to scholarly an articulated and shared with disciplines and cross-institutional committees.	Scholarship is assessed using diverse indicators (e.g., societal impact, equity) as well as a broad body of work in individual articles, and forms of scholarship (e.g., journal articles, preprints). Indicators of quality recognize non-individual activities and contributions from across various disciplines. New definitions of "scholarship" are designed across the full range of institutional goals.	Faculty have the ability to customize assessment practices to reflect their research interests and goals. New research, activities, and criteria for evaluating the quality and impact of scholarship are recognized and the integrated processes of new assessment practices.
PROCESS MECHANISMS AND POLICIES	Meaningful and appropriately rigorous qualitative indicators for academic assessment, such as metrics CI, are given due weight. Systems and processes are explicit, consistently implemented, and clearly articulated. Use of new assessment mechanisms extend beyond traditional metrics, covering, and attention to increase research and researcher diversity.	Training on the goals and procedures of assessment practices and practices are accessible and continuously maintained. Institutions design processes that increase the transparency of committee members to effectively integrate assessment practices, such as additional factors in form. Institutions have developed new leadership in efforts to ensure faculty capacity for new assessment practices and principles.	Assessment mechanisms can be flexibly applied and adapted to accommodate diverse disciplines. Mechanisms to support practices are identified and address institutional goals. New processes and practices are seamlessly integrated and widely adopted.
ACCOUNTABILITY	The goals, principles, and practices of academic assessment and metrics, promotion and tenure (P&T) criteria are transparent and clearly articulated, and are given due weight. Institutions have clearly defined expectations for alignment to academic assessment practices. Examples of "what good looks like" are collected and used to ensure they measure target outcomes and behaviors.	Research evaluations self-report adherence to academic assessment principles and practices. Senior leaders and committee members actively engage equitable assessment practices during each formal and informal assessment process. Institutions model equitable level consistency, with an emphasis that good work receives high and support signed-upon principles and practices.	Individuals actively contribute to the development and review of new practices and principles. Equitable and consistent leadership and product research activities to include new or re-evaluated systems. Faculty serve as "ambassadors" for new academic assessment practices, such as new review or internal committee members.
CULTURE WITHIN INSTITUTIONS	More diverse types of individuals are promoted to both advising and participating in career advancement processes, such as including early career researchers on P&T committees. Representation of non-traditional pathways means an increased equity goals for both new hires and researcher retention. Career growth and mentoring systems are transparently designed to provide ongoing support for underrepresented hires.	Adaptation of new assessment mechanisms to support and align with by departmental and institutional leaders. All individuals actively contribute to building more equitable practices—both formal and informal. New research assessment norms are increasingly adopted as a default by faculty administration, and applicants.	The new metrics and indicators of research and practice points to reflect new assessment practices and allow them to be used in a more transparent and consistent way. Both formal and informal assessment practices are transparently integrated in all pathways in assessment practices and activities. There is a balance of effectiveness and efficiency.
EVALUATIVE AND FEEDBACK	Goals and success criteria are transparently articulated and consistently implemented. Goals and success criteria are transparently articulated and consistently implemented. Use of leading indicators to increase diversity and equity in research and teaching. Use of leading indicators to increase diversity and equity in research and teaching. Goals and success criteria are transparently articulated and consistently implemented.	Quantitative and qualitative data from interventions are reported in a standardized way. Mechanisms to support both quantitative and qualitative feedback are explicitly designed and implemented in assessment practices from the start. Best practices and examples of measurement and/or gathering feedback are codified and shared across disciplines within the institution.	Self-reflection and innovation that don't address desired outcomes, are considered learning opportunities, not failures. Outcomes and data are collected and reviewed to ensure high standards of evaluation quality and equity in assessment practices and activities. Feedback and other indicators are used and/or combined to aggregate to identify and investigate areas for improvement in the assessment practices.

<https://sfdora.org/resource-library/>

THE LEIDEN MANIFESTO

10 principles to guide research evaluation:

1. Quantitative evaluation should support qualitative, expert assessment.
2. Indicators used to evaluate performance should relate clearly to the program goals.
3. Protect excellence in locally relevant research.
4. Keep data collection and analytical processes open, transparent and simple.
5. Allow those evaluated to verify data and analysis.
6. Consider field differences in publication and citation practices
7. Base assessment of individual researchers on a qualitative judgement of their portfolio.
8. Avoid misplaced concreteness and false precision.
9. Recognize the systemic effect of the assessment and indicators.
10. Scrutinize indicators regularly and update them.

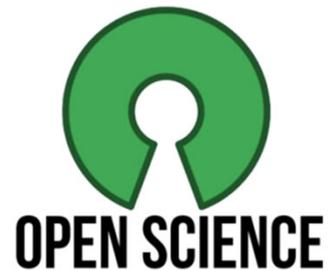


“China now moves from a strong focus on Web of Science-based indicators towards a more balanced combination of qualitative and quantitative research evaluation”

Three main measures to reach these aims:

- *Farewell to “SCI worship”.*
An alternative citation index with Chinese characteristics and international influence will be established.
- *From metrics to peer review.*
A new focus on novelty, scientific value, research integrity, innovation potential and societal outcomes will replace the “paper only” orientation in panel evaluations. Number of publications and journal impact factors will not count any more.
- *Local relevance.*
Publications in high-quality Chinese journals will be encouraged, and the development of such journals will be supported.

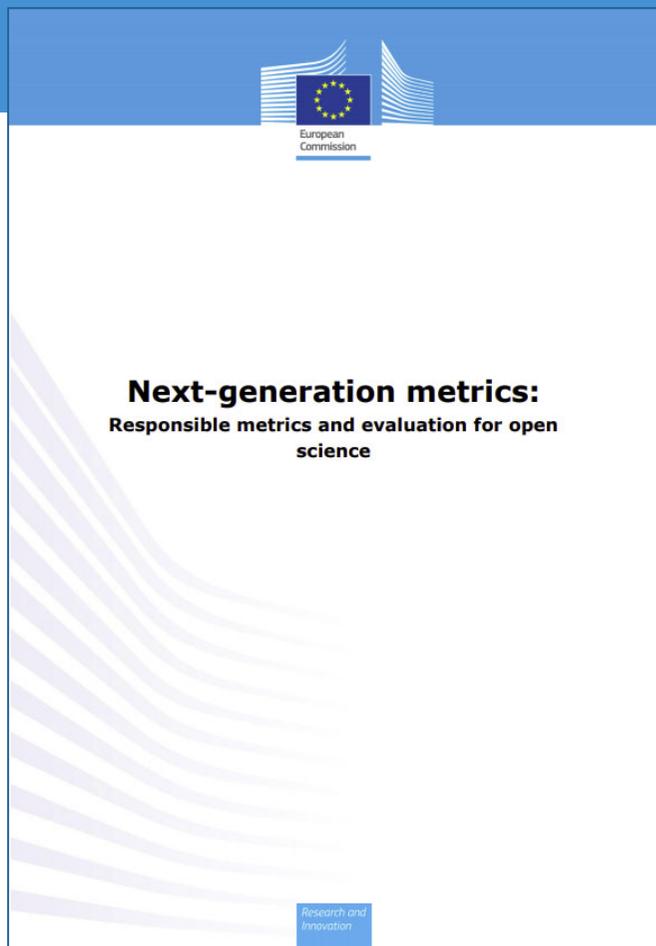
CHANGE OF PARADIGM



- * JOURNAL ARTICLES
- * JOURNAL BASED METRICS (JIF, quartiles and deciles)
- * CITATIONS and related (h index)

- * More than journal articles: PREPRINTS, REPORTS, DATASETS
 - * ARTICLE LEVEL METRICS AND ALTERNATIVE METRICS
- OPEN SCIENCE





<https://ec.europa.eu/research/openscience/pdf/report.pdf>

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New indicators must be developed to complement the conventional indicators for research quality and impact, so as to do justice to open science practices.

#	NAME	DESCRIPTION/DEFINITION	SOURCE	CATEGORY	RATIONALE / DISCUSSION
(OPEN) SCIENCE					
1	Open access publications	Share of publications published open access	SCOPUS, Web of Science, CWTS Leiden Ranking (WoS based), Unsub (formerly Unpaywall)	Output	This indicator is to check the state of institutions on their way towards 100% open access (= available and free). The indicator is needed in a 5-10 year perspective, after that we are hopefully close to 100%.
2	Top 10% most cited publications	Share of the publications that, compared to all other publications in the same field and in the same year,	CWTS Leiden Ranking (WoS based)	Output; Impact	This is a good indicator for measuring impact and 'quality' of an entity. It can also be used for specific research
3	Citation impact	Avera norm; author biblior ranke			
4	Interdisciplinary publications	Share public Recor profes			
5	Publications with non-academic sector	Share from e.g. p			

#	NAME	DESCRIPTION/DEFINITION	SOURCE	CATEGORY	RATIONALE / DISCUSSION
		societal organisations, non-profit research institutes, other non-profit organisations like NGO's, but also industry and for-profit organisations. This has to be a university-based calculation, since no-one seems to provide these data at present.			metric has a much wider definition. We should not strive for 100% collaboration with non-academic partners. Publications with academic partners alone are also needed.
6	International PhD students and postdocs	Share of the PhD students and postdocs which are of foreign nationality.	University	Input; Process	International influence enhances the openness of the university as a whole and stimulates collaboration.
7	Repository traffic	Number of searches in the institutional repository	University	Process; Impact	To spread information about publications, as well as full texts as wide as possible.
8	Open and FAIR data sets	Share of the publications that have a research data set, for which the data set is 'open and FAIR	University	Process; Output; Impact	To make data used and reused, thus improving possibilities to reproduce results, but also to build on old data. 100% FAIR data is desired, but not 100% open – some data should perhaps be sold. The indicator is needed in a 5-10 year

(OPEN) INNOVATION					
1	Granted patents	Number of patents granted based on work from the university.	University	Output; Impact	Patents are important to protect research ideas for a limited time, to make it possible to explore the idea further and/or to exploit it.
2	Incubator supported projects	Number of projects that are assisted by incubator facilities linked to the university, i.e. helping the initiators realise their ideas by advice, funding, networking or legal support.	University	Process; Impact	Incubator facilities are important parts of the entrepreneurial ecosystem. It also opens up the possibilities for turning ideas into profitable ventures.
3	Surviving spin-off companies	Number of spin-off companies, existing for at least three years, stemming from the university, i.e. companies started either by students or employees (or ex.) with or without IP, or started by others based on university IP.	University	Output; Impact	Spin-off companies illustrate the innovative willingness, strength and ability of the university
4	Licences	Number of licences, based on work from the university, sold by the university.	University	Output; Impact	Licenses can be important parts of the process to commercialise research ideas. It is a real test of the practical applicability of research.
5	Open source software	Share of software (either in size or in number of packages etc.), created by the university, that is free to use and/or modify.	University	Output; Impact	Open Source Software is a way to share knowledge with the community and also to make an impact for the university. We should not strive for 100%, some software might be better to commercialise.
6	Industrial collaboration	Share of research income funding industrial collaboration, i.e. coming from industry or intended for industry collaboration.	University	Input; Process; Output; Impact	Industrial collaboration shows that our research is creating value that is worth financing by different kinds of funding bodies. We should not strive for 100%, as independence is important.
7	Industrial co-publication	Share of publications co-written with at least one author coming from industry. Recommended, but not necessary, to use bibliometric data from a professional supplier or ranker.	Scopus, WoS, University repositories, CWTS Leiden Ranking (WoS based) or UMR (WoS based) or SoVal (Scopus based)	Process; Output; Impact	Co-publishing with industry reflects close co-operation between universities and industry. We should not strive for 100%, as e.g. fundamental research is important too.
8	Publications cited in patents	Share of all publications at the university that are cited in at least one international patent. Recommended to use bibliometric data from a professional supplier or ranker.	UMR "Publications cited in Patents" (WoS based)	Output; Impact	Citation of publications in patents indicates that research plays an important role for patents.
9	Industry-employed PhD students	Share of doctoral students that are industry-employed.	University	Process; Impact	This reflects the attractiveness, to government, industry and university, of having industry-employed PhD students.
10	Entrepreneurial skills	Share of bachelor and master graduates with entrepreneurial skills, i.e. having acquired entrepreneurial abilities through taking courses, participating in projects or equivalent, i.e. through a combination of education and research, equivalent to at least 30 ECTS in total.	University	Process; Output; Impact	To shape a creative and entrepreneurial mindset for students, is a base for future innovation.

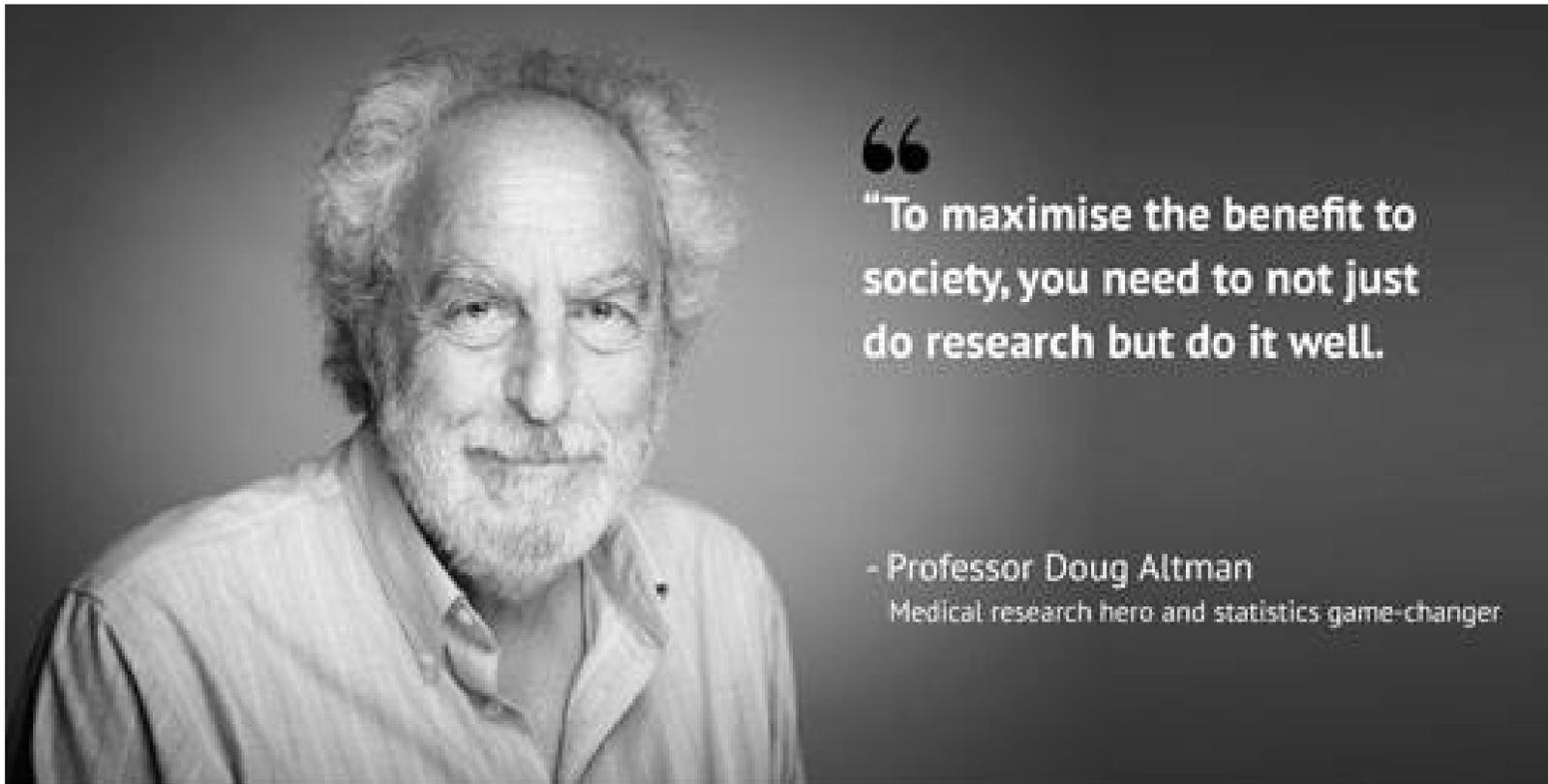
Ingrid Bauer, David Bohmert, Alexandra Czernecka, Thomas Eichenberger, Juan Garbajosa, Horia Iovu, ... Kurt De Wit. (2020, June 10). Next Generation Metrics. Zenodo.

<http://doi.org/10.5281/zenodo.3874801>

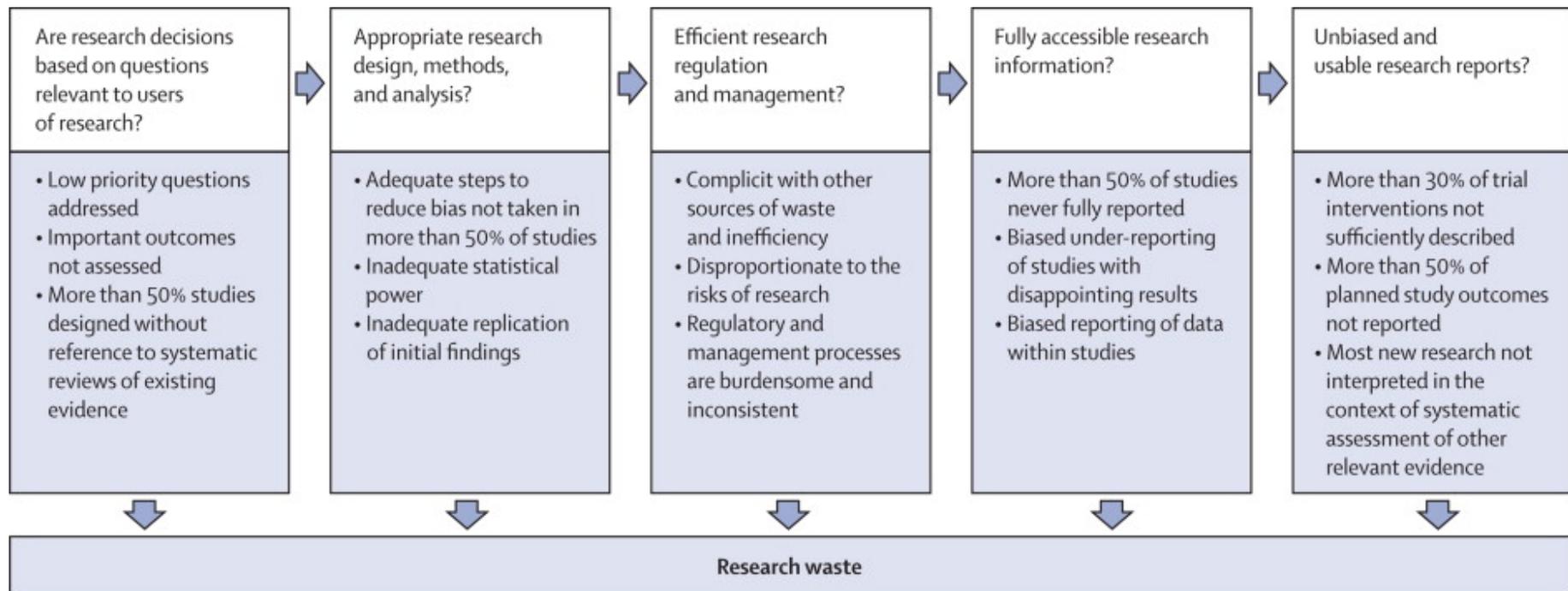
THE USE OF METRICS TO HELP IMPROVEMENT IN RESEARCH AND DECREASE OF RESEARCH WASTE

Annalisa De Silvestri
Luigia Scudeller

DOUG ALTMAN, 12 JULY 1948 – 3 JUNE 2018



AVOIDABLE WASTE IN THE PRODUCTION AND REPORTING OF RESEARCH EVIDENCE



THE LANCET

Volume 383, Issue 9912, 11–17 January 2014, Pages 176–185

How should medical science change?

Sabine Kleinert, Richard Horton
The Lancet, London, NW1 7BY, UK

Published Online
January 8, 2014
[http://dx.doi.org/10.1016/S0140-6736\(13\)62678-1](http://dx.doi.org/10.1016/S0140-6736(13)62678-1)

I Chalmers, MB Bracken, B Djulbegovic *et al.*

How to increase value and reduce waste when research priorities are set

Lancet (2014) published online Jan 8. [http://dx.doi.org/10.1016/S0140-6736\(13\)62229-1](http://dx.doi.org/10.1016/S0140-6736(13)62229-1)

JPA Ioannidis, S Greenland, MA Hlatky *et al.*

Increasing value and reducing waste in research design, conduct, and analysis

Lancet (2014) published online Jan 8. [http://dx.doi.org/10.1016/S0140-6736\(13\)62227-8](http://dx.doi.org/10.1016/S0140-6736(13)62227-8)

R Al-Shahi Salman, E Beller, J Kagan *et al.*

Increasing value and reducing waste in biomedical research regulation and management

Lancet (2014) published online Jan 8. [http://dx.doi.org/10.1016/S0140-6736\(13\)62297-7](http://dx.doi.org/10.1016/S0140-6736(13)62297-7)

A-W Chan, F Song, A Vickers *et al.*

Increasing value and reducing waste: addressing inaccessible research

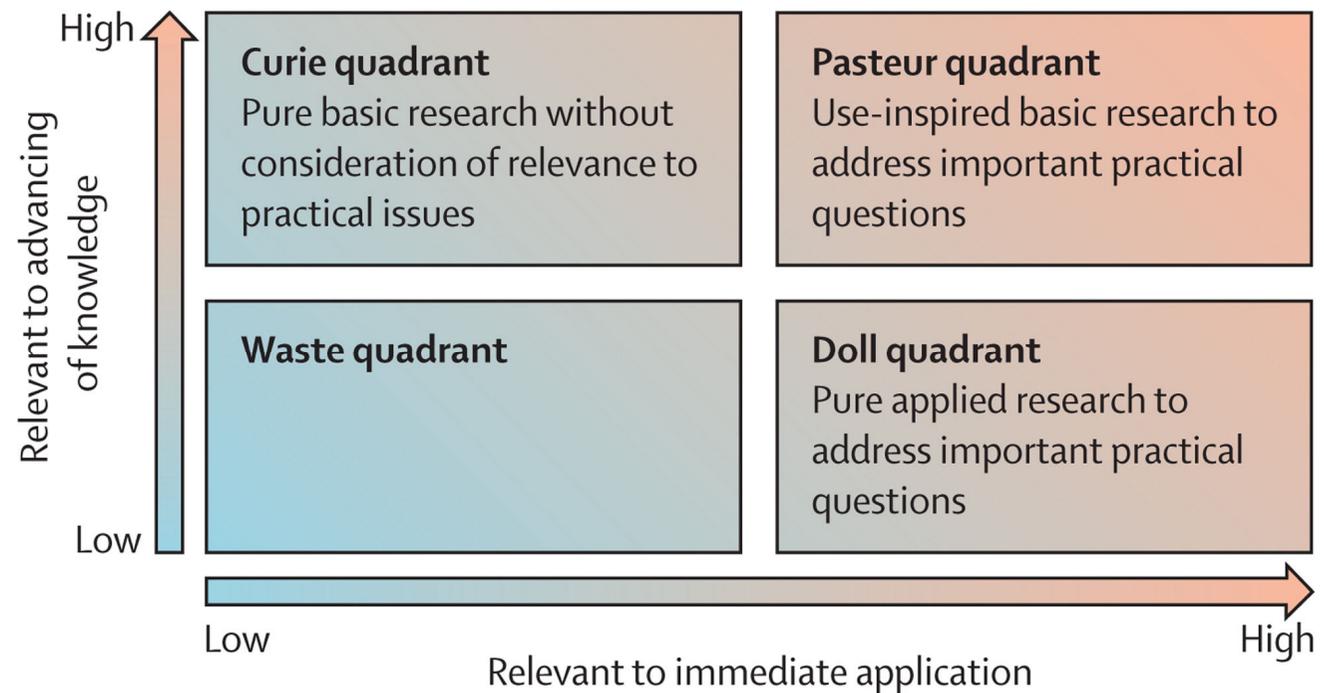
Lancet (2014) published online Jan 8. [http://dx.doi.org/10.1016/S0140-6736\(13\)62296-5](http://dx.doi.org/10.1016/S0140-6736(13)62296-5)

P Glasziou, DG Altman, P Bossuyt *et al.*

Reducing waste from incomplete or unusable reports of biomedical research

Lancet (2014) published online Jan 8. [http://dx.doi.org/10.1016/S0140-6736\(13\)62228-X](http://dx.doi.org/10.1016/S0140-6736(13)62228-X)

CLASSIFICATION OF DIFFERENT CATEGORIES OF RESEARCH



I Chalmers, MB Bracken, B Djulbegovic *et al.*

How to increase value and reduce waste when research priorities are set

Lancet (2014) published online Jan 8. [http://dx.doi.org/10.1016/S0140-6736\(13\)62229-1](http://dx.doi.org/10.1016/S0140-6736(13)62229-1)

Development of so-called needs-led research agendas is dependent on the expertise of individuals who are well placed to use the findings as well as that of researchers. In some exercises in research priority setting, specific attention has been paid to interpersonal communication, with consideration of aspects of collaborative working, such as mutual respect and mutual learning.⁴⁰ Discussions about research prioritisation can benefit from the inclusion of someone with the skills to unite different groups, translating between different languages or spheres of expertise, and enabling interactions.⁴¹.

Whichever methods are used to decide what research to support, decision makers should endeavour to avoid wasting resources. They should not ignore the needs of potential users of research evidence or what is already known or being researched.

If researchers do not meet the needs of the users of research, evidence will have less of an effect on clinical and public health practice than it should. The principal users of clinical and epidemiological research are clinicians and the patients who look to them for help.⁵⁰ Both are often frustrated by mismatches between the uncertainties that they wish to see addressed in research and the questions that researchers choose to investigate.³³⁻³⁶ They express concern about clinical trials having little relevance in real-world settings⁵¹ and complain that researchers often do not assess the effects

What might account for mismatches between what researchers do and what potential users of research want? Apart from the effect of commercial, political, and academic interests in decisions about what is researched,⁴ one obvious reason is that users of research evidence are only rarely involved in the setting of research agendas.⁵⁵ As a result, some research questions rated important by patients and clinicians might never occur to researchers.

Recommendations

- 1 More research on research should be done to identify factors associated with successful replication of basic research and translation to application in health care, and how to achieve the most productive ratio of basic to applied research
 - Monitoring—periodic surveys of the distribution of funding for research and analyses of yields from basic research
- 2 Research funders should make information available about how they decide what research to support, and fund investigations of the effects of initiatives to engage potential users of research in research prioritisation
 - Monitoring—periodic surveys of information on research funders' websites about their principles and methods used to decide what research to support
- 3 Research funders and regulators should demand that proposals for additional primary research are justified by systematic reviews showing what is already known, and increase funding for the required syntheses of existing evidence
 - Monitoring—audit proposals for and reports of new primary research
- 4 Research funders and research regulators should strengthen and develop sources of information about research that is in progress, ensure that they are used by researchers, insist on publication of protocols at study inception, and encourage collaboration to reduce waste
 - Monitoring—periodic surveys of progress in publishing protocols and analyses to expose redundant research

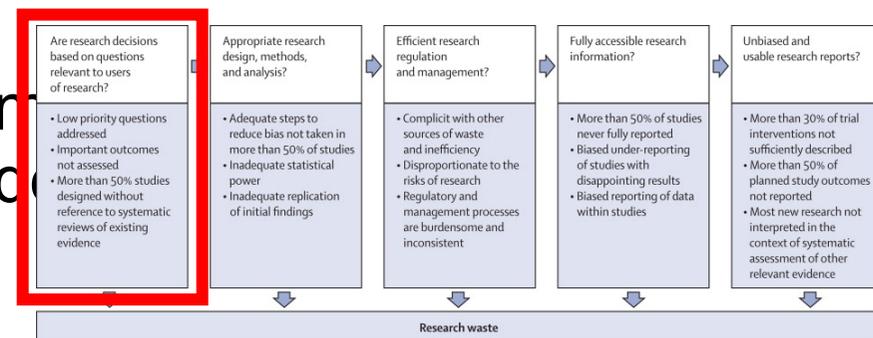
Panel 1: Steps for research groups to improve setting of priorities³¹

- 1 Include objectives in research groups' strategic plans and define the stakeholders whose opinions and priorities will be considered
- 2 Draw on an existing summary of previous priority-setting exercises in the specialty before undertaking own exercise
- 3 Use available methodological reviews of research priority setting as guidance about how to meet priority-setting objectives
- 4 Ensure that the priority-setting team has the necessary data, information about context, and skill set for their exercise
- 5 Pilot, assess, revise, and update the priority-setting exercise at intervals
- 6 Participate in discussions within the community of interest to share findings and experiences

Reproduced from Nasser et al,³¹ by permission of Elsevier.

RATIONALE

- The first source of research waste chain is the limited relevance of many research questions to patients.
- Taking into account their opinion in selecting research priorities should lead to improvement in research and decrease of waste.
- However, “real” patients are rarely involved at this stage
- Alternative metrics claim impact outside the acad



OUR POINT

- Designing research not only based on systematic reviews of the available evidence (Evidence-Based Research), but also on papers and themes more discussed by the public could bring to a less wasteful research.
- **Can alternative metrics be a surrogate to patients' opinion in setting research priorities?**



SOME BACKGROUND

- Not all methods explicitly include research priority setting

The **Council on Health Research for Development** has developed a categorisation of different methods of Research Priority setting Methods. However, some key methods for setting priorities like the **James Lind Alliance** approach are missing from the overview. Moreover, different research groups implement the same methods differently in their own context and topic area. In order to help, Cochrane groups to make more informed decisions on how to prioritise their topics, we selected research articles representing different methods used in research priority setting and provided a summary of them.

Cochrane Airways approach to priority setting

Dialogue approach to stakeholder involvement in research priority setting exercises



James Lind Alliance Priority Setting Partnerships

Developing a matrix approach to identify and prioritise research recommendations



Research Priority Setting: a method that incorporates health equity lens and social determinants of health

Child Health and Nutrition Research Initiative (CHNRI) approach to research priority setting

Mapping of multiple criteria for priority setting of health interventions: an aid for decision makers

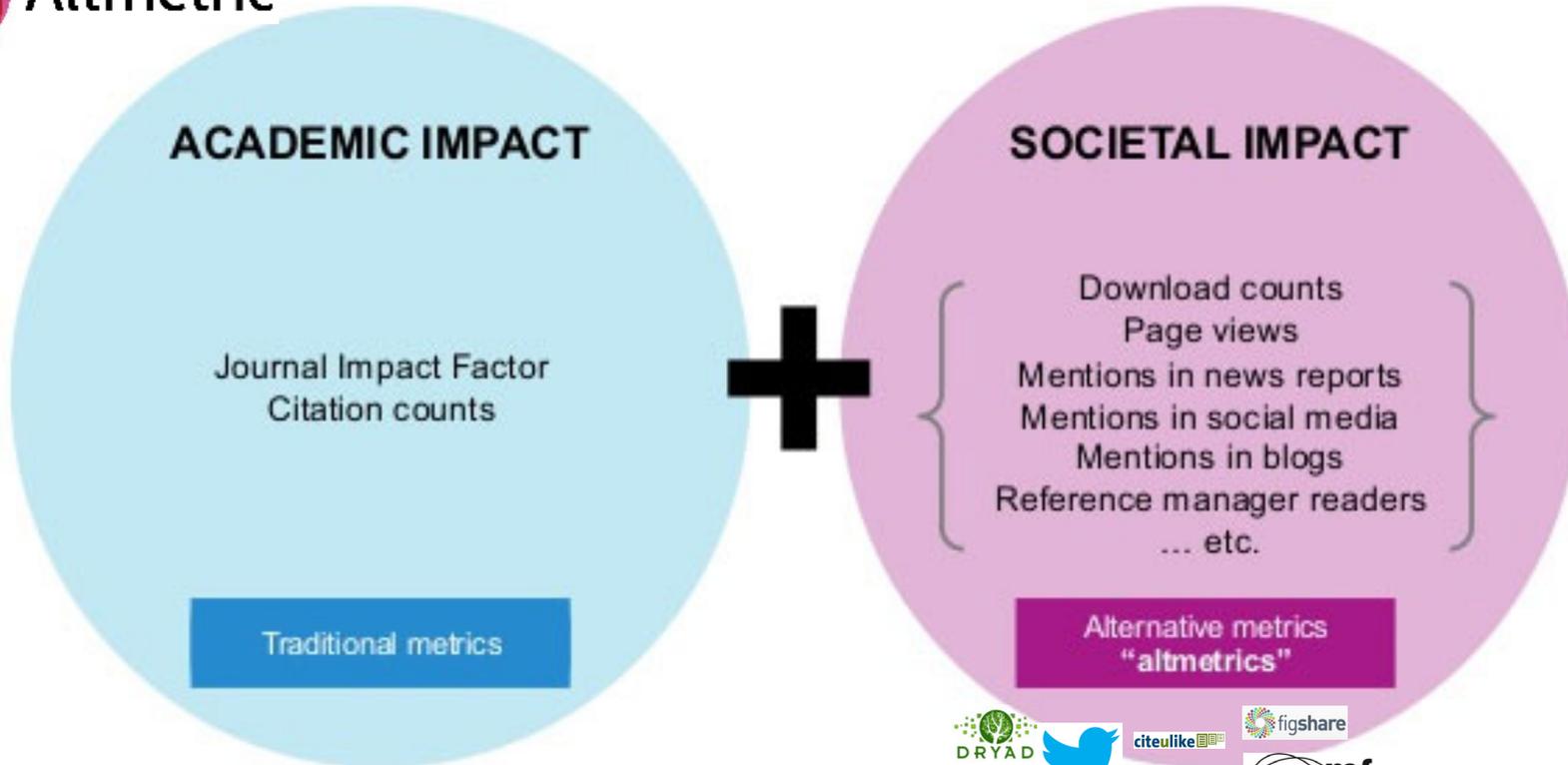
Multiple Criteria Decision Analysis for Health Technology Assessment

Prioritisation processes for updating of systematic reviews, health technology assessments and clinical guidelines



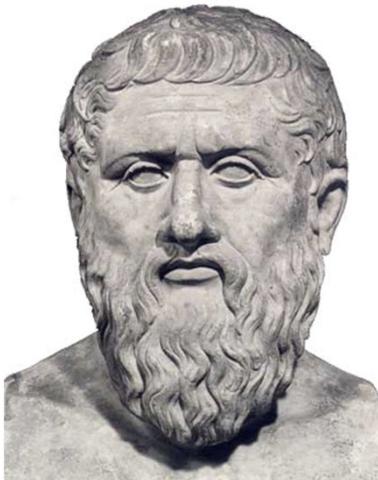
Trusted evidence.
Informed decisions.
Better health.

ALTERNATIVE METRICS



ALTMETRICS FOR SETTING RESEARCH PRIORITIES: YES

- Praeclarum igitur illud Platonis: [...] inquit, [...] “scientia, quae est remota ab iustitia calliditas potius quam sapientia est appellanda”[...]



Cicero, De officiis, Liber primus, 63

ALTMETRICS CAN ANSWER QUESTIONS SUCH AS:

- How many times was it downloaded?
- Who is reading my work? (on Mendeley, bookmarking sites, etc.)
- Was it covered by any news agencies?
- Are other researchers commenting on it?
- How many times was it shared? (on Facebook, Twitter, etc.)
- Which countries are looking at my research?

Do altmetrics point to the broader impact of research? An overview of benefits and disadvantages of altmetrics

Lutz Bornmann*

Journal of Informetrics 8 (2014) 895–903

- **stakeholders**
- **Measure "hidden impact" (impact without citations)**
- **Diversity**
 - Accommodate other products: posters, datasets, blog posts, etc
 - **Provide evidence of impact for CVs, tenure packages, & grant applications**
 - Provide context and meaning for download counts
 - **Allow assessment directly at the article level (rather than the journal)**
- **Speed**
 - Hours or days
- **Openness**
 - **Free access** to this data through Web APIs
 - Complementary to traditional citation-based metrics



Next-generation metrics: Responsible metrics and evaluation for open science

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Expert Group on Indicators

Indicators for Researchers' Engagement with Open Science and its Impacts

Home Open Access European Open Science Cloud Open Science Policy Platform Groups Open Science Monitor

Final Report of the Expert Group on Indicators for Researchers' engagement with open science

The Expert Group on Indicators for Researchers' Engagement with Open Science makes in this final report a proposal on how to move forward with proposing indicators supporting and acknowledging open knowledge practices. The Open Science Policy Platform will prepare an opinion on the report and propose a way to go forward during their mandate which will end by May 2020.

[The report can be downloaded here](#)

Altmetric for Funders

Monitor and report on the online discussion surrounding the work you fund

[Introduction](#) [Using altmetrics](#) [Products and tools](#) [Case studies](#) [Get in touch](#)

Discover the reach of funded research outputs

Altmetric data provides a unique record of how funded research has been received and disseminated. Detailed visualizations within the platform offer summaries of where research has influenced different audiences around the world on social media, in mainstream news, and in public policy. Our intuitive platforms can be used to track the outputs of specific grants or projects, and to identify emerging fields and scholars.



An increasing number of funders are exploring altmetrics for the following purposes:

- To understand the reach of the research they fund;
- To promote press coverage received by funded research; and
- To evaluate grant proposals

Here are some specific examples of how funders have used altmetrics to date.



The Wellcome Trust has been an outspoken supporter of altmetrics to identify “**alternative perspectives on impact**”. They **reportedly** generate altmetrics for benchmarking purposes, to understand the relative influence of the research they fund.



The John Templeton Foundation is a cross-disciplinary grantmaking trust that **uses altmetrics** to identify and amplify the attention its funded research receives. The Foundation also uses altmetrics in the grantmaking process.



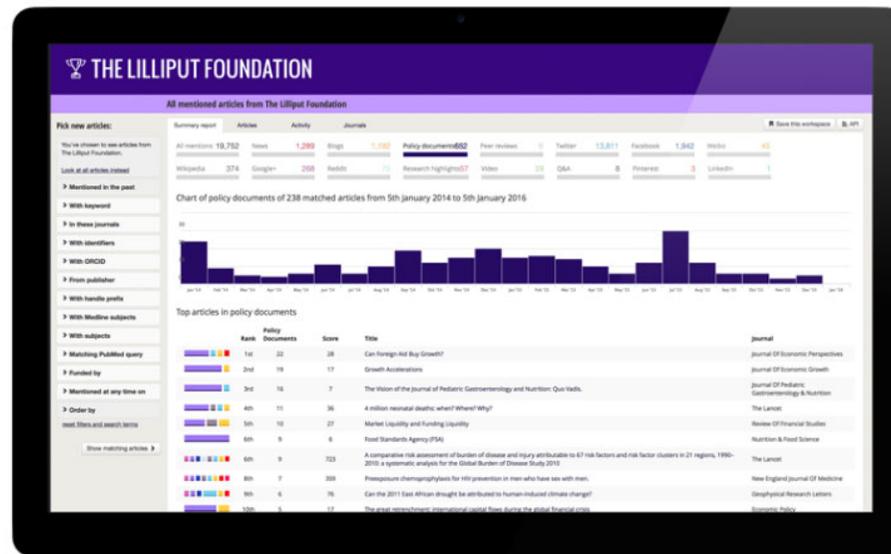
Explorer for Funders

Enhance your reporting and analysis with altmetrics insights

[Introduction](#) [Benefits](#) [UX](#) [Features](#) [Case studies](#) [Pricing and implementation](#) [Get in touch](#)

Uncover the full story of the research you support

At the heart of any research project is the aim to make a difference, to have a real-world impact within society.



Government and funders

More than 200 funders rely on Dimensions to reach their strategic goals

For years, leading funders have been using the robust Dimensions grant database to transform their workflows. Applications have been broad, from evaluating applications and designing funding strategies and programs, to positioning those programs in the international research funding landscape. Now that Dimensions is home to a vast array of connected publications, there are new opportunities; not only for funders, but for national research policy initiatives or assessment exercises.



METRICS TOOLKIT

HELPING YOU NAVIGATE THE RESEARCH METRICS LANDSCAPE

The Metrics Toolkit is a resource for researchers and evaluators that provides guidance for demonstrating and evaluating claims of research impact. With the Toolkit you can quickly understand what a metric means, how it is calculated, and if it's a good match for your impact question.

We developed the Metrics Toolkit to help scholars and evaluators understand and use citations, web metrics, and altmetrics responsibly in the evaluation of research.

The Metrics Toolkit provides evidence-based information about research metrics across disciplines, including how each metric is calculated, where you can find it, and how each should (and should not) be applied. You'll also find examples of how to use metrics in grant applications, CVs, and promotion dossiers

Choose Metrics

Type of impact? ▼

- Type of impact?
- Attention, Reach, or Diffusion
- Cultural Impact
- Disciplinary Influence
- Interdisciplinary Influence

Research Object? ▼

Discipline of Your Work? ▼

[show blocks helper](#)

 Altmetric Attention Score	 Amazon Ratings and Reviews	 Blog Mentions	 Citation Fingerprint and "Highly Cited" Labels	 Citations, Articles
 Citations, Books and Book Chapters	 Citations, Data	 Citations, Software	 Downloads, Articles	 Downloads, Books and Book Chapters
 Downloads, Software	 Facebook: Comments, Likes, and Shares	 Faculty of 1000 Prime, FF, Ratings, Reviews	 Field Normalized Citation Impact	 GitHub: Forks, Collections, Watchers
 Goodreads: Ratings and Reviews	 h-index	 Journal Acceptance Rate	 Journal Impact Factor	 Mendeley Readers
 Monograph Holdings	 Monograph Sales and Ranking	 News Mentions	 Policy Mentions	 Publons Score
 PubPeer Comments	 Relative Citation Ratio	 Twitter Mentions	 Wikipedia Citations	



NISO, the National Information Standards Organization, a non-profit association accredited by the American National Standards Institute ([ANSI](#)), identifies, develops, maintains, and publishes technical standards to manage information in today's continually changing digital environment.

NISO RP-25-2016 Outputs of the NISO Alternative Assessment Metrics Project

Abstract

Altmetrics are increasingly being used and discussed as an expansion of the tools available for measuring the scholarly impact of research in the knowledge environment. The NISO Alternative Assessment Metrics Project was begun in July 2013 with funding from the Alfred P. Sloan Foundation to address several areas of limitations and gaps that hinder the broader adoption of altmetrics. This document, the output from the project, was created by three working groups.

- “Working Group A” extensively studied the altmetrics literature and other communications and discussed in depth various stakeholders' perspectives and requirements for these new evaluation measures.
- “Working Group B” created documents that are intended to help users better understand the landscape of data metrics and thus offer recommendations toward improvements, and to help organizations that wish to use altmetrics effectively communicate about them with each other and with those outside the community.
- “Working Group C” studied and discussed issues of data quality in the altmetrics realm, an essential aspect of evaluation before metrics can be used for research and practical purposes.

Publication type

Recommended Practice

Front Matter

Publication Date: September 14, 2016

ISBN: 978-1-937522-71-1

ALTMETRICS FOR SETTING RESEARCH PRIORITIES: NO

- Volatile nature of social media interest
- Impact can be exaggerated through data manipulation ("gaming")
- Can be difficult to interpret
- Popularity do not necessarily correlate with quality



VOLATILE NATURE OF SOCIAL MEDIA INTEREST



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Public interest in disease with highly active advocacy groups could be overrepresented; more attention on diseases that people don't like to talk about (STD, zoonosis) will be penalized

- Normalization:
 - Citations are normalized to allow cross-field and cross-time comparisons of the impact of papers (Bornmann, Leydesdorff, & Mutz, 2013; Vinkler, 2010).
 - As higher altmetric scores can be expected from newer papers and papers on certain than for older papers and papers on other topics, altmetric data should also be normalized
 - ImpactStory already does so (on percentiles)

IMPACT CAN BE EXAGGERATED THROUGH DATA MANIPULATION ("GAMING")



- It is much easier to manipulate altmetrics than bibliometrics.
 - Regarding traditional metrics, there are reports that journals try to increase their impact with several citations in editorials or that GoogleScholar can create citations with false papers.
- However, there are many more and different opportunities for manipulation with altmetrics that are much easier to carry out.
 - “In particular, since social websites tend to have no quality control and no formal process to link users to offline identities it would be easy to systematically generate high altmetric scores for any given researcher or set of articles”.
 - For example, Twitter mentions can be generated through fake accounts and “robot tweeting”.
- A possible measure to counter manipulation of altmetrics is the cross-calibration of data from different sources in order to reveal suspicious patterns in a source

CAN BE DIFFICULT TO INTERPRET

- Altmetric counts are frequently made available as counts of all relevant mentions on a platform. However, impact assessment should focus on identifying and evaluating processes of interaction between researchers and societal actors given that these interactions are the mechanisms which will ultimately lead to societal impact
- possibility of using network-based approaches for altmetrics to indicate and visualize interactions with scholarly documents among the general public.
 - Wouters have pointed to the importance of networks for showing “the relationships and interactions among the different actors.”
 - Robinson-Garcia argued that by using network analysis or other visualization methods, social media data can be analysed to demonstrate the social interactions between academics and non-academics
- This approach has merit from the perspective of not only telling us how much discussion a research study is getting online; but also who is discussing it.

Wouters, Paul; Zahedi, Zohreh; Costas, Rodrigo (2019). "Social media metrics for new research evaluation". In: Glänzel, Wolfgang; Moed, Henk; Schmoch, Ulrich; Theiwall Mike (eds.). Springer handbook of science and technology indicators. Cham, Switzerland: Springer International Publishing, pp. 687-713. ISBN: 978 3 030 02511 3

Robinson-Garcia, B., van Leeuwen, T. N., and Rafols, I. (2017) 'Using Altmetrics for Contextualised Mapping of Societal Impact: From Hits to Networks', *Science and Public Policy*, 45/6: 815–826.

POPULARITY DO NOT NECESSARILY CORRELATE WITH QUALITY

- In a recent survey among many scientists in the field of nutrition, there was a concern that poor quality research has a considerable chance of getting significant attention online, with the non-academic public selecting and focusing on research based on 'news' value and interest:
 - I think it is good to be able to measure the impact of an article in this way in terms of its interest for the public. The danger lies in how the value is interpreted. In my opinion, just because an article receives a lot of attention online, this does not mean it is of excellent research quality. Some topics will always be of interest to the population, regardless of the scientific rigour of the work itself.
- Research that is spread in the media is commonly that that has the most shocking results. Altmetrics may cause such research to seem more important—

Science and Public Policy, 46(4), 2019, 479–489

Matthew effect

The more you are cited,
the more you'll get cited

23:56

(79)

Pros and Cons of Altmetrics

PROS

- Quicker way of providing statistics than traditional bibliometrics
- Includes usage and sharing among the general public as well as scholars
- Demonstrates popularity of research in a particular field

CONS

- Tends to favor more recent research
- Open to manipulation and gaming of statistics
- **Popularity doesn't necessarily correlate with scholarly quality**--for example, a article getting a lot of Tweets and traction on social media may contain inaccurate science

https://libraryguides.umassmed.edu/research_impact/altmetrics

Altmetrics: Complete Postcard Measuring Your

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OK

CONCLUSIONS

- **Can alternative metrics be a surrogate to patients' opinion in setting research priorities?**

- Yes ————— ⇔ ————— No
Luigia Annalisa



Opportunities



Challenges

CONCLUSIONS

"not everything that can be counted counts
and not everything that counts can be
counted".

Albert Einstein



GROUP DISCUSSION

QUESTIONS TO DISCUSS

- Can metrics in general, and particularly alternative metrics, help to design research in a more responsible way, and help therefore to decrease research waste?
- Do actually help metrics to increase or decrease research waste?
- Are alternative metrics closer to the general population, to check for instance patient's needs and societal interest?
- Why should alternative metrics not be employed to set research priorities in light of the developments of open access and the recent pandemic?

Add your notes here:

<https://cryptpad.fr/pad/#/3/pad/edit/9aabc9043183e742c61033b7e00c62b2/>

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THANKS!



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