Research assessment and the rising tide of metrics

Ben Johnson
Research Policy Adviser, HEFCE
13 October 2015
About HEFCE

• We invest in the teaching, research and knowledge exchange activities of English higher education institutions. £3971M per annum (= €5362M)

• We regulate and oversee English HEIs (quality and financial sustainability)

• We operate the UK-wide Research Excellence Framework (REF)  www.ref.ac.uk
Metrics everywhere!

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The Metric Tide

Report of the Independent Review of the Role of Metrics in Research Assessment and Management

http://www.hefce.ac.uk/rsrch/metrics/

http://www.responsiblemetrics.org

The Metric Tide

Literature Review

Supplementary Report I to the Independent Review of the Role of Metrics in Research Assessment and Management

July 2015

The Metric Tide

Correlation analysis of REF2014 scores and metrics

Supplementary Report II to the Independent Review of the Role of Metrics in Research Assessment and Management

July 2015
“I have asked HEFCE to undertake a review of the role of metrics in research assessment and management. The review will consider the robustness of metrics across different disciplines and assess their potential contribution to the development of research excellence and impact...”

David Willetts, Minister for Universities & Science, Speech to Universities UK, 3 April 2014
Steering group

The review was chaired by James Wilsdon, Professor of Science and Democracy at the Science Policy Research Unit (SPRU), University of Sussex. He was supported by an independent steering group and a secretariat from HEFCE’s Research Policy Team:

Dr Liz Allen (Head of Evaluation, Wellcome Trust)
Dr Eleonora Belfiore (Associate Professor of Cultural Policy, University of Warwick)
Sir Philip Campbell (Editor-in-Chief, Nature)
Professor Stephen Curry (Department of Life Sciences, Imperial College London)
Dr Steven Hill (Head of Research Policy, HEFCE)
Professor Richard Jones FRS (Pro-Vice-Chancellor for Research and Innovation, University of Sheffield) – representing the Royal Society
Professor Roger Kain FBA (Dean and Chief Executive, School of Advanced Study, University of London) – representing the British Academy
Dr Simon Kerridge (Director of Research Services, University of Kent) – representative of the Association of Research Managers and Administrators
Professor Mike Thelwall (Statistical Cybermetrics Research Group, University of Wolverhampton)
Jane Tinkler (Parliamentary Office of Science & Technology)
Dr Ian Viney (Head of Evaluation, Medical Research Council) – representing RCUK
Professor Paul Wouters (Centre for Science & Technology Studies, Uni of Leiden)
Our approach and evidence sources

• Steering group: diverse expertise and extensive involvement;
• Broad TORs: opening up, rather than closing down questions;
• Transparent: publishing minutes & evidence in real time;
• Formal call for evidence, May to June 2014;
  – 153 responses; 44% HEIs; 27% individuals; 18% learned societies; 7% providers; 2% mission groups; 2% other
• Stakeholder engagement
  – 30+ events, inc. 6 review workshops, including on equality & diversity, A&H. Invited fiercest critics!
  – Ongoing consultation & use of social media e.g. #hefcemetrics;
• In-depth literature review;
• Quantitative correlation exercise relating REF outcomes to indicators of research;
• Linkage to HEFCE’s evaluations of REF projects;
• Interim findings on 25 March; followed by full report on 9 July.
Why Metrics Cannot Measure Research Quality: A Response to the HEFCE Consultation

JUNE 18, 2014 / MEERA

The Higher Education Funding Council for England (HEFCE) has launched a consultation on the use of metrics in research assessment. The consultation invites comments on the use of metrics in research assessment, including the impact of the Research Excellence Framework (REF) on universities. The consultation is open until 17th June 2014.

The consultation aims to explore how metrics can be used to measure research quality and to identify potential challenges and opportunities for the future. It seeks to encourage a wider discussion on the use of metrics in research assessment and to provide a platform for stakeholders to share their views.

The consultation includes a number of open questions, such as:

- What are the benefits and drawbacks of using metrics to measure research quality?
- How can metrics be used to support the development of research excellence?
- What role do metrics play in the funding of research?

The consultation is open to all interested parties, including academics, researchers, and policy makers. It is available online at the HEFCE website and can be accessed here.

The consultation closes on 17th June 2014. If you have any questions or comments, please contact the HEFCE at researchmetrics@hefce.ac.uk.
World University Rankings 2015-16

The Times Higher Education World University Rankings 2015-2016 list the best global universities and are the only international university performance tables to judge world class universities across all of their core missions - teaching, research, knowledge transfer and international outlook.

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<td>United States of America</td>
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<td>2</td>
<td>University of Oxford</td>
<td>United Kingdom</td>
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Announcing the 2nd Altmetrics Conference: Amsterdam

To follow the successful first annual altmetrics conference, 1:AM (London), 2:AM will be held in Amsterdam on October 7-8th 2015.

Join us at this year’s meeting to continue discussions on all things altmetrics, where we’ll build on the themes and ideas of last year. To help us bring the final program together we’d love to know which topics are of most interest to you - please do take a few minutes to give us your thoughts in this short survey.

There’ll be lots happening, including a hack day ahead of the main event. The 2:AM conference will be held in concert with the altmetrics research conference, altmetrics15 (Oct 9) to further collaboration and cross-pollination between research and practice - more details on this will follow soon.

Stay tuned for further programme details!

Supported by:
The San Francisco Declaration on Research Assessment (DORA), initiated by the American Society for Cell Biology (ASCB) together with a group of editors and publishers of scholarly journals, recognizes the need to improve the ways in which the outputs of scientific research are evaluated. The group met in December 2012 during the ASCB Annual Meeting in San Francisco and subsequently circulated a draft declaration among various stakeholders. DORA as it now stands has benefited from input by many of the original signers listed below. It is a worldwide initiative covering all scholarly disciplines. We encourage individuals and organizations who are concerned about the appropriate assessment of scientific research to sign DORA.

San Francisco Declaration on Research Assessment

Putting science into the assessment of research

There is a pressing need to improve the ways in which the output of scientific research is evaluated by funding agencies, academic institutions, and other parties.

To address this issue, a group of editors and publishers of scholarly journals met during the Annual Meeting of The American Society for Cell Biology (ASCB) in San Francisco, CA, on December 16, 2012. The group developed a set of recommendations, referred to as the San Francisco Declaration on Research Assessment. We invite interested parties across all scientific disciplines to indicate their support by adding their names to this Declaration.

The outputs from scientific research are many and varied, including: research articles reporting new knowledge, data, reagents, and software; intellectual property; and highly trained young scientists. Funding agencies, institutions that employ scientists, and scientists themselves, all have a desire, and need, to assess the quality and impact of scientific outputs. It is thus imperative that scientific output is measured accurately and evaluated wisely.

The Journal Impact Factor is frequently used as the primary parameter with which to compare the scientific output of individuals and institutions. The Journal Impact Factor, as calculated by Thomson Reuters, was originally created as a tool to help librarians identify journals to purchase, not as a measure of the scientific quality of research in an article. With that in mind, it is critical to understand that the Journal Impact Factor has a number of well-documented deficiencies as a tool for research assessment. These limitations include: A) citation distributions within journals are highly skewed [1-3]; B) the properties of the Journal Impact Factor are field-specific: it is a composite of multiple, highly diverse article types, including primary research papers and reviews [1, 4]; C) Journal Impact Factors can be manipulated (or ‘gamed’) by editorial policy [5]; and D) data used to calculate the Journal Impact Factors are neither transparent nor openly available to the public [4, 6, 7].
Metrics evoke a mixed reaction from the research community. A commitment to using data and evidence to inform decisions makes many of us sympathetic to, even enthusiastic about, the prospect of genuinely, real-time analysis of our own activities. If scientists cannot take full advantage of the data they have created, they are left with the ethical obligations and the.nav.com/news/we-need-a-measured-approach-to-metrics-1.17928
Metrics: how to handle them responsibly

Amid concerns about the growing use – and abuse – of quantitative measures in universities, a major new review examines the role of metrics in the assessment of research, from the REF to performance management.

JULY 9 2015

BY PAUL JUMP
FOLLOW AUTHOR ON PAULJUMP

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The Metric Tide

Headline findings
Across the research community, the description, production and consumption of ‘metrics’ remains contested and open to misunderstandings.
Peer review, despite its flaws and limitations, continues to command widespread support across disciplines. Metrics should support, not supplant expert judgement.
Inappropriate indicators create perverse incentives. There is legitimate concern that some quantitative indicators can be gamed, or can lead to unintended consequences.
Indicators can only meet their potential if they are underpinned by an open and interoperable data infrastructure.
Our correlation analysis of the REF2014 results at output-by-author level has shown that individual metrics cannot provide a like-for-like replacement for REF peer review.
Within the REF, it is not currently feasible to assess the quality of research outputs using quantitative indicators alone, or to replace narrative impact case studies and templates.
There is a need for more research on research. The study of research systems – sometimes called the ‘science of science policy’ – is poorly funded in the UK.
Responsible metrics

Responsible metrics can be understood in terms of:

- **Robustness**: basing metrics on the best possible data in terms of accuracy and scope;
- **Humility**: recognizing that quantitative evaluation should support – but not supplant – qualitative, expert assessment;
- **Transparency**: keeping data collection and analytical processes open and transparent, so that those being evaluated can test and verify the results;
- **Diversity**: accounting for variation by field, using a variety of indicators to reflect and support a plurality of research & researcher career paths;
- **Reflexivity**: recognizing the potential & systemic effects of indicators and updating them in response.
The Metric Tide

Recommendations
The research community should develop a more sophisticated and nuanced approach to the contribution and limitations of quantitative indicators.
At an institutional level, HEI leaders should develop a clear statement of principles on their approach to research management and assessment, including the role of indicators.
Research managers and administrators should champion these principles and the use of responsible metrics within their institutions.
HR managers and recruitment or promotion panels in HEIs should be explicit about the criteria used for academic appointment and promotion decisions.
Individual researchers should be mindful of the limitations of particular indicators in the way they present their own CVs and evaluate the work of colleagues.
Like HEIs, research funders should develop their own context-specific principles for the use of quantitative indicators in research assessment and management.
Data providers, analysts & producers of university rankings and league tables should strive for greater transparency and interoperability between different measurement systems.
Publishers should reduce emphasis on journal impact factors as a promotional tool, and only use them in the context of a variety of journal-based metrics that provide a richer view of performance.
There is a need for greater transparency and openness in research data infrastructure. Principles should be developed to support open, trustworthy research information management.
The UK research system should take full advantage of ORCID as its preferred system of unique identifiers. ORCID IDs should be mandatory for all researchers in the next REF.
The use of digital object identifiers (DOIs) should be extended to cover all research outputs.
Further investment in research information infrastructure is required to improve the interoperability of research management systems.
The community needs a mechanism to carry forward this agenda. We propose a Forum for Responsible Metrics, to bring together key players to work on data standards, openness, interoperability & transparency.
This site aims to provide a forum for debating responsible uses of metrics in higher education & research.

It builds on the UK’s Independent Review of the Role of Metrics in Research Assessment and Management which published its final report The Metric Tide on 9 July 2015.

9TH JULY 2015
Skewering the impact factor

Sometimes it’s the little things that count. Which is why I have started asking journals to publish their citation distributions alongside their

9TH JULY 2015
The Metric Tide - report now published

Today the Independent Review of the Role of Metrics in Research Assessment and Management publishes its findings, available here. Our report The

Download the Full PDF and Executive Summary

This report starts by tracing the history of metrics in research management and assessment, in the UK and internationally. It looks at the applicability of metrics within different research cultures, compares the peer review system with metric-based alternatives, and considers what balance might be struck between the two. It charts the development of research management systems within institutions, and examines the effects of the growing use of quantitative indicators on different aspects of research culture, including performance management, equality, diversity, interdisciplinarity, and the 'gaming' of assessment systems. Finally, it examines the role that metrics played in REF2014, and outlines scenarios for their contribution to future exercises.
Data infrastructure key to the quality and impact of UK research

9 July 2015

Jisc welcomes the publication of ‘The Metric Tide’ - a report on the independent review of the role of metrics in research assessment and management, chaired by Professor James Wilsdon.

With our ethos of supporting open and interoperable data infrastructure to make research easier for universities, Jisc strongly supports the report’s recommendations. In particular we commend its emphasis on identifiers being central to a more reliable, less burdensome and transparent research information management system.
Science, values and the limits of measurement

Metrics play a growing role in managing research. But to understand their limitations, we need to draw on the humanities.

Cameron Neylon

Tuesday 14 July 2015 09:44 BST

There is a particular form of proof that is applied both by mathematicians and by critics of using metrics in research assessment. Proof by contradiction seeks to prove something, say that the square root of two is an irrational number, by first assuming its opposite and then proceeding to demonstrate an internal contradiction. It follows that the assumption is proven untrue.
First the tide rushes in. Plants a kiss on the shore...

Written by dkernohan on July 10th, 2015. 4 Comments

I’m genuinely at a loss to describe how good James Wilsdon’s report of the independent review of the role of metrics in research assessment and management (“The Metric Tide“) is. Something that could so easily have been a clunky and breathless paean to the oversold benefits of big data is nuanced, thoughtful and packed with evidence. Read it. Seriously, take it to the beach this summer. It’s that good.

It also rings true against every aspect of the academic experience that I am aware of – a real rarity in a culture of reporting primarily with an ear on the
Another small piece in the evidence jigsaw...
The Metric Tide

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