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Dear colleague

The role of metrics in research assessment

This letter invites you to provide input or evidence on the role of metrics in research assessment.

The attached document sets out the context for an independent review of the role of metrics in research assessment that HEFCE is currently undertaking. As part of this review, the independent steering group would like to receive comments and advice on a number of issues to inform the development of proposals and recommendations about the future use of metrics in research assessment and management.

Please send responses to **metrics@hefce.ac.uk** by **noon on Monday 30 June 2014**. We will consider all responses received by this deadline. We welcome responses from any person or organisation with an interest in these matters. Please make it clear in your response whether you are responding as an individual or on behalf of a group or organisation.

If you have any comments or queries about the metrics review, please contact Kate Turton or Alex Herbert via e-mail (metrics@hefce.ac.uk).

Yours sincerely

A handwritten signature in black ink, appearing to read "David Sweeney".

David Sweeney
Director (Research, Innovation & Skills)
HEFCE

A handwritten signature in black ink, appearing to read "James Wilsdon".

Professor James Wilsdon
Science Policy Research Unit
University of Sussex

Independent review of the role of metrics in research assessment: Call for evidence

Introduction

1. The quality and diverse impacts of scientific and scholarly research are commonly assessed using a combination of peer review and a variety of quantitative metrics. Peer review is the most established method of research assessment and underpins the academic system in the UK and internationally. The use of metrics is a newer approach but has developed rapidly as a potential method of measuring research quality and impact in some fields, though how best to do this is still the subject of considerable debate.

2. Metrics includes the analysis of journal articles and their citations using a range of bibliometric methods, and has more recently expanded to include analysis of a more diverse range of research outputs. In addition, a growing array of social media and web-based alternative metrics have developed with potential to capture relevant dimensions of quality or impact. With the increasing capacity for real-time analysis based on large, linked datasets ('big data'), some think that metrics could play an increasing role in the assessment of research.

Definitions¹ for metrics

3. Bibliometrics focuses on the quantitative analysis of scientific and scholarly publications, including patents. Bibliometrics is part of the field of scientometrics: the measurement of all aspects of science and technology, which may encompass information about any kind of research output (data, reagents, software, researcher interactions, funding, research commercialisation, and other outputs).

4. The emergence of the Internet and the World Wide Web has led to webometrics, or cybermetrics, which measure the features and relationships of online items, such as web-sites and log files. The rise of new social media has created an additional stream of work under the label altmetrics.

Context for the review of the role of metrics in research assessment

5. In 2008 and 2009, HEFCE ran a pilot exercise to test the potential for using bibliometric indicators of research quality in the Research Excellence Framework. At that time, it was concluded that citation information was not sufficiently robust to be used formulaically or as a primary indicator of quality but that there might be scope for it to inform and enhance processes of expert review.

¹ Definitions adapted from 'Encyclopedia of Science Technology and Ethics' (2014) Macmillan, 2nd edition (ISBN: 0028661966)

6. Metrics may already be in use or may be used in the future, either formally or informally, to inform judgements of research quality that are made inside higher education institutions for their own management purposes around human resources and research strategy development, and in decisions by funding agencies.

7. On 3 April 2014, the Minister for Universities and Science asked HEFCE to undertake a fresh review of the role of metrics in research assessment and management². This review will build on the previous pilot exercise to explore the current use of metrics for research assessment, consider the robustness of metrics across different disciplines, and assess their potential contribution to the development of research excellence and impact. The terms of reference identify key issues that will be considered during the course of the review.

8. The review will be chaired by James Wilsdon, Professor of Science and Democracy at the Science Policy Research Unit (SPRU), University of Sussex. It will consider the role that metrics-based assessment could play in determining quality, impact and other key characteristics of research undertaken in the higher education sector.

Call for evidence

9. Through this call for evidence, the independent steering group wishes to draw on evidence from a wide range of sources on the role of metrics in research assessment, which could include written summaries or existing published research,. In responding to this call, please focus on the following issues:

- a. Identifying useful metrics for research assessment.
- b. How should metrics be used in research assessment?
- c. 'Gaming' and strategic use of metrics.
- d. International perspective.

Identifying useful metrics for research assessment

10. Bibliometrics, scientometrics and alternative metrics are quantitative approaches for research assessment, and their use has been developed and refined since the Science Citation Index was first introduced in 1961. There is potential for metrics to be applied to wider aspects of research assessment, including the research environment and impact of research.

11. The steering group would like to gather evidence and views on the potential of metrics and how they could be applied broadly to research assessment. There may be differences across and between disciplines, in terms of administrative burden and research culture. In particular, the following issues are of interest:

- What empirical evidence (qualitative or quantitative) is needed for the evaluation of research, research outputs and career decisions?

² HEFCE's review of the role of metrics is outlined at www.hefce.ac.uk/whatwedo/rsrch/howfundr/metrics/

- What metric indicators are currently useful for the assessment of research outputs, research impacts and research environments?
- What new metrics, not readily available currently, might be useful in the future?
- Are there aspects of metrics that could be applied to research from different disciplines?
- What are the implications of the disciplinary differences in practices and norms of research culture for the use of metrics?
- What are the best sources for bibliometric data? What evidence supports the reliability of these sources?
- What evidence supports the use of metrics as good indicators of research quality?
- Is there evidence for the move to more open access to the research literature to enable new metrics to be used or enhance the usefulness of existing metrics?

How should metrics be used in research assessment?

12. Mechanisms for research assessment should assure fairness and enable funding to be allocated in the best possible way. This requires clarity on the rationale for funding to ensure that the decision-making criteria are optimal. The qualitative method of peer review is internationally recognised as the traditional method of research assessment; citation analysis and bibliometrics are more quantitative approaches. Each method has merits and limitations, so a combinatorial approach is often used.

13. The steering group would like to gather evidence around the use of metrics in research assessment and management. In particular, the following issues are of interest:

- What examples are there of the use of metrics in research assessment?
- To what extent is it possible to use metrics to capture the quality and significance of research?
- Are there disciplines in which metrics could usefully play a greater or lesser role? What evidence is there to support or refute this?
- How does the level at which metrics are calculated (nation, institution, research unit, journal, individual) impact on their usefulness and robustness?

‘Gaming’ and strategic use of metrics

14. Whether research is evaluated through peer review, metrics or a combination of the two, there are inevitable consequences for research cultures. Any approach to assessment is likely to influence the behaviour of individual researchers as well as the policies, practices and management systems of institutions and funders. In some contexts, the inappropriate use of certain metrics raises ethical dilemmas and may lead to gaming, or distortion of evaluation systems. The recent San Francisco Declaration on

Research Assessment (DORA)³ was a specific initiative to discourage the use of journal-based metrics in research assessment.

15. The steering group recognises the importance of ethical considerations around the use of metrics, and seeks advice and guidance on how unintended effects and inappropriate use of metrics could be addressed. In addition, the steering group is keen to consider equality and diversity issues associated with the use of metrics that may have an impact on certain groups of researchers. In particular, the following issues are of interest:

- What evidence exists around the strategic behaviour of researchers, research managers and publishers responding to specific metrics?
- Has strategic behaviour invalidated the use of metrics and/or led to unacceptable effects?
- What are the risks that some groups within the academic community might be disproportionately disadvantaged by the use of metrics for research assessment and management?
- What can be done to minimise 'gaming' and ensure the use of metrics is as objective and fit-for-purpose as possible?

International perspective

16. Finally, the steering group would like to receive evidence and advice on how metrics have been used for research assessment and management in other countries. In addressing the issues and questions above, please include relevant evidence and examples from outside the UK, where appropriate.

Publication of evidence

17. We welcome responses from any person or organisation with an interest in these matters. Please make it clear in your response whether you are responding as an individual or on behalf of a group or organisation. Responses should be sent to **metrics@hefce.ac.uk** by **noon on Monday 30 June 2014**. We will consider all responses received by this deadline.

18. We will commit to read, record and analyse the views of every response to this call for evidence in a consistent manner. For reasons of practicality, a fair and balanced summary of responses, rather than the individual responses themselves, will inform the review. In most cases, the merit of the arguments made is likely to be given more weight than the number of times the equivalent point is made.

19. We intend to publish all evidence submitted in response to this call on the HEFCE web-site. We will also publish an explanation of how the evidence was

³ HEFCE is a signatory to DORA: <http://am.ascb.org/dora/>

considered in the steering group's discussions. We may also publish evidence submitted in response to the call within the steering group's final report.

20. Additionally, any information submitted in response to this call for evidence may be disclosed on request under the terms of the Freedom of Information Act. The act gives a public right of access to any information held by a public authority, in this case HEFCE. HEFCE has a responsibility to decide whether any responses, including information about your identity, should be made public or treated as confidential. We can refuse to disclose information only in exceptional circumstances. This means that responses to this call for evidence are unlikely to be treated as confidential except in very particular circumstances. For further information about the act, see the Information Commissioner's Office web-site: www.ico.gov.uk.