Assessing Impact: Approaches and Considerations

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March 22, 2023
Outline

- Research excellence
- Research impact
- Research culture & environment
- Lessons learned
Research excellence: its origins, why it’s unattainable and why it’s immeasurable
Research excellence

“A myopic focus on excellence isn't helpful. Excellence is not a quantifiable measure; rather, excellence is produced from diversity of thought.”

– Dr. Patricia Kingori, Oxford University
North-American and Western-European contexts of origin have shaped uses of excellence and research on excellence initiatives.

Different uses of ‘excellence’ coexist and the vagueness surrounding notions of excellence has performative effects.

Imbalance between intended and unintended consequences of competition and concentration of resources.

Critiques on the excellence regime are as omnipresent as the notion itself; however, alternatives are scarcely formulated and there seems to be a tendency towards pluralizing or diversifying excellence.

Notions of excellence in research funding have been underexplored although considered to play a key role in the institutionalization of excellence.
Assessing research excellence

- No consensus, standard definition or reliable measure
- Highly subjective creating room for bias and abuse
- Opaqueness undermines trust
- Underpins hyper-competition
- Perpetuates inequities
- Negatively influences how research is conducted and evaluated
Is meritocracy the answer?

EQUITY, DIVERSITY AND INCLUSION

Racial inequity in grant funding from the US National Institutes of Health

Abstract Biomedical science and federal funding for scientific research are not immune to the systemic racism that pervades American society. A groundbreaking analysis of NIH grant success revealed in 2011 that grant applications submitted by the National Institutes of Health in the US by African-American or Black Principal Investigators (PIs) are less likely to be funded than applications submitted by white PIs, and efforts to narrow this funding gap have not been successful. A follow-up study in 2019 showed that this has not changed. Here, we review these original reports, as well as the response of the NIH to these issues, which we argue has been inadequate. We also make recommendations on how the NIH can address racial disparities in grant funding and call on scientists to advocate for equity in federal grant funding.

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DOI: https://doi.org/10.7554/eLife.65697

Gender bias in scholarly peer review

Abstract Peer review is the cornerstone of scholarly publishing and it is essential that peer reviewers are appointed on the basis of their expertise alone. However, it is difficult to check for any bias in the peer-review process because the identity of peer reviewers generally remains confidential. Here, using public information about the identities of 9000 editors and 43000 reviewers from the Frontiers series of journals, we show that women are underrepresented in the peer-review process, that editors of both genders operate with substantial same-gender preference (homophily), and that the mechanisms of this homophily are gender-dependent. We also show that homophily will persist even if numerical parity between genders is reached, highlighting the need for increased efforts to combat subterfuge forms of gender bias in scholarly publishing.

DOI: 10.7554/eLife.21718.001

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Limitations:  
- Machine-learning models able to "predict" funding outcomes: predictors were factors not related to research impact, but narrow quantitative metrics (e.g., journal impact factors, H-index scores, and university rankings).
- "Perceived expert’s ability to make judgements about a probabilistic outcome is poor, and is not at all correlated to age, number of publications, experience, years in field, or status." - Mark Burgman, Imperial College London

Benefits (OECD, 2018):  
- increase the quality and relevance of research project proposals
- ensure that research awards meet a minimum standard of quality
- provide researchers with an opportunity to test their ideas among peers
- build trust in the community that awards are made fairly
Moving beyond excellence

- **Patching existing frameworks** – abandonment of journal impact factors in favor of more responsible uses of metrics to mitigate the overreliance on bibliometrics (e.g. DORA, 2012; Leiden Manifesto, 2015; The Metric Tide, 2015)

- **Pluralizing excellence** - move beyond the emphasis on published outputs by including narratives of impact inclusive of more than academic impact (e.g. UK REF); inclusive of impact defined by local contexts (Tijssen & Kraemer-Mbula, 2018) and EDI (coined ‘inclusive excellence’ by Williams, 2005)

- **Transforming the research ecosystem** – from abandonment of the ‘assessment of excellence’ (Halfman & Radder, 2015) or the ‘notion of excellence’ altogether (Neylon, 2020), to the replacement of a singular view of performance with an understanding that research is anchored in an ‘open, extended, complex system of with a range of competing (and legitimate) perceptions of performance’ (Rafols, et. al 2012)

Research impact: a portfolio analysis
“[M]is-application of narrow criteria and indicators of research quality or impact, in ways that distort incentives, create unsustainable pressures on researchers, and exacerbate problems with research integrity and reproducibility.”

– Global Research Council
Portfolio analysis

- **Goals:**
  - Give *organization-wide picture* of activities, results and outcomes
  - Provide assurance that funding *programs are collectively effective*
  - Indicate whether *resources are allocated appropriately* across all funding programs and activities
  - Apply a *balanced portfolio approach* – holistically assess varying degrees of program maturity, risk, investment, and impact

- **Methods:** bibliometric analyses, linear regression models, outcome mapping, case studies, validate with secondary and independent sources
Portfolio insights

Research projects that demonstrated the greatest reach and citation impact:

• International research collaborations
• Inter/transdisciplinary team collaborations
• New technologies and resources, including multi-site population studies
A story of impact
Contributions to open access policy

2005
- NIH mandates OA
- Wellcome mandates OA
- NIH recommends OA
- Wellcome implements OA block grants
- RCUK recommends OA

2008
- NIH updates its Public Access policy to mandate that all research arising from its funding be made available in PubMed Central within 12 months of publication, but does not use a block grant financing model.

2011
- BIS Strategy for Growth
- Wellcome participates in Finch consultation
- Wellcome’s then Head of Digital Services Robert Kiley and Allison Henning contribute to Dame Janet Finch’s Working Group on Expanding Access to Published Research Findings.

2012
- Finch Report on OA
- Includes recommendation to “follow the Wellcome Trust’s initiative” on Open Access publishing, by introducing an OA mandate to be implemented via institutional block grants.

2013
- UK Gov mandates OA
- UK Gov introduces OA block grants

2015
- The UK Government acts on recommendations from the Finch report
- The proportion of UK publications made openly available increased by an average of 8% per year in the four years following introduction of the OA mandate, compared to 3% per year in the four years preceding.

Wellcome contribution | Contributions of others | Outcomes | Impact
Societal impact of open access

- Democratize knowledge
- Increase efficiency of scientific outputs
- Increase accountability of the research enterprise
- Accelerate innovation and impact
- Reduce research waste
Research culture and environment
Research culture

“Research assessment shapes research culture. What funders value and measure will influence what is valued in the research ecosystem.”

– Global Research Council
Research environment - which includes the institutional strategies, infrastructure, facilities, processes, and management systems - is inextricably linked to research culture.

“Research culture encompasses the behaviors, values, expectations, attitudes and norms of our research communities. It influences researchers’ career paths and determines the way that research is conducted and communicated”\(^1\).

\(^1\)Royal Society https://royalsociety.org/topics-policy/projects/research-culture/
Diversity, Equity AND inclusion

Success rates for BAME applicants remain lower than for White applicants

Wellcome Report on 2019-20 Grant Funding Data

- Success rates are lower for BAME applicants (10.3%) than for White applicants (16.1%). Success rates are similar for BAME men and women. Success rates are lowest for Black applicants (8.6%).

BAME researchers make up a smaller proportion of applicants and awardees for more senior awards and those with higher financial value.

If international schemes and awards to non-UK based organisations are included, over the past four years 28.6% of applicants and 19.3% of awardees are BAME. Award rates are 9.6% for BAME applicants and 15.3% for White applicants.

BAD BEHAVIOUR
Instances of harassment and gender or racial discrimination remain distressingly commonplace. The most frequently reported perpetrators are supervisors.

Q: Have you experienced discrimination or harassment in your PhD programme?

- Prefer not to say 4%
- Yes 21%
- No 76%

Q: If yes, which of the following have you experienced?

- Gender discrimination 39%
- Racial discrimination or harassment 33%
- Age discrimination 16%
- Sexual harassment 15%
- Prefer not to say 9%
- Religious discrimination 9%
- Disability discrimination 4%
- LGBTQ* discrimination or harassment 3%

*People from sexual and gender minorities.

Source: Nature PhD Survey 2019
Open science

Features:

• Promote openness, transparency of research and the research process

• Value activities associated with openness (e.g., open access, data sharing, open tools and platforms)

• Value outputs associated with openness (e.g., preprints, FAIR datasets, open software, open code)
Inter/transdisciplinary research environments

Features:

• Shared purpose, strong leadership
• Culture of openness, creative & bold thinking, respect across disciplines
• Core infrastructure and spaces to facilitate inter/trans-disciplinary collaborations
• Competitive talent packages
• Career paths and competitive remuneration for career scientists, technologists and project managers
Lessons learned
Lessons learned

1. Evaluate the outcomes (or impact) of research relative to where it sits on a continuum.
   Action: Deploy a range of mixed methods to assess effectiveness of funding strategies.

2. Research is not static and predictable; neither should evaluation frameworks be static and predictable.
   Action: Adopt agile evaluation and learning frameworks where the primary driver is learning.

3. Funders must take on more direct responsibility for achieving impact.
   Action: Invite external, independent evaluation that looks at both the effectiveness and impacts of a program, as well as the funder’s strategies and policies. Assess both the funder’s direct and indirect contributions to impact.

4. Funders should seek evidence to inform and transform their own practice.
   Action: Make processes and decisions transparent. Share not only funder data but implicit drivers of funder practice and policies with others to promote shared learning.
"The ways in which research quality and research impact are defined and measured are deeply embedded in practices and concepts derived from the Global North. [A] fundamental shift is required that understands the value of research — and the institutions producing it — according to the contexts in which knowledge is needed, produced and used."

- John Harle, 2021

LSE Blog Series: “We won’t get to a more equitable knowledge ecosystem if we don’t have more equitable ways to assess research and knowledge.”
Thank you