IMPERIAL

Beyond Open Research:
Understanding what matters for quality and reliability

- Asking the right questions about open research helps embed quality.
- Involving the public in discussions about the reliability of data-based applications sheds light on the societal impact of Open Research.
- Combining responsible practices with research assessment offers recognition and incentives for openness and scrutiny.

Dr Hamid Khan
Open Research Manager: Academic Engagement
hamid.khan@imperial.ac.uk
ORCID-0000-0002-4587-7717

Aims and motivation

Fostering a research culture that promotes quality and reliability of research data, code and software.

What?

Key questions we are asking:

- **Is openness enough to ensure quality and reliability?**
- **How do we incentivise quality and reliability?**
- **What is the public interest in research culture?**

43%

Researchers in the UK who believe their institution places more value on metrics than quality[1]

Why?

Lack of reproducibility, research waste and dysfunctional incentives are problems across disciplines, demographics and countries.

At Imperial, the autonomy of faculties and departments provides a further challenge to an institutional approach to research culture.

Let the "reproducibility crisis" be a call to action.

Our pioneering methods go "Beyond Open Research"

How?

Public involvement has been a novel part of this work. Societal views of research culture are poorly explored, but to embed responsible research practices, it's crucial to understand what it's all for. Workshop participants discuss their questions and concerns about the reliability of Artificial Intelligence in patient treatment (The Invention Rooms, Imperial College London, 9 May 2024). The participants were a combination of patients, clinicians and interested members of the public.

In a series of facilitated scoping and co-creation workshops, we are engaging with:
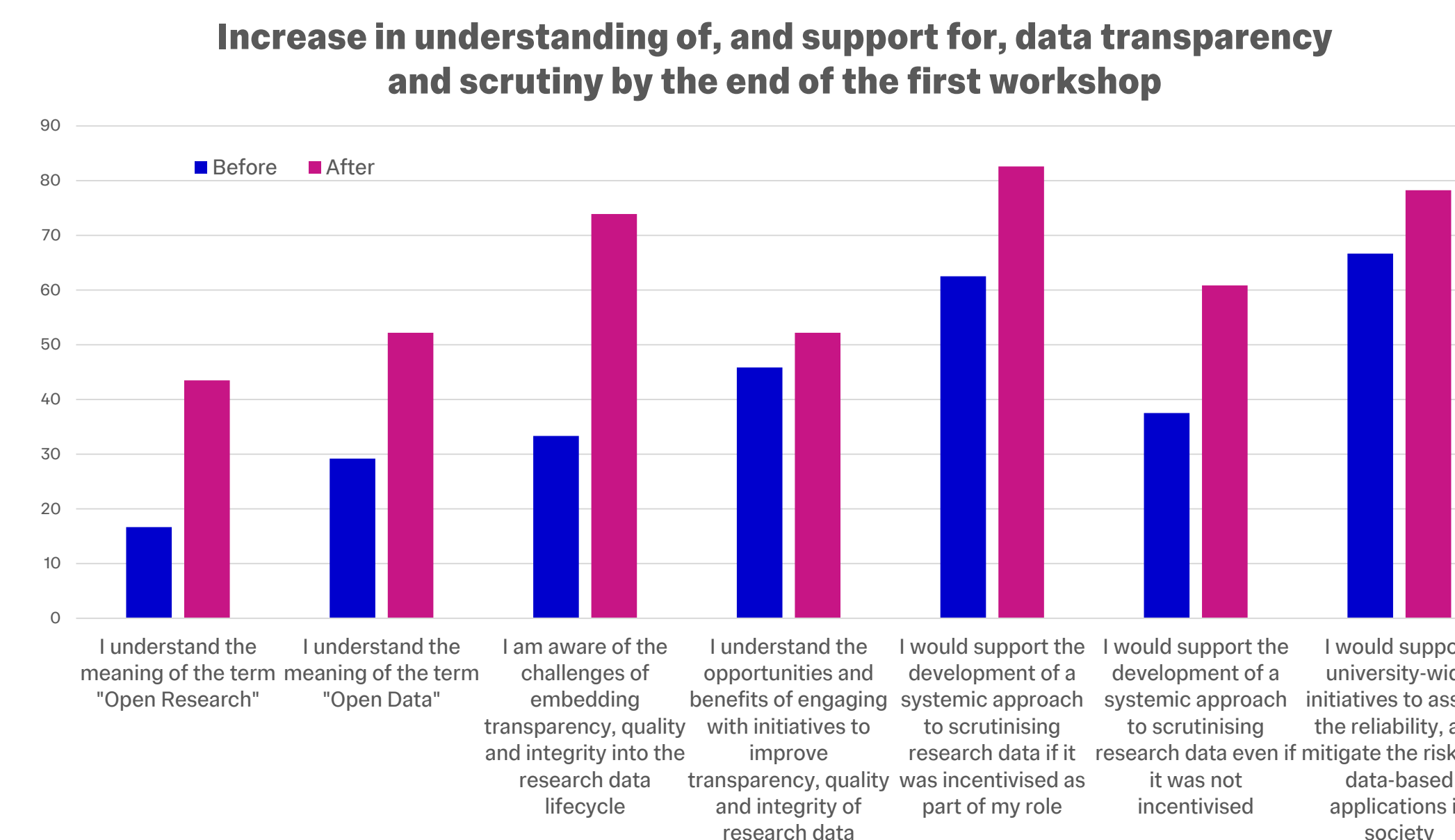- Researchers from 19 departments
- Eight professional and technical services
- Clinicians
- Public and patients from the local community.

Workshop topics:
- Challenges of making data, code and software open at every stage of the research lifecycle
- The reliability of data-based applications in decision-making (e.g. healthcare)
- The questions to ask to scrutinise data, code and software
- Incentivising what matters for quality and reliability.

15 departmental **Research Software Champions (RSCs)** recruited from PhD/MRes students across 13 Imperial departments are promoting good practice in research software management.

We combine quantitative evaluation data with qualitative data from workshops, RSC events and semi-structured interviews with experts.

Increase in understanding of, and support for, data transparency and scrutiny by the end of the first workshop

Attitudes and awareness about Open Research at Imperial shifted positively during the workshops. This before and after evaluation shows support growing for open practices around research data, including the development of a university-wide approach to data transparency and scrutiny, and initiatives to assess the reliability of data-based applications, backed by recognition and incentives.

Early findings: institutional and public support for openness and reliability

- Openness is a social good – important for public trust, impact and legitimacy.
- Involving the public in discussions about openness and reliability is crucial for accountability.
- HR, professional and technical staff must be involved in co-creating policies alongside researchers.
- Repeatable and testable results, responsible assessment (motivated by DORA), and sharing of ideas and negative data must be considered holistically.

23%

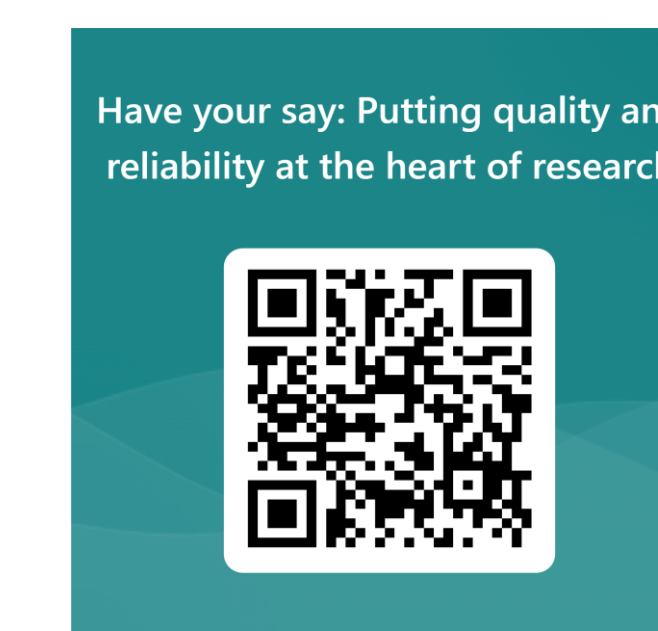Researchers in the UK who have felt pressured by their supervisor to produce a particular result[1]

- Sustainable data storage requires investment in infrastructure and support services.
- "Peer review": standardise, fund and recognise.
- Reliability is about ensuring trustworthiness, accuracy, EDI and consistency of data and models.
- Openness can be incentivised through training and the power of collaboration.

46%

Researchers in the UK who report they understand what their workplace considers compromised research to be[1]

Future work: practical recommendations shared nationally

- Continue engagement with the Imperial community to co-create practical solutions.

- Share our findings nationally via the UK Reproducibility Network (UKRN).

- Nurture a community of practice comprising researchers and professional and technical staff at all levels to implement changes.

Our public-focussed, participatory approach to enhancing research culture has never been attempted before. We have a unique opportunity to make a meaningful and lasting transformation in research culture, in the interests of researchers and society. We are excited to see where it goes.

Have your say: Putting quality and reliability at the heart of research

What do you think needs to happen to foster a culture of quality and reliability?

[1]What-researchers-think-about-the-culture-they-work-in.pdf (wellcome.org)

Imperial College London

Find more information, resources and tips:
Open research at Imperial | Research and Innovation | Imperial College London