



Research Integrity Training –

Needs and provisions in institutions in Japan

Springer Nature

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Executive summary

Top Level Takeaways and Key Figures

6%

The proportion of respondents who felt that researchers in their field were not using honest and verifiable methods.

"[Research integrity is the] use [of] research funds appropriately in accordance with scientific procedures and without fabrication, falsification, or plagiarism."

73%

The proportion of respondents who indicated that their institution provided training on research integrity.

"Avoid plagiarism and be respectful of other researchers. For research that can be reproduced without fabricating research data, we will show the steps to reproduce it and contribute to the development of scholarship."

81%

The proportion of respondents who support mandatory training on research integrity for early career researchers.

"Conduct research and judge value based on rules, regardless of constraints or personal interests."

78%

The proportion of respondents who felt that research integrity training provided by their institution is effective.

"Following the rules stipulated in the research ethics manual. Ensuring clarity in research procedure and reporting the results truthfully. Managing research funds responsibly."

41%

The proportion of respondents who feel confident their institution would support them in allocating time for integrity training & activities.

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Introduction

Introduction

In 2019, Nature hosted a meeting of stakeholders from all parts of the Australian research community — including representatives from business, government bodies, university and research institutes, and funding organisations — to discuss research integrity and good research practices.

One of the most striking outcomes of this meeting was the realisation of how little anyone knew about the level of understanding or training offered to researchers in research integrity. This led us to launch a series of surveys of researchers in different parts of the world to determine the level of understanding of research integrity and relevant training within the research community of each country surveyed. And, in partnership with the Japanese Association for the Advancement of Science (JAAS), the survey has been extended to Japan.

These surveys aim to address the following:

- To determine the scale of training on research integrity (as defined by the NIH) and good research practices provided to researchers, including how it is provided, who provides it, and with what frequency.
- To understand the perceived need and quality of such training.
- To understand what topics are covered and whether they align with the researchers' needs (as identified by them).

The following report describes the survey results received from 1,190 participants from more than 445 organisations across Japan.

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What is understood by
“research integrity”

Unprompted, 1 in 3 participants emphasized avoiding misconduct as integral to RI

Unprompted understanding of research integrity meaning

The Japan survey received 1,085 open text comments where participants described what Research Integrity (RI here after) meant to them. 65% of these comments were coded into the themes on the right.

The predominant theme, emphasized the importance of preventing research misconduct (30%), such as fabricating or falsifying data. This was followed by the appropriate use and allocation of funds (16%), then ethical conduct (15%).

“Engage in research honestly and ethically without engaging in research misconduct.”

“Appropriate use of research funds and research activities that do not involve fabrication or plagiarism.”

“Disclose research content and results honestly and accurately and be fair and without bias when evaluating research. Also, comply with laws and regulations when conducting research activities.”

Comments have been translated into English from the original Japanese.

Q. How would you describe Research Integrity, including the practices it relates to? (n=701)

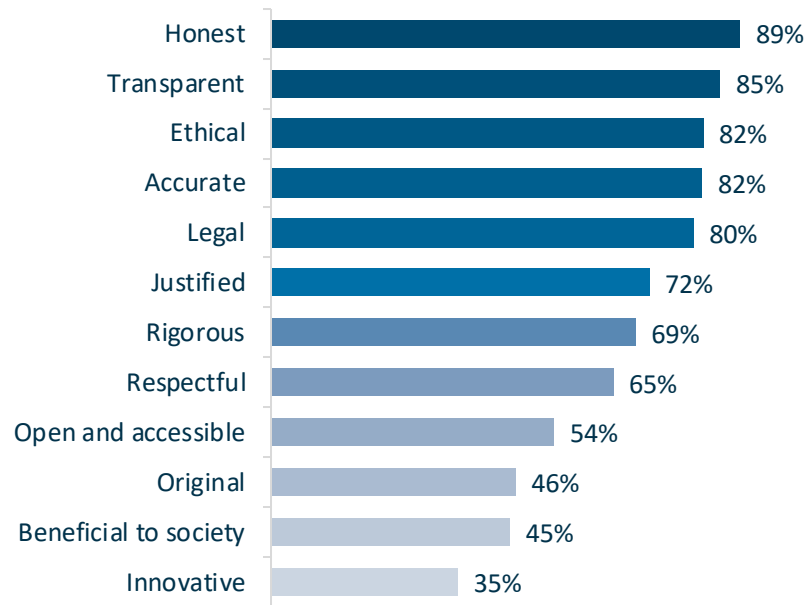


These figures represent the weighted proportion of respondents to give a particular response. Total may not = 100%.

In prompted questioning, honesty and transparency take precedence

Prompted understanding of research integrity meaning

Q. How important, if at all, would you rate each of the following with regards to Research Integrity? (n=1,103)



In prompted questioning, participants prioritized honesty (89%) and transparency (85%) as the most crucial elements for Research Integrity. Despite being ranked 7th and 13th in unprompted comments, respondents most consistently rated honesty and transparency as either "extremely important" or "very important" to research integrity. This is closely followed by ethical conduct (82%), maintaining its position among the top 3 most important elements, as observed in unprompted questioning.

Transparency & disclosing COIs are seen as most important activities to maintain RI

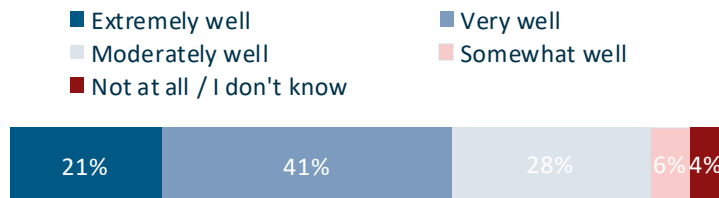
Important aspects for maintaining integrity in research

After initial questions (see slides 6 & 7) respondents were provided with a definition of research integrity to provide context and consistency for further questioning:

“The use of honest and verifiable methods in proposing, performing, and evaluating research and reporting research results with particular attention to adherence to rules, regulations, guidelines, and commonly accepted professional codes and norms.”

62% of respondents felt that definition reflected their understanding of Research Integrity either “Extremely well” or “Very well”.

Q. To what extent does this definition reflect your understanding of Research Integrity? (n=1,188)



Q. How would you rate the importance of each of the below activities with reference to NIH definition of research integrity? (n=1,167)





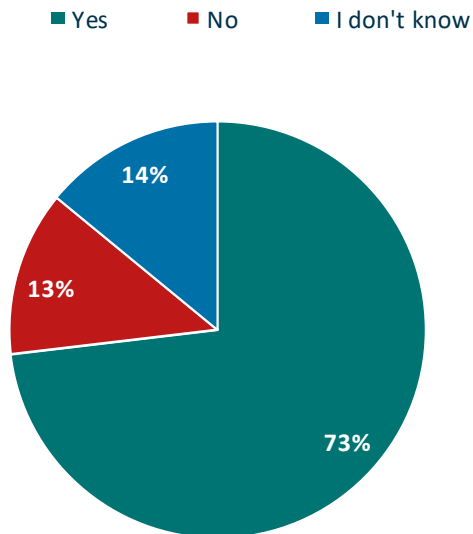
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**Current research integrity
training provision**

Awareness of research integrity training based on seniority and workplace

Availability of training in research integrity

Q. Does your institution provide training in research integrity? (n=1,165)



"Yes" broken down by seniority



Institutional Management – 79%



Senior researcher – 86%



Mid-level researcher – 68%



Early career researcher – 54%



Other / Non-academic staff – 43%

"Yes" broken down by workplace



Research organizations – 84%



Academia – 84%



Not for profit – 19%



Industry – 44%



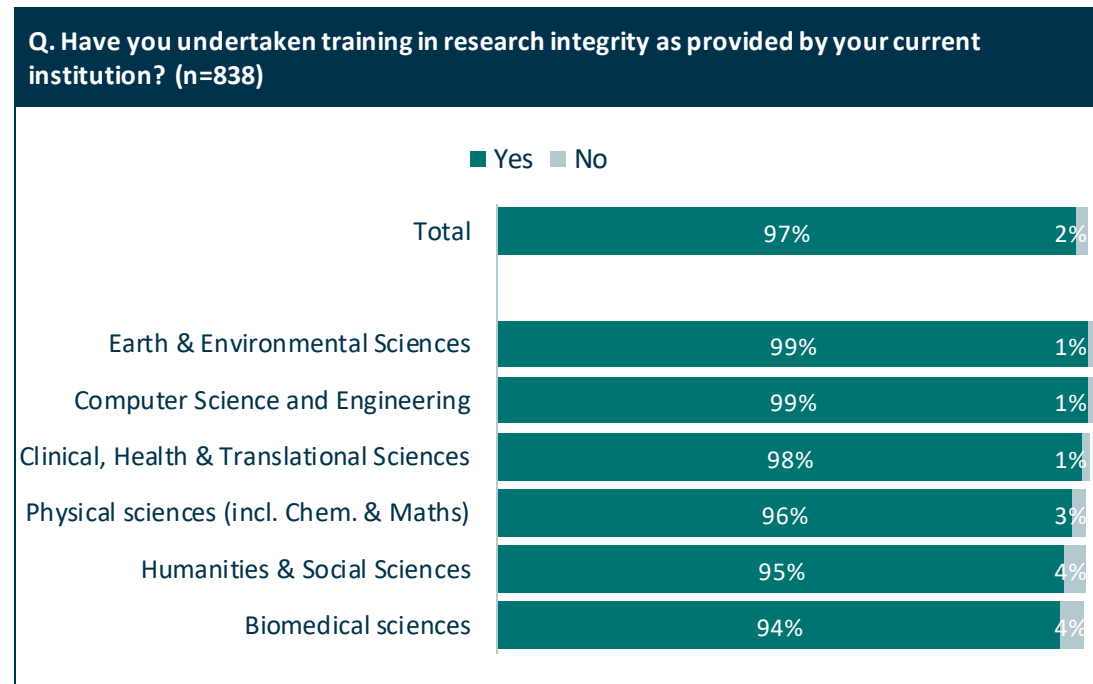
Self-employed – 26%



Other – 27%

97% confirmed they have undertaken RI training provided by their institutions

Who has taken training in research integrity?



Please note, this question was only shown to those who answered “Yes” to the question “Does your institution provide training in research integrity?” on slide 10.

Participants indicated high levels of undertaking research integrity training that was provided to them by their institutions, with about 97% confirming their participation.

By field, participants working in the earth and environmental sciences and computer science and engineering have the highest levels of uptake at 99%, while those working in biomedical sciences have the lowest but still considerable participation rate at 94%.

Moreover, respondents affiliated with universities or higher education institutions are most likely to have undergone research integrity training, whereas those in the industry are more inclined to indicate that they have not participated in such training.

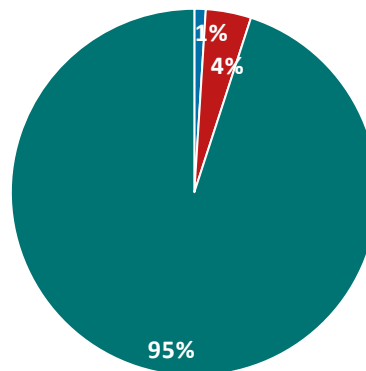
Most RI training is mandatory and provided online

How is research integrity training provided?

Q. Was the training in which you participated mandatory or optional? (n=811)

- Respondents working at universities or other higher education institutes were most likely to indicate their RI training was mandatory.
- Participants working in non-profits were, as well as those that were funded by industry, most likely to indicate that it was optional.

■ I don't know ■ Optional ■ Mandatory



Q. How is this training provided? (n=846)



Blended – 28%



Online – 67%



In person – 5%

Please note, this question was only shown to those who answered “Yes” to the question “Have you undertaken training in research integrity as provided by your current institution?” on slide 11.

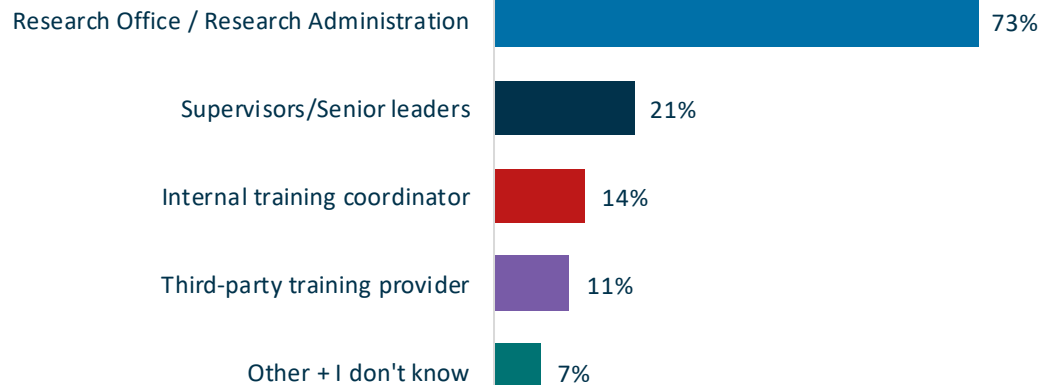
RI training is most often conducted by research offices and administrations

Who is responsible for conducting training?

Almost 3 out of 4 (73%) participants indicated that the Research Office / Research Administration is responsible for conducting RI training at their institution.

Participants that work in industry (i.e. pharma, biotech, consulting), however, were most likely to indicate that responsibility lies with supervisors / senior leaders as well as internal training coordinators.

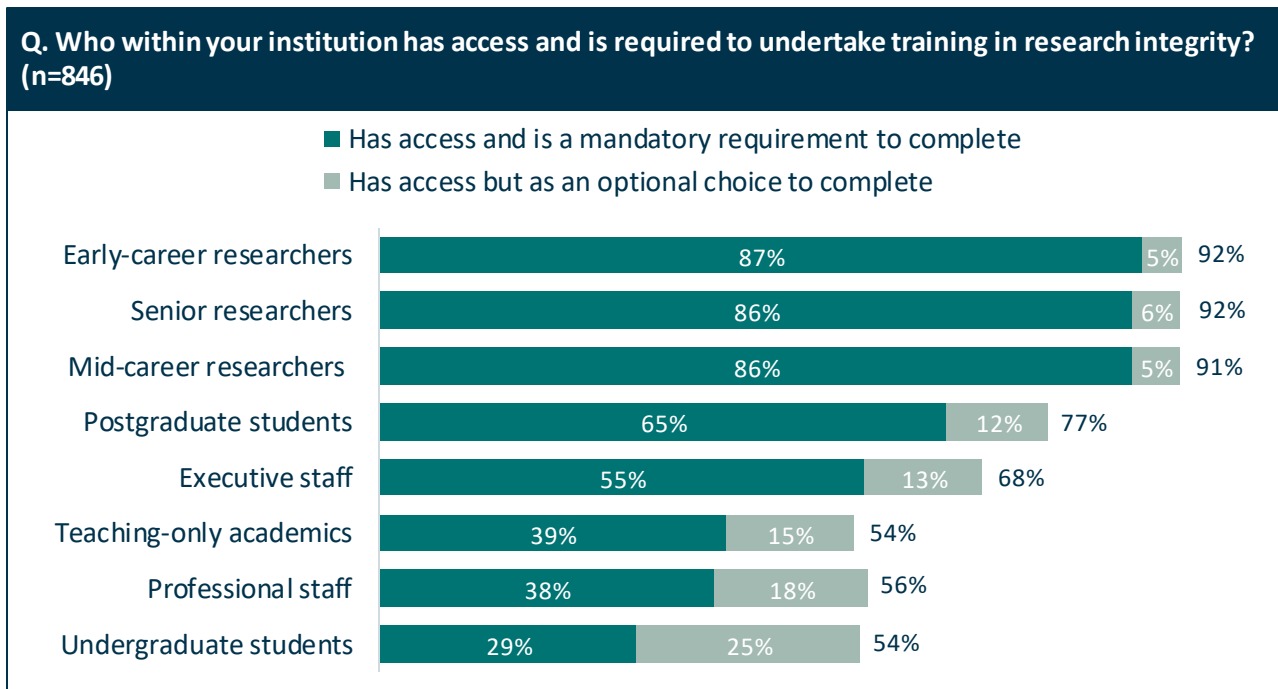
Q. Who is responsible for conducting the training within your institution? (n=848)



Please note, this question was only shown to those who answered “Yes” to the question “Does your institution provide training in research integrity?” on slide 10. Additionally, these figures represent the weighted proportion of respondents to give a particular responses, therefore, may not =100%

Active researchers, compared to students and staff, have highest access to RI training

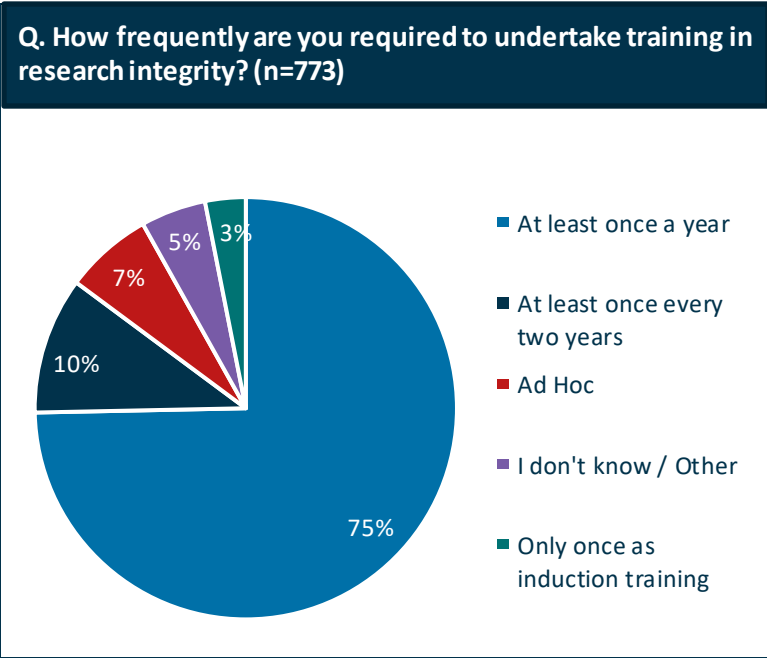
To whom is research integrity training offered?



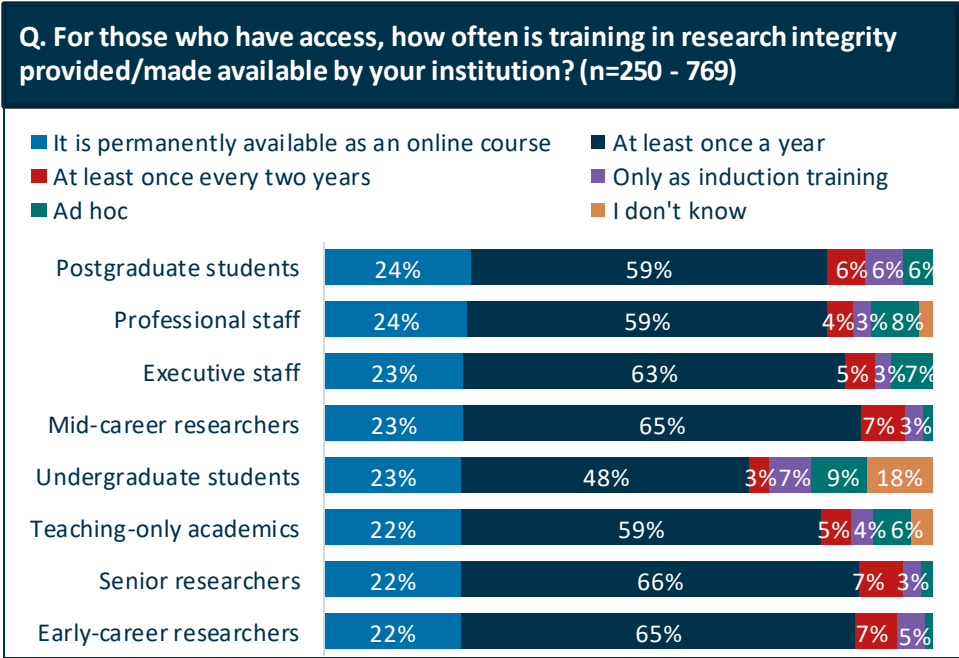
Please note, this question was only shown to those who answered “Yes” to the question “Does your institution provide training in research integrity?” on slide 10.

3 in 4 reported that they are required to take RI training at least once a year

How frequently is training in research integrity taken and provided?



Please note, this question was only shown to those who answered "Mandatory" to the question "Was the training in which you participated mandatory or optional?" on slide 12.

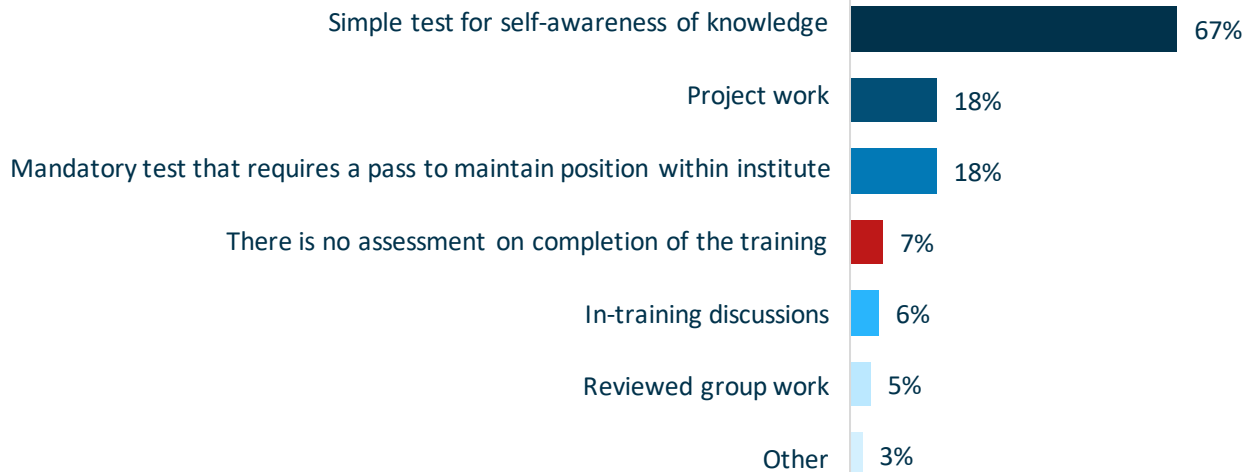


Please note, this question was only shown to those who indicated these groups did have access to Research Integrity training on slide 14.

67% had simple awareness tests, while 18% needed to pass testing to maintain position

How is training in research integrity assessed?

Q. How, if at all, is learning from the training on research integrity assessed? (n=834)



Please note, this question was only shown to those who answered “Yes” to the question “Does your institution provide training in research integrity?” on slide 10.

Additionally, these figures represent the weighted proportion of respondents to give a particular responses, therefore, may not =100%

1 in 3 participants indicated their institution encourages RI through “speak out” systems

How else do institutions encourage research integrity?

Q. Aside from formal training opportunities, how else does your institution encourage and develop research integrity? (n=1,117)



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**Topic inclusion within
training**

Over 90% of participants indicated that their institutions' training covers RI fundamentals

Topics covered in institutional research integrity training

Participants indicate that the most prevalent topics included in their research integrity training are the fundamentals: its importance (92%) and its definition (90%).

Interestingly, however, students were less likely than working researchers to indicate that their training covered the importance of research integrity.

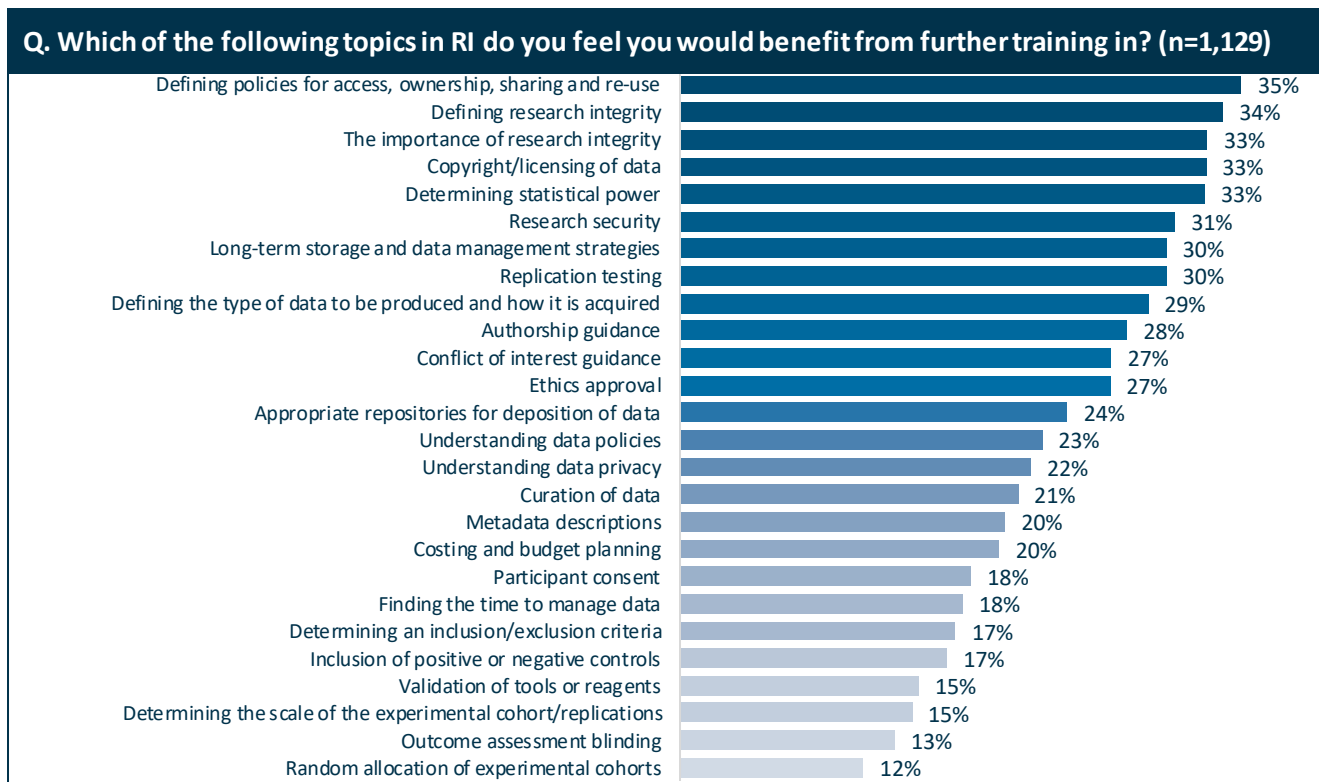
Q. Which aspects associated with research integrity are included in your institution's training? (n=807)



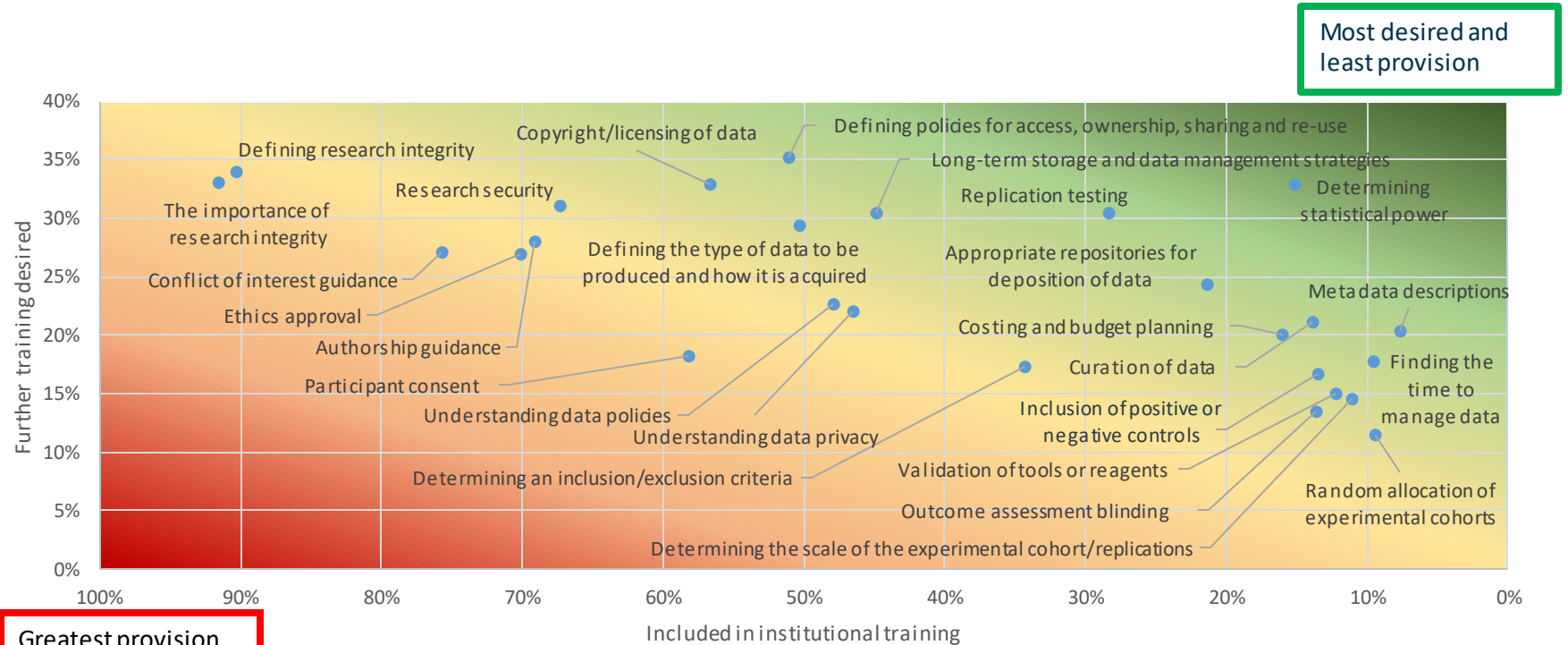
Please note, this question was only shown to those who answered "Yes" to the question "Have you undertaken training in research integrity as provided by your current institution?" on slide 11.

Defining data policies is the top desired topic for RI training, followed by RI fundamentals

Topics desired from research integrity training

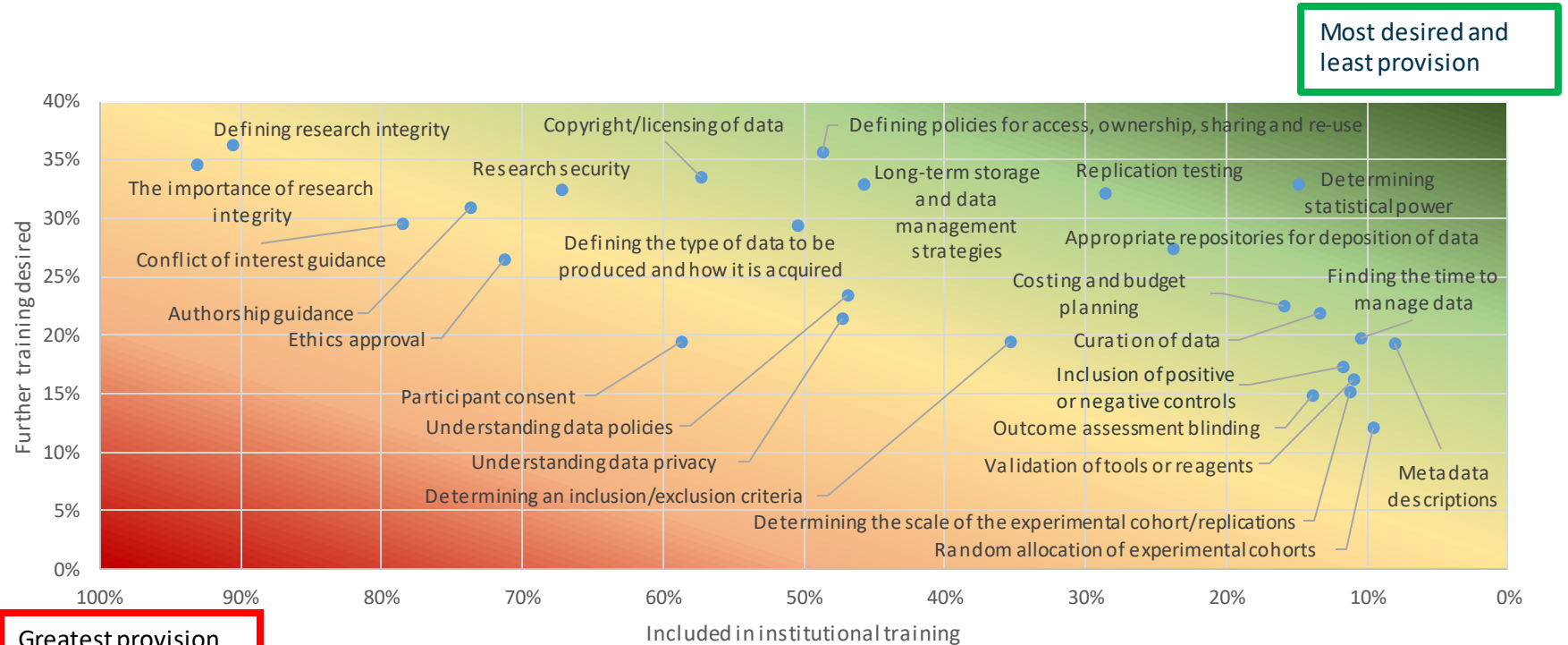


Cross-plot of training topics provided and training topics needs identify key institutional training development areas



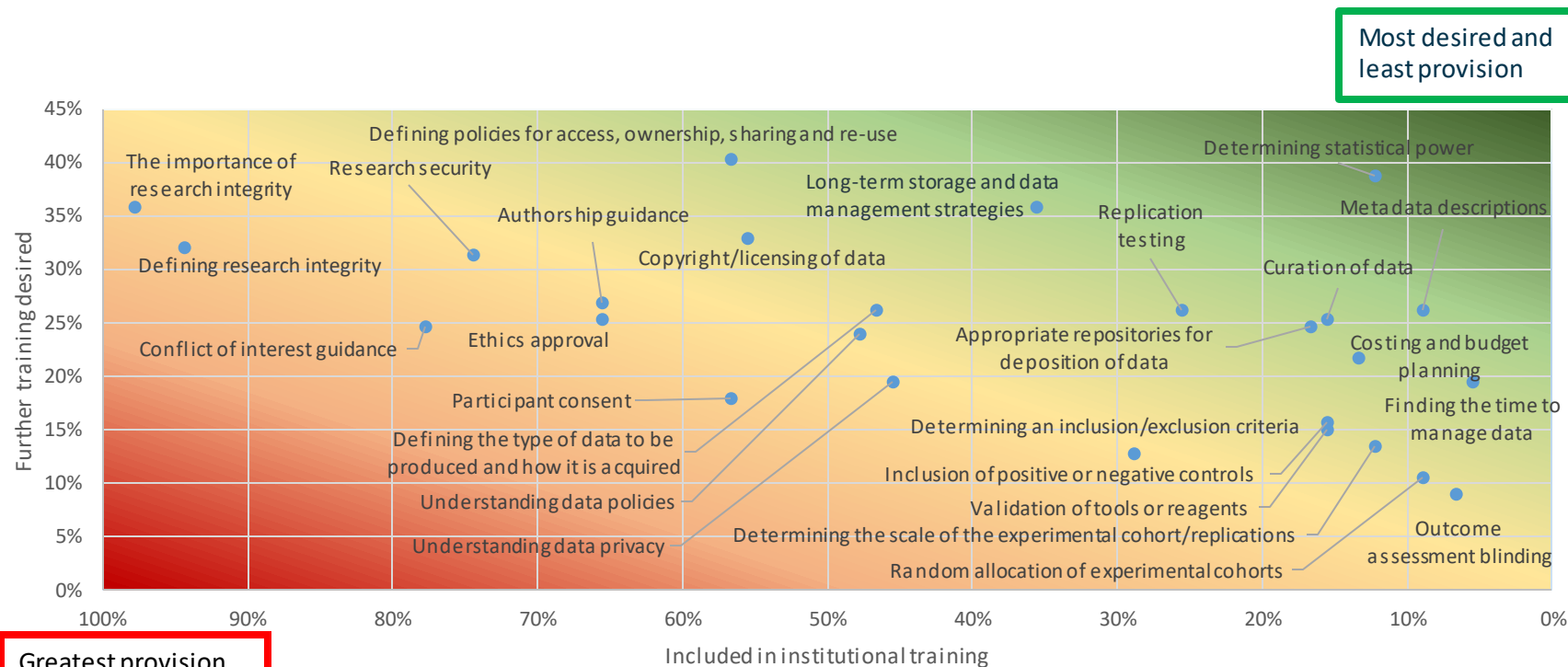
Senior researchers' cross-plot of training topics provided and training topics needs

Topics covered in research integrity training versus topics desired by seniority group



Mid-career researchers' cross-plot of training topics provided and training topics needs

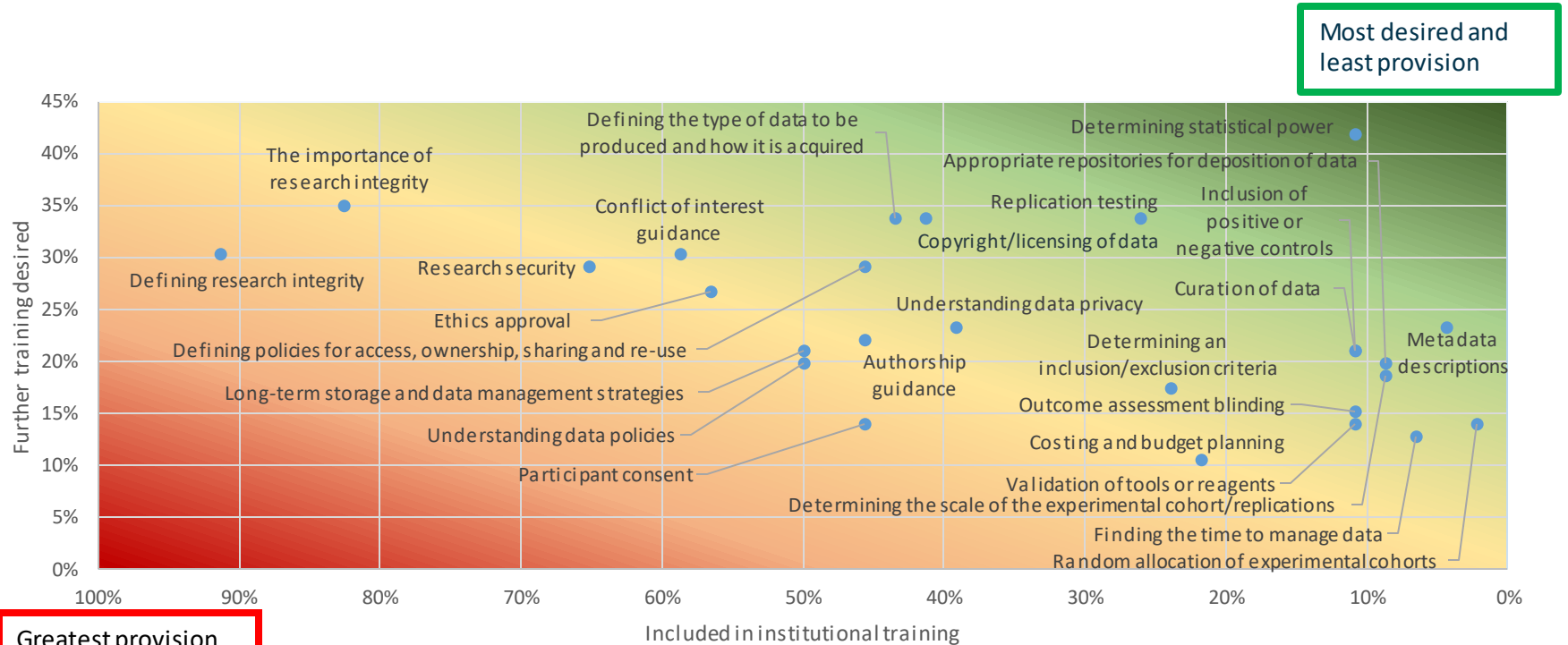
Topics covered in research integrity training versus topics desired by seniority group



Greatest provision and least desired

Early career researchers' cross-plot of training topics provided and training topics needs

Topics covered in research integrity training versus topics desired by seniority group





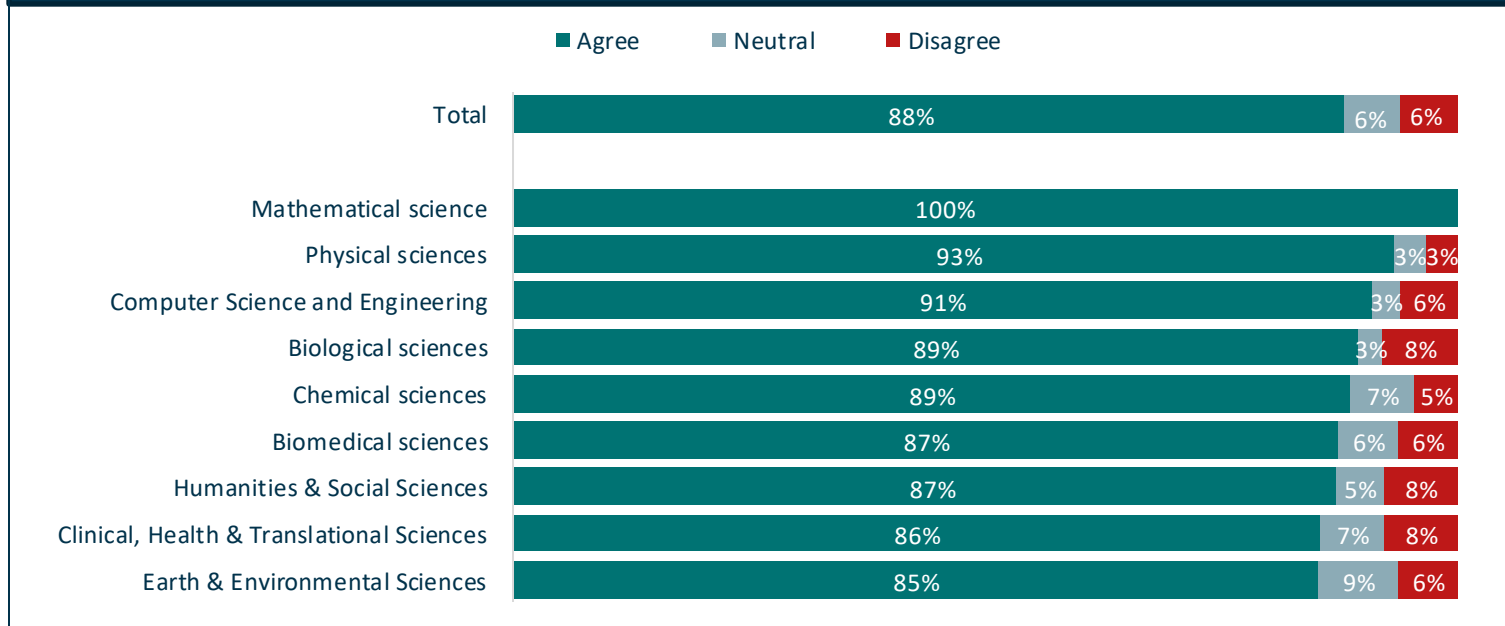
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Current training efficacy

Participants working in mathematical sciences report highest levels of RI in practice

Field specific perceptions of problems associated with research integrity

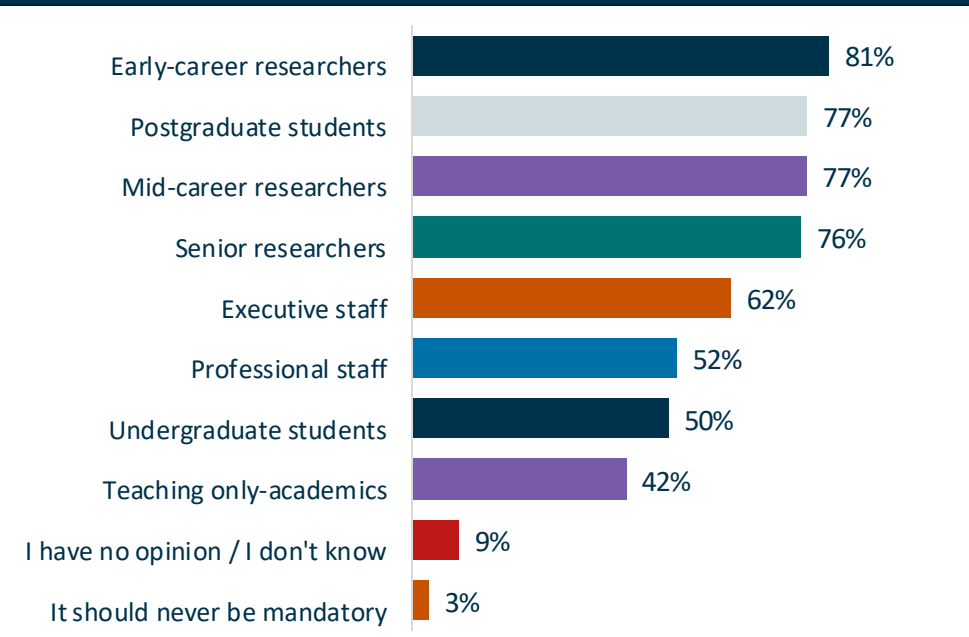
Q. To what extent do you agree/disagree that researchers within your field are using "honest and verifiable methods in proposing, performing, and evaluating research and reporting research results"? (n=1,145)



81% support mandatory training for younger researchers, while 3% oppose for all

Who should training in research integrity be mandatory for?

Q. For whom should training in research integrity be mandatory? (n=1,144)



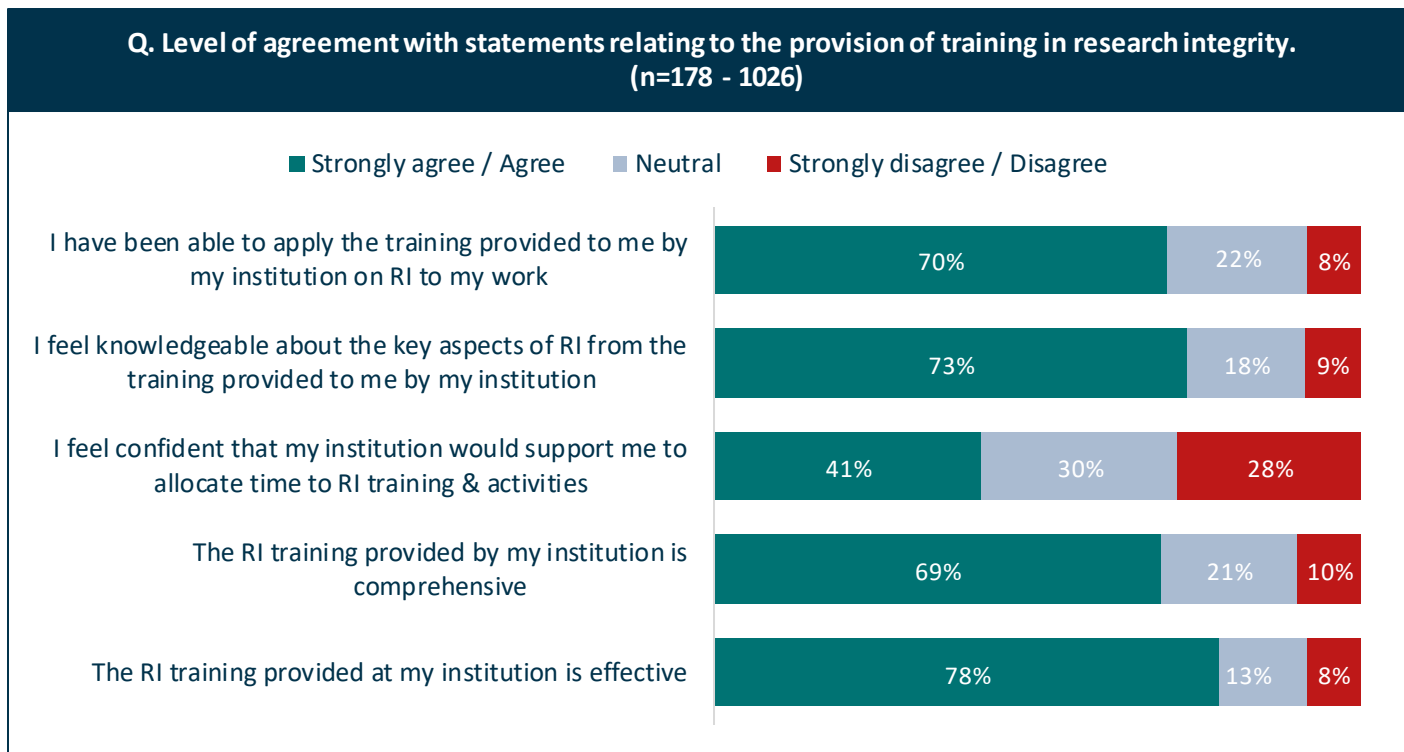
Most participants believe that training in RI should be mandatory for early-career researchers at 81%. In contrast, only a minimal 3% believe that it should never be mandatory for anyone.

Those working in universities and higher education institutions were more likely than those working in other places to indicate that RI training should be mandatory for everyone. Whereas those working in industry were least likely to indicate the same.

These figures represent the weighted proportion of respondents to give a particular response. Many respondents chose more than 1 answer. Total may not = 100%.

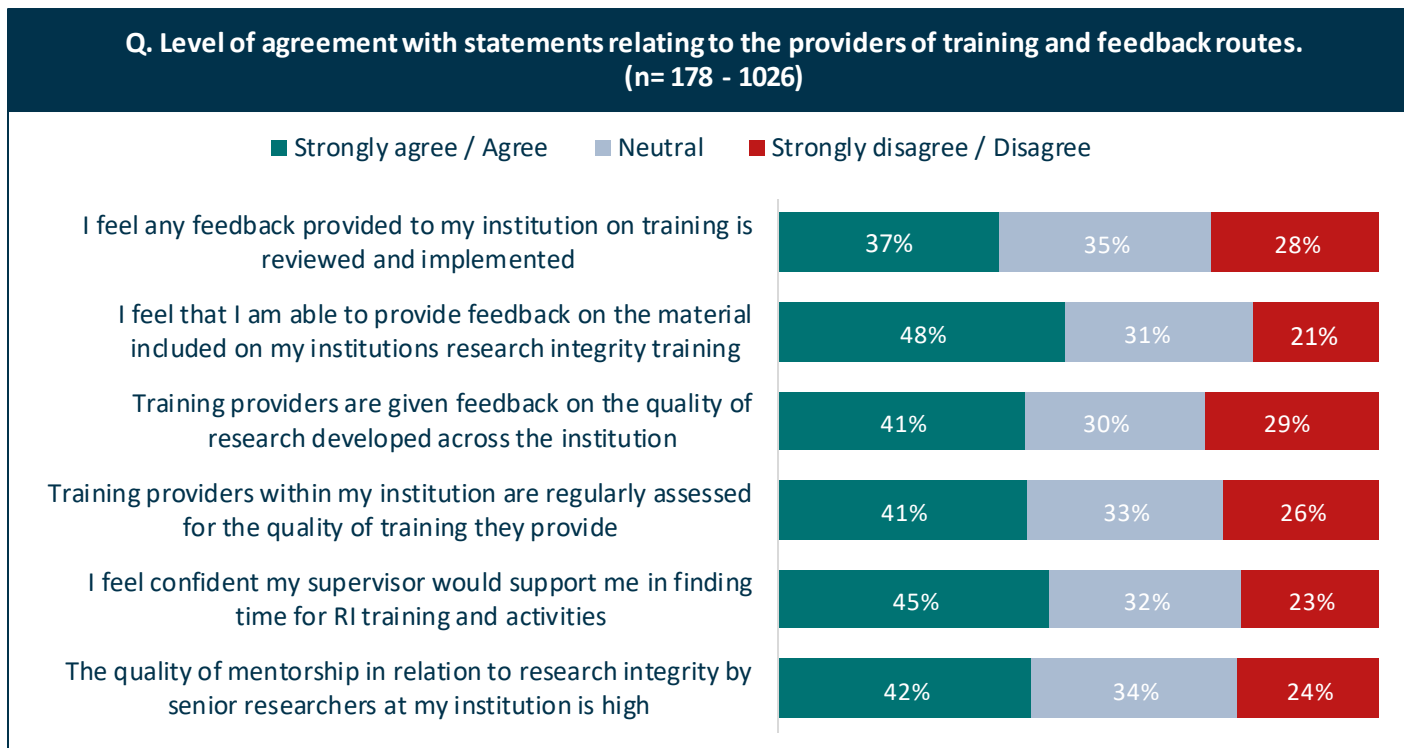
3 in 4 participants indicated their institution's RI training is effective

Perceived quality of current research integrity training provision



Almost half of participants feel able to provide feedback on RI training provided

Perceived quality of training providers and feedback mechanisms



For a few, RI training is seen as routine, and limited, particularly in data management

Why is training not effective and what is your biggest unmet need in training?

Q. You indicated that your institution's research integrity training was not effective and/or comprehensive. Please say more. (n=32)

❖ **Box-ticking exercise: Not done in practice**

- *"It's more important to demonstrate that one has completed it than it is to demonstrate any comprehensive understanding of research ethics."*
- *"The emphasis is only on receiving training on ethics, and the organization's practices emphasize only one aspect of research integrity, making it hard to believe that the organization is seriously considering how to achieve integrity."*

❖ **Limited content coverage**

- *"I feel that the scope of training in my field of expertise is narrow."*
- *"It does not include content related to specific data handling such as data curation or statistical methods."*

Q. What do you feel is the biggest unmet need in training in research integrity? (n=97)

❖ **Data management**

- *"Handling of research data (including data attribution, etc.)."*
- *"Digitize data for long-term storage."*
- *"Data in general is not covered in research integrity training."*
- *"Cost calculation and budget planning in research data management."*

❖ **Responsible authorship**

❖ **Data analysis and statistical methods**

- *"Selecting the appropriate statistical analysis method."*
- *"Concerning statistical significance."*
- *"Determining statistical power."*
- *"Knowledge of the fundamentals of data such as positive controls, negative controls, and statistics."*

❖ **Reproducibility**



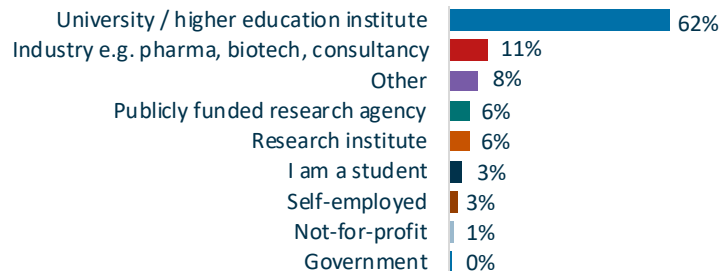
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Appendix

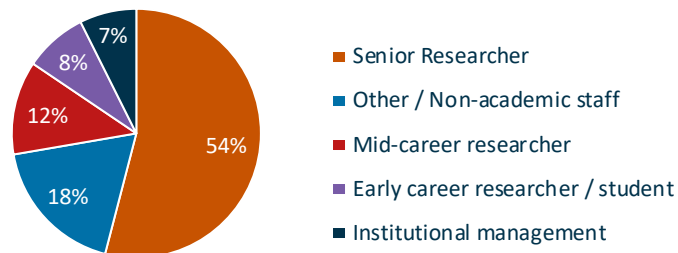
Respondents' profiles

Demographics (1/2)

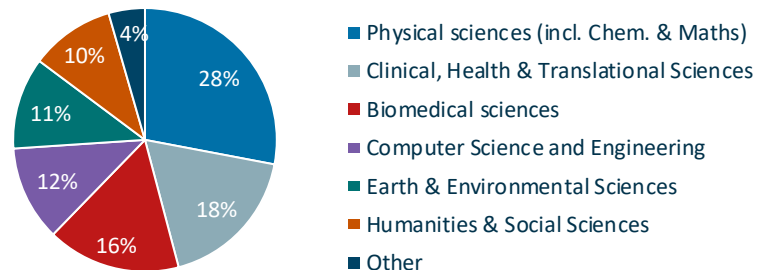
Workplace or student status (n=1,190)



Job role / Seniority (n=1,151)



Primary field of interest (n=1,190)

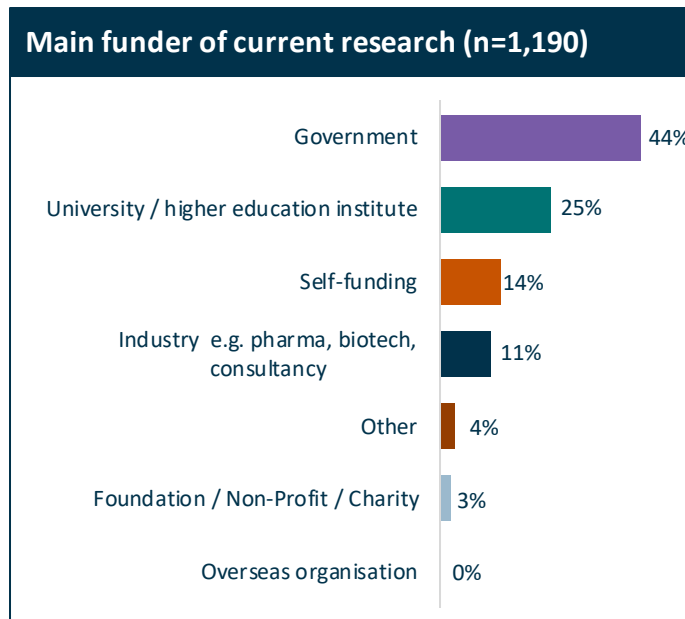


Training responsibility (n=1,190)



Respondents' profiles

Demographics (2/2)



Thank you