



**Australian Government**

**National Health and Medical Research Council**

## **2019 Survey of research culture in Australian NHMRC-funded institutions**

### **Appendices**



**Australian Government**

**National Health and Medical Research Council**

## **2019 Survey of research culture in Australian NHMRC-funded institutions**

### **Appendix A: Survey questionnaire**

## A. Your role

1 [ASK ALL] In what capacity are you participating in this survey?

1 Senior researcher

[Hover text: More than ten years of research experience after completion of research higher degree]

2 Mid-career researcher

[Hover text: Five-ten years of research experience after completion of research higher degree]

3 Junior researcher

[Hover text: Less than five years of research experience after completion of research higher degree (for example, postdoctoral researcher, technician / research assistant)]

4 Research student

[Hover text: Masters or PhD student involved with a research project]

5 Representative of an institution

[Hover text: A senior manager within an institution who is accountable for the administration of research funds, the conduct of research or the governance of research within the institution]

6 Current member of a Human Research Ethics Committee (HREC)

7 Current member of an Animal Ethics Committee (AEC)

8 None of the above

2 [ASK ALL] Do you work in an Australian institution?

1 Yes

2 No

[If Q1=8 or Q2=2, thank and end]

3 [Q1=1-4 (Researcher / Student)] How would you describe your research?

[Q1=5 (Institutional representative)] How would you describe the research conducted at your institution?

[Q1=6-7 (HREC member / AEC member)] How would you describe the proposals considered by your ethics committee?

[Please select all that apply]

1 Discovery

2 Preclinical

3 Hospital clinical

4 Other clinical

5 Health services

6 Public health

7 Epidemiology

8 Implementation research

- 9 Qualitative research
- 10 Quantitative research
- 11 Translational research
- 12 Research on research (meta-research)
- 13 Other *[Please specify]* \_\_\_\_\_

4 [Q1=5 (Institutional representative)] Which of the following most closely matches your current **primary** role / job title?

- 1 Chief Executive Officer
- 2 Executive Director
- 3 General Manager
- 4 Vice-Chancellor
- 5 Deputy Vice-Chancellor
- 6 Pro Vice-Chancellor
- 7 Director
- 8 Department / Faculty / Research Group Head
- 9 Research Administration Officer
- 10 Research Integrity Advisor
- 11 Research Integrity Officer
- 12 Other *[Please specify]* \_\_\_\_\_

5 [If Q1=6 (HREC member)] What is your current role on the Human Research Ethics Committee (HREC)?

- 1 Chair
- 2 Layperson

**[Hover text:** A person who has no affiliation with the institution and does not currently engage in medical, scientific, legal or academic work.]

- 3 Person with knowledge of, and current experience in, the professional care, counselling or treatment of people

**[Hover text:** For example: a nurse or allied professional.]

- 4 Person who performs a pastoral care role in a community

**[Hover text:** For example: An Aboriginal Elder, or a Minister of religion.]

- 5 Lawyer

**[Hover text:** Where possible one who is not engaged to advise the institution.]

- 6 Person with knowledge of, and current experience in, the areas of research regularly considered by the HREC

- 7 Other *[Please provide details including **voting status**]*  
\_\_\_\_\_

6 [If Q1=7 (AEC member)] What is your current role on the Animal Ethics Committee (AEC)?

1 Chair

2 Category A member

[**Hover text:** A person with qualifications in veterinary science that are recognised for registration as a veterinary surgeon in Australia, and with experience relevant to the institution's activities or the ability to acquire relevant knowledge.]

3 Category B member

[**Hover text:** A suitably qualified person with substantial and recent experience in the use of animals for scientific purposes relevant to the institution and the business of the AEC. This must include possession of a higher degree in research or equivalent experience. If the business of the AEC relates to the use of animals for teaching only, a teacher with substantial and recent experience may be appointed.]

4 Category C member

[**Hover text:** A person with demonstrable commitment to, and established experience in, furthering the welfare of animals, who is not employed by or otherwise associated with the institution, and who is not currently involved in the care and use of animals for scientific purposes. Veterinarians with specific animal welfare interest and experience may meet the requirements of this category. While not representing an animal welfare organisation, the person should, where possible, be selected on the basis of active membership of, and endorsement by, such an organisation.]

5 Category D member

[**Hover text:** A person not employed by or otherwise associated with the institution and who has never been involved in the use of animals in scientific or teaching activities, either in their employment or beyond their undergraduate education. Category D members should be viewed by the wider community as bringing a completely independent view to the AEC, and must not fit the requirements of any other category.]

6 Person responsible for the routine care of animals

[**Hover text:** In some jurisdictions, this may be described as a Category E member.]

7 Other [Please provide details including **voting status**]

---

7 [If Q1=1-2 (Senior researcher or Mid-career researcher)] How many students / staff are you currently a primary supervisor for? *Please enter the number of each. If none, please enter zero.*

	Number of students / staff you are a primary supervisor for
a Honours students (including MBBS research years)	_____
b Masters students	_____
c Doctoral students	_____
d Technical assistants	_____
e Research assistants	_____
f Postdoctoral researchers	_____
g Clinical researchers	_____

- 8 [Q1=5 (Institutional representative)] Approximately how many researchers are there at your institution?
- 1 None
  - 2 1 to 20
  - 3 21 to 50
  - 4 51 to 100
  - 5 101 to 150
  - 6 151 to 200
  - 7 More than 200

## B. Knowledge and attitudes

- 9 [Q1=1-4 (Researcher / Student)] What motivates you in your work as a researcher? [Please select **up to 3** responses]
- 1 Improving my knowledge and understanding
  - 2 Making research discoveries for the benefit of society
  - 3 Gaining recognition from my peers
  - 4 Progressing my career
  - 5 Gaining recognition from the public
  - 6 Satisfying my curiosity
  - 7 Working as part of a team
  - 8 Communicating research to others
  - 9 Training the next generation of researchers
  - 10 Earning a salary
  - 11 None of the above
  - 12 Don't know / can't say
- 10 [ASK ALL] Which of the following do you believe are most important for 'high quality research'? [Please select **up to 5** responses]

That the research is...

- 1 Rigorous
- 2 Transparent
- 3 Honest
- 4 Beneficial to society
- 5 Respectful
- 6 Innovative
- 7 Legal
- 8 Original

- 9 Justified
- 10 Accurate
- 11 Ethical
- 12 Open
- 13 Other *[Please specify]* \_\_\_\_\_

11 **[ASK ALL]** Is there anything you think that you, or your institution, could do in order to improve the quality of research? *Please provide details in your answer.*

---



---



---

12 **[Q1=1-4 (Researcher / Student)]** To what extent do you feel that your department / research group prioritises honesty and integrity when researchers propose, perform and report research?

- 1 Not at all
- 2 Somewhat
- 3 Moderately
- 4 Very much
- 5 Completely
- 6 Don't know / can't say

13 **[Q1=1-4 (Researcher / Student)]** Which of the following do you think matters most to the **validity** of your research? *[Please select up to 3 responses]*

- 1 The past work of others
- 2 Your hypothesis
- 3 Your experimental design
- 4 The statistical power of your experiments
- 5 Avoidance of experimental biases
- 6 The absence of conflicts of interest
- 7 Validation via publication in a peer-review journal
- 8 None of the above

14 **[Q1=1-4 (Researcher / Student)]** To what extent do you think each of the following contribute to inefficient use of research resources?

	Not at all	A little	A fair amount	A lot	To a great extent	Don't know / can't say
a Failure to build on what is already known from previous research	1	2	3	4	5	6
b Conduct of unnecessary research that might have been avoided if all negative or neutral studies were routinely published	1	2	3	4	5	6

	Not at all	A little	A fair amount	A lot	To a great extent	Don't know / can't say
c Problems for researchers when previous experiments / studies are unreliable because of biases or inadequate sample size	1	2	3	4	5	6
d Time wasted when essential information on study methods or materials are poorly described or inaccessible	1	2	3	4	5	6
e Failure to consider whether and how research results might have value to downstream users (other researchers, clinicians, etc)	1	2	3	4	5	6

## Reproducibility of results

15 [ASK ALL] How important do you think reproducibility is to research?

- 1 Not at all important
- 2 Not that important
- 3 Somewhat important
- 4 Quite important
- 5 Very important
- 6 Don't know / can't say

16 [ASK ALL] Have you heard of the term 'crisis of reproducibility' in relation to issues in research?  
[Please select all that apply]

- 1 Yes, from the mainstream media
- 2 Yes, from research journals
- 3 Yes, from discussions at conferences
- 4 Yes, from discussions with my colleagues
- 5 Yes, from elsewhere [Please specify] \_\_\_\_\_
- 6 No
- 7 Don't know / can't say

17 [ASK ALL] Which of the following statements do you feel is most accurate when thinking about reproducibility in research?

- 1 There is no crisis of reproducibility
- 2 There is a slight crisis of reproducibility
- 3 There is a significant crisis of reproducibility
- 4 Don't know / can't say

18 Please indicate the extent to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know / can't say
a [ASK ALL] I think that a failure to reproduce a result most often means that the original finding is wrong	1	2	3	4	5	6
b [ASK ALL] I think that a failure to reproduce a result rarely detracts from the validity of the original finding	1	2	3	4	5	6
c [Q1=1-4 (Researcher / Student)] I think that the failure to reproduce research is a major problem in my field	1	2	3	4	5	6
d [Q1=1-4 (Researcher / Student)] I think that the failure to reproduce research is a major problem for all fields	1	2	3	4	5	6

19 [Q1=1-5 (Researcher / Student / Institutional representative)] To what extent do you feel that each of the following factors contribute to a failure to reproduce results?

	Not at all	Slightly	Moderately	Considerably	To a great extent	Don't know / can't say
a Pressure to publish for career advancement	1	2	3	4	5	6
b Insufficient oversight / mentoring by principal investigator for the research group (e.g. reviewing raw data)	1	2	3	4	5	6
c Insufficient peer review of grant applications	1	2	3	4	5	6
d Insufficient peer review of research publications	1	2	3	4	5	6
e Selective reporting of results	1	2	3	4	5	6
f Original findings were inadequately robust because of insufficient replication by the research group publishing the work	1	2	3	4	5	6

	Not at all	Slightly	Moderately	Considerably	To a great extent	Don't know / can't say
g Original findings obtained with low statistical power / poor statistical analysis	1	2	3	4	5	6
h Mistakes or inadequate expertise in reproduction efforts	1	2	3	4	5	6
i Information not available from the original research group (e.g. protocols, data, code, reagent information)	1	2	3	4	5	6
j Methods need technical expertise that is difficult for others to reproduce	1	2	3	4	5	6
k Variability in standard reagents	1	2	3	4	5	6
l Poor experimental design	1	2	3	4	5	6
m Fraud (i.e. fabricated or falsified results)	1	2	3	4	5	6
n Bad luck	1	2	3	4	5	6

## C. Environment

### Immediate environment: Department / research group

20 Please indicate the extent to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know / not applicable
a [Q1=1-4 (Researcher / Student)] Research practices in my department / research group follow established institutional policies regarding research	1	2	3	4	5	6
b [Q1=1-4 (Researcher / Student)] People in my department / research group implement data management principles within their research projects	1	2	3	4	5	6
c [Q1=1-4 (Researcher / Student)] People in my department / research group appropriately handle data from collection to archival with an intention for potential future re-use	1	2	3	4	5	6

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know / not applicable
d [Q1=1-5 (Researcher / Student / Institutional representative)] Junior researchers are effectively mentored about responsible research practices	1	2	3	4	5	6
e [Q1=1-4 (Researcher / Student)] Researchers in my immediate research environment are committed to appropriate data and code sharing when publishing research results	1	2	3	4	5	6
f [Q1=1-4 (Researcher / Student)] Researchers in my immediate research environment are committed to open access publishing when publishing research results	1	2	3	4	5	6

21 [Q1=1-4 (Researcher / Student)] Which of the following procedures have you / your research group established to ensure reproducibility in your work? [Please select all that apply]

- 1 Estimate required number of participants / animals per experimental cohort
- 2 Estimate statistical power
- 3 Randomly allocate participants / animals to experimental cohorts
- 4 Apply inclusion or exclusion criteria
- 5 Procedures for accounting for dropouts / losses documented in the analysis plan
- 6 Blind outcome assessment
- 7 Transparent reporting of study design and methods
- 8 In house replication before publication
- 9 Inclusion of positive and negative controls
- 10 Validation of tools or reagents such as antibodies, SiRNAs, small molecules
- 11 Other [Please specify] \_\_\_\_\_
- 12 No procedures have been established to ensure reproducibility in our work
- 13 Don't know / can't say

- 22 [Q21=1-10] When were such procedures first established within your research group?
- 1 Within the last year
  - 2 1 year to less than 2 years ago
  - 3 2 years to less than 5 years ago
  - 4 More than 5 years ago
  - 5 These procedures have been in place since I started working in my research group
- 23 [Q22=1-4] Did the quality of your research change after these procedures were introduced?
- 1 Yes, the quality of my research improved
  - 2 Yes, the quality of my research worsened
  - 3 No, the quality of my research remained unchanged
  - 4 Don't know / can't say
- 24 [Q1=1-4 (Researcher / Student)] Have you / your research group experienced any barriers when trying to implement procedures to improve reproducibility of research?
- 1 Yes
  - 2 No
  - 3 I / we haven't ever tried to implement such procedures
  - 4 Don't know / can't say
- 25 [Q24=1] Please list the barriers that you / your research group have encountered when trying to implement procedures to improve reproducibility of research.
- 
- 
- 
- 26 [Q1=1-4 (Researcher / Student)] Have you ever tried to reproduce a finding from a published paper? [Please select all that apply]
- 1 Yes, and I was able to fully reproduce the finding
  - 2 Yes, but I was not able to fully reproduce the finding
  - 3 No, I have not tried to reproduce a finding from a published paper
- 27 [Q26=2] Did you try to publish findings that disagreed with those in a published paper?
- 1 Yes
  - 2 No
- 28 [Q27=2] Why not?
- 
- 
- 
- 29 [Q26=2] Were the differences in findings ever resolved by you or another researcher?
- 1 Yes
  - 2 No

30 [Q1=1-4 (Researcher / Student)] Have you ever tried to reproduce a finding from your own published paper? [Please select all that apply]

- 1 Yes, and I was able to fully reproduce the finding
- 2 Yes, but I was not able to fully reproduce the finding
- 3 No, I have not tried to reproduce a finding from my own published paper
- 4 I have not published any work to date [Skip to Q33]

31 [Q1=1-4 (Researcher / Student)] Have you ever been aware that a finding you had published was not able to be reproduced?

- 1 Yes
- 2 No

32 [Q31=1] How was this resolved, if at all?

---



---



---

33 Responsible research practices are practices that ensure research is rigorous, transparent and reproducible. Approximately, how often do you discuss responsible research practices...

	Never	Annually or less often	Quarterly	Monthly	Weekly	Daily	Don't know / can't say
a [Show if Q1=4] in class / tutorials	1	2	3	4	5	6	7
b [Show if Q1=1-4] with your immediate peers	1	2	3	4	5	6	7
c [Show if Q1=3-4] with a supervisor	1	2	3	4	5	6	7
d [Show if Q1=1-4] with a mentor	1	2	3	4	5	6	7
e [ASK ALL] with a senior staff member	1	2	3	4	5	6	7
f [Show if Q1=1-4] with an ethics committee member	1	2	3	4	5	6	7
g [Show if Q1=6-7] with another member of the ethics committee	1	2	3	4	5	6	7
h [Show if Q1=5-7] with staff at my institutional research office or equivalent	1	2	3	4	5	6	7
i [Show if Q1=1-4] with a librarian	1	2	3	4	5	6	7
j [ASK ALL] with a colleague from another institution	1	2	3	4	5	6	7
k [ASK ALL] with a friend or relative	1	2	3	4	5	6	7
l [ASK ALL] with a member of the general public	1	2	3	4	5	6	7

- 34 [ASK ALL] Do you have informal discussions about responsible research practices (e.g. after work, in social situations)?
- 1 Yes
  - 2 No
  - 3 Not relevant to my role
  - 4 Don't know / can't say
- 35 [ASK ALL] Have you wanted to have discussions about responsible research practices but felt unable to do so?
- 1 Yes
  - 2 No
- 36 [Q1=1-4 (Researcher / Student)] At what stages do you generally discuss responsible research practices with your supervisors / senior colleagues / senior administrators? [Please select all that apply]
- 1 When ethics / grant applications are being prepared
  - 2 When papers are being prepared for publication
  - 3 During annual career development sessions
  - 4 At regular research group meetings
  - 5 When data analysis is being discussed
  - 6 When I first started work / study, but not since
  - 7 Other [Please specify] \_\_\_\_\_
  - 8 Never
  - 9 Don't know / can't say

## Institutional environment

37 Please indicate the extent to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know / not applicable
a [ASK ALL] I have easy access to an individual(s) with appropriate expertise that I can ask for advice about responsible research practices [Hover text: Practices that ensure research is rigorous, transparent and reproducible.]	1	2	3	4	5	6

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know / not applicable
b [ASK ALL] I have easy access to my institution's policies / guidelines about responsible research practices [Hover text: Practices that ensure research is rigorous, transparent and reproducible.]	1	2	3	4	5	6
c [Q1=1-4 (Researcher / Student)] The regulatory committees that review my research (e.g. ethics committees) understand the kind of research I do	1	2	3	4	5	6
d [Q1=1-4 (Researcher / Student)] I have access to sufficient material resources (e.g. space, equipment or technology) to conduct my research	1	2	3	4	5	6
e [Q1=1-4 (Researcher / Student)] I find it difficult to conduct research in a responsible manner because of insufficient access to human resources (e.g. statistical expertise, technical / administrative support)	1	2	3	4	5	6
f [Q1=1-4 (Researcher / Student)] Senior administrators in my institution support data and code sharing when publishing research results	1	2	3	4	5	6
g [Q1=1-4 (Researcher / Student)] Senior administrators in my institution support open access publishing when publishing research results	1	2	3	4	5	6

38 [Q1=6-7 (HREC member / AEC member)] Which of the following information is **required** in proposals that your ethics committee considers? [Please select all that apply]

- 1 How the number of participants / animals per experimental cohort was determined
- 2 How statistical power was determined
- 3 Whether participants / animals are to be randomly allocated to experimental cohorts

- 4 Whether inclusion or exclusion criteria will be applied
- 5 How dropouts / losses will be accounted for in the analysis plan
- 6 Whether outcome assessment will be blinded
- 7 Inclusion of positive and negative controls
- 8 Validation of tools or reagents such as antibodies, siRNAs, small molecules
- 9 None of the above
- 10 Don't know / can't say

39 [Q1=6-7 (HREC member / AEC member)] Which of the following information is **routinely provided** in proposals that your ethics committee considers? [Please select all that apply]

- 1 How the number of participants / animals per experimental cohort was determined
- 2 How statistical power was determined
- 3 Whether participants / animals are to be randomly allocated to experimental cohorts
- 4 Whether inclusion or exclusion criteria will be applied
- 5 How dropouts / losses will be accounted for in the analysis plan
- 6 Whether outcome assessment will be blinded
- 7 Inclusion of positive and negative controls
- 8 Validation of tools or reagents such as antibodies, siRNAs, small molecules
- 9 None of the above
- 10 Don't know / can't say

40 [Q1=6-7 (HREC member / AEC member)] How are you assured about the quality of the design and methods for a project outlined in applications considered by your committee? [Please select all that apply]

- 1 I trust the expertise of other members of the ethics committee
- 2 I have sufficient expertise to assess these aspects of an application
- 3 Independent external review
- 4 Independent internal (institutional) peer review
- 5 Peer review by a funding body
- 6 I assume these aspects of the applications are appropriate if they are before the committee
- 7 Other [Please specify] \_\_\_\_\_

41 [Q1=5 (Institutional Representative)] What systems does your institution have in place for measuring, monitoring and reporting the quality and outcomes of research?

---



---



---

- 42 [ASK ALL] If you have any further comments you would like to make about the culture of your institution in regard to responsible research practices, please provide them in the space below.

---



---



---

## **Education and training**

- 43 [Q1=5 (Institutional Representative)] How does your institution offer education and training about responsible research practices? [Hover text: Practices that ensure research is rigorous, transparent and reproducible.]  
 [Q1=1-4 (Researcher / Student)] How have you received education and training about responsible research practices? [Hover text: Practices that ensure research is rigorous, transparent and reproducible.]  
 [Q1=6-7 (Ethics committee member)] How have you received education and training about responsible research practices that are relevant to the proposal that your committee considers? [Hover text: Practices that ensure research is rigorous, transparent and reproducible.]  
 [Please select all that apply]
- 1 As part of undergraduate courses
  - 2 Training by supervisor / mentor
  - 3 Mandatory institutional training (including induction and refresher training)
  - 4 Non-mandatory institutional training (including induction and refresher training)
  - 5 Ad hoc training
  - 6 Attendance at external conferences / workshops etc.
  - 7 My institution does not offer training
  - 8 [Show if Q1=1-4 (Researcher / Student) or 6-7 (Ethics committee member)] I don't need training
  - 9 [Show if Q1=1-4 (Researcher / Student) or 6-7 (Ethics committee member)] I have never received such training
  - 10 Other [Please specify] \_\_\_\_\_
- 44 [If Q43=1-6] [Q1=5 (Institutional Representative)] How frequently does your institution offer education and training about responsible research practices? [Q1=1-4 (Researcher / Student) or 6-7 (Ethics committee member)] How frequently do you receive training about responsible research practices from your institution?
- 1 Only once as induction training
  - 2 More than once per year
  - 3 Once a year
  - 4 Once every 2 years
  - 5 Less often

45 [Q1=5 (Institutional Representative)] Education and training about responsible research practices is provided to... [Please select all that apply]

- 1 Undergraduate students
- 2 Masters and PhD students
- 3 Early and mid-career researchers
- 4 Senior researchers
- 5 Research support staff
- 6 Human Research Ethics Committee members
- 7 Animal Ethics Committee members
- 8 Other [Please specify] \_\_\_\_\_

46 [ASK ALL] Please indicate the extent to which you agree or disagree with the following statements about **training on responsible research practices**.

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Don't know / Not applicable
a The educational and training opportunities available at my institution about responsible research practices are effective	1	2	3	4	5	6
b Education and training about responsible research practices is beneficial for my work / role	1	2	3	4	5	6
c Appropriately educating and training researchers about responsible research practices will improve research quality	1	2	3	4	5	6

## Reporting and publishing

47 [Q1=1-4 (Researcher / Student)] When you write a report / paper about your research, which of the following do you specify? [Please select all that apply]

- 1 How the number of participants / animals per experimental cohort was determined
- 2 How statistical power was determined
- 3 Whether participants / animals were randomly allocated to experimental cohorts
- 4 Whether inclusion or exclusion criteria were applied
- 5 How dropouts / losses were accounted for in the analysis plan
- 6 Whether outcome assessment was blinded
- 7 Inclusion of positive and negative controls
- 8 Validation of tools or reagents such as antibodies, siRNAs, small molecules
- 9 I have not yet written a report / paper about my research
- 10 None of the above
- 11 I do not specify any of the above as they are not relevant to my research
- 12 Don't know / can't say

48 [If Q1=1-4 (Researcher / Student)] To what degree do you think that the use of reporting checklists has improved the following aspects of your published work / published work in your field? [**Hover text:** In recent years, some journals have required a 'reporting checklist' for all papers published in their journal. Others have adopted similar short checklists, while most state they support compliance with reporting guidelines – such as ARRIVE for animal research, CONSORT for clinical trials, and STROBE for observational studies.]

	Not at all	To a small extent	To a moderate extent	To a large extent	Don't know / not applicable
a Reporting of study methods and procedures	1	2	3	4	5
b Adoption of practices to reduce bias (blinding, randomisation)	1	2	3	4	5
c Statistical analysis of studies	1	2	3	4	5
d Reporting of reagents	1	2	3	4	5
e Reporting of animal models	1	2	3	4	5
f Increased data deposition in public repositories	1	2	3	4	5

## D. Pressures

49 [Q1=1-4 (Researcher / Student)] Have you ever been aware of other researchers feeling tempted or under pressure to compromise on research quality?

[Q1=5-7 (Institutional representative / HREC member / AEC member)] Have you ever been aware of researchers feeling tempted or under pressure to compromise on research quality?

1 Yes

2 No

50 [Q1=1-4 (Researcher / Student)] Have you ever personally felt tempted or under pressure to compromise on research quality?

1 Yes

2 No

## Funding

51 [Q1=1-4 (Researcher / Student)] Please indicate the extent to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know / not applicable
a My department's / research group's expectations of researchers for obtaining external funding are reasonable	1	2	3	4	5	6
b Pressure to obtain external funding has a negative effect on the quality of research in my department / research group	1	2	3	4	5	6

## Publishing

52 [Q1=1-4 (Researcher / Student)] Please indicate the extent to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know / not applicable
a My department's / research group's expectations of researchers with respect to publishing are reasonable	1	2	3	4	5	6
b The pressure to publish findings has a negative effect on the quality of research in my department / research group	1	2	3	4	5	6

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know / not applicable
c It is necessary to have a first authored publication in a prestigious journal (e.g. Cell, Nature, Science, NEJM, Lancet) when seeking an academic position or promotion	1	2	3	4	5	6
d I experience stress at the thought of my colleagues' assessment of my publication output	1	2	3	4	5	6
e Publication pressure leads some colleagues (whether intentionally or not) to cut corners	1	2	3	4	5	6

## Competition

53 [Q1=1-4 (Researcher / Student)] In your experience, how competitive are the following aspects of a researcher's role?

	Not at all competitive	Not that competitive	Somewhat competitive	Quite competitive	Very competitive	Don't know / can't say
a Making discoveries	1	2	3	4	5	6
b Applying for funding	1	2	3	4	5	6
c Applying for jobs and promotions	1	2	3	4	5	6
d Gaining peer recognition	1	2	3	4	5	6
e Gaining public recognition	1	2	3	4	5	6
f Journal publication	1	2	3	4	5	6

54 [ASK ALL] What effect do you think that competition in research is having on the production of high quality research?

- 1 A very negative effect
- 2 A negative effect
- 3 No effect
- 4 A positive effect
- 5 A very positive effect
- 6 Don't know / can't say

55 [Q54<6] Why do you say that?

---



---



---

## External pressure

56 [Q1=1-4 (Researcher / Student)] Have you experienced pressure from a [mentor / supervisor if Q1=3-4, a research colleague if Q1=1-2] to prove that his / her hypothesis was correct, even though the data you generated may not support the hypothesis?

- 1 Yes
- 2 No
- 3 Don't know / can't say

57 [Q1=1-4 (Researcher / Student)] Has [a mentor / supervisor if Q1=3-4, a research colleague if Q1=1-2] ever asked you alter / suppress your results, or to select the best results which may not be representative of all the results?

- 1 Yes
- 2 No
- 3 Don't know / can't say

## E. Actions

58 [ASK ALL] What effect do you think the following features of the Australian research environment have on researchers in terms of **encouraging the production of high quality research**?

	Very negative effect overall	Negative effect overall	No effect overall	Positive effect overall	Very positive effect overall	Don't know / can't say
a The Excellence in Research for Australia (ERA) framework	1	2	3	4	5	6
b International and national University rankings	1	2	3	4	5	6
c How funding for specific projects and programmes is awarded	1	2	3	4	5	6
d How multidisciplinary & collaborative research is supported	1	2	3	4	5	6
e Support of open access publishing	1	2	3	4	5	6
f The grant peer review system	1	2	3	4	5	6
g The journal peer review system	1	2	3	4	5	6
h Media coverage of research	1	2	3	4	5	6
i How researchers are assessed for promotion during their careers	1	2	3	4	5	6
j Provision of professional education, training and supervision	1	2	3	4	5	6

	Very negative effect overall	Negative effect overall	No effect overall	Positive effect overall	Very positive effect overall	Don't know / can't say
k Commercialisation of research	1	2	3	4	5	6
l Ethical review processes	1	2	3	4	5	6
m Research governance and contractual processes	1	2	3	4	5	6
n Initiatives that promote integrity in research, such as codes of conduct	1	2	3	4	5	6
o Data sharing policies	1	2	3	4	5	6
p Monetary rewards for research achievements	1	2	3	4	5	6
q Emphasis on publishing in top-tier journals	1	2	3	4	5	6

59 [ASK ALL] Of the following, who has the largest potential to **improve research quality** (directly or indirectly)? [Please select **up to 3** responses]

- 1 Funders
- 2 Publishers
- 3 Research group heads
- 4 Ethics committees
- 5 Department heads
- 6 Professional societies
- 7 Researchers
- 8 Research institutions
- 9 General public and politicians
- 10 None of the above
- 11 Don't know / can't say

60 [ASK ALL] Which of the following actions by **funders** do you think has the largest potential to improve research quality? [Please select **all that apply**]

- 1 Providing guidance for training of researchers about research quality
- 2 Providing guidance for researchers on how to ensure research quality is addressed in grant applications
- 3 Ensuring grant application processes support submission and assessment of critical and relevant information
- 4 Ensuring appropriate training for peer review panel members about research quality
- 5 Encouraging open publishing practices e.g. data sharing, publishing openly (preprint servers, open access journals)
- 6 Providing a publishing platform for all research outputs
- 7 Providing public recognition of initiatives that ensure and promote research quality

8 Other *[Please specify]* \_\_\_\_\_

9 None of the above

10 Don't know / can't say

61 **[ASK ALL]** Which of the following actions by **academic / research institutions** do you think has the largest potential to improve research quality? *[Please select all that apply]*

1 Providing appropriate education and training for researchers about research quality

2 Requiring compliance with best practice for research design in ethics and grant applications and publications

3 Developing mentoring programs that address research quality as well as career development

4 Rewarding researchers who perform high quality research

5 Conducting audits to ensure maintenance of record keeping and responsible research practice

6 Encouraging open publishing practices e.g. data sharing, publishing openly (preprint servers, open access journals)

7 Promoting an environment where high quality research and reproducible research is considered the required norm

8 Other *[Please specify]* \_\_\_\_\_

9 None of the above

10 Don't know / can't say

62 **[ASK ALL]** Which of the following actions by **researchers** do you think has the largest potential to improve research quality? *[Please select all that apply]* [

1 Participation in appropriate education and training about research quality

2 Specifying critical research design elements (e.g. power analysis, bias avoidance, randomisation, blinding)

3 Clearly distinguishing between discovery and hypothesis testing experiments

4 Obtaining statistical advice and developing a statistical plan before commencing a study

5 Pre-registration of research protocols

6 Appropriate disclosures of interests including funding sources

7 Replication by outside research groups

8 Use of reporting checklists

9 Reporting exclusions

10 Open publishing practices e.g. data sharing, publishing openly (preprint servers, open access journals)

11 Other *[Please specify]* \_\_\_\_\_

12 None of the above

13 Don't know / can't say

63 [ASK ALL] Do you think that ensuring research quality adds to your workload?

- 1 No, not at all
- 2 Yes, a little
- 3 Yes, a moderate amount
- 4 Yes, a large amount
- 5 Don't know / can't say

## F. Current and past behaviours

[NEW PAGE – SHOW IF Q1=1-4 ONLY]

64 [Q1=1-4 (Researcher / Student)] In the **past 3 years**, have you done, or witnessed, any of the following in your role as a researcher?

	No	Yes, I've done it myself	Yes, I've seen others do it	Don't know / not applicable	I prefer not to answer this question
a Proposed research questions which are easy to answer rather than needed	1	2	3	4	5
b Chosen an inadequate research design because it minimised costs	1	2	3	4	5
c Used unsuitable measurement methods because they were readily available	1	2	3	4	5
d Withheld information from a grant application that could have 'weakened' the application	1	2	3	4	5
e Stopped data collection earlier than planned, without the application of pre-planned monitoring and stopping rules, because the results were already statistically significant	1	2	3	4	5

65 [Q1=1-4 (Researcher / Student)] In the **past 3 years**, have you done, or witnessed, any of the following in your role as a researcher?

	No	Yes, I've done it myself	Yes, I've seen others do it	Don't know / not applicable	I prefer not to answer this question
a Excluded outlying data before performing data analysis without disclosure	1	2	3	4	5
b Selected the statistical method that provided the desired result	1	2	3	4	5
c Performed data analyses not described in the study protocol without disclosure	1	2	3	4	5
d Reported an incorrect downwardly rounded p-value	1	2	3	4	5
e Incrementally added more data until the results became statistically significant	1	2	3	4	5
f Concealed results that contradict earlier findings or hypotheses	1	2	3	4	5
g Fabricated / falsified data to complete a project or paper	1	2	3	4	5

66 [Q1=1-4 (Researcher / Student)] In the **past 3 years**, have you done, or witnessed, any of the following in your role as a researcher?

	No	Yes, I've done it myself	Yes, I've seen others do it	Don't know / not applicable	I prefer not to answer this question
a Not attempted to publish a valid 'negative' or 'neutral' study	1	2	3	4	5
b Reported an unexpected finding as having been hypothesised from the start	1	2	3	4	5
c Not reported all study protocol stipulated results	1	2	3	4	5

	No	Yes, I've done it myself	Yes, I've seen others do it	Don't know / not applicable	I prefer not to answer this question
d Selection of the best data for publication, rather than representative data	1	2	3	4	5
e Use of other researchers' ideas or phrases without permission or referencing	1	2	3	4	5
f Not reported replication problems	1	2	3	4	5
g Selective citation	1	2	3	4	5

67 [Q1=1-4 (Researcher / Student)] In the **past 3 years**, have you done, or witnessed, any of the following in your role as a researcher?

	No	Yes, I've done it myself	Yes, I've seen others do it	Don't know / not applicable	I prefer not to answer this question
a Insufficiently reported study flaws and limitations	1	2	3	4	5
b Submitted or resubmitted a paper or grant application without consent from all authors	1	2	3	4	5
c Duplication of a publication without disclosure	1	2	3	4	5
d Inappropriately added or omitted an author or contributor	1	2	3	4	5

68 [Q1=1-4 (Researcher / Student)] In the **past 3 years**, have you done, or witnessed, any of the following in your role as a researcher?

	No	Yes, I've done it myself	Yes, I've seen others do it	Don't know / not applicable	I prefer not to answer this question
a Modification of the results or conclusions of a study due to pressure of a sponsor / funder	1	2	3	4	5
b Failure to disclose a sponsor / funder of a study	1	2	3	4	5
c Failure to disclose a relevant financial or	1	2	3	4	5

	No	Yes, I've done it myself	Yes, I've seen others do it	Don't know / not applicable	I prefer not to answer this question
intellectual conflict of interest					
d Refused to share data (that you have the rights to share) with bona fide colleagues	1	2	3	4	5
e Refused to respond to an allegation of a breach of research integrity	1	2	3	4	5

## G. About you

69 [ASK ALL] Are you:

- 1 Female
- 2 Male
- 3 X (Indeterminate / Intersex / Unspecified)
- 4 Prefer not to say

70 [ASK ALL] How old are you?

- 1 18 – 24 years
- 2 25 – 34 years
- 3 35 – 44 years
- 4 45 – 54 years
- 5 55 – 64 years
- 6 65 – 74 years
- 7 75 years or older
- 8 Prefer not to say

71 [Q1=1-4 (Researcher / Student)] How many years have you been working in research?  
 [Q1=5 (Institutional representative)] How many years have you been involved in your role?  
 [Q1=6-7 (HREC member / AEC member)] How much experience do you have working as a member or Chair of the ethics committee?

- 1 Less than 3 years
- 2 3 to 10 years
- 3 More than 10 years
- 4 Prefer not to say

72 [ASK ALL] What type of institution are you primarily associated with?

- 1 University
- 2 Hospital
- 3 Research institute
- 4 Company
- 5 Other *[Please specify]* \_\_\_\_\_

73 [Q1=1-4 (Researcher / Student)] How many members are in your research group?

- 1 1 to 5 members
- 2 6 to 10 members
- 3 11 to 25 members
- 4 26 to 50 members
- 5 More than 50 members



**Australian Government**

**National Health and Medical Research Council**

## **2019 Survey of research culture in Australian NHMRC-funded institutions**

### **Appendix B: Overall frequency results**



**Australian Government**

**National Health and Medical Research Council**

## **2019 Survey of research culture in Australian NHMRC-funded institutions**

### **Appendix C: Frequency results by participant group**



**Australian Government**

**National Health and Medical Research Council**

## **2019 Survey of research culture in Australian NHMRC-funded institutions**

### **Appendix D: Verbatim comments**