

# Results of the use of the Quality Output Checklist and Content Assessment (QuOCCA)

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and the Neuroscience Research Australia Research Quality Committee

Sydney, Australia

# Background

- Research is conducted with the aim of **supplying dependable new knowledge** and contributing to human health
- To supply robust new knowledge, research must be well designed, properly conducted, and accurately reported
- Unfortunately, a large portion of published literature **falls short** of the target



# Quality Output Checklist and Content Assessment (QuOCCA)

AIMS:

**Identify** areas of concern in reporting

**Educate** researchers on reporting practices

**Allow review** of the effectiveness of interventions to improve research quality

# Checklist and Methods

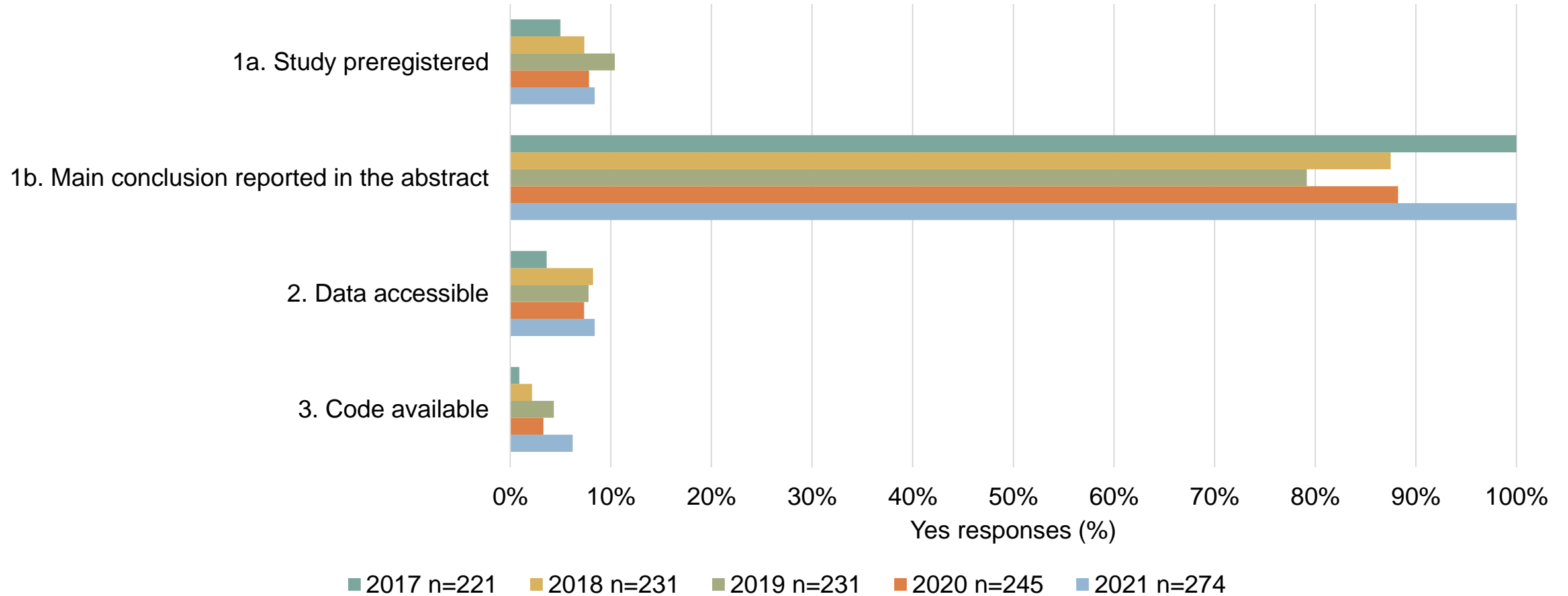
The checklist has 11 simple questions that evaluate three pillars of research:

1. Transparency
2. Design and analysis
3. Reporting practices

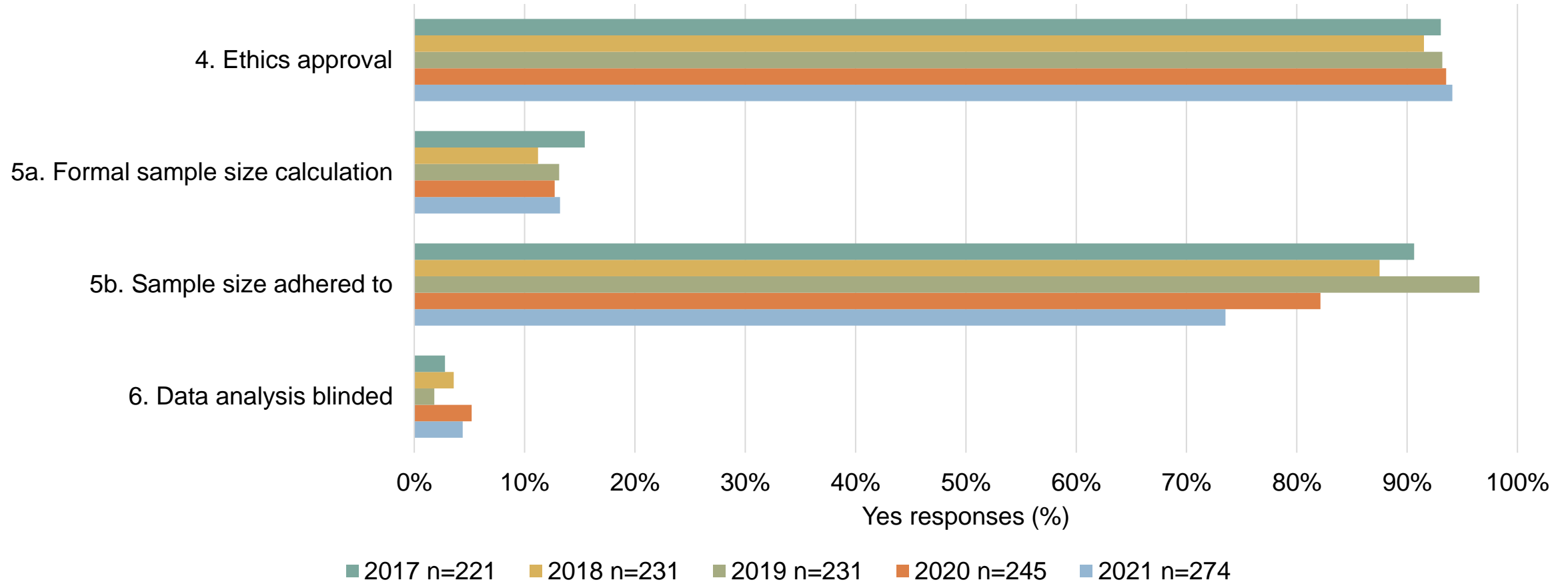
5 pairs of raters assessed all eligible 1202 articles published from 2017 – 2021 by NeuRA researchers

QuOCCA Quality Output Checklist and Content Assessment			
Manuscript Title:			
Manuscript Authors:			
Person submitting this form:			
Date:			
<b>TRANSPARENCY:</b>	<b>N/A</b>	<b>YES</b>	<b>NO</b>
1a. Were the study's hypotheses and analyses plans <b>registered</b> prior to the conduct of the study (i.e. pre-registered)?		<input type="checkbox"/>	<input type="checkbox"/>
b. If so, was the main conclusion reported in the abstract (or summary) based on the primary hypothesis/outcome?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are the <b>primary data accessible</b> to independent researchers on a public website?		<input type="checkbox"/>	<input type="checkbox"/>
3. Is <b>code used for the study available</b> on a public website to allow for reproduction or analysis of data?		<input type="checkbox"/>	<input type="checkbox"/>
<b>DESIGN AND ANALYSIS:</b>	<b>N/A</b>	<b>YES</b>	<b>NO</b>
4. Was <b>ethics</b> approval obtained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5a. Was the <b>sample size</b> based on a formal sample size calculation done prior to starting the study?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. If so, was the planned sample size adhered to?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Was data analysis <b>blinded</b> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>REPORTING PRACTICES:</b>	<b>N/A</b>	<b>YES</b>	<b>NO</b>
7. Are any <b>reporting guidelines</b> specified (such as those found at <a href="http://www.equator-network.org">www.equator-network.org</a> )?		<input type="checkbox"/>	<input type="checkbox"/>
8a. Are all <b>measures of variability</b> defined in figures, tables and text?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Are any data summarised using standard error of the mean (SEM)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. If the SEM is used, are sample sizes specified for all reported SEM?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9a. Were any data excluded?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. If so, was a criterion given?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10a. If null-hypothesis testing of significance was used, is a <b>probability threshold</b> specified for all statistical tests?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. If used, are <b>exact probability values</b> used throughout the report, excluding figure legends?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Are claims made for the importance or significance of results associated with a P-value greater than or equal to 0.05 (or other threshold) i.e. misleading spin of reported results?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

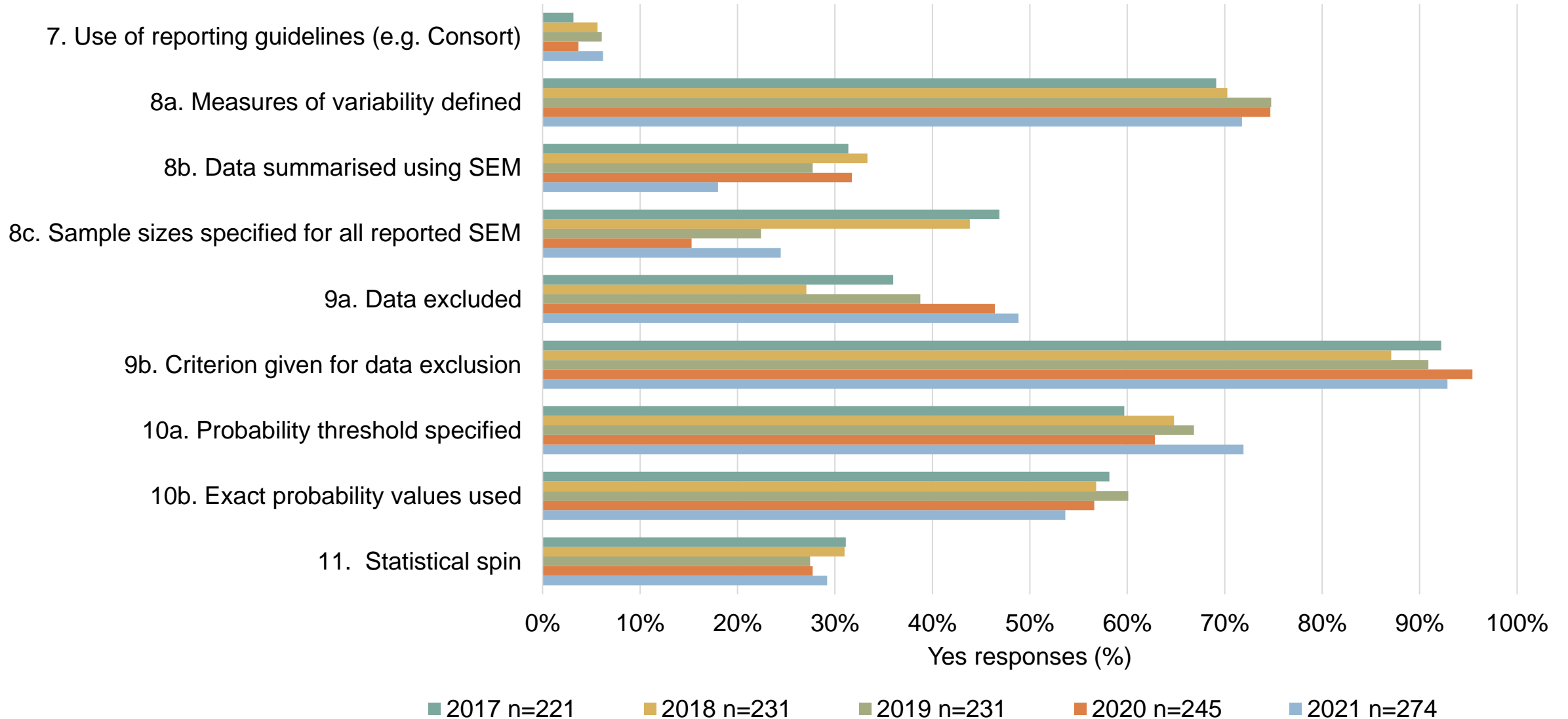
# Transparency



# Design and analysis



# Reporting practices



# Discussion

Overall, results from the QuOCCA were similar between the years 2017-2021:

- $\leq 10\%$  of studies pre-registered their study, or made their data or code available
- Data analysis was blinded in  $< 5\%$  of studies
- $\sim 70\%$  studies define variability
- $\sim 65\%$  define probability threshold
- $\sim 30\%$  of articles included 'spin'

The **QuOCCA is quick** to administer and **broadly applicable**

It can be used by **biomedical institutions** and **individual researchers** to guide improvements in open, reproducible, and well-reported science

Much room for improvement

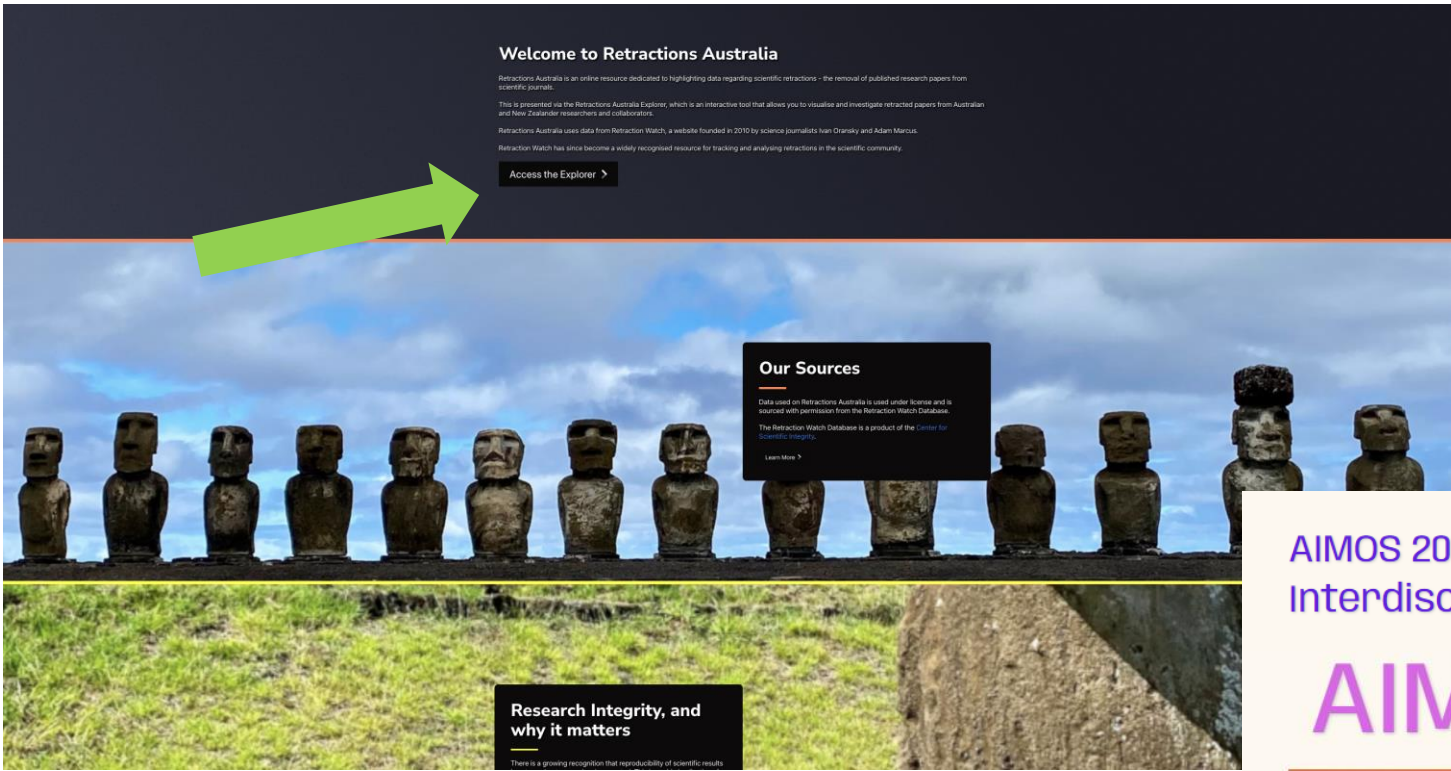


# Quality Output Checklist and Content Assessment

- Instructional videos, guidelines and checklist available at NeuRA: <https://neura.edu.au/resources-tools/quocca>
- Available on the Declaration on Research Assessment (DORA): <https://sfdora.org/resource/quality-output-checklist-and-content-assessment-quocca-a-new-tool-for-assessing-research-quality-and-reproducibility/>



QuOCCA Quality Output Checklist and Content Assessment			
This checklist is intended for peer-reviewed research papers. It should not be used for reviews, chapters, editorials etc.			
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Manuscript Authors:			
Person submitting this form:			
Date:			
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# Retractions Australia website

AIMOS 2024: The sixth annual conference of the Association for Interdisciplinary Meta-research & Open Science (AIMOS)

## AIMOS Conference 2024

### Top 10 Journals/Books

Journal/Book
PLOS One
The Periodic Table: Nature's Building Blocks
The Journal of Biological Chemistry
Mathematics and Mechanics of Solids
British Journal of Sports Medicine
Journal of Crohn's and Colitis
2011 International Conference on E-Business and E-Governance
Scientific Reports
The Journal of Clinical Investigation (JCI)
Renewable and Sustainable Energy Reviews

### Top 10 Institutions

Institution
University of Melbourne
University of Queensland
University of New South Wales
University of Sydney
Monash University
University of Technology
University of Auckland
The Australian National University
Griffith University Gold Coast
University of Western Australia



