

An experiment with Distributed Peer Review



➤ Volkswagen Foundation

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AFIRE Funders' Forum, 23.04.2025

Distributed Peer Review (DPR)

- Applicants agree to review other applications submitted for the same funding program.
- Has been used at the European Southern Observatory (ESO) and Netherlands Research Council (NWO).

Potentials (to be verified)

- Builds on accepted mechanism: peer review
- Solves reviewer recruitment
- Applicants receive more (diverse) feedback
- Makes administrative processes faster and more efficient
- Incentivises timely submission by reviewers
- Trains participants in grant reviewing (and by extension grant writing)
- Diversified and democratised grant review
- Scalable: more applicants -> more reviewers

Reservations (to be verified)

- Lack of expertise
- Bias
- “Gaming the system”
- “Theft of ideas”
- Time commitment for applicants
- Confidence of applicants

Why DPR – Foundation's reasons



In general

- Criticism of reliability & fairness in peer review
- Trial of an alternative approach – overload of peer review duties
- Interested in learning more about the review process
- History of experimenting with review processes – lottery/partial-randomization

“Open up” specific

- High number of applications – requires internal pre-selection
- Shortcoming of a jury – expertise incomplete, consensus instead of risk
- Little to no feedback to applicants to date
- Anonymous review process

The experiment

- Parallel implementation of DPR and established panel review
- Allows comparison of the two review processes in terms of quality, efficiency, and consistency
- Partnership between VolkswagenStiftung (VWS) and RoRI researchers
- Additional funding provided; funding recommendations are made from both the panel review process and DPR
- Short (and anonymised) proposals, reviews based on standardised evaluation forms
- Detailed documentation and online consultation offered
- Early data now being analysed
- Outputs on the experiment to include a guide on implementing DPR

Timeline round I

- January 2024: Call announced
- April: Deadline for proposals
- May/June: Matching reviewers to proposals
- July:
 - All proposals that meet the criteria sent to reviewers
 - disclosure of conflicts of interest
 - at least 6 weeks to complete the reviews
- August: VWS received assessment reports
- September: Panel review meeting
- November: Decisions by Board of Trustees
- December: Feedback to applicants
- January 2025 onwards: Follow-up interviews with participants and qualitative analysis

Experiment is currently being repeated – deadline for applications April 3rd, 2025 (slightly higher number of applications than last year)

DPR and panel review – parallel processes

DPR

Proposal
matching
323 reviewers

Peer review
1387 reviews

Proposal ranking
Trimmed mean
method

10 proposals
recommended for
funding

140 proposals
submitted

18 proposals funded
3 recommended in both
processes

60% overlap

47% overlap

Panel review

Internal
shortlisting
70 shortlisted

Quick
assessment
45 with 1+ A-, A, A+

Panel discussion
42 discussed

11 proposals
recommended for
funding

Reviews assigned



Reviews per Applicant	2	3	4	5
Count	1	2	218	104

Workload $\bar{x} = 4.3$ Reviews per Applicant

7 Reviewers on Average had Disciplinary Agreement with the Proposal

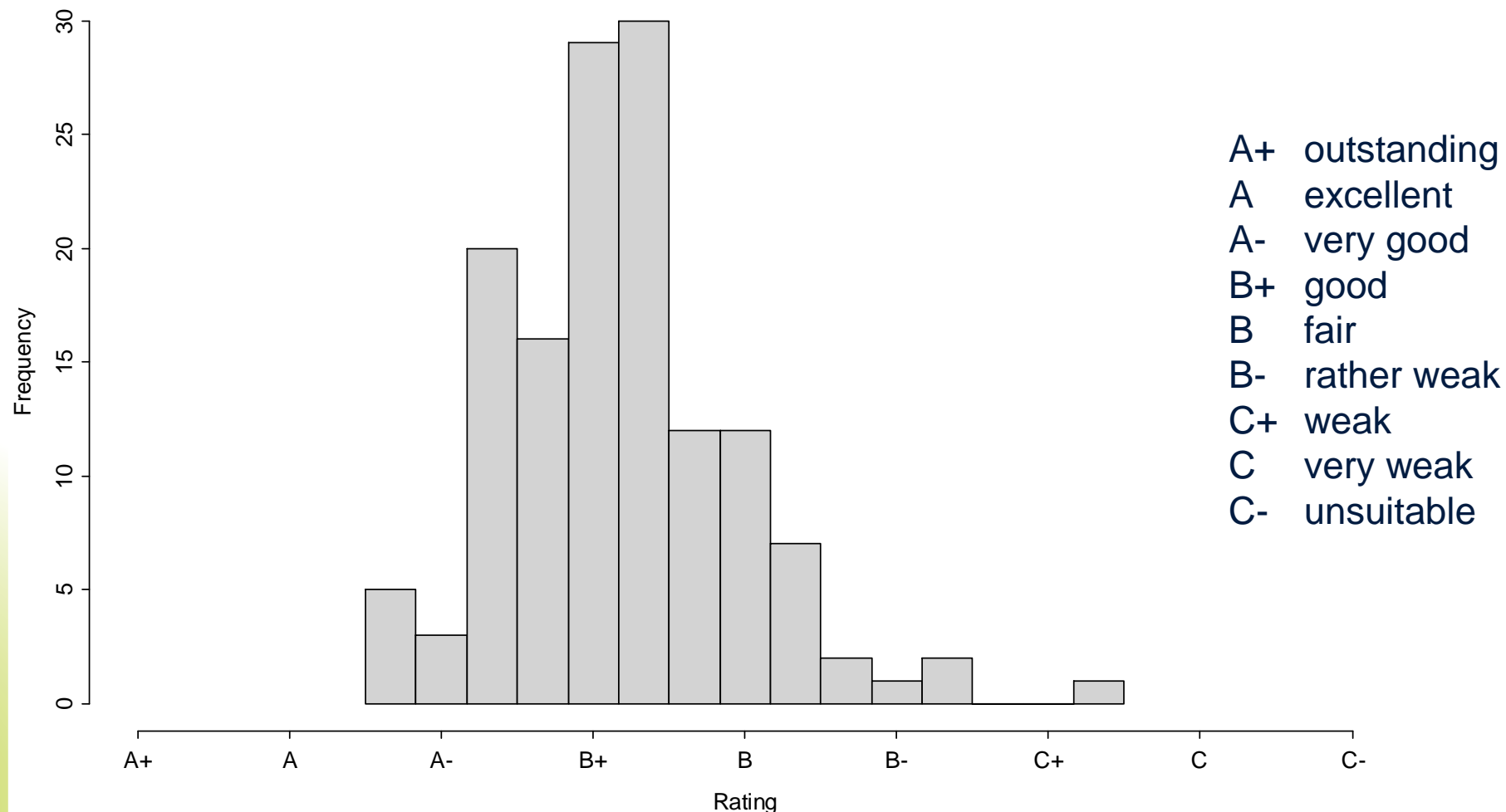
Reviews received



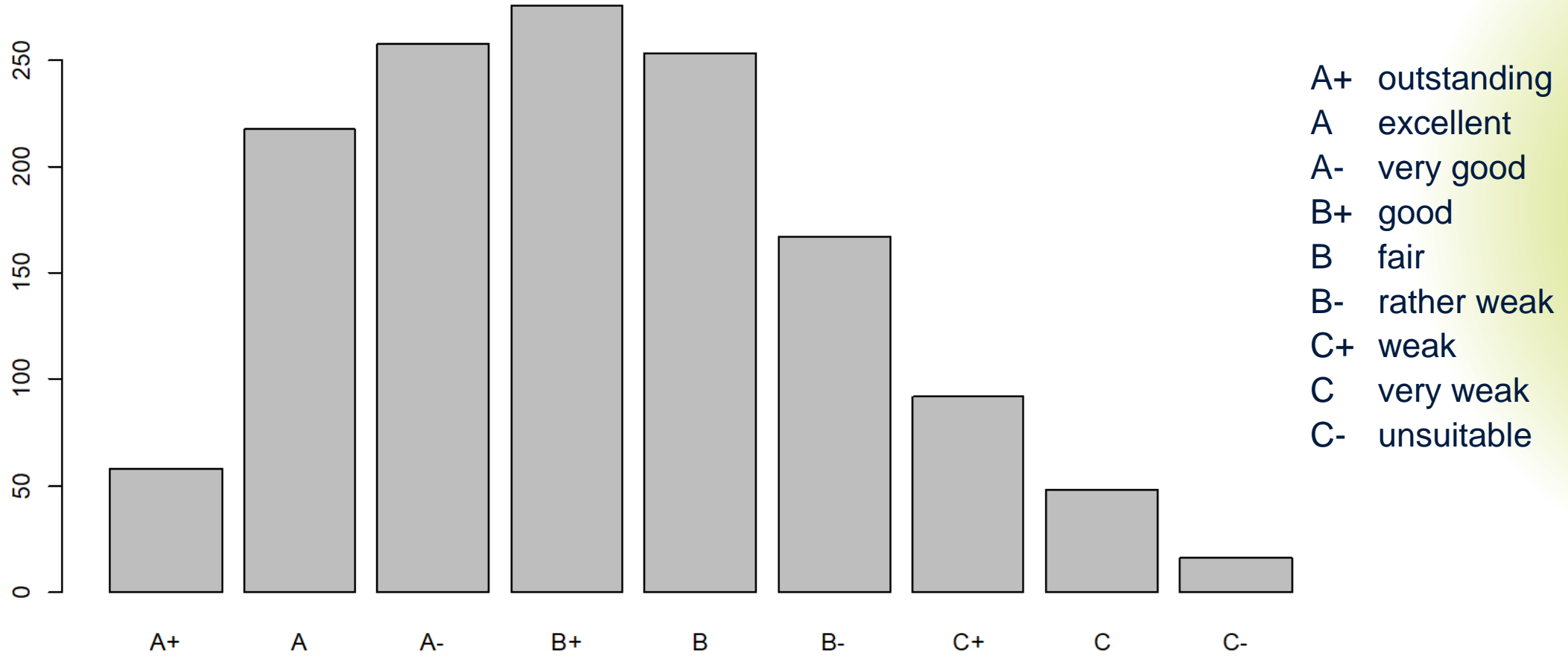
- 2 Reviewers were excused due to Health Reasons (2x4 Reviews)
- 5 Conflicts of Interests reported
- **1387 Reviews received**
- Number of Reviews per Proposal
 - 127x 10 Reviews per Proposal
 - 13x 9 Reviews per Proposal

Distribution of proposal ratings

Average of ‚Overall Vote‘ per proposal

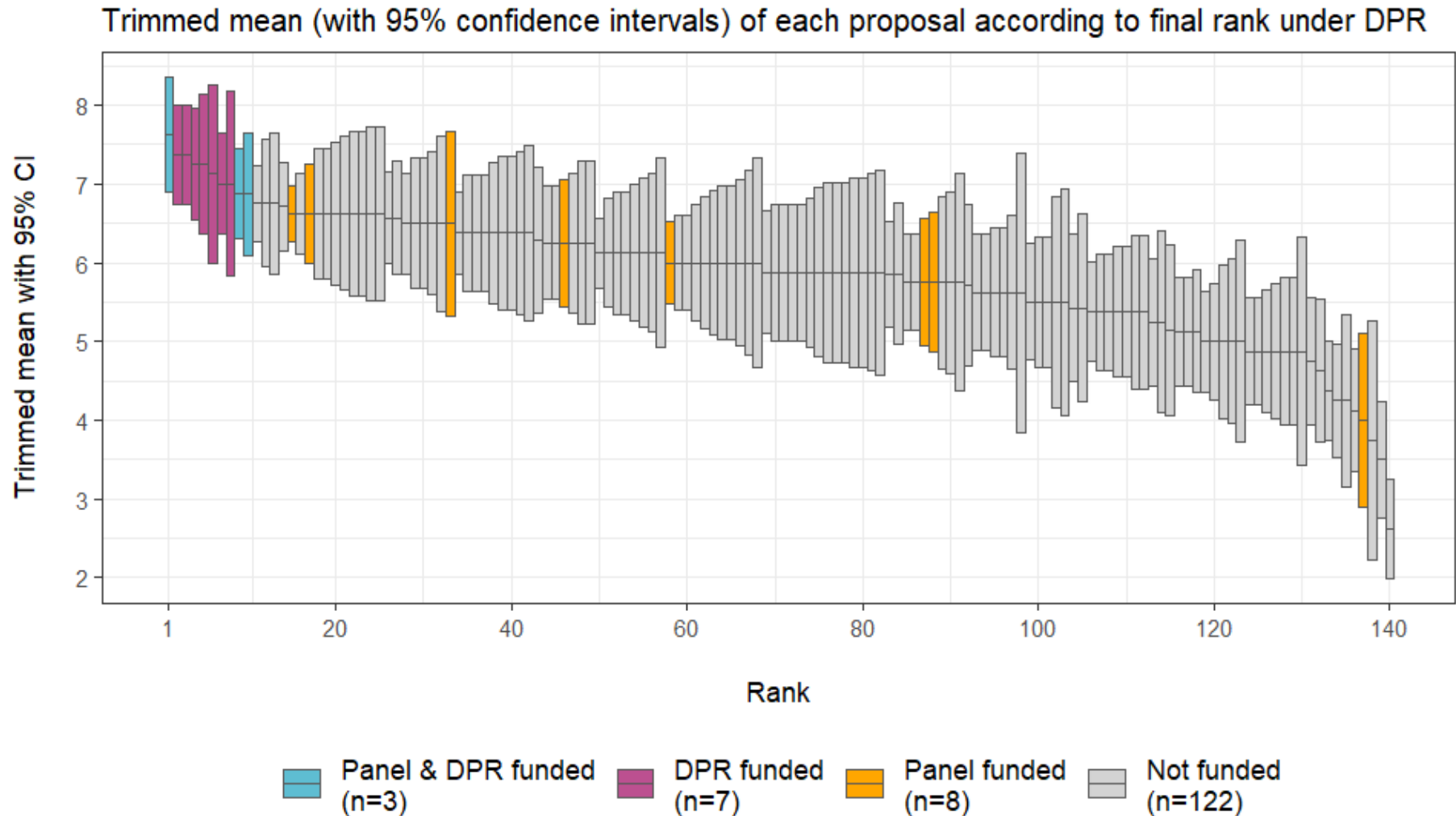


Distribution of raw votes



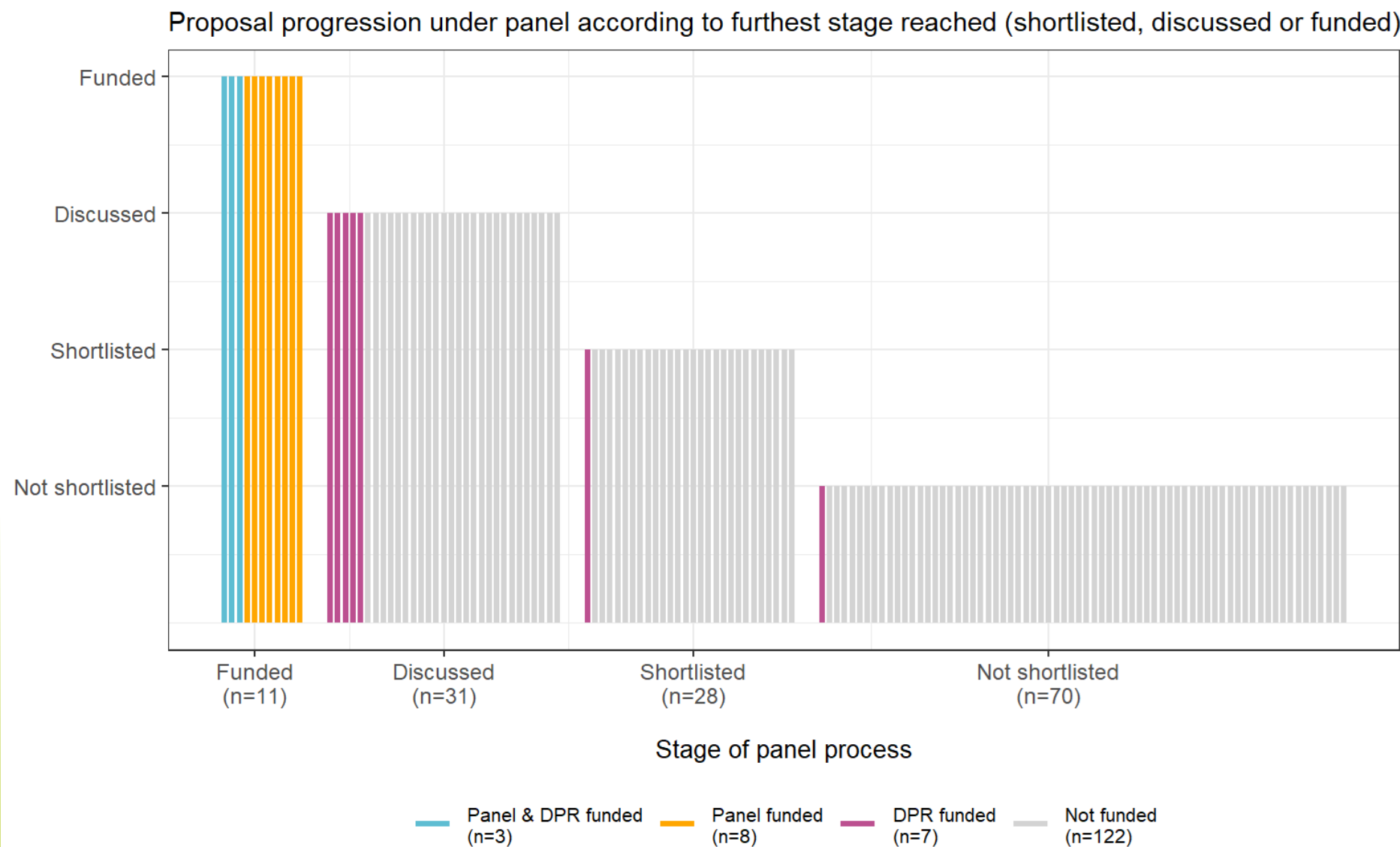
Panel selected proposals are found across the full range of DPR scores

10



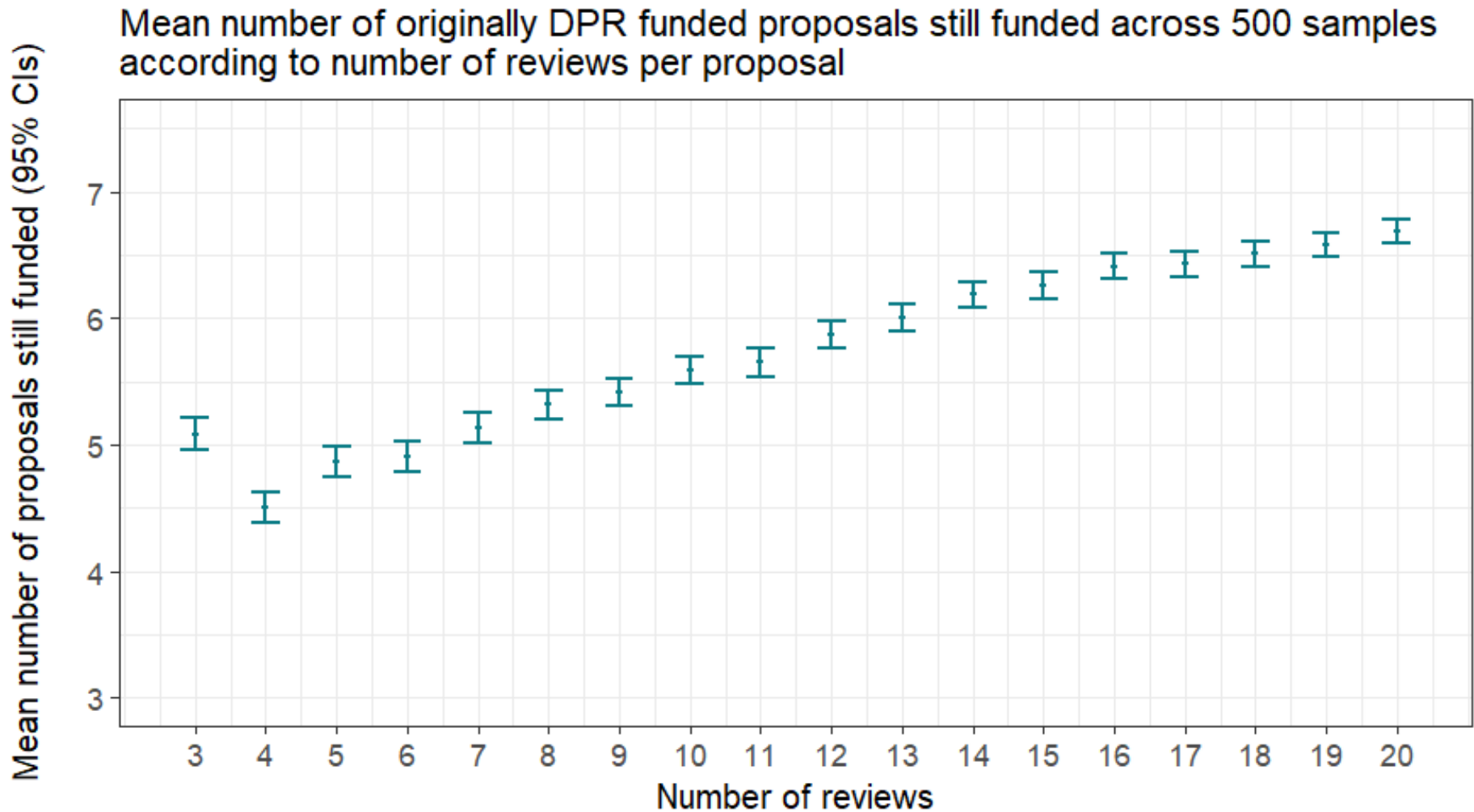
Note: For the purpose of this visualization, where ranks were tied proposals were ordered by standard error.
Any remaining ties were broken by proposal order

DPR selected proposals are found across all Panel stages



Applicant burden can be reduced

12



Reducing the number of proposals allocated to each reviewer by 1:

An average of 7.59 reviews per proposal.

Applicant workload reduced by 20-25%

*500 samples were simulated for each possible number of reviews

Time spent reviewing

In DPR, more time is spent reviewing but distributed more equally between more people:

- DPR: Total of 1763 hours across 323 reviewers to review 140 proposals
On average, reviewers spent 4 hours reviewing all allocated proposals
- Panel: Preselection + quick assessments = 195 hours across 8 panellists + VWS staff
Panel meeting 9am - 4pm = 12 people x 7 hours = 84 hours
On average, panellists spent 19.5 hours completing all quick assessments + attending the panel meeting

More time is spent considering proposals but distributed more equally across all proposals:

- On average the total time spent on all reviews for each proposal was 11.7 hours
- **At least 70% of proposals received more attention under DPR than is possible under panel review**

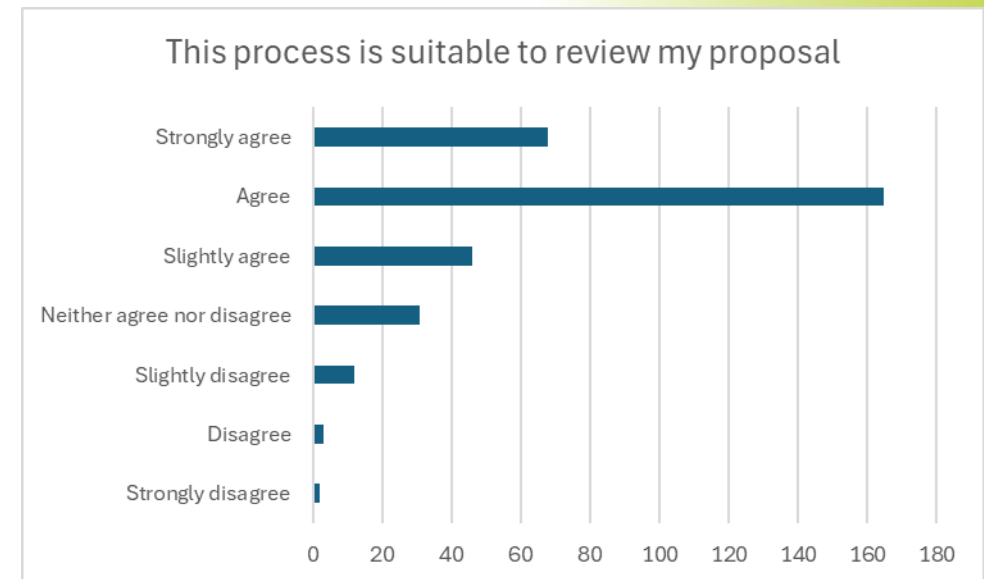
Expectations of DPR were generally positive

Expectations of DPR process:

- Suitability; fairness; identifying appropriate reviewers; selecting best proposals

Expectations of how DPR would compare to panel review

- Identify similar set of proposals; more adventurous proposals
- 85% thought DPR was suitable
- 74% trusted it to be fair & fund best research
- 70% thought would select more adventurous proposals



Applicant feedback

Feedback from 127 applicants across 84 proposals

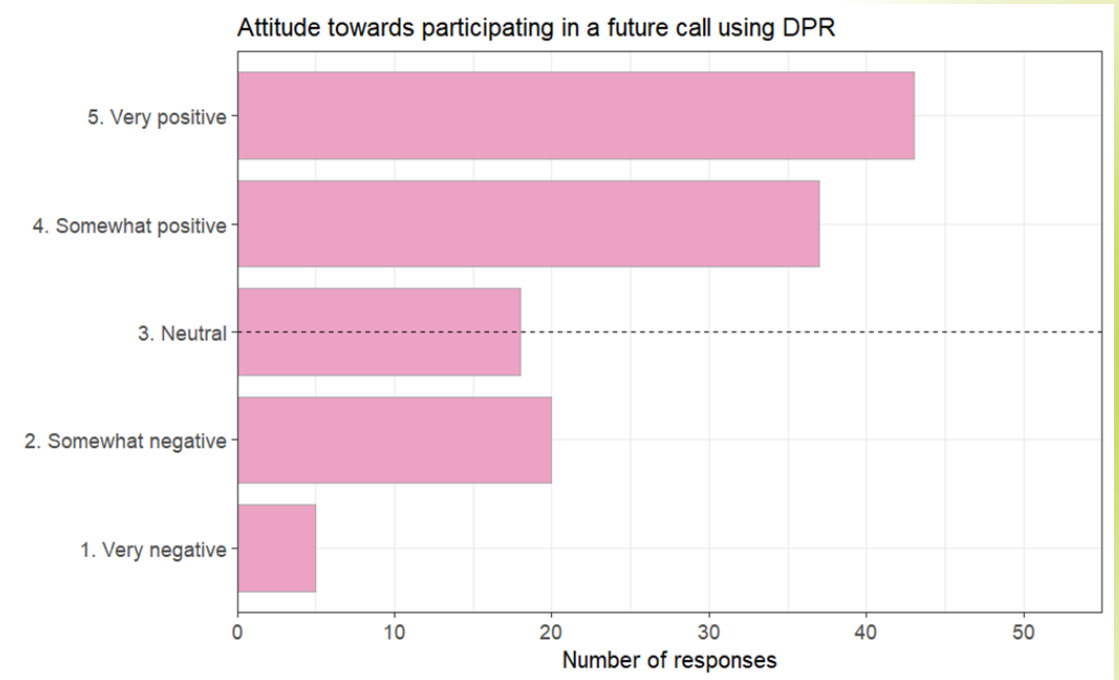
- 97 not funded, 30 funded

Feedback survey

- Constructiveness of each review
- Overall helpfulness, politeness, expertise, attitude to future DPR

Taking part in future calls using DPR:

- 83% of funded applicants felt somewhat or very positive
- 60% of unfunded applicants felt somewhat or very positive



Interviews



Target population:

- Applicants
 - successful and unsuccessful
 - across different disciplines
 - across different levels of seniority
 - maintain a gender balance
- Panel members
- VWS staff

Interview topics:

- Expectations and concerns about the panel and DPR processes
- Time and workload commitment of DPR
- Experience as reviewer - criteria, scoring
- Experience receiving feedback - constructiveness
- Fairness of panel and DPR processes
- Advantages and disadvantages of panel and DPR
- Future of this approach
- Other innovations

Interviews: expectations and concerns



- Panel process is established, but lacks transparency - seen as “a black box”
- Initial concerns over gaming in DPR
- Review process being “outsourced” and putting more pressure on ECRs, “deteriorating” the process
- Time and workload commitment (applicants and staff)
- However, short proposal format, so happier to spend time reviewing
- Less concern over scooping - projects are often unusual

Interviews: experiences of review



Experience as reviewer

- Disciplinary fit sometimes inconsistent
- Interdisciplinary projects difficult to review, but DPR can be helpful here
- Some evidence of gaming
- DPR reviewed ideas; panel reviewed quality of proposal
- Clear criteria are important and should align closely with call

Experience receiving feedback

- Some felt feedback was superficial or lacked understanding
- Successful applicants tended to feel feedback was constructive!
- Amount of feedback may be less important than career stage, length/cost of project, or projects that might be submitted elsewhere in future

Interviews: Advantages and disadvantages of panel and DPR



Panel

- Well-established form of review; known advantages and disadvantages
- Good for discussion, but can also result in being swayed by persuasive arguments or dominant personalities
- Funder can oversee process better

DPR

- Removes problem of finding reviewers, but is only as 'good' as the applicants (less control, may have gaps, lack of diversity)
- More and broader feedback
- Favours innovative, impactful work over traditional "ivory tower discussions"
- Speed of whole process is seen as a big advantage
- Concerns over gaming remain

Summing up and moving forward



Ongoing work of analysis:

- Ongoing analysis - quantitative and qualitative
- Outputs/dissemination:
 - DPR guide - in production
 - Technical report - recording the detail for internal/VWS audience
 - Peer-reviewed paper(s)
 - Conference contributions e.g. ICSSI 2025, MetaScience 2025

Moving forward:

- Repeating the experiment with any appropriate adjustments
- Growing interest from other funders and policymakers e.g. UKRI, NHMRC
- Widening out further investigation to consider how DPR might be implemented elsewhere in VWS and beyond

Thanks to our partners at University of Sheffield / RoRI



- **Tom Stafford**, Professor of Cognitive Science, University of Sheffield, UK and Senior Research Fellow, Research on Research Institute
- **Stephen Pinfield**, Professor of Information Services Management, University of Sheffield, UK and Senior Research Fellow, Research on Research Institute
- **Anna Butters**, Research Associate, University of Sheffield, UK
- **Melanie Benson Marshall**, Postdoctoral Research Associate, University of Sheffield, UK

Thank you very much

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