



# Should we use lotteries to allocate telescope time?

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CSIRO co-learnium, 3<sup>rd</sup> July 2025

Australia's National Science Agency





# Using Lotteries to allocate resources

Using lotteries in Australia to increase fairness and assess policy impacts when allocating scarce resources

- 1 day workshop in May @ ANU
- Organised by Adrian Barnett (QUT) + Philip Clarke (Oxford)
- ~30 attendees from range of disciplines
  - ARC representatives
  - Researchers
  - Politicians
  - STA
  - Policy makers

## Agenda

Opening Remarks, Andrew Leigh, 9:30 to 9:45am

Aims of the day, Philip Clarke, 9:45 to 10:00am

Section: Examples of conditional lotteries, 10am to 10:45am

- Scholarships at the Stats Society, Jess Kasza
- Research grants at the Australian Academy of Science, Chris Anderson
- Research grants at The British Academy, Adrian Barnett
- Military drafts, Peter Siminski

*Morning tea, 10:45 to 11:00am*

Discussion: What policy areas are most amenable to lotteries? What biases can lotteries address? Chair: TBC. 11:00am to 11:20am

Section: Potential conditional lotteries in Australia, 11:20am to 12:00pm

- Telescope time, Brian Schmidt
- School places, Isa Hafalir
- Medical students, Jen Williams
- Research funding at the ARC, Peter Siminski

Discussion: What are the political and social barriers to using lotteries? Chair: John Byron, 12:00pm to 12:30pm

*Lunch, 12:30pm to 1:30pm*

Section: Estimating policy impacts, 1:30pm to 2pm

- Experiences of the Australian Centre for Evaluation, Eleanor Williams
- The impact of winning funding on researcher productivity, results from a randomised trial, Philip Clarke

Discussion: What outcomes are most important for researchers and the public? What data should be collected in lottery trials? Chair: Simon Deeming, 2pm to 2:30pm

*Afternoon tea, 2:30pm to 2:45pm*

Discussion: What's most needed to move forward? Chairs: TBC, 2:45pm to 3:30pm.

Closing remarks: Adrian Barnett & Philip Clarke, 3:30pm.

End at 4pm

Thanks to [AusHSI](#) who have sponsored the meeting.



# Examples of lotteries

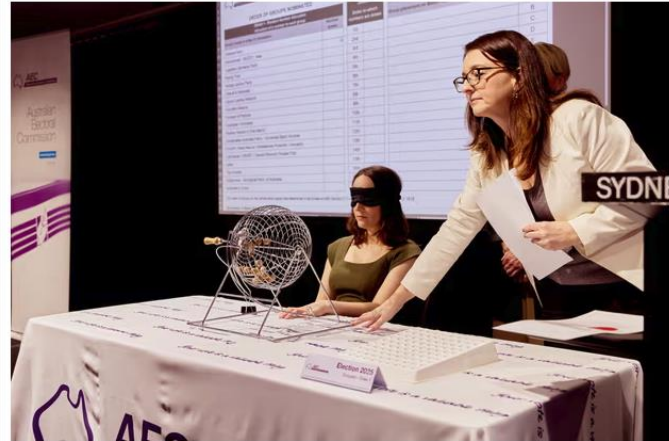
- Medical school places in Sweden
- Stats society of Australia – small funding grants
- Research funding at NZ Health Research Council
- Research grants at British Academy
- Working or holiday visas
- Election ballots
- Military drafts

<https://www.theguardian.com/australia-news/2025/apr/11/blindfolds-and-wooden-balls-australia-fires-up-its-extremely-analog-election-machinery>

## Blindfolds and wooden balls: Australia fires up its extremely analog election machinery

It can matter which order candidates appear on the ballot paper. That's why the Australian Electoral Commission takes a very old-fashioned view of its random act of democracy

- [Polls tracker; election guide; full federal election coverage](#)
- [Anywhere but Canberra; interactive electorates guide](#)
- [Get our afternoon election email, free app or daily news podcast](#)



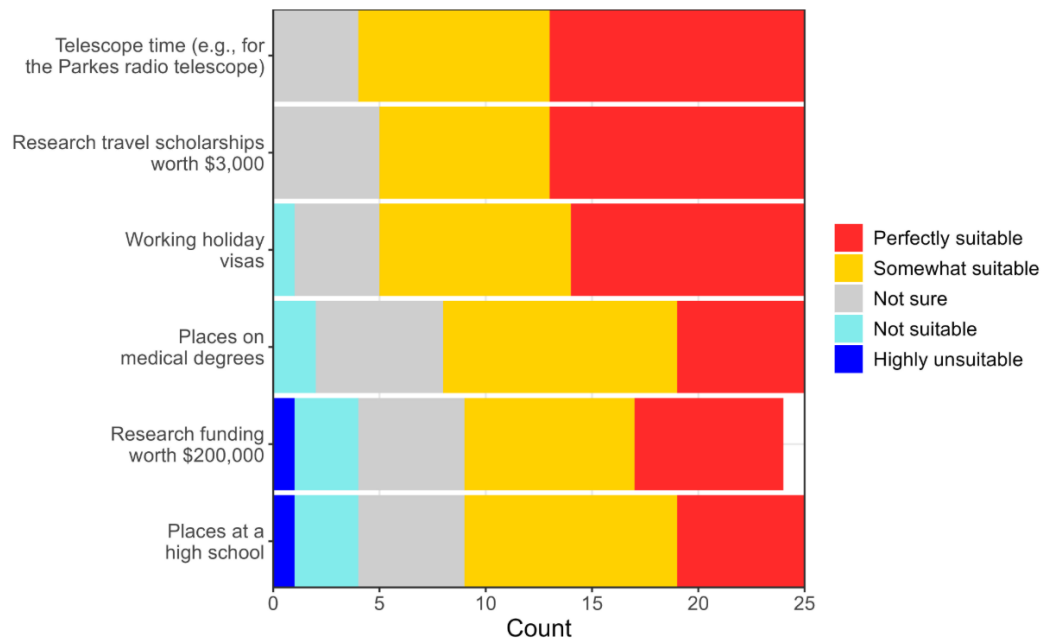
📷 Australian Electoral Commission officials, one blindfolded, prepare to draw the balls that will decide which order the candidates appear in on the NSW Senate ballot paper for the 3 May federal election. Photograph: Bec Lorrimer/The Guardian

A blindfolded woman plucks a numbered wooden ball from a bingo cage as 30 people watch, holding their breath.

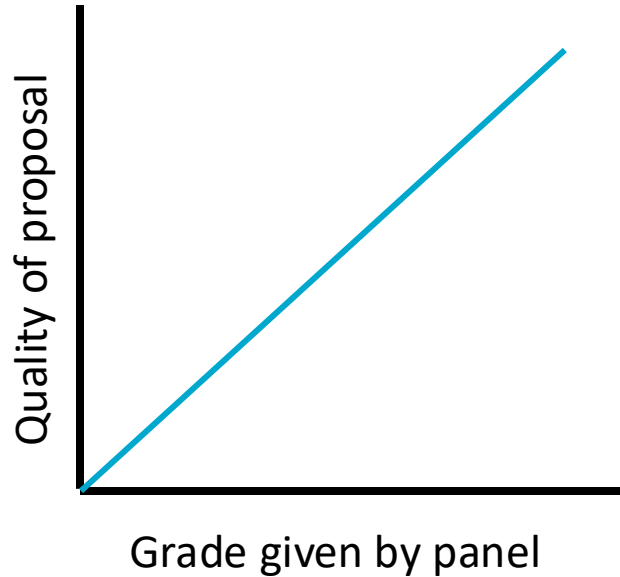
She hands it to her supervisor, who holds out the ball marked “001” for the crowd to see.

# Suitable

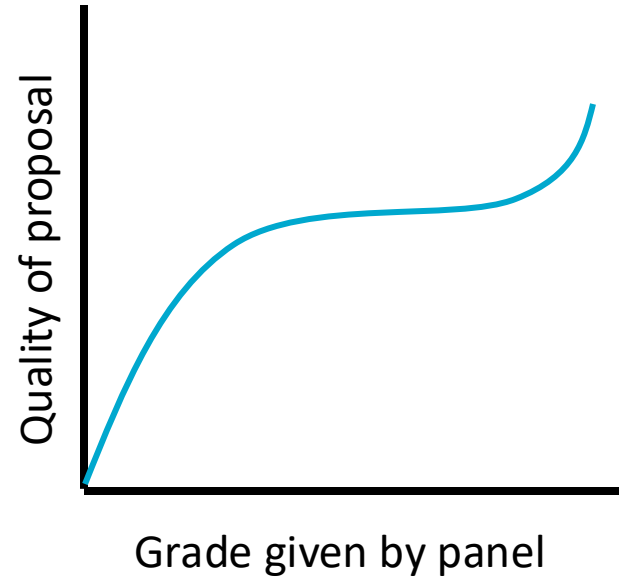
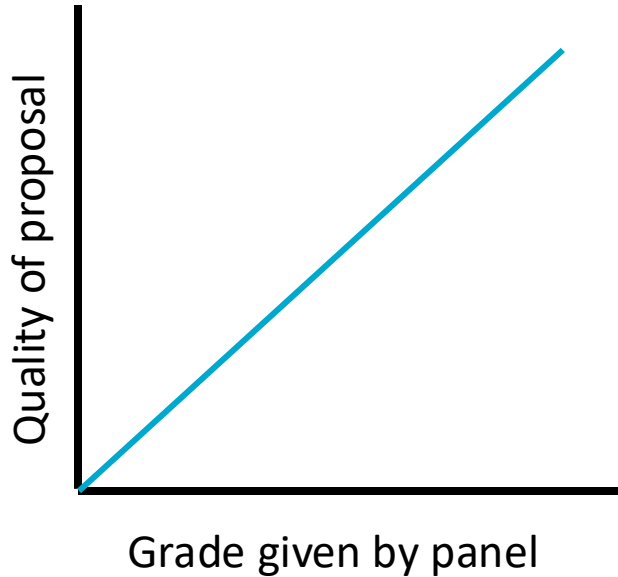
Which of the following are suitable for applicants to be awarded via a lottery in Australia



# How people think peer review works...

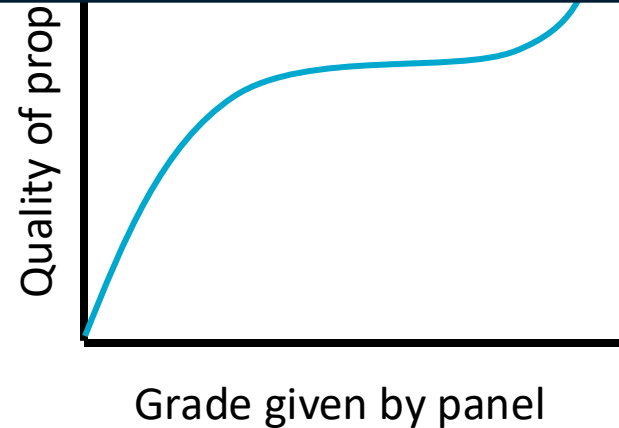
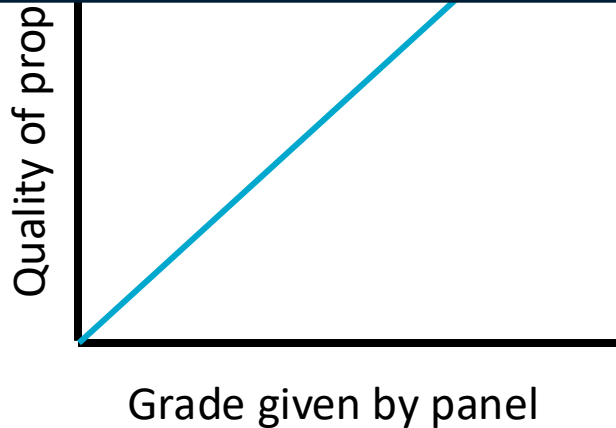


# How it really works...



## How it really works...

The current processes are already random!!



## Pros

- Fairer - reduces bias
- Prevents use of trivial differences within margin of error when determining outcomes
- Increase in applicants who otherwise might not have applied
- Reward more “left-field” ideas
- Less work in peer review?

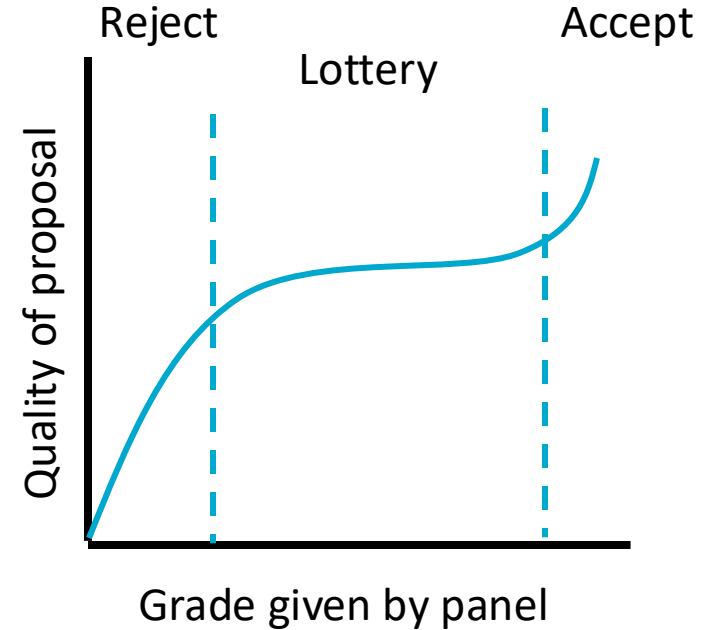
## Cons

- Risk of deserving applicants/proposals not getting time
- Potential for “prestige” associated with winning to be reduced
- Public perception - need to get the community on board
- Increase in applications(?)



# Conditional lotteries

- Only enter the lottery once certain conditions are met
  - Allows you to control/monitor eligibility
  - Gives freedom to award/deny applications outright
- Needs to be designed very carefully to suit the specific purpose
  - E.g. set high and low thresholds and have lottery for everything in the middle?
  - Only set minimum threshold?



# Lottery alterations

- “Golden ticket” – definitely award small fraction of applications
- Weighted lottery – some ppl get more tickets
- Stratified lottery – multiple lotteries to control for certain groups (e.g. ensure 50% women successful)
- Lottery first – enter a ballot for right to apply (not super popular!)





# Example: BA funding grants

## **BA/Leverhulme Small Research Grants**

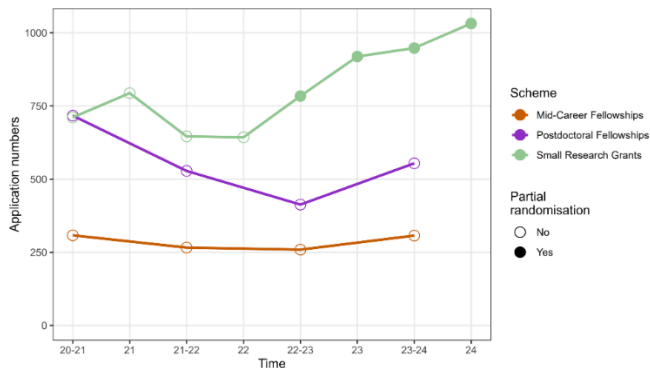
- Total budget around £1.3 million per round
- Awards £10k for up to 24 months
- Often for pilot studies and small-scale projects
- Worldwide in scope, international partners
- High priority in the British Academy's portfolio – running for over 50 years
- Wide outreach: around 100 institutes represented
- 600 applications per round with around 300 suitable for funding with around 150 awarded

## **Why switch to lottery?**

- People “self-disqualifying” under the old system as they were not confident of winning funding and perceived a bias if they were not from an “elite” institution
- Spending time picking apart candidates separated by wafer-thin differences - concerns about efficiency
- Small grants are for innovative and/or first opportunities

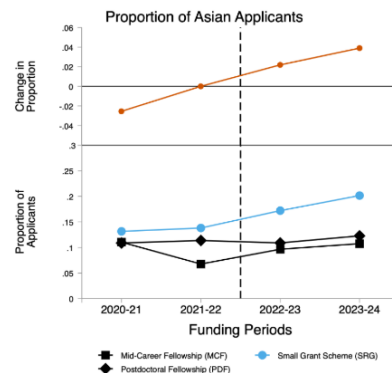
# Example: BA funding grants

## Change in application numbers



Average of 516 more applicants per round (95% CI: 143 to 889)

## Change in diversity



Asian and Asian British applicants increased by 4.3% (95% CI: 2.0 to 6.6%)

# Possible problems with lotteries

## Bad publicity

- Sarah says that a lottery is unfair. "It is cruel to leave young people's futures to chance."
- "I thought I had done enough – I couldn't actually do any more."
- "It feels like merit is being thrown out the window."
- "The [admissions system] is simple, crude and inadequate," Director of the National Association of Principals and Deputies

From Irish Times, August 2024

**'She couldn't have done better':  
Leaving Cert student with  
maximum points misses out  
on college course due to  
lottery**

Father says his daughter is inconsolable after  
not being accepted for UCD course



## Colleges and government respond

- Colleges have blamed inflated Leaving Cert grades for making it difficult to differentiate between candidates on top grades for high-demand courses
- ~1,000 students (1.6%) achieved maximum points in 2024, compared with ~200 (0.4%) in 2019
- Minister for Higher Education: "Random selection provides an unbiased method to distinguish between applicants who are otherwise equally qualified for a place in a course"
- Used for entry to more than 20 college courses



# Possible problems with lotteries

- Too many applications -> need for a feedback loop
- Cultural sensitivities
- Legislation – specifically for terms of National Facility, but more widely (e.g. does gaming legislation apply?)
- Is the term ‘lottery’ part of the problem?
  - Other suggestions? Ballot, Lucky-dip, sortition, equal-access pathway etc.



# Questions for you

- Do you think ATNF should move to a lottery-system for allocating telescope time?
- Would you be more or less likely to apply for time?
- Would it impact how you felt about receiving time? Or not receiving time?
- Do you think a lottery would be better/worse/the same as the current peer-review system?
- What outcomes should we track to assess if this is fairer than peer-review?