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Why draw lots? Funder motivations for using partial randomisation to allocate research grants

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1. Introduction: why draw lots?

The strengths and the shortcomings of peer review as a means of assessing quality and determining funding decisions continue to be debated by many stakeholders in research systems. Writing in a funding context, three key challenges are summarised by Bendiscioli (2019): reviewer fatigue and the prodigious burden peer review places on researchers; conservatism, with higher risk projects more likely to be rejected; and a lack of fairness and parity, whereby characteristics of applicants such as gender, race, nationality, institutional affiliation and disciplinary field negatively affect applications.

Echoing these ideas are the findings from a recent systematic review of grant peer review in the health sciences (Guthrie, Ghiga & Wooding, 2018). The authors found strong evidence of bias against higher risk research, and limitations in identifying which projects would prove successful in the future. They also identified evidence that revealed a lack of reliability in peer review with great variations in scores between reviewers. The authors advocate for greater reflexiveness and evaluation of practice within the funding sector. A similar message emerges from a recent National Bureau of Economic Research study (Azoulay & Li, 2020) that calls for more transparent evaluation of funding methods and the impact of funding decisions.
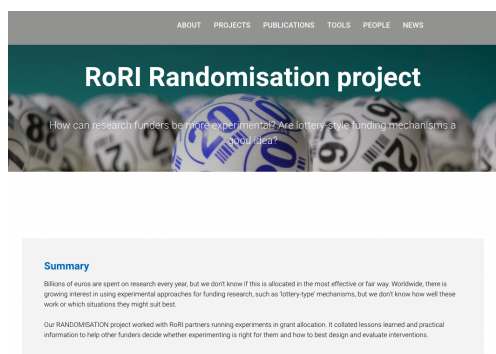
In line with this desire to evaluate their practice and to improve the effectiveness and fairness of grant allocation, a number of funding organisations have joined forces within RoRI's workstream on randomisation. This has provided an opportunity for partners to share what they have learned through pilot initiatives, however small scale.[2]

The use of partial randomisation in grant allocation is not yet part of mainstream practice, and there is limited research on the topic. Whilst some authors point to partial randomisation as a possible solution to the shortcomings of peer review in grant allocation (Fang & Casadevall, 2016; Roumbanis, 2019; Gross & Bergstrom, 2019), the effectiveness of partial randomisation has yet to be determined. It may also prove difficult to assess the effect of interventions where pilots are part of new funding schemes that self-evidently lack existing evaluation data. It is clear that what is most desirable and beneficial for the research community is empirical research that can assess the effectiveness of the method across multiple funding organisations. This is something that RoRI plans to consider and formulate as part of this workstream to implement in a future phase of work.

The acceptability of these methods have begun to be explored, such as in an initial evaluation of the use of partial randomisation by the Health Research Council of New Zealand in its 'Explorer Grant' scheme (Liu et al, 2020). The authors report that researchers responded positively to the use of partial randomisation, but were less supportive of it being applied more broadly. Most applicants reported that they did not change the amount of time they took to complete their application due to partial randomisation. Collective understanding of the acceptability of partial randomisation from many stakeholders' perspectives will increase as more pilot initiatives are evaluated.

One **gap in the existing literature** is around the exploration of institutional motivations for the use of partial randomisation. To complement the results of current pilot evaluations there is value in a comparative approach, looking at motivations, drivers and constraints across funding organisations. With this in mind, we devised the following research question, which we have answered using a qualitative approach: **What are the drivers and restraining factors for the introduction of partial randomisation in research funding organisations?**

1.1   Structure of this working paper

The next chapter will present the methodology used, including information about participants, data collection methods, ethical and data management governance, and data analysis methods. Our findings will then be presented in a narrative format, structured under **three overarching themes.** The first is **motivating factors**, to include five sub-themes of fairness, the grey zone, disciplinary spread, innovation, and efficiency. The second theme is **restraining factors**, to include two sub-themes of reputational risk, and communication to applicants and panel members. The final theme describes **participants' reflections** on the current use of partial randomisation and its wider effects. In conclusion, a summary of the findings is presented alongside potential learning points from this work.

2.   Study methodology

This is a small-scale qualitative study using **key informant individual interviews** (Fetterman 2012, p.477) to explore and expand our understanding of motivations and restraining factors for the use of partial randomisation in grant allocation. A hallmark of any RoRI project is its collaborative nature, involving different stakeholders in the research system. This manifests itself in 'equity [fairness] rather than equality [equivalence]' of roles (Given, 2008, p.94), in that how people contribute is commensurate with the time they have available, their skills, knowledge and experience. The design of this study is a product of this collaborative approach, realised through bilateral conversations, group discussions, an initial workshop, and through ongoing consultation with our project steering group whose membership is a mixture of the RoRI core team and strategic partners.

2.1   Setting and participants

A number of RoRI partners expressed interest in the randomisation workstream. The key contact from each institution was approached and their organisation invited to participate in the study. As a result of this exercise, **six research funding bodies**—five of which are existing members of the RoRI consortium—agreed to take part. The agencies that took part were at different stages: some had implemented partial randomisation. and others were planning to do so. There was also variety in the types of schemes in which partial randomisation was being applied, and in the types of organisation, with a mix of public funders and private foundations. **Eleven interviews** took place from September to November 2021. This included six people in leadership positions, and five funding practitioners with insight into the design and delivery of their randomisation initiative.

2.2   Ethics and data management plan

The study was conducted in alignment with the University of Sheffield policy on Good Research and Innovation Practices (GRIP).[3] This included the production of a data management plan[4] and submission of an ethics application[5] which was reviewed and approved before the study commenced. Participants were provided with an information sheet and asked to give written consent before taking part in the study.

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[3] https://www.sheffield.ac.uk/rs/ethicsandintegrity
[4] https://www.sheffield.ac.uk/library/rdm/dmp
[5] https://www.sheffield.ac.uk/rs/ethicsandintegrity/index

Figure 2: Overview of participants and status of partial randomisation trial

Organisation & status of randomisation trial	Org One Pilot implemented	Org Two Pilot implemented	Org Three Pilot planned	Org Four Pilot planned	Org Five Pilot implemented	Org Six Pilot implemented
Practitioner	1	x	1	2	1	x
Leader	1	2	x	x	2	1

## 2.3 Data collection and analysis

In-depth individual interviews were conducted with 'key informants' from six funding organisations. Key informants were chosen as being 'articulate and knowledgeable about their community' (Fetterman, 2008, p.477). They are a valuable information source for a qualitative study, where it is not possible to interview every stakeholder in a specific group. As both funding practitioners and senior managers were interviewed, different perspectives were gathered on the introduction and use of partial randomisation. Those in a leadership position were operating at a strategic level, and were well placed to speak with authority about the research funding system and policy changes within their organisation, including initiatives such as partial randomisation. Practitioners were experienced professionals who had a deep understanding of the design and management of funding calls and evaluation processes.

Based on a method described by Guest et al, (2013) an interview schedule was created by brainstorming, phrasing and sequencing potential interview questions, building on the initial research question. This was discussed by the project team and piloted before being finalised. As we are seeking to explore and gather information on motivations, purposes, benefits, risks and enablers in relation to partial randomisation, a simple elicitation method 'free listing' (Guest et al, 2013) was used in the early part of each interview. This is where an interviewee is simply asked to list all the ideas within a particular topic or concept, guided by the interviewer.

A number of commonly suggested uses or motivations for using partial randomisation were presented to interviewees. They were then asked to add to, or remove these as they saw fit. Participants were then asked to rank the motivations in order of relevance for the use case of their organisation, excluding options if they were irrelevant. It was not possible to plan the particular questions that were asked within this exercise, but it included follow up questions to clarify and understand the items chosen and how they were ranked. The reason for using the exercise was to allow participants to have time to think through all the many motivations and how they related to their own context. The **Google software *Jamboard*** was used, which

allows virtual 'sticky notes' to be created and moved around the board. An example *Jamboard* is presented below, that was prepared for each interview.

Figure 3: Example Jamboard prepared for elicitation exercise
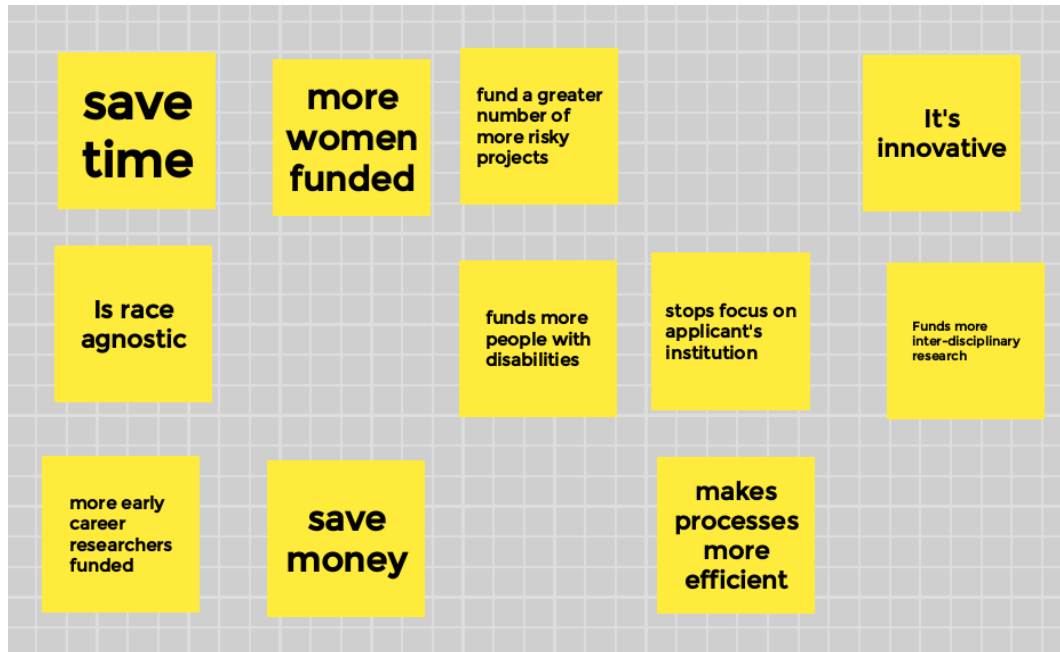
The interviews took place using conferencing software (Google Meet) and following the interviews the data was transcribed using Otter.ai (https://otter.ai/about) software, where participants had given their approval. Otter.ai is cloud-based, it syncs data over an encrypted connection and stores data in a secure cloud. All data was removed from Otter.ai once the transcriptions were complete and stored on the University of Sheffield's password protected secure drive. The identity of Individuals and their organisations were anonymised (see appendix for more details of interview terms). This was to afford participants as protected an environment as possible to share their experiences.

The transcriptions were reviewed by the interviewer and checked for accuracy by the interviewee. Data was analysed thematically based on the work of Braun and Clarke (2006). The unstructured interview data (transcripts) were downloaded into NVivo software. Categories from the free listing exercise provided a starting point for initial categories to code the data against, and these were built on inductively. Categories were then reviewed, with some data recoded, some categories merged or discarded. Finally overarching themes were identified, as presented in this working paper. The results follow a conventional narrative format with extracts from the data to illustrate these findings.

3. Study findings

The New York Times

They Wanted Research Funding, So They Entered the Lottery

A survey of New Zealand scientists found that recipients of a randomized funding program favored random allocations of some kinds of grant money.

Anna Ponnampalam secured funding for her work through a lottery scheme from New Zealand's Health Research Council. *Cornell Tukiri for The New York Times*
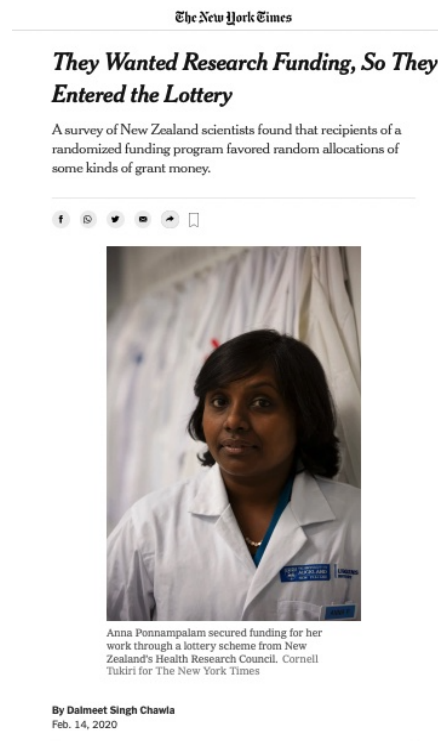
By Dalmeet Singh Chawla
Feb. 14, 2020

Figure 4: Article in the New York Times about partial randomisation of research funding, 14 February 2020

The study's findings are presented in a narrative format, under three overarching themes: **motivating factors; restraining factors;** and **reflections**. Overall, participants cited numerous reasons for implementing partial randomisation. These decisions were taken in the context of their organisational mission and culture, and whether they were a public or private funding body. The design of the randomisation process also varied: for example the method to decide which applications would be subject to the process; and which methods to use to enact the randomisation. There was also variation by uses designed as an initial pilot or trial in a specific funding scheme or in more than one scheme.

3.1   Motivating factors

Fairness

Fairness was by far the most prevalent driver that we identified from the interview data and participants were more animated about this topic than any other driver identified. The data on this topic is broken down into four sub-categories of meaning. These are: a fairer decision making process when peer review had run its course. Fairer to applicants no matter who they were or what institution, field or type of research project they proposed. It was also described as having the advantage of perceived fairness i.e. a transparent process that is easier to defend as a basis for funding decisions in the context of limited funds and a competitive funding environment. In a final category the impact of the legality of how funding is allocated intersects with the use of partial randomisation for public funders.

Decision making

The majority of participants saw partial randomisation as a useful way to minimise bias in panel settings and a useful intervention when inserted into the decision making process at the point when peer review had reached the end of its usefulness. This is when decisions are not being guided by agreed criteria but by personal whims and values of the members of the decision making panel. Peer review is subjective, it is its strength as it is drawing on professional knowledge and experience, but this has limits. Participants had witnessed these

limits many times and could clearly see that an intervention was needed to be made at this point as the process became partisan, inconsistent and difficult to defend. This senior leader refers to this point of usefulness being reached:

> *If you give the same proposal to two panels, you will not get…100% concordance in their decision. And you even won't get 100% concordance, if you allocate the experts at random to the two panels…the rest is just random, you know, how do you feel this day? Who will look at your proposal, etc.* (*Leader: Org Five*)

Participants were asked when they first encountered the idea of using randomisation in the process of allocating research funding. The idea was met initially with amusement and shock, as one participant said 'it seemed like a really good after dinner joke' *(Leader: Org One).*

These initial feelings swiftly turned to curiosity, further interest and exploration. Another participant initially felt it was 'a utopia that's never going to happen' *(Practitioner: Org Four)*. In the same way that the thought of giving away large amounts of money using a lottery is risible, so is the cynical observation that grant peer review is a lottery. The thought of using a lottery in this context is, at first, shocking and contentious as one participant illustrates when s/he first shared the idea with panel members:

> *When we introduced…partial randomisation…there was,…literally an outcry in this discussion…that we had. Immediately one …[panel member] said..'hey, this is tax money, we are wasting tax money, throwing tax money out of the window'…there was really strong concern against … randomisation. (Leader: Org Two)*

We observed in the interview data that organisations had recognised the chance element in decision making and had acknowledged it and taken control of it, as far as this is possible. One participant spoke to this idea directly:

> *…I'm convinced it increases fairness. Because it accommodates the random or the chance element, which we know exists in these panel processes. (Leader: Org Five)*

Others described it as intervening at a point where 'everything else is equal' *(Leader: Org Six)* where the peer review process has run its course, or preventing influence by 'subtle issues' *(Leader: Org Two)*

Diversity

Another aspect of fairness voiced by participants was that in a randomised selection all applications were treated equally, no matter who wrote them, this meant no distinctions were made with reference to applicants' personal characteristics, their institution, or field. This senior leader comments here on the challenges panels face in adhering to evaluation criteria:

> *it really is an extremely difficult task to to stick to these criteria, and then differentiate the proposals without going into directions that we wouldn't want to go so that you start to have ad hoc, secondary criteria... for instance, you say, okay, they're quite the same, but I somehow believe we should now fund this or that discipline, or because this person is in an early stage of the career because of gender or because of whatever, which are not part of the criteria, officially. And this, we want to...avoid. (Leader: Org Five)*

The use of randomisation makes decisions blind to applicants' personal characteristics, this includes numerous factors that an applicant may choose to keep private. The responsibility is removed from both the funder and the applicant to create lists of characteristics or declare personal characteristics to be taken into account, which has benefits from a privacy perspective as this participant describes:

> *The way randomisation was discussed with the board, was "'diversity in general". I also discussed that it's better than having [a] quota. Because for setting a quota, you have to first know and define a minority...Since the lottery is fully blind, every marginalised group can profit from it. I argued with diversity, marginalised groups of any kind, and diversity of topics. That was my reasoning. (Practitioner: Org One)*

The use of randomisation to address diversity (of topics or grantees) was raised by all participants, with different perspectives voiced. Whilst the fact that the process is blind and therefore ultimately fair to every applicant and project was acknowledged, it was not regarded as sufficient to address the lack of diversity in the research system. There was some doubt whether it would achieve these aims in practice over the long term. In the short term, the selection could be the exact opposite of the goals of the organisation as this practitioner explains in a discussion about funding more female researchers:

> *...if you have a small set that remains...then it's based on chance, who will be picked?...So if you have...five applications left, four women and one man, and you can select one at draw one, and it could be the guy. (Practitioner: Org Two)*

The desire for more evidence on the outcomes of using a random selection in relation to diversity issues was voiced by a number of participants as this practitioner suggests:

And I wish that randomisation would pick the right applications, not only the best applications, but I'm not sure if that happens. Because when you randomise then you ... don't pick ... that's what I'm aiming at, that's to pick the right applications. (Practitioner: Org Four)

Some participants felt that if a strategic objective was to fund a particular type of research, field, or type of candidate then these applications must be awarded funding if it was excellent research and fitted the criteria. It was not enough to only use randomisation to achieve these strategic objectives. Moreover, as issues such as gender equality are not unique to the research system but are manifestations of a wider social problem, more direct actions were favoured by a number of organisations such as quotas or points systems as this interviewee reflects:

...if you have a research organisation to say, one of our goals is to increase the proportion of females in science, then it's ... only a small step. It just reduces the bias, but it doesn't... fulfil the kind of mission that you would like to have. (Leader: Org Two)

Perceived fairness

Another connotation to fairness that we identified in the data was the idea of perceived fairness. That is, the importance of a consistent approach to allocation of funding across schemes. This idea of parity across schemes was voiced numerous times in the interviews and was often described as an internal discussion allied to conversations about partial randomisation. Participants commented on how difficult it was to explain funding decisions to unsuccessful applicants when they were based on what appeared as flimsy grounds. Explaining to a researcher that their application was good enough to be funded but it did not come out in the lottery process was seen as a more defensible way to proceed and fairer for the applicant than being subjected to the vicissitudes of a lengthy panel meeting discussion as this practitioner comments:

Well, for us, ... it's easier to communicate when ... the number of applications we can grant is so low. (Practitioner: Org Four)

Randomisation and the law

Finally, one other aspect of fairness discussed in the interviews is linked to the legality of using randomisation. Public funders are necessarily accountable to particular legal requirements. For public bodies introducing randomisation, there is a need to comply with national legal frameworks and any regulations governing their operations. From the data this is expressed in two ways, firstly as a mandate to change practice as this leader expresses:

We have a lot of heterogeneity which actually our legal service said was potentially a reputational and legal risk, if someone…realises that actually depending on in which panel, he or she is evaluated, the process is quite different and it's not transparent. So increase transparency, develop and deploy best practices are certainly values that the organisation has…[and] were paramount…in our decision to introduce… it. (Leader: Org Five)

And secondly, as a prerequisite to its use, as this practitioner refers:

And… of course…our legal department had to be involved here because we cannot do this unless all circumstances are equal. We are not allowed to have randomisation if you have one with the best grading and one with the second best grading…for the randomisation, then …everything has to be equal. So that's the legal part of it. It's quite important that, since it's public funding we are dealing with. (Practitioner: Org Four)

Fairness was the strongest motivator identified in the interview data, across organisations, reflected in different aspects of the process. In all aspects fairness to applicants was the common factor. The next sub-theme revisits the use of partial randomisation as an intervention to aid decision making and draws on data regarding panel dynamics.

The Grey Zone

All participants spoke about the use of randomisation as a decision making tool in a situation where a set of applications are basically indistinguishable. It was another clear motivator that we observed in the interview data. Participants described lengthy panel discussions where fine details would be poured over to try and find a way of rejecting some proposals and having a justifiable reason to give to candidates, as this practitioner observed:

So there were situations where decisions were really difficult…and… we had to … tell the panels well here, this argument is not permissible. You…have to use the scientific arguments or criteria we have. And … they continued debating, but in the end, the decisions we had to make, because they were forced to make a selection… was really…tough. You know…the difference is so subtle. So…we could equally have… funded the other person, maybe the other few persons who were of similar quality. But in the end it was a very, very tight decision. (Practitioner: Org Five)

A similar scenario was voiced by this leader:

> *...the final decisions are very often on small details, methodological details....So, you're looking for reasons why you have to decline proposals, why you reject proposals, and then you are looking very much on arguments that you can communicate. And you say, Okay, this project is rejected, because the description of the methods section was not sufficient. But this...shouldn't be an argument. So, again...you have to be fair, in your decision, you have to be able to communicate your decision. (Leader: Org Two)*

Participants also referred to the role of panel dynamics within these close discussions. For example, where a dominant speaker would drive through a particular proposal to be funded or some panel members would not get to make their case or have their views heard, as this practitioner observed:

> *What I could see in a lot of instances: group dynamics in panel meetings. Some panelists are more senior, louder, more eloquent, and 'their' proposals will make it in the end and not the more quiet, maybe even more reflective person in a panel...That's something which is very important for me. It is balanced by the lot. These problems we know. (Organisation One: Practitioner: Implementers)*

At this point in the process, as panelists struggle to make final selections, organisational motivations of fairness and the desire to combat the 'grey zone' interlace, as this senior leader describes:

> *...if you try within this... funding line area...to do a further discussion, and try to go more in detail into a comparison of one proposal to another, etc. We believe that this is the place where bias creeps in, where more vocal people will win over more silent people...So we...got to the point to say, we should do the evaluation and then see...what it gives. But then rather than trying to refine the discussion for a long time, and potentially with...more bias then creeping in, it would just be better to leave it and do then a random selection. (Leader: Org Five)*

Despite these issues, participants underscored the centrality of peer review and highlighted additional measures that helped to optimise the peer review process such as anti-bias training and the importance of appointing an experienced chairperson. The next sub-theme moves to the use of randomisation to facilitate a greater plurality of ideas and knowledge types and draws on data pertaining to the composition of panels.

Disciplinary Spread

Another strongly prevalent sub-theme we identified in the data was the use of randomisation to fund a broader range of projects, for example 'blue skies' or risky research, interdisciplinary or multidisciplinary research, and research emanating from smaller fields or disciplines.

Through the data we observed that the use of randomisation to fund more high-risk projects depended upon the nature of the funding call, whether creative or high-risk proposals are solely invited or they appear in the mix of applications to a broader call. As the final selection process is random, if there are a mix of different projects, then the 'creative' project may or may not be drawn.

In a similar way to the goal of increasing the number of projects led by female researchers, the context in which randomisation is used is crucial. If the whole call is for creative high risk projects and a panel are chosen to do the initial evaluation work, then the random element works to assess the equally good proposals which are all creative / risky projects. If the call is more generic, there may be less chance, given the conservative nature of some panels, that these type of projects would come through the peer review process as they are being compared to more traditional projects, as this leader suggests:

> *In my point of view, a really well substantiated problem that review panel members really tend to be very, very mainstream traditional scientists, as a panel member, they don't like to take risks. And they always want to look for preliminary data, good applications, and then they have the feeling okay, the past performance was well, so there shouldn't be too much risk in giving additional funding. So, that's the way the usual panel member argument argues. And it's very hard. The way we did it, randomisation helps to kind of reduce this problem. (Leader: Org One)*

In the context of a call designed solely for higher risk research projects, participants felt that there may be some challenges with evaluating these proposals using traditional peer review alone. Randomisation is a method that is often cited as being particularly useful in assessing this type of proposal as there is usually very little evidence within such applications to suggest whether they will be successful or even completed. This leader recalls developmental discussions on this topic:

> *So really, that next... step on beyond just... novelty, in the science, but really looking at that really high risk, potentially transformative research...how were we going to go about that? And we knew that the traditional peer review process would have some limitations matched to that environment...so we had a range of ideas, where we felt that... these could be potential process steps that we could*

use, that would support that context of…really transformative research. (Leader:
Org Six)

A different but related use for randomisation is to minimise bias against particular ideas or topics, to avoid outlying ideas being discarded without proper consideration, and giving unpopular or unfashionable 'cold' topics a chance to be funded, as this participant comments:

[I suggest]…'diversity of topics funded', since it counteracts mainstreaming, which is also sometimes happening in the peer review process. (Practitioner: Org One)

One participant articulated the particular importance of funding these type of projects, despite the lack of surety that they would be successful:

…we have this goal overall, that we will fund excellent research, groundbreaking, excellent research. And in that part, I think randomisation actually will be a good thing, because…again…, you have a lot of good applications, you really don't know how to distinguish between them. And if then you get these … possibly more high risk high gain projects … not … going for the safe…this could actually build upon this goal of excellent groundbreaking research. (Practitioner: Org Four)

This third sub-theme reflected ideas on the use of partial randomisation to facilitate a greater diversity of research, both in terms of topic and study design, in order to ameliorate the challenge that evaluators face in identifying potentially successful proposals that diverge from the mainstream. The fourth sub-theme tackles the question of whether randomisation is an innovative method and if this matters.

It's innovative?
Within the interviews we discussed the idea of randomisation being innovative and whether that was a motivation for the participants' organisations. There was a mixed response, with some interviewees saying it was a nice, but largely unimportant by-product of introducing the method into practice, others that it was important to be seen as an innovative organisation, and one participant felt that it was not innovative at all:

I think this is …just innovative because no one has done it so far. But I don't know if this is …a definition of innovation… Yeah, I wouldn't…call it innovation. (Leader: Org Two)

The idea of the practice being new or innovative was not a primary driver for any organisation. This is because it was attendant with other key motivators such as fairness; it did not stand alone. Where it was a motivation it was a manifestation of deeper organisational values:

...our culture is one of trying to develop and apply best practices and trying to reduce bias as much as possible and never stop thinking how we could ... improve further. And that very much was ... at the start... of introducing these new evaluation approaches... (Leader: Org Five)

The discussion of innovation presented an opportunity for respondents to restate their organisations' main drivers such as fairness or distinguishing between applications in the 'grey zone'. It also revealed the importance of other factors, such as, alighting on a particular case where randomisation could be piloted which would both test its usefulness and be feasible to set up, as seen in this participant's testimony:

It's the responsibility of the [Organisations'] staff to bring the arguments to the board, why in this specific programme a lottery would be good. And not just as a sexy add-up without any reasoning. Our board expects us to give them a reasoning, why this kind of selection scheme would give the perfect results to achieve the funding aim of the programme. (Practitioner: Org One)

Effects on efficiency

Finally under this theme, the issue of whether randomisation increases the efficiency of decision making processes by saving time and money. Across the data, there was less surety on the money saving effect of partial randomisation. Largely, it was not the main consideration and therefore did not appear to have been assessed. Participants were not definite on randomisation's money saving effects. Participants used words such as 'unsure' and 'might' (save money). For one participant partial randomisation was seen as more expensive, but worth the cost:

...the way we set it up it was more expensive, but that was okay. Because, for us, being innovative was much more important than saving money...we were willing, our board as well...to invest more. (Leader: Org One)

Participants were more voluble on the topic of saving time. The majority of participants felt that it had the potential to save time depending upon how it was set up. It was not a motivation on its own, but something that may be realised in the shortening of lengthy panel discussions of equally good applications.

the potential for saving a few hours [in panel discussion] is...not a strong driver, but it's still something that... is a very... valid argument for doing it. Saying... you can cut a few hours off of the discussions about ... [applications] above or below the pay line, then it's worth trying that at least...on a trial basis. (Practitioner: Org Five)

However, perhaps the efficiency gains are negligible, as this practitioner observed from their organisational context:

> *...It doesn't save a lot of time. It might shorten panel meetings, because it relieves the reviewers to assess very marginal or non-existing differences among top applications. That's a tiny advantage, but it doesn't save you much time. (Practitioner: Organisation One: Implementers)*

Scale and method of implementation also made a difference in how much time could be saved. If the method was used more widely needless to say, the time saving was predicted to multiply. If the method was operationalised with a large proportion of projects selected for randomisation, after only a brief screening for eligibility, then the dispensation of peer review created greater efficiency savings. However, no participants were planning or had implemented the use of randomisation in this way. Using both processes (peer review and randomisation), as participants advocated, could actually increase the time needed to reach decisions, particularly as peer reviewers were being asked to identify projects to put into the randomisation process, which is a different task to usual:

> *...our panel members did not only identify those where they thought these should be funded, because they really liked them. We also asked them to identify those which should not be in the lottery part because there were so bad that it would actually damage the reputation of [our organisation] if they would be drawn by lot. So...that's a challenge for panel members as well who are...only used to identify the best ones...this... just...takes more time. (Leader: Org One)*

Other methods were suggested to save time, in the sense of truncating discussions, for example applying secondary criteria before or instead of using randomisation, in order to identify particular groups or applications from specific fields, as this participant suggests:

> *if you want to save time, you could also do other things...for instance, having the secondary criteria very clearly defined. The younger, in academic age somebody is ...and gender, for instance, that would also be very fast, you don't have to discuss anymore, you just have your group of equally ranked proposals and then 'paf' you apply that. (Leader: Org Five)*

Finally, this participant highlights the benefits of efficiency savings to the end user:

> *...we are not there, but in the end, we want to have a high quality process that gives an answer to the researcher in [a] short time. So ... we always start to think from the perspective of the researchers who apply and to them, it is an advantage*

> *if they ...know whether their proposal will be granted as soon as possible. (Leader: Org Five)*

Of the five sub-themes describing organisational motivations for the use of partial randomisation, **fairness** was the most prevalent, alongside **using randomisation to distinguish between equally good applications**. A third motivation commonly cited was to facilitate a **greater breadth of topics and types of research**. Efficiency was also important, but there was little certainty about its money saving properties and participants who had implemented the method felt that the amount of time saved was negligible. Data on the idea of randomisation as an innovative practice and the extent to which this is a driver was also presented. The next section presents data on challenges to the use of partial randomisation and is the second of three themes in this chapter.

3.2   Restraining factors

In order to implement partial randomisation organisations had to consider practical matters such as finding a suitable method that would deliver their objectives, that was within the law, and was feasible to implement. However, what was a stronger concern for participants was the challenge of communicating the introduction of partial randomisation to various stakeholders. Participants shared the initial concerns they encountered and how they were addressed in their organisations. These were largely centred on how to communicate the method, how much to reveal and to whom, and what the consequences of these communications would be.

Reputational risk

For some organisations, the inception of the idea was from the board or senior leaders, in others it was championed by practitioners. The process of arriving at the decision to go ahead with partial randomisation varied considerably. Once this was agreed, aside from the not inconsiderable practical issues, the main barrier was that of communicating this development effectively to the general public, panel members and applicants. The idea of reputational risk was voiced by a number of participants as an initial fear, as this interviewee recalls:

> *There ... were these worries that... you would find... in the headlines of some major newspaper [a] statement that the [organisation] is throwing dice and that people wouldn't understand that this is to a quite small group of proposals that this will be applied. So that it will be perceived in the... public opinion ... as a surrender of, or just a statement of [our organisation] isn't capable of doing what it is supposed to do. So that was a fear that many...[organisation] members, panellists, were bringing forward and I also had a bit myself. (Leader: Org Five)*

A similar sentiment was voiced by this practitioner anticipating the introduction of the method:

> *Yes...in general, I'm very positive about this...I think it will...work...but what I'm mostly worried about or concerned about is this perception of the thing..we don't want...the newspapers to...say.... the [organisation] is now gambling with the research funding and so on. I think that will be ... the nightmare somehow... (Practitioner: Org Three)*

Public funders had the additional pressure of being crystal clear on the legality of the process and demonstrating their accountability to the public:

> *And in terms of communication, it's ultimately important to mention that first, we do a strong selection, to look only at projects, which are generally worth funding...the quality of the project has to be very good. And out of these projects, we do then this partial randomisation. That's very important...in particular for us as a public or as a governmental funding agency. As I mentioned before, that we're not throwing tax money to, you know, weird ideas, it has to be first strong quality control... then we can do this randomisation. (Leader: Org Two)*

Some participants stressed the importance of clear messaging to stakeholders, so the detail of the process could be understood and acceptability increased. For example, by ensuring that applicants understood the process, rather than glossing over how it would be done:

> *I think it was very important to explain the whole process as well. I mean, in the randomisation that we had demonstrated then exactly how the selection is done. So this was ... I think this was very, very important as well, ...the algorithm that we're using for the randomisation was very clear, there were some mathematicians in who looked over. So it was...really fulfilling all kinds of quality control of the randomisation process as well. This was ... so we didn't put it into a box, and someone were just pulling out projects. I think this was very important. It was important to discuss the existing biases in the decision making process. (Leader: Org Two)*

More specific challenges were reported with reference to communicating to other stakeholder groups presented in the next sub-theme.

Communicating to applicants and panel members

Particular challenges were reported in communicating to applicants and panel members and we refer to the data on communicating to these groups in turn.

Organisations varied in whether they believed that it was beneficial for applicants to know that their proposal had been entered into the pool for randomisation, or that randomisation was a tool in use. There were also fears that the change would lead to an avalanche of

queries from applicants or that people would submit poor quality applications, or there would be a large increase in submissions, as applicants may believe that it was a lottery and the usual standards did not apply. For those who had implemented the method, the data indicates that these fears were not realised due to a significant effort in communicating the application process and the fact that peer review is still the mainstay of the evaluation process. As one senior manager reflected:

> *What wasn't anticipated was actually the positive response from the applicants… how it was perceived… from the applicants … that was really positive and not expected. (Leader: Org Two)*

For those organisations at an earlier stage in the process the initial fears are similar:

> *…the only thing I think about is how to communicate this to the applicants. Because when we talk to researchers, they are so interested in doing this, they think it's a very good thing. It's like rolling the dice, they get equal opportunities. But that's when they speak generally. So I really wonder what they would say if I say, okay, your application is actually going to be randomly picked or not. I think they will have a different approach to the whole thing…So that's the only thing I'm a little worried about the communication part. (Practitioner: Org Four)*

There were other ideas voiced on the possible unintended consequences for applicants whose proposal was chosen for a randomisation process. That there might be some stigma attached if they were funded as they may risk others saying that their research was lesser than a project chosen solely by peer review. There was more concurrence on the idea that actually losing out at the randomisation stage could benefit a researcher, particularly someone with a young academic age, as it may encourage them to stay in academia as they know their project was good enough to be funded, rather than doubt their ability and leave the profession.

> *We acknowledge the quality of these applications. But we didn't have the financial means to support it. (Practitioner: Org Five)*

From those organisations that had implemented partial randomisation, participants reported a mixed reaction from panel members.

> *Some panel members, were not amused…and thought this could be even a reason to resign …because they wouldn't want to kind of take the responsibility [of] being part of a panel that in the end doesn't take all the decisions or do all the rankings and rely on randomisation. (Leader: Org Five)*

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From the same institution a colleague summed up their experience of implementing the change in practice:

> *It is my experience that although these members of the [institution] are all very innovative and excellent researchers who push the boundaries in their field, they are actually quite conservative, when it comes to evaluation, funding, etc. And there was a … lot of convincing and explaining to be done. And that took quite a long time… It was worth it…So you have to be patient, you have to listen, you have to involve people, you have to co create…to some extent…you need to be open to suggestions from the community and also implement some of these, and it's a give and take, and you need to move steadily, but not too rapidly, otherwise, you lose them. These are hard learned lessons. (Leader: Org Five)*

In this second theme we reported restraining factors to the use of partial randomisation based on interview data with six funding organisations. These centred on communications to different stakeholders. Through the data we observed the challenges that emerged at various points in the process. From announcing a completely new practice, to building acceptance from the research community, and retaining the publics' trust in their organisations' brand. In the final theme some initial reflections are presented on what randomisation cannot do, where more evidence is needed, and some useful side-effects of its introduction.

3.3   Reflections

In this working paper we have reported on motivations and uses for partial randomisation within six funding organisations. For those organisations where partial randomisation was slightly more established, views of a more reflective nature were beginning to be voiced. Three different ideas emerged: the need for more evidence, the effect of randomisation across the funding community, and randomisation as a trigger for additional conversations on peer review and decision making.

The need for more evidence and the desire to learn from others who were using or had investigated the method was voiced by numerous participants. As already reported, to address strategic goals around diversity, organisations employed additional methods to achieve specific outcomes, for example, the promotion of female researchers. Only in the longer term would it be possible to have enough quantitative data to draw any conclusions on its effects on demographic characteristics across funded projects as this participant articulates:

> *Also this increased diversity, it works…but it works only if you have many calls and you add them up. That's one negative thing about the lottery. You need many grants, many cases and have to look in the… long run. The more grants you have,*

> *the better the lottery works, because it's pure chance, pure luck. This pure luck from every round will add up and it will reflect all the features you had in the group that went into the lottery. (Practitioner: Org One)*

Until there is enough data available to do a meaningful comparison of evaluation methods, there is a question mark over the extent to which randomisation delivers on issues of diversity as this participant reflects:

> *...it would need to be studied. Ideally, in...controlled studies...comparing the ...usual [panel] And you compare that approach to, the more... ...this more systematic approach to defining the partial randomisation groups...and you will then look whether, more people with disabilities or more women, or more minority ethnic people will be funded...these are potential positive outcomes, but they are by no means guaranteed. ..you could confidently argue that it does save time, that ... it does increase fairness, and reduce bias, although it's unclear how and what bias is exactly. (Leader: Org Five)*

The second reflective idea that emerged was how the use of partial randomisation would be viewed in retrospect. Perhaps as a trend within funding practice and that the trials and pilot experiences were building an evidence base, that would be subsequently built on to change practice further, as these two participants reflect:

> *... I don't know if it's just the hype... or it's a ... step in the whole process of the evaluation. So it's just a transient step... that was important to do.* (Leader: Org Two)

> *I think time is on our side it's a mega trend if you like it is something many of the funding agencies are... moving towards...and that also helps a lot so that you can say, look, they do this...it's a best practice that is emerging.* (Leader: Org Five)

Thirdly, participants talked about partial randomisation stimulating discussions in their organisations and in the wider research community about the practice of peer review and opening the door to a more honest discussion about the reality of decision making processes and how these can be optimised:

> *I think the discussion...was very helpful, it triggered...[discussion of] other aspects of the evaluation procedure, how we ran proposals, how we score it...it has...an impact on other aspects, which have now... been improved. (Practitioner: Org Five)*

Looking across the data set, all participants spoke about a variety of other measures that they used or were developing within their organisation to improve the decision making process.

These included anonymising applications, promoting high quality applications from underrepresented groups, bias training for panel members, positive vetos in a panel, personal interviews for applicants, narrative CVs, the use of academic age instead of chronological age, removing the focus on impact, a two stage process of outline application and full application, introducing new calls for specific groups or types of project. Partial randomisation was a useful addition, not a panacea for all ills or a replacement for peer review as this leader reflects:

> *...we're quite clear that it's a tool...For me... we need more tools in the toolbox when it comes to making funding decisions. And so that's a bit ...innovating, trying to test new tools. But what it doesn't do, it doesn't speak... directly to strategic priorities, unless you have some sort of stratification in there... we built randomisation into [a grant] ... but we did actually build in the ability to prioritise [particular]... research before we went ahead and used the randomisation tool.* (Leader: Org Six)

Although various tools and measures were in use and development, the centrality of peer review was still without question as underlined by this participant:

> *Having...excellent panels is much more important than what we have been discussing so far... So that is really the core of the evaluation, excellent people discussing proposals and exchanging opinions, raising issues, criticising, but also highlighting strengths.* (Leader: Org Five)

For those further along in the process, partial randomisation had become more embedded into day to day processes. Its usage had normalised it to some extent as this participant reflects:

> *...at the end, everyone accepted this. So... the critical people, were verifying with this way, so I think there was an increase in acceptance ... by just doing it. (Leader: Org Two)*

As participants reported, at its inception the idea of using randomisation is often met with incredulity. What was also reported was the desire to push the idea forward in the face of disagreeable responses in order to achieve greater parity for grantees through a fairer and more transparent process, as this participant comments when asked about their organisational values in relation to the use of partial randomisation:

> *I think one of the values was to be brave... it's a question of braveness. It's a question also that we have as funding organisation... to be more experimental. So it's a learning process on how to fund projects, how we make the best decisions, how we support innovation. (Leader: Org Four)*

3.4   Summary of findings

This narrative summary presented three overarching themes: motivating factors, restraining factors and reflections. The key driver found in the data was fairness, the key restraining factor centred on communication to stakeholders and reputational risk. Finally, reflective ideas were presented as some organisations had the opportunity to consider the effect of the process of implementation, what partial randomisation could achieve and its shortcomings.

4. Conclusion and avenues for further research

In this working paper, we have addressed the question: what are the drivers and restraining factors for the introduction of partial randomisation in research funding organisations? A total of eleven interviews were conducted with leaders and practitioners across six funders.

Theme one reported data exploring the drivers for the introduction of partial randomisation. It was clear that participants were primarily concerned with creating a fairer system for applicants, where decisions were made based on expert peer review, with randomisation providing a useful intervention when this process had run its course. This in turn created the opportunity for a more confident and positive response to applicants fortified by a more transparent process.

Participants also felt that randomisation lessened the effects of bias in peer review, but not to the extent that it was the singular measure needed to achieved strategic goals. The legality of the process also provided a motivation, to ensure applications were assessed in as similar way as possible across funding schemes. The design of the randomisation method also had to meet specific legal requirements within public funding bodies.

Participants were expert in panel dynamics, and the constitution of panels and shared insights into their experiences in relation to the introduction of partial randomisation. This testimony was focused on the specific context of decision making in panels. Particularly the situation of discerning between equally good applications when the process can become subjugated to personalities, or personal biases come to the fore either about who should be funded or what kind of research is considered good quality.

The idea of innovation produced some interesting discussions, with mixed views on its importance depending upon what it represented for participants. For some it was related to their organisations' values, of continuous improvement and a sense of boldness and experimentation. For others the idea of innovation was seen as somewhat hollow, devoid of this deeper meaning, a by-product that was nice to have as an organisation, but not the core driver for the introducing any new method. It was also seen as not innovative at all, or perhaps for outside observers to decide.

Creating a more efficient system was important to participants, but there was little certainty whether randomisation saved money, and its time saving benefits appeared negligible from participants' experience.
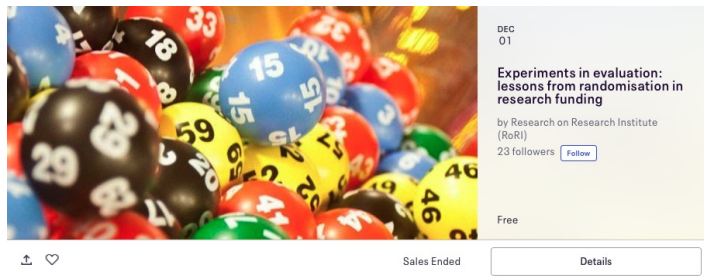
In terms of challenges to the use of partial randomisation, reputational risk or risk to the image of a particular scheme were cited several times as initial fears for the organisations in the study. There was also a long road between initial inception and normalisation of the method, which was underpinned by clear messaging of when partial randomisation would be used, how it would be used and why it was being introduced.

The clearest message regarding communication to applicants was that there was less animosity than was anticipated. Reaching a level of acceptance with panel members was more problematic, but with use more people could see the benefits of randomisation, although it was not completely accepted by all panel members within any organisation.

This study has provided insight into the motivations and challenges to the introduction of partial randomisation in funding bodies. The limitations of peer review have been clearly charted in the literature (Bendiscioli & Garfinkel, 2021). This study is a snapshot of how one particular measure is being used by several institutions to address these limitations.

It is clear that more effectiveness evidence is needed to ultimately understand its full potential. This would entail setting up experimental studies, with control groups. It is also too early to say if its introduction will have any deleterious effect on the research system as envisaged by some scholars such as Bedessem (2020) and Reinhart & Schendzielorz (2020). However initial reflections about wider implications were voiced within the study. This includes the uncomfortable duality of the lived experience participants had of the limitations of peer review and its simultaneous pre-eminence within the research system. In retrospect this may be a moment in time where a significant change for the better began.

5.   Bibliography

Azoulay, P., & Li, D. (2020). Scientific Grant Funding (No. w26889). National Bureau of Economic Research. http://www.nber.org/papers/w26889

Bedessem, B. (2020). Should we fund research randomly? An epistemological criticism of the lottery model as an alternative to peer review for the funding of science. Research Evaluation, 29(2), 150-157. https://doi.org/10.1093/reseval/rvz034

Bendiscioli, S. (2019). The troubles with peer review for allocating research funding: Funders need to experiment with versions of peer review and decision making. EMBO reports, 20: e49472 https://doi.org/10.15252/embr.201949472

Bendiscioli, S., & Garfinkel, M. (2021). Dealing with the limits of peer review with innovative approaches to allocating research funding. EMBO. https://www.embo.org/policy/reports-and-publications/

Bendiscioli, S, Firpo, T, Bravo-Biosca, A, Czibor, E, Garfinkel, M, Stafford, T, Wilsdon, J, Woods, H B (2021) *The experimental research funder's handbook..* RoRI Working Paper No.6, December 2021. DOI: 10.6084/m9.figshare.17102426

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in psychology, 3(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Fang FC, Casadevall A. 2016. Research funding: the case for a modified lottery. mBio 7(3):e00694-16. https://doi.org/10.1128/mBio.00694-16.

Fetterman, cited in Given, L. M. (2008). The SAGE encyclopedia of qualitative research methods (Vols. 1-0). Thousand Oaks, CA: SAGE Publications, Inc. https://doi.org/10.4135/9781412963909

Given, L. M. (2008). The SAGE encyclopedia of qualitative research methods (Vols. 1-0). Thousand Oaks, CA: SAGE Publications, Inc. https://doi.org/10.4135/9781412963909

Gross, K., & Bergstrom, C. T. (2019). Contest models highlight inherent inefficiencies of scientific funding competitions. PLoS Biology, 17(1), e3000065. https://doi.org/10.1371/journal.pbio.3000065

Guest, G., Namey, E., & Mitchell, M. (2013). Collecting qualitative data. SAGE Publications, Ltd https://www-doi-org.sheffield.idm.oclc.org/10.4135/9781506374

Guthrie, S., Ghiga, I., & Wooding, S. (2017). What do we know about grant peer review in the health sciences?. F1000Research, 6. https://doi.org/10.12688/f1000research.11917.2

Liu, M., Choy, V., Clarke, P., Barnett, A., Blakely, T., & Pomeroy, L. (2020). The acceptability of using a lottery to allocate research funding: a survey of applicants. Research integrity and peer review, 5(1), 3. https://doi.org/10.1186/s41073-019-0089-z

Reinhart, M., & Schendzielorz, C. (2020). The lottery in Babylon—On the role of chance in scientific success. Journal of Responsible Innovation, 1-5. https://doi.org/10.1080/23299460.2020.1806429

Roumbanis, L. (2019). Peer review or lottery? A critical analysis of two different forms of decision-making mechanisms for allocation of research grants. Science, Technology, & Human Values, 44(6), 994-1019. https://doi.org/10.1177/0162243918822744

Appendix: Interview schedule, participant information and consent sheet

Interview Schedule

Introductions and housekeeping

Hello and thank you for giving up your time for the interview today. I work at the University of Sheffield as part of the Research on Research Institute. This interview is part of a study to explore organisational motivations for use of the partial randomisation method. I will be interviewing people who have been involved in the application of this method to find out more about why they decided to use it.

Just to remind you I'm going to record the interview and use some software to help me transcribe it. The audio recording and transcription will be saved on a secure University drive, and your name or that of your organisation will not be used in any publications resulting from this research.

Opening

1. So, thinking about partial randomisation. Can you remember the first time you heard about the idea of using randomisation in grant allocation and what your initial feelings were about this?

Theme One: initial motivations and drivers

2. So, from the literature there are a number of documented motivations for the use of partial randomisation. I have listed these on a whiteboard. I'm going to share my screen so you can see these.

    Looking at this list. Do you think anything is missing? Does it include the initial motivations for your organisation?

    So, could you rank them in order of importance?

    [Primary and secondary motivations? Public and private?]

    Still on this theme of motivations and drivers:

3. So, following on from that exercise, I noticed….

    How important were organisational values in your decision to introduce this experiment?

4. Tell me more about the planning stage. Was there anything you were particularly worried about at the planning stage? Or that made you hesitate?

Theme Two: Reflection / Evaluation

So, moving on to some more reflective questions:

5. Now that you have implemented it, is there anything that has turned out differently or better than you hoped?

   [Could you give me an example?]

6. Having introduced it, do you plan to expand its use? Why?

Closing
So, I am going to begin closing our interview now. We have talked about your organisation's initial motivations for using partial randomisation and your thoughts on how it turned out. Is there anything else that you would like to add or say before we close? I will be in touch to ask you to check the transcript to make sure you are happy with it.

Thankyou for your time.

Participant Information and Consent Sheet

1. Research Project Title:
Randomised grant allocation: a multi-funder study of aims, preconditions, outcomes and implications.

2. Invitation paragraph
You are being invited to take part in a research project. Before you decide whether or not to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

3. What is the project's purpose?

The background, aim and duration of the project should be given here in lay terms. Include whether this is for an educational qualification.

This study is being conducted as part of the Research on Research Institute (RoRI). This is an international consortium of funders, academics and technologists committed to transformative & translational Research on Research. There are six different RoRI work streams running simultaneously in 2021. This study is part of the Randomisation workstream, which aims to provide practical resources and empirical insights to support research fundings organisations interested in trialling focal randomisation (FR) in their processes of grant allocation.

This study is mixed-methods, that means there is a qualitative and quantitative element to the project, with two methods of data collection. This information sheet is relevant to the qualitative part of the study.

The **qualitative data** will be gathered through a number of **individual interviews** with **people in leadership or strategic positions** in a range of research funding organisations.

The project will run for five months from August to December 2021.

4. Why have I been chosen?

Research funding professionals have been chosen to take part to share their perspectives on why their organisation would or would not trial focal randomisation as part of their grant allocation procedures.

5. Do I have to take part?
It is up to you to decide whether or not to take part in the project. If you do decide to take part, you should indicate your agreement below. You can still withdraw at any time without having to give a reason by contacting the researchers listed below. However, once the results of the study are gathered and analysis is being undertaken, it will not be possible to withdraw your data from the research.

Please note that by choosing to participate in this research, this will not create a legally binding agreement, nor is it intended to create an employment relationship between you and the University of Sheffield.

6. What will happen to me if I take part? What do I have to do?

Research funding professionals will be invited to take part in an interview with a researcher where you will be asked about the use of focal randomisation in grant allocation procedures. The interview will include a participative element alongside questions that you can answer verbally. For example, being invited by the interviewer to make a list of ideas and put them in order of importance.

7. Will I be recorded, and how will the recorded media be used?

The **qualitative interviews** will take place using conferencing software (for example Zoom or Google Meet) and will be recorded. These recordings will only be used for analysis. No other use will be made of them without your written permission, and no one apart from the two researchers listed below will be allowed access to the original recordings. There is an option to use Otter.ai software to transcribe the interviews (https://otter.ai/about). Otter.ai is cloud-based, it syncs data over an encrypted connection and stores recordings and data in a secure cloud. All data will be removed from Otter.ai once the transcription is complete and stored on the University's password protected secure drive. Any personally-identifiable information will also be removed as part of the editing process after automatic transcription when interviews are stored on the University's password-protected secure drive. Participants will be able to opt in or out of this software being used for their interview. More information about the Otter.ai privacy policy is here: https://blog.otter.ai/privacy-policy/.

8. What are the possible disadvantages and risks of taking part?

Participating in the research is not anticipated to cause you any personal disadvantages or discomfort. The potential physical and/or psychological harm or distress will be the same as any experienced in everyday life. Any risks to your organisation in sharing information will be managed by ensuring confidentiality as described below.

9. What are the possible benefits of taking part?

Whilst there are no immediate personal benefits for those people participating in the project, it is hoped that this work will have a beneficial impact by informing future research and practice. Results will be shared with participants and more widely in order to inform future research and practice.

10. Will my taking part in this project be kept confidential?

All the information that we collect about you and your organisation during the course of the research will be kept strictly confidential and will only be accessible to members of the research team. Individuals taking part will remain anonymous and will not be named in any resultant document or publication such as an article, report or presentation about the study.

We will not collect any personal data in this study except the names of interviewees in the qualitative part of the study. All data relating to the qualitative part of the study will be deleted at the end of the study (Dec 2021).

Data will be stored on secure password protected drives managed by the University of Sheffield. Data may also be stored on the password protected machines of project team members, with any individual files containing personal information also being password protected.

When the research is reported organisations involved in the study will not be named. Individual participants will also remain anonymous. Individuals or their organisations will not be associated with any data reported (such as survey results or quotations from interviews).

Any data from interviews shared publicly in the reporting of this research (e.g. publications, presentations) will be anonymised to ensure participant's confidentiality is maintained.

In specific exceptional cases, where it is impossible to anonymise data sufficiently, it may be necessary to attribute quotations from interviews to individuals or their organisations. In these cases, the research team will obtain your explicit consent for this. If you do not consent for the use of this data it will not be used in any publications or other reporting of the study (i.e. the specific quotations from interview data would not be published).

11. What is the legal basis for processing my personal data?

According to data protection legislation, we are required to inform you that the legal basis we are applying in order to process your personal data is that 'processing is necessary for the performance of a task carried out in the public interest' (Article 6(1)(e)). Further information can be found in the University's Privacy Notice
https://www.sheffield.ac.uk/govern/data-protection/privacy/general.'

12. What will happen to the data collected, and the results of the research project?

The data collected for the project will be managed in ways described above. It will be used as the basis for reporting our findings. Results of the research may be published in reports, academic and professional articles or books, and other publications. They may also be disseminated at conferences in papers, presentations and posters. Results may also be included in other publications or dissemination channels, including blogs or social media sites.

13. Who is organising and funding the research?

The project is a part of the programme of work being undertaken by RoRI (the Research on Research Institute), a partnership founded by the Wellcome Trust, Digital Science and the Universities of Sheffield and Leiden leading an international consortium of funders, academics and technologists. RoRI has received funding from all the founding partners plus other partner organisations who are listed as Strategic Partners on the RoRI website (http://researchonresearch.org/).

14. Who is the Data Controller?

The University of Sheffield will act as the Data Controller for this study. This means that the University is responsible for looking after your information and using it properly.

15. Who has ethically reviewed the project?

This project has been ethically approved via the University of Sheffield's Ethics Review Procedure, as administered by the Information School on behalf of the University of Sheffield Research Ethics Committee.

16. What if something goes wrong and I wish to complain about the research or report a concern or incident?

If you are dissatisfied with any aspect of the research and wish to make a complaint, please contact the people listed below in the first instance. If you feel your complaint has not been handled in a satisfactory way you can contact the Head of the Information School at the University of Sheffield, Professor Val Gillet by emailing v.gilet@sheffield.ac.uk. If the complaint relates to how your personal data has been handled, you can find information about how to raise a complaint in the University's Privacy Notice:
https://www.sheffield.ac.uk/govern/data-protection/privacy/general.

17. Contacts for further information

Dr Helen Buckley Woods, University of Sheffield. Email: h.b.woods@sheffield.ac.uk Professor James Wilsdon, University of Sheffield. Email: j.wilsdon@sheffield.ac.uk

You are asked to keep a copy of this information and consent form for your records

18. Details of consent

We ask you to provide your consent to taking part in the research as described above. The specific areas where you asked to consent are the following. **We will ask you to confirm your consent in an email to us.** You will also have the opportunity to ask questions about the research at any stage.

- I confirm that I have read and understood the description of the research project, and that I have had an opportunity to ask questions about the project.
- I agree to take part in the research project as described above.
- I understand that my participation is voluntary and that I am free to withdraw at any time without any negative consequences.
- I understand that I may decline to answer any particular question or questions, or to do any of the activities.
- I understand that if I withdraw I can request for the data I have already provided to be deleted, although if the data has already been aggregated into the overall analysis this may not be possible.
- I understand that my responses will be kept strictly confidential, and that my name will not be included in reporting and will not be associated with any particular quotations or views without my explicit permission.
- I understand that the name of my organisation will not be identified or identifiable in any reporting of the research in relation to specific quotations, views or other data, unless explicit permission is granted.
- I agree to the interview being recorded and transcribed using a third-party speech-to-text transcription application (Otter.ai) (https://otter.ai/). Please note, all responses transcribed in third-party applications will be kept secure, confidential and anonymous. If you do not agree to this, please leave the box blank and the interview will be transcribed manually by the researcher (i.e. not using third-party software).
- I give permission for all the research team members to have access to my responses for purposes of analysis.

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