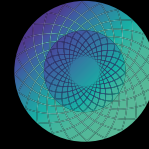




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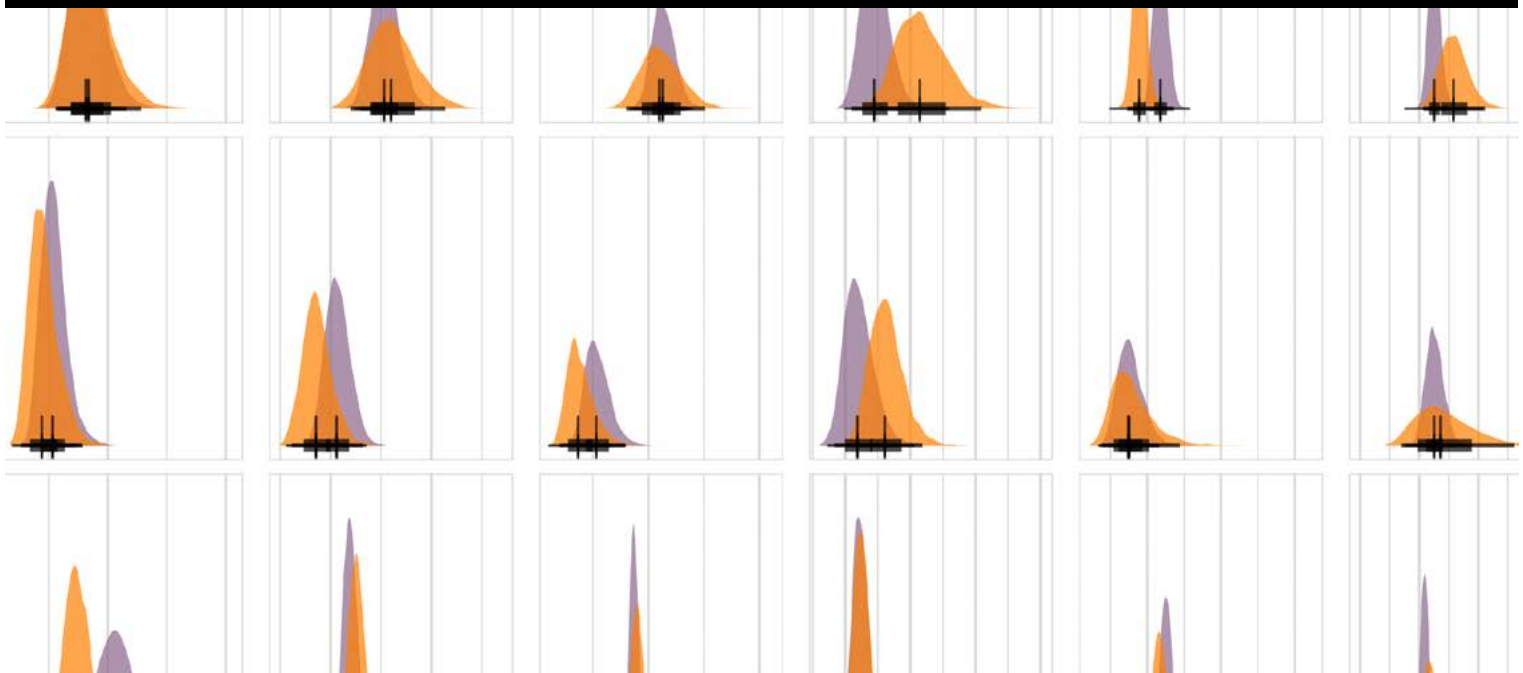


Bennett School
of Public Policy
Cambridge

Improving Inclusivity in Grant Funding

Briefing note

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I3GF Briefing note

We looked at three stages of the grant application process for researchers at the University of Cambridge to ask if there were gender disparities¹. We asked: who applies? How large are the applications? And who is awarded? We examined these stages because reasonably comprehensive data is available, and we believe they are important markers in the process (although not the only important stages).

Our analysis makes it clear that seniority and discipline (defined via Research Excellence Framework (REF) Main panels) have substantial effects. Application rates, size of application and award rates all increase with seniority and vary by discipline. Variation by REF panels is unsurprising given the different roles that grant funding plays in supporting research in different disciplines. Cross-panel comparisons of application rate, grant size or award rate are therefore likely to be influenced mainly by disciplinary differences.

Women are underrepresented in the senior academic population of the university, and the gender split across disciplines is uneven. This means the disparities in the professional structure of the university heavily influences overall application rate, application size and award rate. Our analysis separates these structural imbalances from current grant seeking behaviour. By separating the two, we aim to highlight where interventions can be most effective. Controlling for seniority and discipline, we see little overall disparity, and a much more varied pattern of disparities at different career stages in different REF panels.

The analysis revealed four main findings:

1. The majority of gender disparities in grant outcomes are largely explained by structural factors.
2. Smaller grant sizes go a long way to explaining women's higher award rates.
3. The relationship between gender and grant outcomes varies substantially across contexts.
4. Temporal trends account for part of the observed gaps in grant outcomes. (Disparities are generally decreasing over time.)

Below we talk about each of the four key findings.

¹ The analysis used two proxies for disciplinary classification: the University of Cambridge's Schools and the REF panels. This document reports results based on the REF classification; further methodological details for this analysis can be found in the pre-print (https://doi.org/10.31222/osf.io/c5bsz_v2). For results using the School classification, please refer to the Bennett Institute report (<https://doi.org/10.17863/CAM.118217>).

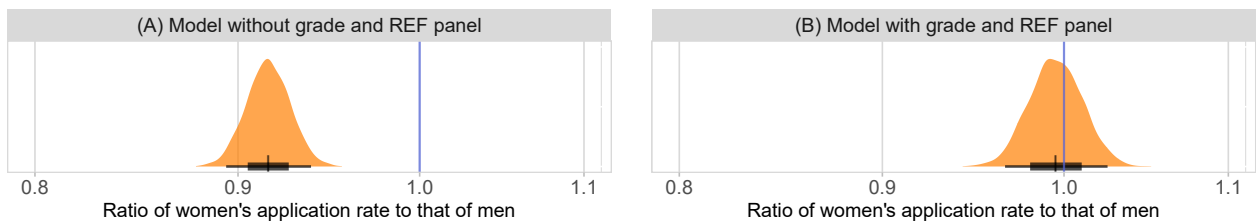
FINDING 1:

The majority of gender disparities in grant outcomes are largely explained by structural factors.

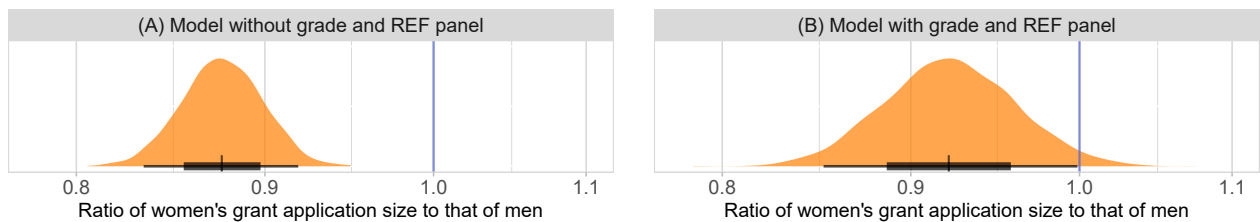
Figure 1 shows our estimate of the effect of gender, comparing results with and without controlling for the effects of grade and discipline on application rate, size of application and award rate. In all cases the results based on the simple model (left hand panels), using only gender as the predictor of each outcome, show men outperforming women. For application rate structural factors fully explain the entire disparity we observe (Figure 1.1B). For application size including structural factors reveals a smaller disparity although a gap probably remains (Figure 1.2B). For success rate (Figure 1.3B) see the disparity reverse when including structural factors with our best estimate that women have higher odds of being successful, at the same grade, in the same discipline. Although the exact shift differs across the different outcomes, structural factors are consistently important in explaining grant funding outcomes.

Figure 1 Average ratio/odds ratio of women's grant outcomes to that of men - model comparison

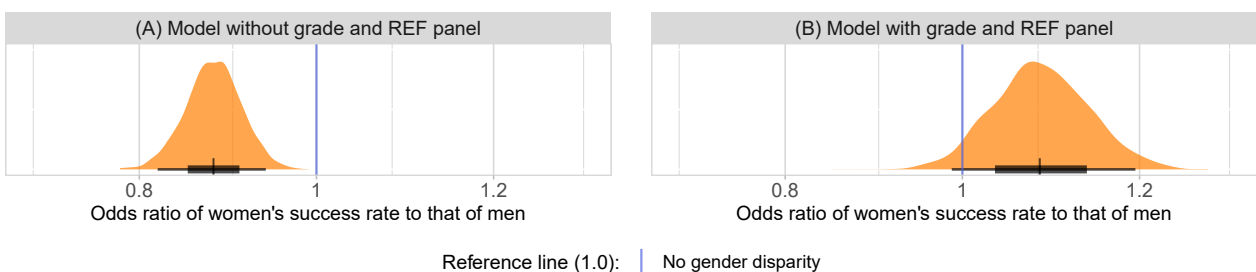
1.1 Applications rate



1.2 Size of application



1.3 Award rate



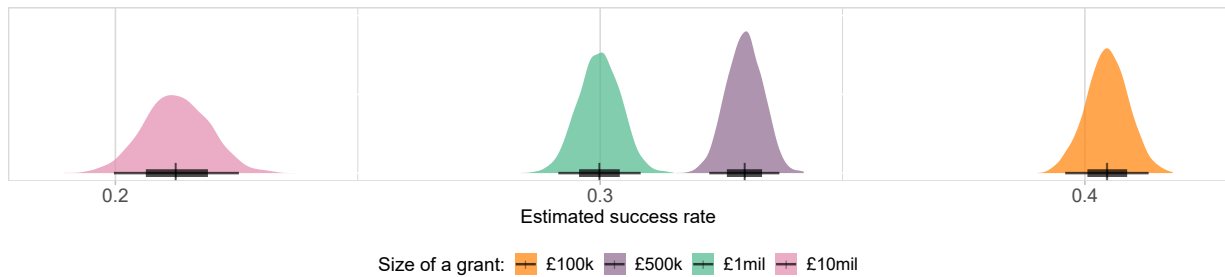
The estimates in (A) are based on a model in which the only predictor is gender; the estimates in (B) are based on a model that incorporates all main effects and interactions between gender, grade and REF. The estimates are averaged over values of grade and REF. The thicker line at the base of each curve indicates the 66% credible interval, the thinner line indicates the 95% credible interval. The x-axis has been log-transformed. Estimates to the right of the reference line indicate a higher outcome for women; estimates to the left of the reference line indicate a higher outcome for men.

FINDING 2:

Smaller grant sizes may explain women’s higher award odds.

In the previous section (Figure 1.2 and 1.3) we showed that women tend to apply for smaller grants and have higher success rates than men, when controlling for structural factors. Our analysis also shows that the success rate for larger grants is lower (Figure 2) so these findings might be linked.

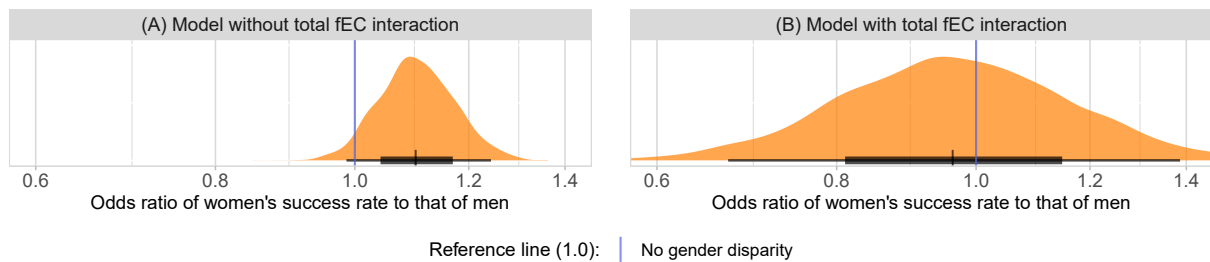
Figure 2 Estimated award rate by size of grant application



The estimates are based on a model that includes the size of the grant as the only predictor. The thicker line at the base of each curve indicates the 66% credible interval, the thinner line indicates the 95% credible interval.

Figure 3 compares the results from the previous analysis of disparity in success rates correcting for structural factors with a model that also incorporates the effect of size on success rate. When we include the size/success effect our best estimate for female/male disparity shifts to include parity suggesting there is unlikely to be a substantial gender disparity in success rate for comparable grants.

Figure 3 Average odds ratio of women’s award rate to that of men - model comparison



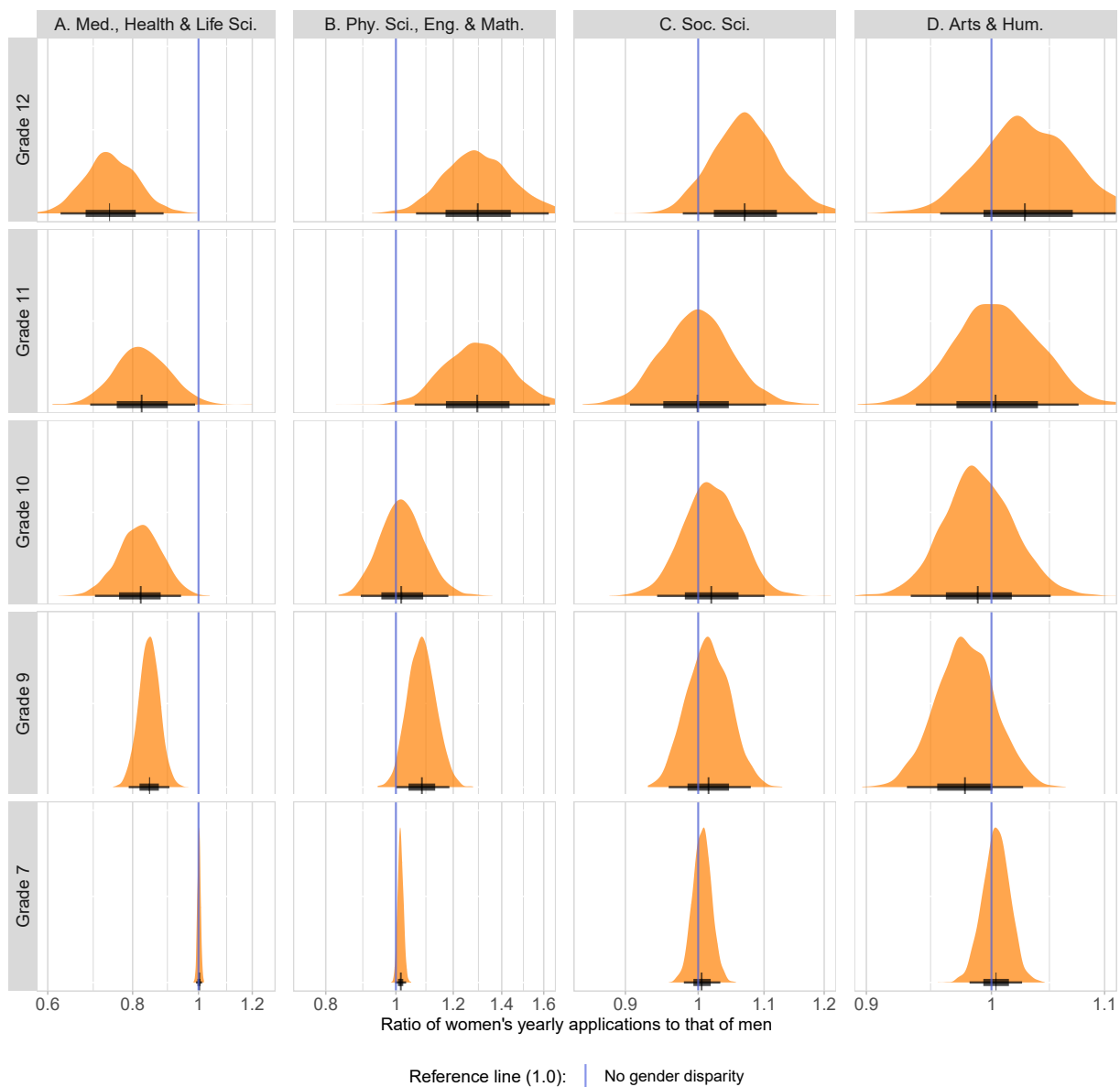
The estimates in (A) are based on a model that incorporates all main effects and interactions between gender, grade and REF; the estimates in (B) are based on a model that incorporates all main effects and interactions between gender, grade and REF, and an interaction term between gender and size of grant. The estimates are averaged over values of grade and REF, and size of grant. The thicker line at the base of each curve indicates the 66% credible interval, the thinner line indicates the 95% credible interval. The x-axis has been log-transformed. Estimates to the right of the reference line indicate a higher outcome for women; estimates to the left of the reference line indicate a higher outcome for men.

FINDING 3:

The relationship between gender and grant outcomes varies substantially across contexts.

The overall balance between female and male behaviour appears to be the result of balanced disparities in particular disciplines at particular career stages. Figure 4 breaks the results down for application rate by panel and grade. This shows both situations where women are applying more and where men are applying more (similar, although less dramatic, variation of patterns appear for other outcomes). For example, in Main Panel A (Medicine, Health, and Life Sciences) in grades 9-12 the results suggest women apply for grants less often than men. The opposite relationship is shown in Main Panel B (Physical Sciences, Engineering, and Maths) grades 9, 11 and 12. Across several contexts we see no evidence of disparities between women and men existing, e.g., Main Panel C (Social Sciences), grade 11. These findings suggest the importance of context and that different interventions to achieve different things may be necessary in different areas of the university.

Figure 4 Average odds ratio of women's application rate to that of men by REF panel and grade



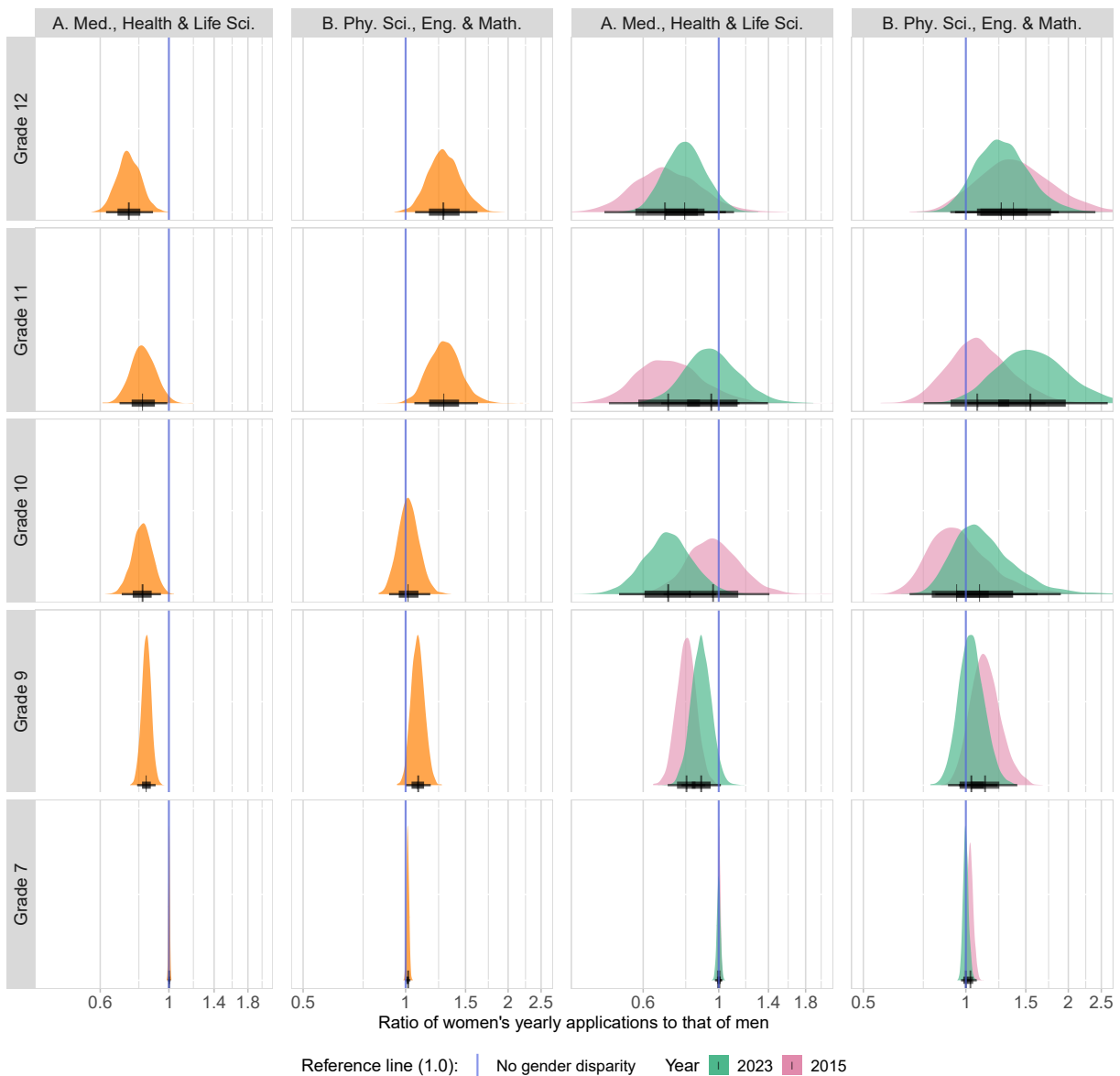
The estimates are based on a model that incorporates all main effects and interactions between gender, grade and school. The thicker line at the base of each curve indicates the 66% credible interval, the thinner line indicates the 95% credible interval. The x-axis has been log-transformed. Estimates to the right of the reference line indicate a higher outcome for women; estimates to the left of the reference line indicate a higher outcome for men.

FINDING 4:

Temporal trends account for part of the observed gaps in grant outcomes.

We see evidence that disparities are changing with time – and more often decreasing than increasing. Figure 5 compares the static results for panels A and B (as presented in Figure 6) with results incorporating temporal trends. The curves show the estimates of disparities in application rates in 2015 (Pink) and 2023 (Green). In five cases we see decreasing gender disparities, in two cases increasing disparities and in three cases little change. This finding reinforces the need for bespoke interventions aimed at specific disciplines and grades that properly consider the current state of the grant funding disparities.

Figure 5 Average ratio of women’s application rate to that of men by REF panel, grade and year - model comparison



The estimates are based on models that incorporate all main effects and interactions between gender, grade and REF, and year. The thicker line at the base of each curve indicates the 66% credible interval, the thinner line indicates the 95% credible interval. The x-axis has been log-transformed. Estimates to the right of the reference line indicate a higher outcome for women; estimates to the left of the reference line indicate a higher outcome for men.