

#SWDSS



NIH Scientific Workforce Diversity Seminar Series

The effect of mentee and mentor gender on scientific productivity of applicants for NIH training fellowships

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Women pursuing careers in biomedical sciences face formidable barriers

- Their work accrues fewer citations than that of their male colleagues
- Less likely to be judged as stars in their field by reviewers of R01 applications
- Members of the National Academy of Science, which is 85% male, are more likely to train other men as postdoctoral fellows, and train 58% of future faculty
- Awarded half of all doctoral degrees, represent a third of tenured or tenure-track faculty
- Women of color face a double bind

Do female mentors help female mentees overcome barriers to success?

- Previous attempts to characterize the effect of mentor gender on the career progress of female mentees have reached opposite conclusions
- Answering these types of metascience questions requires pursuit and confirmation of the highest level of data quality for study parameters, including...
 - gender identification
 - name disambiguation
 - author attribution
 - accurate identification of scientific relationships
 - it is essential to avoid metrics that are invalid, overly simplified, and/or improperly normalized, e.g., raw citation data or Journal Impact Factor (JIF)

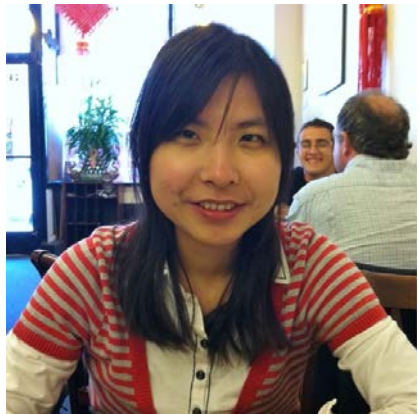
OPA analysis of the effect of mentee and mentor gender on the scientific productivity of applicants for NIH fellowships

We analyzed the relationship between mentoring and productivity with a carefully designed analytical approach and high quality data:

- 18,600 pre- and post-doctoral fellowship applications
 - F30, F31 and F32, K01, K08, K23, K99 respectively
 - FY2011 through FY2017
- Separated into four mentee-mentor dyads: FF, FM, MF, and MM
- Mentees identify their mentor(s) in every application
- Since fellowships are salary only, productivity relies upon (and was therefore normalized to) the research funds available to the mentor
- Publications were linked to mentees with high quality disambiguation, and productivity was measured with a multi-faceted framework



Linking publications to people: disambiguation



Hao Yu

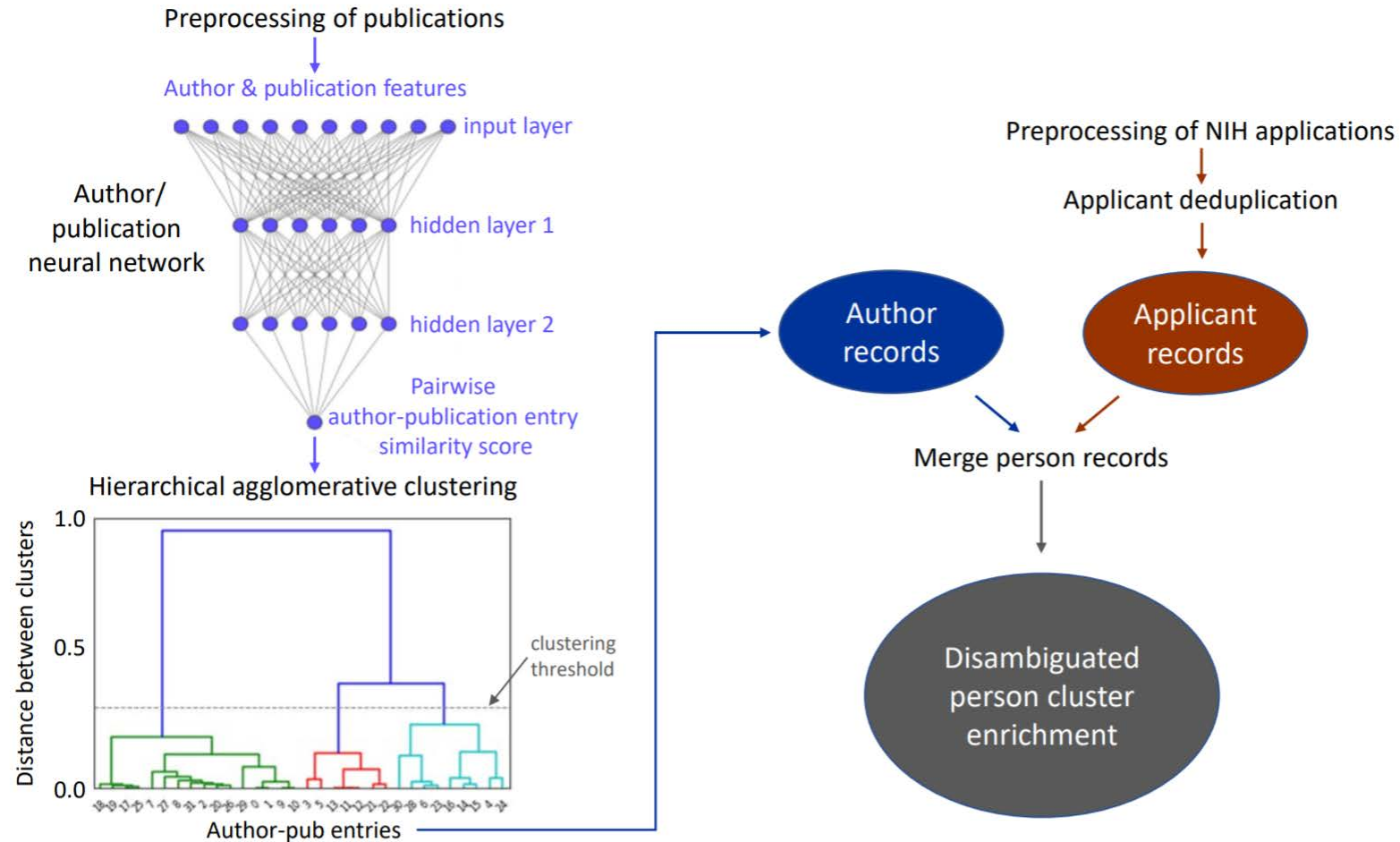
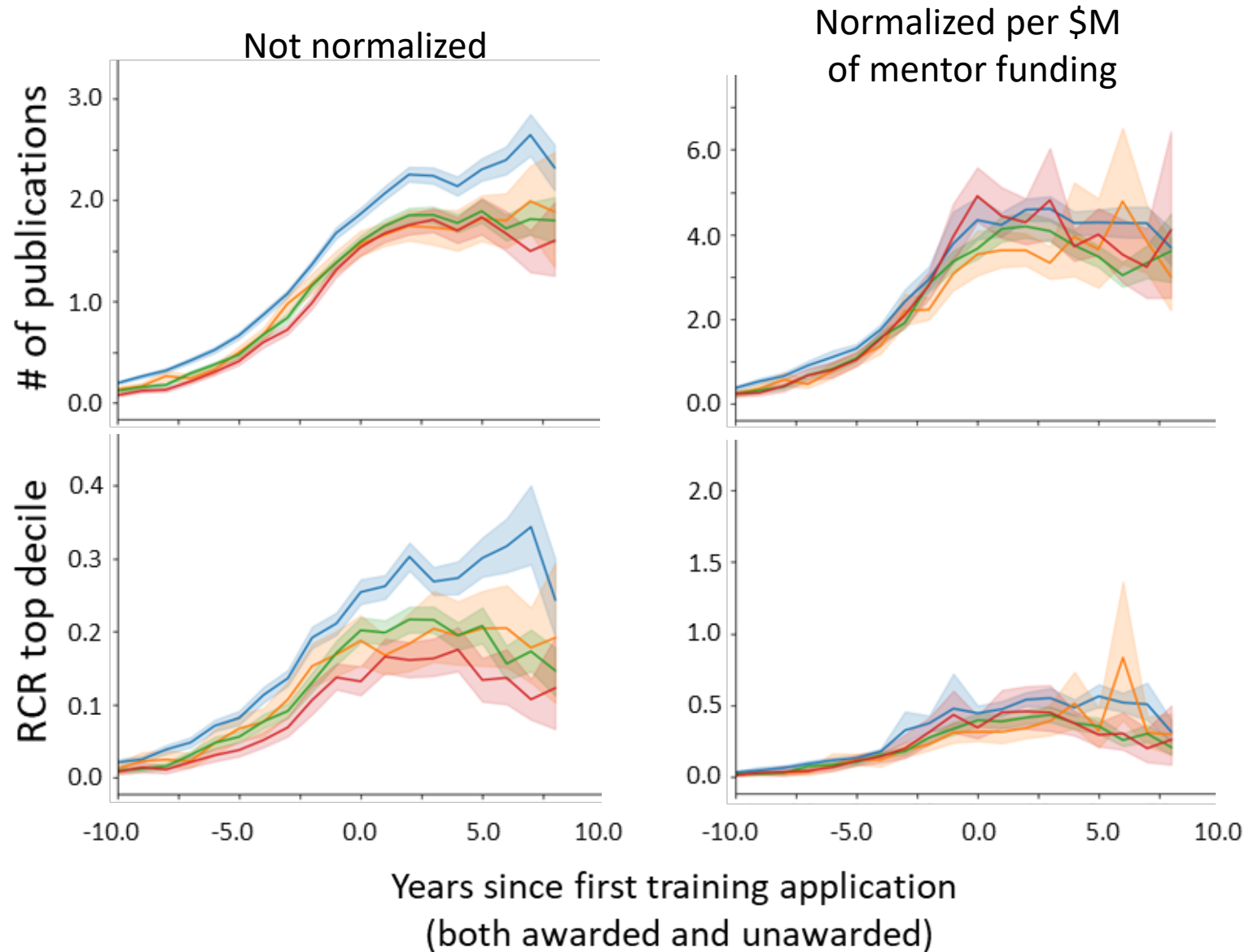


Figure 2 from Yu et al. The effect of mentee and mentor gender on scientific productivity of applicants for NIH training fellowships. bioRxiv 10.1101/2021.02.02.429450 (February 3, 2021)

The effect of mentee/mentor gender on mentee productivity

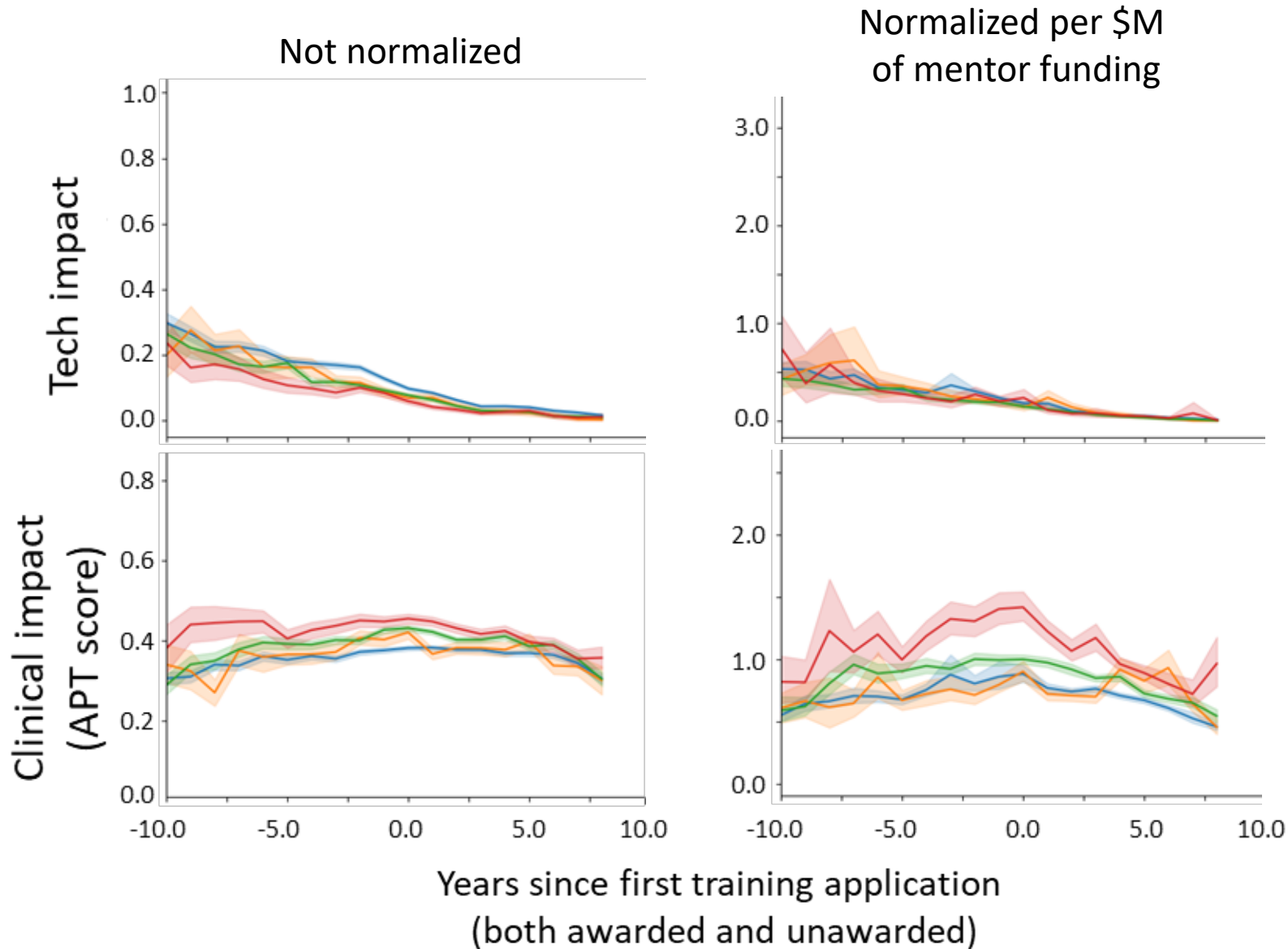


mentee → mentor

- MM
- MF
- FM
- FF



The effect of mentee/mentor gender on mentee productivity



mentee → mentor

- MM
- MF
- FM
- FF



OPA analysis of the effect of mentee and mentor gender on the scientific productivity of applicants for NIH fellowships









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New Results

The effect of mentee and mentor gender on scientific productivity of applicants for NIH training fellowships

 Hao Yu,  Kristine A. Willis, Aviva Litovitz, Robert M. Harriman,  Matthew T. Davis, Payam Meyer, Brad Busse,  Rebecca A. Meseroll, Hashanthi D. Wijayatilake, Matthew J. Perkins,  James M. Anderson,  George M. Santangelo

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This article is a preprint and has not been certified by peer review [what does this mean?].

Abstract

Full Text


Info/History

Metrics

 Preview PDF

Summary and Conclusions

- After normalizing to the funding level of each mentor, the productivity of female and male mentees is independent of mentor gender
- Productivity is indistinguishable other than in clinical impact, where female mentees, especially those with female mentors, outperform their male counterparts
- This demonstrates the importance of a multi-faceted approach to measuring the return on research investments
- High-quality disambiguation (with both high precision and high recall) is essential to matching research outputs with the correct individuals

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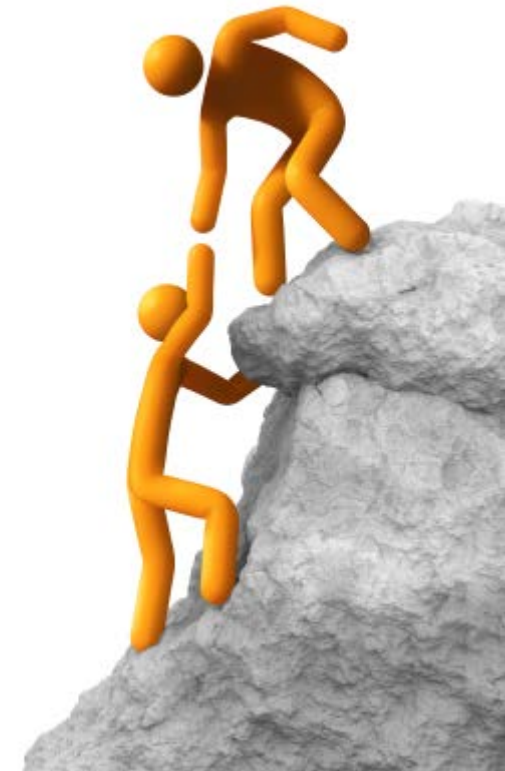
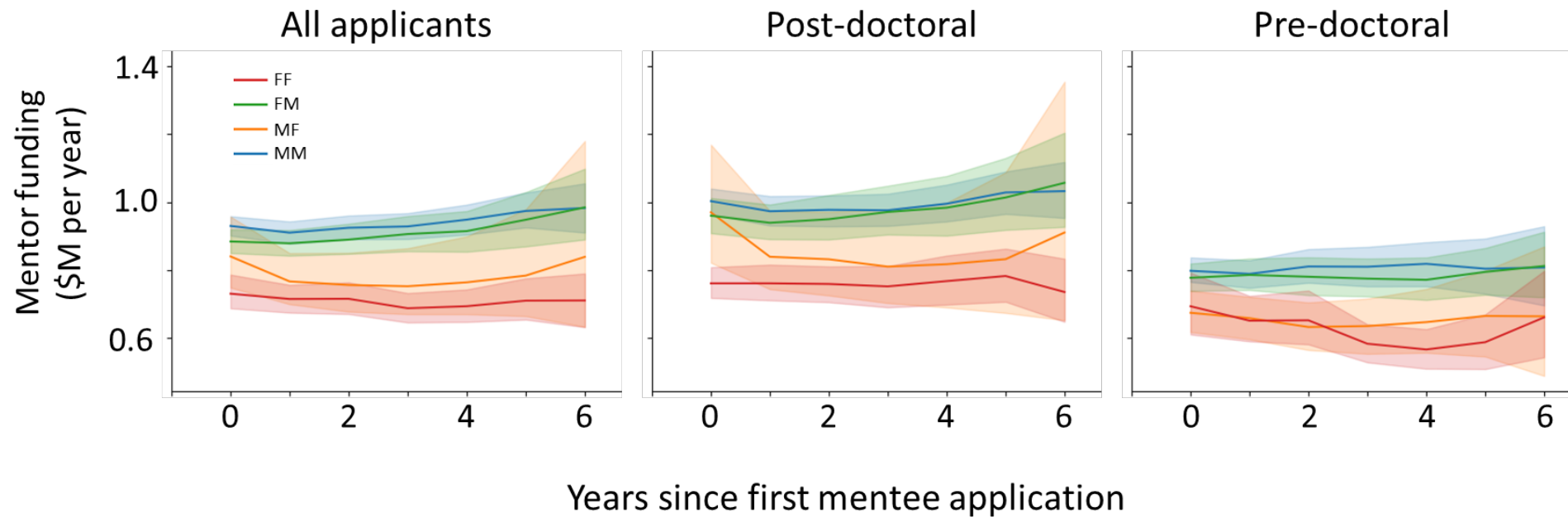
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Chief Officer for Scientific Workforce Diversity

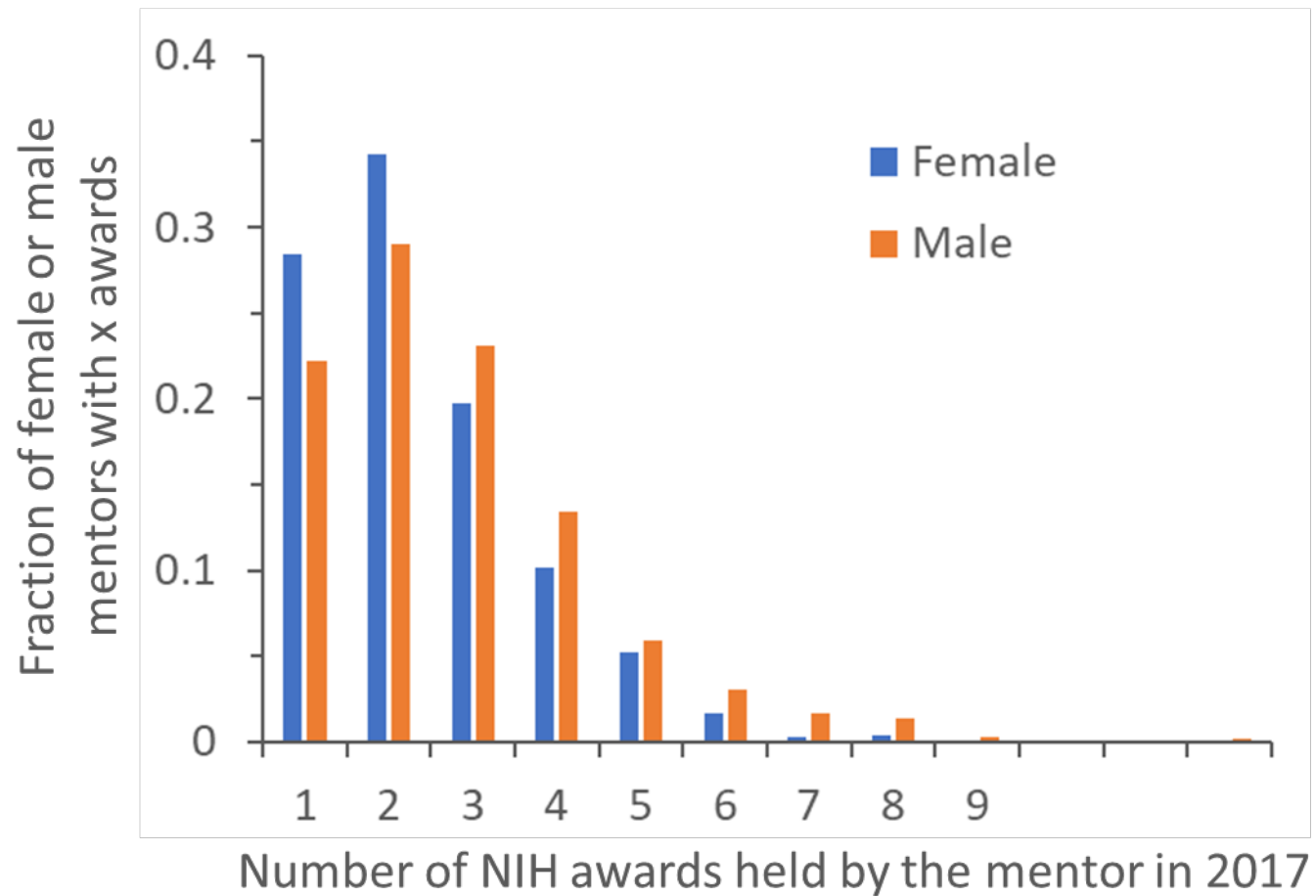
The effect of mentee and mentor gender on productivity

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