Research Environment

Input

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Inclusive and diverse research environments

- Outline the department's goals
- Some general insights to why inclusive and diverse research environment's might be a good thing
- But not as simple as, e.g., diversity $\rightarrow$ everything better
- Where do you see particular challenges in our department?

Key objectives of Research Strategy 2024-29

1. Community, collegiality and respect to define our approach to engaging with research
2. A research environment that promotes equality, diversity and inclusion
3. Research that is well supported financially and enabled by an effective professional services research support team.
4. To enhance our reputation as leaders for rigorous, impactful research and external engagement
5. To facilitate an environment for outstanding collaborative and autonomous research alongside excellent teaching.
6. A research community that is attentive to the support of a variety of career tracks.

Research productivity, diversity, and inclusiveness

Nielsen et al., 2017

Fig. 2. This depiction of the mechanisms of innovation at scientific organizations emphasizes that "diversity in" does not automatically lead to "creativity out." Maximizing gender diversity's benefits requires careful management. Image courtesy of Erik Steiner (Stanford University, Stanford, CA).

Paradoxes

AlShebli et al., 2018

The preeminence of ethnic diversity in scientific collaboration

Bedoor K. AlShebli, Talal Rahwan & Wei Lee Woon

Nature Communications **9**, Article number: 5163 (2018) | Cite this article

Abstract

Inspired by the social and economic benefits of diversity, we analyze over 9 million papers and 6 million scientists to study the relationship between research impact and five classes of diversity: ethnicity, discipline, gender, affiliation, and academic age. Using randomized baseline models, we establish the presence of homophily in ethnicity, gender and affiliation. We then study the effect of diversity on scientific impact, as reflected in citations. Remarkably, of the classes considered, ethnic diversity had the strongest correlation with scientific impact. To further isolate the effects of ethnic diversity, we used randomized baseline models and again found a clear link between diversity and impact. To further support these findings, we use coarsened exact matching to compare the scientific impact of ethnically diverse papers and scientists with closely-matched control groups. Here, we find that ethnic diversity resulted in an impact gain of 10.63% for papers, and 47.67% for scientists.

Paradoxes

Hofstra et al, 2020

RESEARCH ARTICLE | SOCIAL SCIENCES |

The Diversity–Innovation Paradox in Science

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Significance

By analyzing data from nearly all US PhD recipients and their dissertations across three decades, this paper finds demographically underrepresented students innovate at higher rates than majority students, but their novel contributions are discounted and less likely to earn them academic positions. The discounting of minorities' innovations may partly explain their underrepresentation in influential positions of academia.

Abstract

Prior work finds a diversity paradox: Diversity breeds innovation, yet underrepresented groups that diversify organizations have less successful careers within them. Does the diversity paradox hold for scientists as well? We study this by utilizing a near-complete population of ~1.2 million US doctoral recipients from 1977 to 2015 and following their careers into publishing and faculty positions. We use text analysis and machine learning

Environment

Spoon et al, 2023

Gender and retention patterns among U.S. faculty

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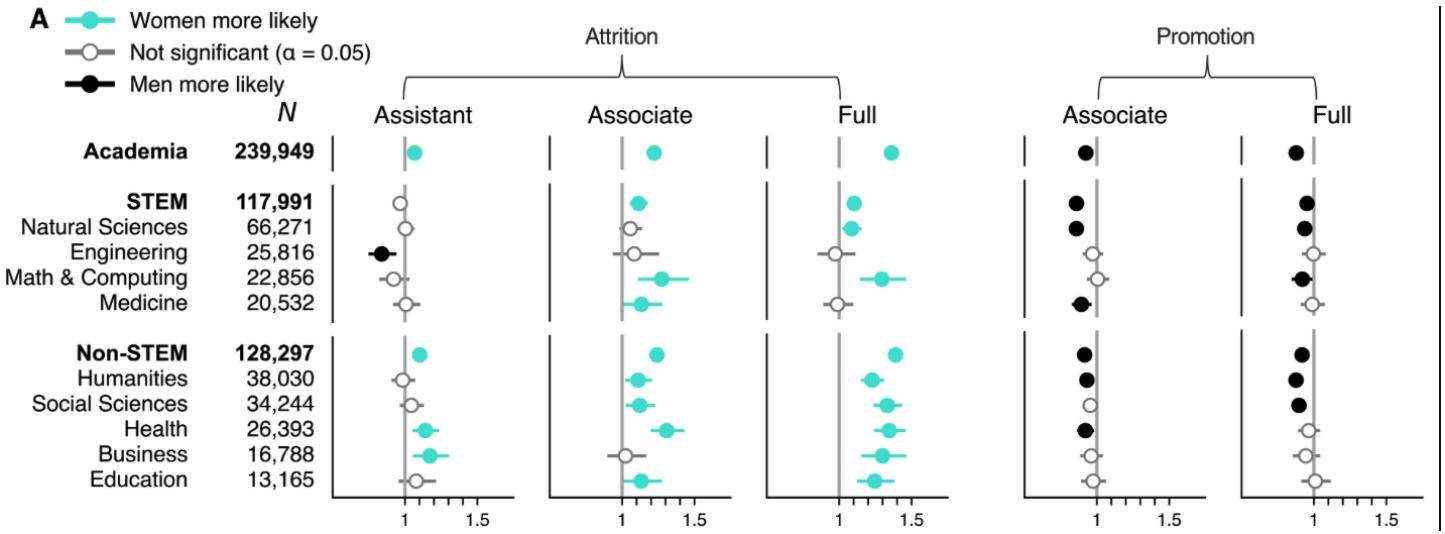
SCIENCE ADVANCES · 20 Oct 2023 · Vol 9, Issue 42 · DOI: 10.1126/sciadv.adi2205

Abstract

Women remain underrepresented among faculty in nearly all academic fields. Using a census of 245,270 tenure-track and tenured professors at United States–based PhD-granting departments, we show that women leave academia overall at higher rates than men at every career age, in large part because of strongly gendered attrition at lower-prestige institutions, in non-STEM fields, and among tenured faculty. A large-scale survey of the same faculty indicates that the reasons faculty leave are gendered, even for institutions, fields, and career ages in which retention rates are not. Women are more likely than men to feel pushed from their jobs and less likely to feel pulled toward better opportunities, and women leave or consider leaving because of workplace climate more often than work-life balance. These results quantify the systemic nature of gendered faculty retention; contextualize its relationship with career age, institutional prestige, and field; and highlight the importance of understanding the gendered reasons for attrition rather than focusing on rates alone.

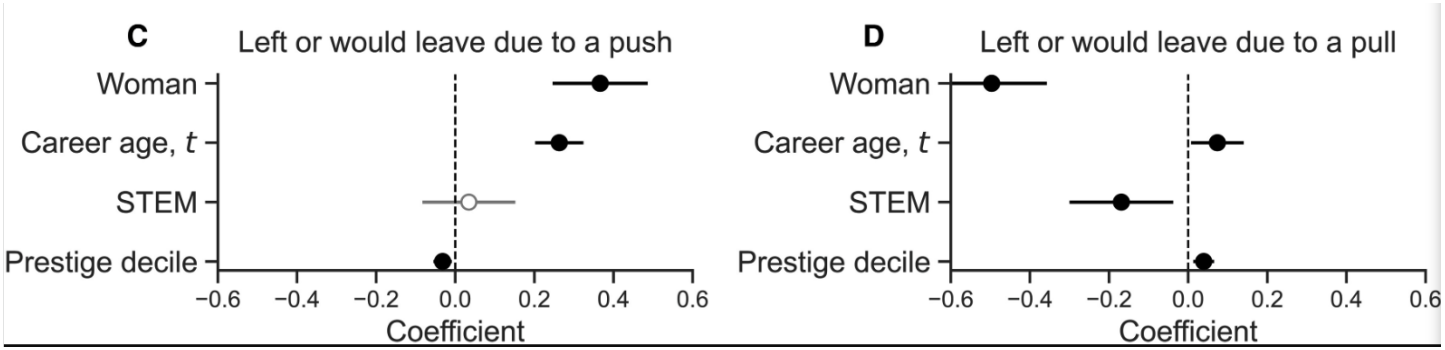
Environment

Spoon et al, 2023



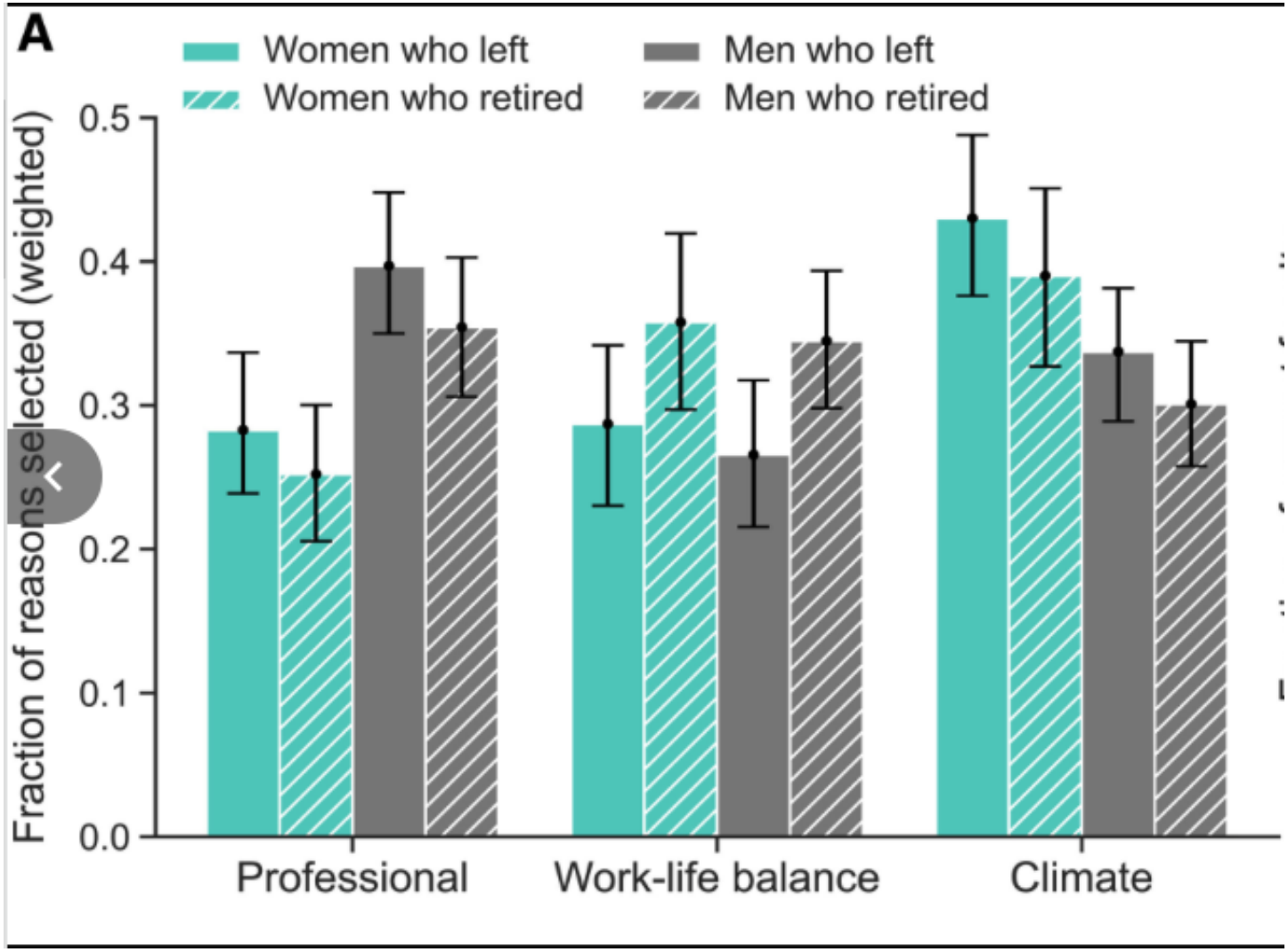
Environment

Spoon et al, 2023



Environment

Spoon et al, 2023



Structure

Li et al, 2022

Research Away Day

Article | Open access | Published: 20 August 2022

Untangling the network effects of productivity and prominence among scientists

Weihua Li, Sam Zhang, Zhiming Zheng, Skyler J. Cranmer & Aaron Clauset

Nature Communications **13**, Article number: 4907 (2022) | Cite this article

15k Accesses | **15** Citations | **213** Altmetric | Metrics

Abstract

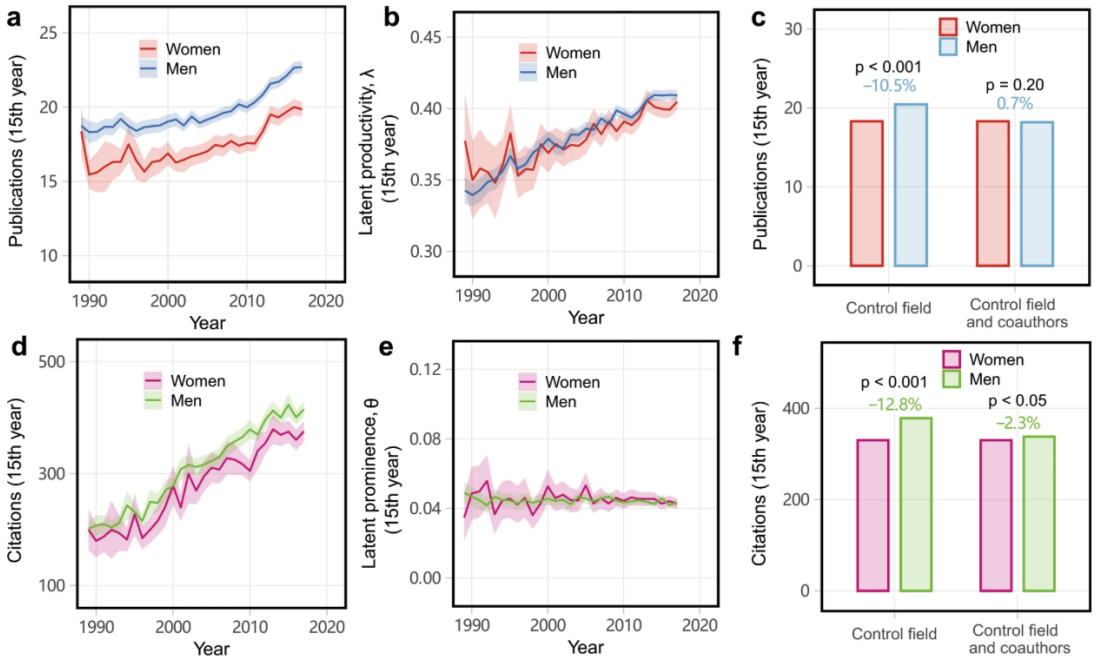
While inequalities in science are common, most efforts to understand them treat scientists as isolated individuals, ignoring the network effects of collaboration. Here, we develop models that untangle the network effects of productivity defined as paper counts, and prominence referring to high-impact publications, of individual scientists from their collaboration networks. We find that gendered differences in the productivity and prominence of mid-career researchers can be largely explained by differences in their coauthorship networks. Hence, collaboration networks act as a form of social capital, and we find evidence of their transferability from senior to junior collaborators, with benefits that decay as researchers age. Collaboration network effects can also explain a large proportion of the productivity and prominence advantages held by researchers at prestigious institutions. These results highlight a substantial role of social networks in driving inequalities in science, and suggest that collaboration networks represent an important form of unequally distributed social capital that shapes who makes what scientific discoveries.

Structure

Li et al, 2022

Fig. 2: Gendered disparities in individual productivity and prominence measures.

From: Untangling the network effects of productivity and prominence among scientists



Across six STEM fields, observed average (**a**) productivity and (**d**) prominence, showing substantial and stable gaps, among 198,202 mid-career researchers, by gender from 1989 to 2017, along with corresponding estimated individual latent (**b**) productivity λ and (**e**) prominence θ for the same researchers, showing negligible gendered differences. Shaded areas represent 95% confidence intervals. Then, (**c**) productivity and (**f**) prominence for pairs of men and women researchers matched on institutional prestige, year of first publication, and either (i) field alone or (ii) field and the number of coauthors, showing that gendered collaboration rates can explain the observed gendered differences in scholarly metrics. Two-sided t-test for comparisons.