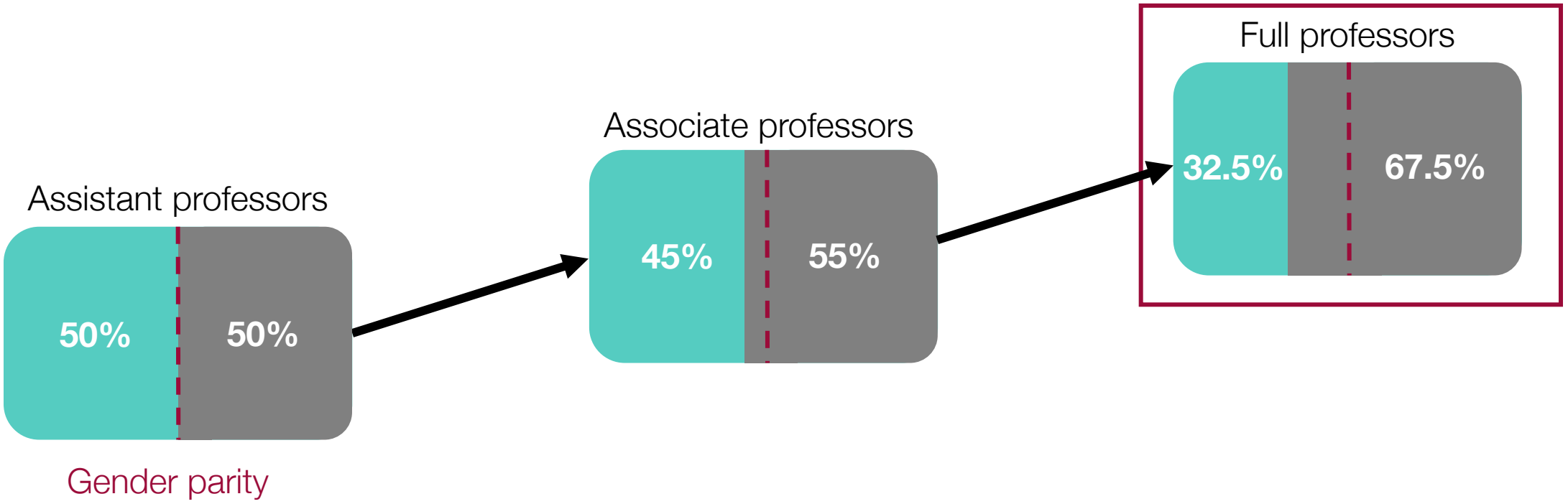
Gender and retention patterns among U.S. faculty

Katie Spoon, Nick LaBerge, K. Hunter Wapman, Sam Zhang, Allie Morgan, Mirta Galesic, Lauren Rivera, Joanna Mendy, Maria Martinez, Bailey K. Fosdick, Dan Larremore, Aaron Clauset

University of Colorado Boulder

Women are still underrepresented in academia.



aaup
AMERICAN ASSOCIATION OF UNIVERSITY PROFESSORS
(2020)

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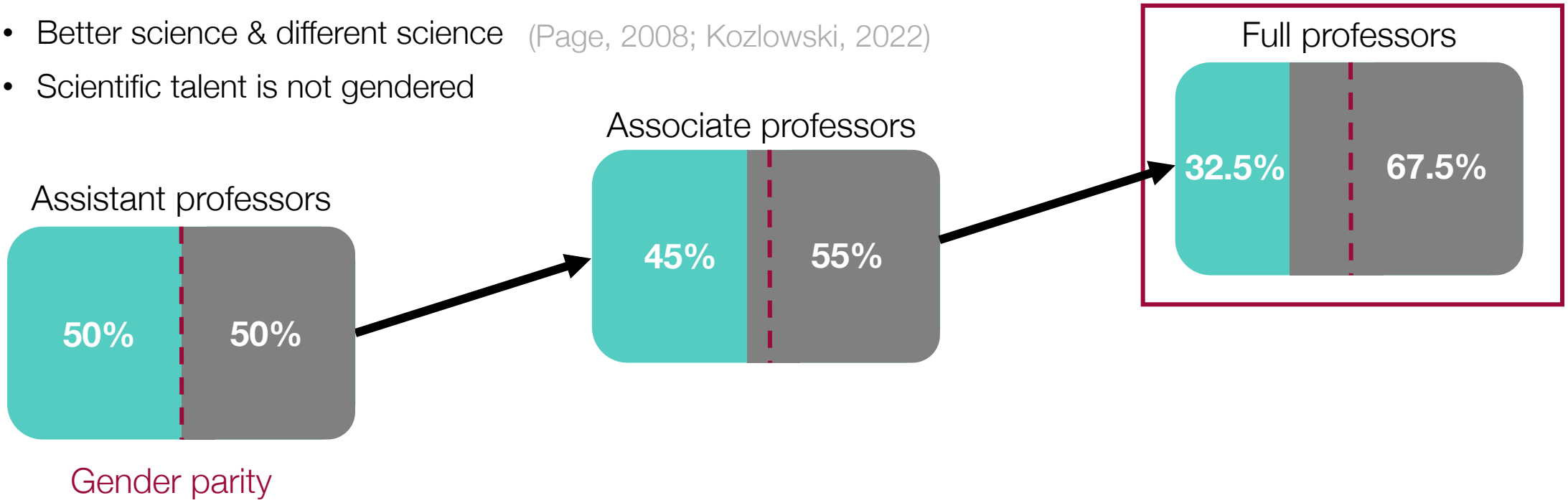
- Better science & different science (Page, 2008; Kozlowski, 2022)
- Scientific talent is not gendered



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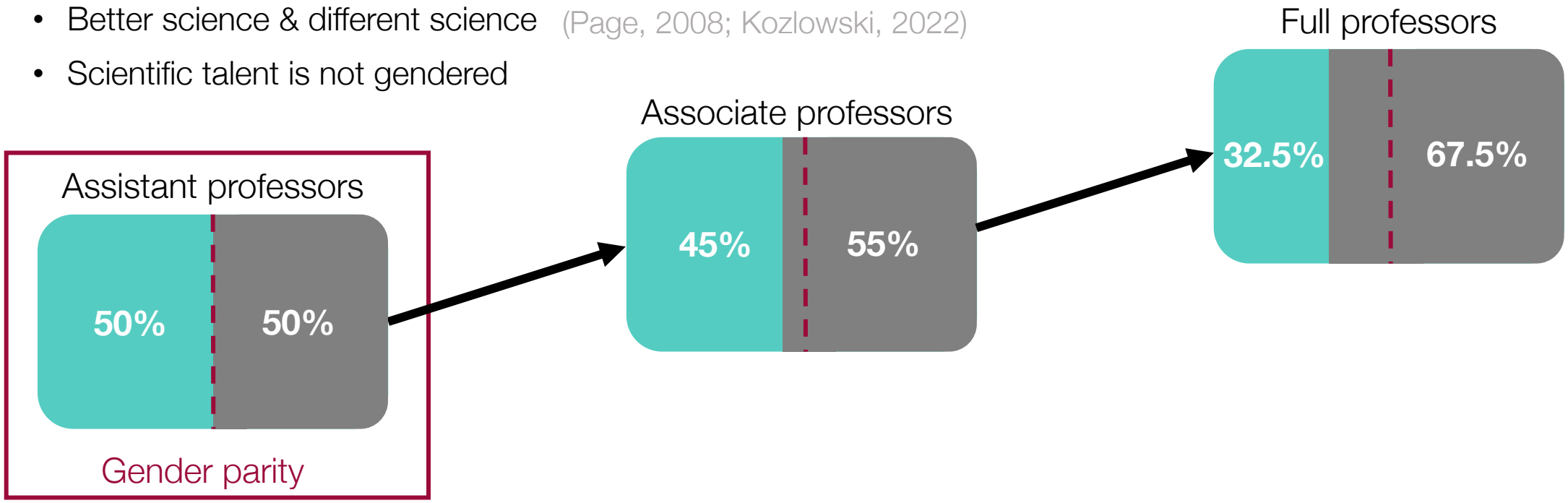

Gender parity in ***hiring*** will not lead to gender parity in ***representation*** if women disproportionately leave the system (the "leaky pipeline") (Pell, 1996)

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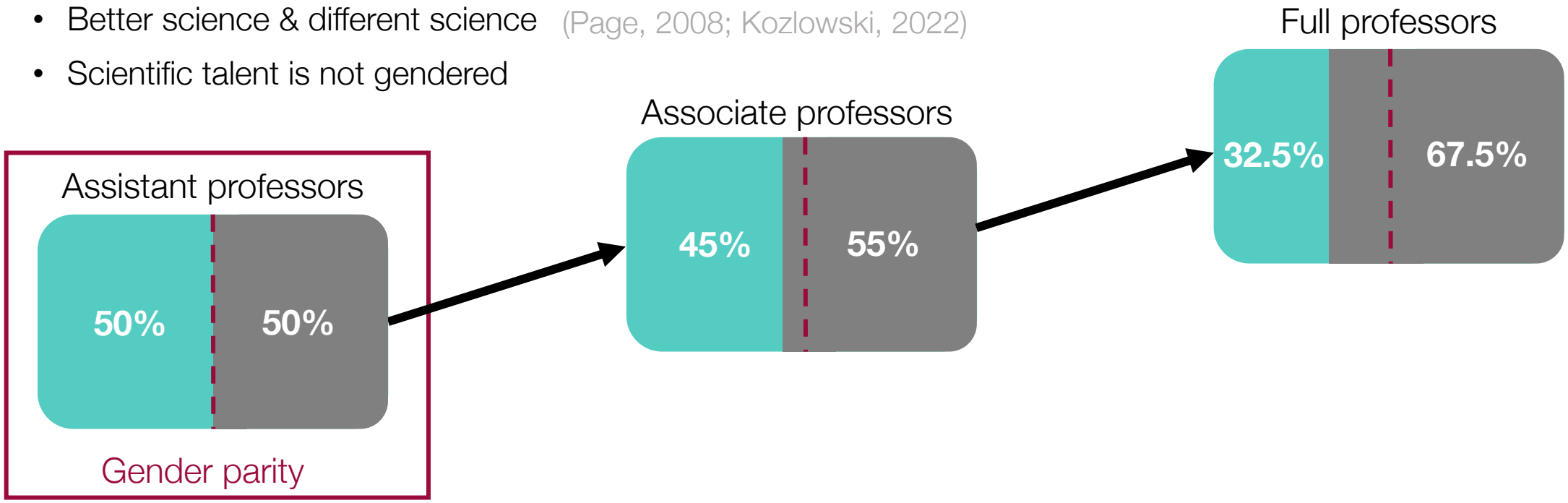

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gendered retention

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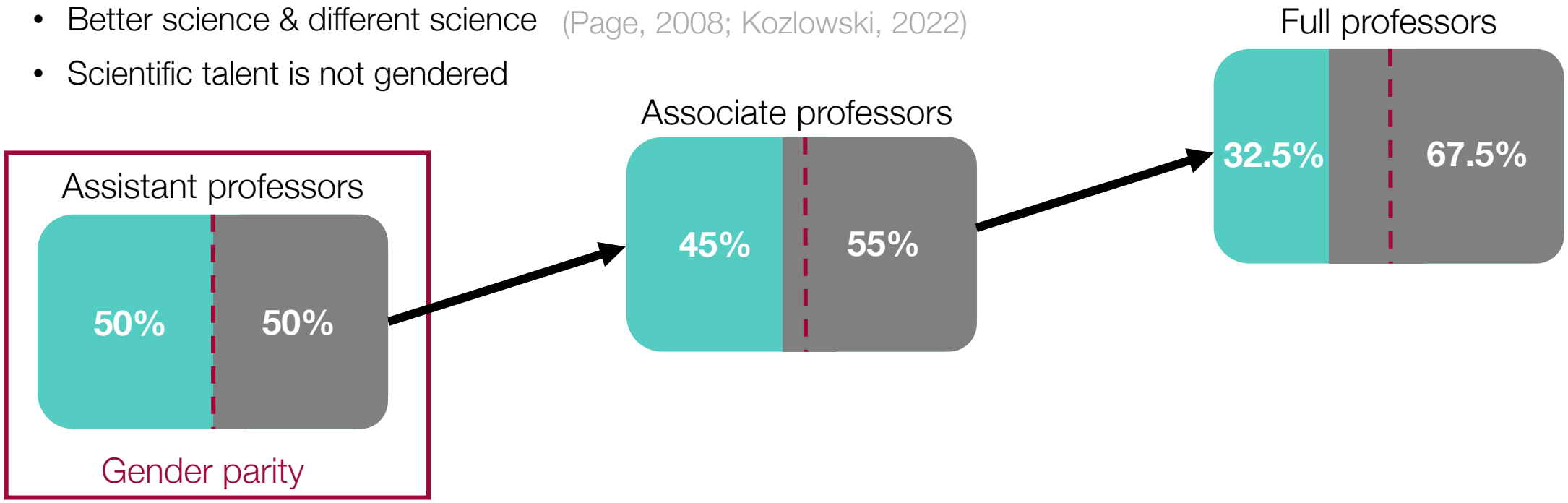

Gender parity in ***hiring*** will not lead to gender parity in ***representation*** if women disproportionately leave the system ~~(the "leaky pipeline")~~ gendered retention (Pell, 1996)

Lots of interest, but this is really hard to study!

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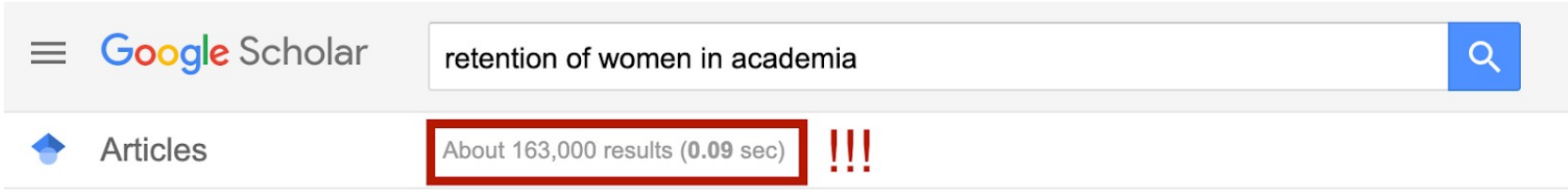
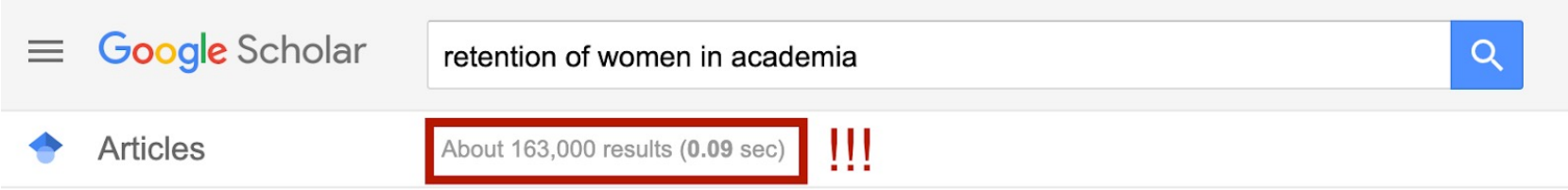
Literature is deep



Literature is deep, but narrow



Focused mostly on:

Assistant profs

STEM

High-prestige schools

Literature is deep, but narrow and contradictory

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No gendered differences


CULTURE, CLIMATE, AND CONTRIBUTION:
Career Satisfaction Among Female Faculty

Louise August*,** and Jean Waltman*

Research in Higher Education (2004)


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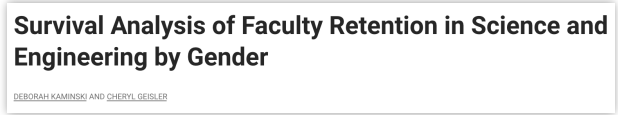
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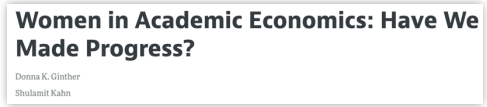
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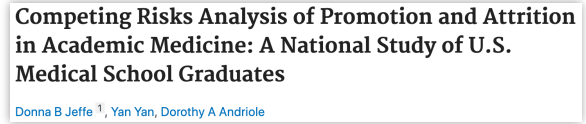
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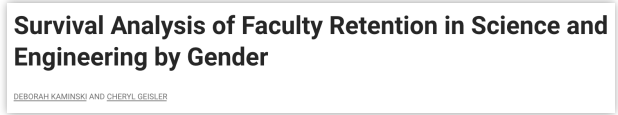
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- Most studies are done at a **single institution or small group of institutions**
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Literature is deep, but narrow and contradictory

Similarly, the ***reasons*** women professors leave their jobs are also mixed.

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- Obtaining funding
- Admin. support

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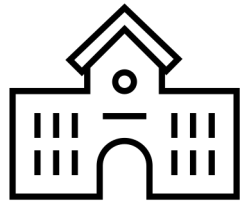

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- Competition
- Not belonging

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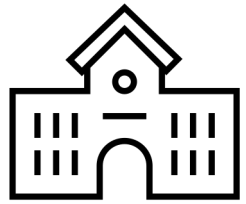

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We need a system-level, comprehensive view of academic retention to resolve the conflicting evidence.

Part 1: Administrative analysis

Do women and men leave *at different rates?*

Part 2: Survey analysis

Do women and men leave *for different reasons?*

Part 1: Administrative analysis

Do women and men leave *at different rates?*

Part 2: Survey analysis

Do women and men leave *for different reasons?*

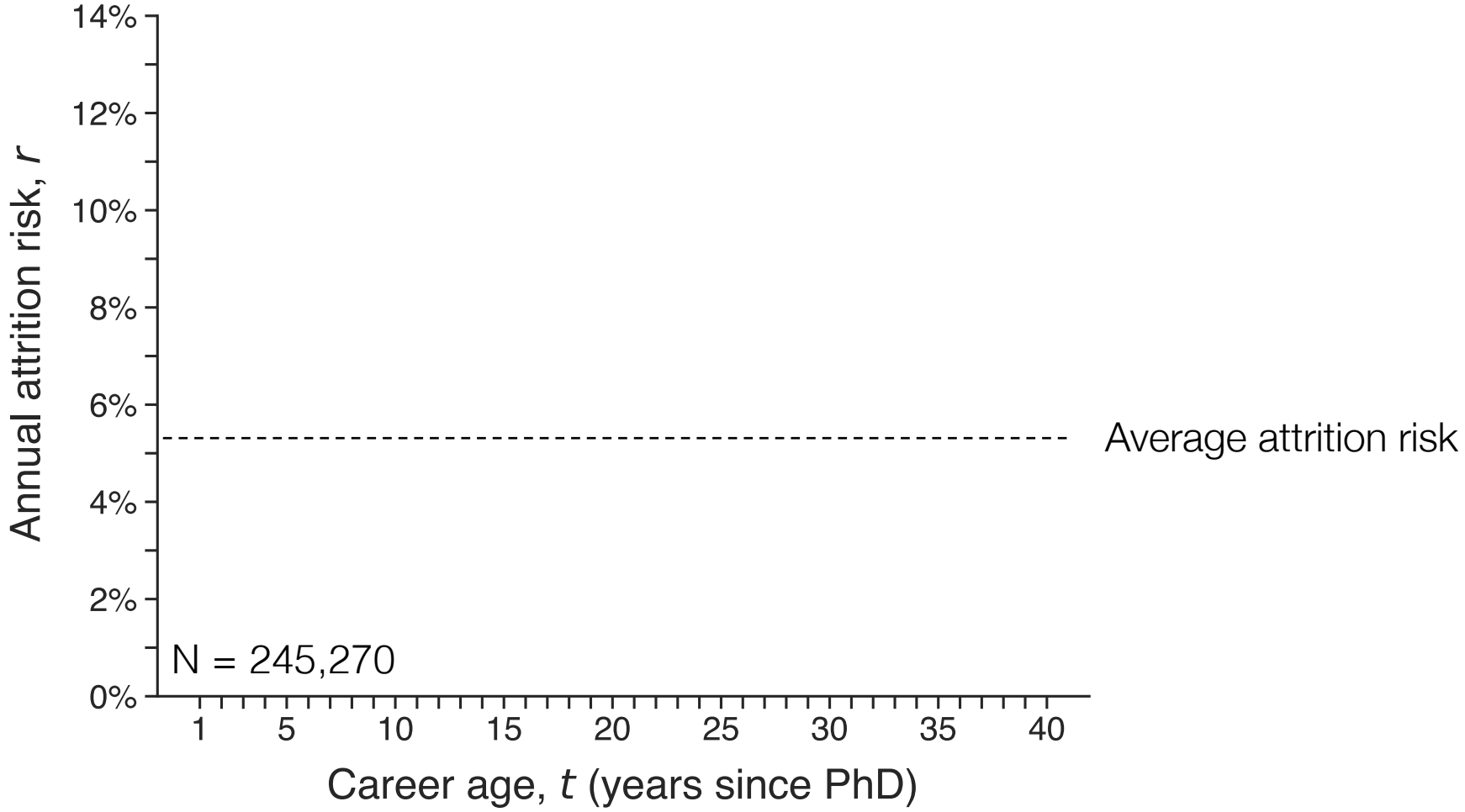
Longitudinal Data

- 245,270 U.S. tenure-track & tenured faculty
- 391 U.S. PhD-granting institutions
- 111 academic fields, grouped into 9 high-level domains
- 10 years, 2011-2020

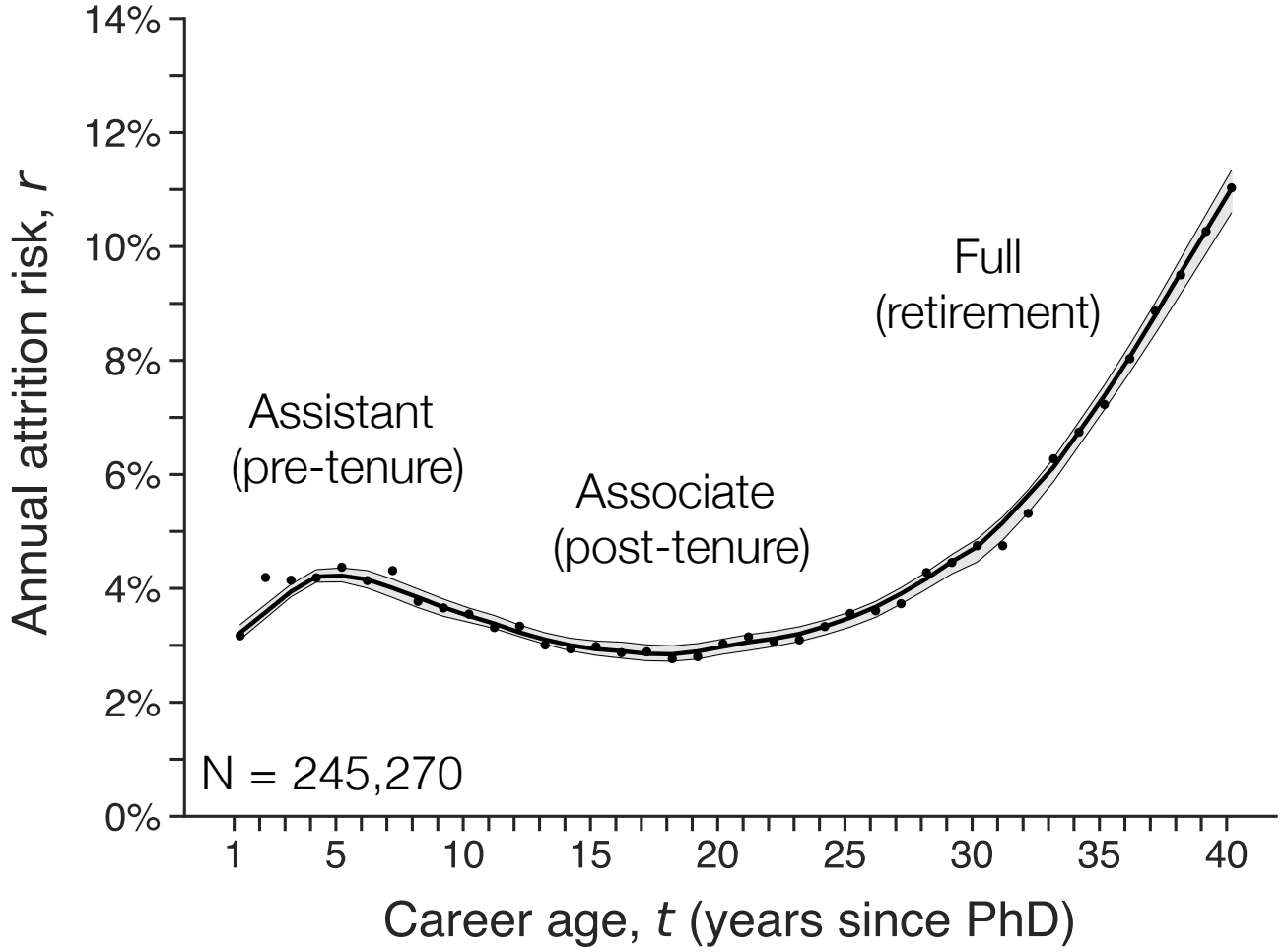
From Academic Analytics Research Center AARC

K.H. Wapman et al., “Quantifying hiring and dynamics in U.S. faculty hiring and retention.” *Nature* (2022).

What is an academic's risk of leaving across their career?



What is an academic's risk of leaving across their career?



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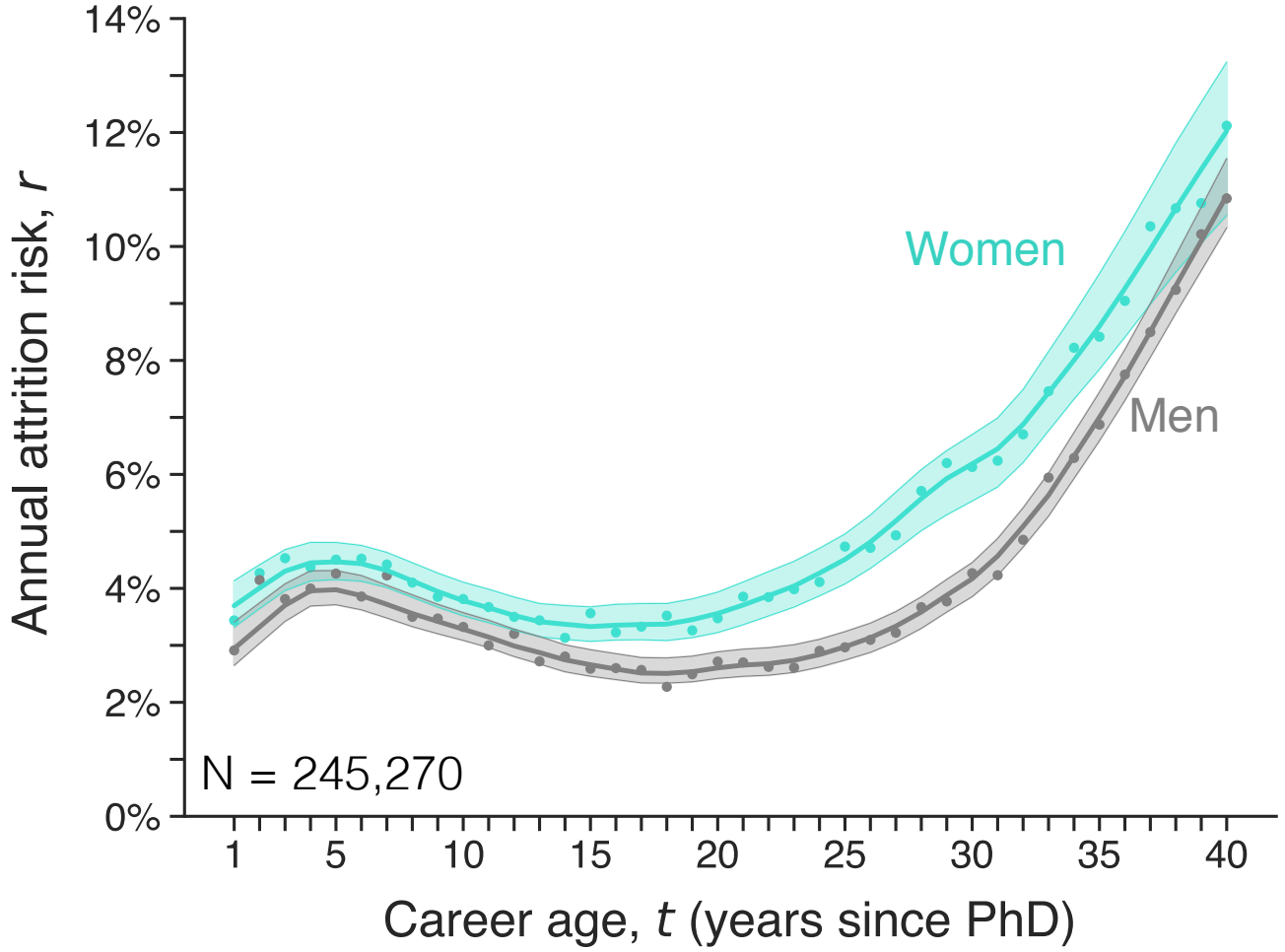

Women are more likely to leave their jobs than men at every career age.

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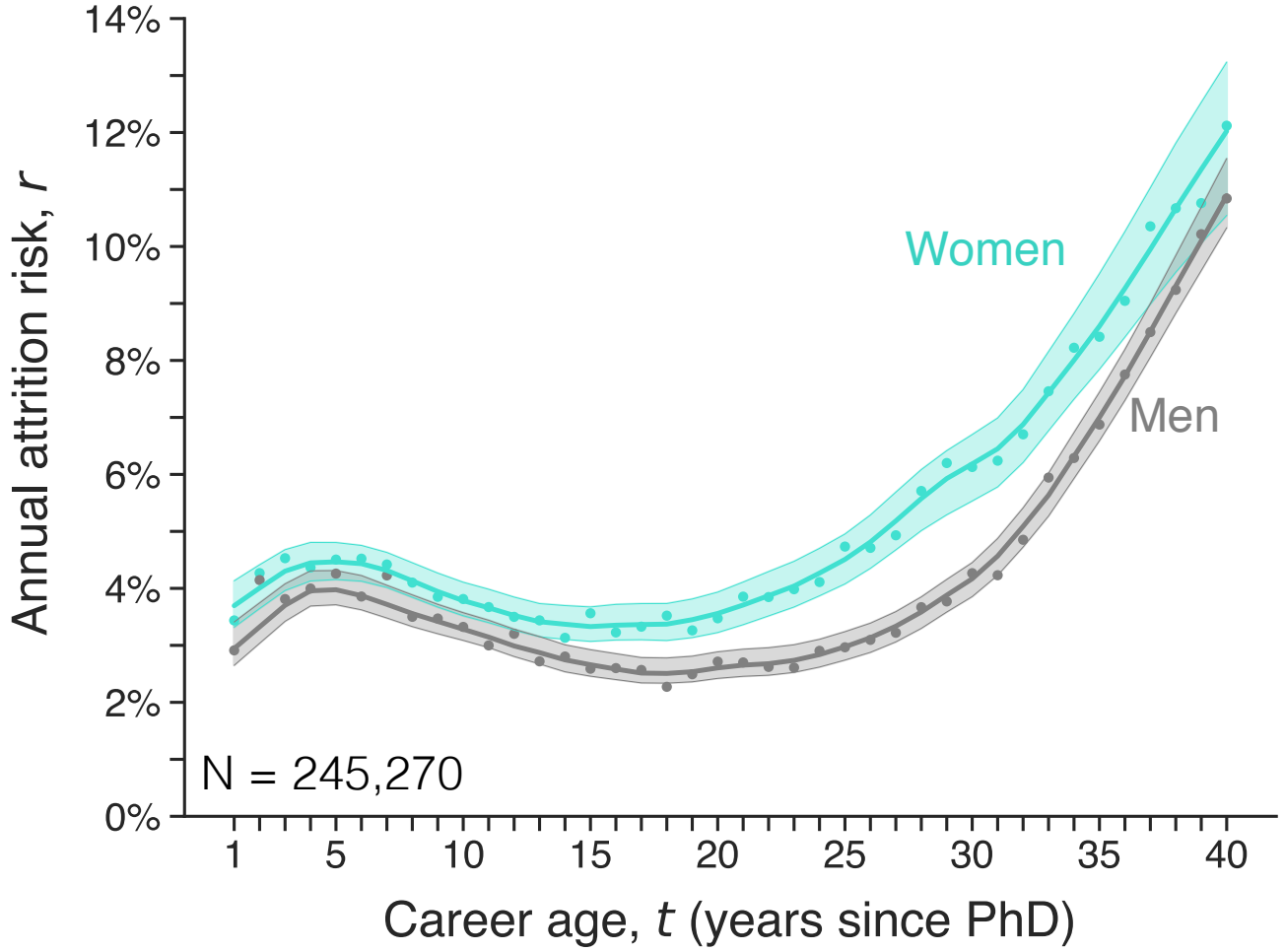
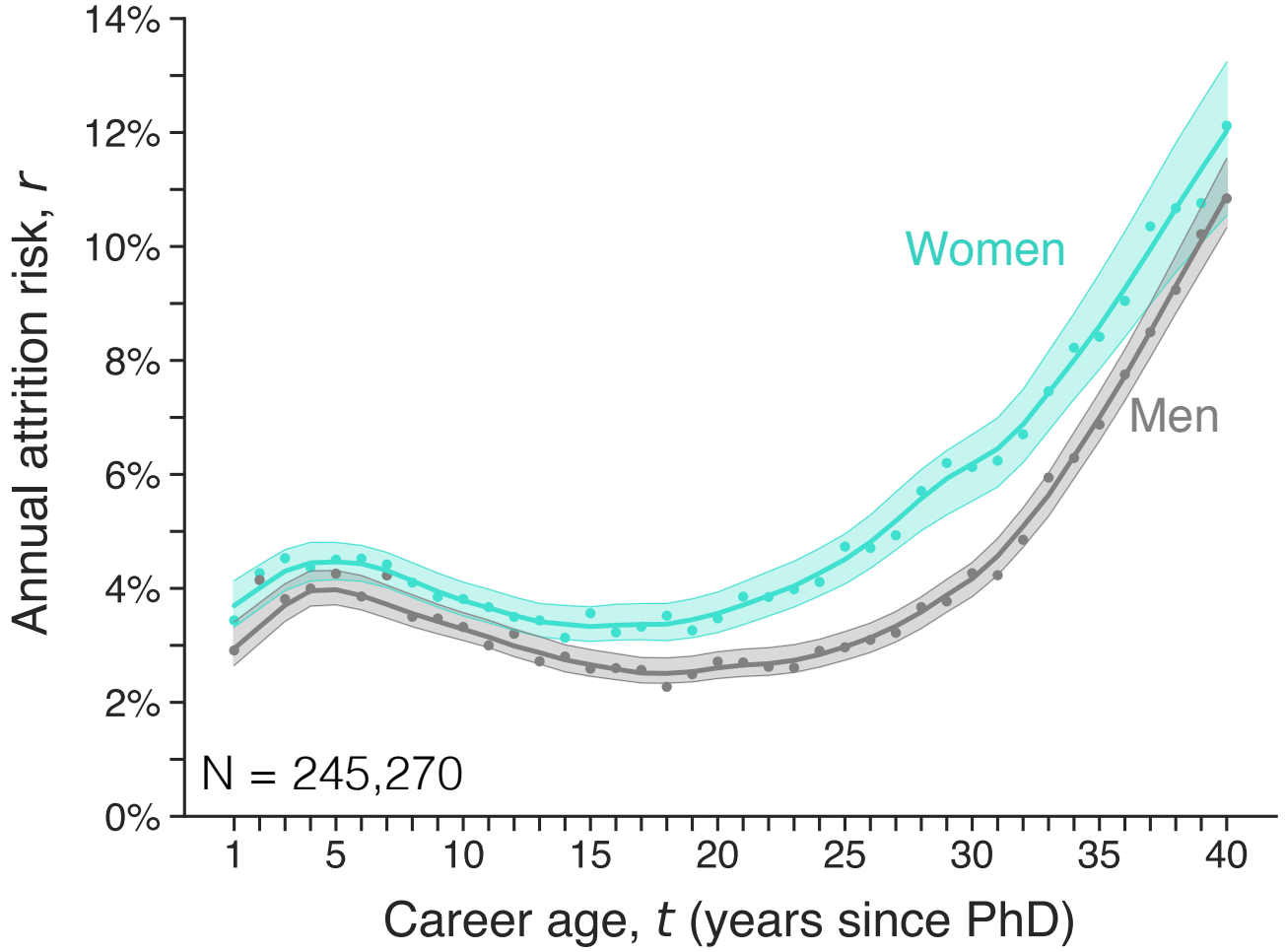


Hired at parity

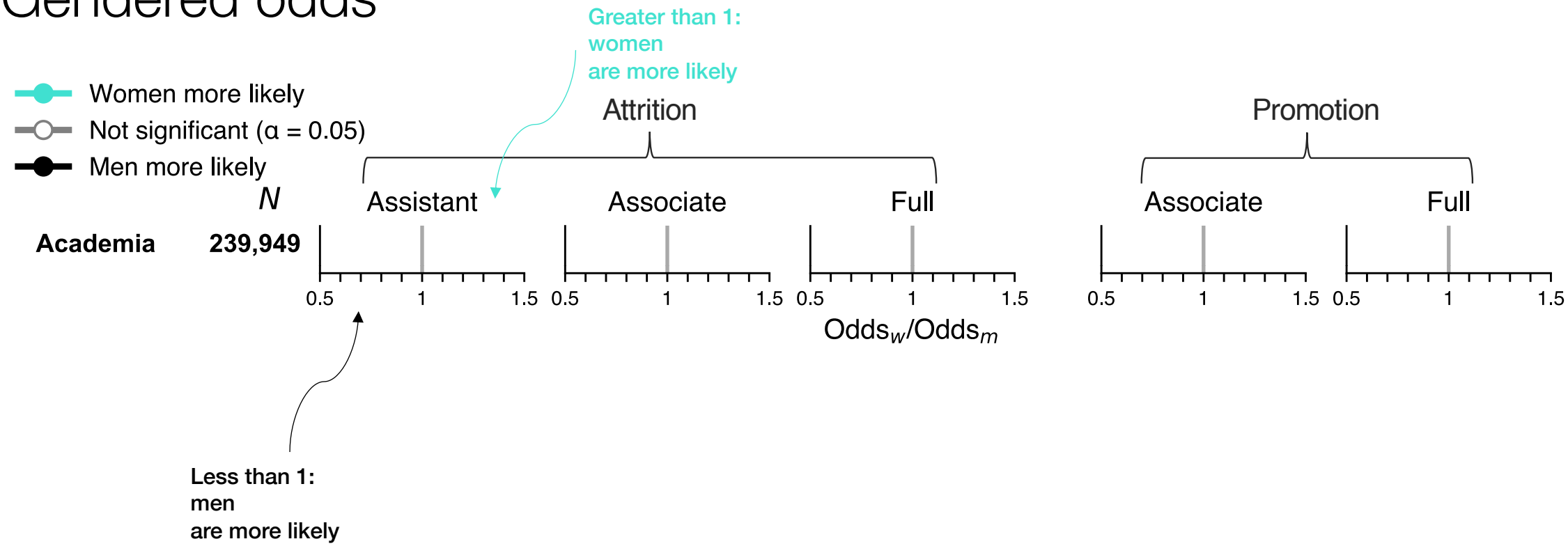
An *additional* loss of **1 in every 5** women over a career

What is an academic's risk of leaving across their career?



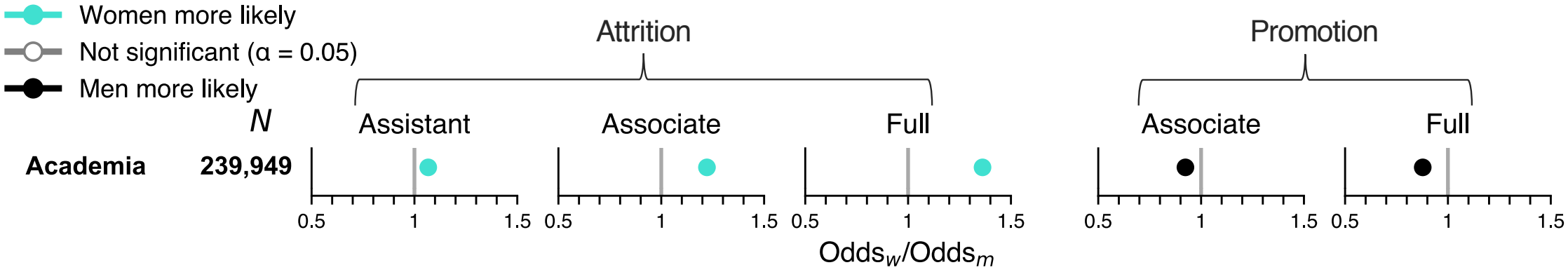
We are averaging across people with different training & environments –
are any of these factors influencing the gendered pattern we see?

Gendered odds



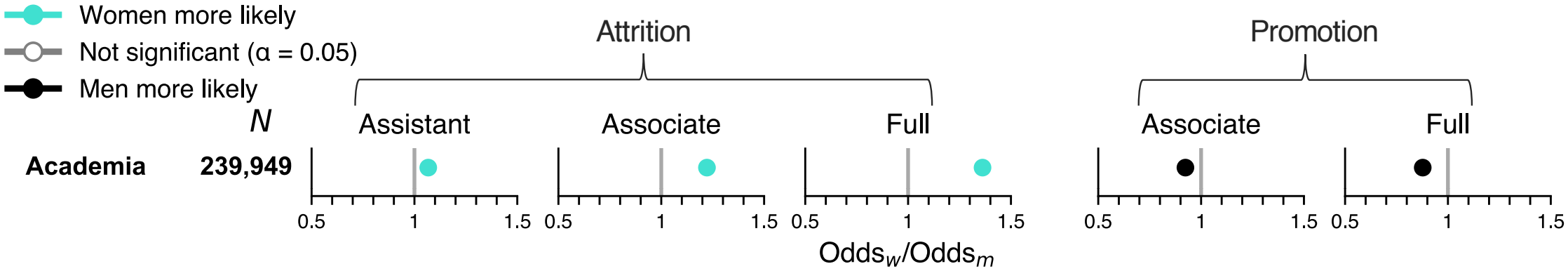
Adjusting for career age, employer prestige, and PhD training…

Gendered odds vary across career stage



Adjusting for career age, employer prestige, and PhD training…
women are still more likely to leave their jobs and less likely to be promoted, than men, at every career stage.

Gendered odds vary across career stage



Gender gaps increase with rank,
largest for **tenured faculty** (esp. Full)

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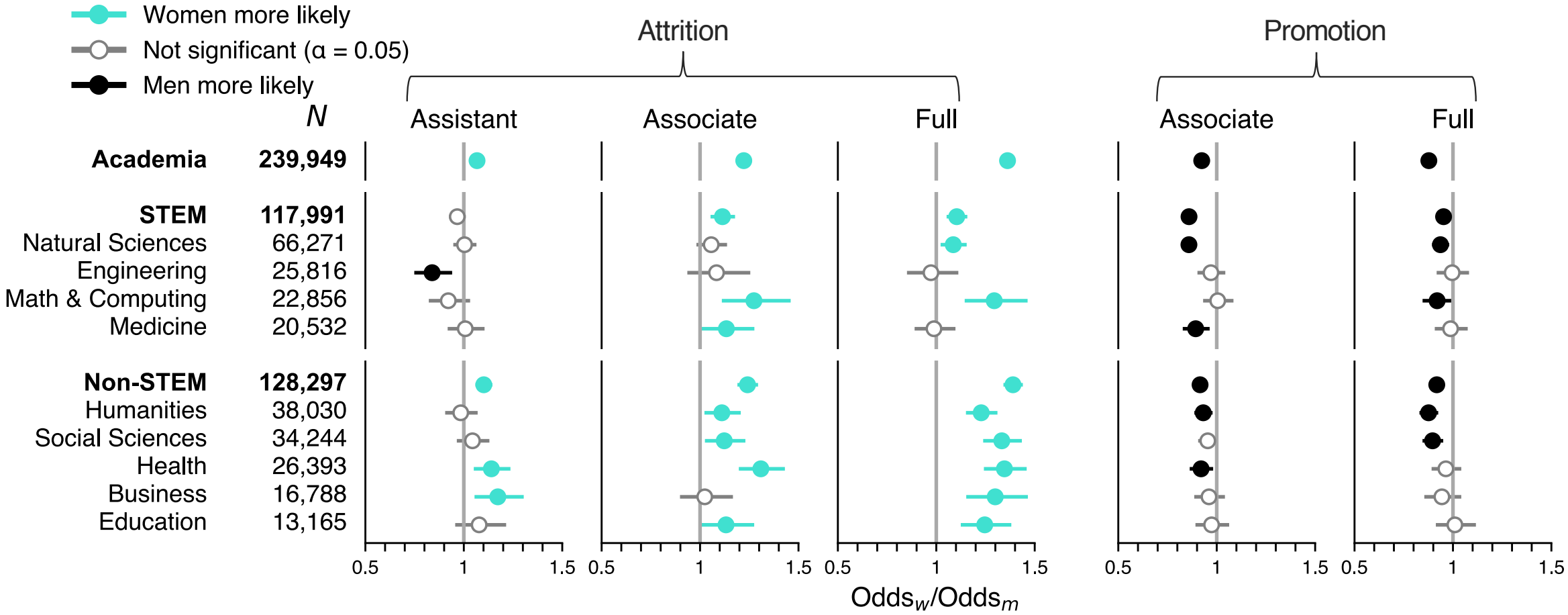
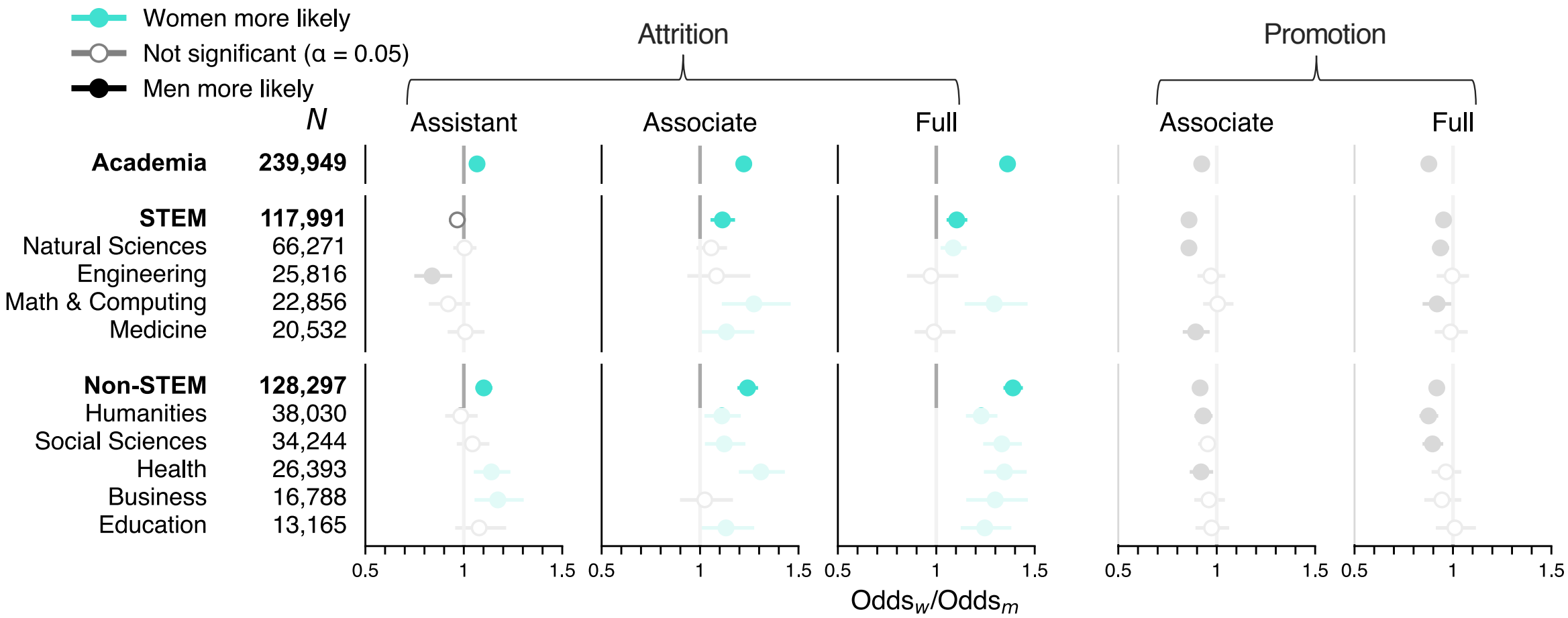
Gendered odds vary across career stage, domain



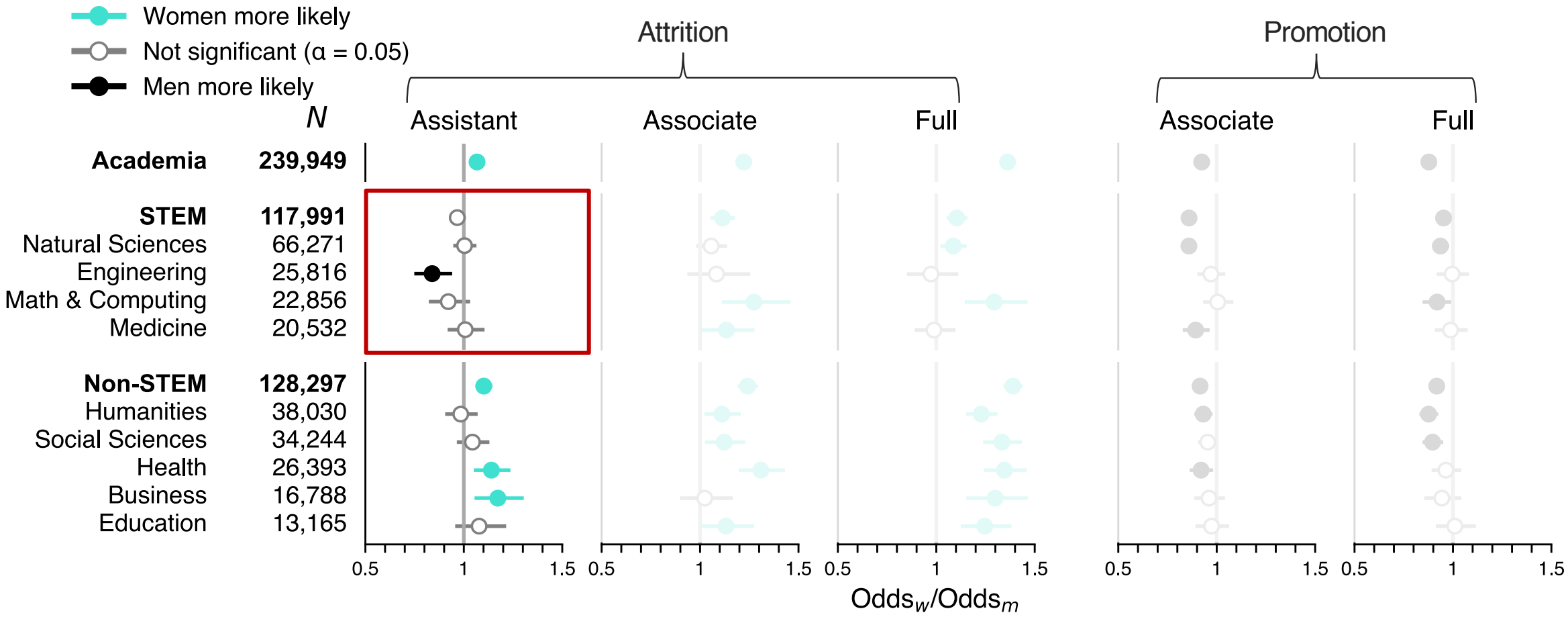
When we split by domain there's even more variation!

Gendered odds vary across career stage, domain



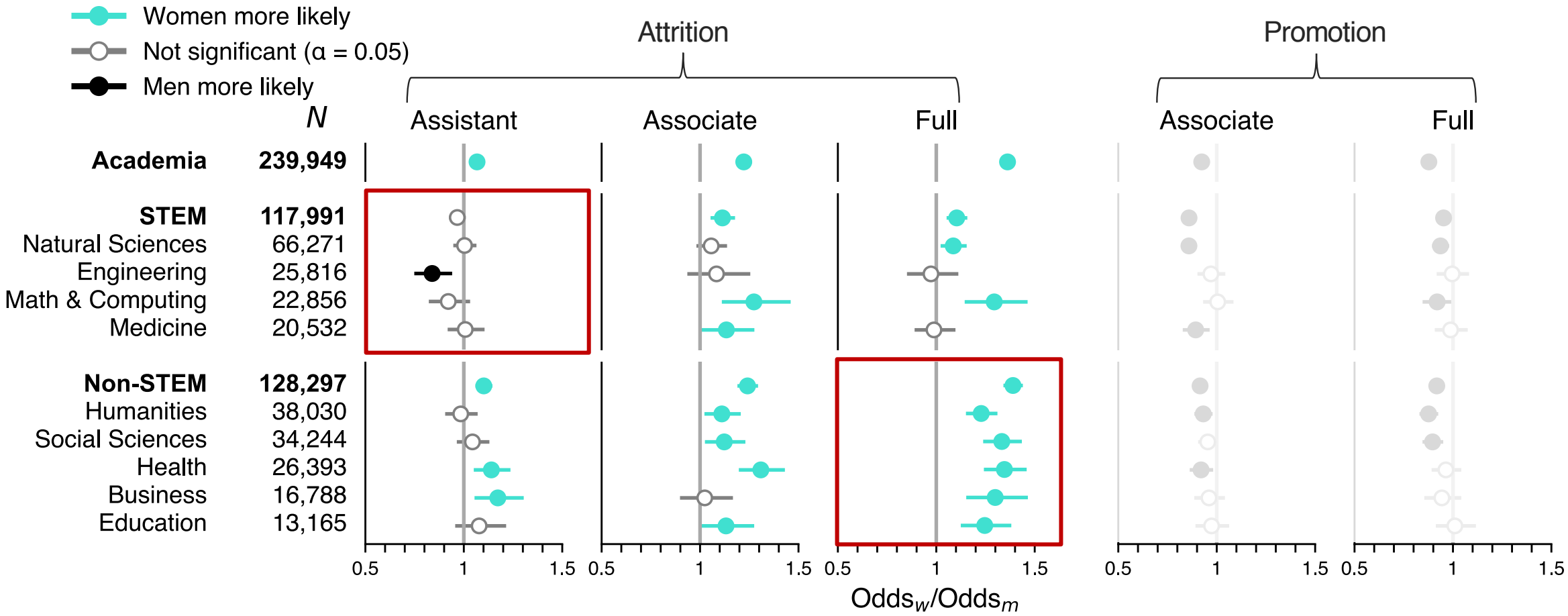
The gendered retention gaps are **larger in non-STEM domains** than in STEM domains

Gendered odds vary across career stage, domain



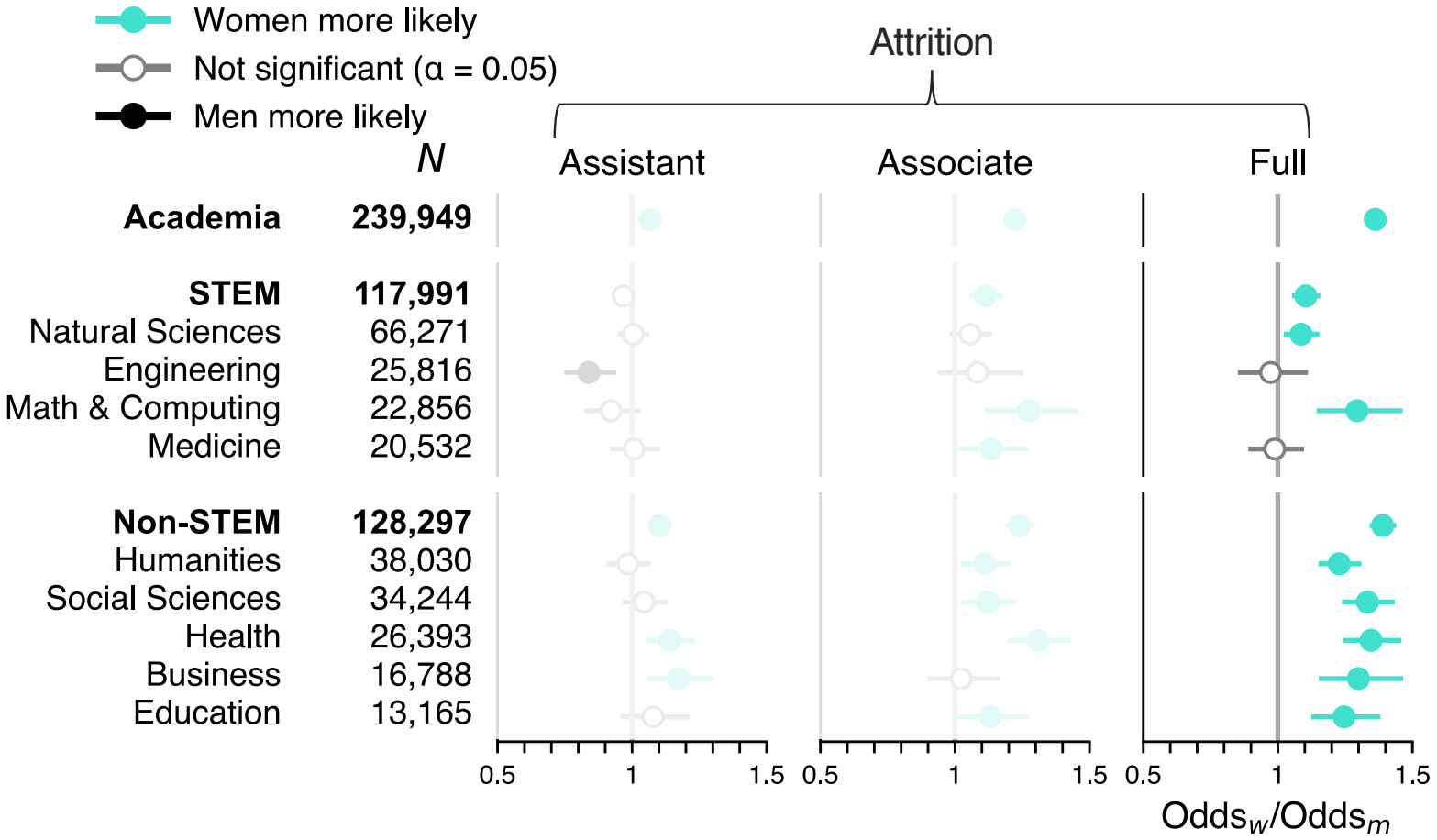
There are ***no*** STEM domains where women assistant profs are more likely to leave than men

Gendered odds vary across career stage, domain

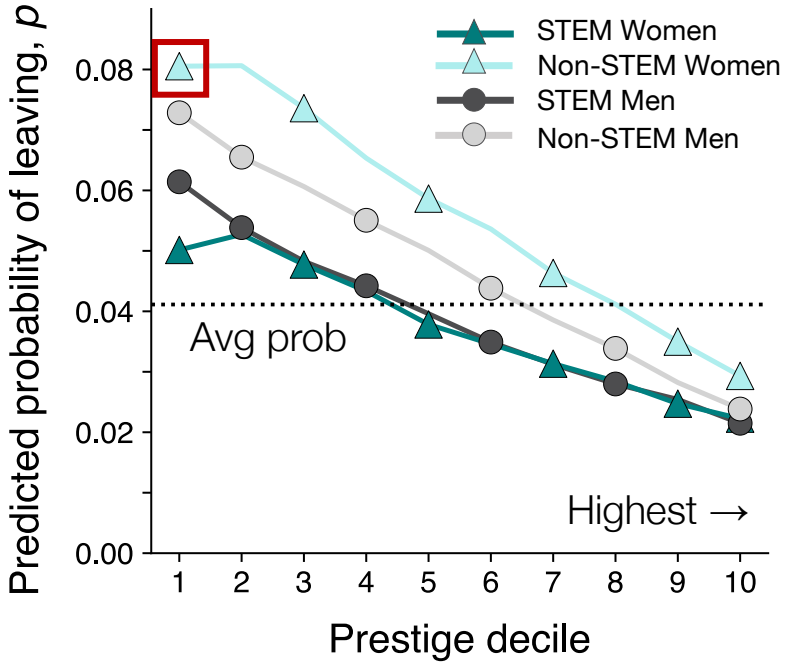


In contrast, women full profs in ***every*** non-STEM domain are more likely to leave than men

Gendered odds vary across career stage, domain and prestige



Women, full profs, in non-STEM, at low-prestige are at highest risk



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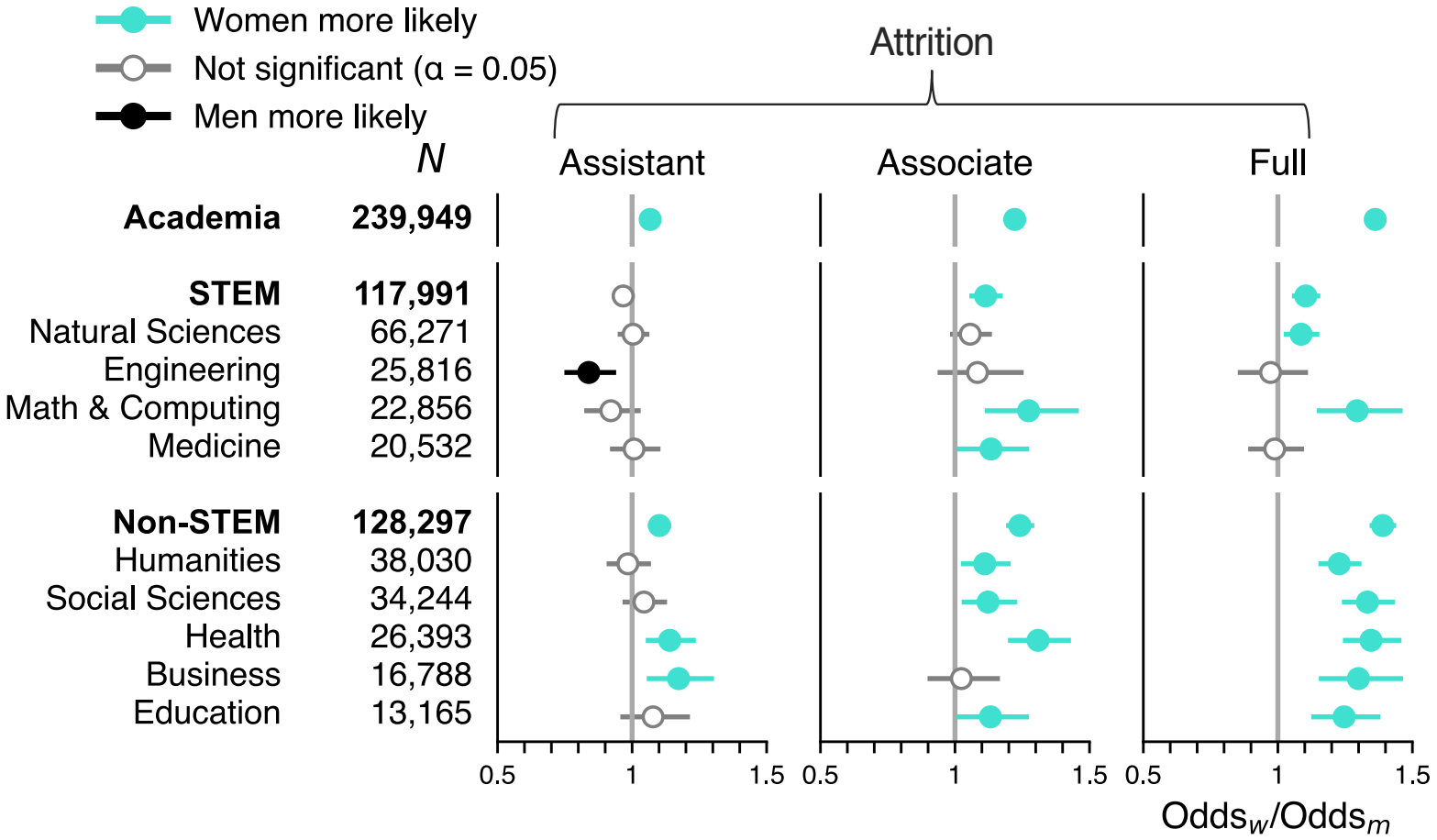

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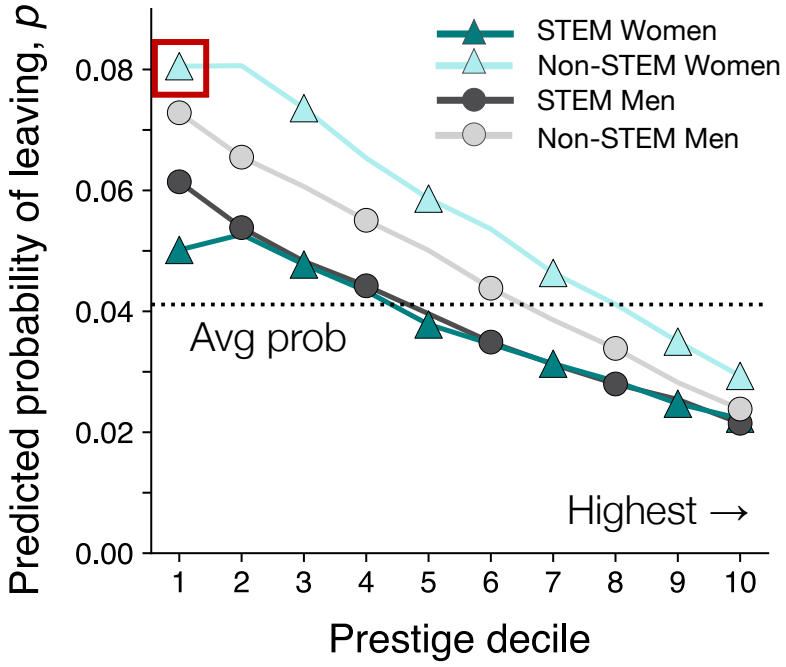
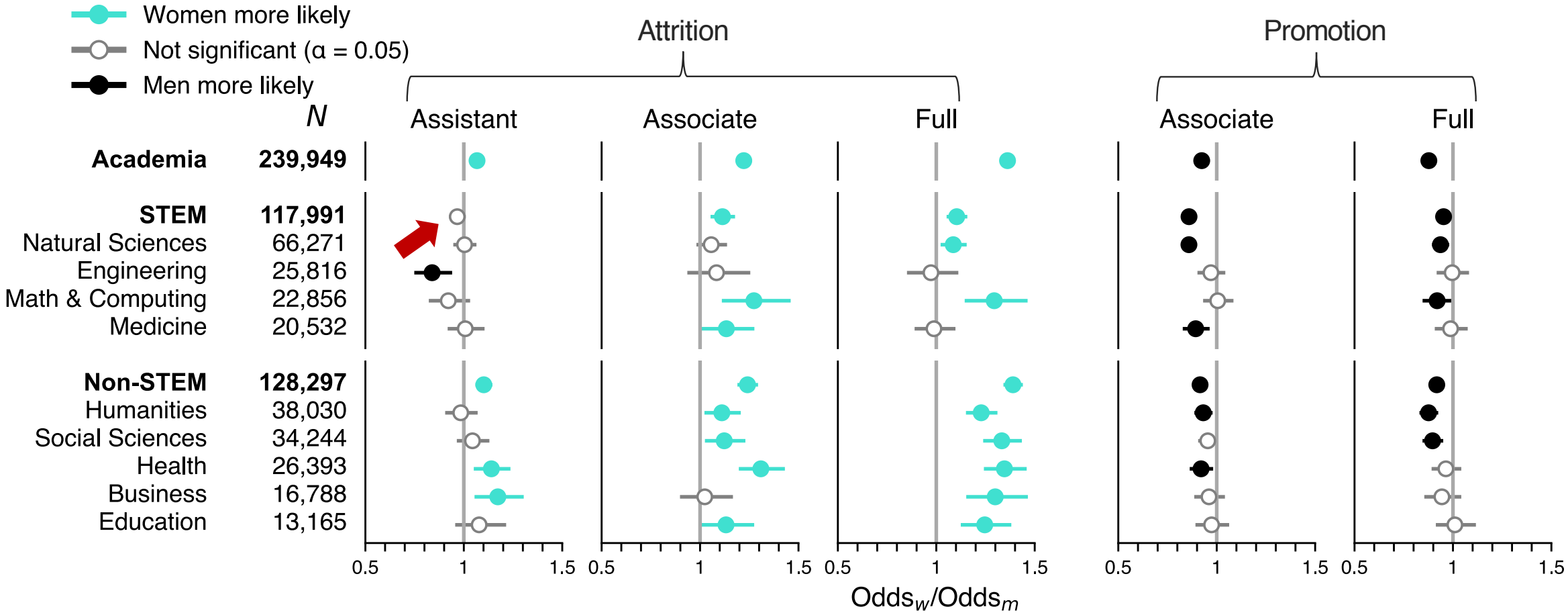


All of this variability helps explain the "contradictory" results in the literature! **Most studies are consistent, given their samples.**

Gendered odds vary across career stage, domain and prestige



These rates tell an important part of the story, but not the whole story. **Example: early-career STEM faculty!**

Part 1: Administrative analysis

Do women and men leave *at different rates?*

Part 2: Survey analysis

Do women and men leave *for different reasons?*

Survey Data


10,050 responses from current + former U.S. faculty, sampled from Part 1 dataset

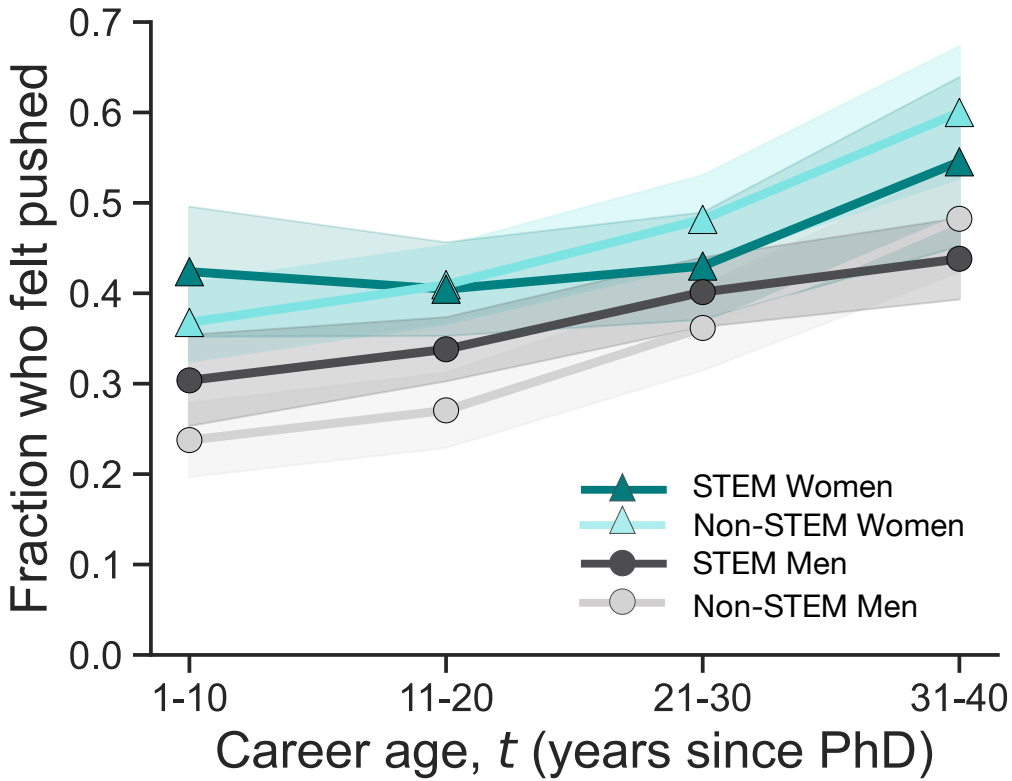

325 U.S. institutions

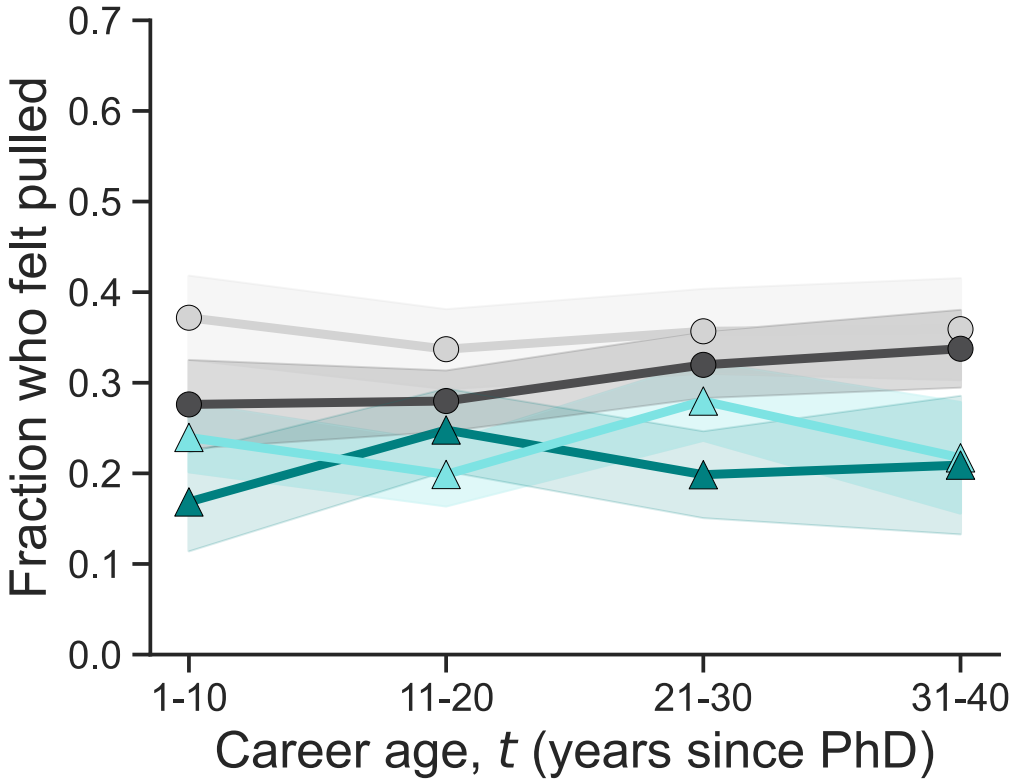

25 academic fields


Fall 2021

Which forces (push or pull) and what reasons, led or would lead faculty to leave their jobs?

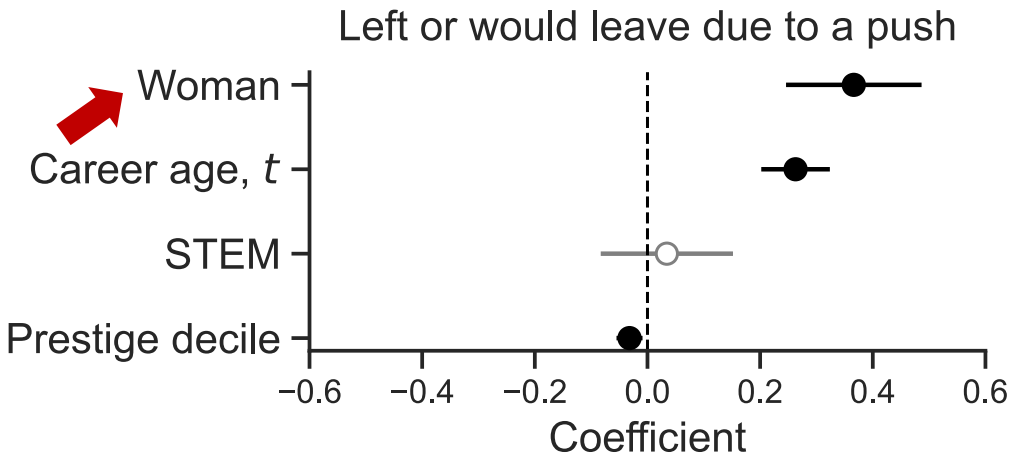
1. Women and men leave in response to different forces

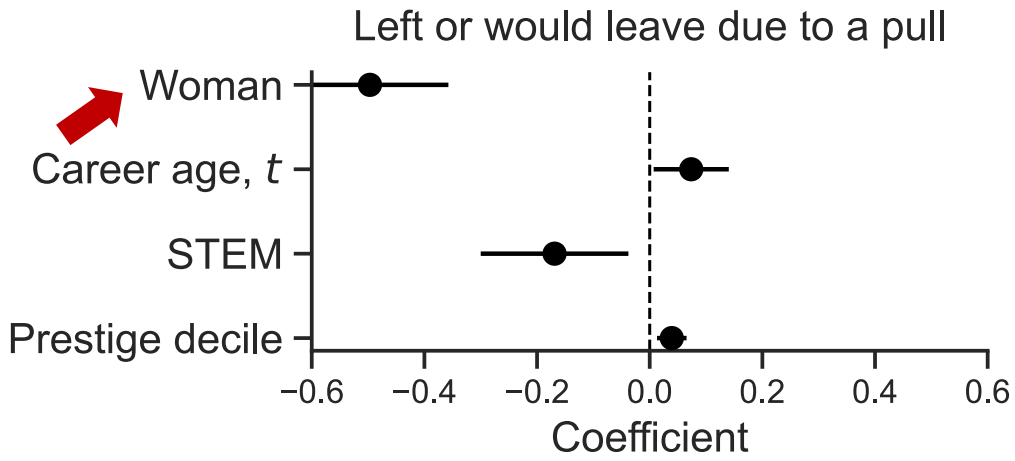




Both STEM & non-STEM women were more likely to feel pushed & less likely to feel pulled, than men, at every career age.

1. Women and men leave in response to different forces



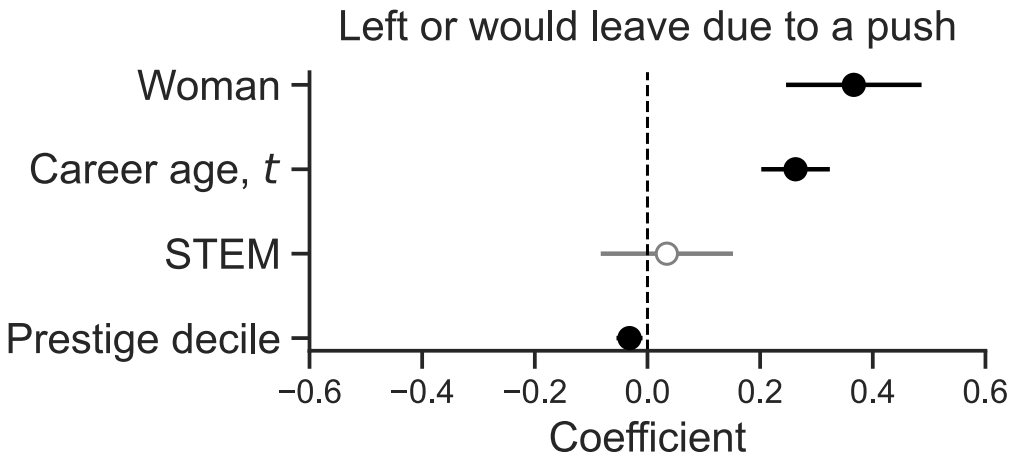


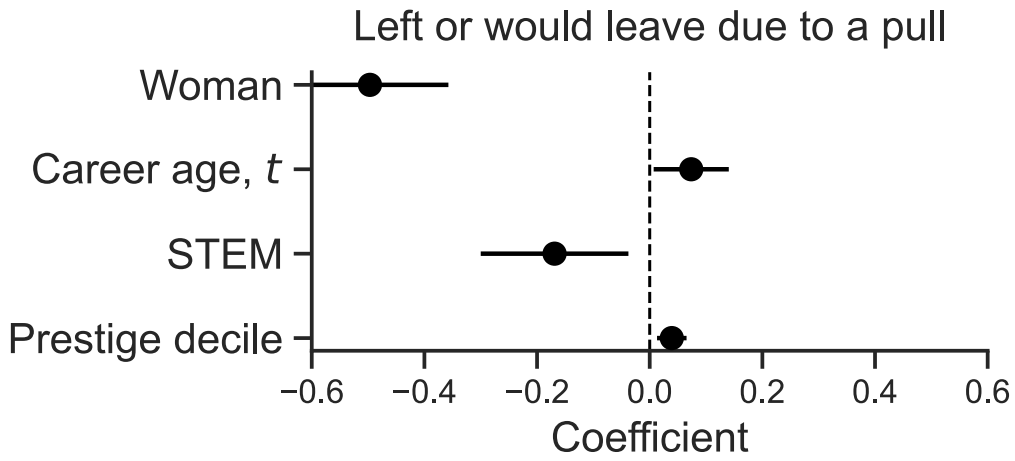
Gender was the **strongest predictor** of feeling pushed/pulled,
out of gender, STEM & prestige, controlling for career age

Very few differences across domains

1. Women and men leave in response to different forces

What types of pushes?





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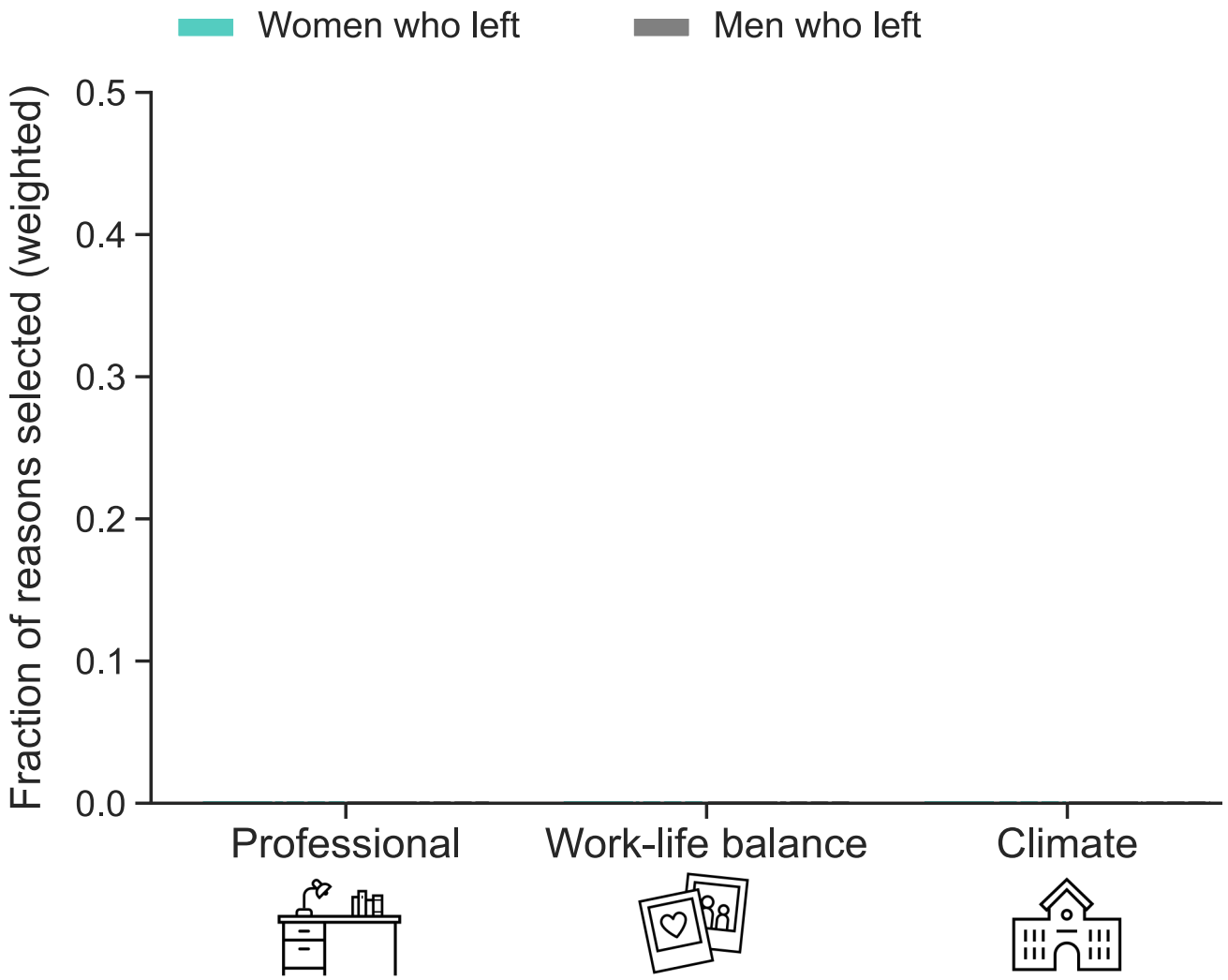
2. Women and men leave for different reasons

Professional
Funding, admin. support, etc.

Work-life balance
Kids, hours, etc.

Workplace climate
Competition, not belonging, etc.



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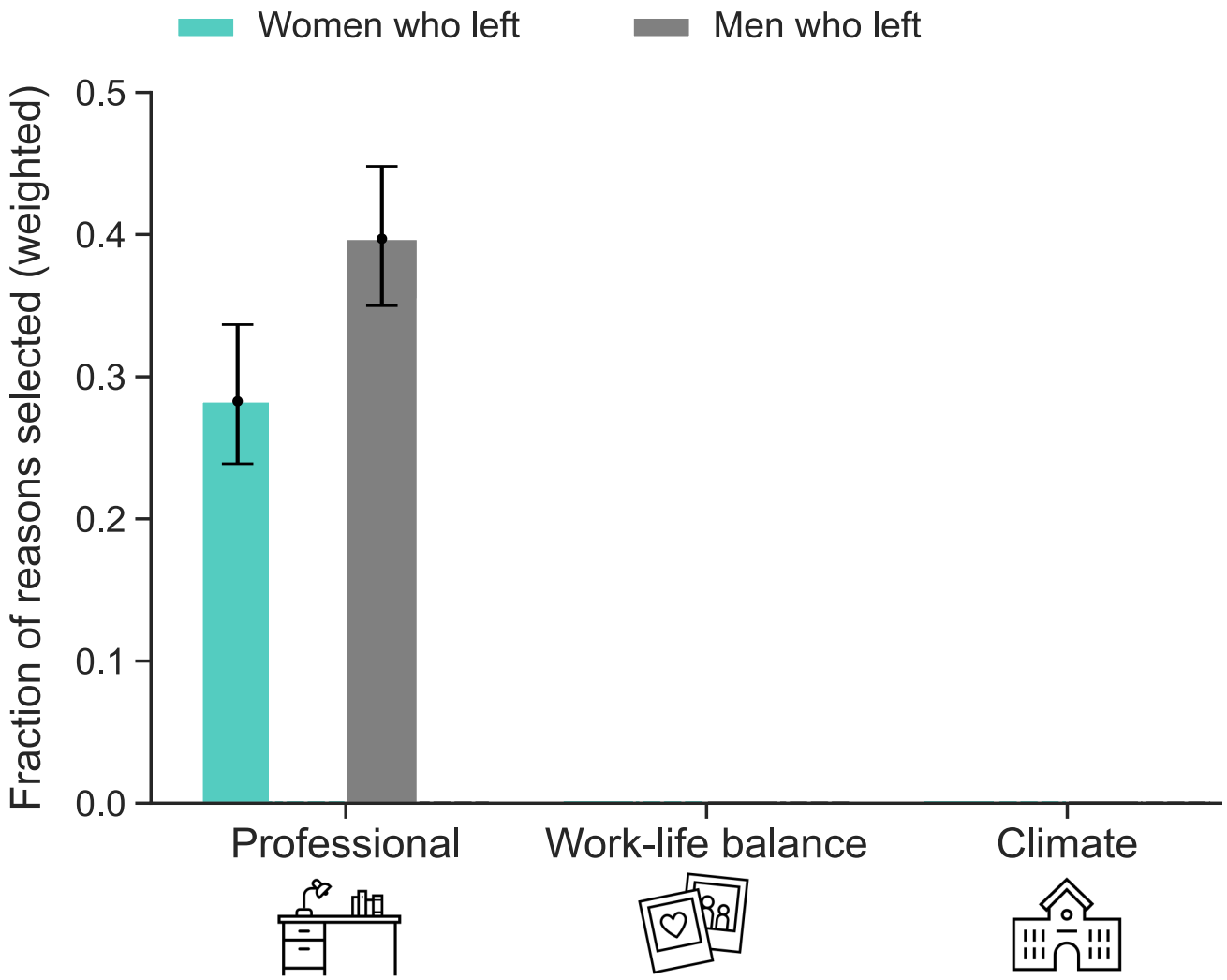

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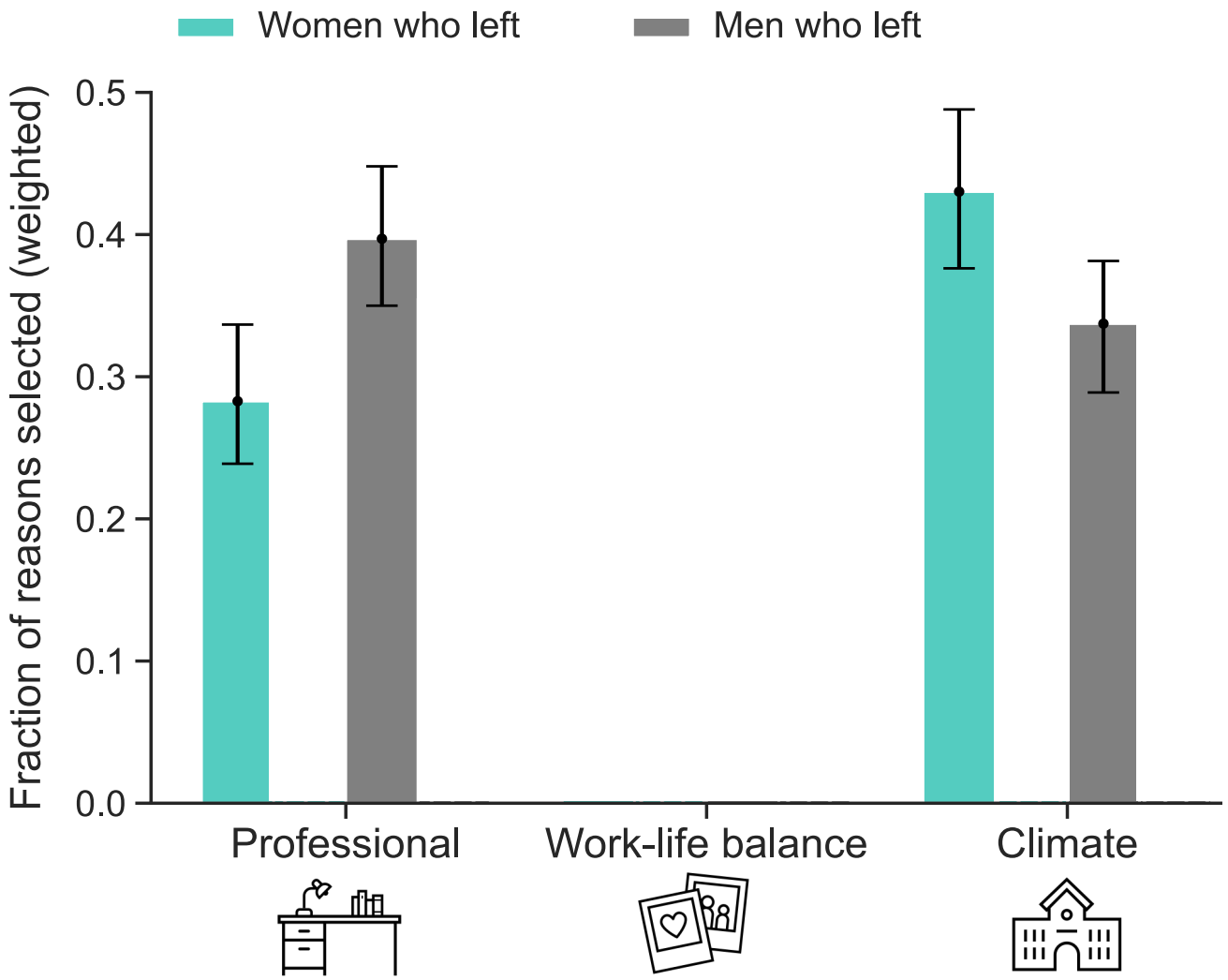

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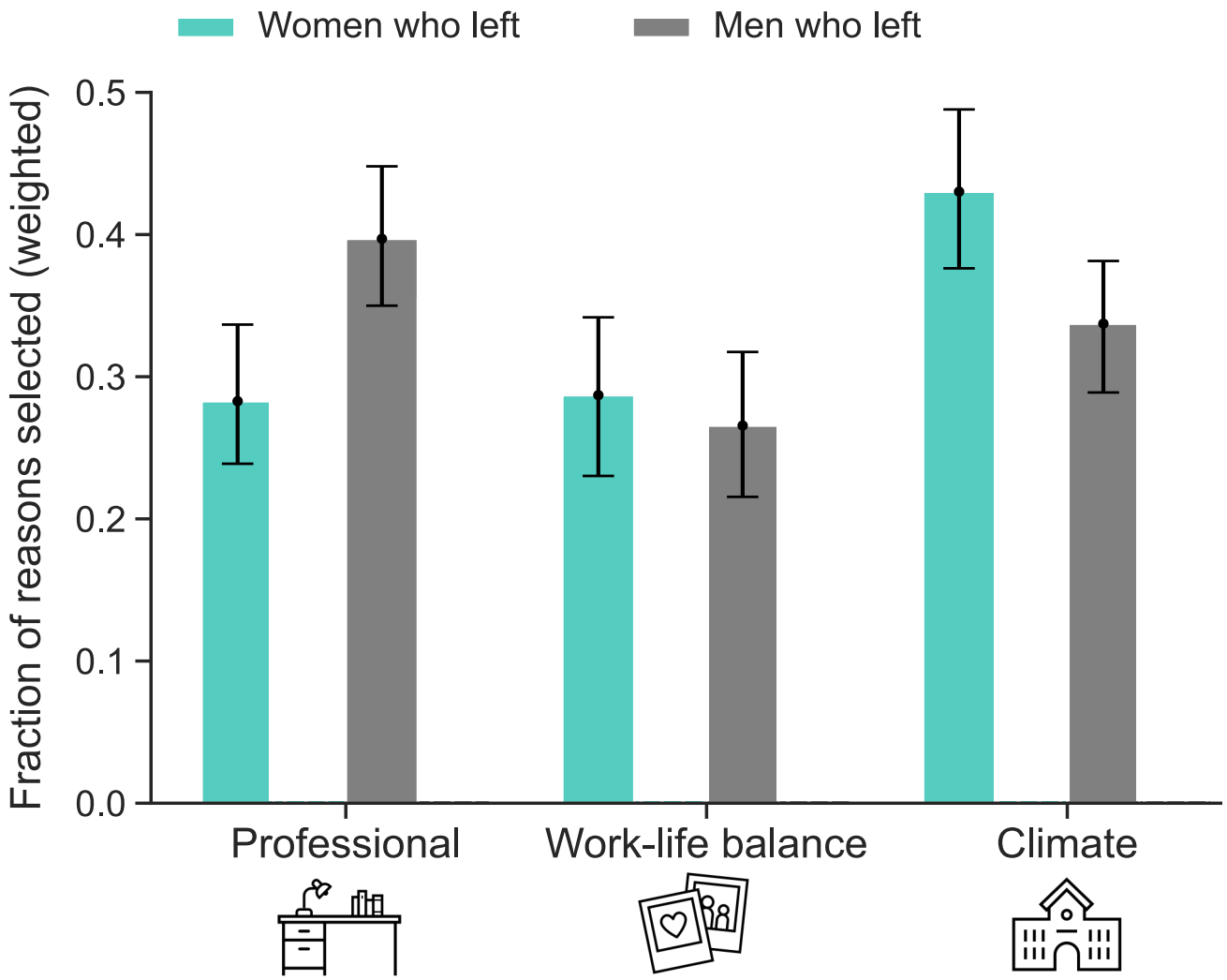

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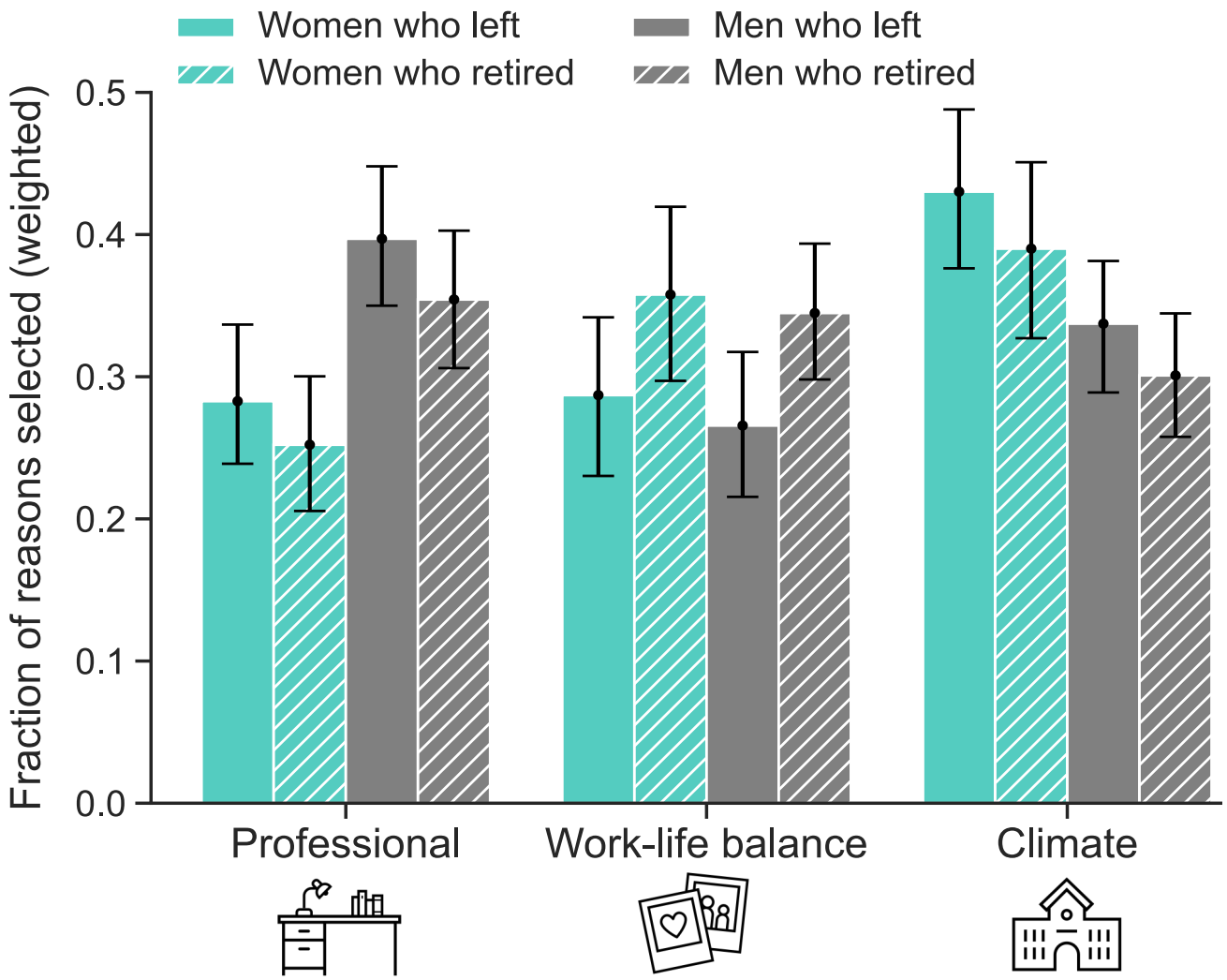

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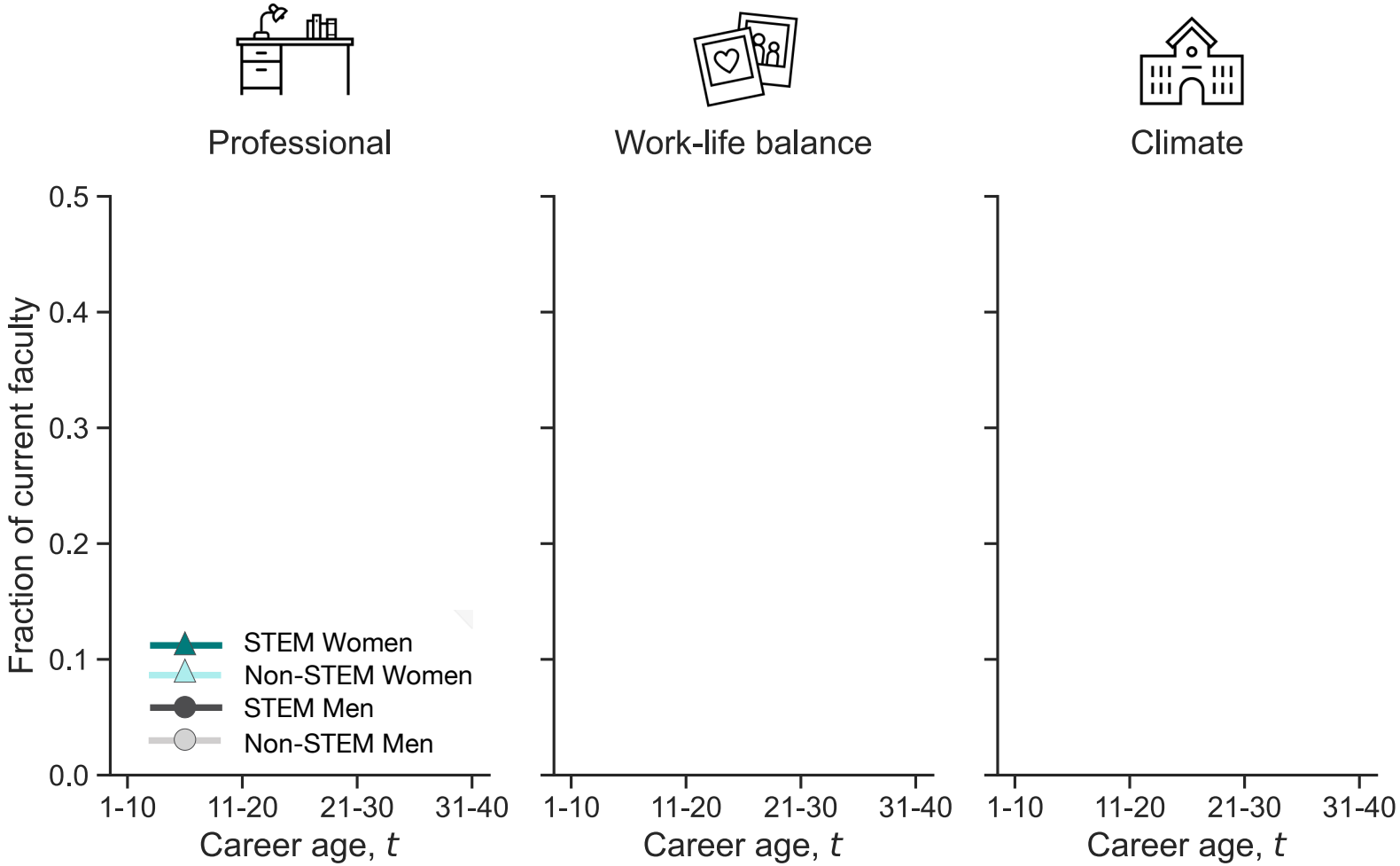

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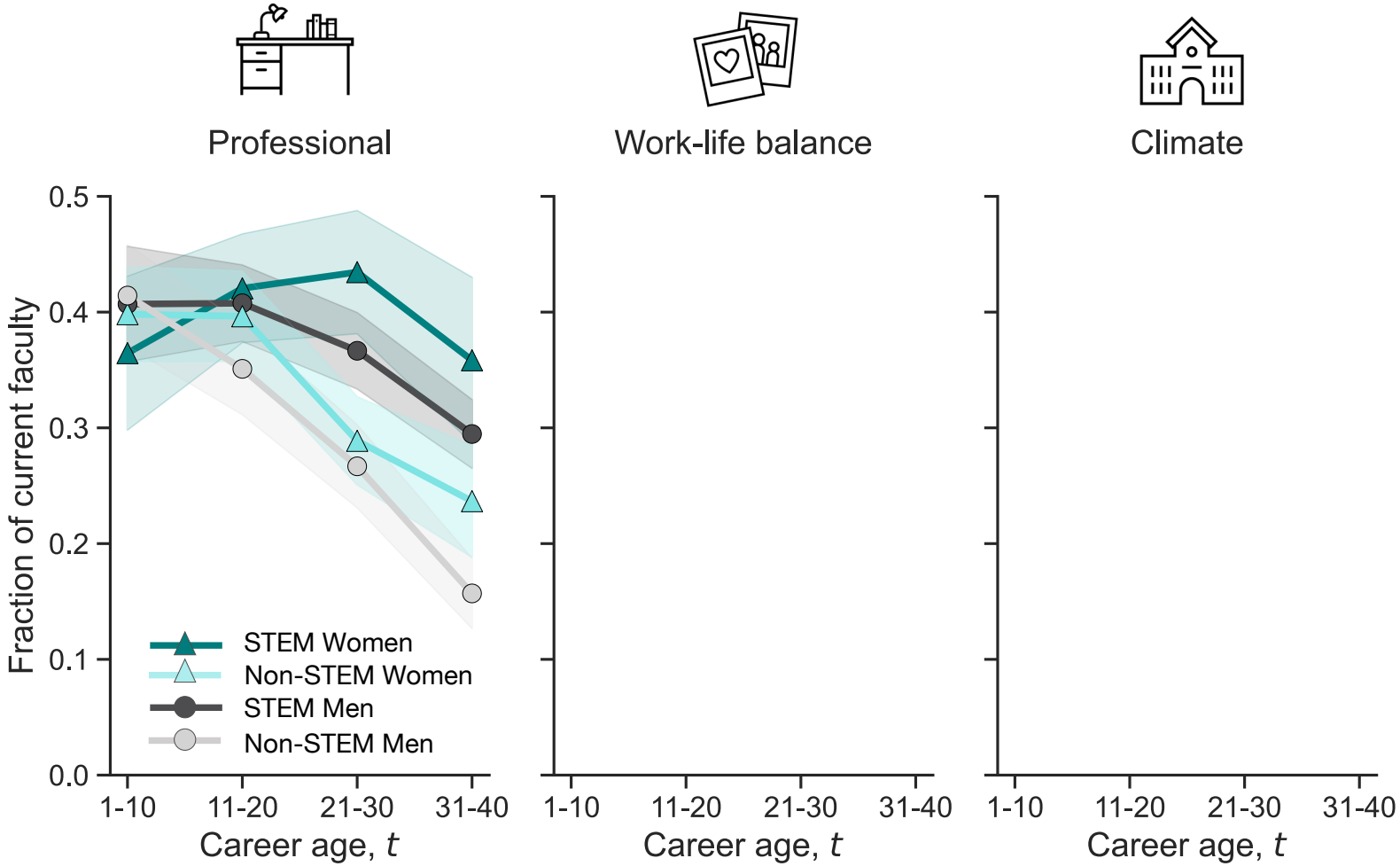

Professional: higher for late-career STEM faculty, especially women in STEM

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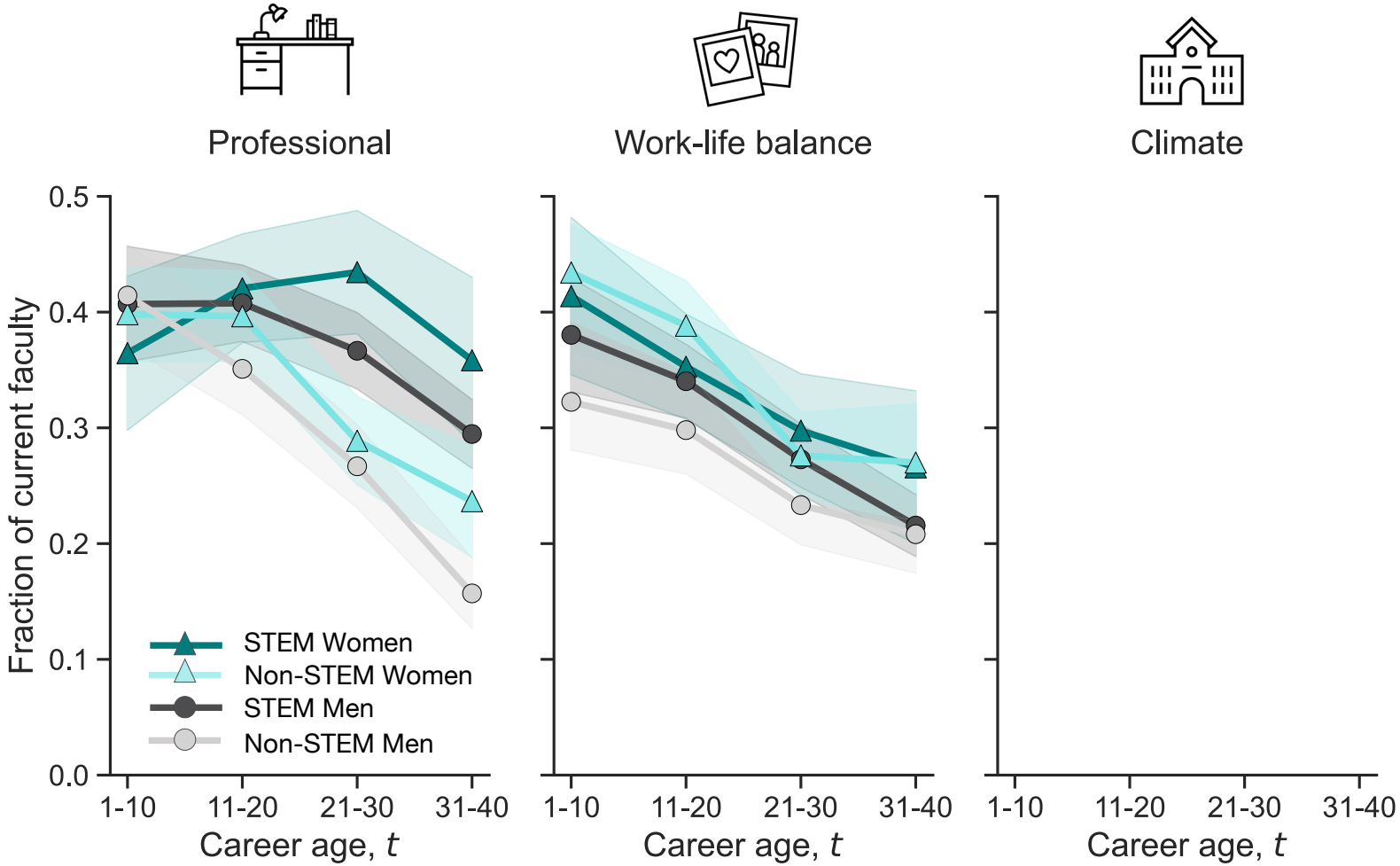

Work-life balance: higher for all early-career faculty (especially women), falls sharply over time

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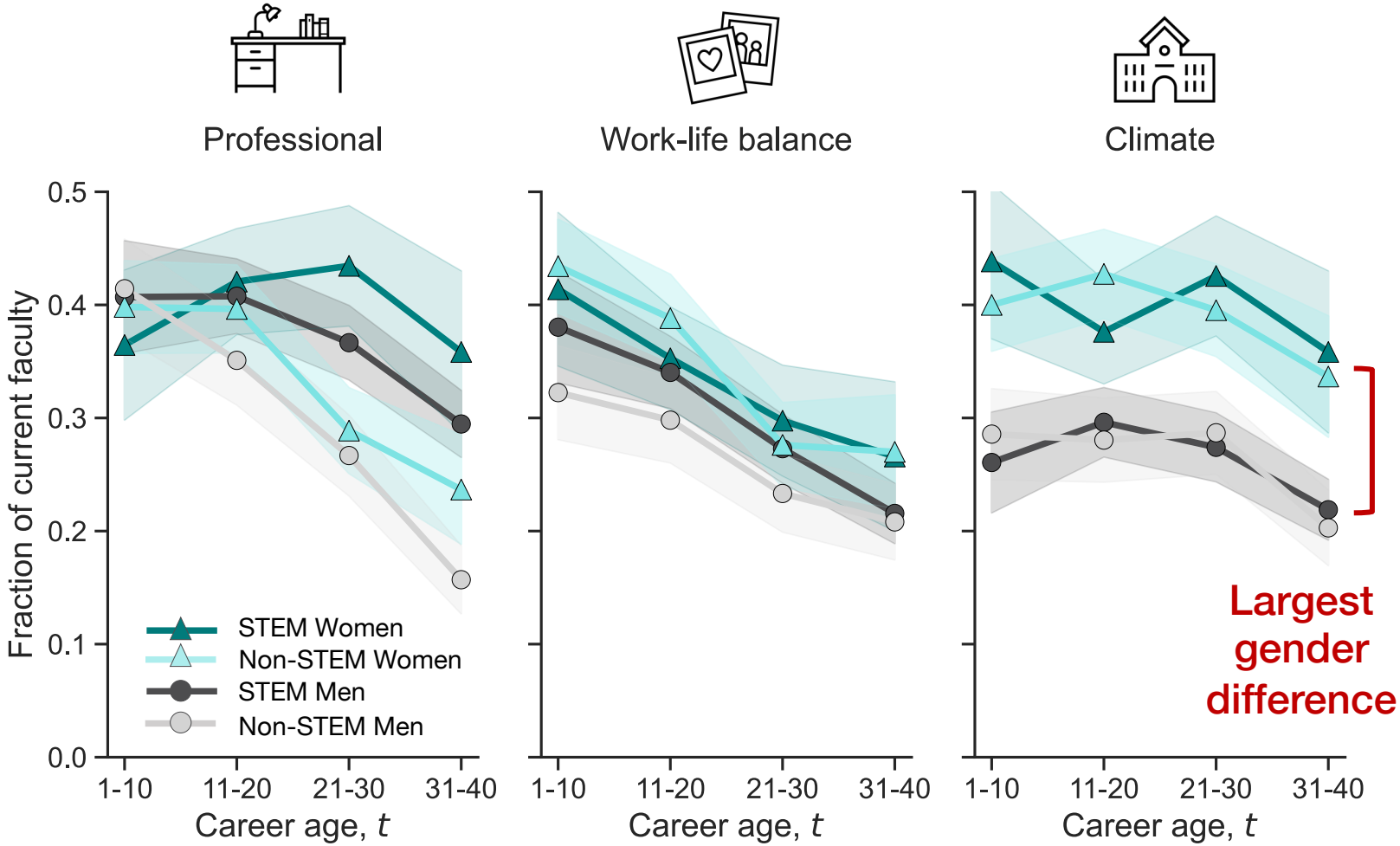
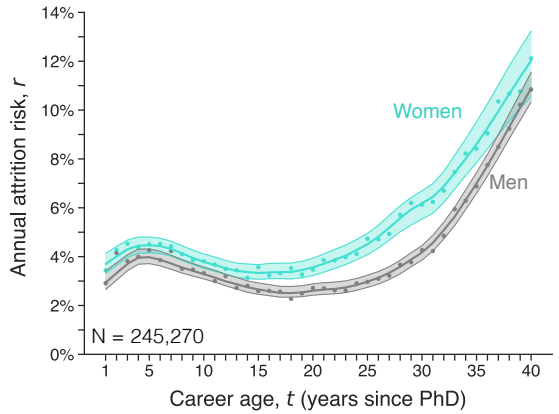
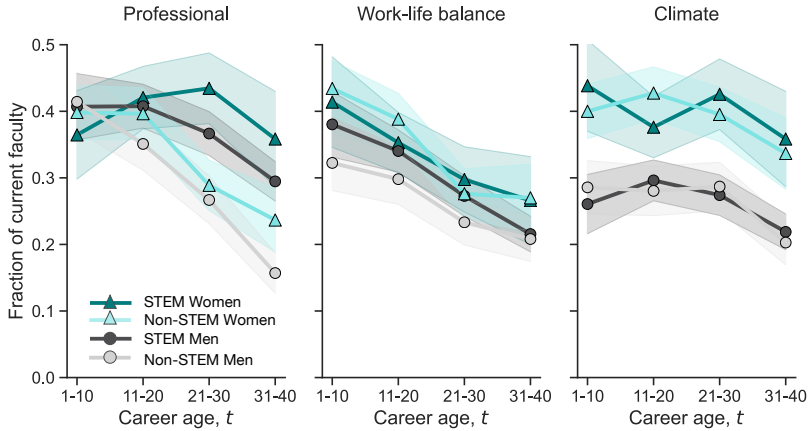


Climate: consistently higher for women across an academic career

Implications





Part 1: Administrative analysis
Do women and men leave *at different rates?*

Part 2: Survey analysis
Do women and men leave *for different reasons?*

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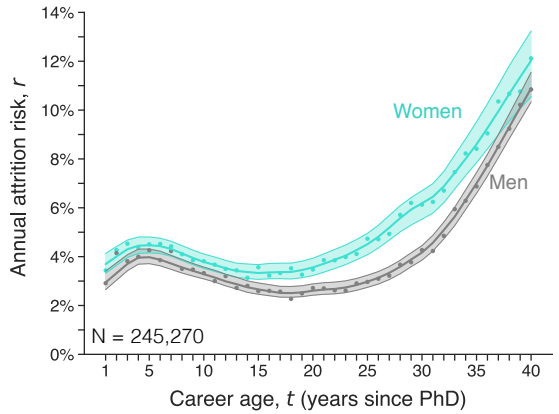

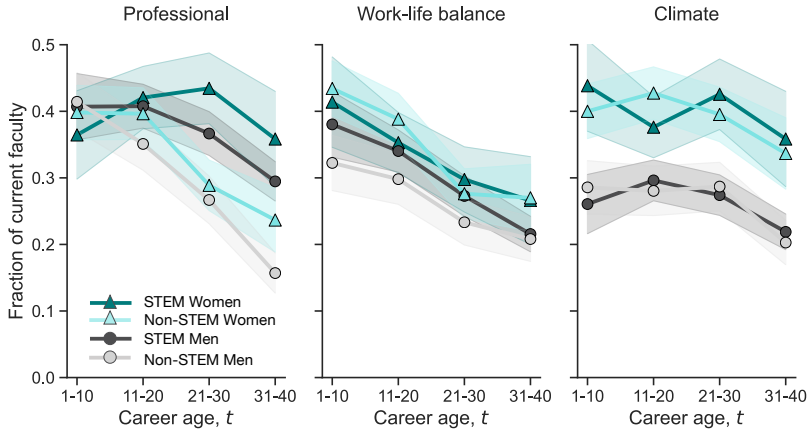

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- **Women are more likely to leave & less likely to be promoted than men**
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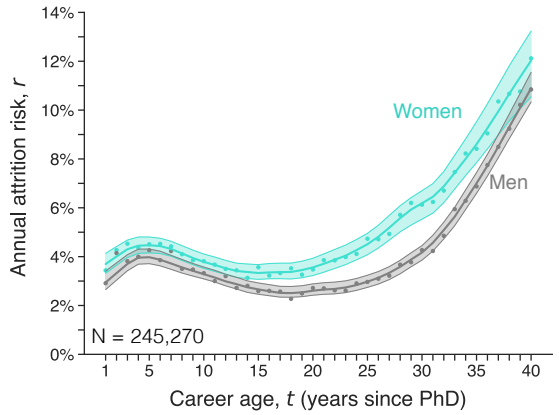

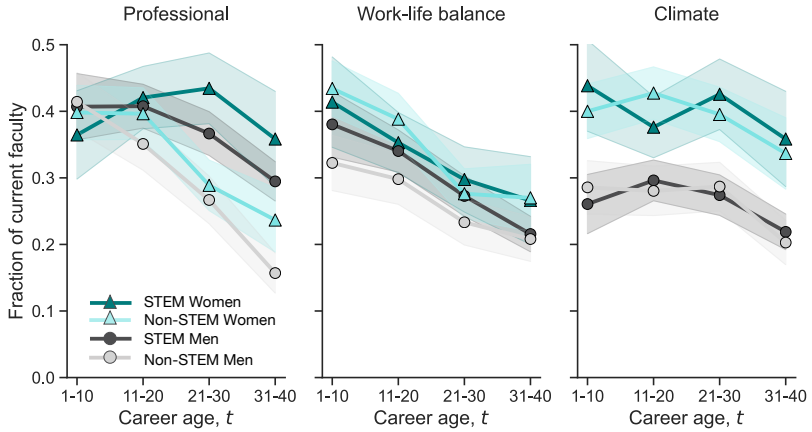

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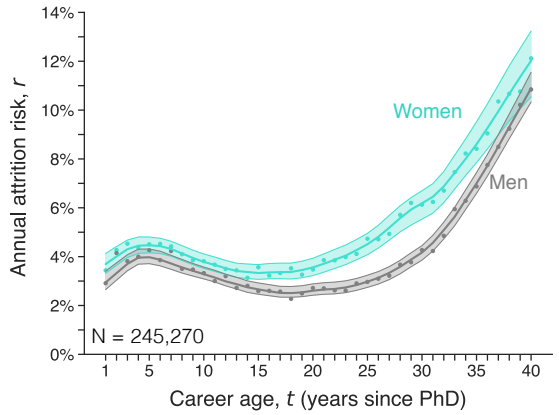

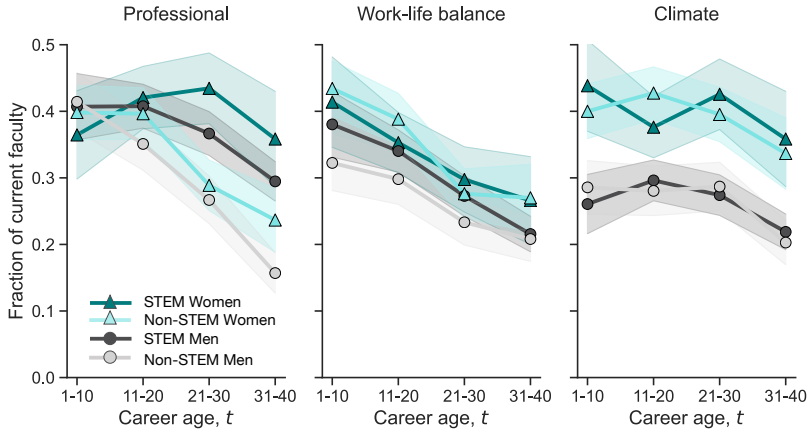

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Takeaway: Even for subpopulations with no visible gender gap in retention, women still leave for different reasons than men, so we should focus on reasons, not just rates, to improve gender equity

→ let's ask & listen to historically excluded academics, and address the specific reasons they bring up

A final note on the value of people's stories

- **Ongoing qualitative follow-up study:** 7000 free-text responses about policy recommendations that would have improved their retention
- Very preliminary, but overwhelmingly, women & gender-diverse faculty feel systemically devalued in academia → **It's about climate.**
- These stories are not "just anecdotes".

Preprint coming soon!

Thanks!

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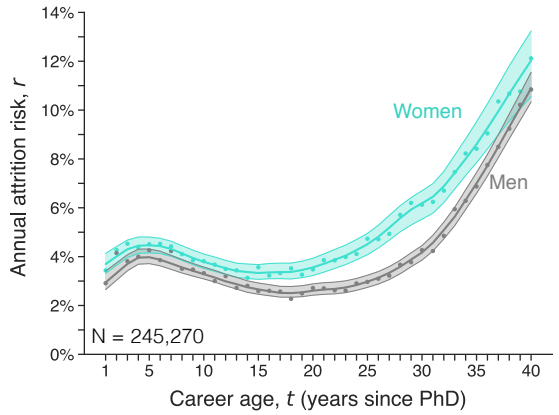
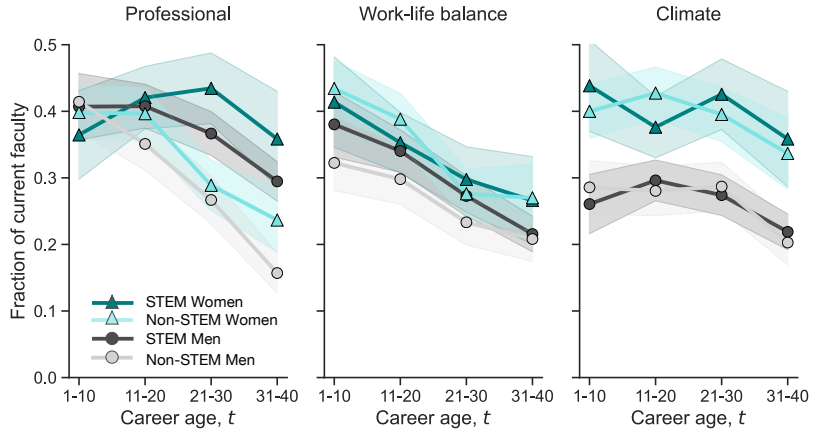
@thekatiespoon

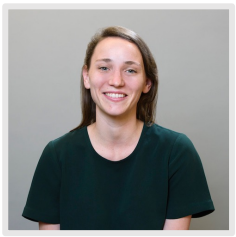





Nick LaBerge


Hunter Wapman


Sam Zhang

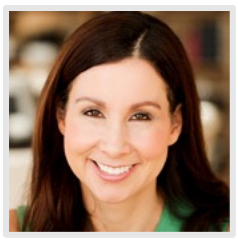

Allie Morgan

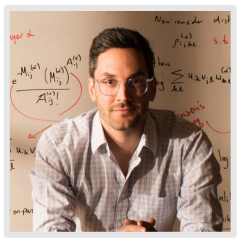

Joanna Mendy


Maria Martinez


Mirta Galesic


Bailey Fosdick


Lauren Rivera


Dan Larremore


Aaron Clauset

& all of our survey respondents for their valuable time

University of Colorado **Boulder**

Paper under review
Preprint out!