

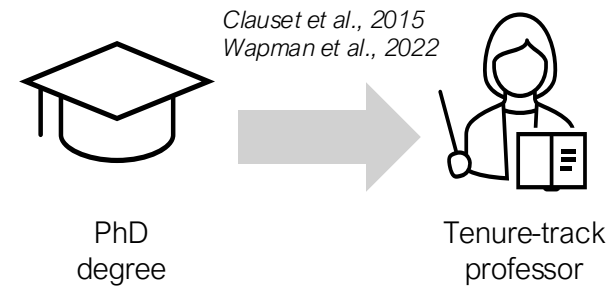
The elite undergraduate backgrounds of U.S. faculty

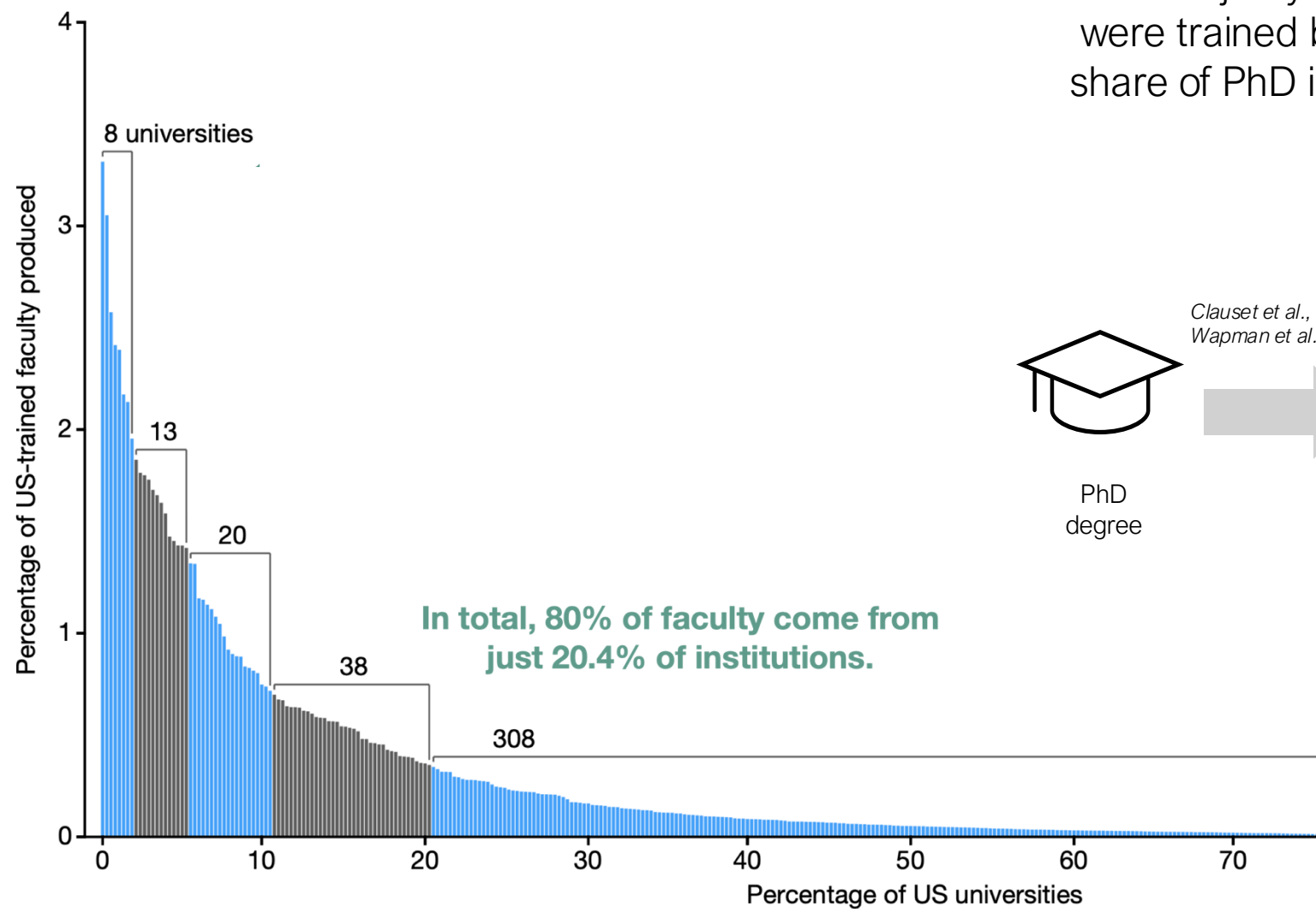
Katie Spoon, Eun Lee, Aaron Clauset and Daniel Larremore
University of Colorado – Boulder

ATLC, May 14, 2025

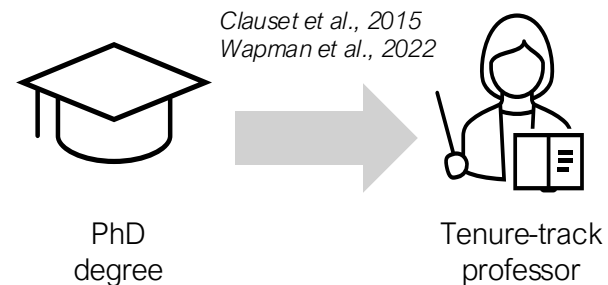
🏠 katiespoon.github.io/
🦋 kspoon.bsky.social
✉️ katherine.spoon@colorado.edu

The majority of faculty
were trained by a small
share of PhD institutions





The majority of faculty were trained by a small share of PhD institutions



Quantifying hierarchy and dynamics in US faculty hiring and retention

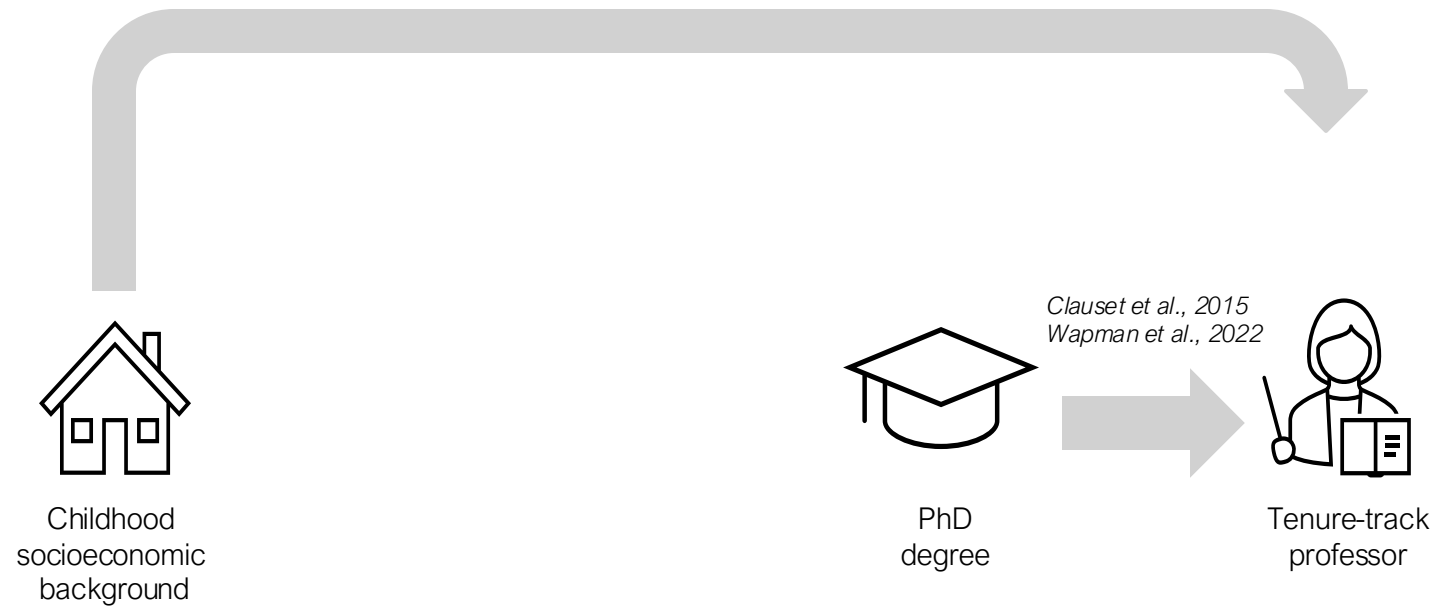
[K. Hunter Wapman](#) ✉, [Sam Zhang](#), [Aaron Clauset](#) & [Daniel B. Larremore](#) ✉

Nature **610**, 120–127 (2022) | [Cite this article](#)

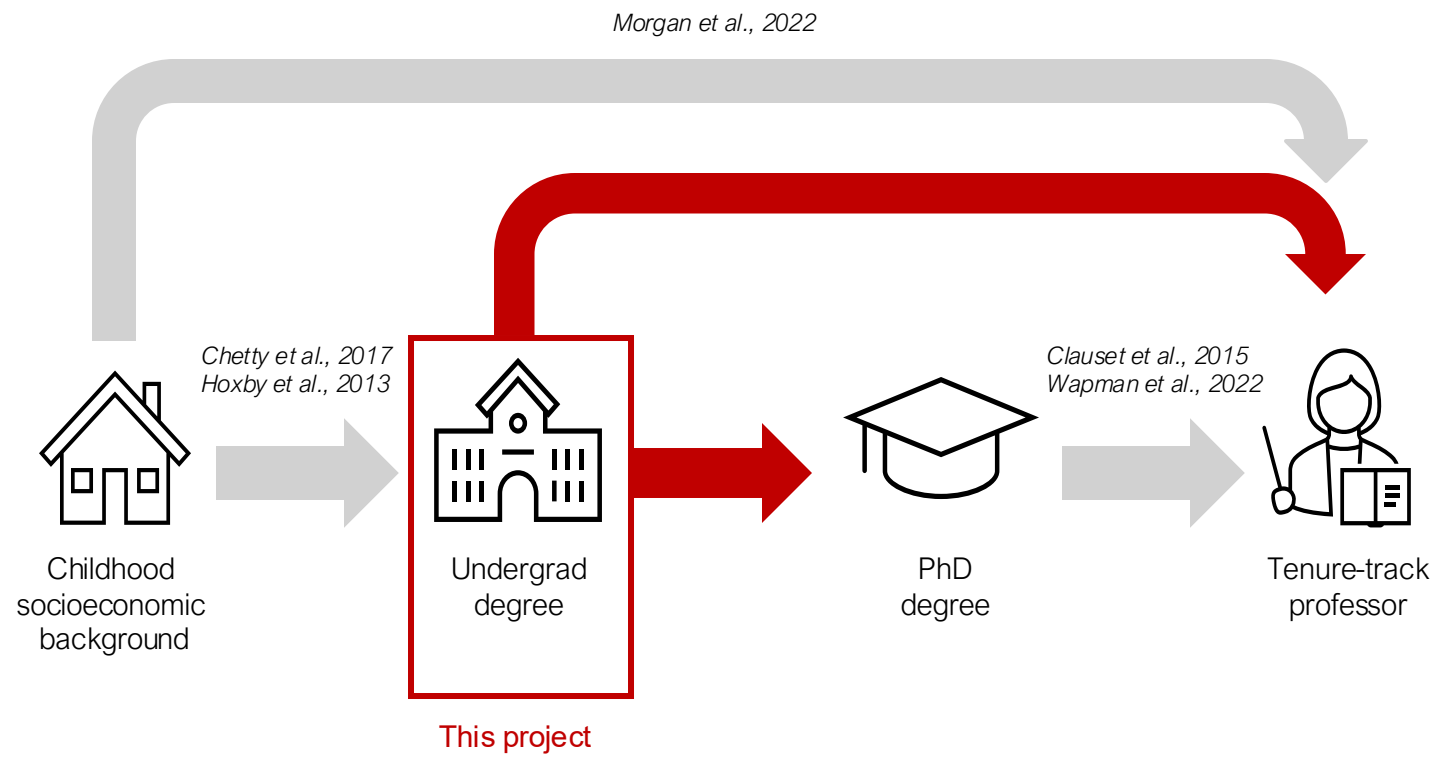
146k Accesses | 54 Citations | 1202 Altmetric | [Metrics](#)

The previous presentation!

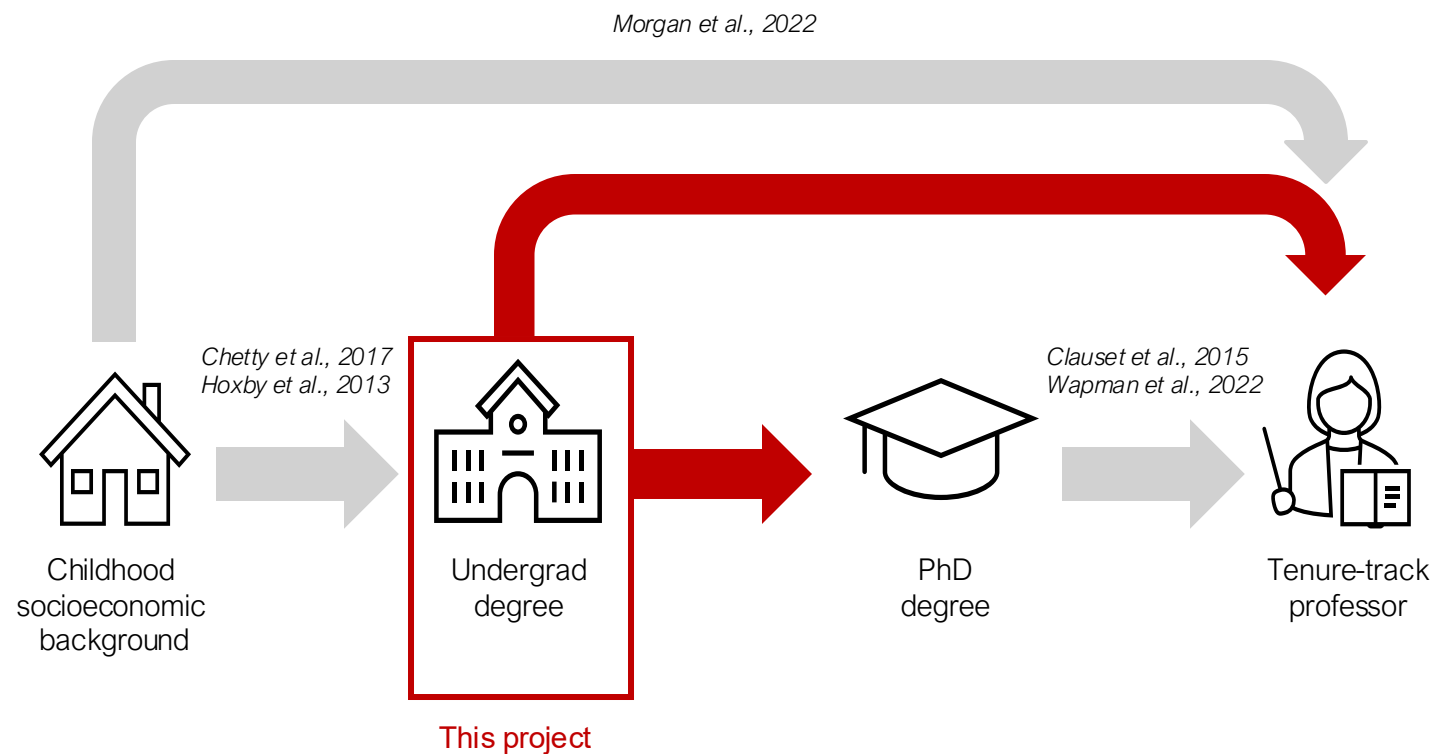
Morgan et al., 2022



We also know faculty are much more likely to have a parent with a PhD even compared to PhD recipients



Hard to study because the data is hard to collect!



A strong prestige hierarchy has been found among U.S. physics faculty (Grunspan et. al 2024), but no cross-field comparative study of U.S. faculty has been done. D. Z. Grunspan et. al, "Importance of undergraduate institution prestige in physics faculty hiring networks," *Physics Education Research* 20, 010144 (2024).

| | | | |
|------|-------------------------|-----------------|----------------|
| Type | Computer Science | Business | History |
| | STEM | Social Science | Humanities |

These fields may treat undergraduate prestige differently!



| Type | Computer Science STEM | Business Social Science | History Humanities | These fields may treat undergraduate prestige differently! |
|-----------------|--------------------------|----------------------------|-----------------------|--|
| Year Collected | 2011-2012 | 2012 | 2013 | |
| # institutions* | 205 | 112 | 144 | |



For each of these three fields, faculty institutions in our sample were constructed from field-specific comprehensive lists of PhD-granting universities in the U.S. (U.S. News and World Report for Business and History, and the Forsythe list, maintained by the Computing Research Association, for Computer Science e).

| Type | Computer Science STEM | Business Social Science | History Humanities |
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These fields may treat undergraduate prestige differently!

For each academic unit, a full listing of tenured or tenure-track faculty was obtained from the department's homepage



Dr. Marie Curie



Education

| | |
|----------------------------|------|
| B.S., University of Paris | 1893 |
| Ph.D., University of Paris | 1903 |

Academic Positions

| | |
|--------------------------|-----------|
| Prof., Univ. Paris, | 1911- |
| Asst. Prof., Univ. Paris | 1904-1911 |
| Lecturer, ENS | 1897-1900 |

We thank K. Parthan, S. Dhall, D. Mysamy, P. Srivastava, S. Kamat, A. Yarlagadda, R. Daubert, A. Zizzi, K. Hargett, R.T. Guthikonda, R. Vardha, U. Lingala, and C. Sivakumar for help collecting these data, which took roughly 5000 person-hours of combined effort.

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BS

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PhD

Prof

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PhD

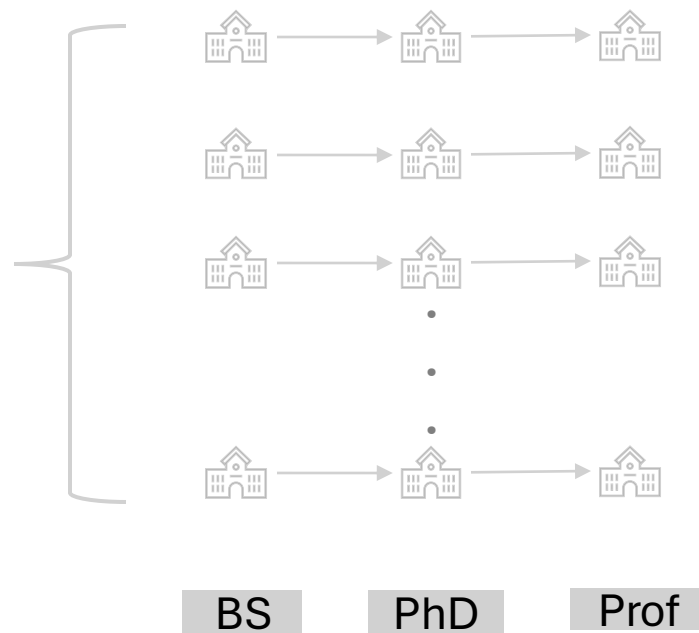
Prof

- ① Disambiguate schools
 Univ. Paris = University of Paris
- ② Add country to each school
 N = 115 countries

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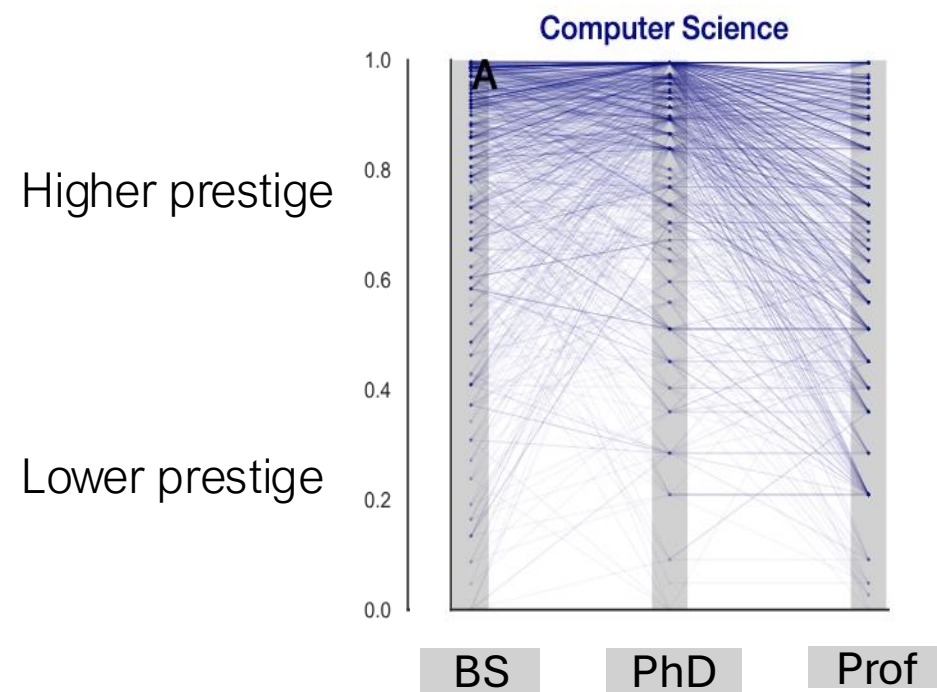
Data

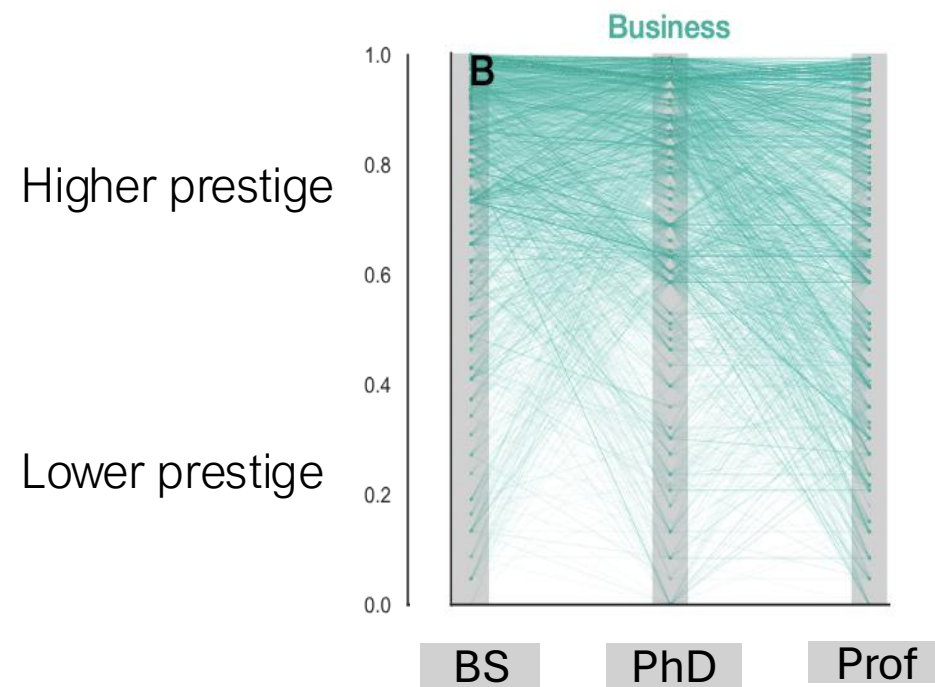
20,970
trajectories from
Comp Sci,
Business &
History
professors
in the US

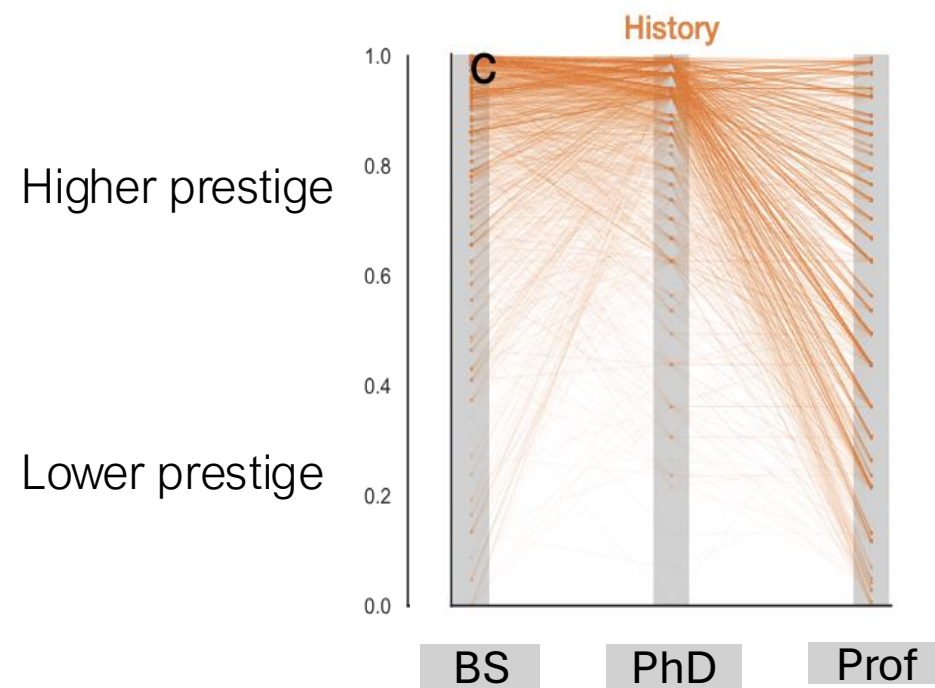


Linked to



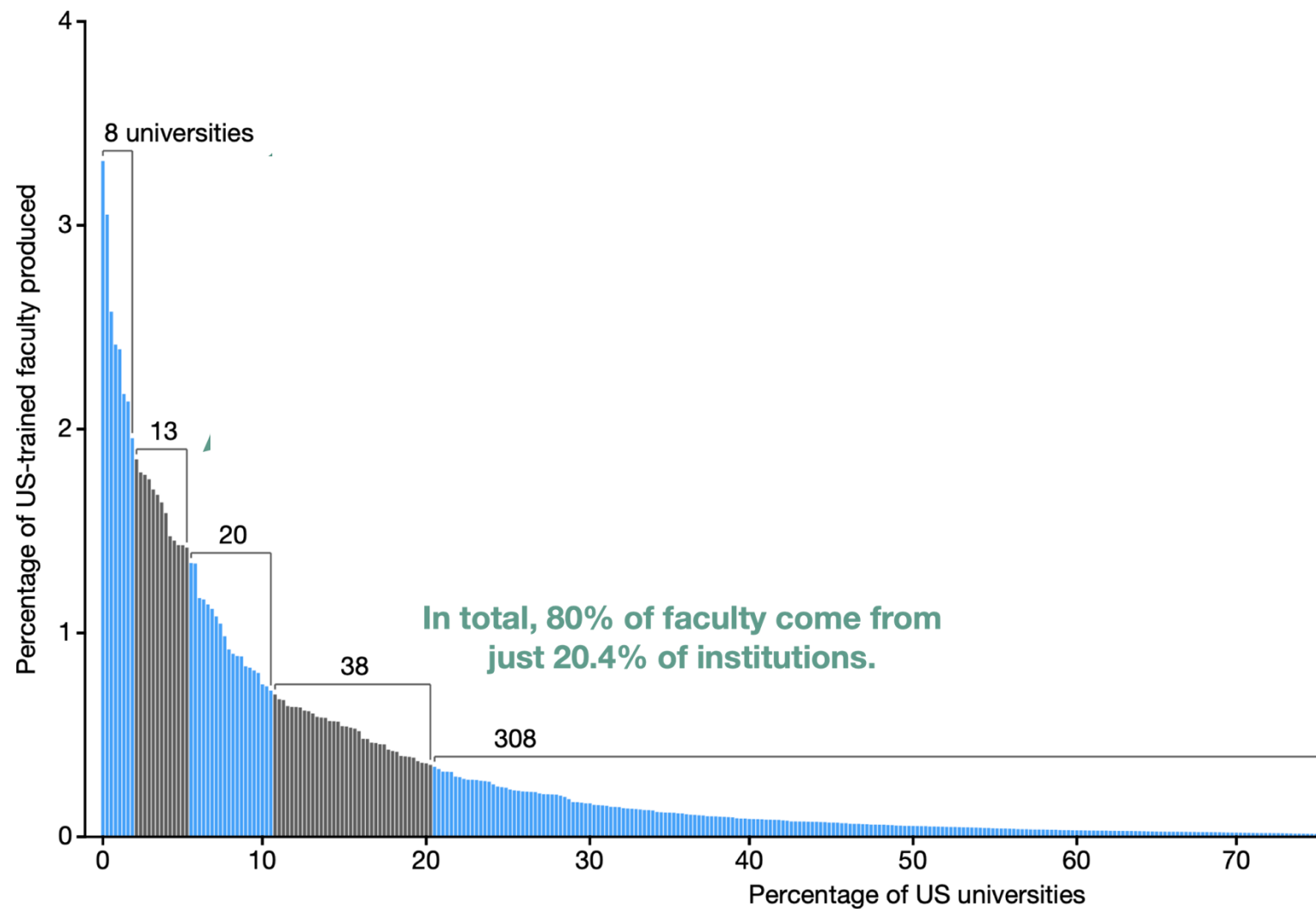






There is far more diversity of Undergrad origins than PhD origins.

There is far more diversity of Undergrad origins than PhD origins.
We can visualize this using Lorenz curves...

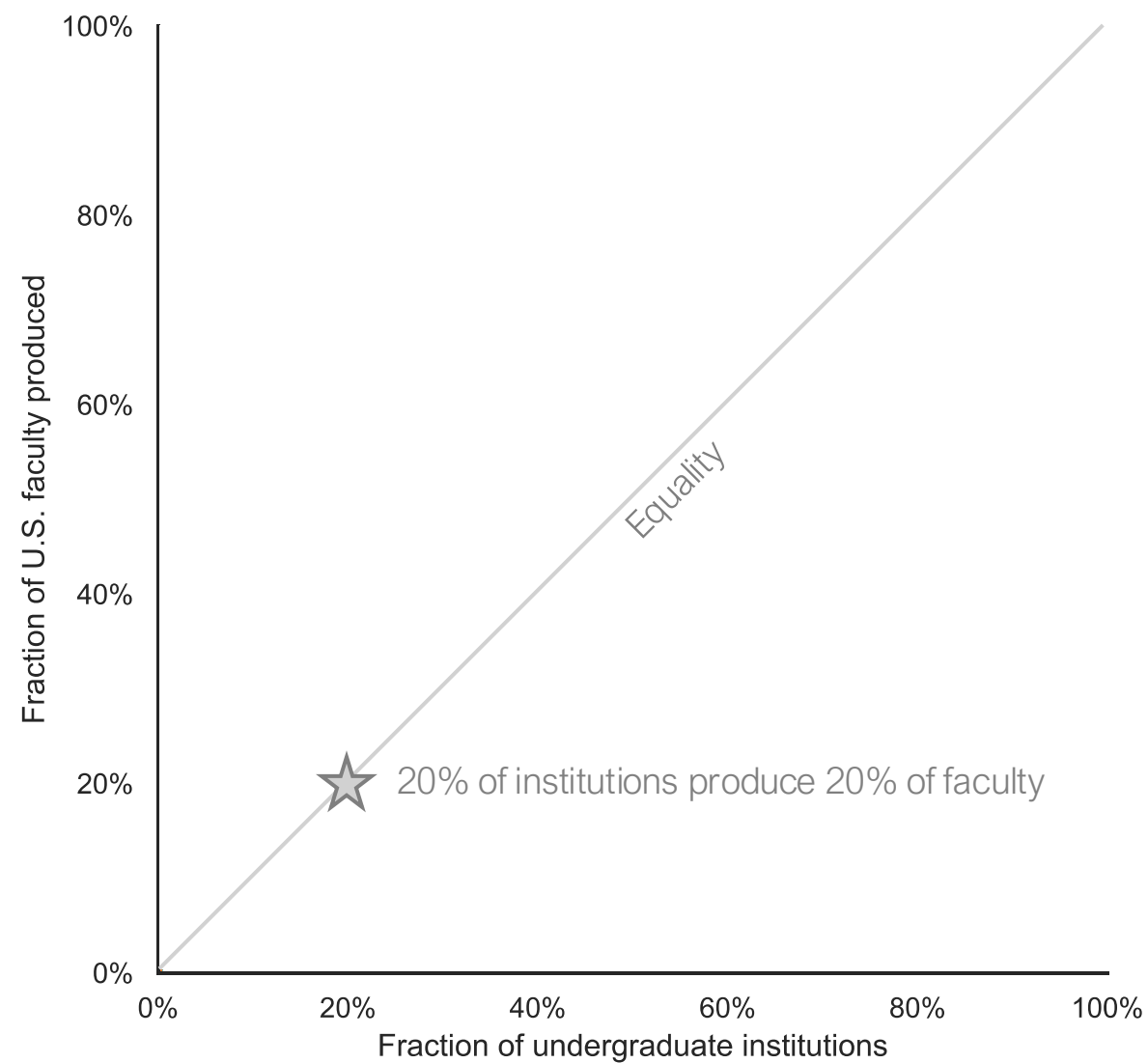


Quantifying hierarchy and dynamics in US faculty hiring and retention

[K. Hunter Wapman](#) , [Sam Zhang](#), [Aaron Clauset](#) & [Daniel B. Larremore](#) 

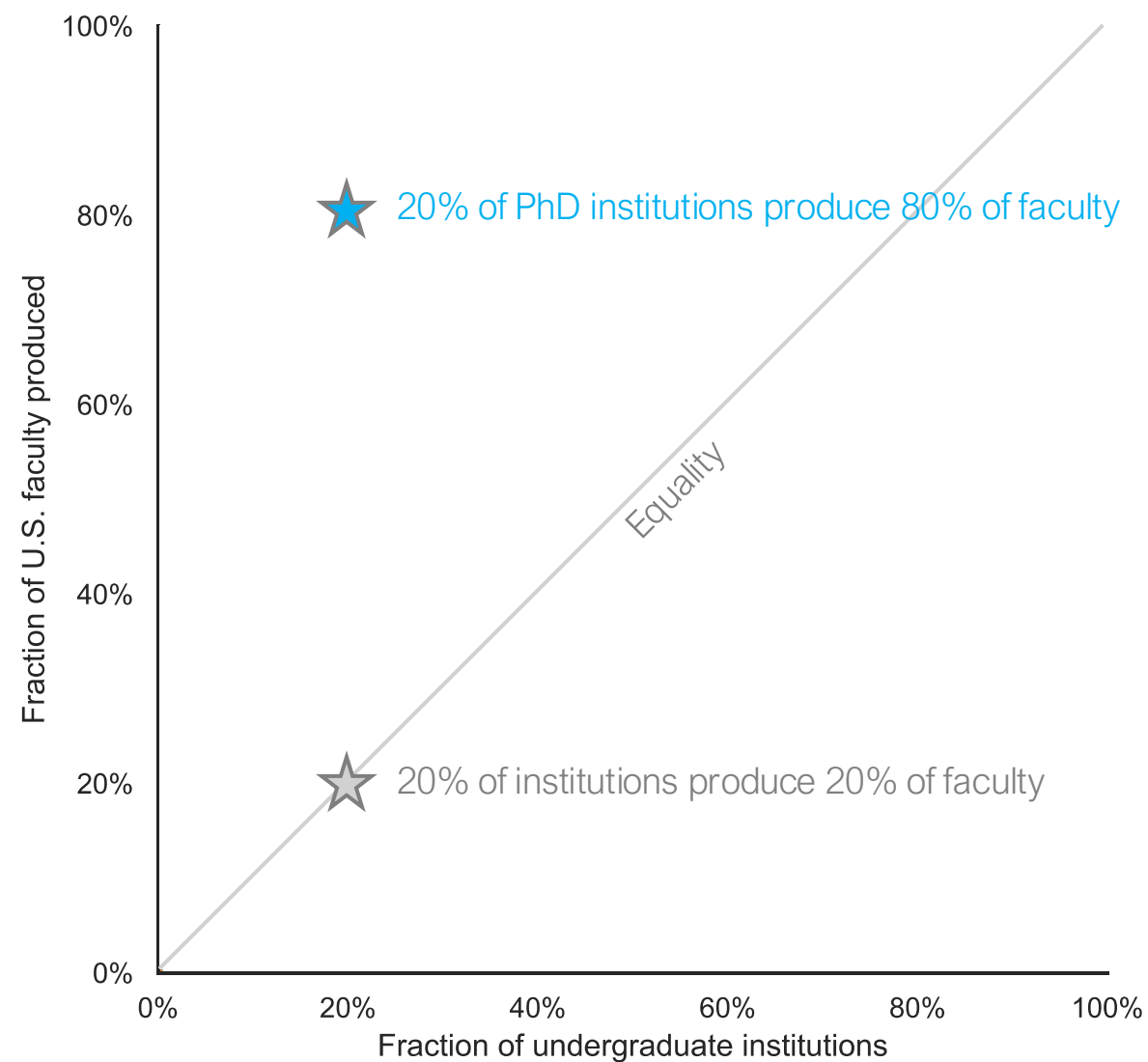
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Inequality is not automatically bad, it could be that only a small share of institutions have the resources and/or applicant pool to produce future profs
There are ~1000 US unique undergrad institutions and ~1000 non-US unique undergrad institutions from 100+ countries

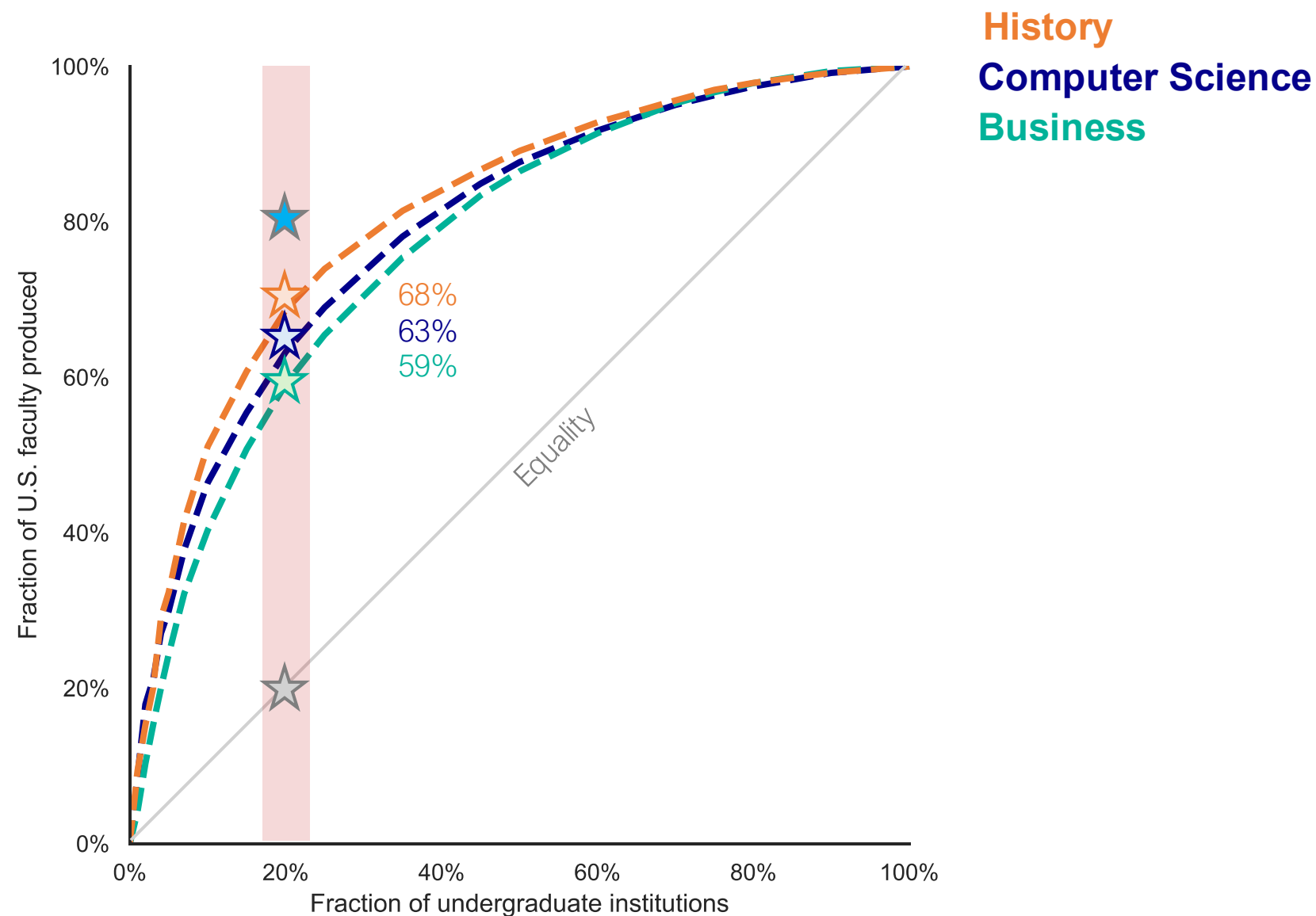
How do undergraduate institutions compare?



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There are ~**1000 US unique undergrad institutions**

Yet, a small share
train most US profs
– particularly in
History

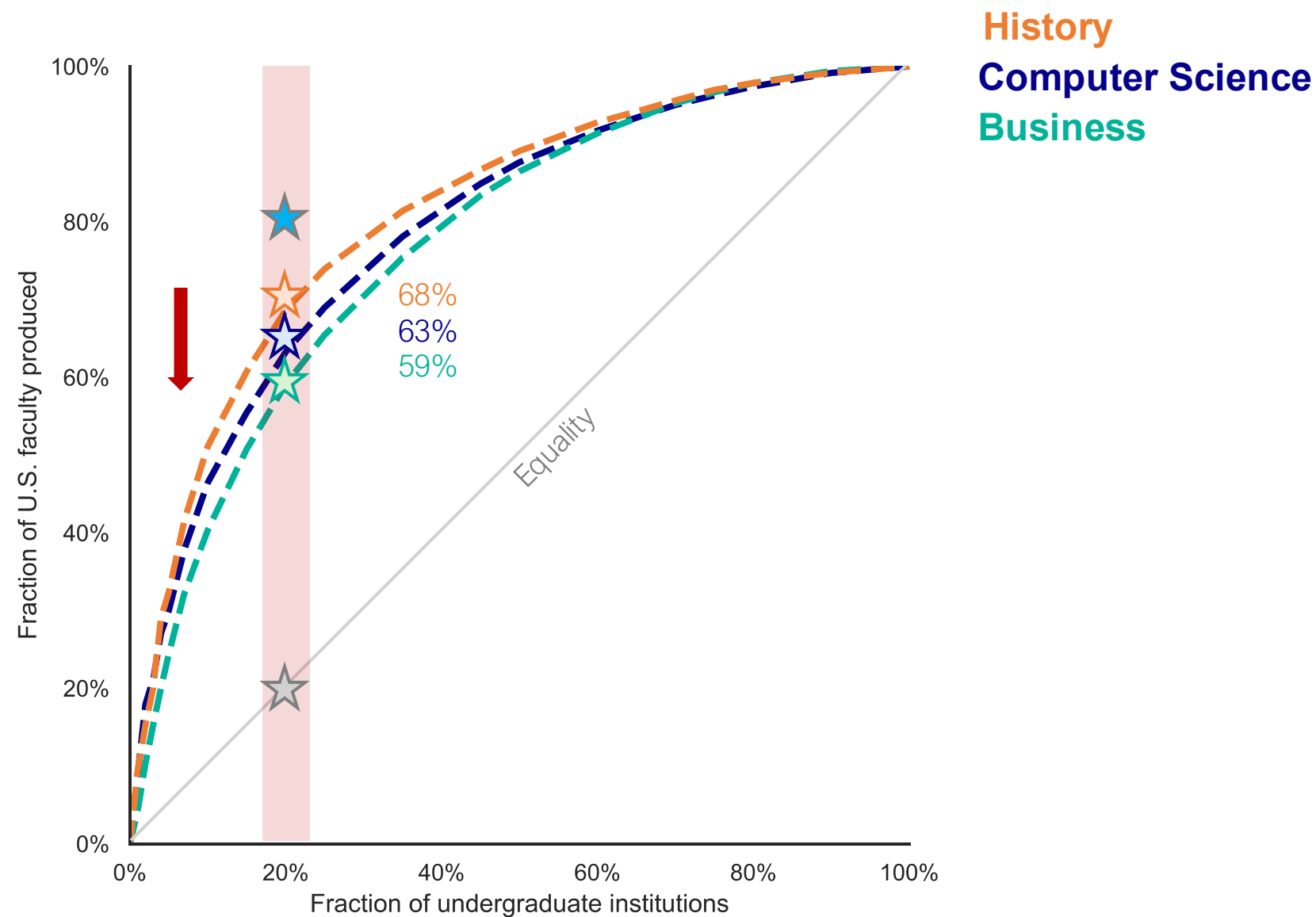


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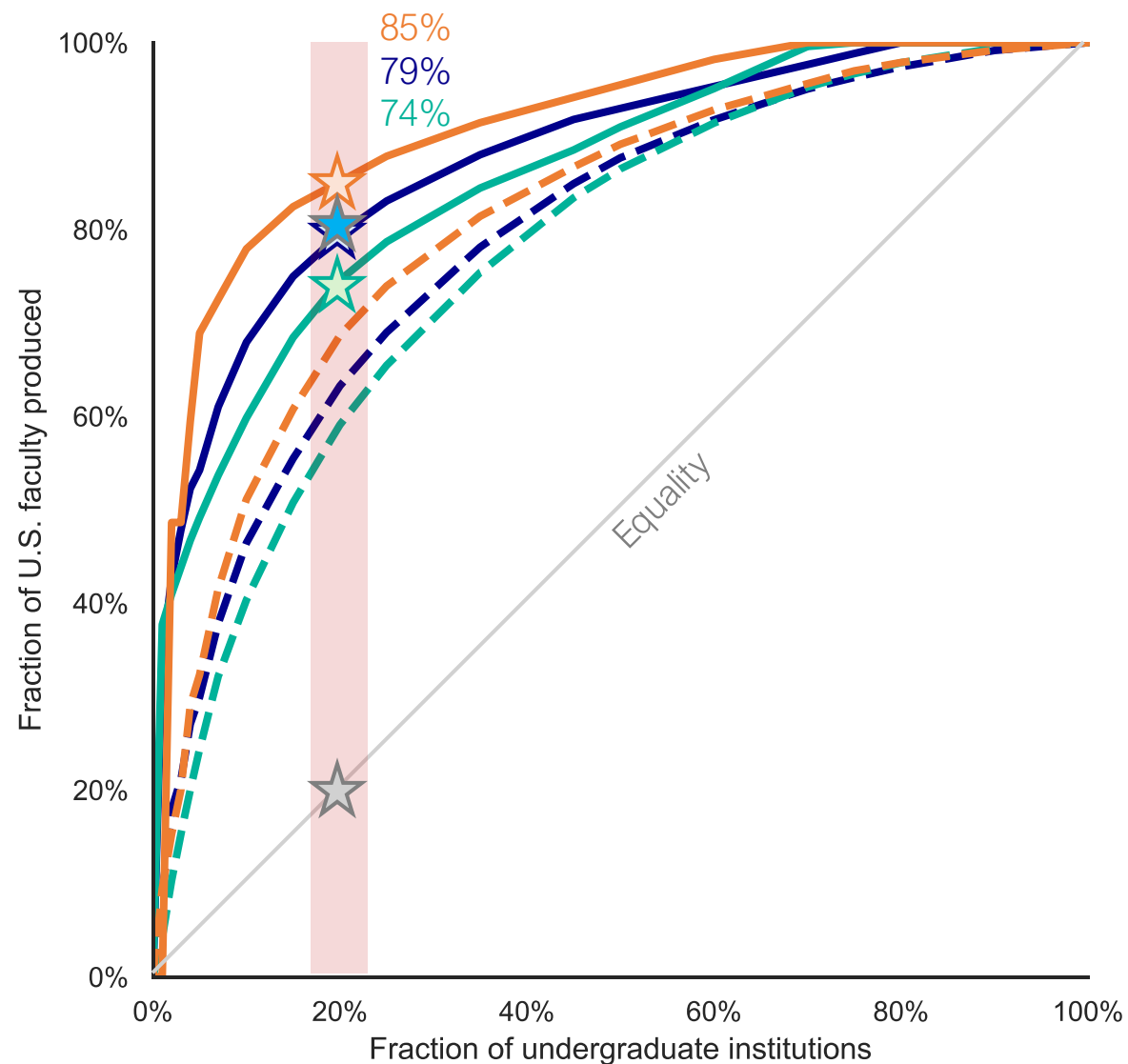
But this is a more
diverse set than PhD
institutions



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History
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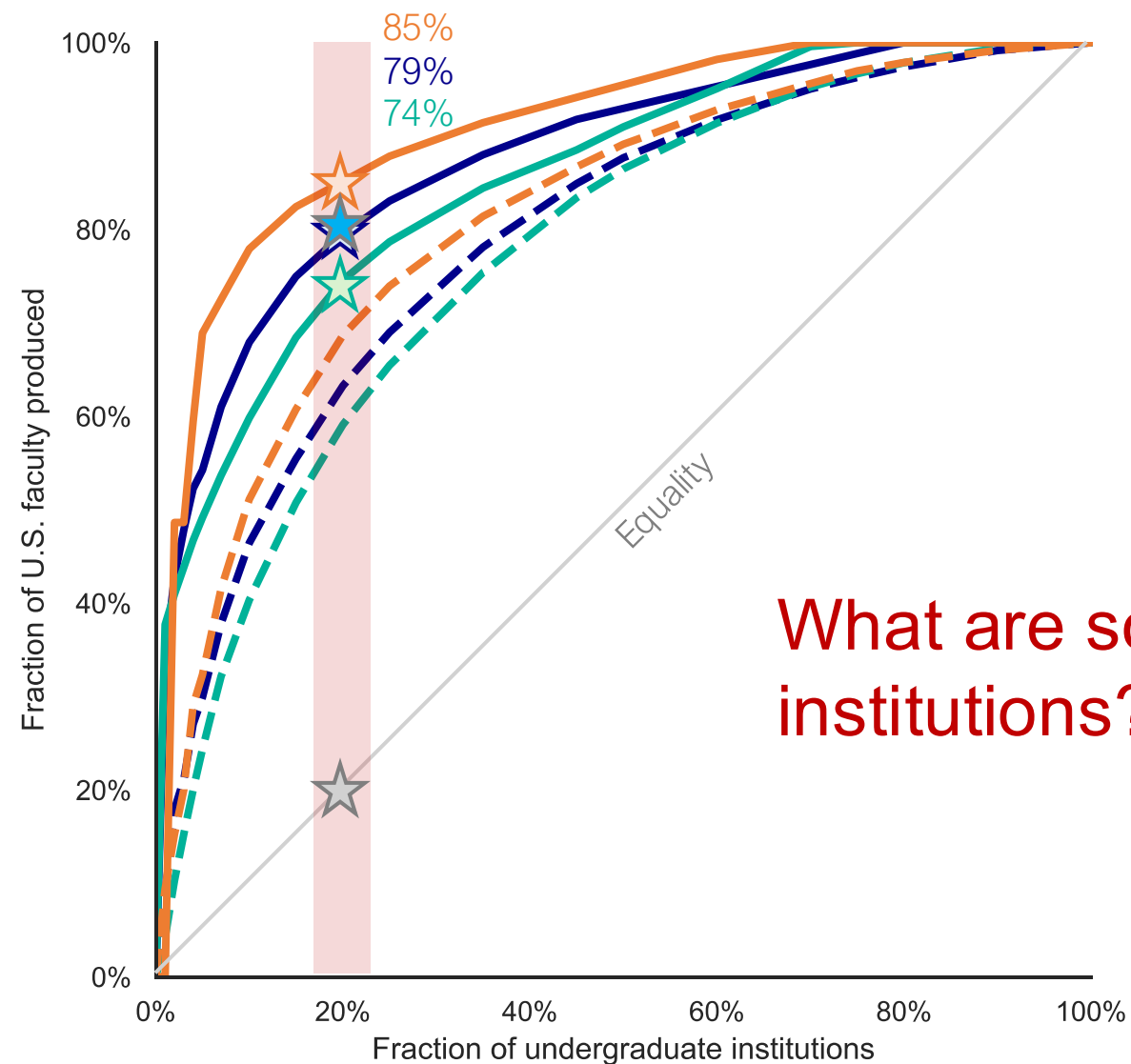


History
Computer Science
Business

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History
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History
Computer Science
Business

What are some of these
institutions?

Many professors did their undergrad
at one of **5 schools**:



HARVARD
UNIVERSITY



Massachusetts
Institute of
Technology

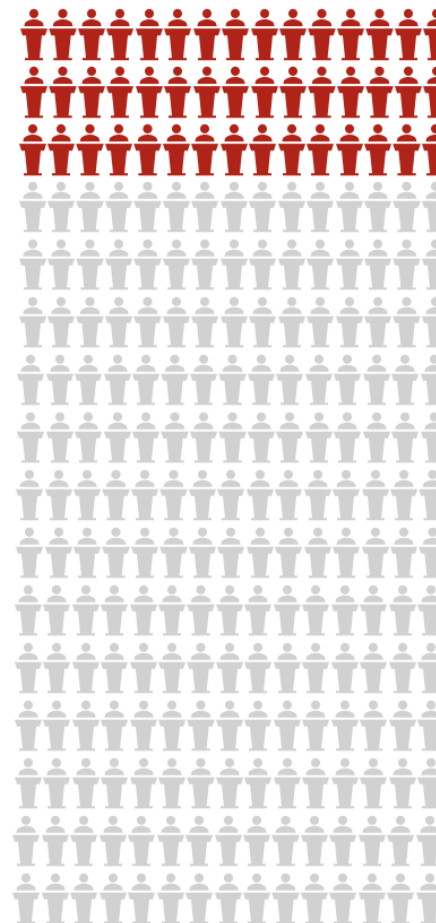
Yale

Berkeley
UNIVERSITY OF CALIFORNIA



Cornell University.

U.S.-trained U.S.
professors

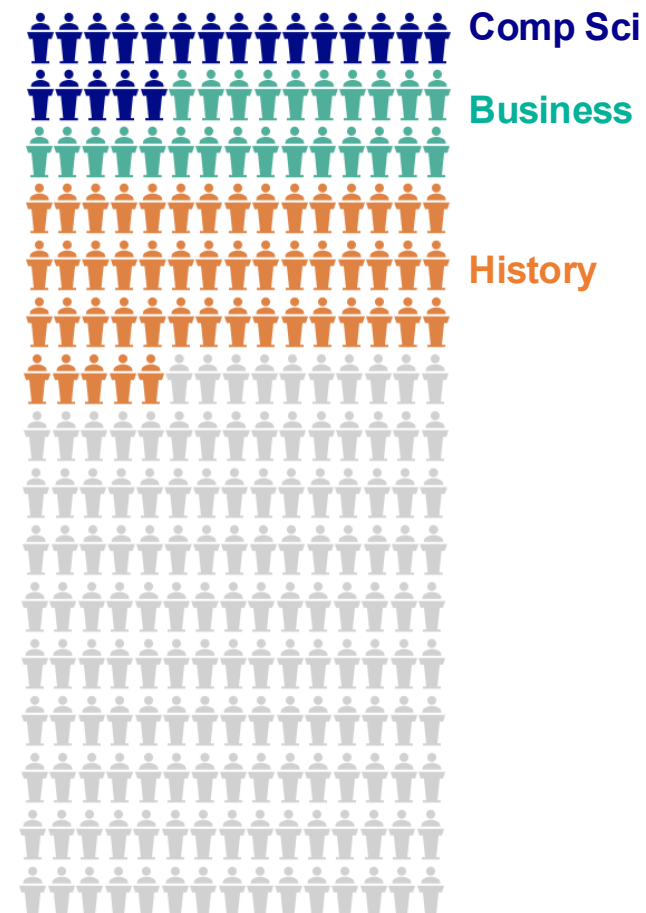


1 in 6

Large shares also did their undergrad at a
SLAC = Selective Liberal Arts College,
especially in **History**

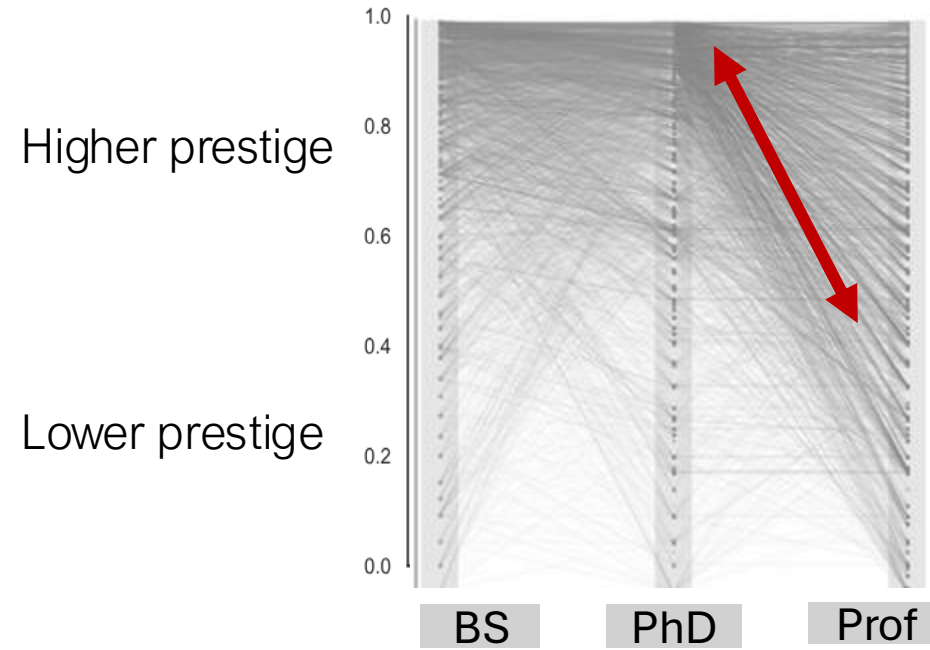


U.S.-trained U.S.
professors

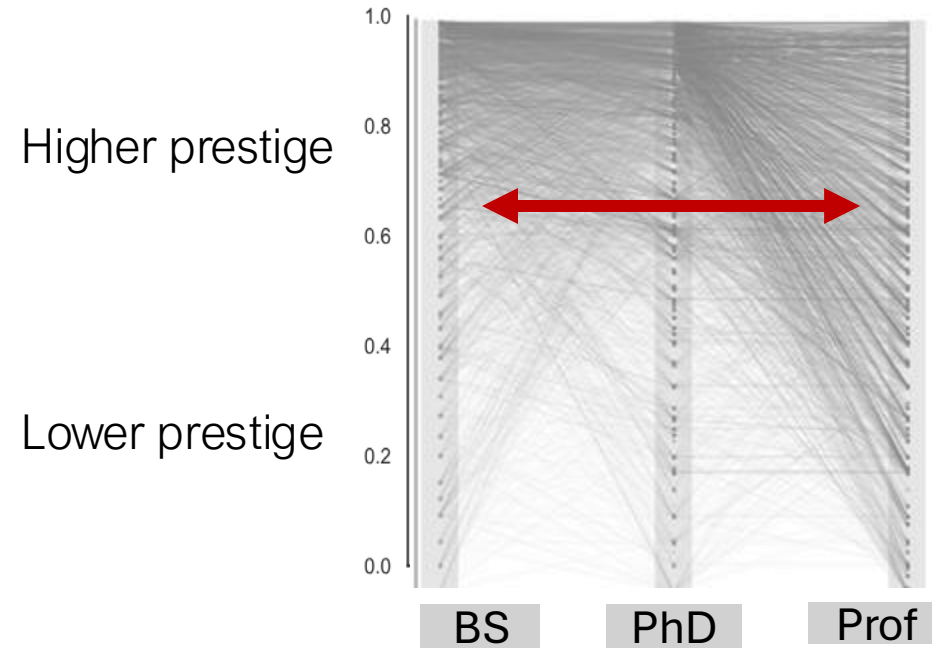


There is far more diversity of Undergrad origins than PhD origins.
Although it's still a pretty elite set of schools.

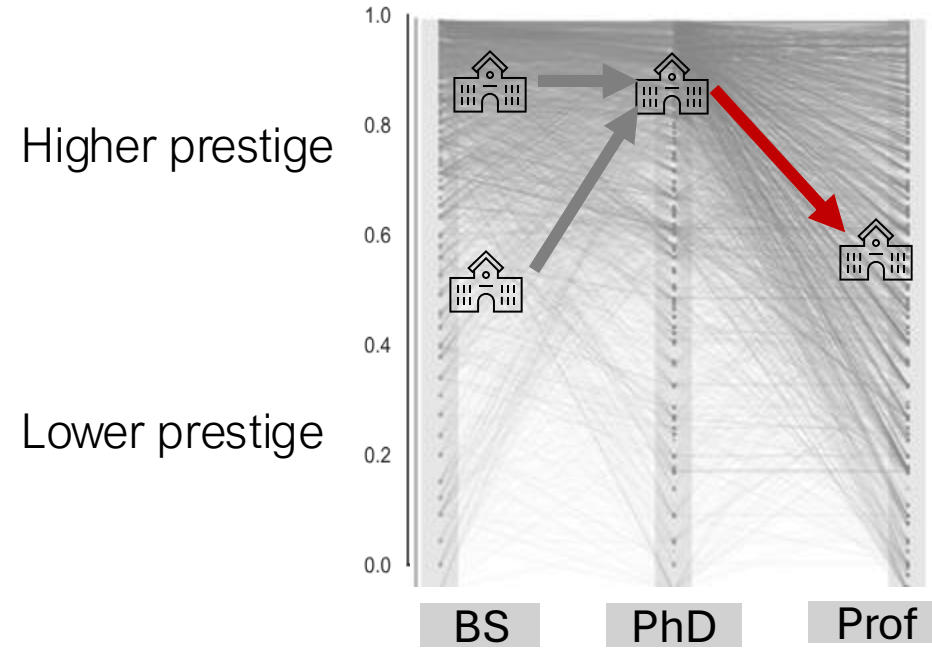
... but we want to know: *even controlling for PhD*, does where you do your undergraduate degree matter?



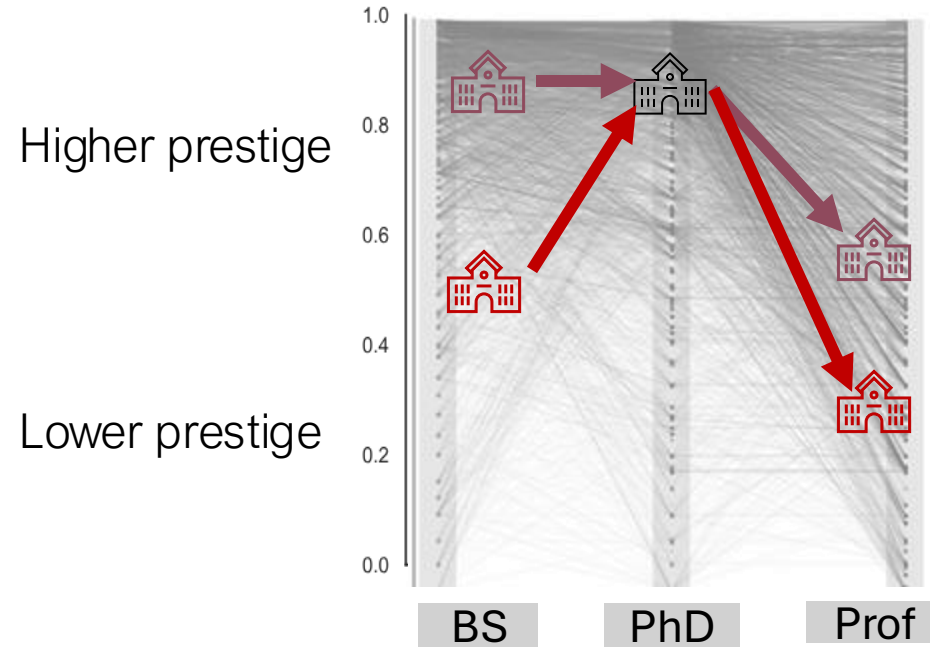
In all 3 fields,
there is clearly a
relationship PhD
-> faculty



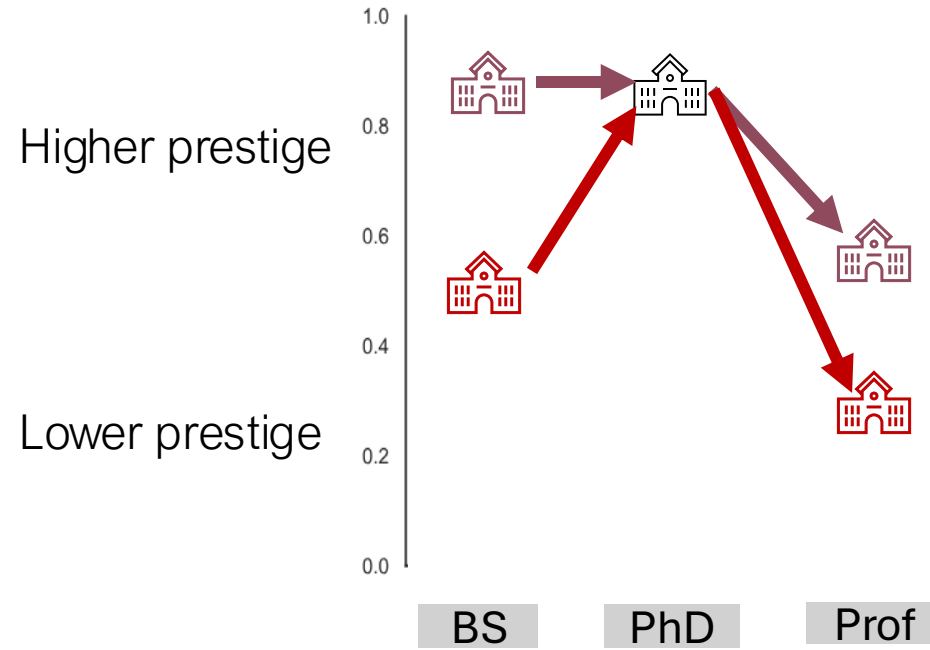
But is there also
one
BS -> faculty?



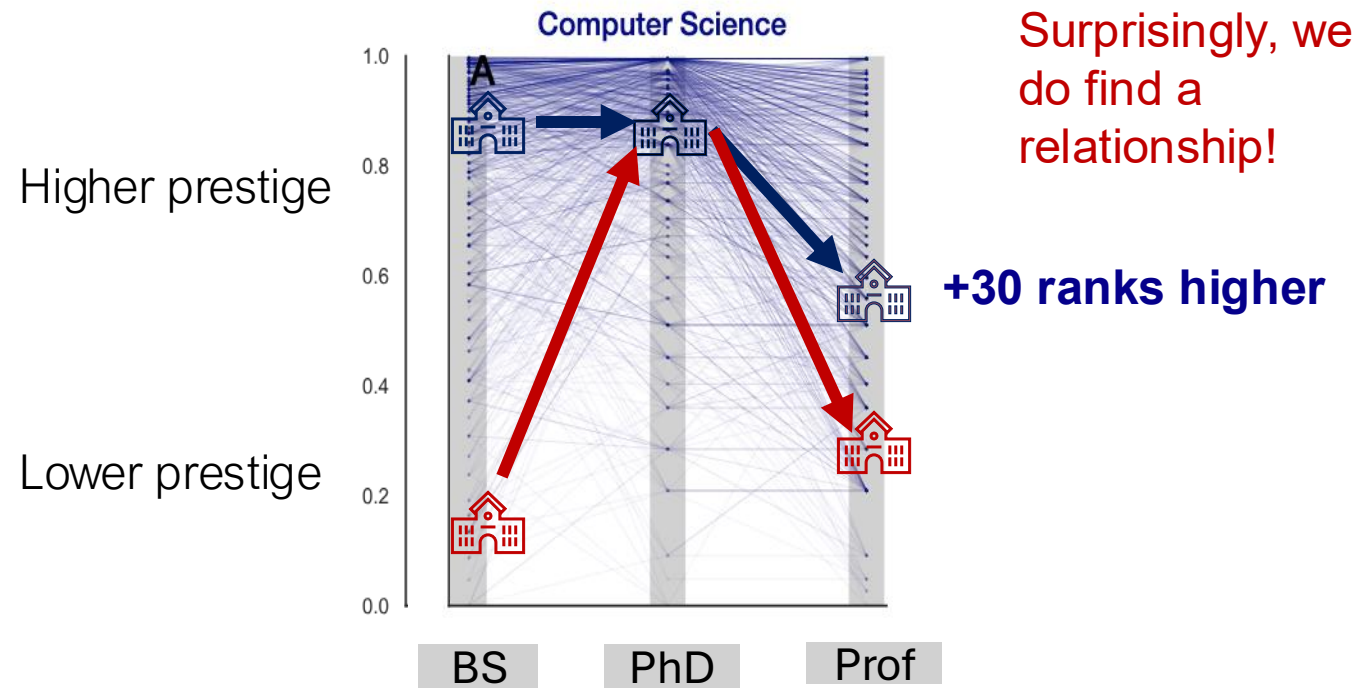
If no
relationship,
faculty
placement
should vary by
PhD but not BS
prestige

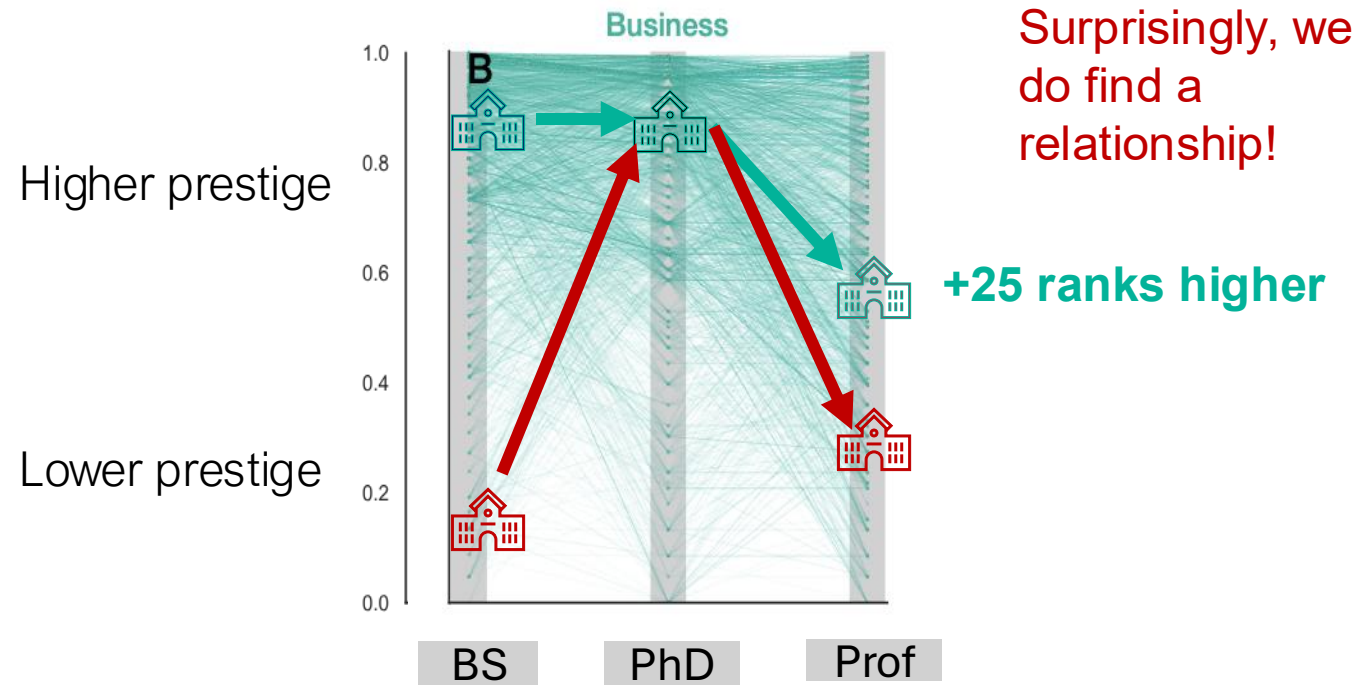


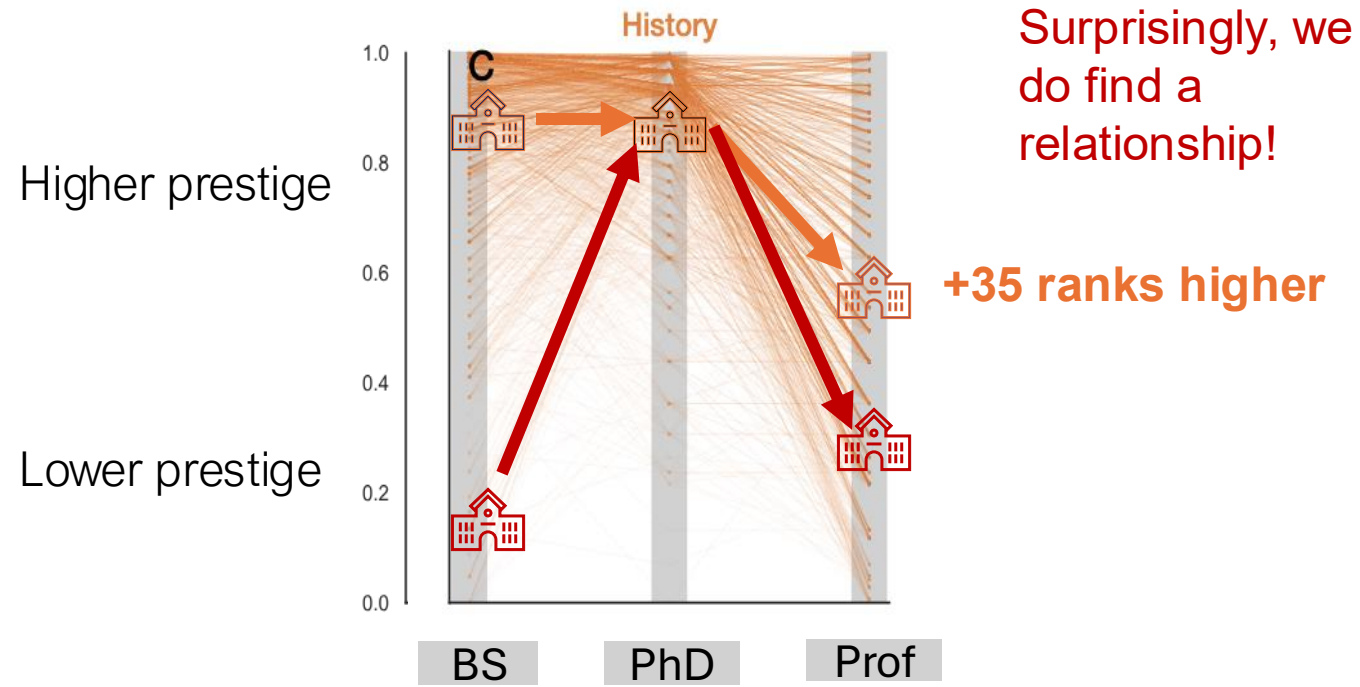
If relationship,
faculty
placement
should vary by
BS prestige
even when
matching on
PhD prestige

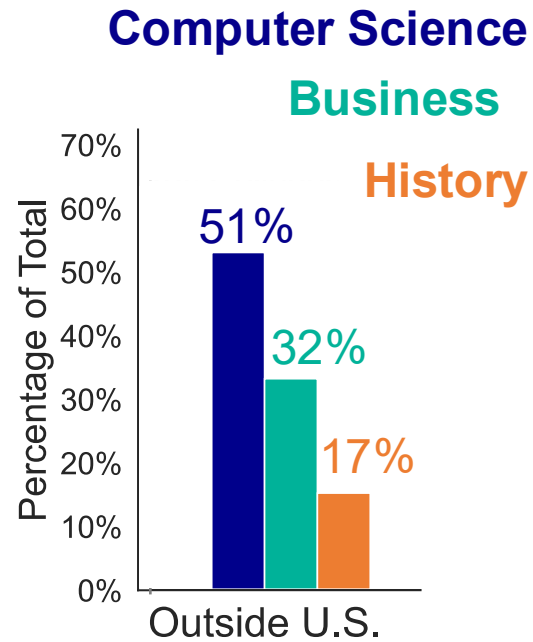


Surprisingly, we
do find a
relationship!







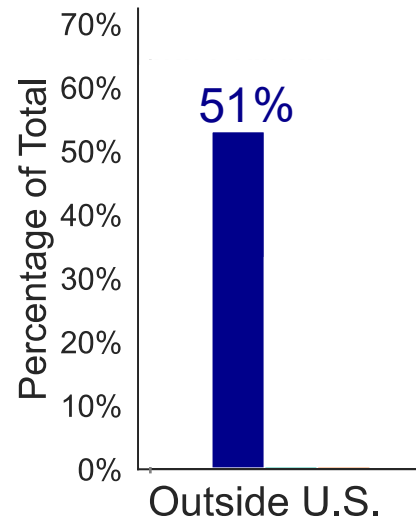


Large shares were trained outside the U.S.!
(MUCH larger than among PhDs)



Very few trained in South America & Africa

Computer Science

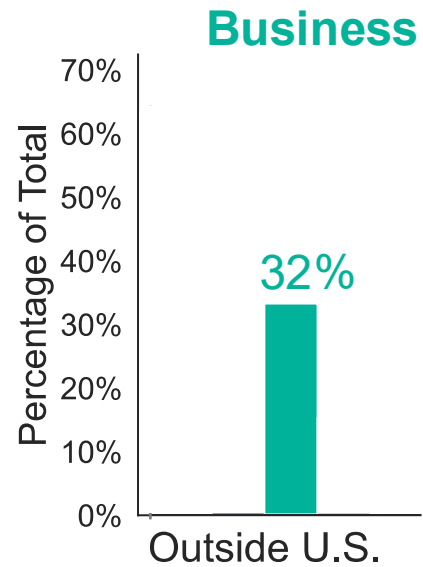


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Largest share from Asia
($> 50\%$)

1. China
2. India



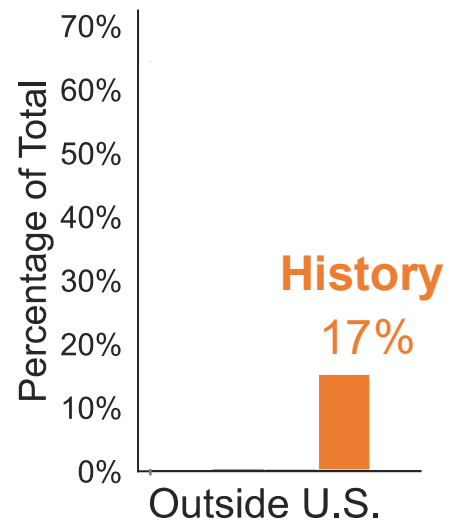
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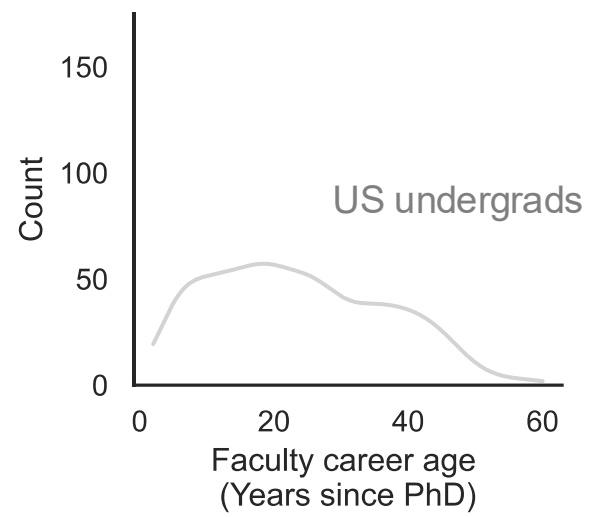
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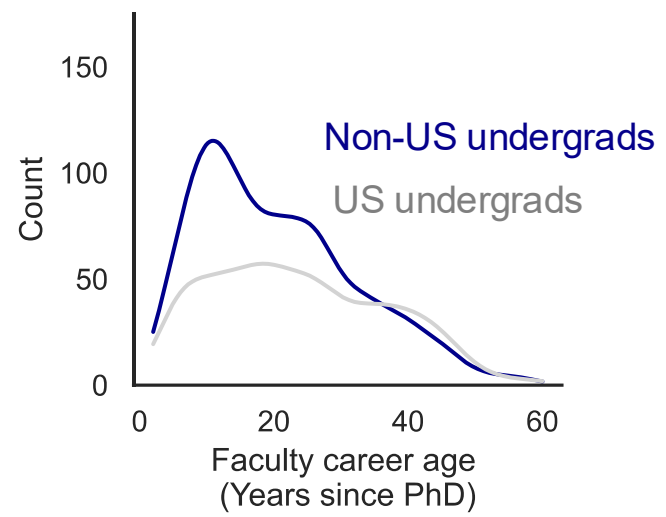
Largest share from Europe
($> 50\%$)

1. U.K.
2. Canada

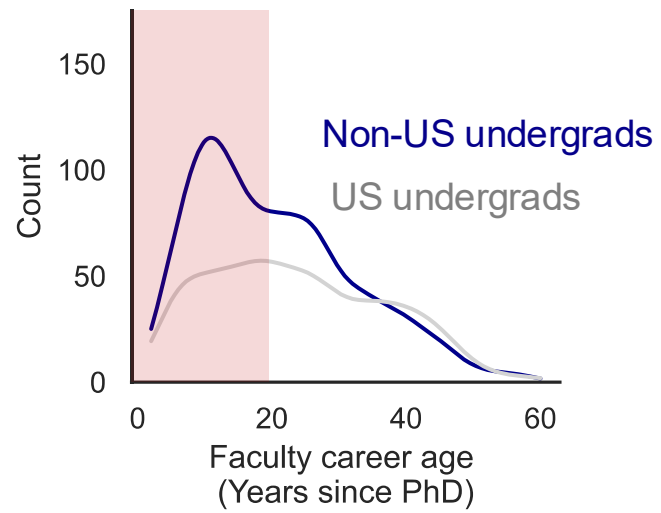
Computer Science



Computer Science

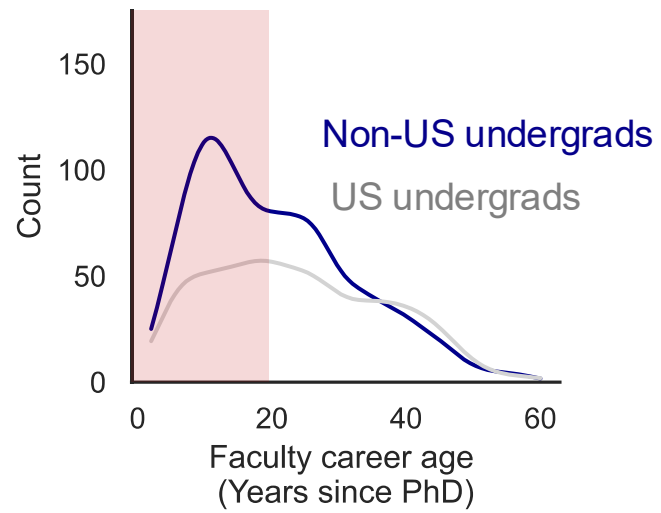


Computer Science

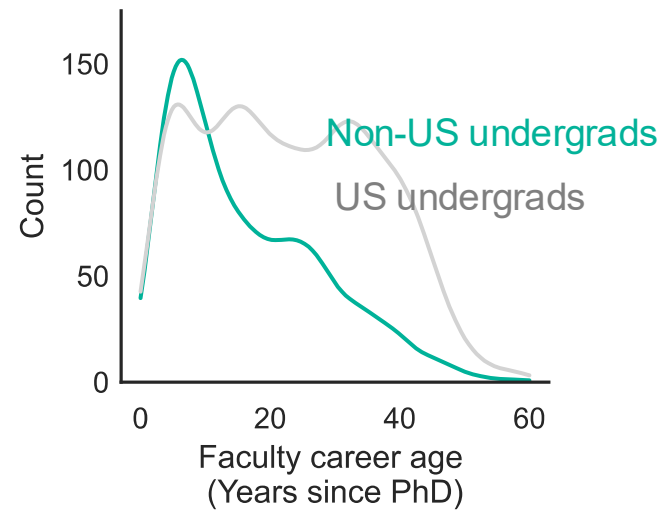


Most early-career CS
faculty did their undergrad
outside the U.S.!

Computer Science

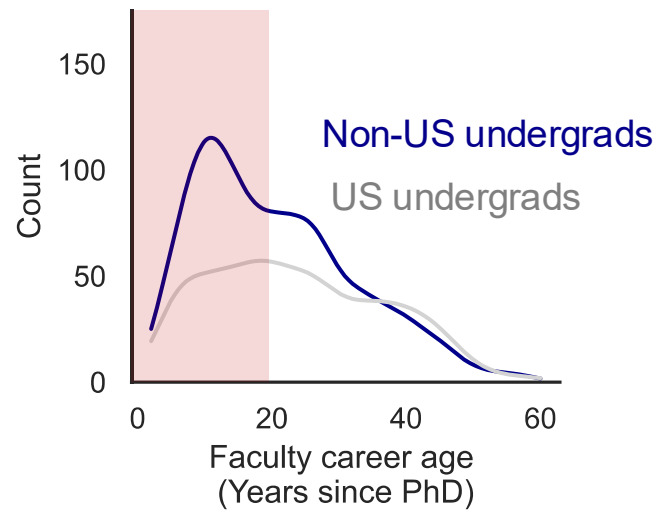


Business

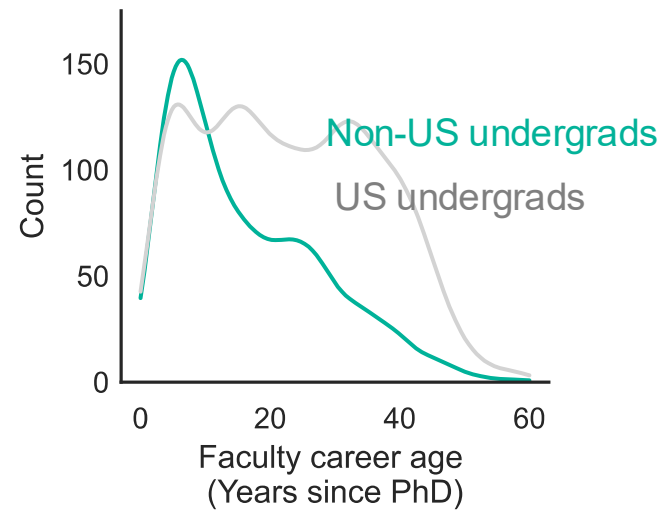


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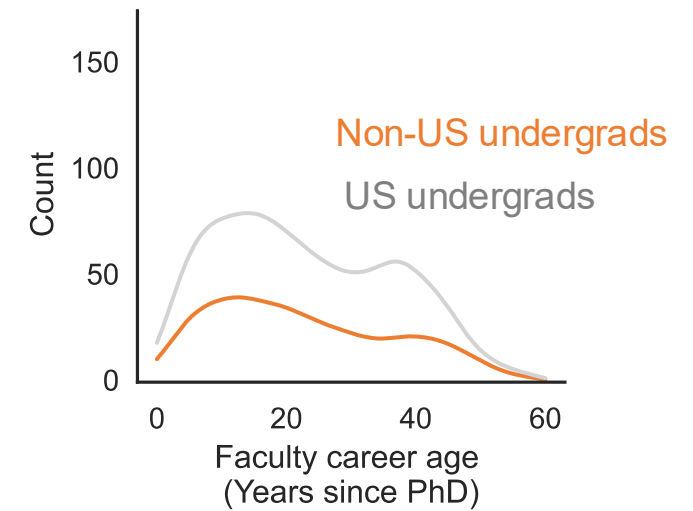
Computer Science



Business



History

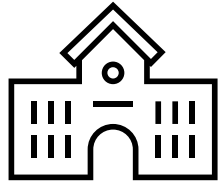


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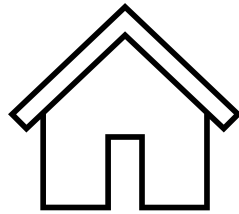
We showed that YES, after matching on PhD, undergraduate institution is still associated with faculty placement

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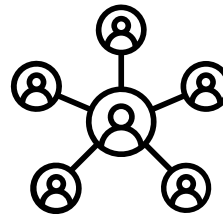
What could *explain* these correlations?



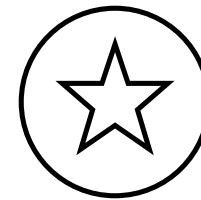
Meritocracy?



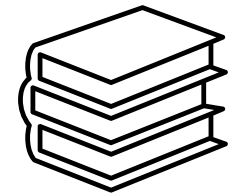
Socioeconomic
status?



Social
networks?



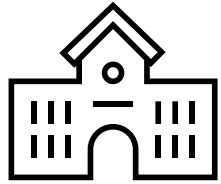
Cultural capital?



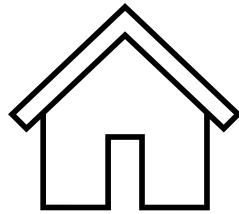
Undergraduate
major?

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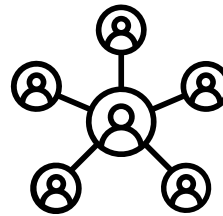
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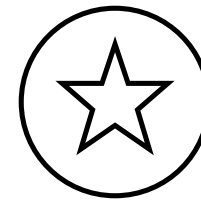
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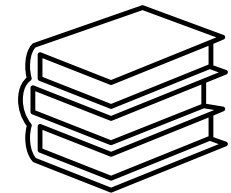
Socioeconomic
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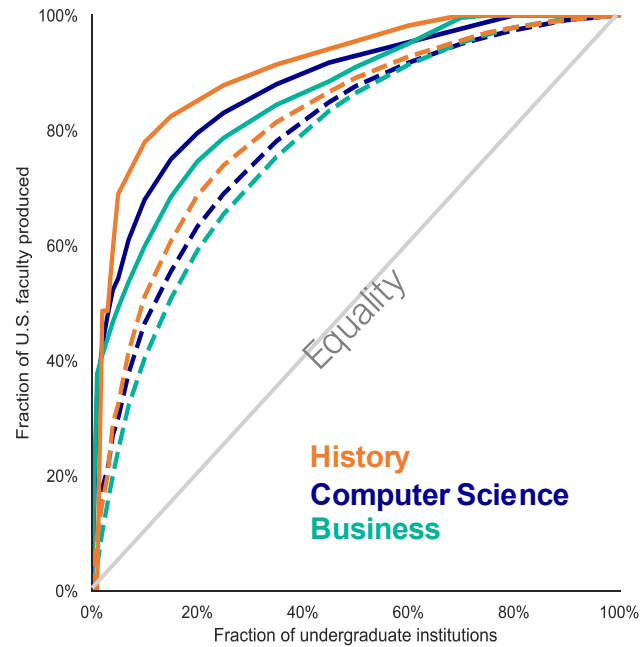
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Undergraduate
major?

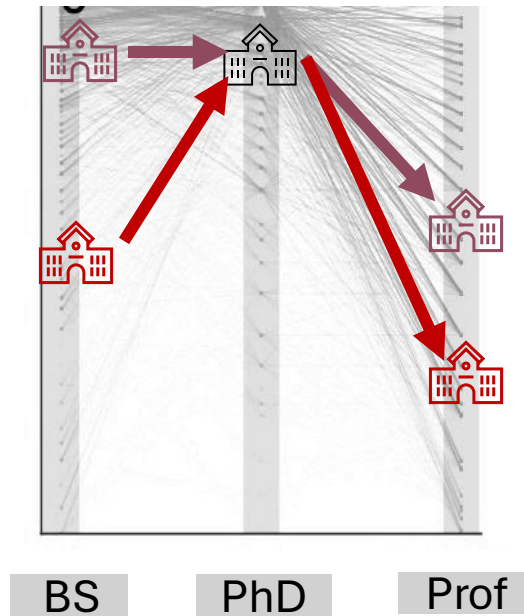
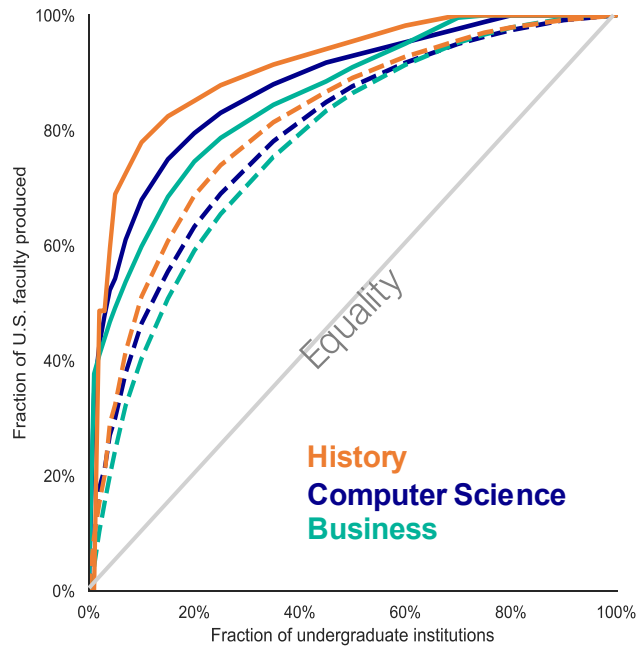
Data we have recently obtained access to from NCSES will help us untangle these hypotheses

A small share of elite
undergrad institutions train
U.S. faculty, but is much more
diverse than PhD institutions

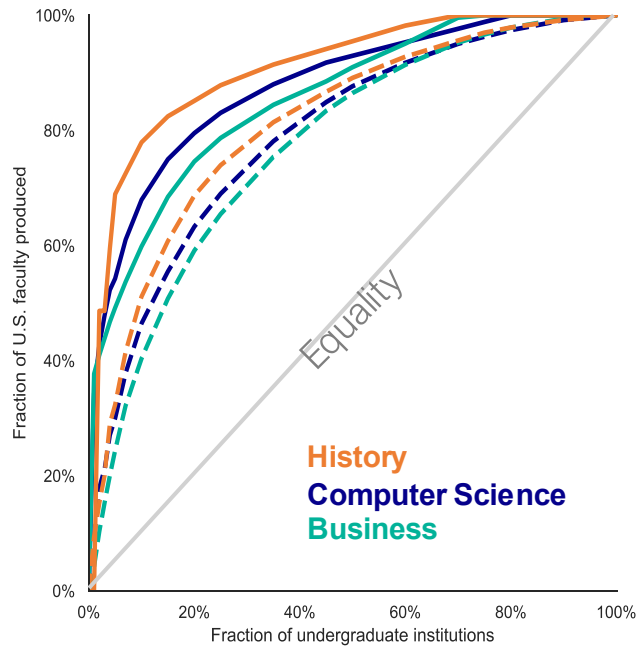


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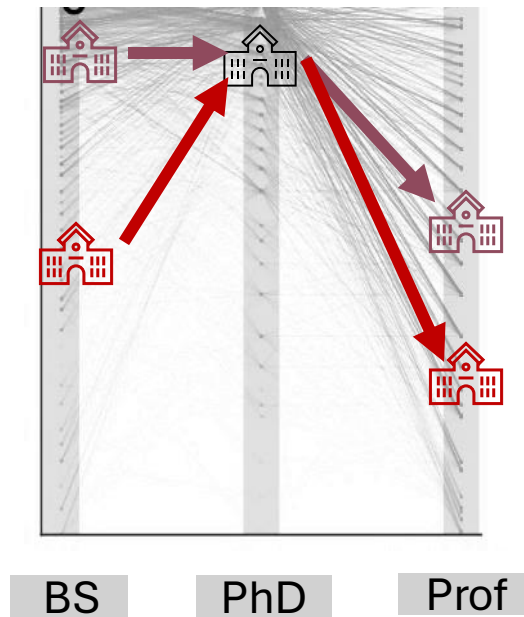
Undergraduate prestige is associated with faculty placement even among people from the same PhD program



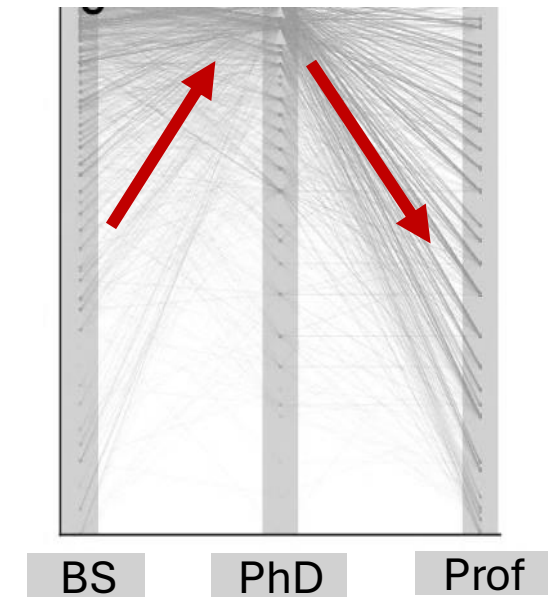
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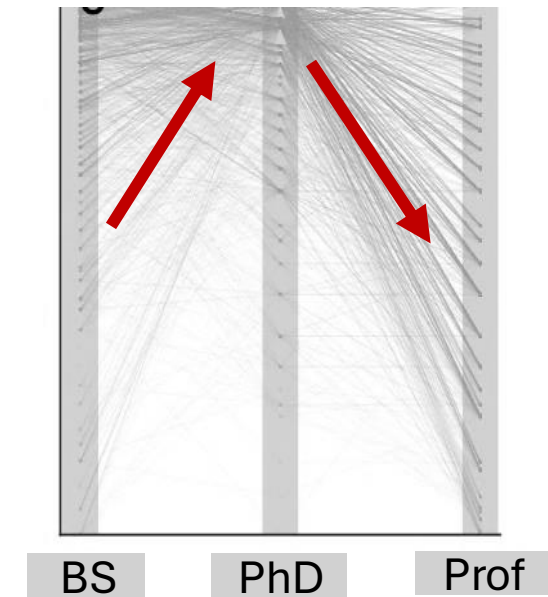
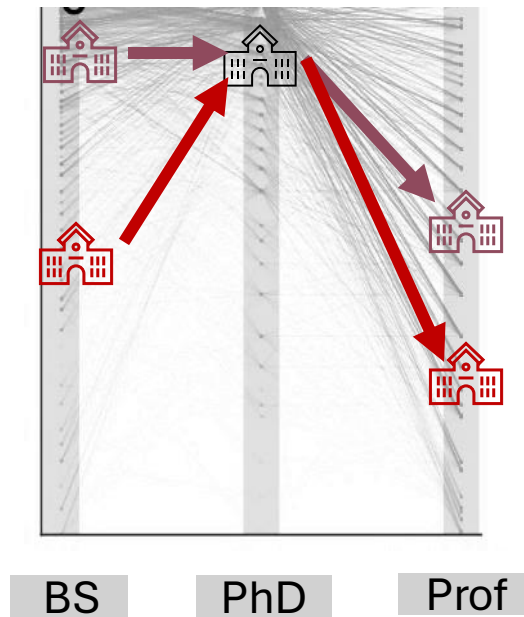
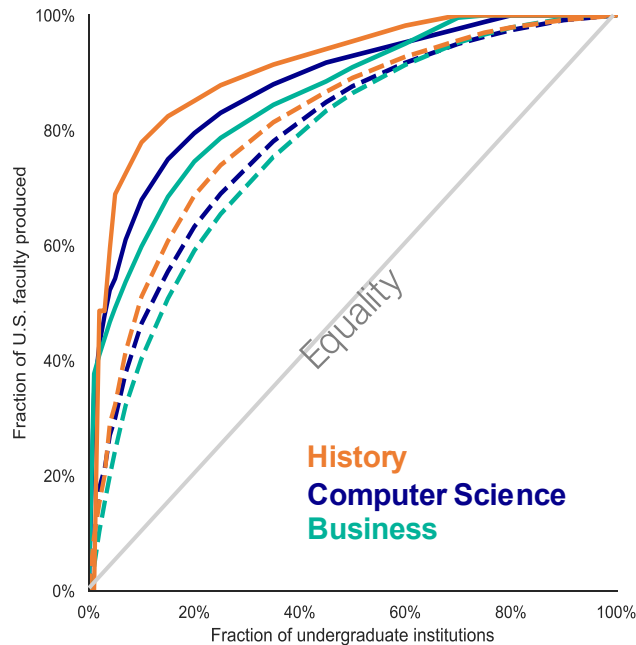
There is a strong bottleneck at the PhD level



A small share of elite undergrad institutions train U.S. faculty, but is much more diverse than PhD institutions

Undergraduate prestige is associated with faculty placement even among people from the same PhD program

There is a strong bottleneck at the PhD level



Many trends were strongest in **History**, a field that could potentially rely more heavily on undergraduate background as a form of cultural capital

Thank you

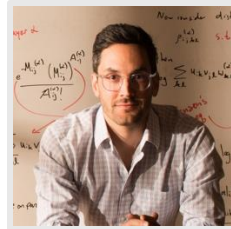
🏠 katiespoon.github.io/

🦋 kspoon.bsky.social

✉ katherine.spoon@colorado.edu



Eun Lee



Dan Larremore



Aaron Clauset



University of Colorado **Boulder**