

#SWDSS



NIH Scientific Workforce Diversity Seminar Series

# How Does Diversity Impact Science?

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# DISCRIMINATION AND DIVERSITY

# Economic theory of discrimination

- Taste-based preferences
  - Preference for people who are similar (“homophily”)
  - Employer’s or customers’ preferences
- Equilibrium
  - Wage differential
  - Under-representation
- Observational outcomes
  - Individuals from discriminated group must clear a higher bar
  - Discriminated group outperforms on average

Becker, Gary. (1957). *The Economics of Discrimination*. University of Chicago Press.  
Nobel Prize, 1992

# Example: Tokyo Medical School

- Discriminated against female applicants
- Target share of women per class: 30%
- Reduced women's scores on admission exams

The New York Times

# *Japanese Medical School Accused of Rigging Admissions to Keep Women Out*

By Austin Ramzy and Hisako Ueno

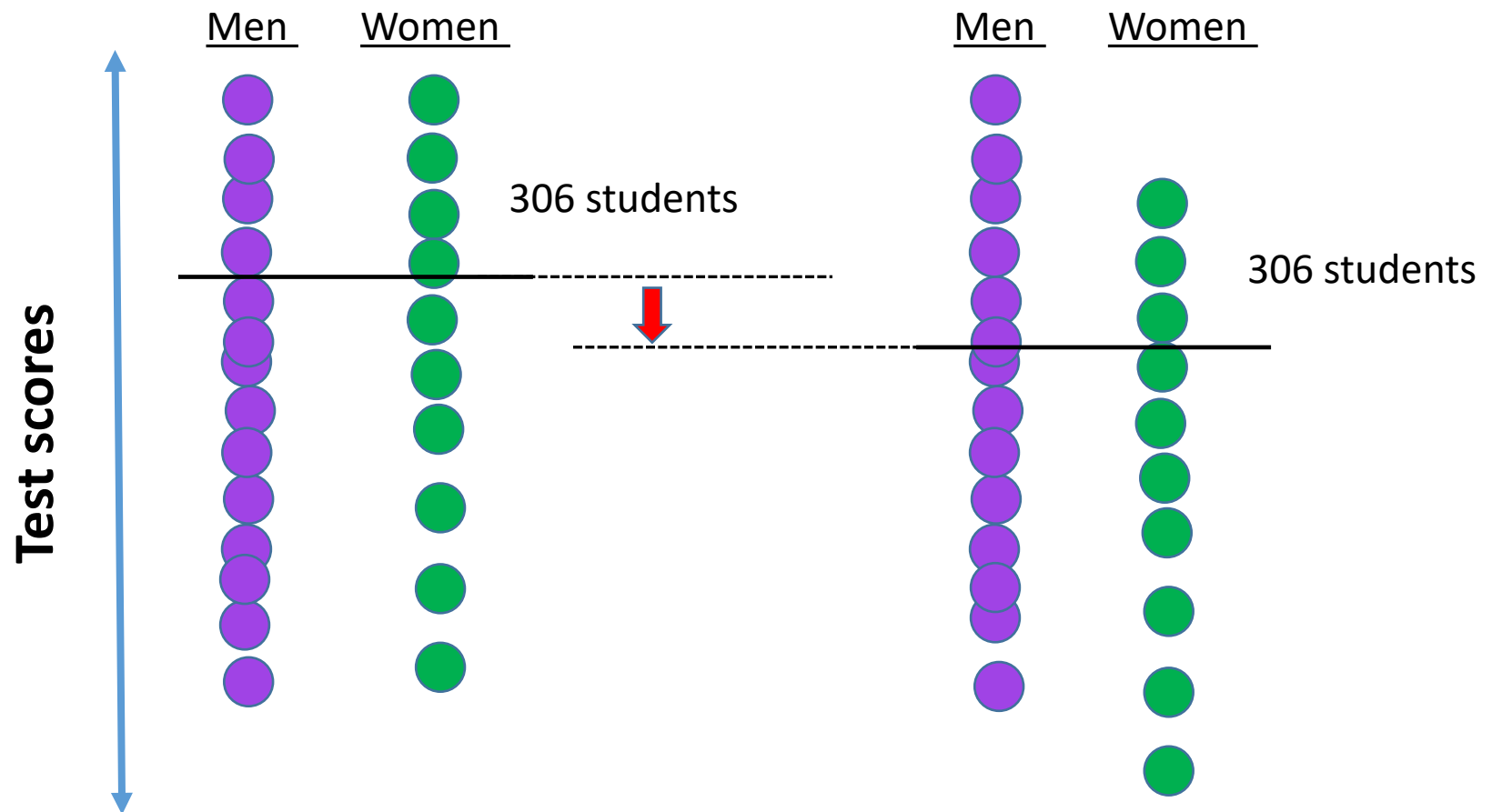
Aug. 3, 2018

TBS, a television network, cited an unnamed former university admissions official as saying the practice was commonplace among medical schools and that administrators did not see anything wrong with it.

Tokyo Medical University reduced the test scores of women to keep their numbers at about 30 percent of entering classes, the

Before tampering

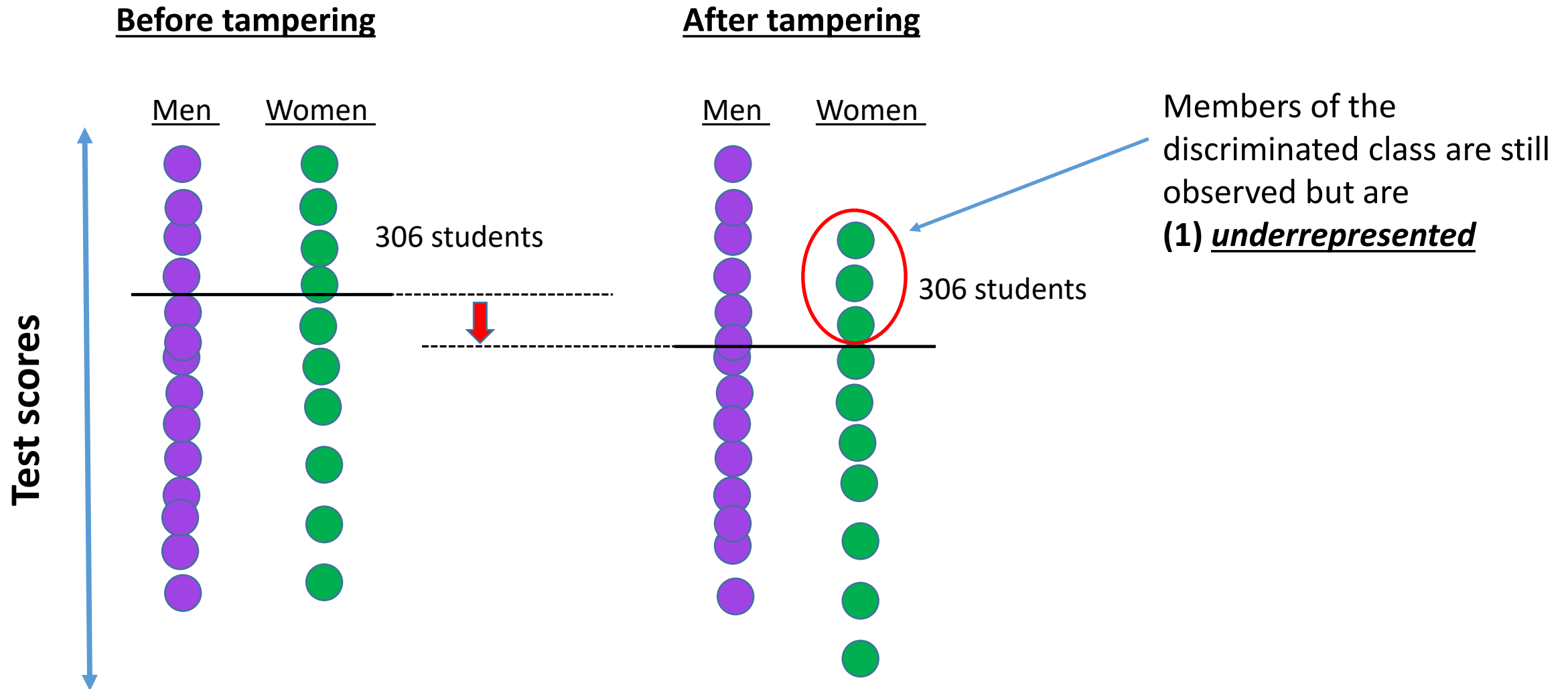
After tampering

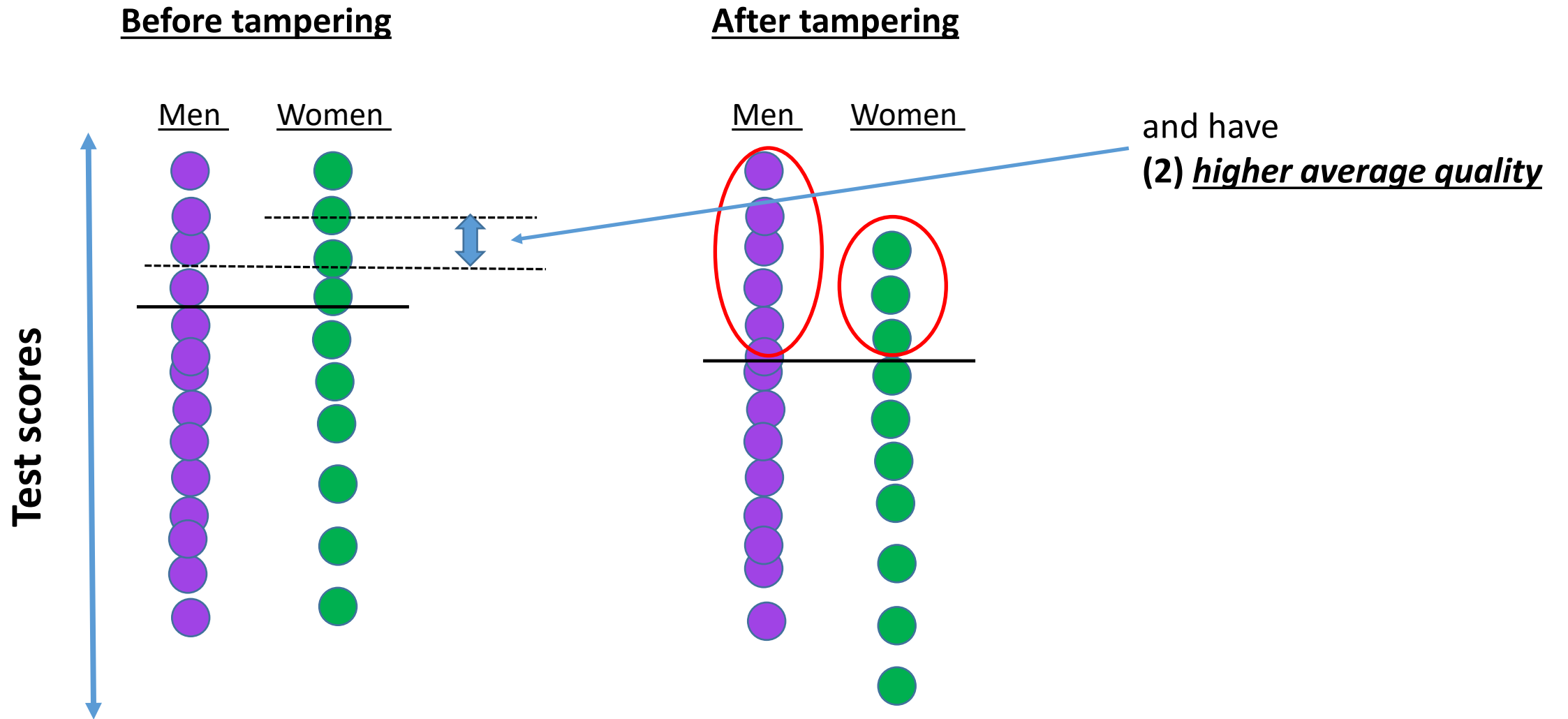


1596  
61%

1018  
39%

Target: 30%

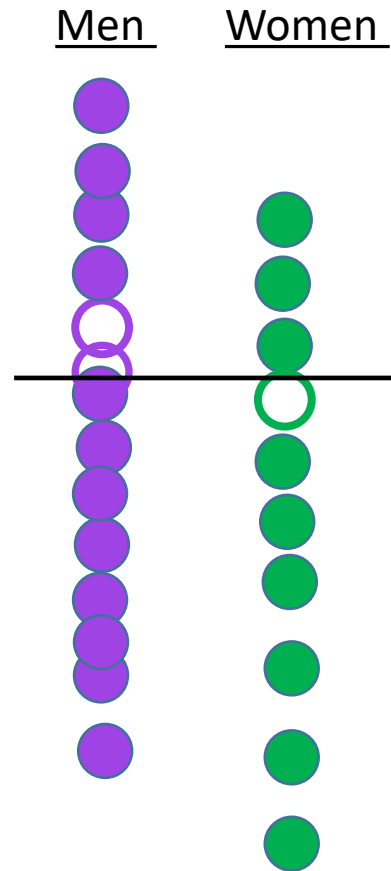
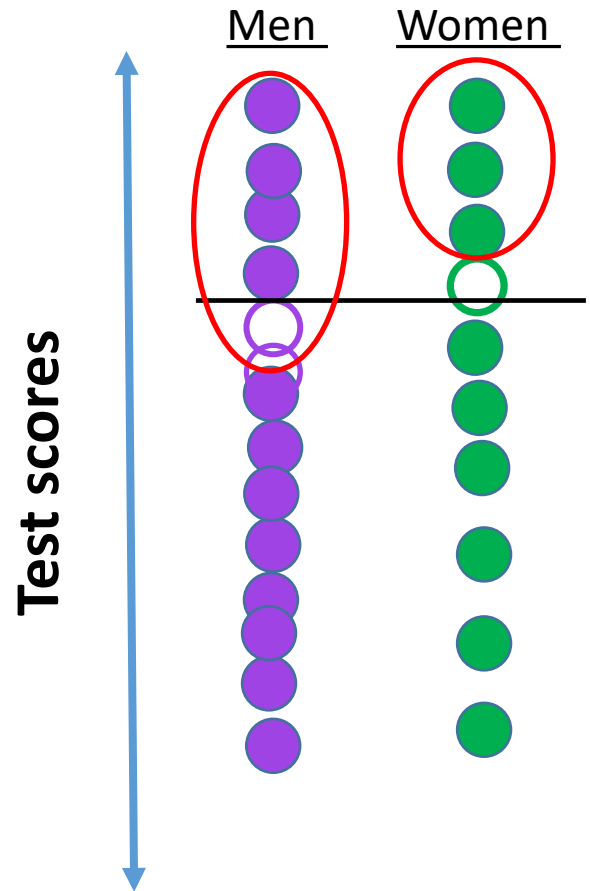


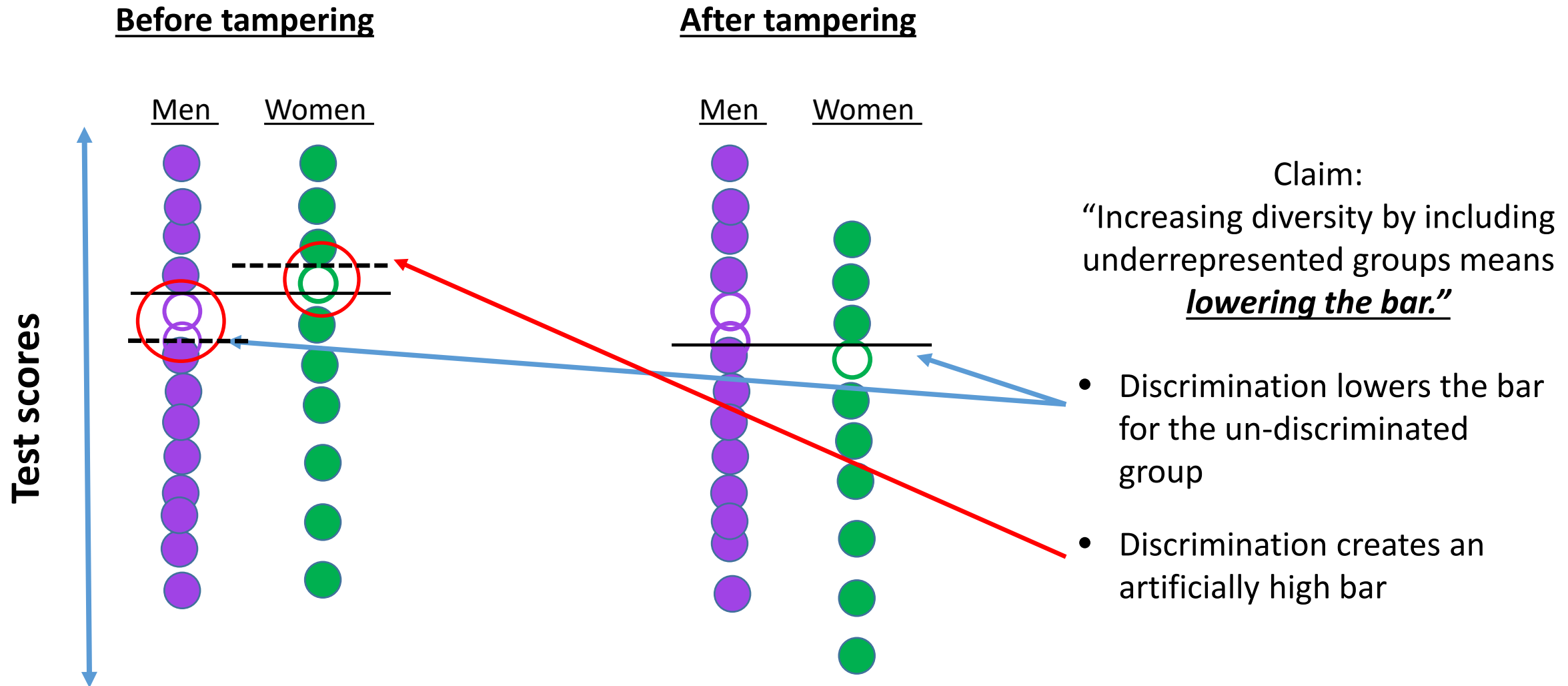


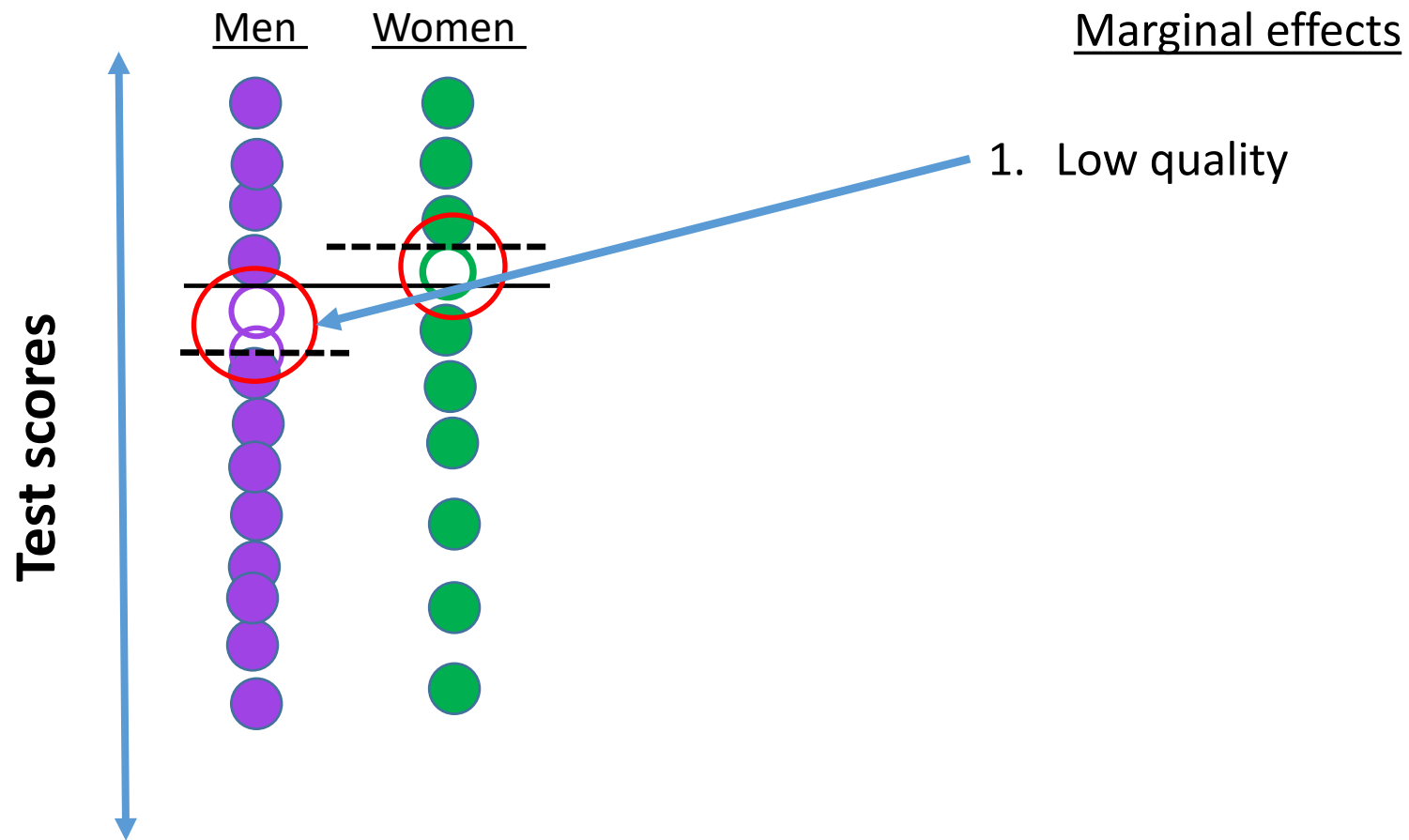


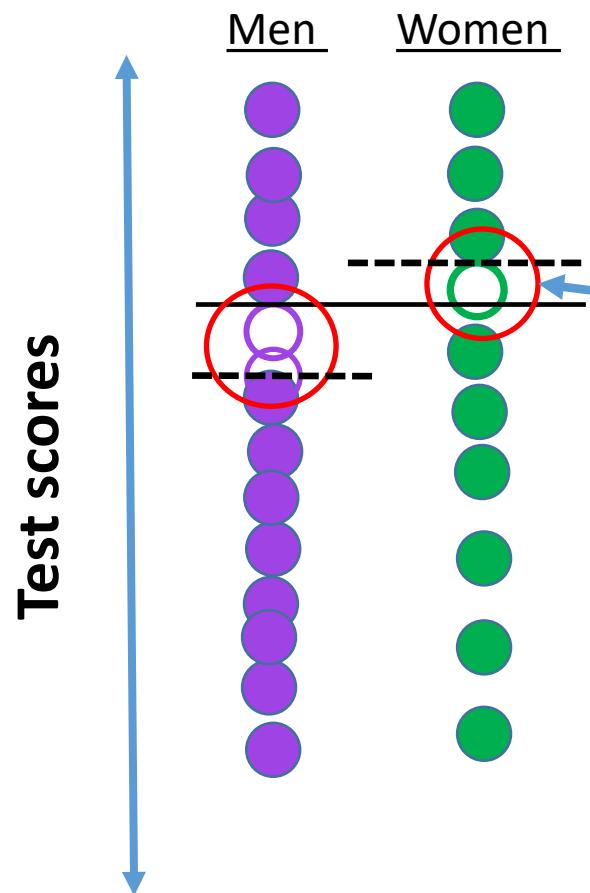
Before tampering

After tampering









Marginal effects

1. Low quality
2. Estimates of counterfactuals
  - Underrepresentation, drop out
  - “Lost Einsteins”

Cook L, Gerson J, Kuan J, (2022). Closing the innovation gap in pink and black. *Entrepreneurship and Innovation Policy and the Economy* and *NBER Working Paper 29354*.

Bell A, Chetty R, Jaravel X, Petkova N, Van Reenen J. (2019). Who becomes an inventor in America? The importance of exposure to innovation. *Quarterly Journal of Economics*



## Katalin Kariko: co-invented technology for mRNA COVID vaccines

Grad student, University of Szeged

Research position – terminated due to lack of funding

“Ineligible for funding” in Europe

Only able to get post-doc and adjunct professor positions

Unable to win grants—mRNA “was a backwater”

Passed up for promotions

Had to rely on collaborations with senior faculty

Still only an Adjunct Professor of Neurosurgery at Penn

The Vast Promise of mRNA Technology, *Wall Street Journal*, Dec 3, 2021

# QUESTIONS?





| Thank you for joining us!



[diversity.nih.gov](https://diversity.nih.gov)



[@NIH COSWD](https://twitter.com/NIH_COSWD)

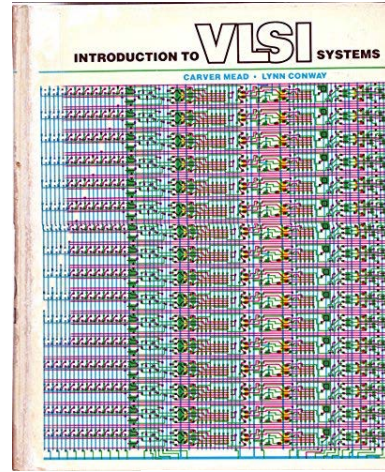
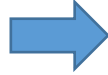


[@NIH Chief Officer for Scientific Workforce Diversity](https://www.linkedin.com/company/nih-chief-officer-for-scientific-workforce-diversity)



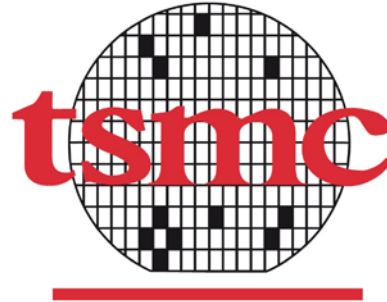
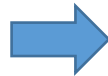
**National Institutes of Health**

*Office of the Director  
Chief Officer for Scientific Workforce Diversity*



Kuan J, West J (2022). How DARPA Modularized the Semiconductor Ecosystem, *Research Policy* forthcoming.

Lynn Conway introduced semiconductor design rules in text book (with Carver Mead)



Marina Chen introduced the idea of semiconductor “foundries” to Taiwan



Jodi Shelton co-founded Global Semiconductor Alliance which stabilized the fabless semiconductor business model



# Counterfactuals – diverse solutions

- SBIR program - Casting a wider net to solve a new problem
  - Reached out to non-traditional disciplines
  - Resulted in more women and minorities, first-time applicants
- Contributions from non-traditional sources