

# Women in STEM

**Workshop**

**Prof. Amso**

1. <https://www.scientificamerican.com/article/covid-has-laid-bare-the-inequities-that-face-mothers-in-stem/>
2. <https://www.pnas.org/content/pnas/116/10/4182.full.pdf>
3. <https://www.aauw.org/resources/research/the-stem-gap/>
4. <https://www.ceeol.com/search/article-detail?id=412569>

# **Why STEM?**

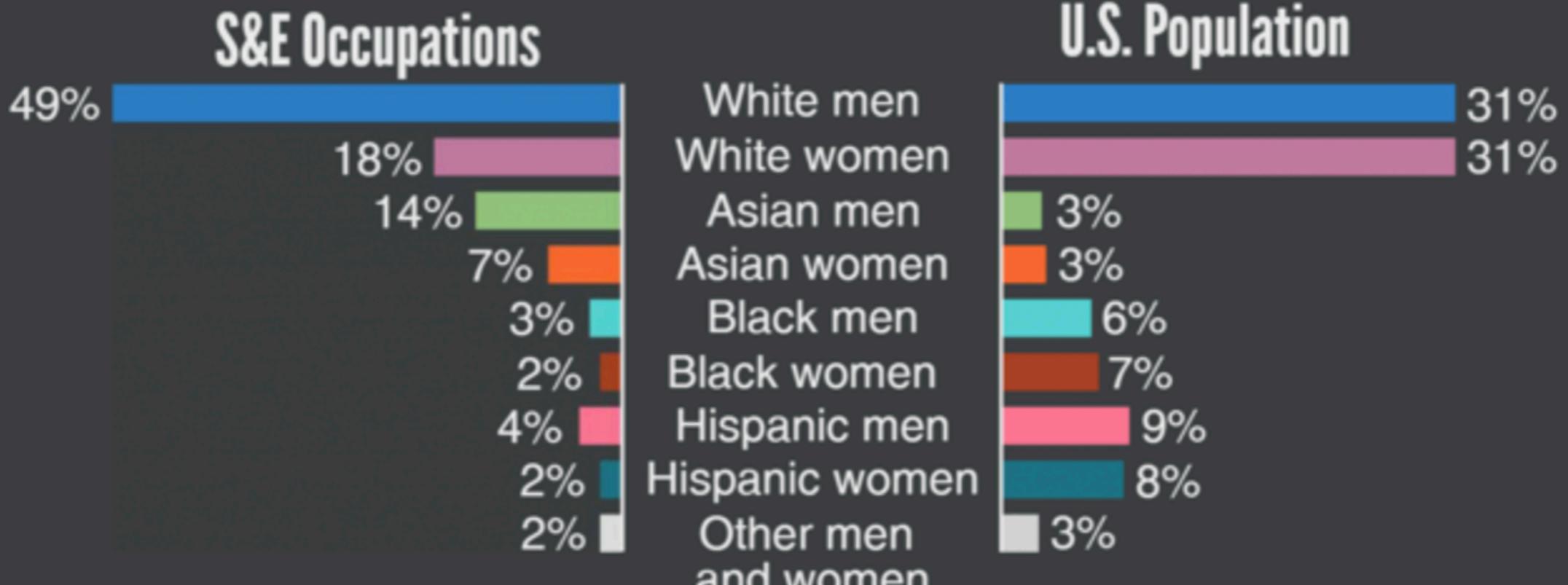
# STEM Pays Off

1. According to the Education Commission of the States, STEM jobs are projected to grow 13% between 2017 and 2027. In contrast, all other jobs are expected to grow by only 9% during the same period.
2. According to the Bureau of Labor Statistics (BLS), the median annual salary for STEM occupations in 2019 was \$86,980, \$48,820 more than non-STEM occupations.

# So why are women so underrepresented?

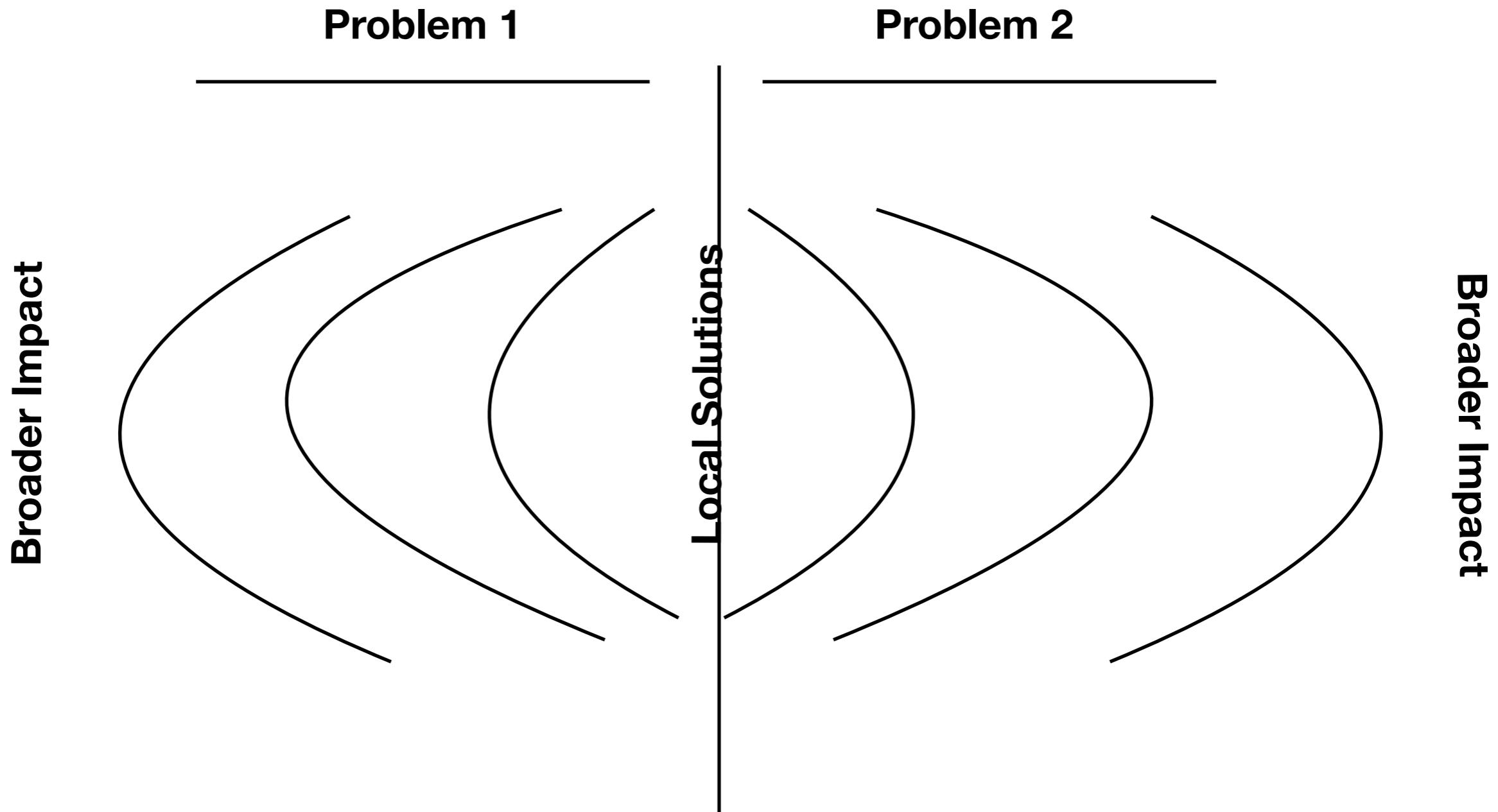
## Workers in science and engineering occupations

In 2015, women and some minority groups were represented less in science and engineering (S&E) occupations than they were in the U.S. general population.



Source: National Center for Science and Engineering Statistics, National Science Foundation  
Women, Minorities, and Persons with Disabilities in Science and Engineering: 2017  
<https://nsf.gov/statistics/wmpd/>

# Workshop: What are the problems women face in STEM?



# **WHY STEM?**

# Bottom Line

- STEM jobs pay more and are faster growing in terms of availability and income potential (pay ~26% more than non-STEM).

- What are the problems women face in STEM?

## STEM Fields



## Other Fields

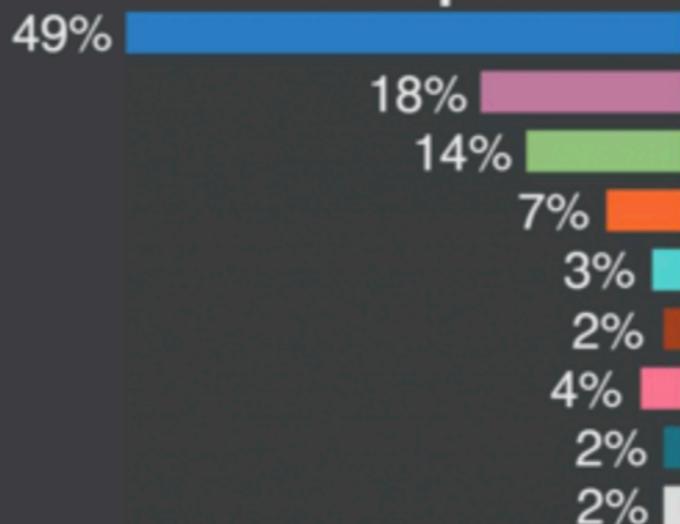


Underrepresented

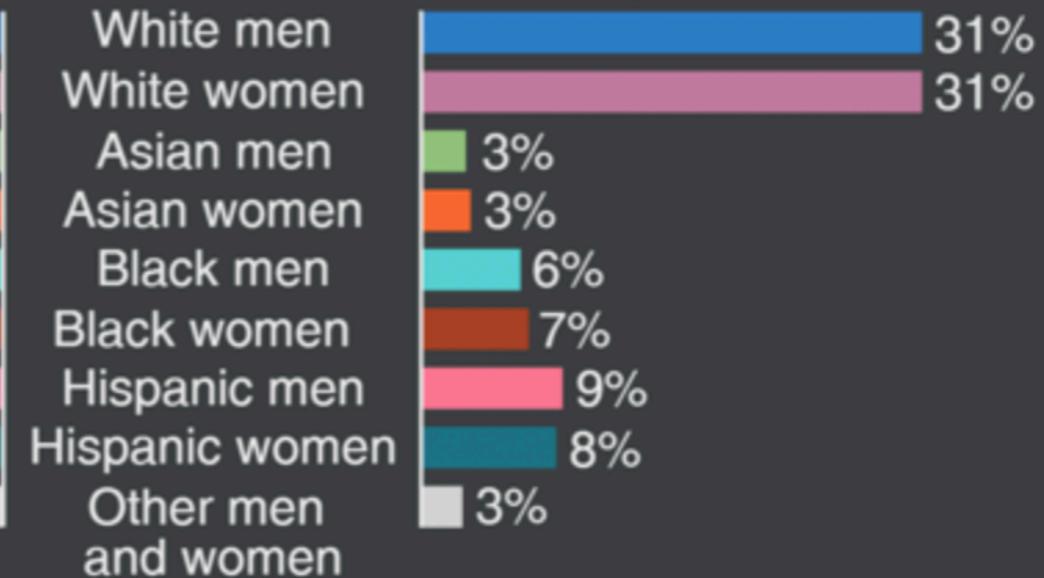
# Workers in science and engineering occupations

In 2015, women and some minority groups were represented less in science and engineering (S&E) occupations than they were in the U.S. general population.

## S&E Occupations



## U.S. Population



Source: National Center for Science and Engineering Statistics, National Science Foundation  
Women, Minorities, and Persons with Disabilities in Science and Engineering: 2017  
<https://nsf.gov/statistics/wmpd/>

Like every *ism*, it's institutional structure that brings about and protects these social injustices.



## Underpaid

MENU ▾

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# Scientists' salary data highlight US\$18,000 gender pay gap

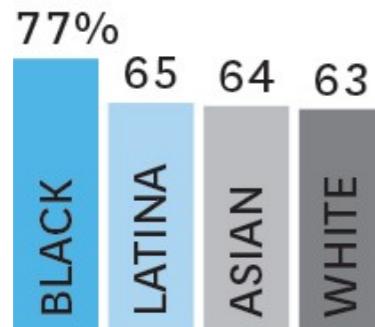
*Female PhD recipients in the United States expect to earn less than male colleagues.*



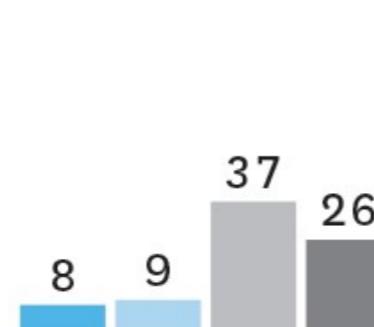
# Of those small percentages

## PERCENT OF U.S. WOMEN IN STEM WHO REPORT...

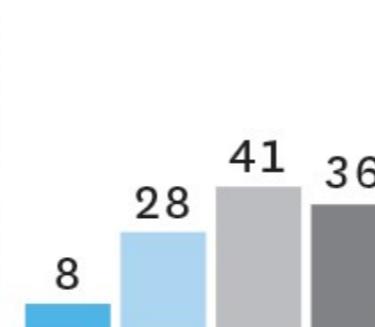
having to provide more evidence of competence than others to prove themselves.



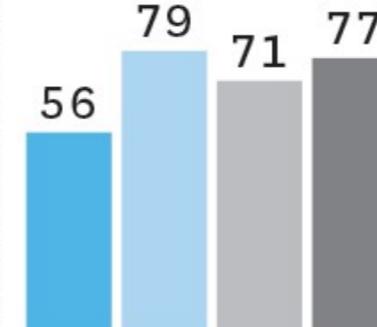
that colleagues have suggested they should work fewer hours after having children.



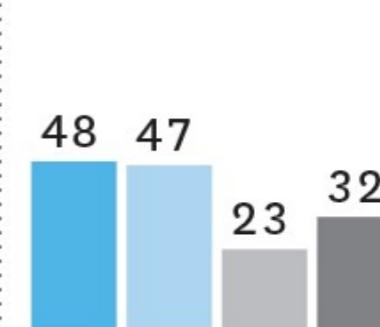
that at work, they find themselves pressured to play a stereotypically feminine role.\*



that women in their work environments support one another.



they've been mistaken for either administrative or custodial staff.



\*SUCH AS “OFFICE MOTHER” OR “DUTIFUL DAUGHTER.”

SOURCE JOAN C. WILLIAMS, KATHERINE W. PHILLIPS, AND ERIKA V. HALL

HBR.ORG

## Underestimated

# What are the causes?

- Implicit Bias (bias by individuals)
- Academic Culture (institutional culture bias)
- Linked

Source: <https://www.bestcolleges.com/resources/women-in-stem/>

# Universities love their established traditions and celebrate their history



# BUT

Historically, universities were created to educate rich, white men.

- High standardized test scores (can afford test prep)
- Excellent prior networking experiences (and so rec letters)
- Private school education (personalized education)
- Time to commit to school work (no need to take time to work to pay for education)
- Not childbearing (BIG ONE for older WIS)

# *Yet, myth of Meritocracy is that disparities are about hard work and intelligence*

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# Implicit Bias -

**"Women need to behave in masculine ways to be seen as competent - but women are expected to be feminine"**

**Joan C. Williams**  
UC Hastings Professor of Law



*Source: <https://www.bestcolleges.com/resources/women-in-stem/>*

# Implicit Bias -



**These feelings in turn dissuade some women in STEM from pursuing jobs in the field, and encourage some women already in this field to seek other passions.**

Source: <https://www.bestcolleges.com/resources/women-in-stem/>

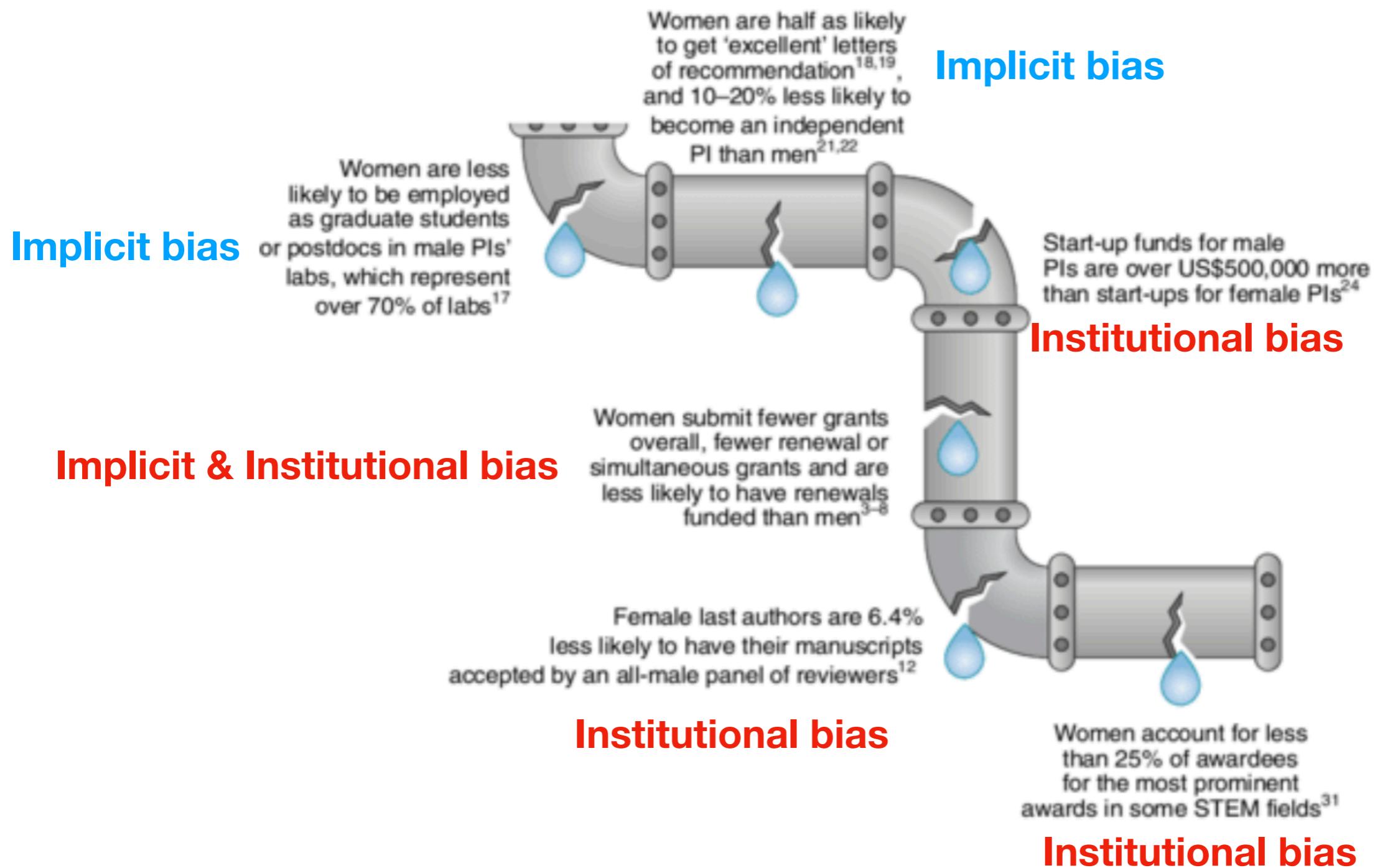
# Implicit Bias-

**“Someone would ask about a problem, and I'd give them the answer I got and the process I went through. Then they'd ask another guy, get the same answer, and go, 'oh ok' and write that down.”**

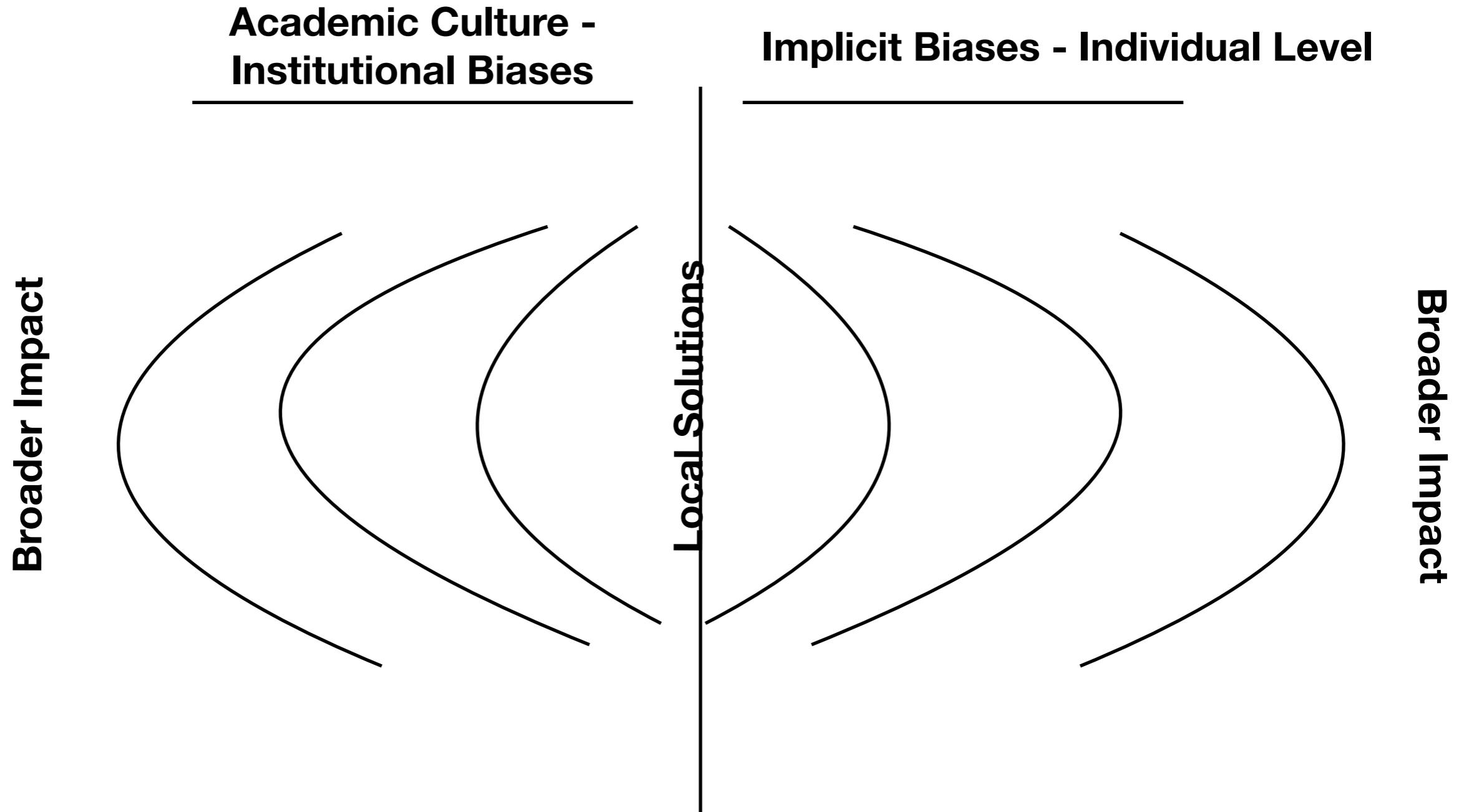
**Sierra Gernhart**  
civil engineering student



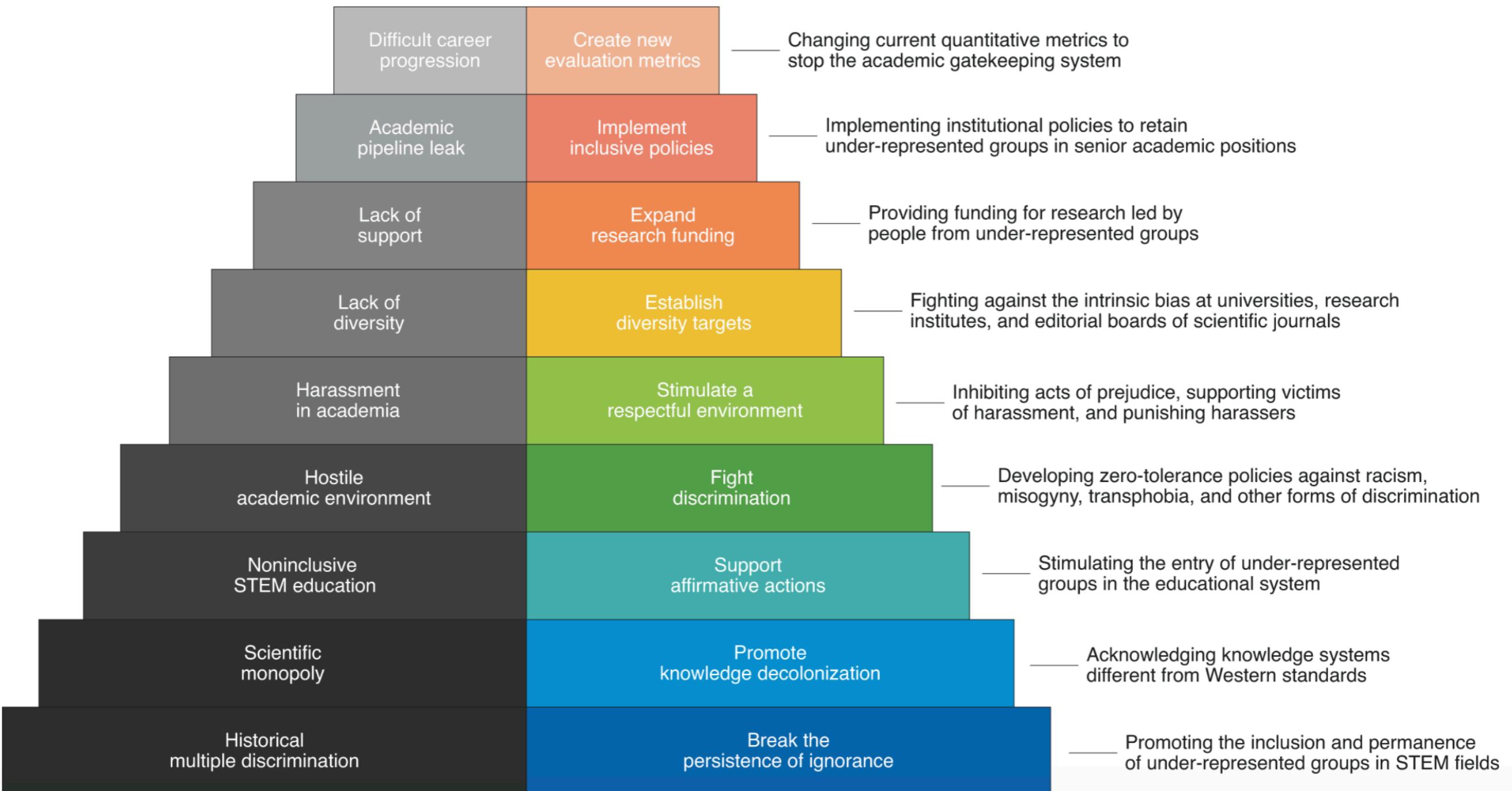
Grogan, Kathleen. (2018). How the entire scientific community can confront gender bias in the workplace. *Nature Ecology & Evolution*. 3. 10.1038/s41559-018-0747-4.



# Brainstorming solutions



### Discriminatory pyramid vs. solutions for inclusiveness



- <https://www.nature.com/articles/s41562-021-01104-w#Fig1>

# **Navigating the job market Knowing Your Worth and Advocating for Your Career**

Dima Amso, PhD

Coming sometime soon