



# Beyond Representation

Data to Improve Equity in Physics  
Chesapeake Section AAPT

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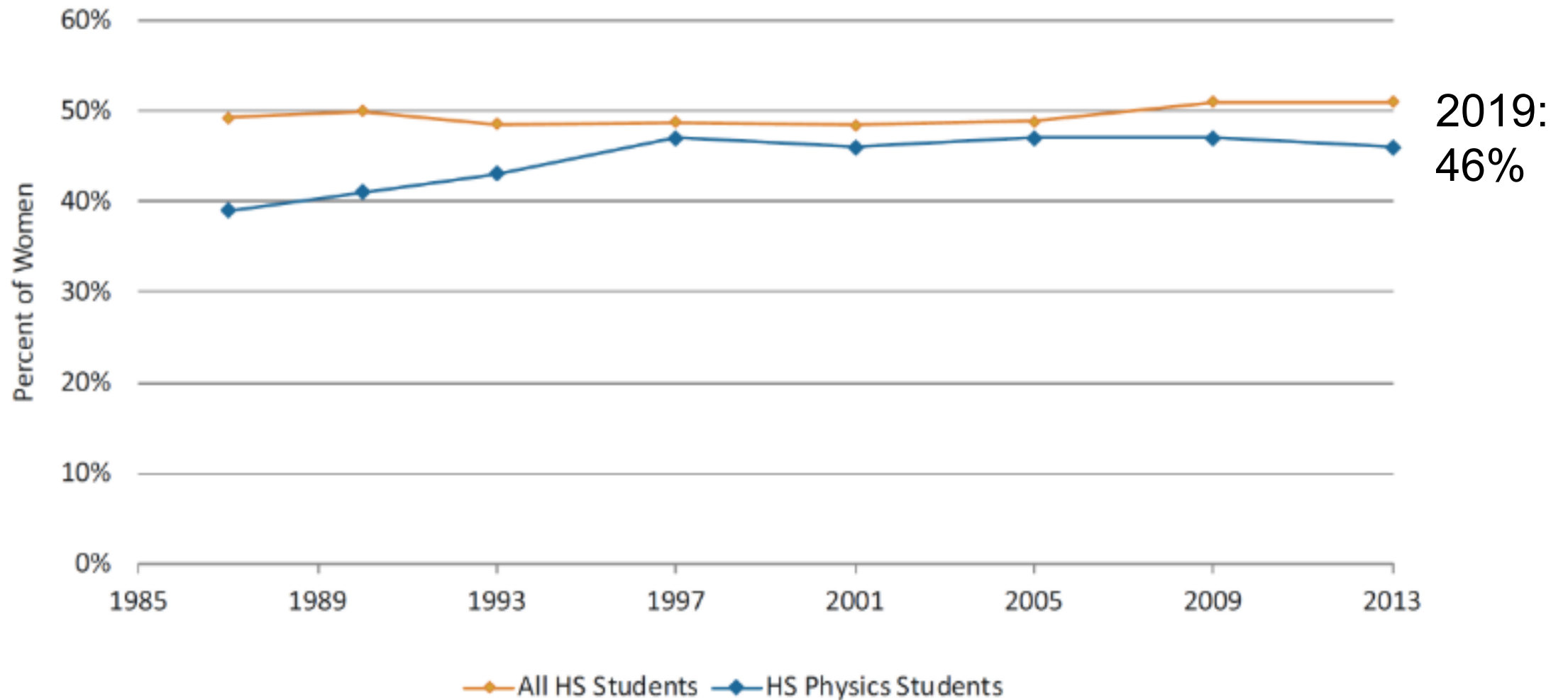
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# REPRESENTATION OF WOMEN



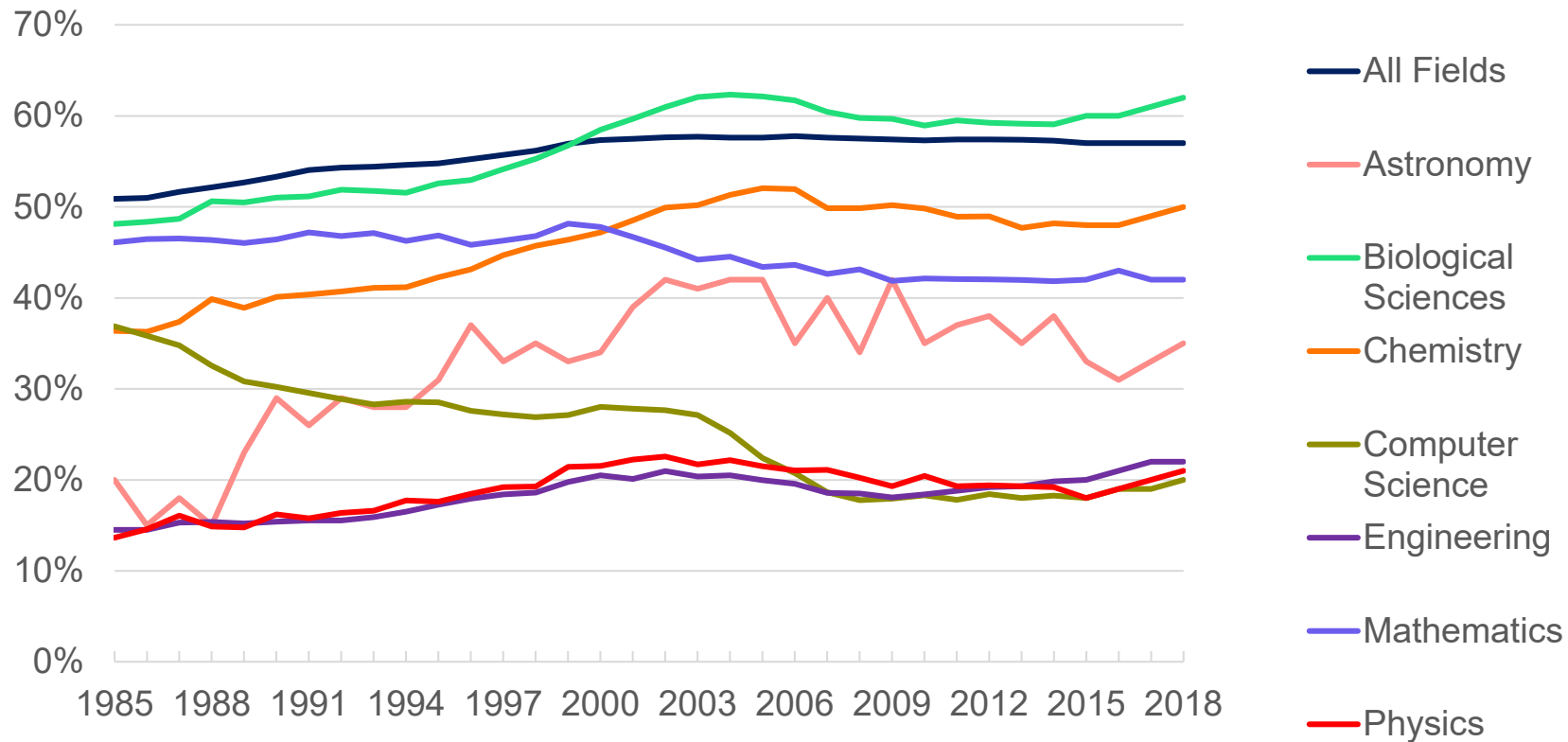
Check out our 2019 report at [aip.org/statistics](https://aip.org/statistics)

## Percent of Young Women Enrolled in High School Physics, 1987-2013

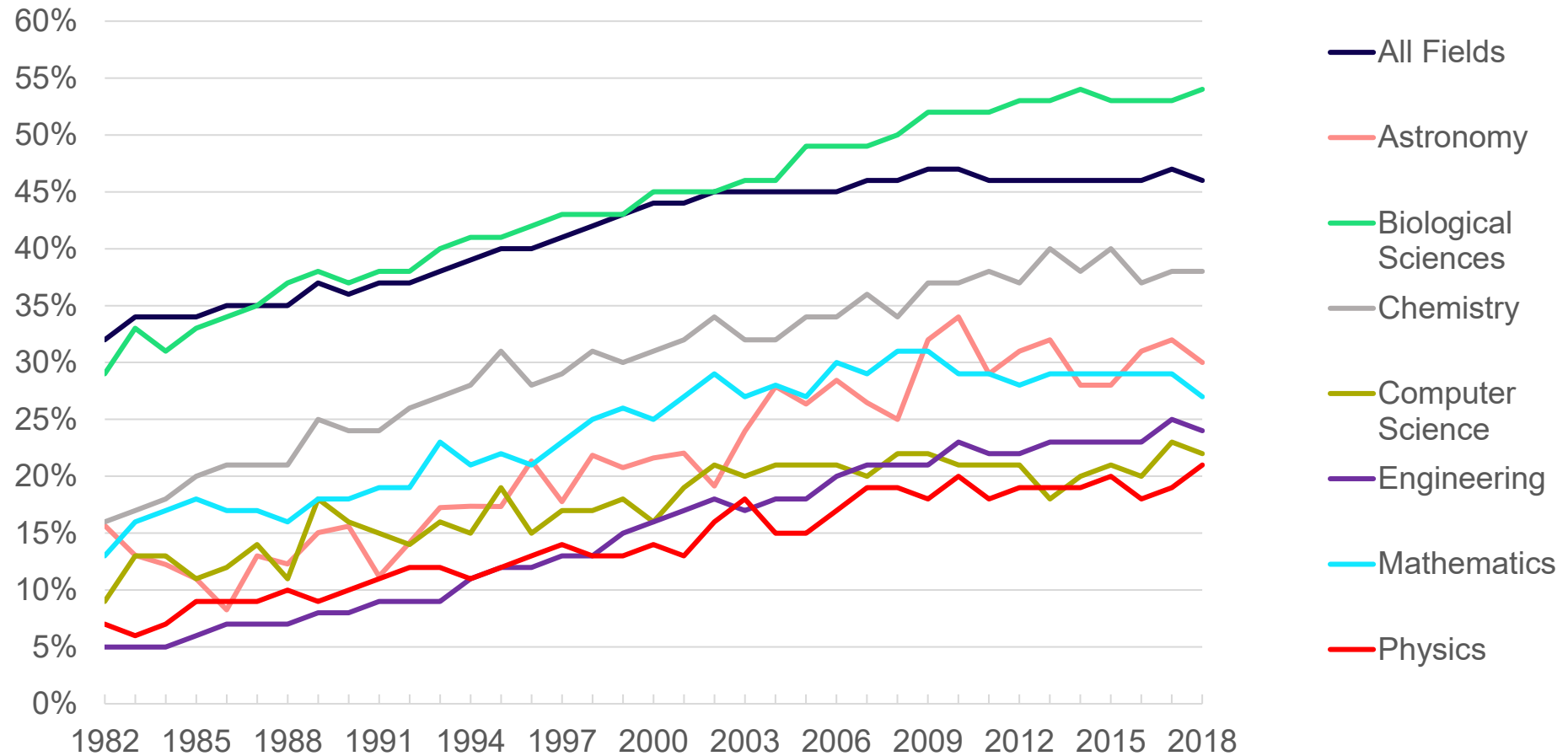


Source: AIP Statistical Research Center, Nationwide Survey of High School Physics Teachers

# Percentage of Bachelor's Degrees Earned by Women in Selected Fields, Classes 1984 Through 2018



# Percentage of PhDs Earned by Women in Selected Fields, Classes 1982 Through 2018



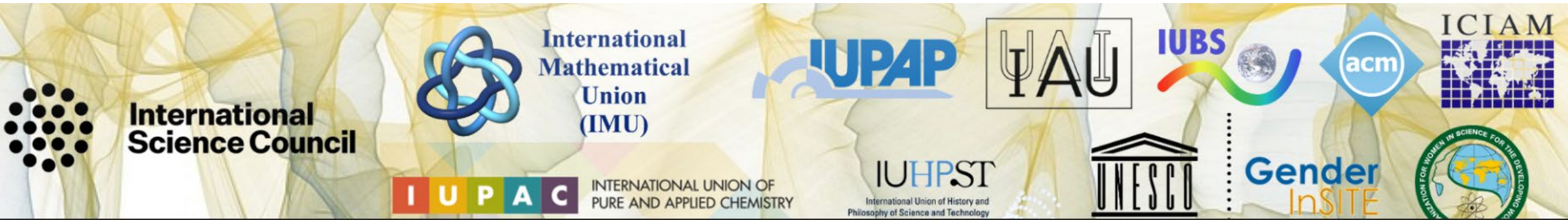
# Race and Gender of Physics and Astronomy Faculty Members, 2021

	Women	Men	Total
<b>American Indian or Alaska Native</b>	0.3%	0.3%	0.6%
<b>Asian or Asian American</b>	2.1%	6.3%	8.4%
<b>Black or African American</b>	0.8%	2.2%	3.0%
<b>Hispanic or Latino</b>	1.4%	3.2%	4.6%
<b>White</b>	17.9%	67.0%	84.9%
<b>Other</b>	0.6%	1.5%	2.1%
<b>TOTAL</b>	23.0%	80.4%	103.5%

# All of these are measures of diversity

But we also need to measure INEQUALITY

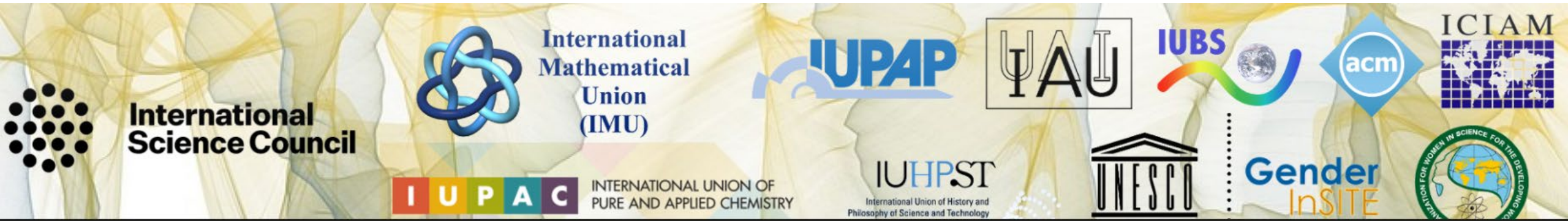




- A Global Approach to the Gender Gap in Mathematical, Computing, and Natural Sciences:  
How to Measure It, How to Reduce It?



- To truly understand and reduce [the gender gap in science], it is necessary to identify the various factors that deter women from pursuing careers in scientific disciplines.
- Collaboration with IUPAP, IAU, and 10 other international science unions/organizations
- Three parts
  - Survey
  - Study of gender gap in publications
  - Database of good practices
- <https://gender-gap-in-science.org/>



# Career Resources in Physics

Resource	Significant differences by gender?
Had enough funding	Women were 128% less likely
Had enough clerical support	Women were 141% less likely
Had enough technical support	Women were 135% less likely
Had enough employees or students	Women were 132% less likely
Had enough support as a working parent	Women were 145% less likely
Had enough equipment	No
Had enough office space	No
Had enough lab space	No
Had enough travel money	No
Had enough computing capability	No
Had enough access to data	No
Had enough access to scientific literature	No

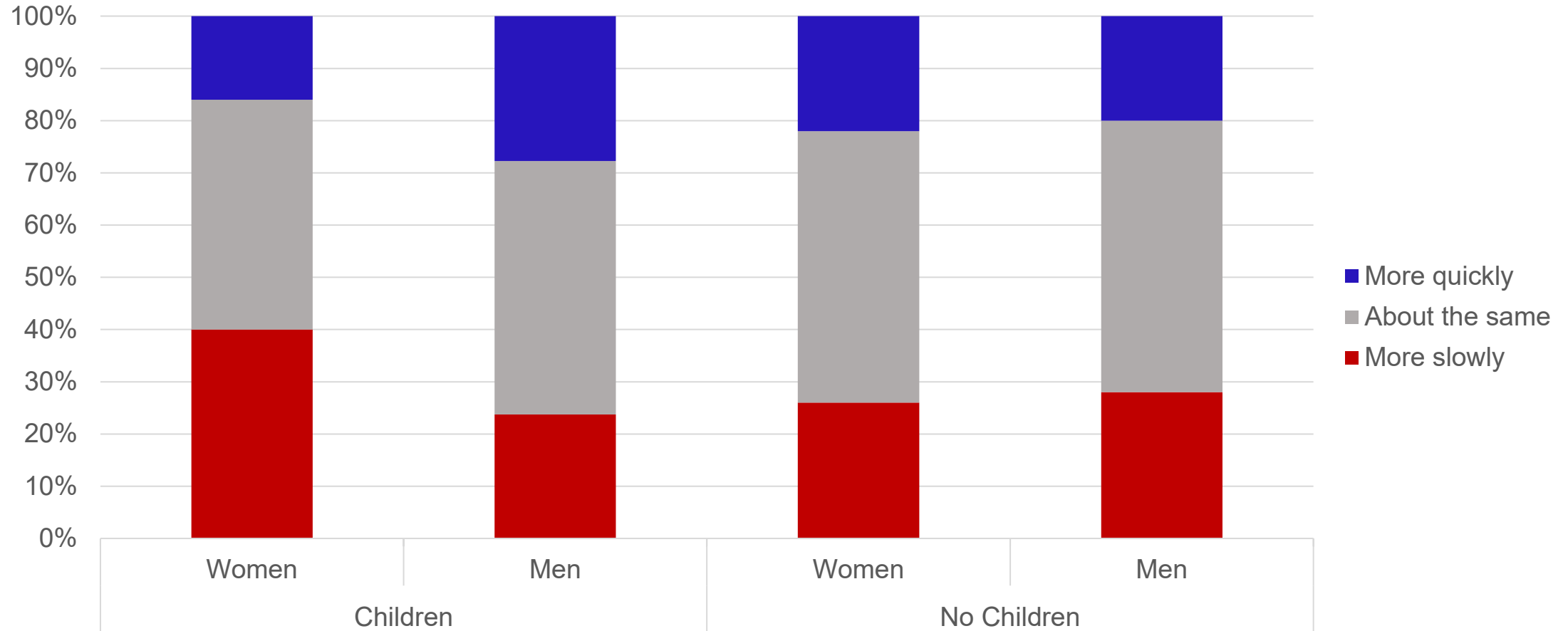
Source: Global Survey of Scientists, 2018

# Responding physicists' experiences of sexual harassment

Have you ever encountered sexual harassment at school or work? Please select all that apply.	Statistical Significance	Interpretation
<b>Yes, it happened to me</b>	Yes	Women (29%) were more likely than men (2%) to say they have personally encountered sexual harassment at school or work.
<b>Yes, I witnessed it happening to someone else</b>	Yes	Women (14%) were more likely than men (7%) to say they witnessed someone else encountering sexual harassment at school or work.
<b>Yes, I heard about it happening to someone else</b>	Yes	Women (33%) were more likely than men (22%) to say they heard about it happening to someone else.
<b>No</b>	Yes	Men (72%) were more likely than women (44%) to say they did NOT encounter sexual harassment at school or work.

Source: Global Survey of Scientists, 2018

# Compared to colleagues who completed their final degrees at the same time as you, how quickly have you progressed in your career? (Physics)



# All of these contribute to the gender gap

- Globally, women in science may receive fewer resources to do their work.
- Workplace environment, interaction with colleagues, and sexual harassment are additional barriers for women in science.
- Assignment of childcare and housekeeping to women reduces time for science.
- Women with children report slower career progression.

# Other contributors

- Gender bias in access to experiments and equipment
  - Gender bias in funding
  - Two-body problem disproportionately affects women
  - Citation bias
  - Publication gap
- 
- Not as much data on bias due to race/ethnicity, LGBT+ status, and disability

# Conclusions

- There are some inequities that we can't control
- However, that should not keep us from changing what we can
- Educate ourselves and refrain from causing inequity
- If we are in position of authority, do what we can
  - Distribute resources equitably
  - Reduce the gap by giving people what they need to succeed



# Thank you!

Thanks to my colleagues: Susan White, John Tyler,  
and Starr Nicholson

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