

Demographic Data: Cultivating Change

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Diversity, Equity, and Inclusion in Chemistry and Chemical Engineering

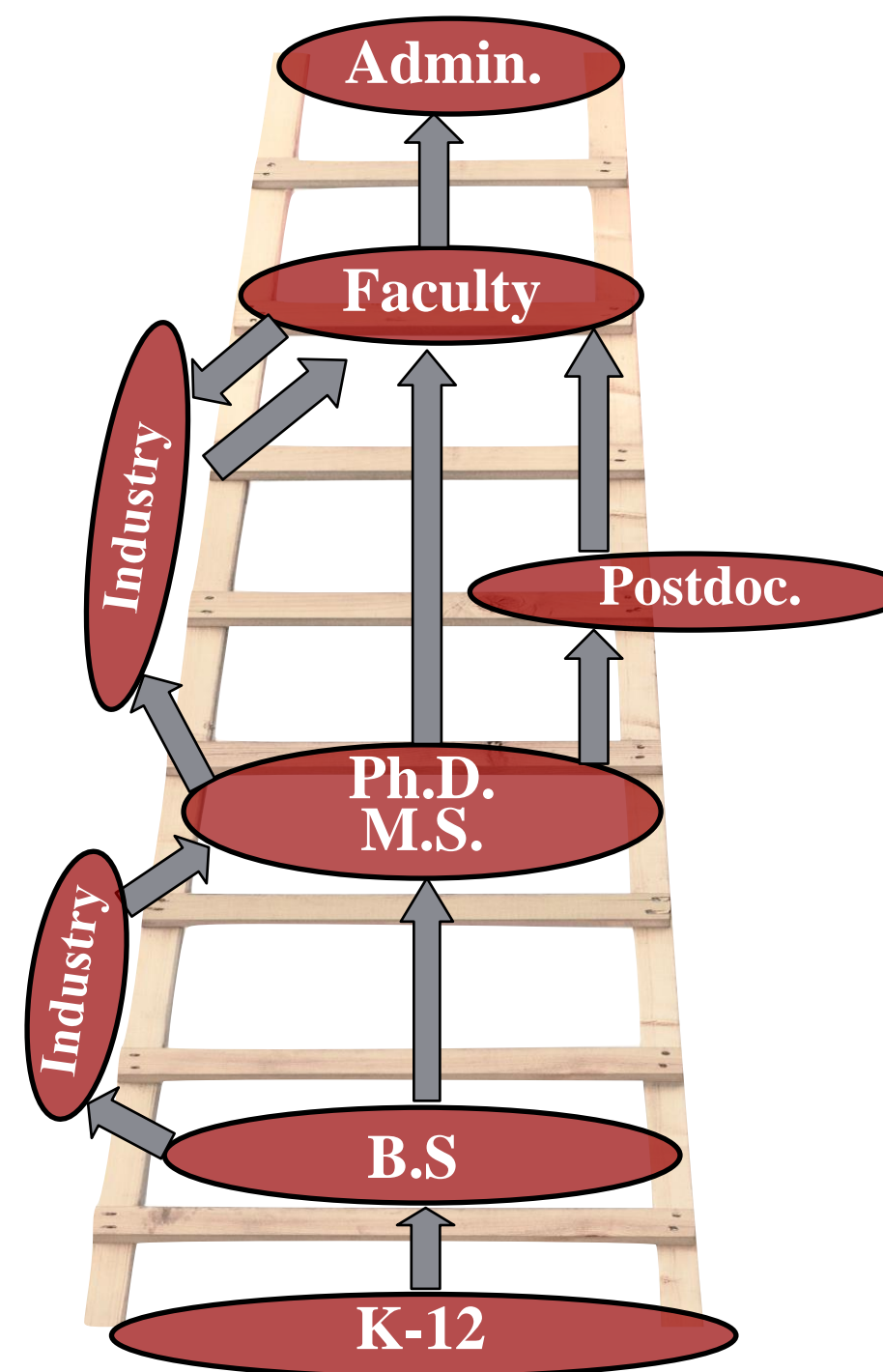
A Virtual Workshop from the
Chemical Sciences
Roundtable

The National Academies of
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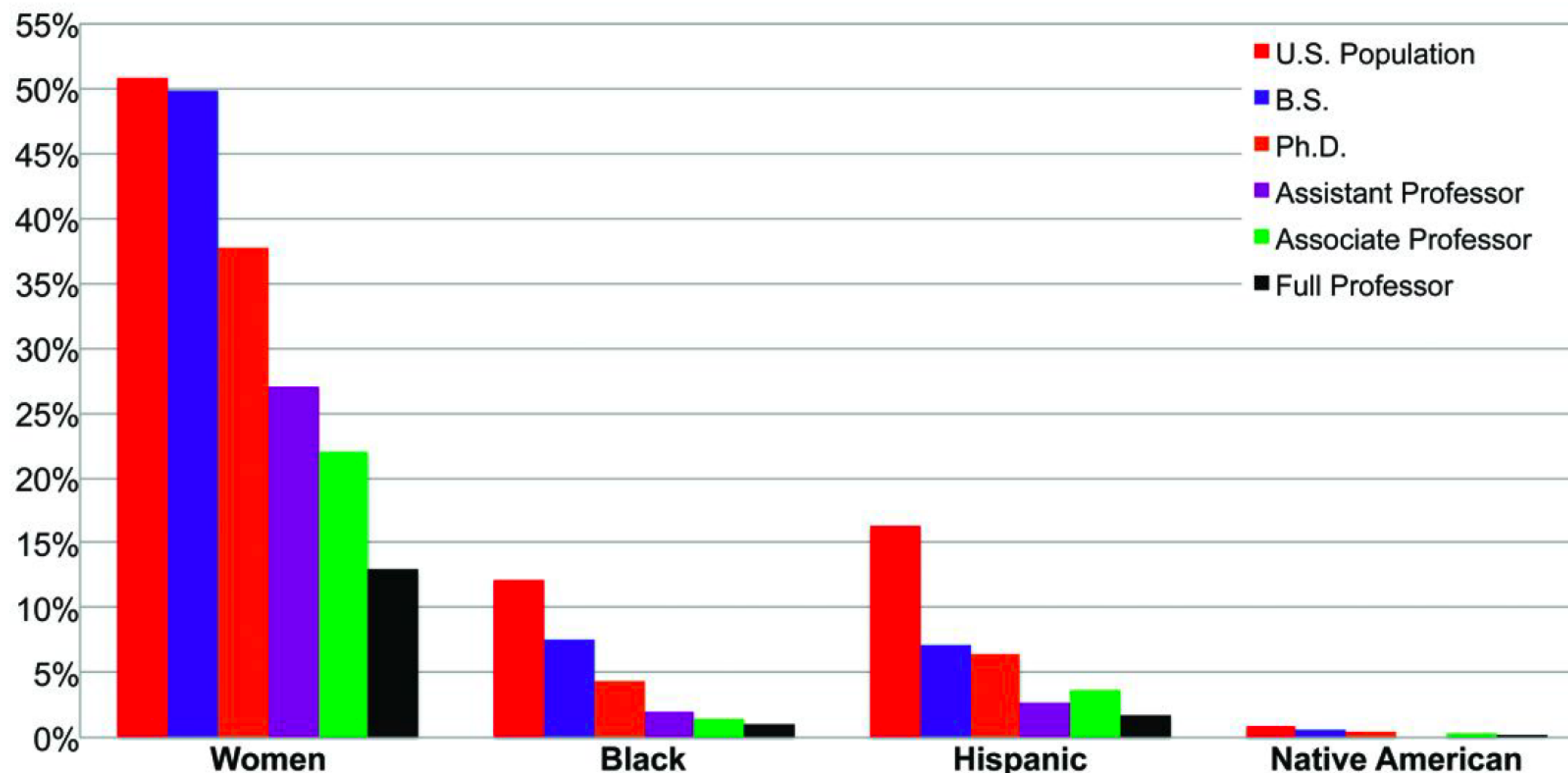


Re-Imagining the Pipeline into a Ladder

- Every rung in the ladder represents a point at which future faculty can be championed to jump past the next transition, rather than just trained to completion.
- Design strategic interventions for every step of the ladder
- Let's focus on making faculty jobs desirable, accessible and inclusive



Making Academia the Preferred Choice for **EVERYONE**



- For all of these groups, there are significant drops in representations from PhD programs, though postdocs, to faculty

Demographics of Undergraduate Students in 2018

Graduate Demographic Representation by Percentatge, AY2017-18

	US Population			Enrolling in College			Degree Conferred in Chemistry			Degree Conferred in ChE		
	% Female	% Male	% Total	% Female	% Male	% Total	% Female	% Male	% Total	% Female	% Male	% Total
African-American / Black	6.5%	6.0%	12.5%	7.5%	4.5%	12.1%	5.3%	2.7%	8.0%	1.7%	2.7%	4.4%
Asian-Pacific	3.0%	2.5%	5.5%	3.3%	2.9%	6.3%	7.5%	6.3%	13.8%	5.3%	8.8%	14.1%
Hispanic / Latino / Latina	9.1%	9.3%	18.5%	11.8%	8.4%	20.2%	6.3%	6.5%	12.8%	3.7%	6.9%	10.6%
Native American	0.4%	0.4%	0.8%	0.4%	0.3%	0.7%	0.2%	0.2%	0.44%	0.1%	0.3%	0.4%
Multi-Race	1.1%	1.1%	2.2%	2.1%	1.6%	3.7%	2.1%	2.1%	4.1%	1.3%	2.1%	3.3%
White, Non-Hispanic	30.5%	29.7%	60.1%	27.3%	22.0%	49.3%	27.9%	30.0%	57.9%	19.5%	45.6%	65.1%
Other	0.1%	0.4%	0.5%	4.0%	3.8%	7.8%	1.4%	1.5%	2.9%	1.0%	1.2%	2.2%
Total	51%	49%	100%	57%	43%	100%	51%	49%	100%	33%	67%	100%

NOTE: This data reflects the numbers genertate by the National Center for Science and Engineering Statistics (April 29, 2021). The title of the report is 'Women, Minorities, and Persons with Disabilities in Science and Engineering'. The report provides statistical information about the participation of these three groups in science and engineering education and employment. A formal report, in the form of a digest, is issued every 2 years,

- US % Underrepresented people of color (URPOC) in STEM: 34%
- Chemistry % URPOC: 25.3%
- ChemE % URPOC: 18.7%

Demographics of MS & PhD Students in 2018

Graduate Demographic Representation by Percentatge, AY2018

	US Population			MS Degree Conferred in Chemistry			PhD Degree Conferred in Chemistry			MS Degree Conferred in ChE			PhD Degree Conferred in ChE		
	% Female	% Male	% Total	% Female	% Male	% Total	% Female	% Male	% Total	% Female	% Male	% Total	% Female	% Male	% Total
African-American / Black	6.5%	6.0%	12.5%	2.6%	2.4%	5.0%	—	—	4.2%	1.4%	3.0%	4.4%	3.2%	2.4%	5.6%
Asian-Pacific	3.0%	2.5%	5.5%	5.9%	5.8%	11.7%	—	—	11.1%	6.2%	9.8%	16.0%	4.7%	5.4%	10.1%
Hispanic / Latino / Latina	9.1%	9.3%	18.5%	5.0%	5.1%	10.1%	—	—	6.1%	2.1%	5.2%	7.3%	4.9%	4.9%	9.8%
Native American	0.4%	0.4%	0.8%	0.1%	0.4%	0.4%	—	—	0.4%	0.0%	0.2%	0.2%	0.2%	0.2%	0.42%
Multi-Race	1.1%	1.1%	2.2%	1.7%	1.3%	3.0%	—	—	2.2%	1.1%	2.5%	3.6%	1.8%	1.7%	3.5%
White, Non-Hispanic	30.5%	29.7%	60.1%	27.1%	37.8%	64.9%	—	—	70.5%	16.1%	45.4%	61.5%	29.5%	36.3%	65.8%
Other	0.1%	0.4%	0.5%	2.8%	2.1%	4.9%	—	—	5.5%	2.6%	4.5%	7.1%	2.2%	2.7%	4.9%
Total	51%	49%	100%	45%	55%	100%	39%	61%	100%	29%	71%	100%	46%	54%	100%

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Masters Degree

- Chemistry % URPOC: 18.5%
- ChemE % URPOC: 15.5%

PhD Degree

- Chemistry % URPOC: 12.9%
- ChemE % URPOC: 19.02%

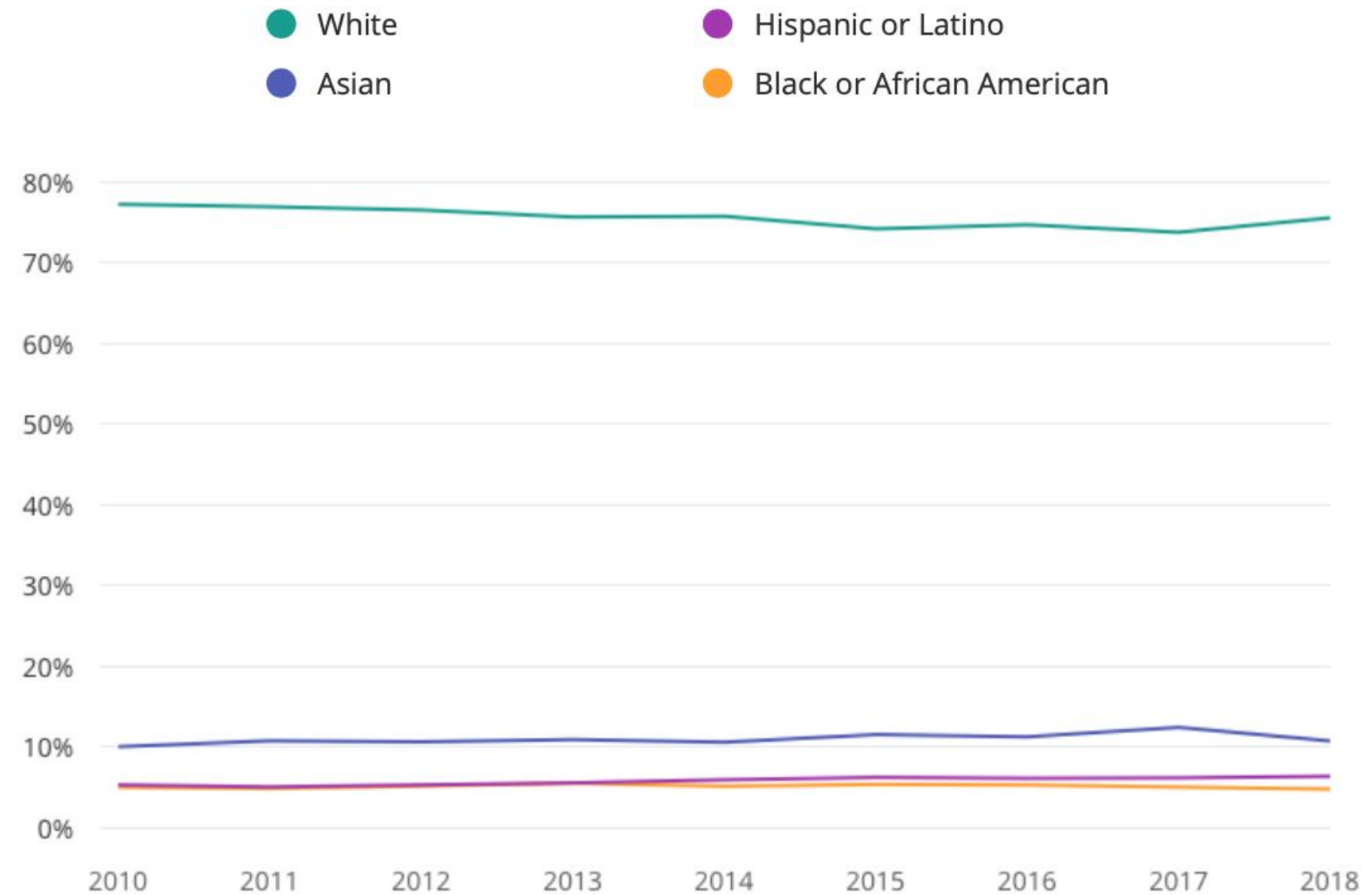


Demographics of Chemical Engineering Faculty

- Demographics:
 - White, 75.6%
 - Asian, 10.8%
 - Hispanic/Latino, 6.5%
 - Black, 4.8%
 - AIAN, 0.2%
 - Unknown, 2.1%
- Comparison to Availability:
 - URPOC PhD: 19.0%
 - URPOC Faculty: ~11.5%

Chemical Engineering Professor Race And Ethnicity Over Time

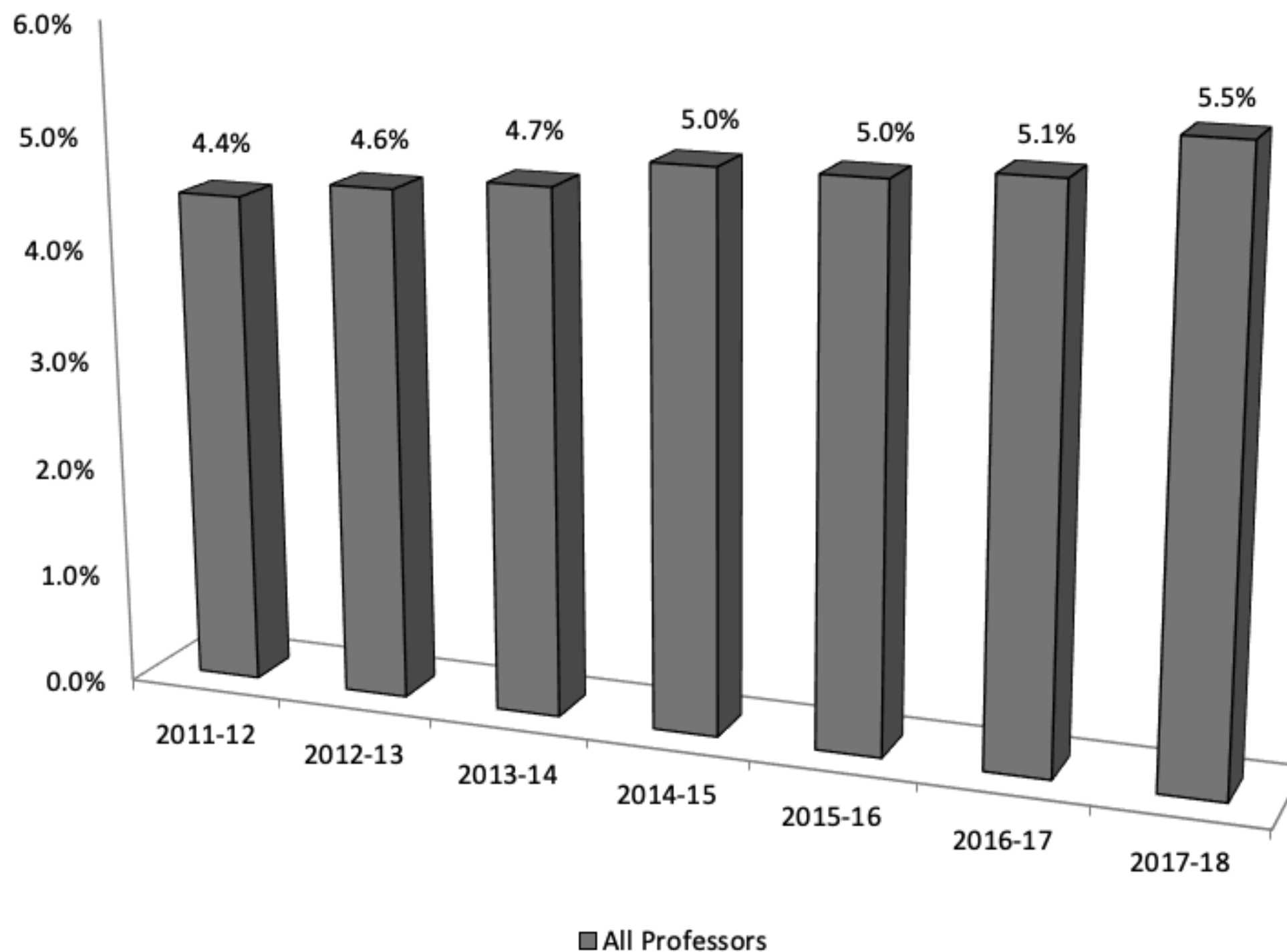
Using the Census Bureau data, we found out how the percentage of each ethnic category trended between 2008-2018 among chemical engineering professors.



Demographics of Chemistry Faculty

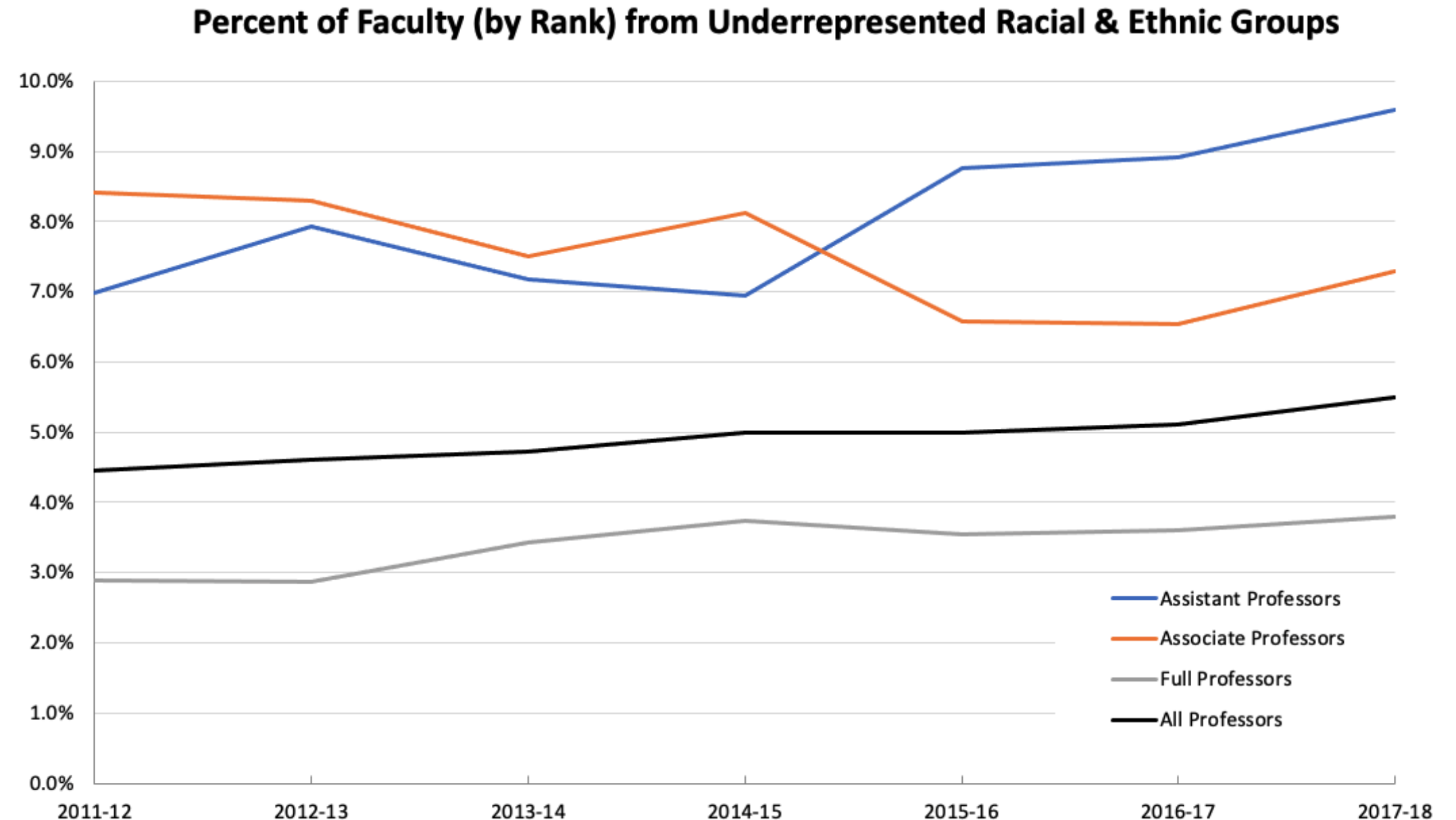
- Positive trend in both percentages and total faculty, but too slow...
 - 4.6% to 5.5%
 - 67 to 87 URPOC professors
 - 30% increase over 7 years (4% annualized rate)
- Comparison to Availability:
 - URPOC PhD: 13.0%
 - URPOC Faculty: 5.5%

Percent of Faculty from Underrepresented Racial & Ethnic Groups



Chemistry Faculty Demographics: Disaggregated by Rank

- Uptick in the percentage of Assistant Professors
 - From 7% to 9.7%
- As of AY 2015-16 Percentage distribution of faculty ranks mirrors that of total faculty population
 - Reflecting a loss of underpromotion of URPOC Associate Professors
- Comparison to Availability:
 - URPOC PhD: 13.0%
 - URPOC Assistant Professors: 9.7%



Conclusion

- Demographic data frames where we are, where we failing, and where we are succeeding
 - In the **OXIDE** project, we believe that this requires a focus on the promotion from doctorates to the professoriate
- The numbers demonstrate that we need to systemic changes in the climate and representation at every level of academic education and research
 - In the **OXIDE** project, we believe that this requires intentional changes in policies and procedures as this workshop has been designed to inform and motivate
- At every level, leadership needs to take action to improve DEI climate and increase participation

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