



# **Women of Color in STEM Education and Employment**

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**CEOSE Mini-symposium on Women of Color in STEM  
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National Science Foundation  
Division of Science Resources Statistics  
[www.nsf.gov/statistics](http://www.nsf.gov/statistics)



# Who do we mean by women of color?

- **Asian, Black, Hispanic, and American Indian/Alaska Native women are all women of color.**
- **Asian women are not underrepresented in STEM.**
- **Black, Hispanic, and American Indian/Alaska Native women are underrepresented in STEM.**



# What do we mean by underrepresentation?

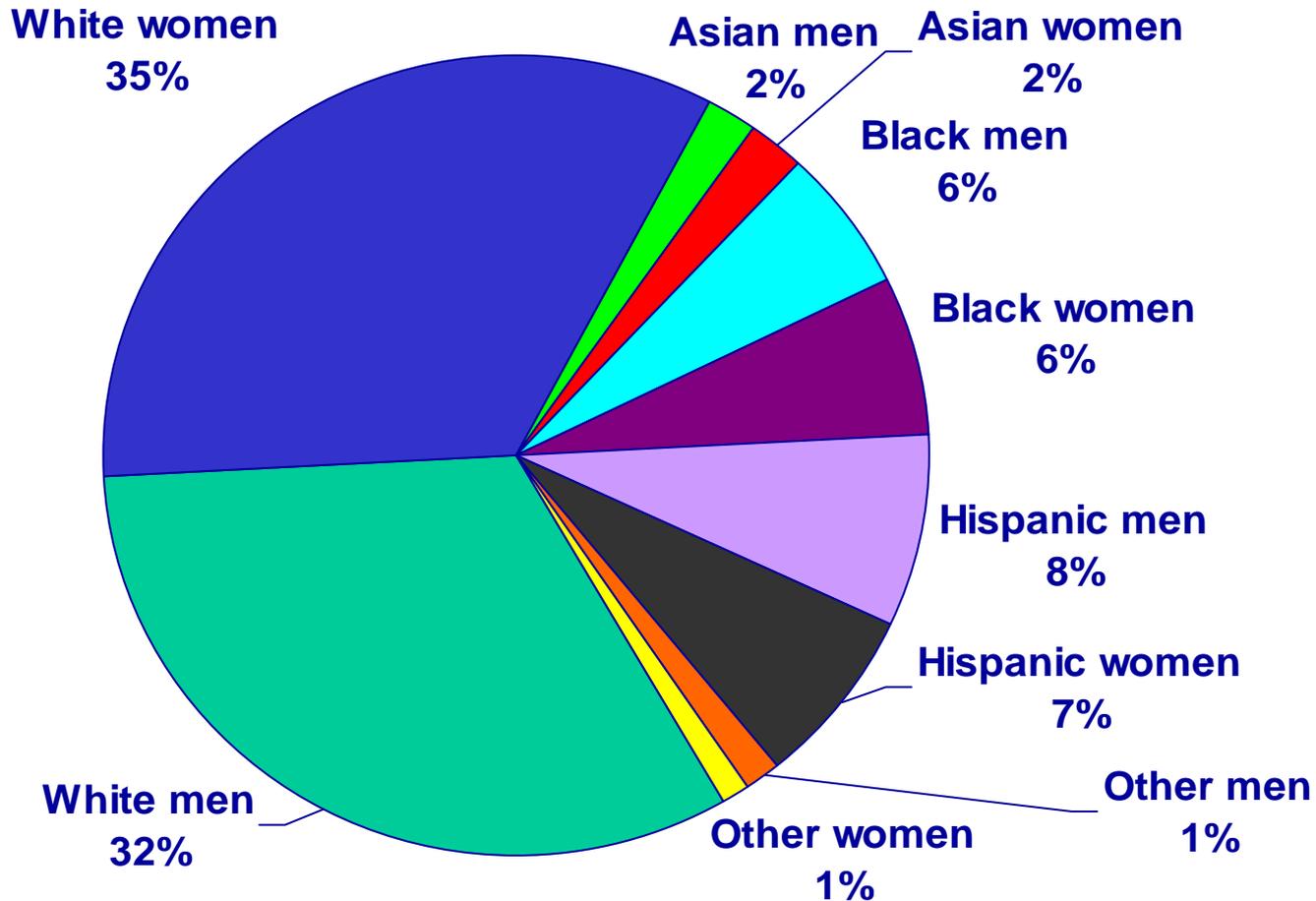
- **Generally, underrepresented minorities are those groups whose representation in STEM is less than their representation in the population as a whole.**
- **Blacks, Hispanics, and American Indians/Alaska Natives are underrepresented in STEM because they are a smaller percentage of STEM graduates and of STEM occupations than they are of the U.S. population.**



# What do we mean by underrepresentation? – cont.

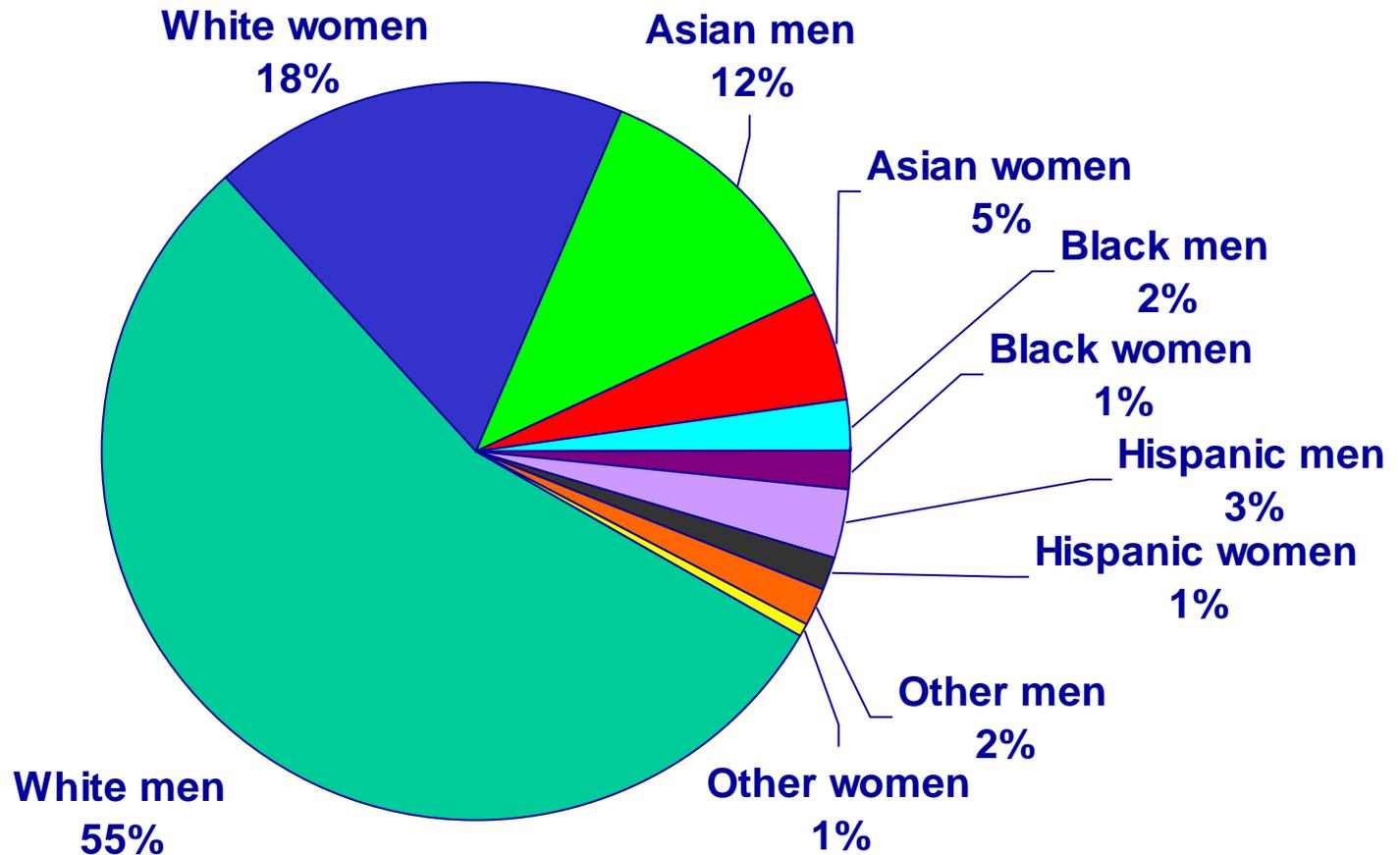
- **Asians, as a group, are not underrepresented in STEM because they are a larger percentage of STEM graduates and of STEM occupations than they are of the U.S. population.**
- **Subgroups of Hispanics and Asians may vary in STEM representation.**

## Resident population of the United States, by race/ethnicity and sex: 2007



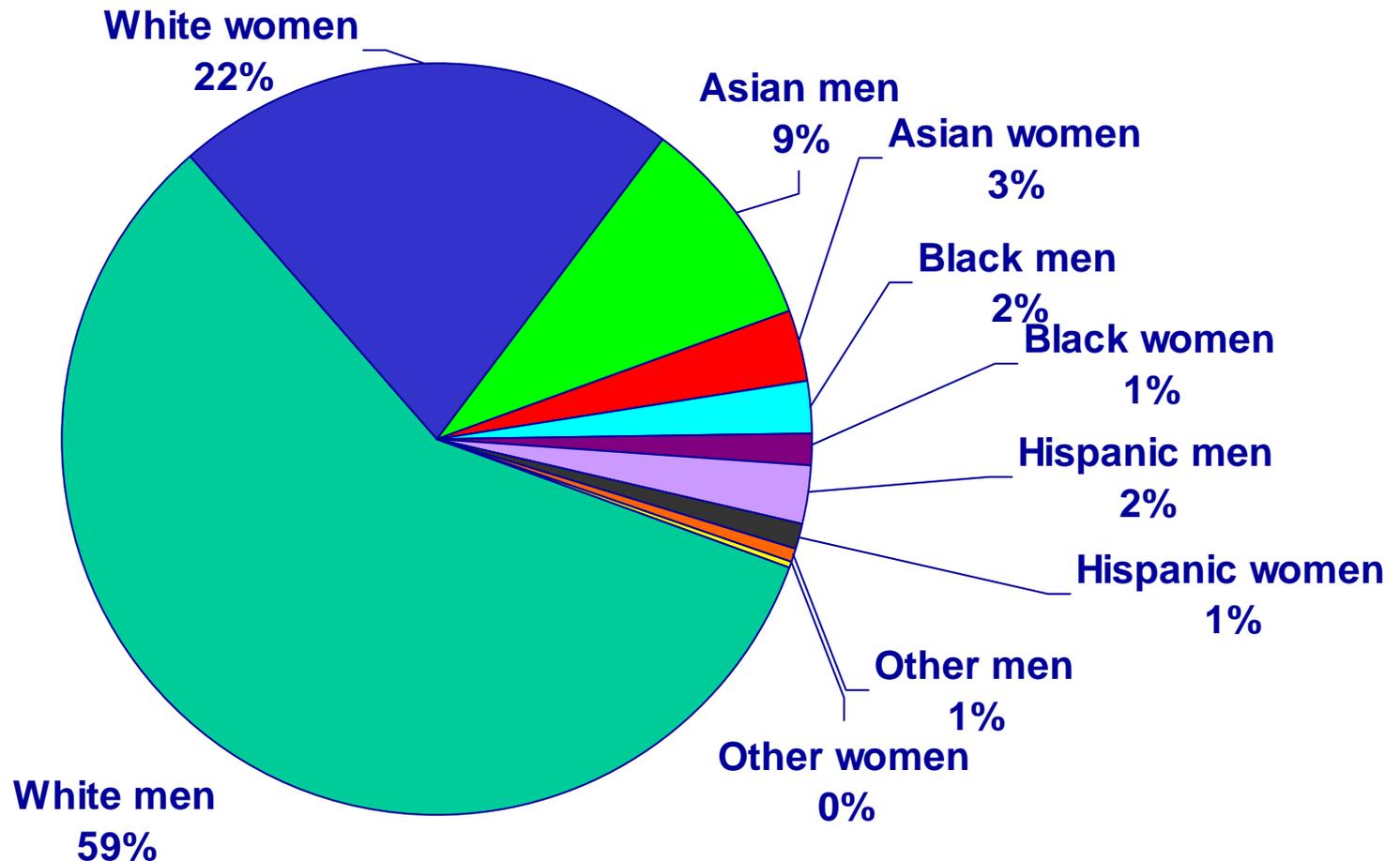
Note: Other includes American Indians/Alaska Natives, Native Hawaiians/other Pacific Islanders and multiple race/ethnicity.  
Source: Bureau of the Census, Current Population Survey, July 2007.

## Employed scientists and engineers, by sex and race/ethnicity: 2006



Note: Other includes American Indians/Alaska Natives, Native Hawaiians/other Pacific Islanders and multiple race/ethnicity.  
Source: National Science Foundation, Scientists and Engineers Statistical Data System, 2006.

## Doctoral science and engineering faculty, by sex and race/ethnicity: 2006



Note: Other includes American Indians/Alaska Natives, Native Hawaiians/other Pacific Islanders and multiple race/ethnicity.

Source: National Science Foundation, Survey of Doctorate Recipients, 2006.



# Why are women of color in a double bind?

- **Like underrepresented minority men, underrepresented minority women are less likely than White or Asian men and women to graduate from high school, go to college, or earn bachelor's degrees.**
- **Like White women, underrepresented minority women are less likely than men to earn degrees in or be employed in STEM fields.**



# What are the differences in educational attainment?

- **Blacks and Hispanics are less likely than Whites to graduate from high school, to enroll in college, and to graduate from college.**
- **Within each racial/ethnic group, women have higher levels of educational attainment than men.**
- **Black and Hispanic women have higher levels of educational attainment than Black and Hispanic men but lower levels of educational attainment than White or Asian men or women.**



## **What are the differences in education attainment – cont.**

- **For Hispanics, country of birth makes a difference. Close to half of the Hispanic population ages 25-29 were born outside the U.S. Those born outside the U.S. have much lower educational attainment than those born in the U.S. Those born in the U.S. have levels of educational attainment similar to Blacks.**
- **Almost 70% of Asians 25-29 were born outside the U.S. Both those born outside the U.S. and those born inside the U.S. have higher educational attainment than all other racial/ethnic groups.**



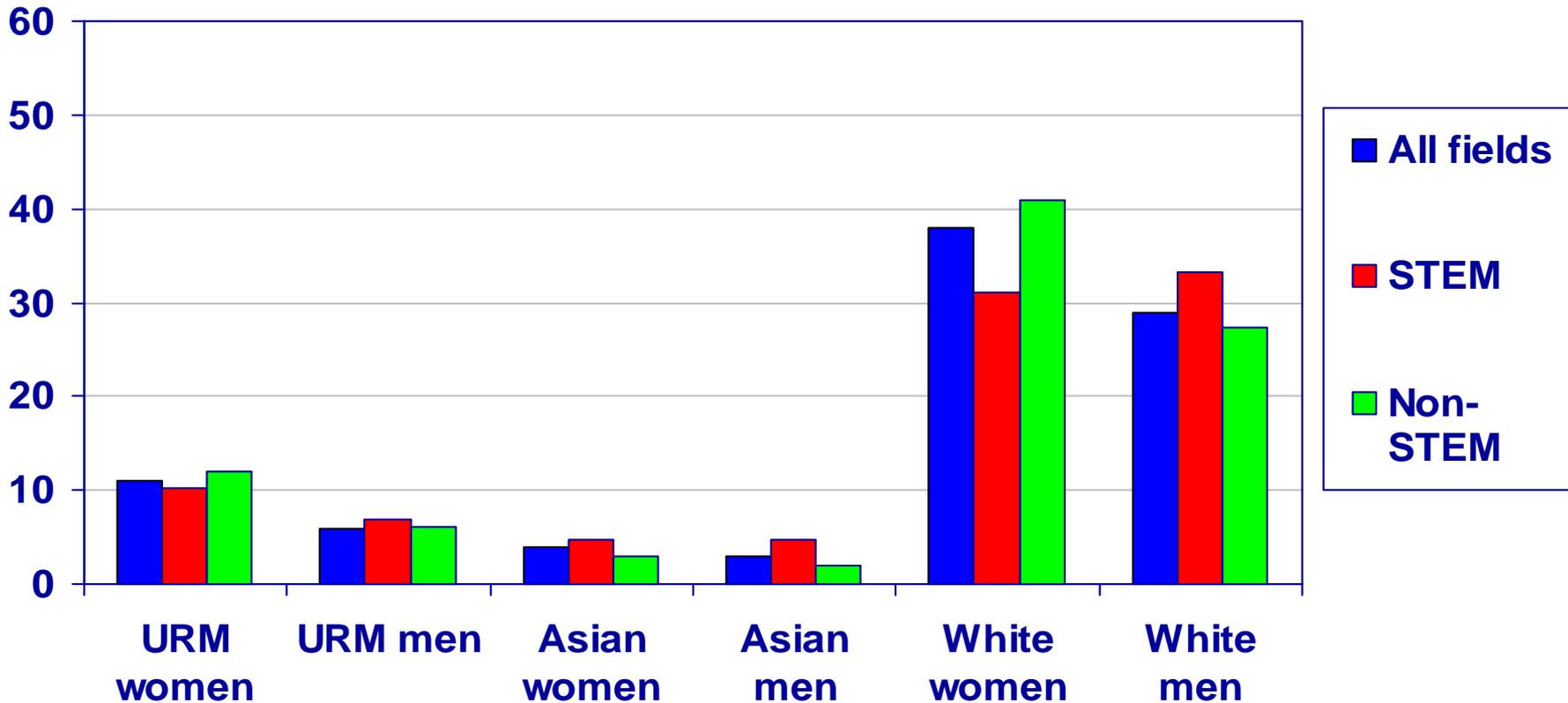
## What are the differences in STEM education?

- **Underrepresented minority women earn higher percentages of bachelor's degrees in all fields, in STEM, and in non-STEM fields than underrepresented minority men.**
- **Asian and White women earn higher percentages of bachelor's degrees in all fields and in non-STEM fields but lower percentages of bachelor's in STEM fields than Asian and White men.**



## Racial/ethnic and gender shares of bachelor's degrees, by field: 2007

Percent



URM = underrepresented minority.

Notes: Underrepresented minority includes Blacks, Hispanics, and American Indians/Alaska Natives. Asian includes Pacific Islander.

Racial/ethnic groups refer to U.S. citizens and permanent residents only.

Source: National Center for Education Statistics, IPEDS Completions Survey, 2007.

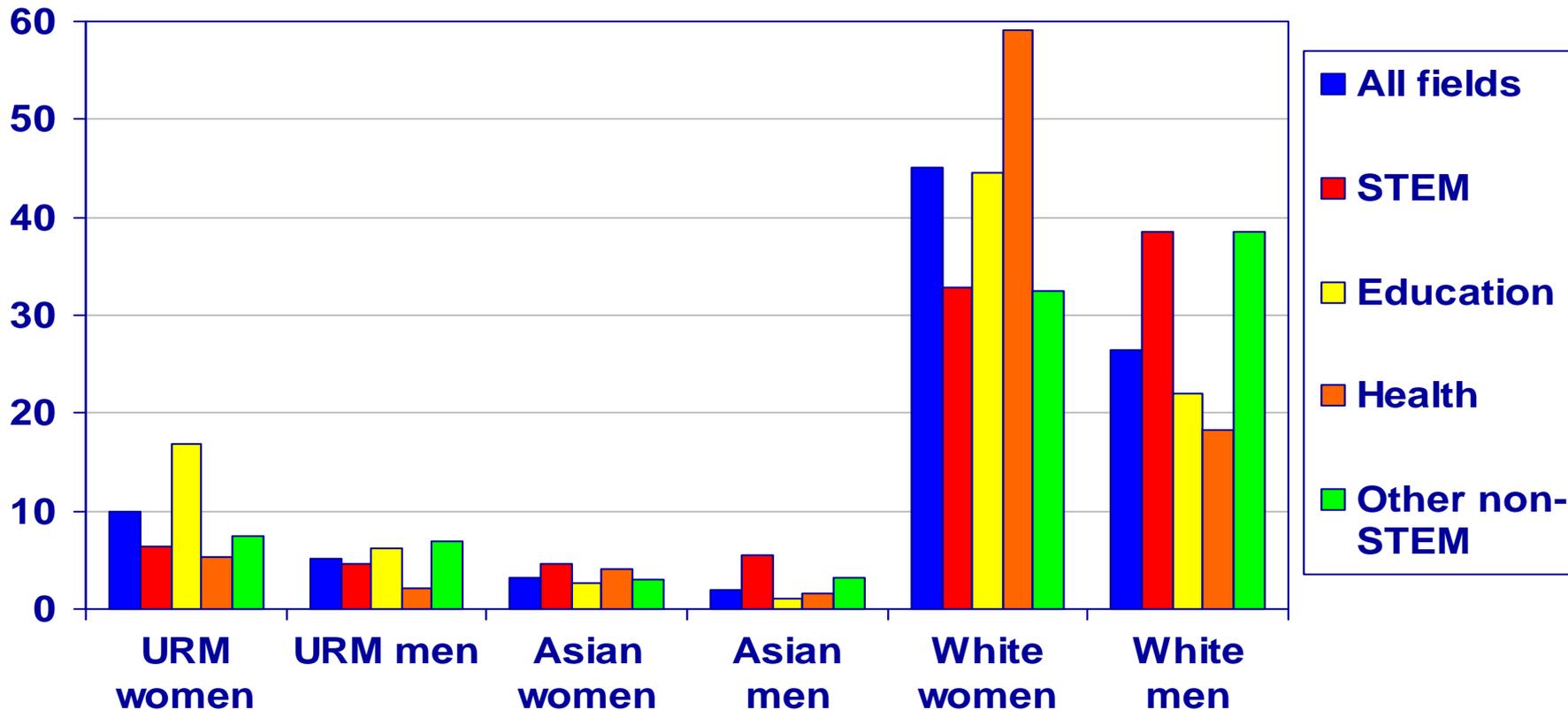


## **What are the differences in STEM education? – cont.**

- **Underrepresented minority women and men earn a lower percentage of STEM doctorates than they do of STEM bachelor's recipients.**

## Racial/ethnic and gender shares of doctoral degrees to U.S. citizens and permanent residents, by field: 2007

Percent



URM = underrepresented minority.

Notes: Underrepresented minority includes Blacks, Hispanics, and American Indians/Alaska Natives. Asian includes Pacific Islander.

Racial/ethnic groups refer to U.S. citizens and permanent residents only.

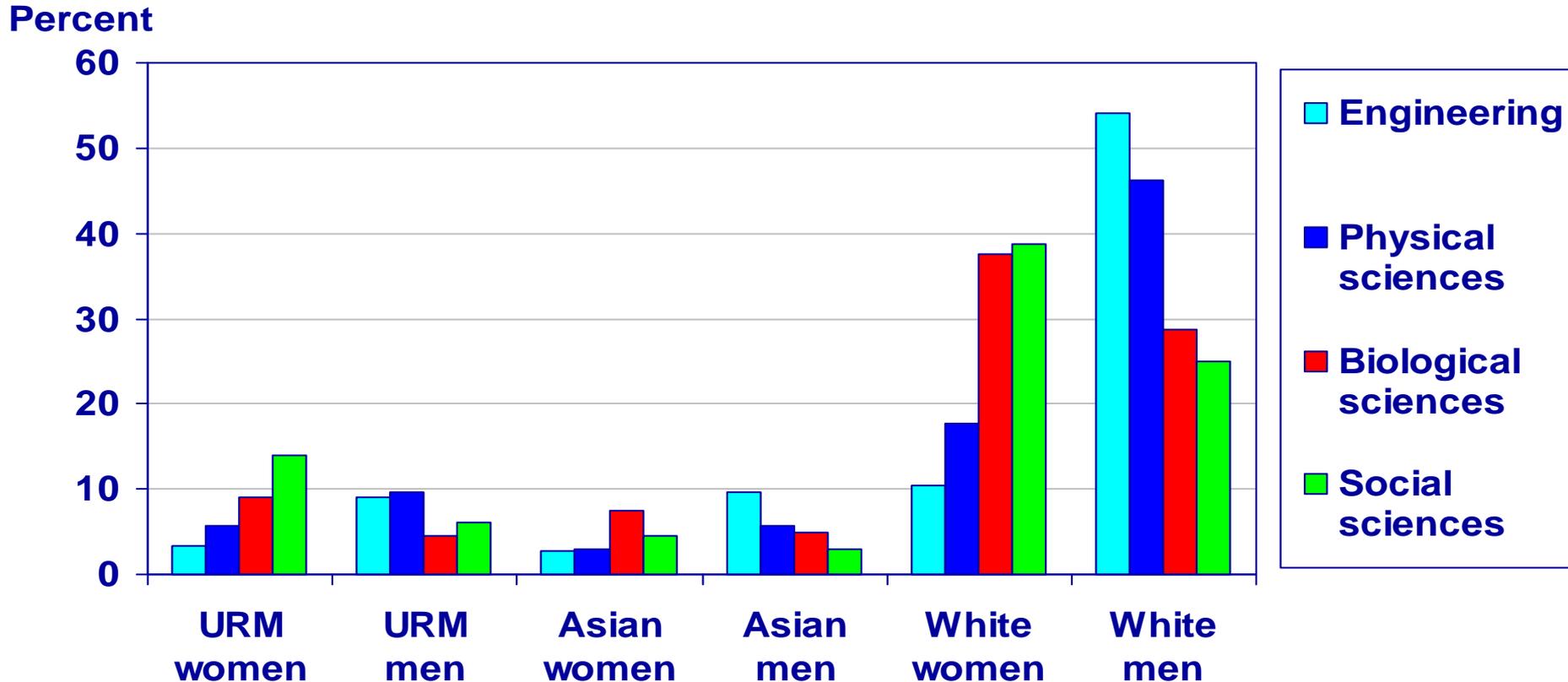
Source: National Center for Education Statistics, IPEDS Completions Survey, 2007.



## What are the differences in STEM fields?

- **Within all racial/ethnic groups, men earn a higher percentage of engineering and physical sciences bachelor's and doctoral degrees than women.**
- **Within all racial/ethnic groups, women earn a higher percentage of biological and social sciences bachelor's than men and a higher percentage of social sciences doctoral degrees than men.**

## Racial/ethnic and gender shares of STEM bachelor's degrees, by field: 2007



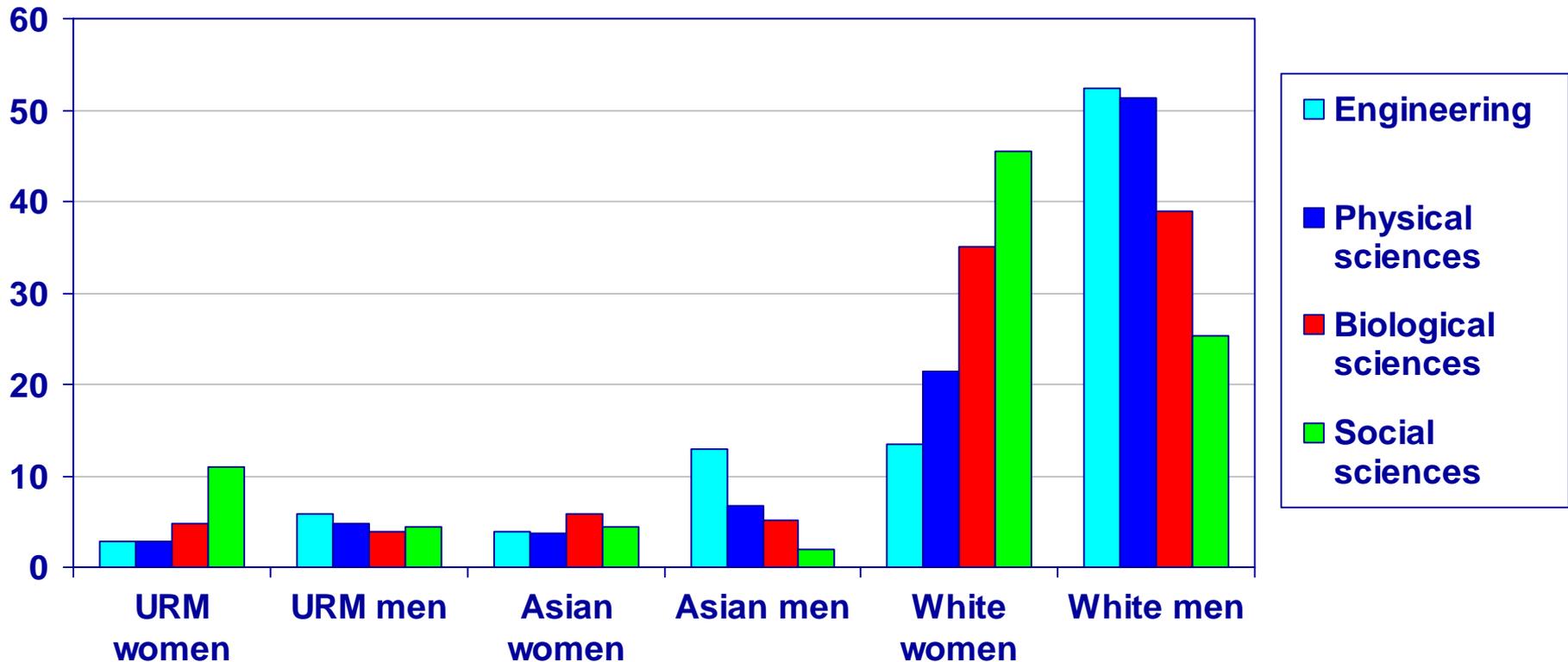
URM = underrepresented minority.

Notes: Underrepresented minority includes Blacks, Hispanics, and American Indians/Alaska Natives. Asian includes Pacific Islander. Physical sciences includes mathematics, computer sciences, and earth, atmospheric and ocean sciences. Biological sciences includes agricultural sciences. Social sciences includes psychology. Racial/ethnic groups refer to U.S. citizens and permanent residents only.

Source: National Center for Education Statistics, IPEDS Completions Survey, 2007.

# Racial/ethnic and gender shares of STEM doctoral degrees to U.S. citizens and permanent residents, by field: 2007

Percent



URM = underrepresented minority.

Notes: Underrepresented minority includes Blacks, Hispanics, and American Indians/Alaska Natives. Physical sciences includes mathematics, computer sciences, and earth, atmospheric and ocean sciences. Biological sciences includes agricultural sciences. Social sciences includes psychology.

Source: National Center for Education Statistics, IPEDS Completions Survey, 2007.

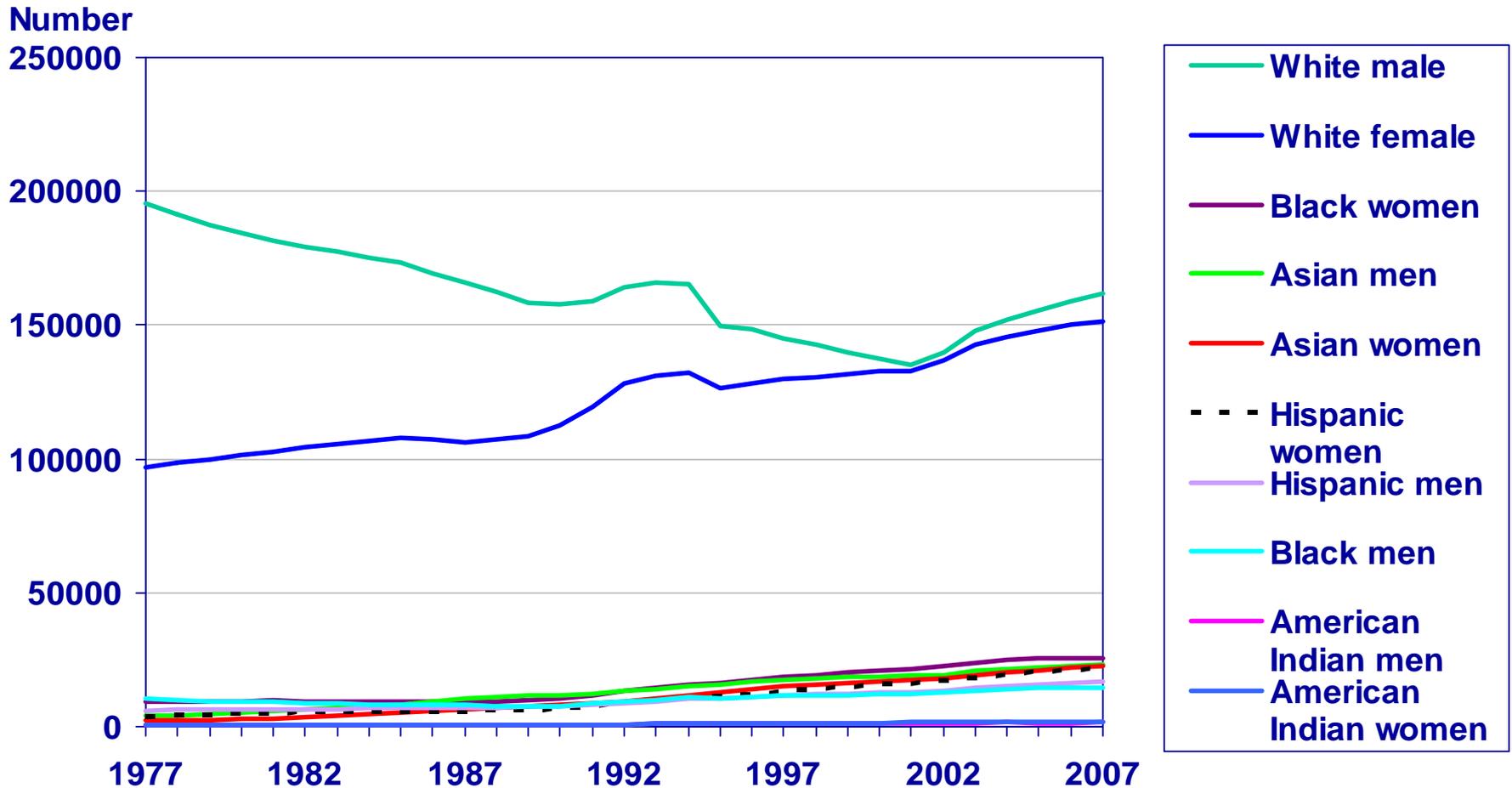


# What are the trends in STEM degree awards?

- **The number of STEM bachelor's degrees awarded to men and women of almost all racial/ethnic groups has increased since 1977.**
- **The number of STEM bachelor's degrees awarded to American Indian/Alaska Native men has remained fairly stable over time.**
- **Within each racial/ethnic group except White, women earned more STEM bachelor's degrees than men in 2007.**



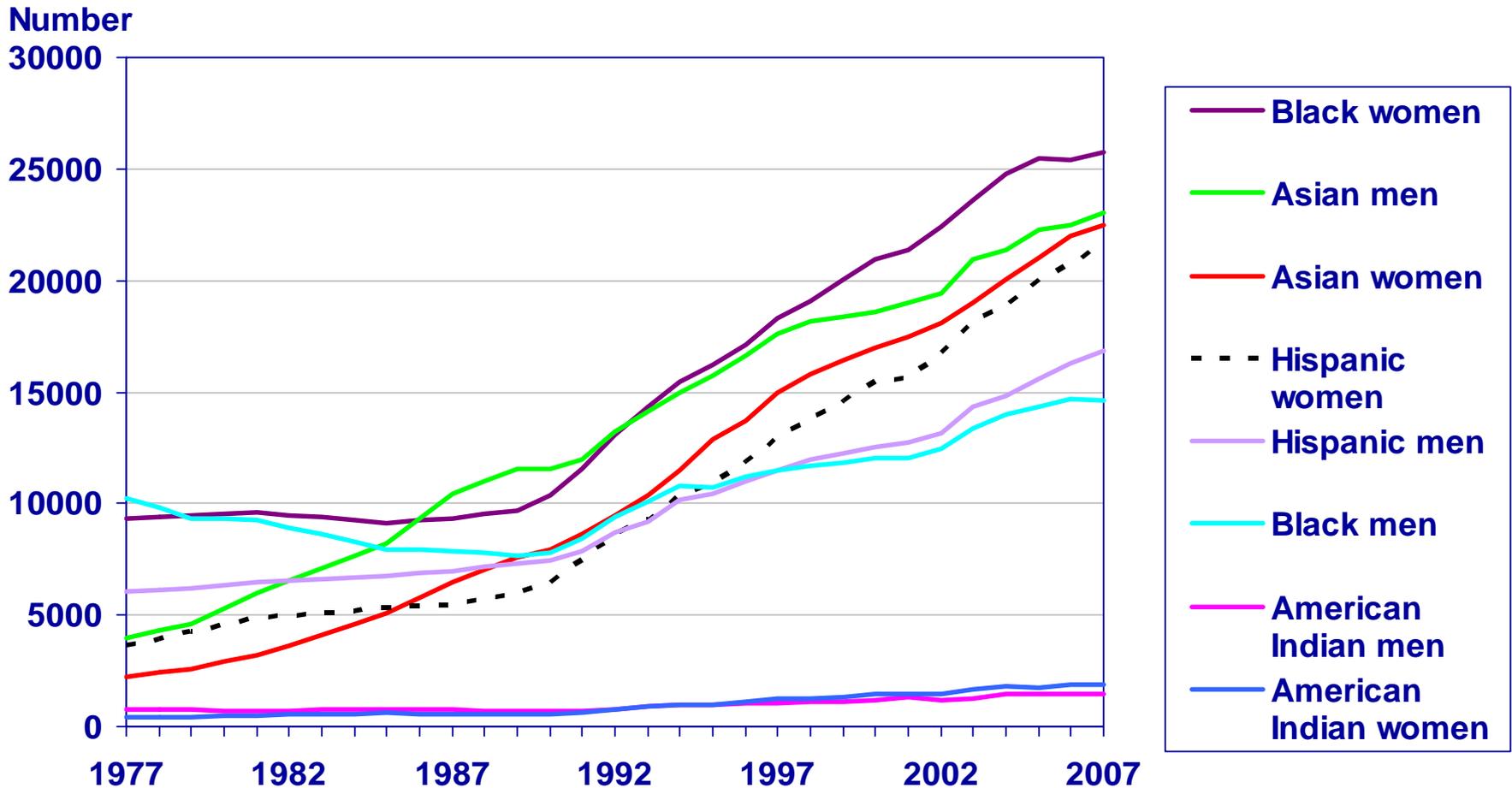
# Bachelor's degrees awarded in STEM fields to U.S. citizens and permanent residents, by sex: 1977–2007



Note: Asian includes Pacific Islander. American Indian includes Alaska Native. Data not available for 1978, 1980, 1982-84, 1986, 1989, and 1999.

Source: National Center for Education Statistics, IPEDS Completions Survey, 1977-2007.

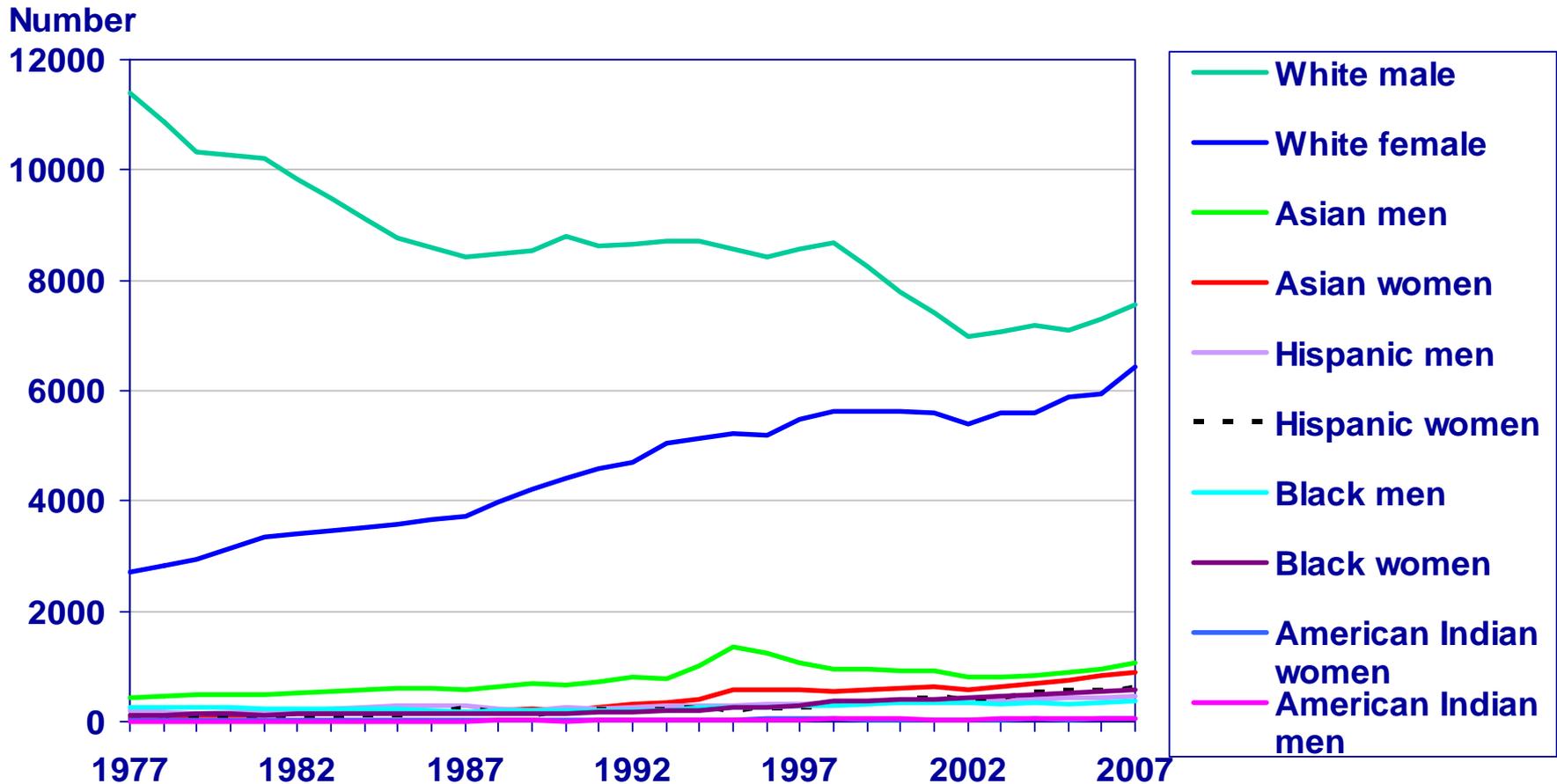
# Bachelor's degrees awarded in STEM fields to minority U.S. citizens and permanent residents, by sex: 1977–2007



Note: Asian includes Pacific Islander. American Indian includes Alaska Native. Data not available for 1978, 1980, 1982-84, 1986, 1989, and 1999.

Source: National Center for Education Statistics, IPEDS Completions Survey, 1977-2007.

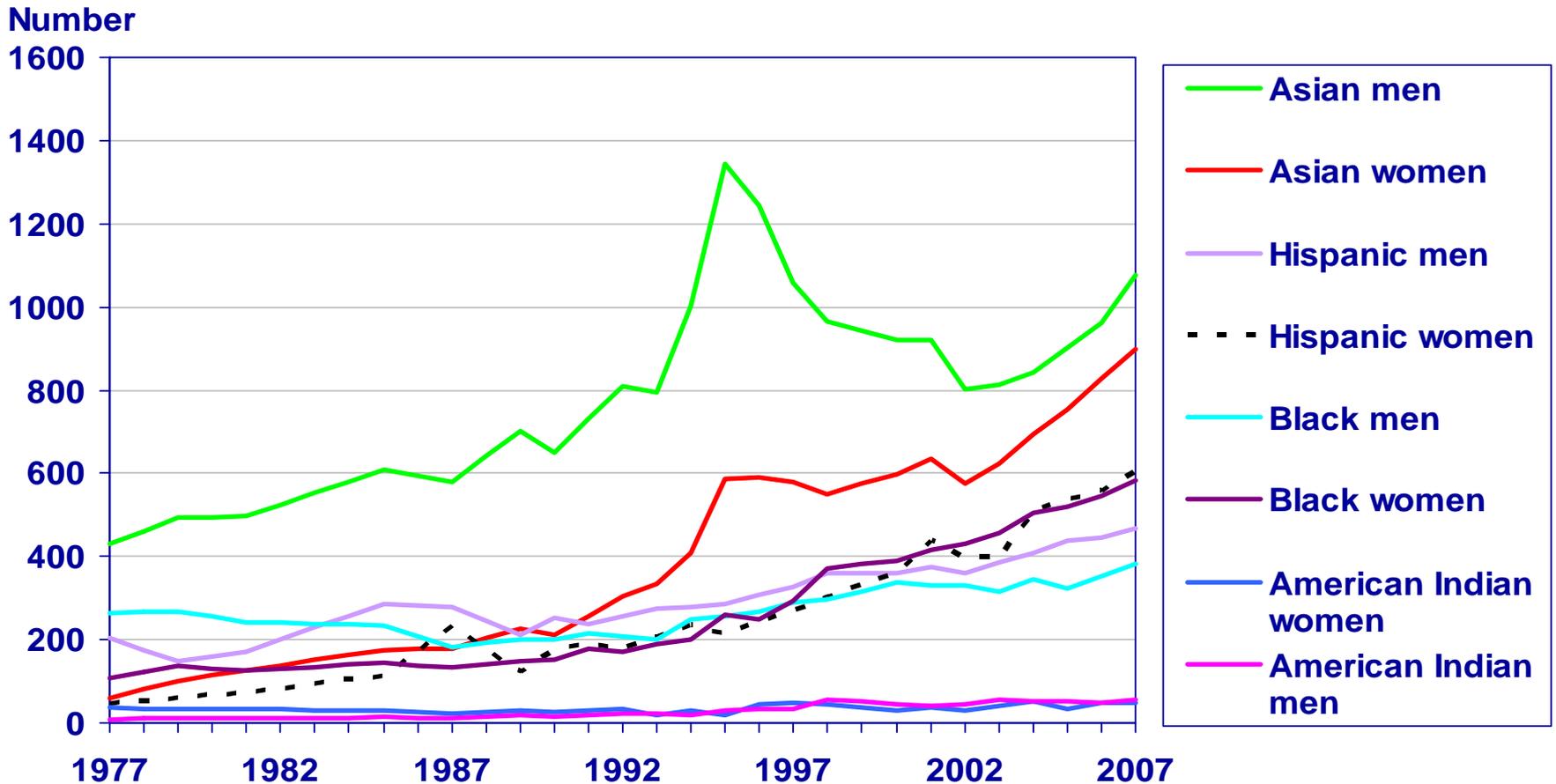
## Doctoral degrees awarded in STEM fields to U.S. citizens and permanent residents, by sex: 1977–2007



Note: Asian includes Pacific Islander. American Indian includes Alaska Native. The increase in Asians/Pacific Islanders in the mid-1990s is a result of the Chinese Student Protection Act of 1992, which made thousands of students from the People's Republic of China enrolled in U.S. universities eligible to apply for permanent resident visas. Data not available for 1978, 1980, 1982-84, 1986, 1989, and 1999.

Source: National Center for Education Statistics, IPEDS Completions Survey, 1977-2007.

# Doctoral degrees awarded in STEM fields to minority U.S. citizens and permanent residents, by sex: 1977–2007



Note: Asian includes Pacific Islander. American Indian includes Alaska Native. The increase in Asians/Pacific Islanders in the mid-1990s is a result of the Chinese Student Protection Act of 1992, which made thousands of students from the People's Republic of China enrolled in U.S. universities eligible to apply for permanent resident visas. Data not available for 1978, 1980, 1982-84, 1986, 1989, and 1999.

Source: National Center for Education Statistics, IPEDS Completions Survey, 1977-2007.



## Physics and biological sciences doctorates earned by women, by race/ethnicity: 1995–2007

	Physics URM women	Physics Asian women	Biological sciences URM women	Biological sciences Asian women
1995	4	26	73	172
1996	3	21	89	190
1997	2	22	117	201
1998	6	19	128	170
2000	4	10	137	200
2001	8	12	138	190
2002	9	6	144	184
2003	9	15	160	216
2004	6	7	197	241
2005	6	14	222	258
2006	8	15	218	241
2007	9	14	234	299

Notes: Underrepresented minority includes Blacks, Hispanics, and American Indians/Alaska Natives. Asian includes Pacific Islander. Data not available for 1999. Racial/ethnic groups refer to U.S. citizens and permanent residents only.

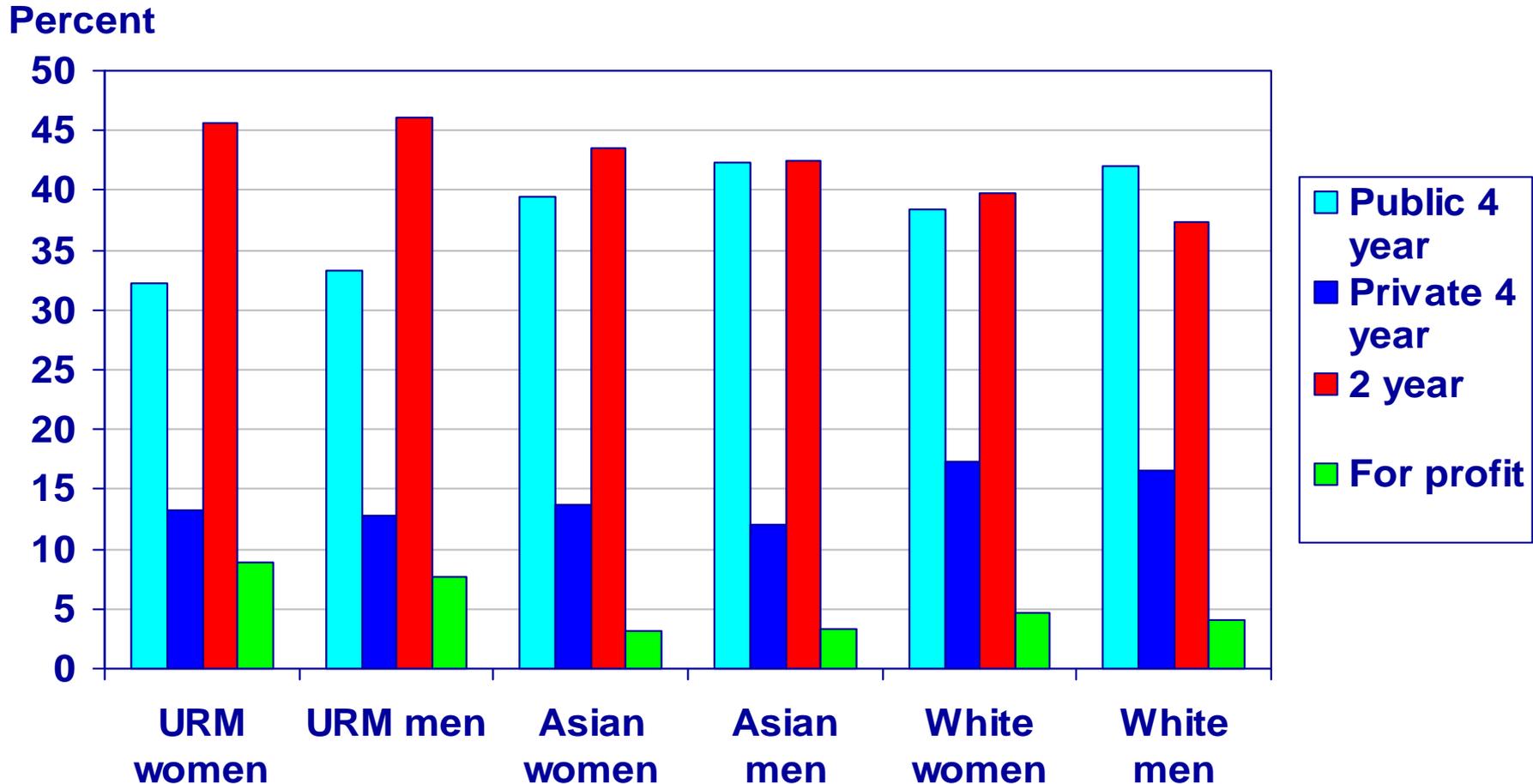
Source: National Center for Education Statistics, IPEDS Completions Survey, 2003-07.



# Where do women and men of color go to school?

- Like underrepresented men, a lower percentage of underrepresented women than of White men and women enroll in public or private 4 year colleges, and a higher percentage attend 2 year colleges and 2- or 4-year for profit institutions.
- A lower percentage of Asian men and women than of White men and women attend private 4 year colleges, and a higher percentage attend 2 year colleges.

## Undergraduate enrollment, by sex, race/ethnicity, and level and control of academic institution: Fall 2007



URM = underrepresented minority.

Notes: Underrepresented minority includes Blacks, Hispanics, and American Indians/Alaska Natives. Asian includes Pacific Islander.

Source: National Center for Education Statistics, IPEDS Fall Enrollment Survey 2007.



## Top bachelor's granting schools

- **The top bachelor's granting schools differ for each racial/ethnic group.**
- **Within each racial/ethnic group, the top schools for men and women are mostly the same schools.**
- **For Hispanic men and women, the top bachelor's granting schools are largely in Puerto Rico, California, Texas, and Florida—states with large populations of Hispanics.**



## **Top bachelor's granting schools – cont.**

- **For Black men and women, the top bachelor's granting schools are largely Historically Black Colleges and Universities.**
- **For American Indians/Alaska natives, the top bachelor's granting schools are largely in Oklahoma, Arizona and other states with large American Indian/Alaska Native population. One is a tribal college.**
- **For Asians, the top bachelor's granting schools are largely in the University of California system.**



## Top academic institutions of Hispanic U.S. citizen/permanent resident STEM bachelor's degree recipients: 2003–07

Academic institution	Women		Academic institution	Men
University of Puerto Rico Mayaguez	2,818		University of Puerto Rico Mayaguez	2,934
University of Puerto Rico Rio Piedras	2,254		Florida International University	1,739
Florida International University	2,147		University of Texas Austin	1,433
University of California Los Angeles	2,093		Universidad Politecnica de Puerto Rico	1,377
California State University Northridge	1,341		University of California Los Angeles	1,316
University of California Santa Barbara	1,291		University of Florida	1,155
University of Texas San Antonio	1,276		University of Puerto Rico Rio Piedras	1,110
University of California Irvine	1,247		University of Texas El Paso	1,025
California State University Fullerton	1,194		University of Texas San Antonio	1,022
San Diego State University	1,193		San Diego State University	956
University of California Riverside	1,178		Texas A&M University	886
University of Texas Austin	1,162		University of Texas Pan American	878
University of California Davis	1,079		University of California Irvine	854
University of Florida	1,069		California State University Northridge	811



## Top academic institutions of Black U.S. citizen/permanent resident STEM bachelor's degree recipients: 2003–07

Academic institution	Women		Academic institution	Men
Spelman College	1,649		Morehouse College	1,159
Georgia State University	1,451		Florida A&M University	906
Howard University	1,300		University of Maryland College Park	809
Florida A&M University	1,256		North Carolina A&T State University	767
Xavier University of Louisiana	1,182		Strayer University	647
Hampton University	1,011		Southern University and A&M College	608
University of South Florida	999		Howard University	603
University of Maryland College Park	990		Morgan State University	597
CUNY John Jay College	951		Florida State University	568
North Carolina A&T State University	935		North Carolina State University Raleigh	561
Morgan State University	881		University of Florida	502
Tennessee State University	867		Tennessee State University	495
Southern University and A&M College	824		Georgia State University	490
Florida State University	800		Ohio State University	486



## Top academic institutions of American Indian/Alaska Native U.S. citizen/permanent resident STEM bachelor's degree recipients: 2003–07

Academic institution	Women		Academic institution	Men
University of Oklahoma Norman	238		Oklahoma State University	246
Oklahoma State University	224		University of Oklahoma Norman	242
University of North Carolina Pembroke	179		Northeastern State University	122
Northeastern State University	164		DeVry University Pomona CA	91
Fort Lewis College	139		University of Washington Seattle	91
University of New Mexico	137		University of New Mexico	90
Arizona State University Tempe	133		George Mason University	85
University of Washington Seattle	118		Southeastern Oklahoma State University	78
George Mason University	111		Haskell Indian Nations University	75
University of Arizona	111		Arizona State University Tempe	74
Southeastern Oklahoma State University	99		University of Arizona	69
Northern Arizona University	96		Northern Arizona University	67
East Central University	85		University of North Carolina Pembroke	67
University of California Davis	85		Fort Lewis College	61
			University of Michigan Ann Arbor	61



## Top academic institutions of Asian/Pacific Islander U.S. citizen/permanent resident STEM bachelor's degree recipients: 2003–07

Academic institution	Women		Academic institution	Men
University of California Los Angeles	5,386		University of California Irvine	5,045
University of California Irvine	5,184		University of California Los Angeles	4,297
University of California Berkeley	4,610		University of California Berkeley	4,283
University of California Davis	3,877		University of California Davis	3,332
University of California San Diego	3,310		University of California San Diego	3,147
University of Washington Seattle	2,469		University of Washington Seattle	2,399
Rutgers University New Brunswick	1,827		University of Texas Austin	2,373
University of Texas Austin	1,720		Rutgers University New Brunswick	2,069
University of California Riverside	1,593		University of Illinois Urbana Champaign	1,704
University of Hawaii Manoa	1,493		University of Hawaii Manoa	1,519
University of Michigan Ann Arbor	1,226		University of Maryland College Park	1,495
University of Illinois Chicago	1,230		University of California Riverside	1,466
University of Maryland College Park	1,112		San Jose State University	1,441
University of Illinois Urbana Champaign	1,053		University of Michigan Ann Arbor	1,409

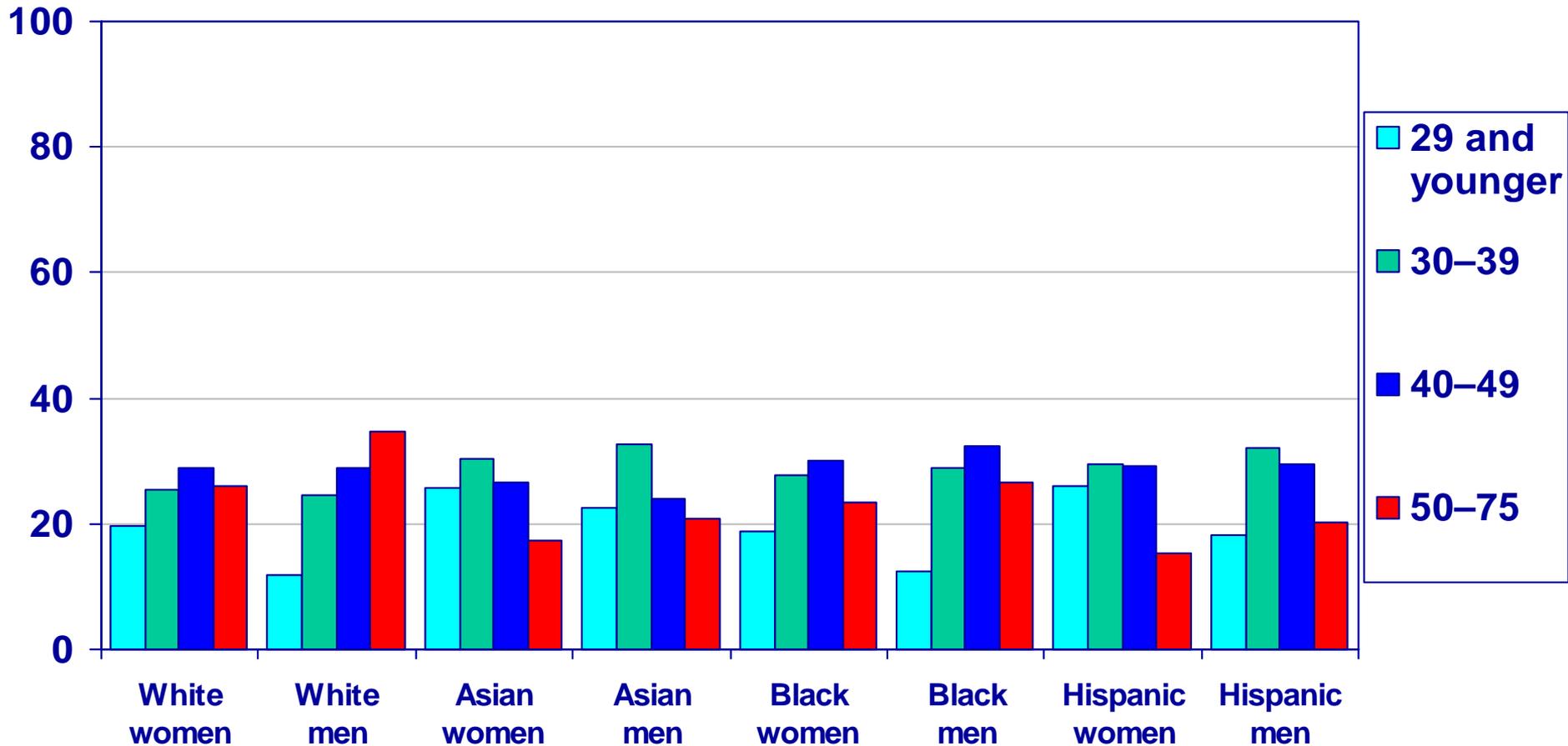


# What are the demographic characteristics of women of color in STEM employment?

- **Within each racial/ethnic group, women are younger, on average, than men.**
- **Within each racial/ethnic group, women are less likely than men to be married.**
- **Within each racial/ethnic group, women are less likely than men to have children living in the household.**

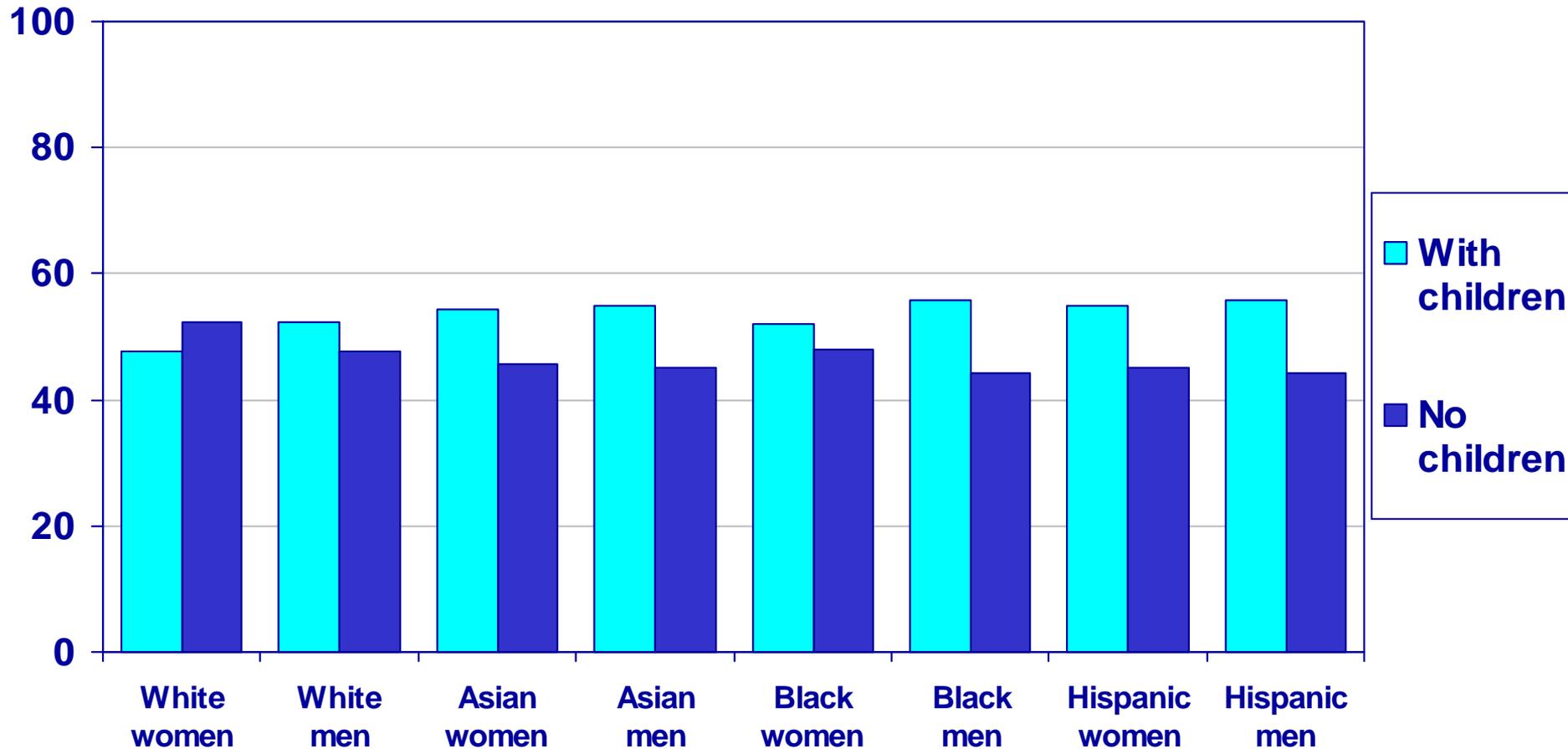
## Demographic characteristics of employed scientists and engineers – age: 2006

Percent



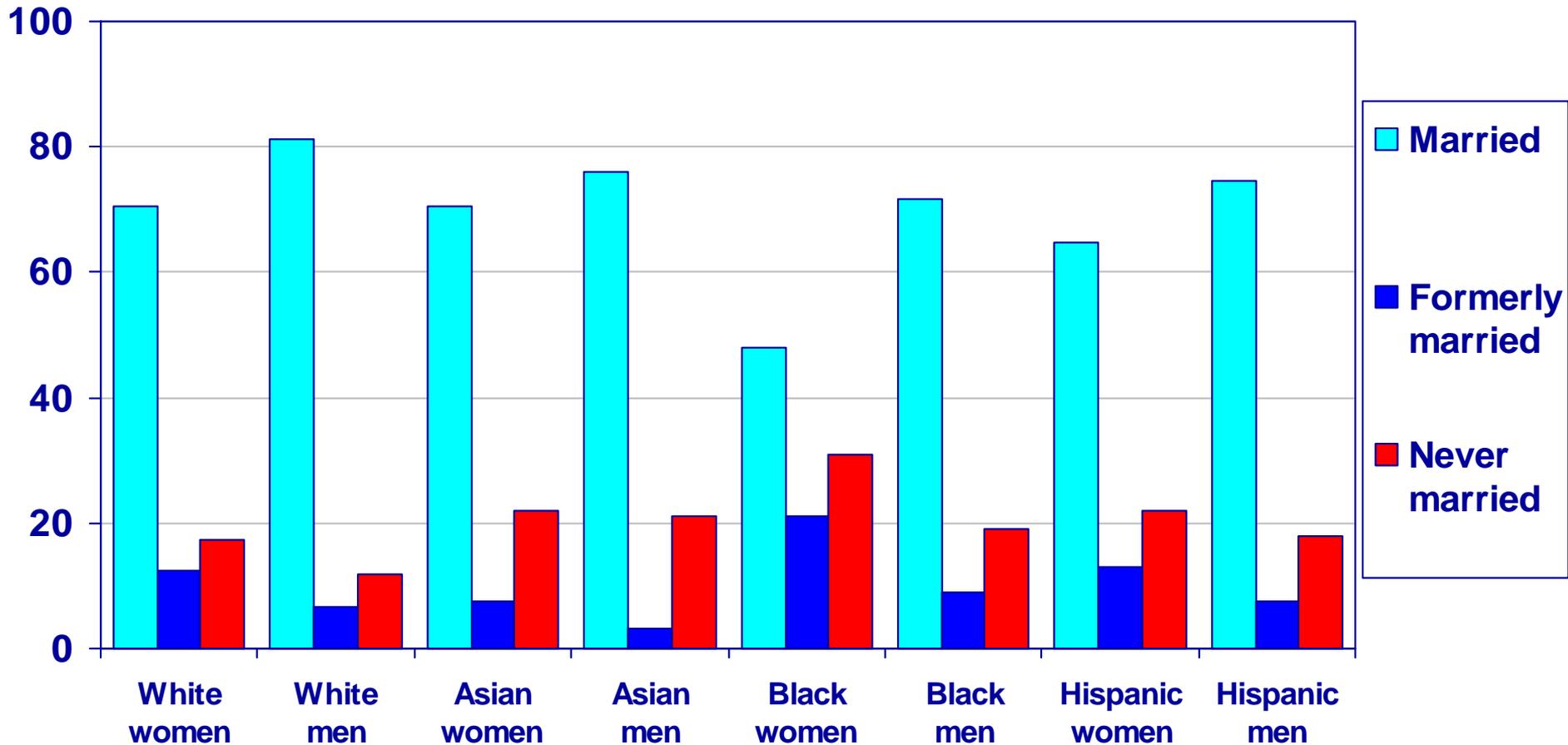
## Demographic characteristics of employed scientists and engineers – children living in household: 2006

Percent



## Demographic characteristics of employed scientists and engineers – marital status: 2006

Percent





# What are the employment characteristics of women of color in STEM?

- **Within all racial/ethnic groups, lower percentages of women scientists and engineers are engineers, computer scientists or physical scientists.**
- **Within all racial/ethnic groups, higher percentages of women scientists and engineers are biological scientists, mathematicians, and social and behavioral scientists.**
- **Within all racial/ethnic groups, a higher percentage of women than of men are employed in the education sector and a lower percentage of men than of women are in business/industry.**



## **What are the employment characteristics of women of color in STEM? – cont.**

- **A higher percentage of Asian men and women than of other groups are employed in business/industry and a lower percentage are employed in government.**
- **Within each racial/ethnic group, lower percentages of women than of men are tenured or full professors.**
- **Asian women have the lowest percentage tenured or full professors.**



## Employed scientists and engineers, by occupation, race/ethnicity and sex: 2006

Percent

100

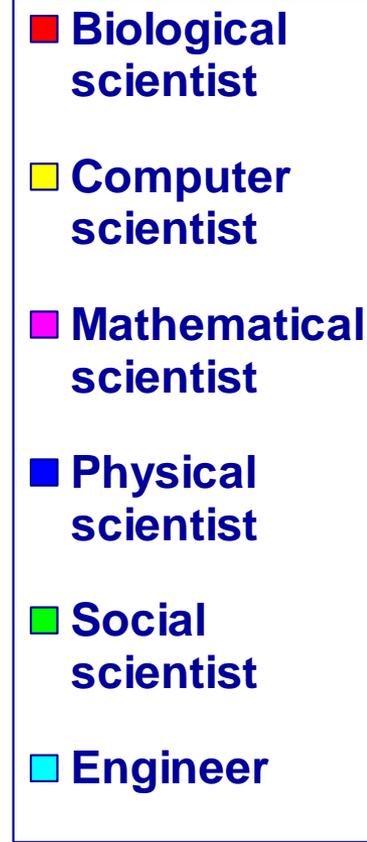
80

60

40

20

0



URM  
women

URM men

Asian  
women

Asian  
men

White  
women

White  
men

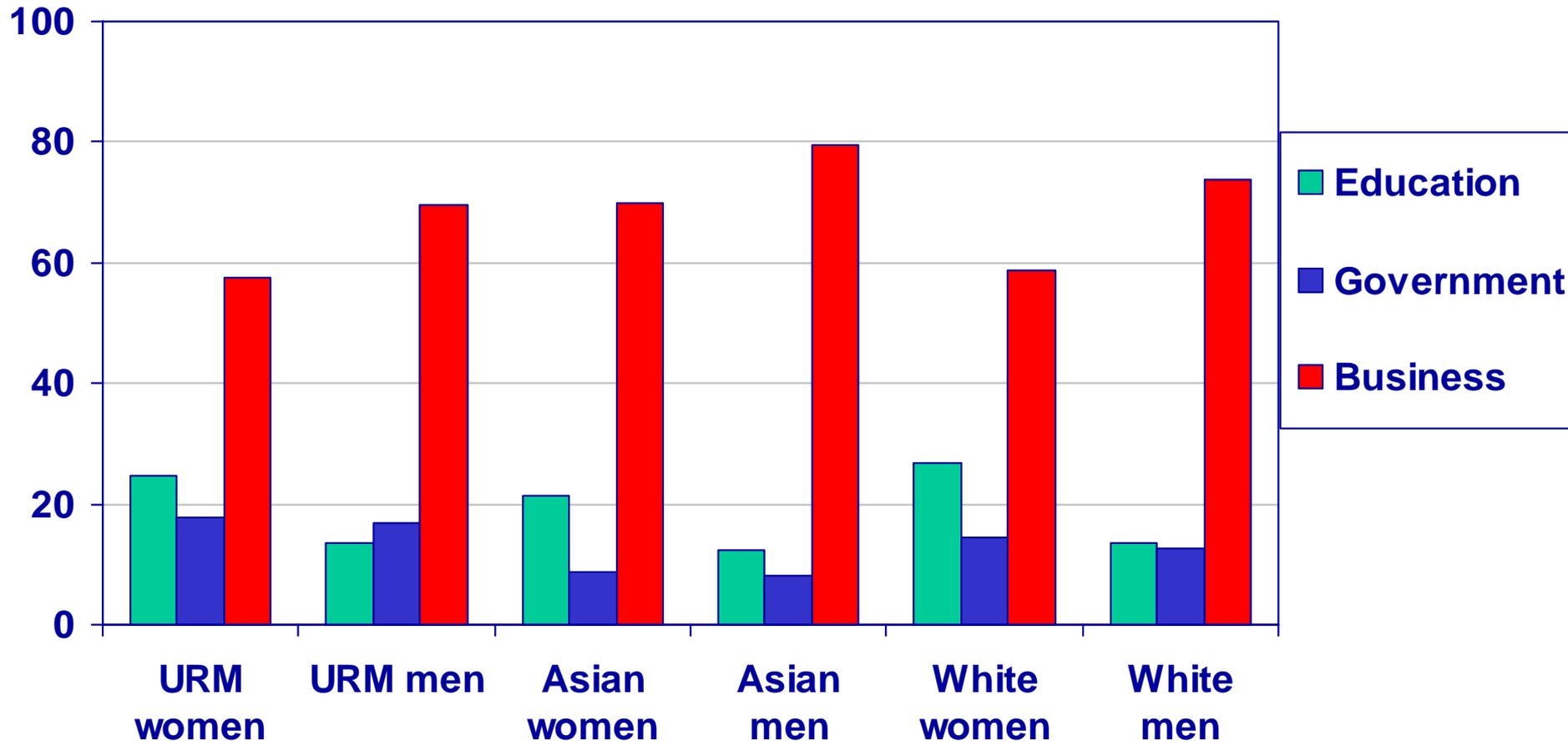
URM = underrepresented minority.

Notes: Underrepresented minority includes Blacks, Hispanics, and American Indians/Alaska Natives. Social scientist includes psychologist.

Source: National Science Foundation, Scientists and Engineers Statistical Data System, 2006.

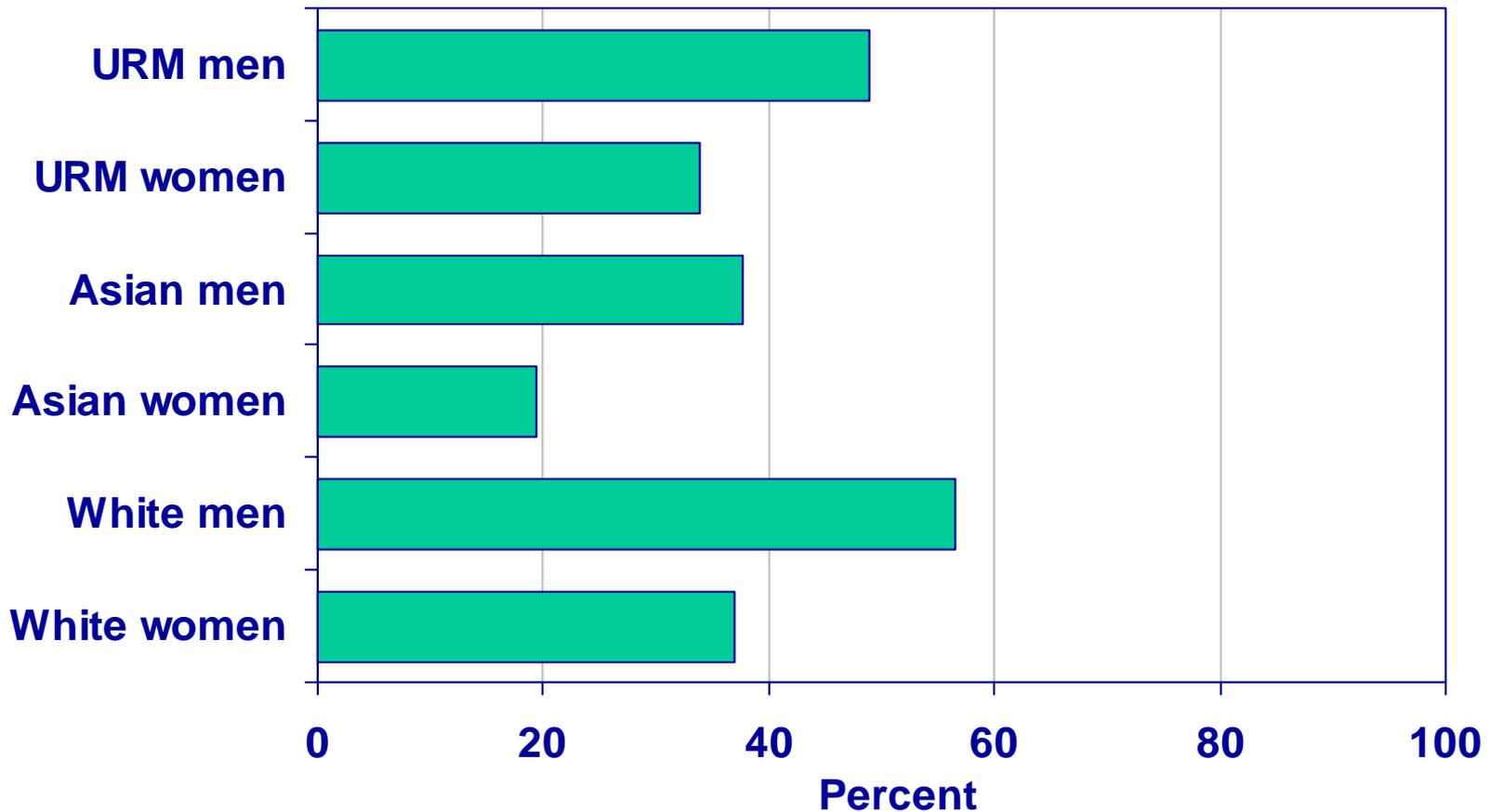
## Employed scientists and engineers, by sector of employment, race/ethnicity and sex: 2006

Percent





## Percentage of doctoral scientists and engineers employed in academia who are tenured, by race/ethnicity and sex: 2006



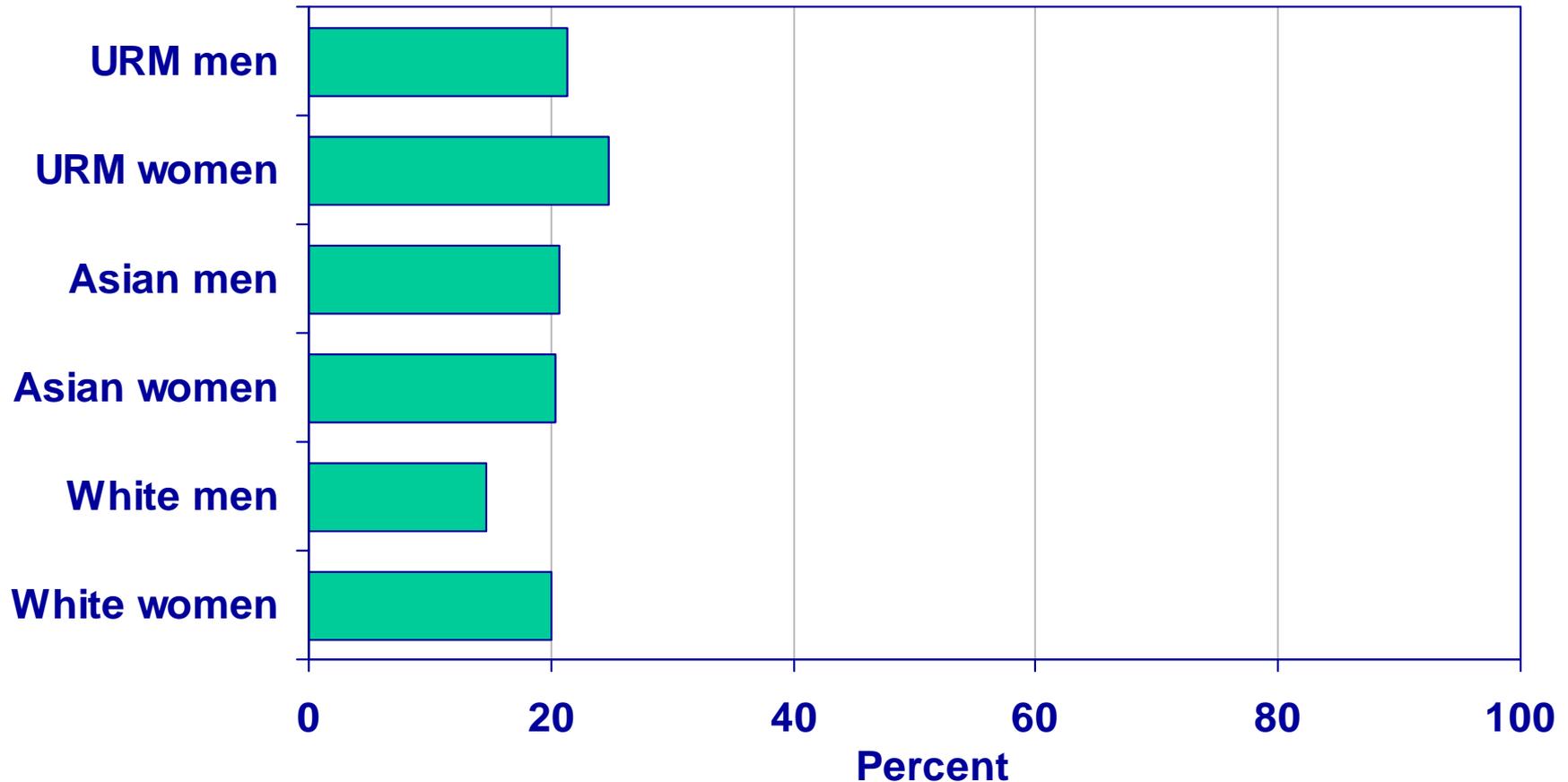
URM = underrepresented minority.

Notes: Underrepresented minority includes Blacks, Hispanics, and American Indians/Alaska Natives.

Source: National Science Foundation, Survey of Doctorate Recipients, 2006.



## Percentage of doctoral scientists and engineers employed in academia who are on the tenure track, by race/ethnicity and sex: 2006



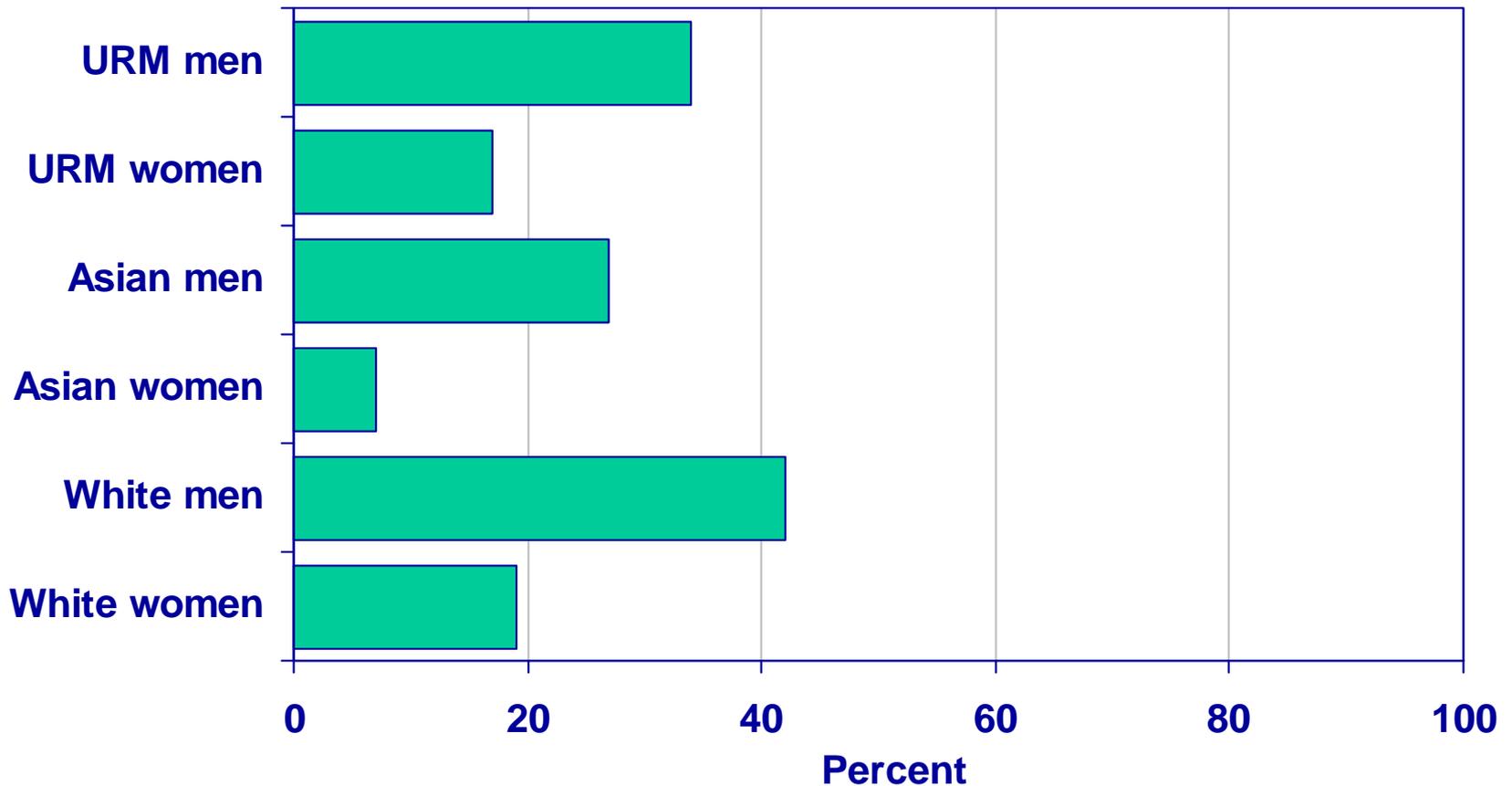
URM = underrepresented minority.

Notes: Underrepresented minority includes Blacks, Hispanics, and American Indians/Alaska Natives.

Source: National Science Foundation, Survey of Doctorate Recipients, 2006.



# Percentage of doctoral scientists and engineers employed in academia who are full professors, by race/ethnicity and sex: 2006



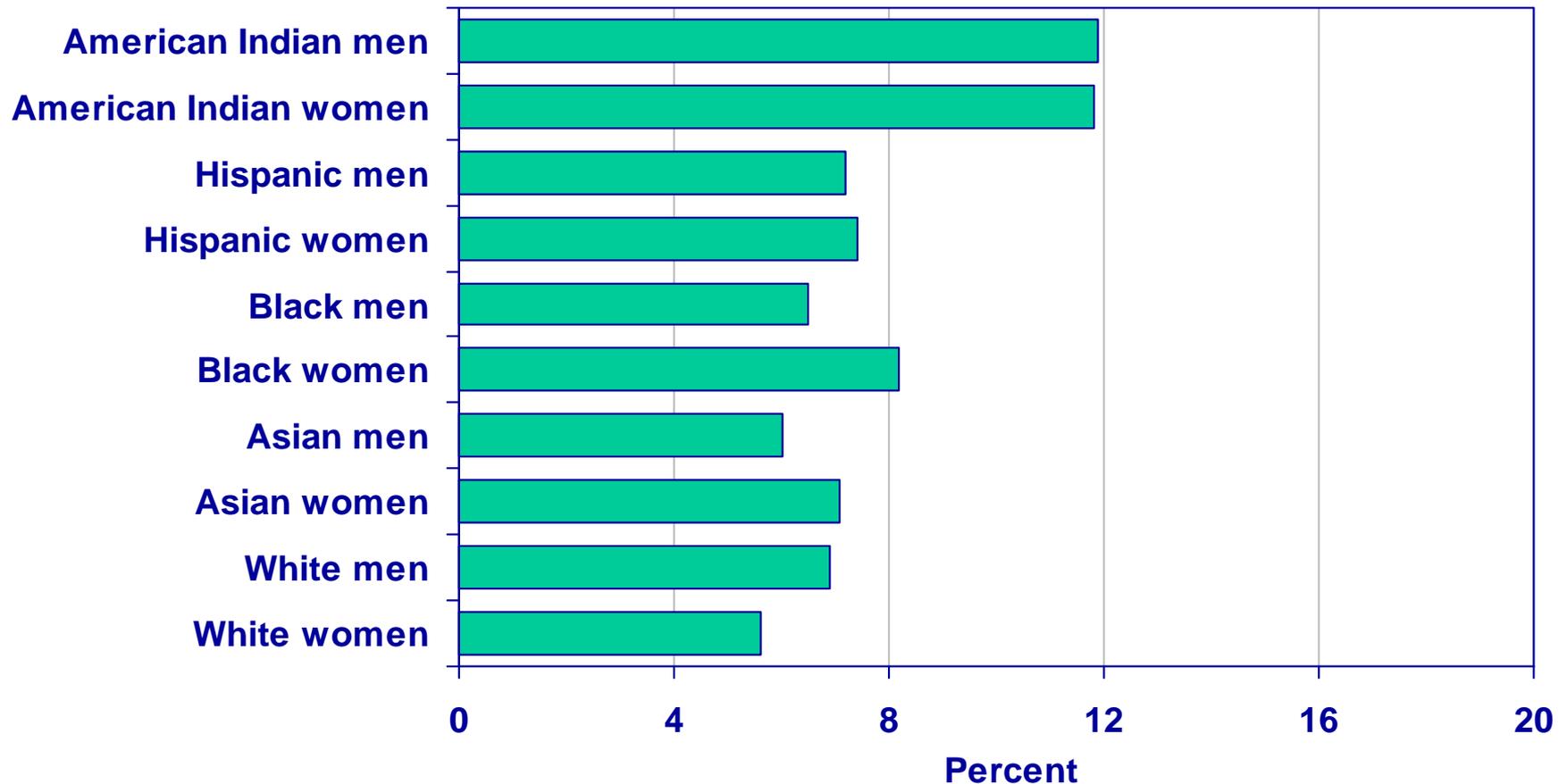
URM = underrepresented minority.

Notes: Underrepresented minority includes Blacks, Hispanics, and American Indians/Alaska Natives.

Source: National Science Foundation, Survey of Doctorate Recipients, 2006.



## Percent of employed scientists and engineers with disabilities, by race/ethnicity and sex: 2006



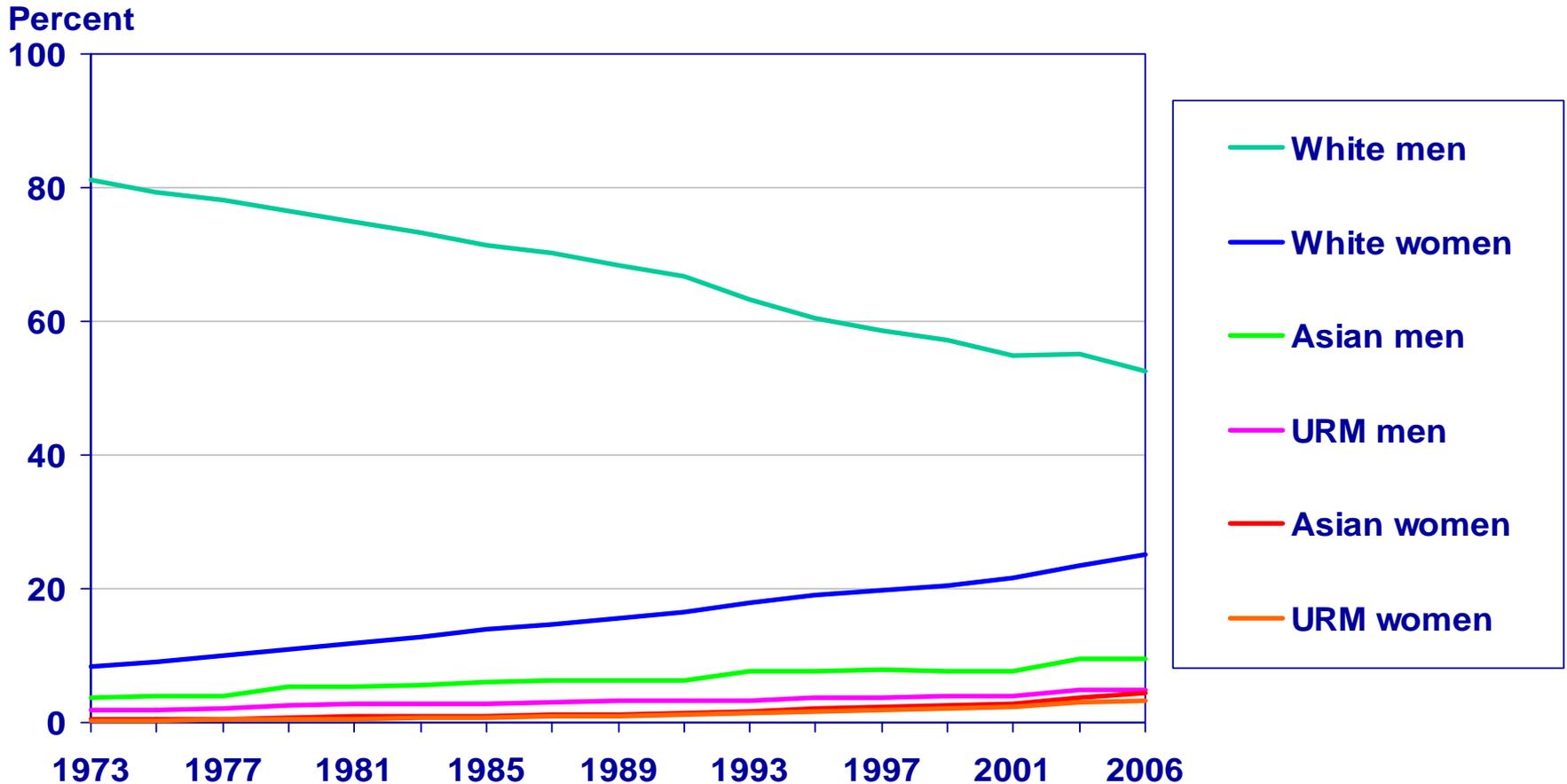
Source: National Science Foundation, Scientists and Engineers Statistical Data System, 2006.



# What are the trends in STEM employment of women of color?

- **Underrepresented minority women are an increasing (although tiny) percentage of STEM doctorate holders in academia.**
- **White men are a declining percentage of STEM doctorate holders in academia.**
- **Asian men and White women have made the most gains in STEM academic employment.**

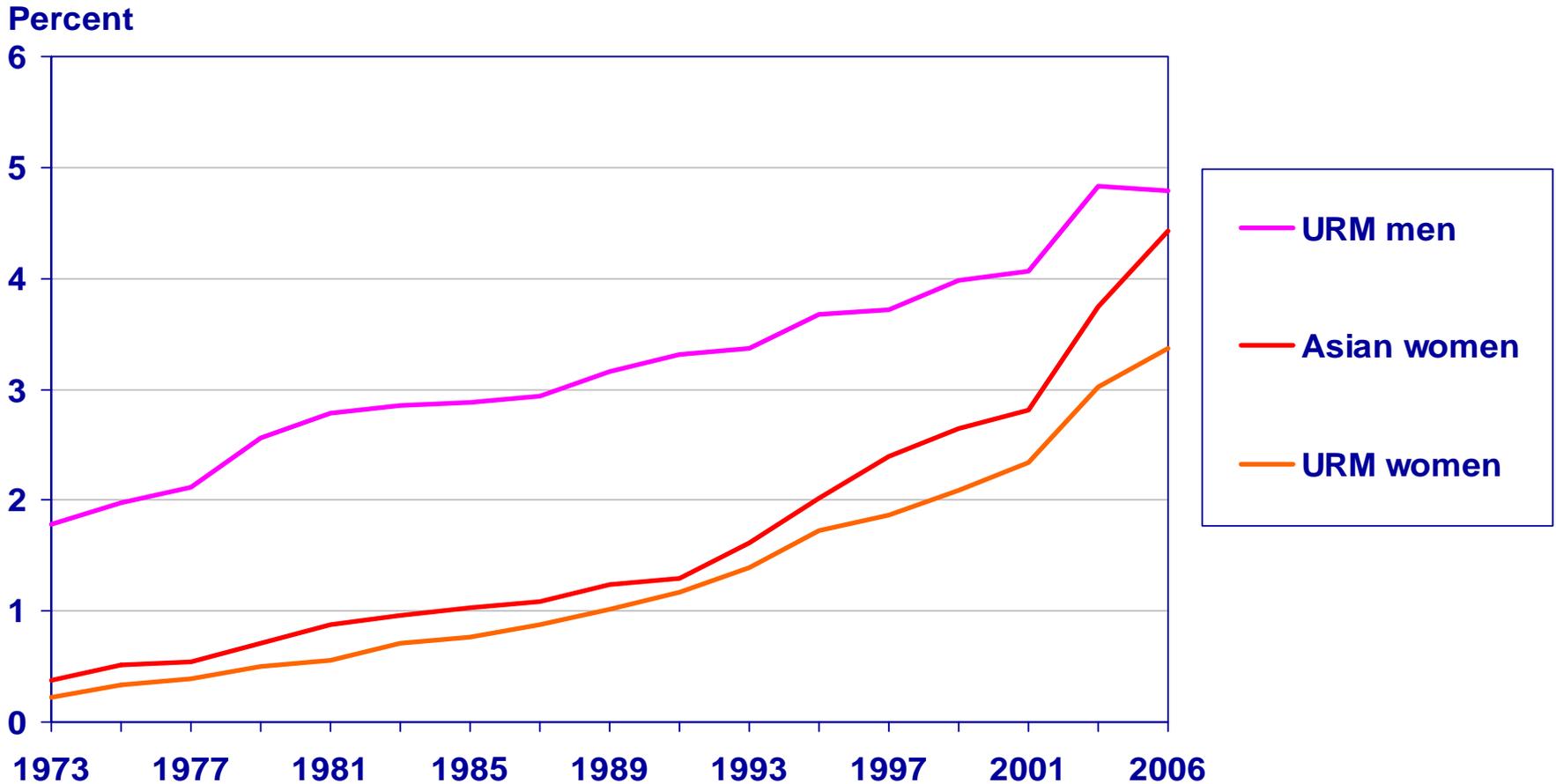
# STEM doctorate holders employed in academia, by race/ethnicity and sex: 1973–2006



Notes: Underrepresented minority includes Blacks, Hispanics, and American Indians/Alaska Natives. Asian includes Pacific Islander from 1973 through 1999.

Source: National Science Foundation, Survey of Doctorate Recipients.

## STEM doctorate holders employed in academia, by race/ethnicity and sex: 1973–2006



Note: Underrepresented minority includes Blacks, Hispanics, and American Indians/Alaska Natives. Asian includes Pacific Islander from 1973 through 1999.

Source: National Science Foundation, Survey of Doctorate Recipients.



## Summary

- **Access to education, educational attainment, and types of colleges attended are defined primarily by race/ethnicity.**
- **Field of study and employment characteristics are defined primarily by gender.**
- **Some progress has been made since the 1970s in education and employment, although representation in STEM remains small.**



# **Women, Minorities, and Persons with Disabilities in Science and Engineering: 2009**

**Women, Minorities, and Persons with Disabilities in Science and Engineering is a report that provides information about the participation of women, minorities, and persons with disabilities in science and engineering education and employment.**

**Information on the site is organized by topic and group. Links to additional data sources and reports are provided. This site is updated as new information becomes available.**

**A formal report is issued every two years and is sent to Congress. The latest report is 2009.**