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
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

- White women: 35%
- White men: 32%
- Asian men: 2%
- Asian women: 2%
- Black men: 6%
- Black women: 6%
- Hispanic men: 8%
- Hispanic women: 7%
- Other women: 1%
- Other men: 1%

Note: Other includes American Indians/Alaska Natives, Native Hawaiians/other Pacific Islanders and multiple race/ethnicity.
Employed scientists and engineers, by sex and race/ethnicity: 2006

- White men: 55%
- White women: 18%
- Asian men: 12%
- Asian women: 5%
- Black men: 2%
- Black women: 1%
- Hispanic men: 3%
- Hispanic women: 1%
- Other men: 2%
- Other women: 1%

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

- White men: 59%
- White women: 22%
- Asian men: 9%
- Asian women: 3%
- Black men: 2%
- Black women: 1%
- Hispanic men: 2%
- Hispanic women: 1%
- Other men: 1%
- Other women: 0%
- Other: 0%

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

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.
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.
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.

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

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.

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

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


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

<table>
<thead>
<tr>
<th>Year</th>
<th>Physics URM women</th>
<th>Physics Asian women</th>
<th>Biological sciences URM women</th>
<th>Biological sciences Asian women</th>
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<tbody>
<tr>
<td>1995</td>
<td>4</td>
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<tr>
<td>2004</td>
<td>6</td>
<td>7</td>
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<tr>
<td>2005</td>
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<td>14</td>
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<td>258</td>
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<tr>
<td>2006</td>
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<td>15</td>
<td>218</td>
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<tr>
<td>2007</td>
<td>9</td>
<td>14</td>
<td>234</td>
<td>299</td>
</tr>
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</table>

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.
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

<table>
<thead>
<tr>
<th>Academic institution</th>
<th>Women</th>
<th>Academic institution</th>
<th>Men</th>
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</thead>
<tbody>
<tr>
<td>University of Puerto Rico Mayaguez</td>
<td>2,818</td>
<td>University of Puerto Rico Mayaguez</td>
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<tr>
<td>University of Puerto Rico Rio Piedras</td>
<td>2,254</td>
<td>Florida International University</td>
<td>1,739</td>
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<tr>
<td>Florida International University</td>
<td>2,147</td>
<td>University of Texas Austin</td>
<td>1,433</td>
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<tr>
<td>University of California Los Angeles</td>
<td>2,093</td>
<td>Universidad Politecnica de Puerto Rico</td>
<td>1,377</td>
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<tr>
<td>California State University Northridge</td>
<td>1,341</td>
<td>University of California Los Angeles</td>
<td>1,316</td>
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<tr>
<td>University of California Santa Barbara</td>
<td>1,291</td>
<td>University of Florida</td>
<td>1,155</td>
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<tr>
<td>University of Texas San Antonio</td>
<td>1,276</td>
<td>University of Puerto Rico Rio Piedras</td>
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<tr>
<td>University of California Irvine</td>
<td>1,247</td>
<td>University of Texas El Paso</td>
<td>1,025</td>
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<tr>
<td>California State University Fullerton</td>
<td>1,194</td>
<td>University of Texas San Antonio</td>
<td>1,022</td>
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<tr>
<td>San Diego State University</td>
<td>1,193</td>
<td>San Diego State University</td>
<td>956</td>
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<tr>
<td>University of California Riverside</td>
<td>1,178</td>
<td>Texas A&amp;M University</td>
<td>886</td>
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<tr>
<td>University of Texas Austin</td>
<td>1,162</td>
<td>University of Texas Pan American</td>
<td>878</td>
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<tr>
<td>University of California Davis</td>
<td>1,079</td>
<td>University of California Irvine</td>
<td>854</td>
</tr>
<tr>
<td>University of Florida</td>
<td>1,069</td>
<td>California State University Northridge</td>
<td>811</td>
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### Top academic institutions of Black U.S. citizen/permanent resident STEM bachelor’s degree recipients: 2003–07

<table>
<thead>
<tr>
<th>Academic institution</th>
<th>Women</th>
<th>Academic institution</th>
<th>Men</th>
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</thead>
<tbody>
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<td>Spelman College</td>
<td>1,649</td>
<td>Morehouse College</td>
<td>1,159</td>
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<td>Georgia State University</td>
<td>1,451</td>
<td>Florida A&amp;M University</td>
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<tr>
<td>Howard University</td>
<td>1,300</td>
<td>University of Maryland College Park</td>
<td>809</td>
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<tr>
<td>Florida A&amp;M University</td>
<td>1,256</td>
<td>North Carolina A&amp;T State University</td>
<td>767</td>
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<tr>
<td>Xavier University of Louisiana</td>
<td>1,182</td>
<td>Strayer University</td>
<td>647</td>
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<tr>
<td>Hampton University</td>
<td>1,011</td>
<td>Southern University and A&amp;M College</td>
<td>608</td>
</tr>
<tr>
<td>University of South Florida</td>
<td>999</td>
<td>Howard University</td>
<td>603</td>
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<td>University of Maryland College Park</td>
<td>990</td>
<td>Morgan State University</td>
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<tr>
<td>CUNY John Jay College</td>
<td>951</td>
<td>Florida State University</td>
<td>568</td>
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<tr>
<td>North Carolina A&amp;T State University</td>
<td>935</td>
<td>North Carolina State University Raleigh</td>
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<td>Morgan State University</td>
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<td>Tennessee State University</td>
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<td>Tennessee State University</td>
<td>495</td>
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<tr>
<td>Southern University and A&amp;M College</td>
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<td>Georgia State University</td>
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<tr>
<td>Florida State University</td>
<td>800</td>
<td>Ohio State University</td>
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</table>

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

<table>
<thead>
<tr>
<th>Academic institution</th>
<th>Women</th>
<th>Academic institution</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Oklahoma Norman</td>
<td>238</td>
<td>Oklahoma State University</td>
<td>246</td>
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<tr>
<td>Oklahoma State University</td>
<td>224</td>
<td>University of Oklahoma Norman</td>
<td>242</td>
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<tr>
<td>University of North Carolina Pembroke</td>
<td>179</td>
<td>Northeastern State University</td>
<td>122</td>
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<tr>
<td>Northeastern State University</td>
<td>164</td>
<td>DeVry University Pomona CA</td>
<td>91</td>
</tr>
<tr>
<td>Fort Lewis College</td>
<td>139</td>
<td>University of Washington Seattle</td>
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<tr>
<td>University of New Mexico</td>
<td>137</td>
<td>University of New Mexico</td>
<td>90</td>
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<tr>
<td>Arizona State University Tempe</td>
<td>133</td>
<td>George Mason University</td>
<td>85</td>
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<tr>
<td>University of Washington Seattle</td>
<td>118</td>
<td>Southeastern Oklahoma State University</td>
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<tr>
<td>George Mason University</td>
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<td>Haskell Indian Nations University</td>
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<tr>
<td>University of Arizona</td>
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<tr>
<td>Southeastern Oklahoma State University</td>
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<td>Northern Arizona University</td>
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<td>Northern Arizona University</td>
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<td>East Central University</td>
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<td>University of North Carolina Pembroke</td>
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<tr>
<td>University of California Davis</td>
<td>85</td>
<td>Fort Lewis College</td>
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<tr>
<td>University of Michigan Ann Arbor</td>
<td></td>
<td>University of Michigan Ann Arbor</td>
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### Top academic institutions of Asian/Pacific Islander U.S. citizen/permanent resident STEM bachelor’s degree recipients: 2003–07

<table>
<thead>
<tr>
<th>Academic institution</th>
<th>Women</th>
<th>Academic institution</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of California Los Angeles</td>
<td>5,386</td>
<td>University of California Irvine</td>
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<tr>
<td>University of California Irvine</td>
<td>5,184</td>
<td>University of California Los Angeles</td>
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<tr>
<td>University of California Berkeley</td>
<td>4,610</td>
<td>University of California Berkeley</td>
<td>4,283</td>
</tr>
<tr>
<td>University of California Davis</td>
<td>3,877</td>
<td>University of California Davis</td>
<td>3,332</td>
</tr>
<tr>
<td>University of California San Diego</td>
<td>3,310</td>
<td>University of California San Diego</td>
<td>3,147</td>
</tr>
<tr>
<td>University of Washington Seattle</td>
<td>2,469</td>
<td>University of Washington Seattle</td>
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<tr>
<td>Rutgers University New Brunswick</td>
<td>1,827</td>
<td>University of Texas Austin</td>
<td>2,373</td>
</tr>
<tr>
<td>University of Texas Austin</td>
<td>1,720</td>
<td>Rutgers University New Brunswick</td>
<td>2,069</td>
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<tr>
<td>University of California Riverside</td>
<td>1,593</td>
<td>University of Illinois Urbana Champaign</td>
<td>1,704</td>
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<tr>
<td>University of Hawaii Manoa</td>
<td>1,493</td>
<td>University of Hawaii Manoa</td>
<td>1,519</td>
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<tr>
<td>University of Michigan Ann Arbor</td>
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<td>University of Maryland College Park</td>
<td>1,495</td>
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<tr>
<td>University of Illinois Chicago</td>
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<td>University of California Riverside</td>
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<tr>
<td>University of Maryland College Park</td>
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<td>San Jose State University</td>
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<tr>
<td>University of Illinois Urbana Champaign</td>
<td>1,053</td>
<td>University of Michigan Ann Arbor</td>
<td>1,409</td>
</tr>
</tbody>
</table>

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

Source: National Science Foundation, Scientists and Engineers Statistical Data System, 2006.
Demographic characteristics of employed scientists and engineers – children living in household: 2006

Percent

With children

No children

White women
White men
Asian women
Asian men
Black women
Black men
Hispanic women
Hispanic men

Source: National Science Foundation, Scientists and Engineers Statistical Data System, 2006.
Demographic characteristics of employed scientists and engineers – marital status: 2006

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

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

Source: National Science Foundation, Scientists and Engineers Statistical Data System, 2006.
Percentage of doctoral scientists and engineers employed in academia who are tenured, by race/ethnicity and sex: 2006

- URM men
- URM women
- Asian men
- Asian women
- White men
- White women

URM = underrepresented minority.
Notes: Underrepresented minority includes Blacks, Hispanics, and American Indians/Alaska Natives.
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.
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.
Percent of employed scientists and engineers with disabilities, by race/ethnicity and sex: 2006

- American Indian men
- American Indian women
- Hispanic men
- Hispanic women
- Black men
- Black women
- Asian men
- Asian women
- White men
- White women

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

Source: National Science Foundation, Survey of Doctorate Recipients.
STEM doctorate holders employed in academia, by race/ethnicity and sex: 1973–2006

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.