Where Are the Women of Color? Data on African American, Hispanic, and Native American Faculty in STEM

By Marcy H. Towns

In October of 2009, the Committee on Equal Opportunities in Science and Engineering (CEOSE) held a symposium on Women of Color in STEM (science, technology, engineering, and mathematics; NSF-OAI). The symposium featured data pertaining to Asian, African American, Hispanic, and Native American women and their participation in STEM. It is critical to become familiar with this data, because the numbers of underrepresented women in STEM are sparingly small. Ultimately, this has an impact on diversity and excellence in academia for faculty and students.

What does the National Science Foundation (NSF) mean by *women of color*? Asian, African American (black), Hispanic, and American Indian/Alaska Native (Native American) women are defined as women of color. The term *underrepresented* describes populations that have lower representation than the population as a whole. According to the U.S. Census Bureau survey in 2000, African American women were 6% of the total population in the United States, Hispanic women 6%, Native American women less than 1%, and Asian women 2% (U.S. Census Bureau 2000). Thus, the phrase *underrepresented women in STEM* refers to African American, Hispanic, and Native American women because they are represented in STEM occupations and in academia at lower percentages than the entire population. (It should be noted that Asian women are not underrepresented because the percentage of these women in STEM occupations and academia is greater than the representation in the whole population.)

What do the educational and employment data show? The NSF data demonstrate that in every year from 1998 to 2007, underrepresented women earned more bachelor's degrees in the sciences than underrepresented men (NSF-SRS a). In 2007, women earned a higher percentage of doctorates in science. Underrepresented minority (URM) women clustered in biological sciences, psychology, and social sciences, whereas URM men earned a higher percentage of doctorates in the computer sciences, Earth and atmospheric science, and mathematics and statistics. The percentage of URM women with doctorates employed in STEM academic positions has crept upward over the past 30 years (NSF-SRS a). However, in 2006 it was slightly over 3%, which points toward a great underrepresentation and underutilization of this group.

In academia, focusing on specific kinds of schools can facilitate analysis of the data by sex, race/ethnicity, discipline, and rank. Dr. Donna Nelson, an associate professor of chemistry at the University of Oklahoma, used the NSF research and development expenditures report at the time of data collection to identify the top 100 science, engineering, and mathematics institutions in the United States (NSF-SRS b). Department heads/chairs at these institutions were asked to classify their faculty by sex, race/ethnicity, and rank.

The data for 2007 are shown in Table 1 with men listed first followed by women in parentheses (Nelson, Brammer, and Rhoads 2007). The disaggregated data is listed specifically for underrepresented minorities—African Americans, Hispanics, and Native Americans—with Whites and Asians summed into the total faculty counts. The reason to craft tables as raw head counts is that a percentage model renders underrepresented women of color all but invisible. For every science discipline, the numbers of underrepresented women in each racial group compared with the total number of faculty is well below 1% and simultaneously much less than the percentage in the general population.

Focusing on chemistry, in 2007 there were 8 African American, 13 Hispanic, and 1 Native American women faculty at the top 100 chemistry departments in the United States. If one focuses on advancement through the academic ranks, the numbers tell an even bleaker story. In 2007, there were no African American and no Native American women full professors

TABLE 1

Numbers of tenured/tenure track faculty at the top 100 research institutions by race/ethnicity and by gender (FY 2007).

Discipline/department	African American	Hispanic	Native American	Total number of faculty
Chemistry	44 (8)	58 (13)	8 (1)	2,787 (383)
Mathematics and statistics	64 (7)	74 (16)	3 (0)	4,303 (554)
Computer science	23 (6)	46 (5)	1 (0)	2,531 (334)
Astronomy (top 40)	6 (2)	7 (1)	0 (0)	594 (94)
Physics	21 (2)	61 (9)	2 (0)	3,335 (304)
Biological sciences	101 (26)	190 (45)	16 (3)	7,455 (1822)
Earth sciences	19 (4)	48 (8)	8 (1)	2,047 (338)

Note: The data are displayed as number of men followed by the number of women in parentheses.

in the top 100 institutions (in 2008, 1 African American was promoted to full professor; Nelson, Brammer, and Rhoads 2007).

In our science classrooms each year there are women of color seeking role models who look like them, but in most cases they will not find them. From the data above it is apparent that students can go through an entire science program and not have been taught or supervised by a URM professor. Students who lack role models face significant barriers in science and deleterious effects on self-esteem (Nelson, Brammer, and Rhoads 2007; Seymour and Hewitt 1997) and persistence in science.

So, where are the underrepresented women of color? Not on science faculties, at least not in the numbers or percentages that are equivalent to their representation in the general population. These data are a call to action. If we value diversity and excellence at our institutions, we must consider how we recruit, advance, and retain URM faculty and also how we recruit, retain, and graduate the URM students who could one day join us in the faculty ranks.

References

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