A National Analysis of Diversity in Science and Engineering Faculties at Research Universities

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EXECUTIVE SUMMARY

The first national and most comprehensive analysis to date of tenured and tenure track faculty in the "top 50" departments of science and engineering disciplines shows that females and minorities are significantly underrepresented.

- There are few tenured and tenure-track women faculty in these departments in research universities, even though a growing number of women are completing their PhDs. Qualified women are not going to science and engineering departments. In some engineering disciplines, there is a better match between the representation of females in PhD attainment versus the faculty, but these disciplines are the ones with very low percentages of females in PhD attainment.
- Underrepresented minority (URM) women faculty are almost nonexistent in science and engineering departments at research universities. In the "top 50" computer science departments, there are no Black, Hispanic, or Native American tenured or tenure track women faculty.
- The percentage of women in BS attainment in science and engineering continues to increase, but they are likely to find themselves without the female faculty needed for optimal role models
- There are few female full professors in science and engineering; the percentage of women among full professors ranges from 3% to 15%. In all but one discipline surveyed, the highest percentage of female faculty is at the level of assistant professor.
- In most science disciplines studied, the percentage of women among recent PhD recipients is much higher than their percentage among assistant professors, the typical rank of recently hired faculty. Even in disciplines where women outnumber men earning PhDs, the percentage of assistant professors who are White male is greater than females. For example, in psychology, 66.1% of the PhDs between 1993 and 2002 were women; while in 2002, they accounted for only 45.4% of the assistant professors.

In some disciplines, it is likely that a woman can get a bachelor of science without being taught by a female professor in that discipline; it is also possible for a woman to get a PhD in science or engineering without having access to a woman faculty member in her field.

The data demonstrate that while the representation of females in science and engineering PhD attainment has significantly increased in recent years, the corresponding faculties are still overwhelmingly dominated by White men.

There is a drastically disproportionate number of male professors as role models for male students. For example, in 2000, 48.2% of the students graduating with a BS in math were women, but in 2002, only 8.3% of the faculty was female.

A cycle is perpetuated. Women are less likely to enter and remain in science and engineering when they lack mentors and role models. In most science disciplines, the percentage of women among faculty recently hired is not comparable to that of recent women PhDs. This results in fewer female faculty to act as role models for female undergraduates and graduate students. Female students observe this in the course of sampling the environment. When female professors are not hired, treated fairly, and retained, female students perceive that they will be treated similarly. This dissuades them from persisting in that discipline.

This is not to say that only women can mentor women and girls. In the absence of female professors, male professors have been mentoring female students for decades. Because of the dearth of female professors and the impact this has on female student perceptions, the male faculty should (1) actively encourage female students to enter science and engineering and offer to become their mentors and (2) insure that the environment for the few female professors currently in science and engineering is one which female students will perceive as appealing. In the end, the presence, treatment, and fate of female professors will be most relevant to the lives, family responsibilities, and careers of typical female students and the choices and obstacles they will face.