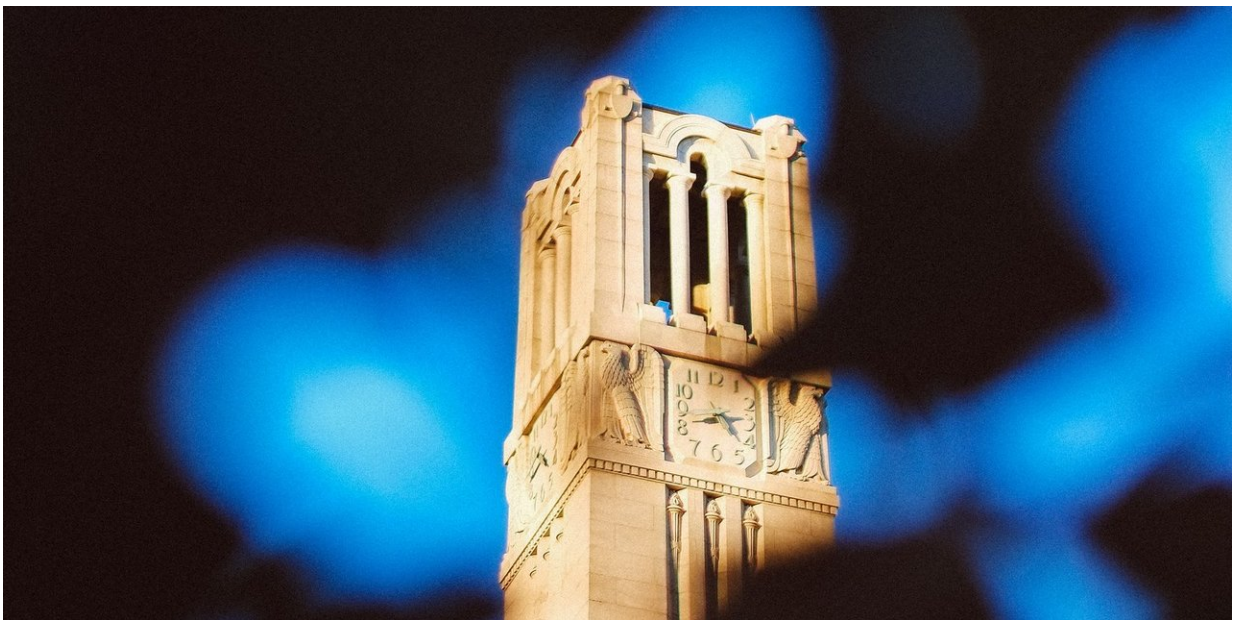


# Study examines hiring, retention of women and underrepresented minorities in STEM faculty

November 7 2017, by Tracey Peake

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Credit: North Carolina State University

Women and underrepresented minorities have been actively recruited by universities for faculty positions in STEM (science, technology, engineering and mathematics) fields for some time now. Has this recruitment been effective? Is faculty makeup becoming – and staying – more diverse?

In a new study, NC State statistician Marcia Gumpertz conducted a "snapshot" survey of time to tenure, promotion and retention for female and minority faculty in four different STEM fields: engineering; physical and mathematical sciences; agricultural sciences and natural resources; and biological and biomedical sciences.

Gumpertz's dataset included women and underrepresented minority assistant and associate professors hired and promoted in STEM fields at four large, research-extensive land-grant institutions between 2002 and 2015. The numbers were broken down by [institution](#), field, gender and race/ethnicity.

For female candidates as a whole, Gumpertz found very few differences in promotion or retention outcomes, although there were variances between disciplines: female engineering faculty who started as assistant professors were more likely to leave than men, and left without tenure more frequently than men. Some of this disparity, however, could have been due to one institution that had significantly lower retention rates than the other three.

Time to promotion from associate to full professor took one to two years longer, on average, for women in biological, biomedical and agricultural fields, but this was not the case in engineering or physical and mathematical sciences.

Gumpertz's analysis of underrepresented minorities was complicated by the low overall numbers of faculty at the four institutions, which affected statistical confidence levels. However, she did find that all minority faculty hired as assistant professors in biological, biomedical, physical and [mathematical sciences](#) between 2002 and 2015 earned tenure at their institutions. Faculty in these same fields also remained in their positions for 10 years or more.

The picture for retention overall was more mixed, however – at two institutions significantly higher fractions of minority faculty than other faculty left within 10 years of hire.

The study also found that rates of hiring in STEM fields for Hispanic faculty are increasing, while those for African-American faculty have remained flat. Hiring tracks well with the number of Ph.D.s earned for Hispanic and American Indian faculty – that is, the proportion of Ph.D.s earned is almost equal to the proportion of faculty – but African-Americans with Ph.D.s in STEM fields had a lower proportion of faculty hires.

"With low overall numbers of minority faculty, the impact that departures of even a few faculty can have on an institution is very large," Gumpertz says. "In fact, the numbers in this study are so low that it limits our ability to say anything definitive concerning retention and success for minority [faculty](#). However, even a small study can demonstrate the importance of institutions and disciplines understanding their own patterns in order to evaluate and address disparities."

The study appears in *PLoS One*.

**More information:** Marcia Gumpertz et al. Retention and promotion of women and underrepresented minority faculty in science and engineering at four large land grant institutions, *PLOS ONE* (2017). [DOI: 10.1371/journal.pone.0187285](https://doi.org/10.1371/journal.pone.0187285)

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