

First US nationwide estimates of sexual minority representation in STEM fields

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One of the first nationwide estimates of sexual minority representation across Science, Technology, Engineering, and Mathematics (STEM) degrees and occupations in the US publishes November 18, 2020 in the open-access journal *PLOS ONE* by Dario Sansone from the University of

Exeter and Christopher S. Carpenter from Vanderbilt University.

A body of research has documented wide gaps in STEM degrees and occupations based on gender and race/ethnicity; however, relatively few studies have examined the impact of [sexual orientation](#) on STEM representation, due in part to a lack of data. This is the first study to use nationwide datasets two orders of magnitude larger than those used for prior research in this area to illustrate the current state of representation in STEM for [sexual minorities](#).

The authors pulled data from two sources: the 2009-2018 American Community Surveys (ACS), which identifies over 142,000 individuals in same-sex cohabiting [romantic relationships](#) and gives information on their current [occupation](#) and undergraduate major(s), and the 2013-2018 National Health Interview Surveys (NHIS), which gives detailed information on occupation and sexual orientation for 4,763 self-identified sexual minority individuals. (For the purposes of this study, the authors use the term "sexual minority" to refer to individuals who describe themselves as lesbian, gay, bisexual, queer, or "something else".)

The data indicate that men in same-sex couples are 12 percentage points less likely to have completed a bachelor's degree in a STEM field compared to men in different-sex couples. There was no gap observed for women in same-sex couples versus women in different-sex couples in terms of STEM degree completion. (For context, the STEM degree gap between men in same-sex and different-sex couples is larger than the STEM degree gap between white and black men, but smaller than the gender gap in STEM degrees—meaning women are still overall less likely to obtain a STEM degree regardless of orientation.) In terms of STEM occupations, however, women in same-sex couples are almost two percentage points more likely to work in a STEM field than women in different-sex couples. The gap between men in same-sex couples and

different-sex couples is smaller when focusing on STEM occupations, but still present, at a statistically-significant one percentage point (these results were borne out by both the ACS and NHIS surveys). The authors also found that gay male representation in STEM fields (measured using either degrees or occupations) is systematically and positively associated with female representation in those same STEM fields.

There are limitations to the data used—most notably, the ACS survey only focused on cohabiting relationships, meaning that individuals who might be in same-sex relationships (or currently single) but living separately would not have been recognized as part of the sexual minority. (However, the NHIS survey did permit observation of single individuals). Additionally, neither survey used provided specific data on transgender individuals.

However, taken together, the results appears to demonstrate that, like race/ethnicity and gender, sexual orientation is an element that must be considered in order to bring equity and efficiency to STEM fields at the degree and occupation level—and highlights the need for more large nationally representative data on both sexual and gender minorities in STEM to better understand their representation and specific challenges.

The authors add: "We show that sexual [minority](#) men are less likely to have completed a bachelor's degree in a STEM field or to work in a STEM occupation compared to heterosexual men. Furthermore, we document that gay male representation in STEM fields (measured using either degrees or occupations) is systematically and positively associated with female representation in those same STEM fields."

More information: Sansone D, Carpenter CS (2020) Turing's children: Representation of sexual minorities in STEM. *PLoS ONE* 15(11): e0241596. doi.org/10.1371/journal.pone.0241596

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