

Study: Integrating STEM majors won't end gender segregation at work

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Increasing women's representation in science, technology, engineering and math majors will reduce—but not nearly eliminate—gender disparities in STEM occupations, Cornell sociologists report in new

research.

Overall, 36% of the gender [segregation](#) seen among college-educated workers is tied to their undergraduate degrees, according to the most comprehensive analysis yet of that relationship. The rest is attributable to labor market factors, potentially ranging from discrimination to family leave policies, that may sort men and women into different types of jobs even when they have the same degree.

The findings suggest that integrating academic majors—particularly those dominated by men and closely linked to specific careers—will help slowly chip away at gaps in pay, prestige and other aspects of [gender inequality](#) at work. On the other hand, most of the problem unfolds outside of [higher education](#).

"Integrating fields of study is an important mechanism for addressing gender inequality in the labor market, especially in STEM fields," said Haowen Zheng, a doctoral student in the field of sociology. "But even if you do that, you still have a long way to go to integrate the labor market among college graduates."

Zheng is the lead author of "How Gender Segregation in Higher Education Contributes to Gender Segregation in the U.S. Labor Market," published April 10 in the journal *Demography* with co-author Kim Weeden, the Jan Rock Zubrow '77 Professor of the Social Sciences in the College of Arts and Sciences, and director of the Center for the Study of Inequality.

College majors are assumed to impart skills and credentials that lead to job opportunities, such that the labor market will echo gender or racial disparities in fields of study. Attention and resources have focused most prominently on STEM degree programs as pipelines for diversifying the STEM workforce, but few researchers have examined the relationship

across the full range of fields and careers.

The new study fills that gap, analyzing a sample of nearly 2.4 million [college graduates](#) from five years of census data (2015–19), which tracked 173 undergraduate fields of study and more than 400 occupations.

The data highlights well-known disparities across fields of study, with a smaller share of women earning STEM degrees and a larger share earning degrees in health, social sciences, humanities and education. The researchers said integrating "high-linkage" fields that funnel graduates into a limited number of professions, including many STEM fields, would be most beneficial for integrating male-dominated professions, compared with "low-linkage" fields like liberal arts or international studies.

But Zheng and Weeden, borrowing a methodology developed recently by scholars of residential racial segregation, calculated that the different undergraduate degrees among men and women have a modest effect in the labor market, accounting for roughly one-third of occupational segregation.

"After that," Weeden said, "if the goal is to even out what's going on in the labor market, you have to look beyond fields of study in college to figure out policy levers for integrating labor markets."

Most occupational segregation, Zheng and Weeden found, reflects segregation within fields. Particularly in heavily male-dominated fields of study, they found, male and female graduates tend to enter more different types of occupations. Among [mechanical engineers](#), for example, women are more likely to focus on health-related applications.

The [census data](#) doesn't contain detail about subfields and why men and

women end up in them, but research has identified factors that can push women out of male-dominated fields or professions. They include unwelcoming or hostile work environments; policies related to household and caregiving responsibilities; organizational cultures that promote "overwork"; discriminatory views of women's competence; and sometimes women's self-evaluations of their abilities.

Zheng became motivated to study gender segregation as an undergraduate studying English in China, where her field was dominated by women steered toward low-paying teaching jobs, while men were more likely to land higher-paying corporate employment. Research has also documented a stalled gender revolution, with occupations integrating less and pay gaps shrinking more slowly since the 1980s.

Zheng said teasing out the role of college degrees in career outcomes for women and men was a step toward understanding what is driving those trends.

"Just integrating fields of study is not enough," she said. "We need more research and policies to figure out why we still see so much [gender](#) segregation in the [labor market](#), even when women and men are from the same fields."

More information: Haowen Zheng et al, How Gender Segregation in Higher Education Contributes to Gender Segregation in the U.S. Labor Market, *Demography* (2023). [DOI: 10.1215/00703370-10653728](https://doi.org/10.1215/00703370-10653728)

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