

National Foundation for American Policy

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New Research: Increase in International Students at a U.S. University Leads to More U.S. Men and Women Majoring in STEM Fields

Study Shows Enrolling More International Undergraduate Students Does Not Crowd Out U.S. Students

Arlington, Va. – Enrolling more international undergraduate students does not crowd out U.S. students at the average American university and leads to an increase in the number of bachelor’s degrees in STEM (science, engineering, computer science, and mathematics/statistics) majors awarded to U.S. students, according to a National Foundation for American Policy (NFAP) [study](#). “Each additional 10 bachelor’s degrees—across all majors—awarded to international students by a college or university leads to an additional 15 bachelor’s degrees in STEM majors awarded to U.S. students,” concluded the study’s author Madeline Zavodny, a Research Fellow at the National Foundation for American Policy and a Professor of Economics at the University of North Florida (UNF) in Jacksonville. Zavodny, who authored the study, is formerly an economist in the research department of the Federal Reserve Bank of Atlanta and Federal Reserve Bank of Dallas.

The report, “The Impact on U.S. Men and Women in STEM Fields of Increases in International Students,” can be found at <https://nfap.com/>.

International students are considerably more likely to major in STEM fields than in most other areas of study, indicating U.S. students are taking more classes with international students rather than avoiding majors popular with international students. Colleges and universities that attract more international students likely are devoting more resources to STEM areas, such as increasing the number of courses and adding fields offered within STEM, hiring more faculty, and providing new lab spaces and buildings. To the extent such changes are occurring, they appear to be attractive to U.S. students as well. The positive relationship is after controlling for school fixed effects and linear trends, so regardless of its cause the finding an increase in international students at a school leads to an increase in the number of bachelor’s degrees in STEM majors awarded to U.S. students is a robust relationship.

The number of international students pursuing a bachelor’s degree in the U.S. doubled from 2006 to 2017. The rapid growth in the number of international students in the U.S. came to abrupt halt by 2017, and the number of international students fell over the next year. The Covid-19 pandemic caused the number of international students to plummet, and the global economic downturn and other factors may keep their numbers relatively low in the near term. The financial implications of this reversal are grave for the large number of U.S. schools that depend on international students. This includes schools ranging from prestigious research universities to community colleges.

This study finds that a drop in international students will not mean more seats are available for U.S. students, since with limited exceptions, there is plenty of capacity at U.S. colleges and universities and international students are not taking away slots from American students.

This study uses data from the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS), a comprehensive data source on U.S. colleges and universities, to examine the relationship between the numbers of international and U.S. undergraduate students at 1,234 non-profit higher-education institutions during the period 1990 to 2018. International students are students who are nonresident aliens (a group that does not include permanent residents or naturalized U.S. citizens) and usually have a temporary student visa.

The results indicate that increases in enrollment of international students or bachelor's degrees awarded to international students generally do not lead to decreases in the number of U.S. students. Specifically, the analysis shows:

- Within 1,234 colleges and universities over 1990-2018, the number of international undergraduate students has no significant effect—either positive or negative—on the number of U.S. students enrolled, on average. This null result holds overall, for men and women, and for non-Hispanic white and black students.
- There is no effect of international students on the number of bachelor's degrees awarded to black U.S. students, either in total or by sex. The number of bachelor's degrees awarded to international students likewise has no significant effect on the total number of bachelor's degrees awarded to U.S. students within those 1,234 colleges and universities over 1990-2018, on average. This null result holds overall, for men and women, and for black students.
- The results indicate that the number of bachelor's degrees awarded to white U.S. women increases less if a school increases the number of bachelor's degrees awarded to international students. This does not mean that fewer white U.S. women earn bachelor's degrees in total because of international students, but rather that the increase in the number of them earning their degree from a particular school is smaller as the number of bachelor's degrees earned by international students increases at that school. In other words, the evidence is only that the increase in the number of white women graduating from a school is smaller when the increase in the number of international students graduate from that school is bigger, not that fewer white women in total are graduating from college. White women are the largest demographic group to attend and graduate from college in the U.S. Some colleges may be choosing to diversify away from this group as they enroll and graduate more international students.
- The research indicates U.S. students, both men and women, shift into STEM majors (science, engineering, computer science, and mathematics/statistics) from social sciences majors at schools that experience larger increases in the number of international students. This may be due to those schools devoting more resources to their STEM programs, making them more attractive to U.S. and international students alike.

The findings that international undergraduate students do not crowd out U.S. students and even prompt more of them to graduate with a STEM major have important economic implications. A college degree has become increasingly vital to financial security for many Americans, and—until very recently—international students were a growing source of revenue for many U.S. colleges and universities.

In much of the U.S., STEM graduates are in short supply. Students who graduate with a STEM major typically earn more than other graduates, especially early in their careers. The finding here that the presence of international students actually increases the number of U.S. students graduating with a STEM major is another reason to encourage international students to come to the United States.

“Many international students are potential STEM professionals and their presence prompts more U.S. college graduates to become potential STEM workers as well, two important benefits of U.S.

universities admitting international students,” concludes the study. “There is not a trade-off between U.S. students and international students. An increase in the number of international students should be viewed as good news for both U.S. students and U.S. schools.”

About the National Foundation for American Policy

Established in 2003, the National Foundation for American Policy (NFAP) is a 501(c)(3) non-profit, non-partisan public policy research organization based in Arlington, Virginia focusing on trade, immigration and related issues. The Advisory Board members include Columbia University economist Jagdish Bhagwati, Ohio University economist Richard Vedder, Cornell Law School professor Stephen W. Yale-Loehr and former INS Commissioner James W. Ziglar. Over the past 24 months, NFAP's research has been written about in the *Wall Street Journal*, the *New York Times*, the *Washington Post*, and other major media outlets. The organization's reports can be found at www.nfap.com. Twitter: [@NFAPResearch](https://twitter.com/NFAPResearch)

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