

Research reveals tools to make STEM degrees more affordable

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In a new [study](#) in *Issues in Science and Technology*, Dominique J. Baker, an associate professor in the College of Education and Human Development and the Joseph R. Biden, Jr. School of Public Policy & Administration at the University of Delaware, has explored the role of student loans on hopeful students striving for college degrees, particularly in STEM.

The cost of attending a public four-year college in the United States has more than doubled since the early 1990s, with inflation factored in.

Undergraduate student loan debt has become unmanageable for a wide swath of borrowers in the United States. Bachelor's degree recipients borrow on average \$41,300, with a median of \$30,000. The median borrower still owes 92% of their loan four years after earning a bachelor's degree, and nearly one-third of people who took out a student loan between 1998 and 2018 fell into default. As part of its emergency response to the pandemic, the US Department of Education suspended action on federal student loans that were in default as of March 13, 2020, until at least September 2024.

Student loan debt is uneven across racial groups.

Recent data has also shown variation in loan repayment patterns by major, challenging the popular assumption that all STEM graduates have [similar prospects](#) after college. Though the median amount owed on student loans for STEM majors four years after earning their degree is 80%, this varies—from 59% for engineering to 94% for biological and [physical sciences](#) and agricultural sciences. These figures do not include the amount of additional debt students may incur in pursuit of further graduate education. Due to interest accrual, delayed repayment of undergraduate student loans can also result in greater debt burdens.

The fact that differential tuition may make a STEM major more expensive than a non-STEM major at some universities deserves more attention when considering how to make STEM degrees more affordable. For example, advanced, in-state students at the University of Maryland pursuing engineering and computer science degrees pay \$1,500 more per semester than their peers enrolled in other disciplines (nearly 27% higher).

The United States currently relies on a rough patchwork of policies and mechanisms to project the image of college affordability while actually depending on students to navigate huge variances in higher education costs. Inevitably, they're often left to shoulder a debt burden that might follow them around for decades. Lessons from other countries on how to assemble the policy patchwork more deliberately—to actually lower student costs and subsidize tuition in targeted disciplines—may help.

Experts on college affordability, tuition setting, and other related topics in higher education should convene to examine the value of tuition caps as a policy, particularly within the context of bringing the missing millions into STEM disciplines. Since most public university subsidies come from state coffers, federal efforts alone are unlikely to solve college affordability. And yet there are no clear policy tools available to ensure that states contribute their due for higher education.

The decentralized nature of US higher education conceals useful information from researchers, decisionmakers, and policymakers—like the national average tuition increase for STEM degrees under differential tuition. Higher education leaders, especially in STEM fields, should be invested in creating spaces for ongoing conversations about real changes in college affordability as another avenue for removing barriers to STEM education and careers.

More information: Dominique Baker, Tools That Would Make STEM Degrees More Affordable Remain Unexamined, *Issues in Science and Technology* (2024). [DOI: 10.58875/RNDC4525](https://doi.org/10.58875/RNDC4525)

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