

DATA BRIEF

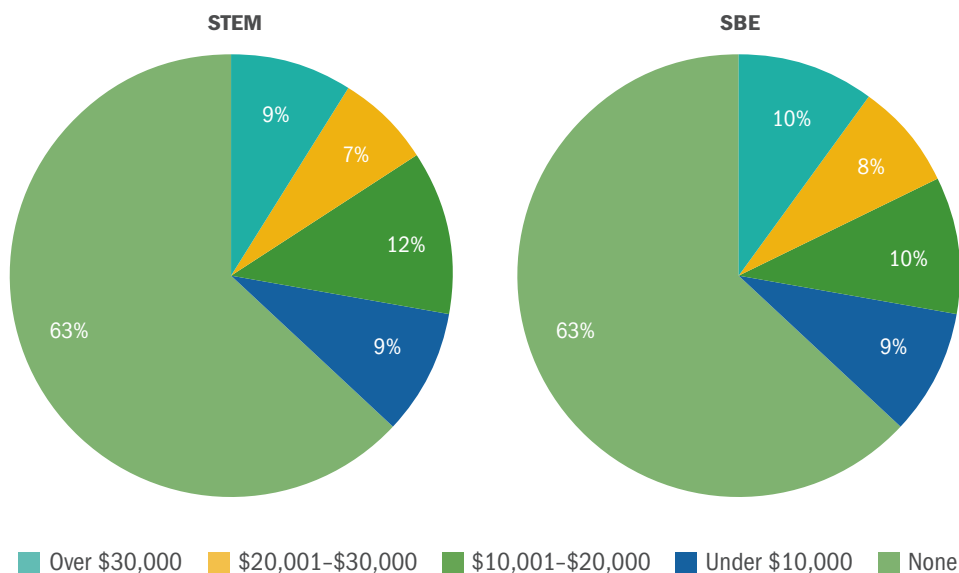
SEPTEMBER 2013

This data brief is the third in the series *The Price and Cost of Science Degrees*. For more information, visit www.air.org/PriceCostScienceDegrees.

How Much Debt Do Science Ph.D.s Accrue?

About two thirds of all bachelor's degree recipients leave school with some educational debt, and underrepresented minorities (URMs) are more likely to graduate with loans than are their white peers. The increasingly high levels of student debt coincide with a growing demand to increase and broaden the participation of traditionally underrepresented groups in critical science, technology, engineering, and mathematics (STEM) fields, including the social, behavioral, and economic (SBE) disciplines. Recent data on Ph.D. recipients these fields reveal notable differences in the debt levels between undergraduate and graduate students, between STEM and SBE graduate students, and between URMs and non-URMs.

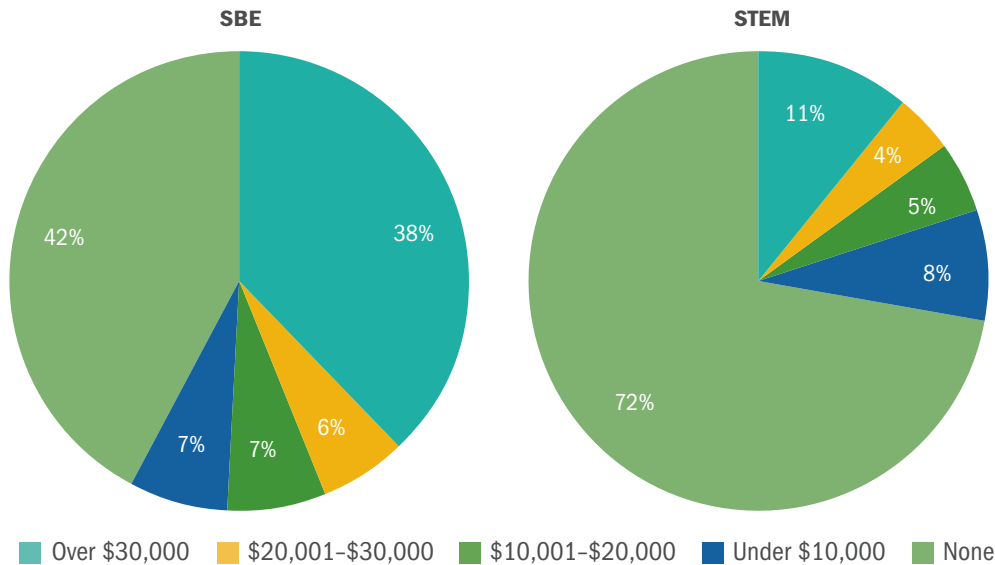
Table 1. Undergraduate Student Debt for STEM and SBE Ph.D. Recipients: 2010



Source: Analyses are based on 2010 Survey of Earned Doctorates (SED) data and are limited to Ph.D. recipients who were U.S. citizens or permanent residents and for whom data were not missing (less than 5 percent of SED respondents were missing data on graduate student debt).

- Almost two thirds of students who earned doctoral degrees in the STEM and SBE fields reported no student debt as undergraduates. This stands in sharp contrast to national data that indicate that approximately two thirds of bachelor’s degree recipients graduated with debt in the 2007–08 and 2009–10 school years.¹
- Only 9 percent of STEM degree recipients and 10 percent of SBE degree recipients reported more than \$30,000 in undergraduate debt.

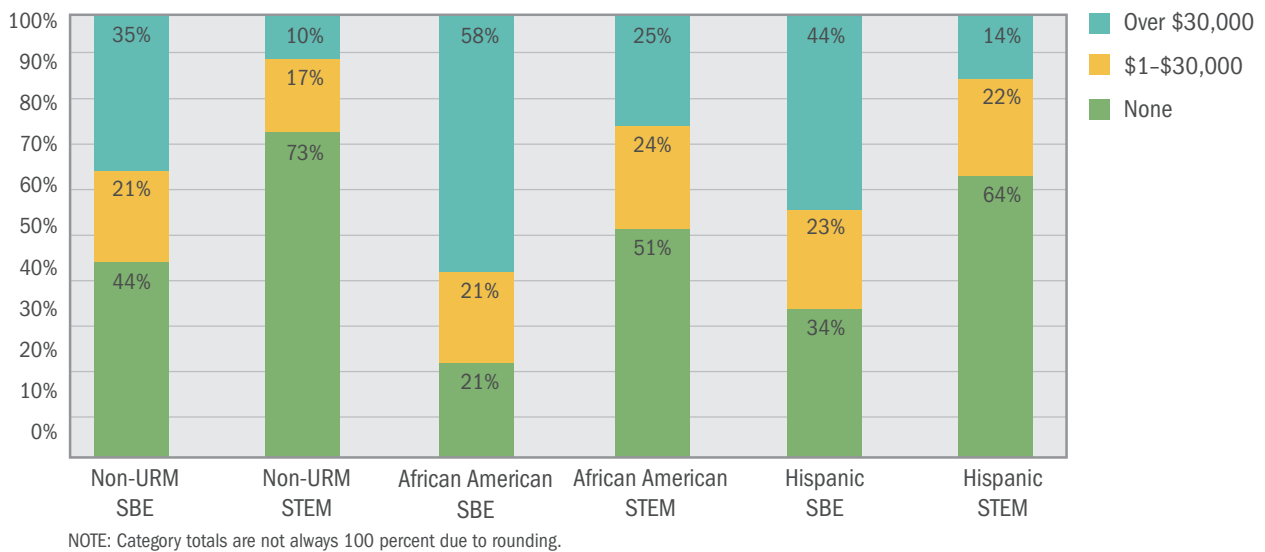
Table 2. Graduate Student Debt for STEM and SBE Ph.D. Recipients: 2010



- The overall debt level accrued in graduate school is larger than that accrued as undergraduates.
- Although differences in the undergraduate debt levels of STEM and SBE doctorates were minimal, differences at the graduate level are large.
- Ph.D. recipients in SBE fields accrued higher levels of graduate school debt than Ph.D. recipients in STEM fields. Fifty-eight percent of Ph.D. recipients in SBE fields accrued debt during graduate school; only 28 percent of Ph.D. recipients in STEM fields accrued debt.
- Thirty-seven percent of Ph.D. recipients in SBE fields accrued more than \$30,000 in graduate school debt, and less than a third of that number, 11 percent, of STEM Ph.D.s accrued this extreme level of graduate school debt.

¹ The Project on Student Debt. (2011). *Student debt and the class of 2010*. Washington, DC: The Institute for College Access & Success. Retrieved from <http://projectonstudentdebt.org/files/pub/classof2010.pdf> and U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. (2011). *Trends in student financing of undergraduate education: Selected years, 1995–96 to 2007–08* (NCES 2011–218). Washington, DC: Author. Retrieved from <http://nces.ed.gov/pubs2011/2011218.pdf>

Table 3. Graduate Student Debt by Race/Ethnicity and Disciplinary Focus: 2010



- Differences between the graduate student debt levels of URMs and non-URMs were pronounced. For degree recipients in both the SBE and STEM fields, non-URM recipients tended to have lower levels of debt than URMs. Forty-four percent of non-URM SBE Ph.D. recipients and 73 percent of all non-URM STEM Ph.D.s reported having no graduate debt at all.
- For African Americans, the percentage of Ph.D. recipients who accrued any debt was more than 20 percentage points higher than the percentage of non-URM recipients in both SBE and STEM fields. Further, among STEM Ph.D. recipients, African Americans were more than twice as likely as non-URM students to report the highest levels of debt, in excess of \$30,000.
- Recipients from SBE fields were much more likely than STEM degree recipients to accrue more than \$30,000 in graduate student debt, with 35 percent of non-URM recipients, 44 percent of Hispanic recipients, and 58 percent of African-American recipients reaching this extreme level of student debt.

Implications

Financing a Ph.D. in a STEM or SBE field results in high levels of debt, particularly for SBE Ph.D. recipients and for URMs. SBE Ph.D. recipients tended to have larger amounts of debt than STEM Ph.D.s, and Hispanic and African-American students accrued considerably more debt, in both STEM and SBE disciplines, than non-URM Ph.D.s. Notably, African-American recipients were more likely to accrue debt in excess of \$30,000 than non-URM students. Other factors that are likely to be related to student debt may be worth exploring. These include the distance that students travel to attend graduate school, spending patterns during graduate school, the family commitments of Ph.D. students during graduate school (e.g., marital status and caregiver status), and salary expectations after leaving graduate school. If graduate students' spending patterns during graduate school are related to the expected financial pay-off of their Ph.D.s, then differences in graduate student debt may be related to differences in students' inflated estimates of their future salaries.

In addition, our findings on undergraduate student debt levels, which demonstrated notable differences between the undergraduate debt levels of STEM and SBE doctoral degree recipients and bachelor's degree recipients overall, may indicate that undergraduate student debt is a deterrent to pursuing graduate education.

For a more extended analysis and discussion of graduate school debt, see *The Price of a Science PhD: Variations in Student Debt Levels Across Disciplines and Race/Ethnicity* (<http://www.air.org/files/AIRPriceofPhDMay13.pdf>).