BHEF BUSINESS-HIGHER EDUCATION FORUM®

BHEF Research Brief

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Addressing the STEM Workforce Challenge: Ohio

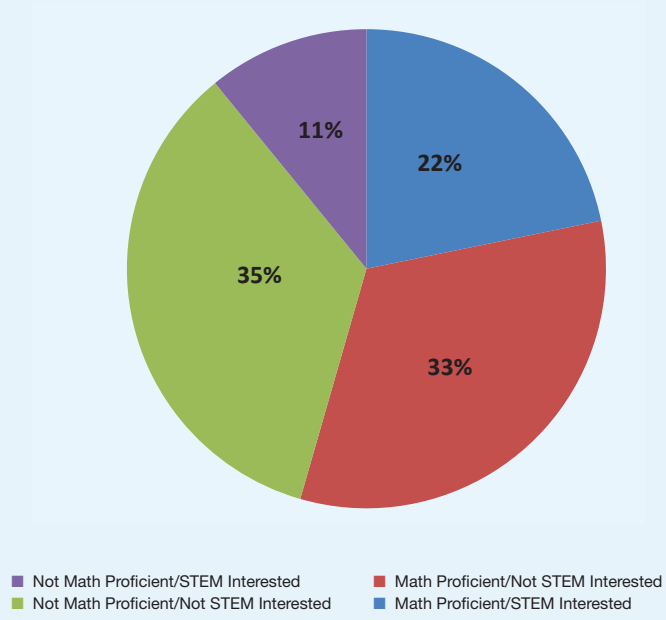
It is nearly impossible to pick up a newspaper in the United States today without coming across information on the economic importance of science, technology, engineering, and mathematics (STEM) education and jobs. In fact, research shows that employment opportunities in STEM-related fields will grow by 17 percent over the next decade; 90 percent of those jobs will require at least some college.[1] Ohio will play an important role in developing the country's capacity to fill these jobs and compete in the international marketplace.

More than two-thirds of Ohio's 12th graders are not interested in STEM. Sixty-eight percent of the state's students are not interested in pursuing STEM education and careers, about the same as their peers across the nation.

One-quarter of Ohio seniors are both proficient in math[2] and interested in STEM. Twenty-two percent of the state's students fall into this category (see Figure 1), compared with 18 percent of students nationally.

Some Ohio seniors are interested in STEM but do not have sufficient math skills to pursue the field successfully. When students graduate high school with proficiency in math, they are typically prepared to pursue STEM majors in college.[3] Eleven percent of the state's 12th graders are interested in pursuing STEM education and careers but lack the math skills correlated with achieving success, about the same as students nationally.

Figure 1: Ohio 12th Graders by Math Proficiency and STEM Interest



These analyses are derived from an Ohio subset of a 2008 longitudinal data set provided to Business-Higher Education Forum (BHEF) by ACT, that provides student interest and proficiency scores on 10th grade (Plan) and 12th grade (ACT) exams (part of what is known as the College and Career Readiness System), along with demographic data (n=32,862). Only students with scores from both exams are included in this dataset. The scores reported in this brief are based on 12th grade math proficiency and interest in a STEM major.

The Business-Higher Education Forum (BHEF) is the nation's oldest organization of senior business and higher education executives dedicated to advancing innovative solutions to U.S. education and workforce challenges. Composed of Fortune 500 CEOs, prominent college and university presidents, and other leaders, BHEF addresses issues fundamental to our global competitiveness. Learn more at www.bhef.com.

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Among STEM-interested Ohio students, African Americans students are least likely to have the math proficiency needed to succeed in the field. Almost one-quarter of African American students in the state are STEM-interested but not math proficient, compared with six percent of Asian American students, 10 percent of Caucasian students, and 17 percent of Latino students (see Figure 2), about the same as students nationally.

Male high school seniors in Ohio are more likely than females to be both math proficient and STEM interested. About 27 percent of males meet these criteria, compared with 18 percent of female students. Nationally, 21 percent of male and 14 percent of female students are both math proficient and STEM interested.

Many of Ohio's two-year college students lack both the math proficiency and interest to pursue STEM majors. Two-year colleges are often important sources of higher education opportunities for working adult and low-income students. Fifty-five percent of Ohio's students enrolled in two-year colleges are neither math proficient nor STEM interested (see Figure 3).

Figure 2: Ohio 12th Graders, by Race/Ethnicity, Math Proficiency, and STEM Interest

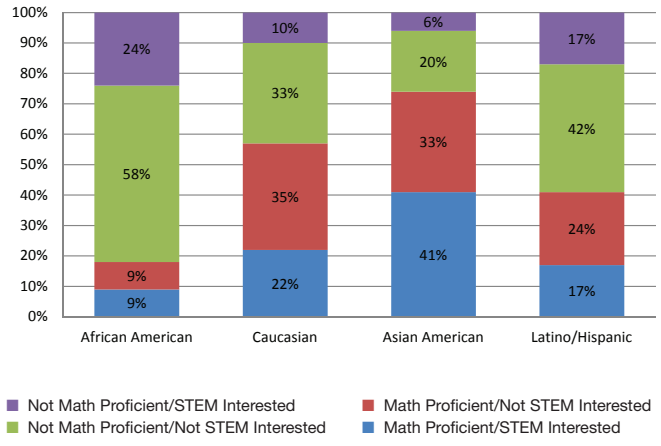
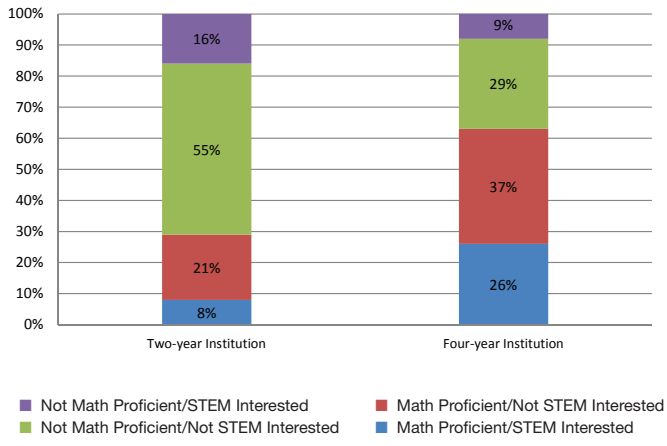


Figure 3: Ohio Two- and Four-Year College Enrollment, by Math Proficiency, and STEM Interest



Many of Ohio's math-proficient college students are not interested in STEM. Among those enrolled in college, 21 percent of the state's two-year and 37 percent of four-year students already have the proficiency to succeed in STEM but are not interested in the field.

A large percentage of Ohio's STEM-interested college students are within reach of math proficiency. Sixty-three percent of Ohio students enrolled in two- and four-year colleges are not proficient in math, but are STEM interested, and scored within four points of math proficiency on the ACT.

Ohio, like many states, has a challenge ahead in meeting the demand for STEM-skilled workers. The state could begin by focusing on the large percentage of students who are already math proficient and enrolled in college, offering them incentives and building interest in entering the field. In addition, initiatives focused on increasing math proficiency and STEM interest among African American and female students could create a more diverse STEM workforce.

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[1] Carnevale, A.P., Smith, N., & Stohl, J. (2010). *Help wanted: Projections of jobs and education requirements through 2018.* Washington, DC: The Center on Education and the Workforce.

[2] Proficiency in math is defined here as a score of 22 or more out of 36 possible points on the ACT mathematics subtest. This brief uses proficiency in math as an indicator of general college readiness for a STEM major.

[3] Bettinger, E.P., Evans, B.J., & Pope, D.G. (2011). *Improving college retention and performance the easy way: Unpacking the ACT exam.* Cambridge, MA: National Bureau of Economic Research.