BHEF BUSINESS-HIGHER EDUCATION FORUM®

BHEF Research Brief

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STEM Interest Among College Students: Where They Enroll

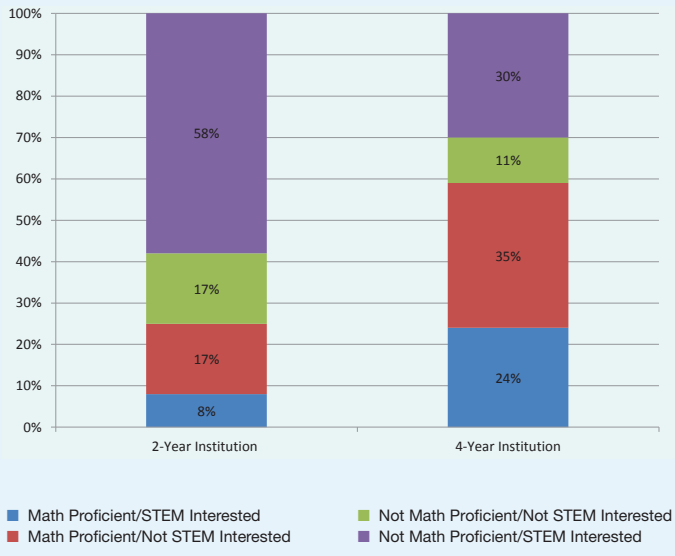
Workforce projections signal an urgent need to develop science, technology, engineering, and math (STEM)-educated college graduates. Students who graduate high school proficient in math are typically prepared to pursue STEM majors in college.[1] However, many students in the United States who are currently enrolled in two- and four-year colleges and universities are not proficient in mathematics.[2] In addition, a large pool of the students who do enter college with the math proficiency to succeed in STEM majors are not interested in the field. Under-preparation and lack of interest may pose a threat to the United States' long-term global competitiveness in the STEM fields. Analysis indicates that:

1. **A higher percentage of math proficient students are enrolled in four-year colleges than two-year colleges.** Twenty-four percent of four-year college students were both STEM interested and math proficient, compared with only eight percent of those enrolled in two-year colleges. In addition, 35 percent of four-year college students were math proficient but not interested in STEM, compared with 17 percent of community college students (See Fig. 1).

2. **Nearly two-thirds of students who have the mathematics skills needed to succeed in STEM majors are not interested in the field, although they enroll in four-year colleges at high rates.** Overall, 61 percent of students who were math proficient on the 12th grade ACT said they had no interest in STEM. Among all students who were math proficient but not interested in STEM on the ACT, 12 percent went on to enroll in two-year and 71 percent in four-year colleges.

3. **Across the nation, African American students with STEM interest enroll in four-year colleges[3] at the same or slightly higher rates than other students.** Half of African American students who are interested in STEM but not math proficient enroll in four-year colleges, compared with 44 percent of white, 49 percent of Asian American, and 37 percent of Latino students. Across all categories of STEM interest and math proficiency, African American students enroll in four-year colleges at rates about the same as or slightly higher than white students and at higher rates than Latino students (See Fig. 2).

Figure 1: National Postsecondary Enrollment by Math Proficiency and STEM Interest, by Type of Institution Attended



These analyses are derived from a 2008 longitudinal data set provided to 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=575,132). Only students with scores from both exams are included in this dataset. There are observations from all 50 states, though states with higher ACT participation rates are over-represented. The scores reported in this brief are based on 12th grade math proficiency and interest in a STEM major.

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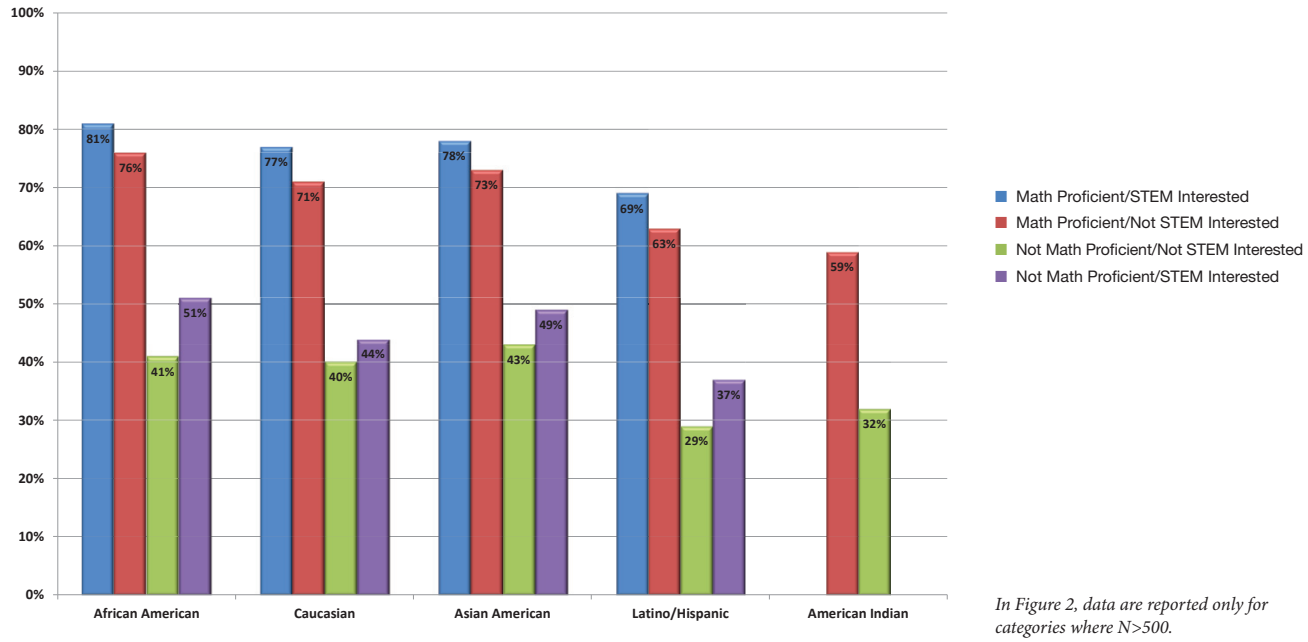
This finding is consistent with other research on underrepresented student college enrollment in STEM, though enrollment does not necessarily mean higher persistence rates in STEM; African American, Latino, and Native American students tend to complete STEM degrees at significantly lower rates than their Asian American and white counterparts.[4]

Figure 2: Percentage of Students Nationally Enrolled in Four-year Colleges, by Race/Ethnicity and STEM Interest and Math Proficiency



In Figure 2, data are reported only for categories where N>500.

4. **Interest in STEM is high among college-going students of both genders who are not math proficient.** Among students who lack math proficiency but are STEM interested, 49 percent of females and 39 percent of males enroll in four-year colleges. About 23 percent of females and 25 percent of males who are interested in STEM but not proficient in math enroll in two-year colleges.

5. **Many college students are within reach of math proficiency.** Fifty-six percent of 12th grade students who were interested in STEM but not proficient in math, and who then went on to enroll in college, scored within four points of math proficiency on the 12th grade ACT. More specifically, 62 percent of STEM-interested students who were within four points of proficiency went on to enroll in four-year colleges and 44 percent went on to enroll in two-year colleges.

Large numbers of students across the United States enter postsecondary education interested in pursuing STEM majors. Promoting the benefits of STEM majors and careers to students who are already math proficient and enrolled in college would capitalize on a ready pool of potential STEM workers. In addition, identifying students who are STEM-interested and within reach of math proficiency allows targeted deployment of research-backed interventions to increase these students' chances of completing a STEM degree. Such efforts could also increase the diversity of the STEM workforce.

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[1] 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.

[2] This brief defines students who score 22 or higher on the mathematics portion of the ACT exam as math proficient and as having a higher probability of college success in a STEM major than students with lower scores.

[3] Two-year colleges are not discussed here because Ns for many groups were less than 500, the cutoff for data analysis and discussion for this brief.

[4] National Academy of Sciences. (2011). *Expanding Underrepresented Minority Participation: America's Science and Technology Talent at the Crossroads.* Washington, DC: The National Academies Press.