

Creating the Workforce of the Future: The STEM Interest and Proficiency Challenge

A strong economy requires a highly educated workforce, especially in science, technology, engineering, and math (STEM) fields. In the United States, STEM degree production has stagnated, despite employment projections forecasting a 17% growth in the field over the next decade.ⁱ

Two key criteria influence progression through the STEM education pipeline and into the workforce: proficiency and interest. Research has shown that students who graduate high school proficient in math are generally ready to pursue STEM majors in college.ⁱⁱ In addition to academic preparation, however, students must also be interested in STEM fields.

Analysis of 12th grade students' STEM interest and proficiency produces sobering results (see figures on reverse):

1. **Too few 12th grade students are both STEM interested and math proficient:** Only 17 percent of 12th grade students are both proficient in math and interested in majoring in a STEM field in college. Males are over-represented; so are Caucasian and Asian American students.
2. **Twelfth graders have low STEM interest even when math proficient:** Twenty seven percent of students are math proficient but not interested in a STEM major.
3. **African-Americans are least likely to pursue undergraduate STEM degrees:** Over 62 percent are neither interested in a STEM major nor proficient in math.
4. **Minorities are more likely to be STEM interested but not math proficient:** Nearly a quarter of African American students are interested in STEM but not proficient in math. American Indian and Latino students are also over-represented in this category.

Current interest in STEM fields and proficiency in math are not sufficient to meet U.S. workforce demand. As the country's population becomes increasingly diverse, gender and race/ethnicity disparities in STEM interest and proficiency will exacerbate workforce challenges. Policy interventions will require a nuanced two-pronged approach focused on increasing STEM interest and improving math proficiency.

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. 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 EPAS 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. Learn more at www.bhef.com.

Figure 1: Too few 12th grade students interested in STEM and proficient in math

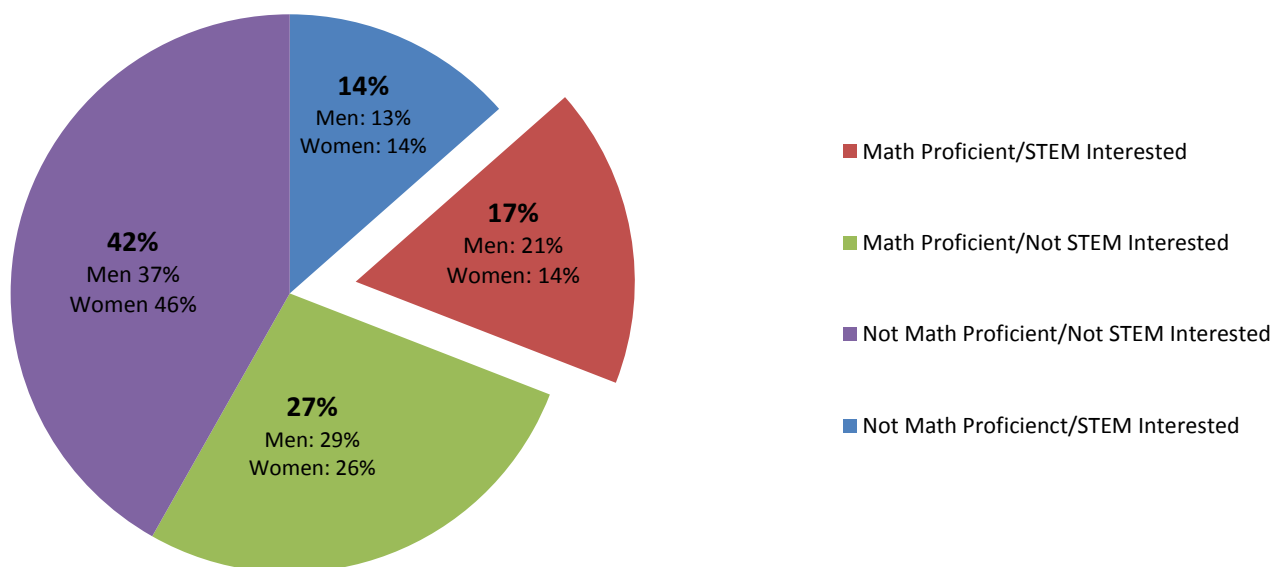
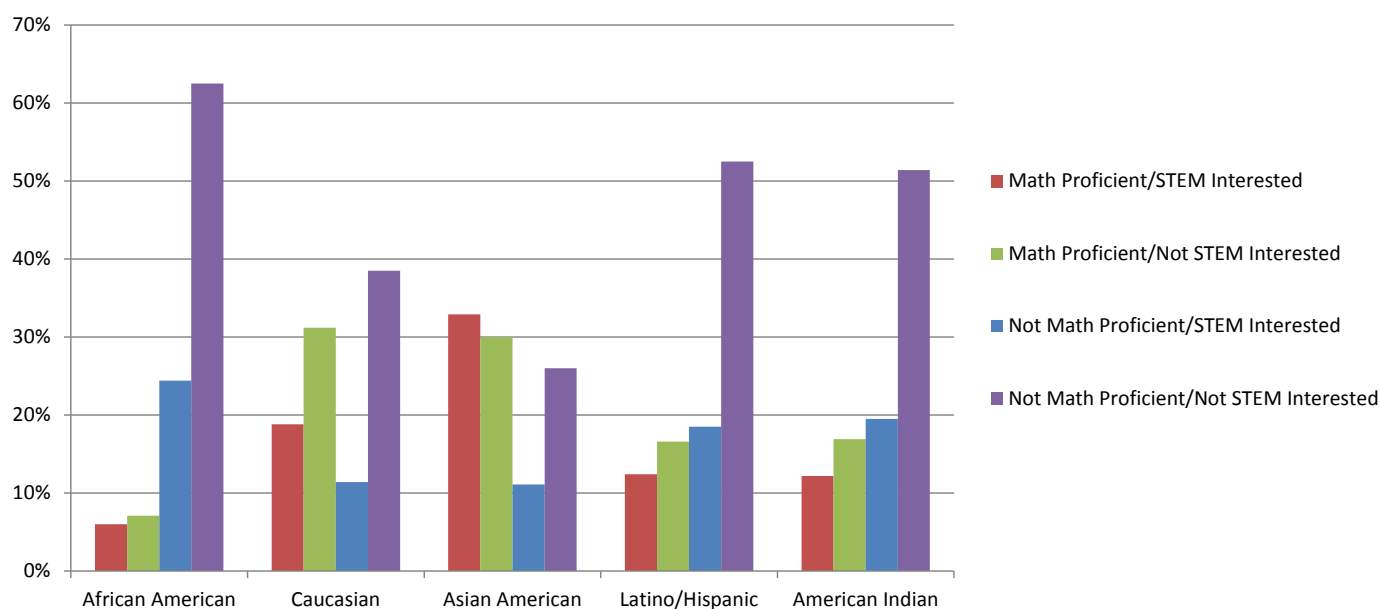


Figure 2: STEM interest and math proficiency differ by race/ethnicity



- i Carnevale, A.P., Smith, N., & Strohl, J. (2010). *Help wanted: Projections of jobs and education requirements through 2018*. Washington, DC: Georgetown University Center on Education and the Workforce.
- ii 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.