

Addressing the STEM Workforce Challenge: Missouri

While states and the federal government have put efforts in place to increase the size of the workforce trained in science, technology, engineering, and math (STEM) to meet innovation demands, there continues to be a nationwide shortage of students who are interested in and prepared for such careers. Missouri is no exception to this problem, one which threatens to impact the country's ability to compete in the global economy.

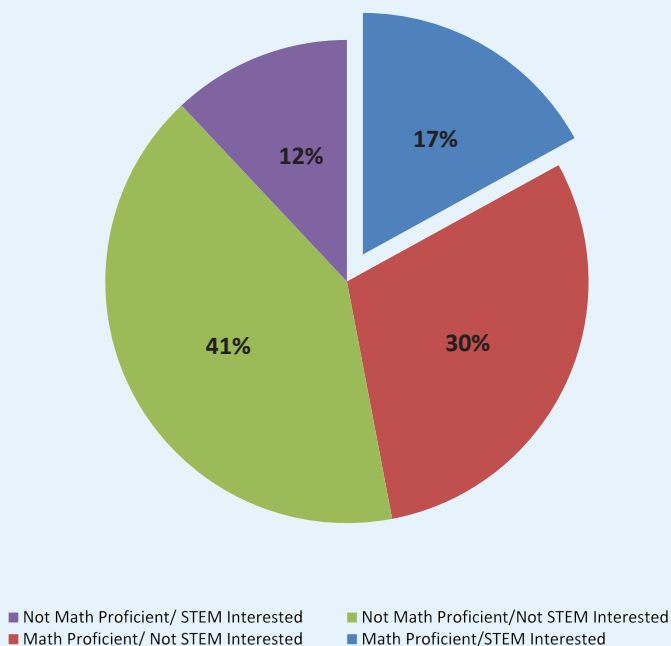
The percent of Missouri 12th graders with both interest in and skills for success in STEM is low. Only 17 percent of Missouri 12th grade students are both proficient in math¹ and interested in STEM, mirroring the nation (see Figure 1). Overall, an overwhelming portion of Missouri students—71 percent—are not interested in STEM at all.

Missouri's African American students are far less likely than their peers to have the math proficiency necessary to pursue STEM education. Twenty-three percent of the state's African American 12th graders have interest in STEM but are not proficient in math, compared with 12 percent of all Missouri high school seniors (see Figure 2). In addition, only 6 percent of Missouri's African Americans are both math proficient and STEM interested. More Latino and Caucasian students are both math proficient and interested in STEM—around 17 percent for each group.

Missouri's female students are underrepresented in STEM interest and math proficiency. Mirroring national trends, 22 percent of the state's male 12th graders are both proficient and interested in STEM, compared with only 14 percent of female students.

Few students enrolled in Missouri's two-year college programs are academically ready for STEM. Two-year colleges play an important role in preparing students for STEM work, especially working adult students and those from low-income families. Only 8 percent of Missouri students enrolled in these programs both math proficient and interested in STEM (see Figure 3).

Figure 1
Missouri 12th Graders: Math Proficiency and STEM Interest



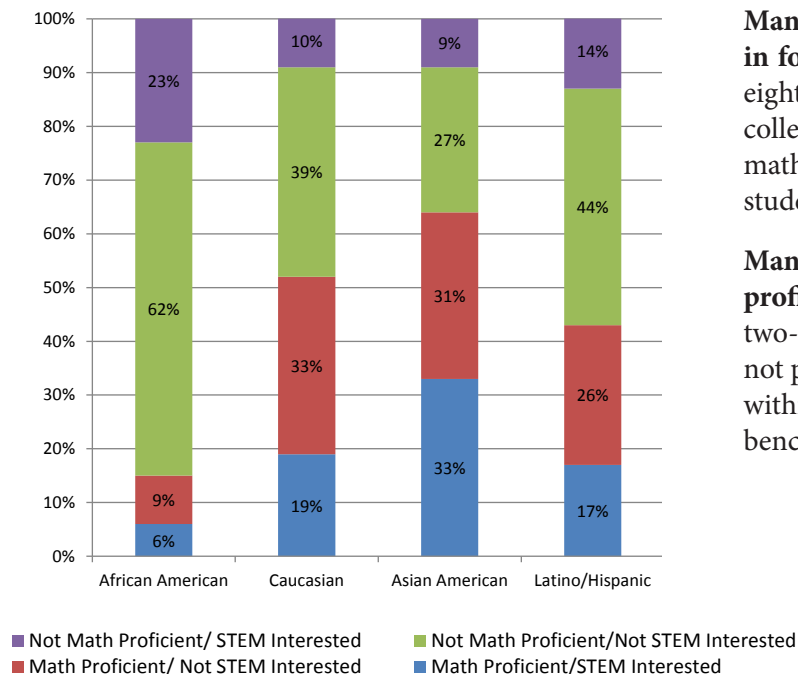
These analyses are derived from a Missouri subset of a 2008 longitudinal data set provided to BHEF by ACT that provides student interest and proficiency scores on 10th grade (Plan) and 12th grade (ACT) exams (part of what is known as the College and Career Readiness System), along with demographic data (n=33,103). 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.

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Figure 2

Missouri 12th Graders: Race/Ethnicity, by Math Proficiency and STEM Interest



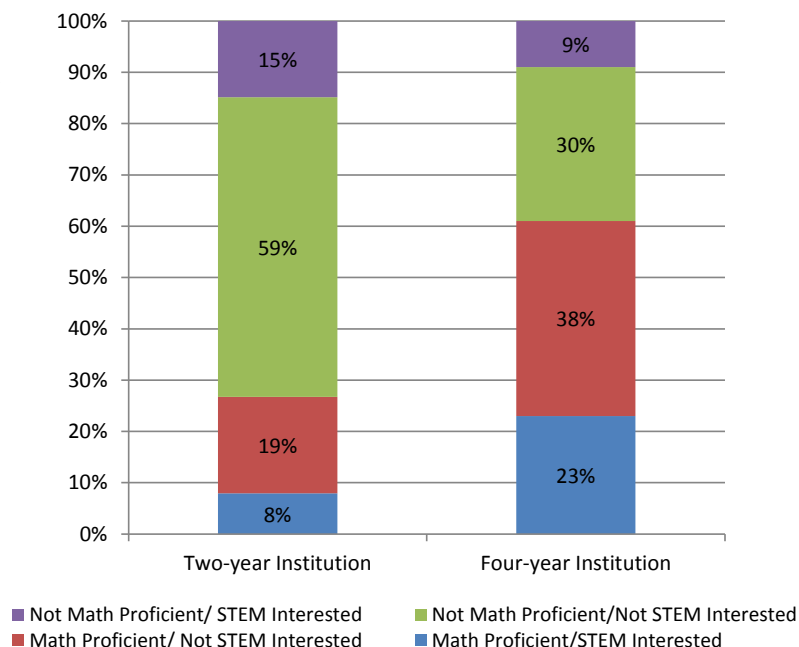
Many math-proficient Missouri students already enrolled in four-year colleges are not interested in STEM. Thirty-eight percent of Missouri students attending four-year colleges are not interested in STEM even though they are math proficient. This is almost double the 23 percent of such students who are both proficient and interested.

Many Missouri students are on the edge of both math proficiency and STEM interest. Of students enrolled in two- and four-year colleges who are STEM interested but not proficient in math, more than half—57 percent—scored within four points of the ACT mathematics proficiency benchmark.

These findings have significant implications for Missouri's efforts to get students ready for and interested in STEM careers. Missouri has an important untapped pool of students who are interested in STEM but do not have the math proficiency needed to pursue it. Capitalizing on their interest by providing the additional resources needed for proficiency may be a worthwhile investment. In addition, math-proficient students already enrolled in higher education, but who are not currently interested in STEM, possess the skills needed to immediately refocus their educations on STEM fields if initiatives can be launched that stir interest in the benefits of STEM education and careers.

Figure 3

Missouri Postsecondary Enrollment by Math Proficiency and STEM Interest



¹ Proficiency in math is defined here as a score of 22 or more out of 36 possible points on the ACT mathematics test, a component of the ACT test battery.

This brief uses proficiency in math as an indicator of general college readiness for a STEM major.