

Factors that Influence Persistence in STEM Fields:  
Does Matching with Your Classmates and Instructor Matter?

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Extended Abstract

Nearly 50 percent of college freshmen who initially intend to major in a science, technology, engineering, or math (STEM) field eventually obtain their degree in another field or fail to complete college. Female and non-Asian minority students exhibit even higher rates of attrition out of STEM fields. This study hypothesizes that students are more likely to transfer out of a STEM field due to fewer female and non-Asian minority faculty members in STEM fields. Similarly, it is hypothesized that the racial composition of introductory classes will influence the decision to persist in a STEM major.

To test this hypothesis, I use data from the Ohio Board of Regents, which tracks the entering cohort of 2000 at twelve public universities in the state of Ohio for six years. In addition to student demographic characteristics and transcript records, the data also contains position, rank, degree and demographic characteristics for each faculty member employed by the Ohio institutions. I match an each student to characteristics of classes taken. I test how the class composition and characteristics of the instructor influence the decision to persist in a STEM field. The primary outcome of interest is whether a student who upon matriculation intends to major in a STEM field and changes his or her major to a non-STEM field.

Even though the primary focus of this study is on the match between a student and the class and professor, there are other factors that influence the decision to change

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majors. These other factors include the role of financial aid, sensitivity to grades, standardized test scores, and institutional characteristics. I will also investigate the importance of these factors in the choice of a STEM major. We attempt to address the issue of endogeneity caused by students selecting classes based on the characteristics of the instructor by using course fixed effects.

Preliminary results indicate that a female STEM majors who have more classes taught by a female STEM faculty member their first semester or year, are significantly more likely to persist in a STEM field. Additionally, for historically disadvantaged minorities who have faculty members of their same race in their first year STEM courses are more likely to persist in that field. These results indicate that the racial and gender composition of faculty members in STEM fields plays an important role in increasing persistence among students, particularly for women and minorities. The racial or gender composition of the class has no significant relationship on the decision to persist in a STEM field.