

Transfer Pathways to Baccalaureate Degree Attainment in STEM Fields of Study: A Longitudinal Transcript Analysis in a Texas Research University

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Employing longitudinal transcript analysis, the proposed research study focuses primarily on community college transfer students' persistence and degree completion at a four-year research university in the Dallas-Fort Worth Metroplex. This study aims to carefully investigate the extent to which students' transfer pathways, early academic momentum, and course-taking patterns affect students' baccalaureate degree attainment, especially in STEM fields of study. I will thoroughly examine undergraduate transcript data collected over the past decade to provide detailed information about students' complex academic behaviors, educational choices, and how these factors affect transfer students' persistence post-transfer and ultimate bachelor degree completion. Differences based on race/ethnicity, gender, and social-economic status will be examined. The findings of the project will contribute to a deeper understanding about factors that may hinder or facilitate transfer students' ability to obtain baccalaureate degrees in STEM and help both 2- and 4-year institutions develop programs, practice, and policy that undergird transfer students' persistence and bachelor degree attainment.

Guiding research questions include: 1) To what extent does attending a community college, along with students' demographic characteristics, socio-economic status, and pre-university preparation (e.g., dual credits earned, if received an associate degree, credits transferred) predict students' early academic momentum in STEM fields of study?, 2) How does early STEM momentum affect transfer students' baccalaureate degree attainment in STEM fields of study?, and 3) How does transferring from a community college affect baccalaureate degree attainment in STEM fields of study? What actions and policies can assist STEM transfers to success?

This study has four significant implications for research, practice, and policy. First, it has potential implications for future research on community college transfer students' access, persistence, and baccalaureate degree attainment. As Texas community colleges continue serving as pathways to higher education for a large proportion of traditionally under-represented students, it is important to fully understand the breadth and depth of transfers' pathways as they access and persist in higher education. Second, national agenda to increase degree completion, particularly in STEM fields, calls for more attention to research investigating students' access and success in these fields. This study will not only examine factors that promote degree completion in STEM fields, but also explore the effect of transferring from a community college on STEM degree attainment. Next, it is anticipated that STEM momentum will prove to be pivotal for students' academic success in STEM fields of study after transfer. This newly developed framework can provide a promising lens for researchers, practitioners, and policymakers to better understand STEM students' pathways to degree completion as well as the nuanced course-taking patterns that may lead to successful or unsuccessful stories in Texas. Finally, state policymakers continue to advocate for traditionally under-represented students and endeavor to create more educational and vocational opportunities for these students. This study will investigate differences among racial/ethnic groups, with a special attention on Hispanic students, as they represent the fastest growing population in the State of Texas. Success of these students in transfer, and more importantly, in baccalaureate degree attainment, will contribute greatly to achieving goals proposed in 60X30TX strategic plan and developing a healthy economy in Texas. This study will offer insight into Latino and other under-represented students' STEM success and may also inform state policy and funding priorities.