The University System of Maryland
First in the World Maryland Mathematics Reform Initiative (FITW MMRI)
Project Overview

Background

The University System of Maryland, in collaboration with the Maryland Community Colleges and the other private and public institutions of higher education in Maryland, are working to address the mathematics "pipeline" issues that have created a significant bottleneck for postsecondary students. The Maryland Mathematics Reform Initiative (MMRI) is a collaborative effort currently underway between the public four-year USM institutions and the two-year community colleges in Maryland to develop and implement multiple high-quality mathematics pathways for students that are relevant for their chosen career path while also ensuring that the new courses have sufficient mathematical integrity and rigor to be deemed "college-level."

As part of that larger statewide MMRI steering committee work, the USM applied for and was awarded a grant from the U.S. Department of Education's First in the World (FITW) program to develop, implement, and evaluate a statistics pathway in order to accelerate developmental students' progress into credit-bearing postsecondary courses and help more of those students reach certificate or degree completion effectively and efficiently. Project goals include reducing costs for students who will not have to languish in developmental courses, and saving the state and higher education institutions at least a portion of the estimated $72 million spent annually in Maryland on developmental education.

In order to meet those goals, the FITW MMRI program will support the development of a new developmental statistics pathway leading to a general education statistics course. The twelve partnering institutions—five USM institutions and seven community colleges serving approximately 158,000 new students each year—will be the "early adopters" of the new mathematics pathway and will lead the development of the new pathway for Maryland's 29 public higher education institutions.

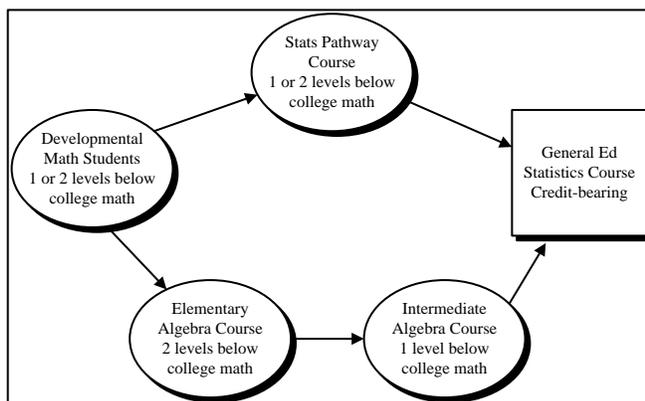| Partner Institutions |
|---|
| Anne Arundel Community College |
| Cecil College |
| College of Southern Maryland |
| Coppin State University |
| Garrett College |
| Harford Community College |
| Howard Community College |
| Montgomery College |
| Towson University |
| University of Baltimore |
| University of Maryland, Baltimore County |
| University of Maryland, University College |

Theory of Action

FITW MMRI hypothesizes that one significant underlying problem with developmental mathematics course sequences is the "disconnect" between the mathematics content students are learning and the mathematics they need to be successful. The key intervention in the project proposed here focuses on a rigorous pathway in statistical reasoning. In the FITW MMRI theory of action, this pathway would be more appropriate, more relevant, and more useful for students who are either undecided about their major or whose college major relies on a fundamental-studies statistics course either in place of, or in addition to a traditional college algebra course. By creating a single, intellectually-rigorous developmental statistics course that meets the needs of students who are up to two levels below college-level math and for whom algebra is not a requirement, the new Statistics Pathway is a strategy with the potential to reduce barriers (costs and time associated with taking multiple developmental-level math courses) to college credit accumulation and successful completion of a postsecondary degree.

Research Questions

The goal of the project evaluation will be to generate evidence of the effects of a newly designed developmental statistics course on student rates of enrollment and success in a college-level statistics course, college retention, and persistence towards degree completion when compared to a matched comparison group of students who take traditional developmental algebra courses.

To that end, our project will address the following research questions:

- To what extent do students who are one level below college-level math in the Stats Pathways course (treatment group) have higher levels of persistence at the end of the course than students who take Intermediate Algebra (comparison group)?
- To what extent do students who are one level below college-level math in the treatment group have higher rates of enrollment and success in college-level statistics within one year compared to students who enroll in Intermediate Algebra?
- To what extent do students who take the Stats Pathway course have higher rates of retention at the end of three years in college than students who take Intermediate Algebra?
- To what extent do students who are two levels below college-level math in the Stats Pathways course have higher levels of persistence at the end of the course than students who take Elementary Algebra?
- To what extent do students who are two levels below college-level math in the treatment group have higher rates of enrollment and success in college-level statistics within one year compared to students who enroll in Elementary Algebra?
- To what extent do students who take the Stats Pathway course have higher rates of retention in college than students who take Elementary Algebra at the end of three years?

Timeline

- October-November 2015: Project launch and planning
- December 2015–March 2016: Determine data sharing processes; gain IRB approvals; determine placement and advising strategies
- December 2015–August 2016: Pathways course design and development, advisor training, student recruitment and enrollment
- August-September 2016: Launch pilot MMRI Statistics Pathways courses at partner institutions
- August 2017: Begin longitudinal evaluation
- 2017-2020: Data collection, analysis and reporting on findings
- 2019-2020: Dissemination and scaling to other Maryland public institutions