

## Goal: Increase retention rate of first-time freshman in STEM majors from 55% to 65%.



### Approach 1: Fostering success in lower-division mathematics

**STEM FRESHMEN DO NOT AIM HIGH ENOUGH AND RE-TAKE MATH THEY SHOULD NOT HAVE TO**

39% start in College Algebra because they do not take or do not pass the Mathematics Placement Test (MPT).

**Actions:** Test administration changed: offerings and test time increased, online practice and tutoring implemented, pass scores changed to pair with mandatory supplemental laboratories in math classes.

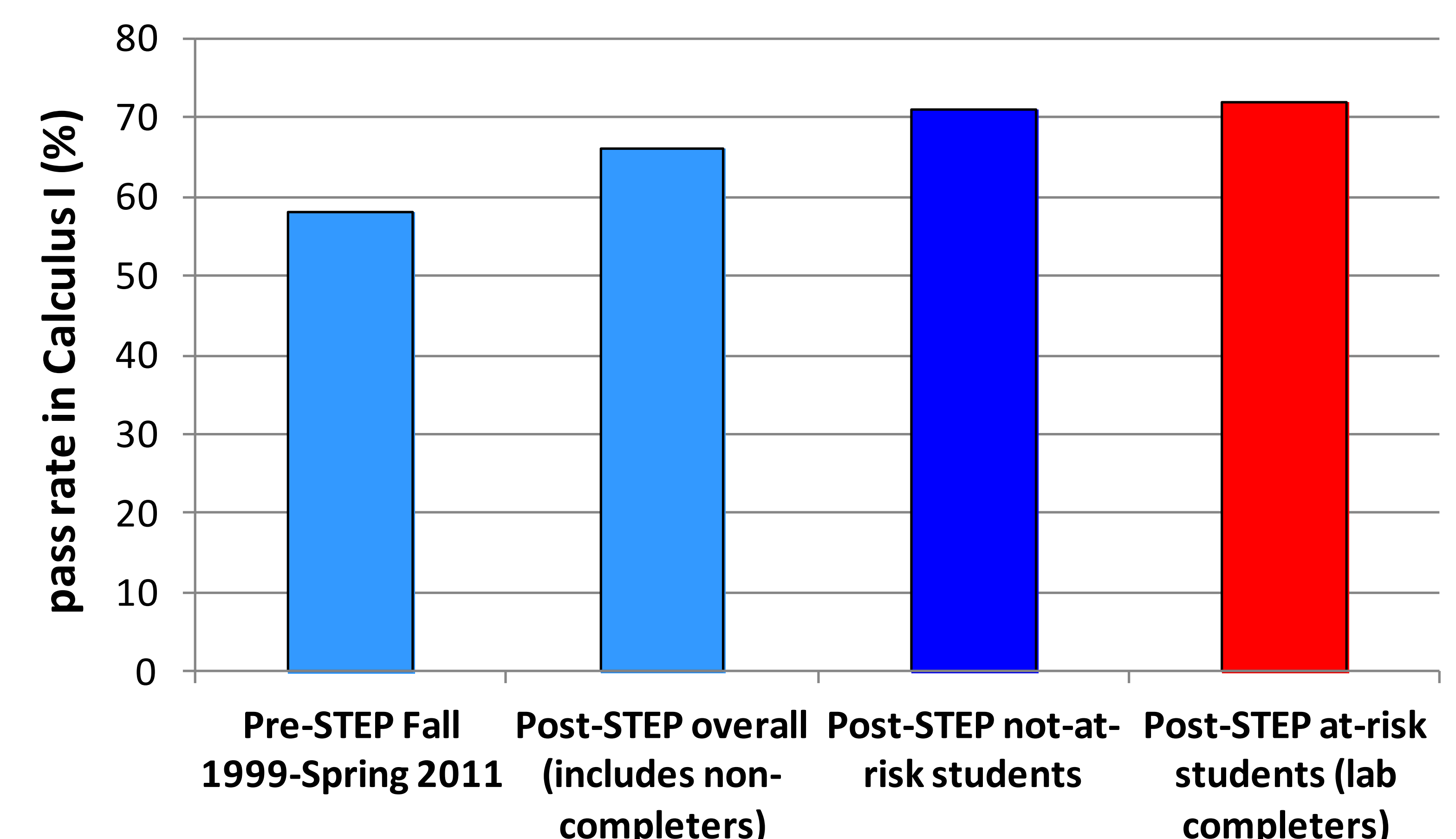
**Results:** The number of students who take the test and place out of College Algebra has increased. For example, the number of test takers who advanced to Calculus I increased by 12% between 2011 and 2012.

### STEM MAJORS HAVE LOW PASS RATES IN COLLEGE ALGEBRA THROUGH CALCULUS II.

This lengthens time to graduation and decreases satisfaction with major.

**Actions:** Supplemental labs for Trigonometry and Calculus I and II created in partnership with similar labs for College Algebra and Precalculus funded by University. Labs are open to all students, but required for at-risk students, defined by grades in prerequisite courses and/or MPT scores.

**Results:** The supplementary labs significantly increased the pass rates in Calculus I of at-risk students who successfully completed the lab. Prior to STEPS at CSUN intervention, the average pass rate in Calculus I was 58%. Since lab implementation in Fall 2011, 391 of the 457 students who enrolled in lab received credit for the lab (86%). Of these successful lab completers, 72% also passed lecture, a number identical to the pass rate of the not-at-risk students.



## Approach 2: Mentored team-based problem solving in the Summer Interdisciplinary Team Experience (SITE)



### WHEN THE GOING GETS TOUGH, SOPHOMORES LEAVE STEM MAJORS.

Motivation wanes as course difficulty increases and connections to majors and potential careers are weak.

**Actions:** SITE is a 3-week-long summer program designed to kick-start excitement about STEM majors and create productive interactions between students and between students and faculty mentors. The 70 participants in the two SITE programs represented 8 STEM majors. Most were sophomores, with GPAs from 2.0 to 3.9. Faculty team leaders designed projects focused on sustainable energy, water purification, and earthquake hazards. Students proudly presented their results at the conclusion of the program.

**Results:** In exit surveys, 100% of SITE students said that they were more firmly committed to completing a STEM major and had increased interest in participating in faculty research. In addition, 80% said that they had a better understanding of how they will use their education in a professional career. Ten months after the first SITE, 6 of the 30 students were interviewed to examine long-term impacts. All were still in a STEM major. In response to the question: *Have you done anything differently as a result of SITE?*, most said that they more actively seek faculty advice and interaction with peers.

