

Summary of Research on Math Transition

Terrence Willett, Director of Research
twillett@calpass.org, (831) 277-2690

Transitioning between educational segments is a challenging event for students whether it is going from middle to high school, high school to college, or a two-year to a four-year college. Continuing to progress beyond curriculum already completed is a goal of many students and educators. One discipline with a clearly defined set of levels is mathematics. While curricula and residents vary by region and between segments, it appears that in many cases, students are repeating coursework already completed in an earlier segment. Pooling available reports and data from the Cal-PASS database, over 1/3 take a 9th grade math class of similar or lower level than the one just passed in 8th grade (Figure 1). Asian and White, non-Hispanic students are more likely to transition up a level while African-American and Hispanic students are more likely to repeat the same level. There is no difference in transition by gender.

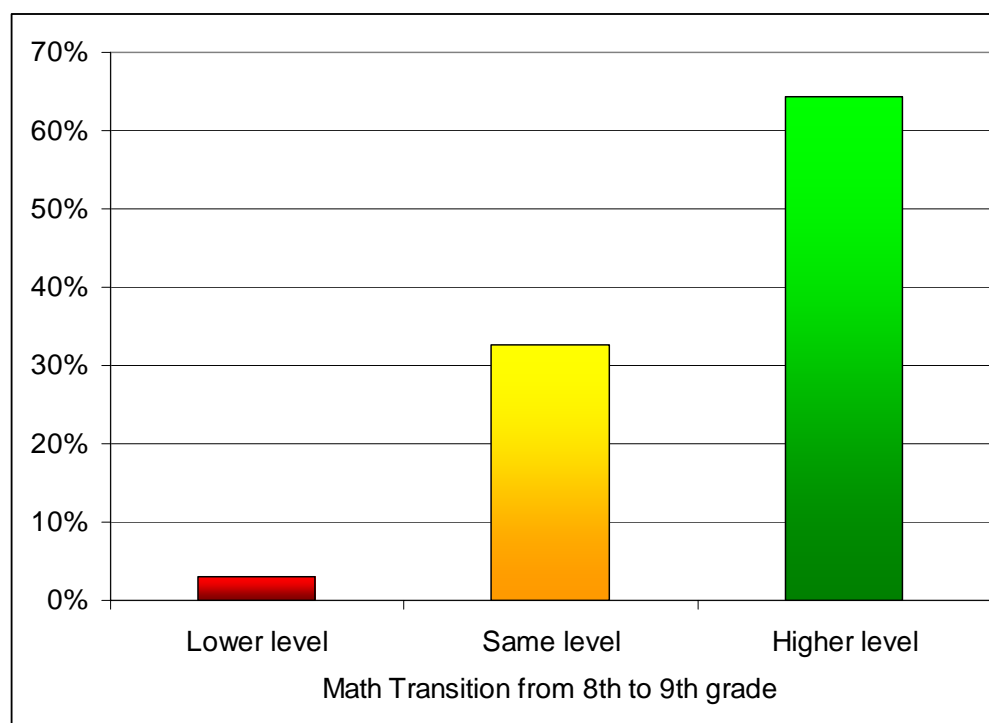


Figure 1. Level of math attempted in 9th grade relative to the level of 8th grade math passed with a grade of C or better from available Cal-PASS member schools. N=73,968.

Again relying on available data in the Cal-PASS database, about 2/3 of students' first math attempts in community college are in a class equal to or lower than a class already completed in high school (Figure 2). Male students and Asian and White, non-Hispanic students are more likely to transition to a higher level math course. Female students and African-American and Hispanic students are more likely to transition to a lower level math course.

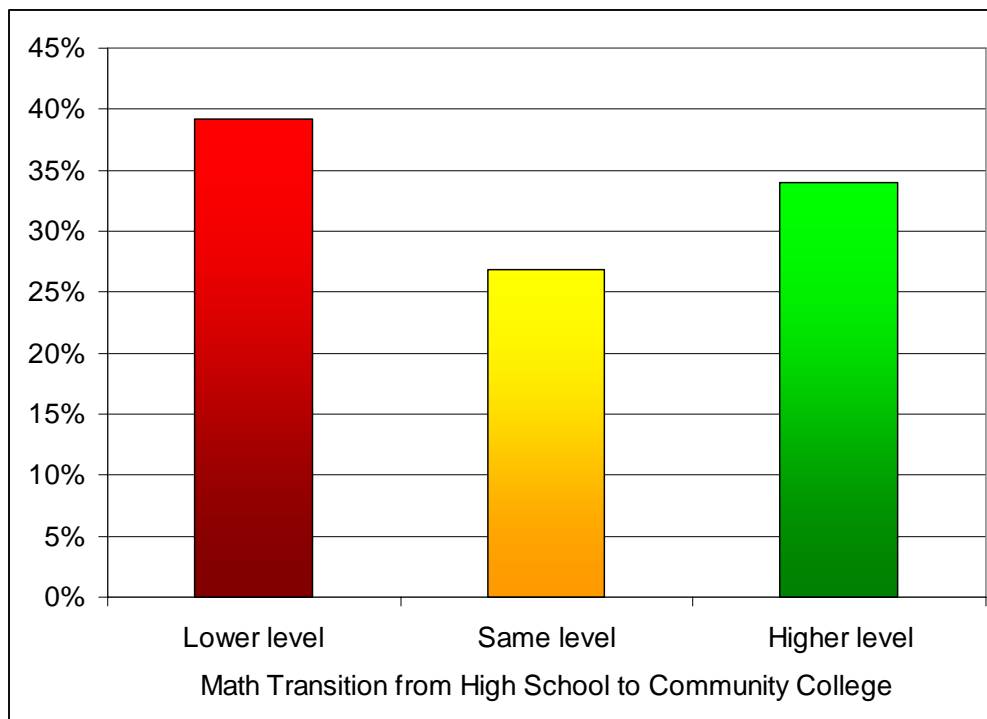


Figure 2. Level of first math attempted at a community college relative to last math class passed in high school with a grade of C or better from available Cal-PASS member schools. N=46,847.

The transition to universities is more regulated than most other segments and is complicated by a curriculum that is more expansive than those found at other institutions. Preliminary work with the community college transition to California State Universities suggests that between 20% and 45% of transfer students are not clearly progressing forward in their math curriculum (Figure 3). As seen from the figure, students have many paths to choose from at the university and it is not always clear whether or not a student is progressing or regressing. For this cohort, Asian transfer

students are more likely to take Calculus after transitioning, Hispanic transfer students are more likely to take general education math, and African-American transfer students are more likely to clearly progress up a level in math. Female transfer students are more likely to repeat a similar level of math after transition. Male transfer students are more likely to switch between general education and Science, Technology, Engineering, and Math (STEM) pathways after transition in either direction.

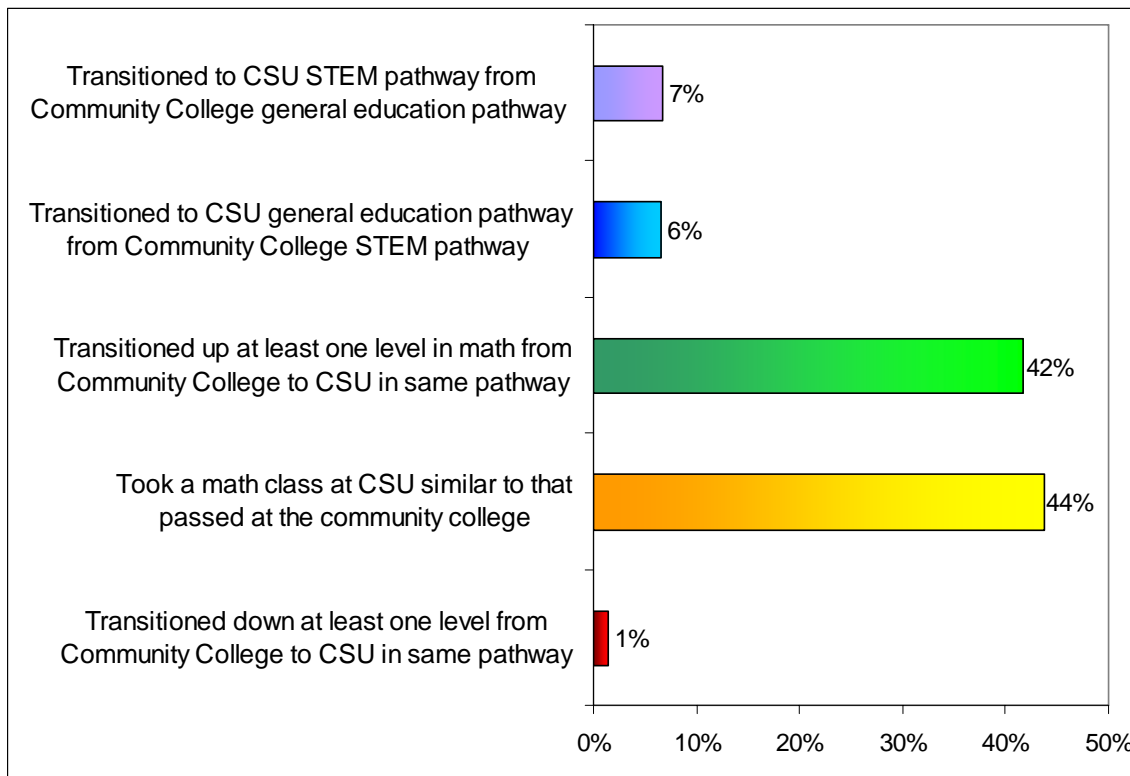


Figure 3. Transition pathways from last community college math at nearby feeder colleges to first math at the local CSU campus (STEM = Science, technology, engineering, math) for a selection of Cal-PASS member schools. N=1,419.

While each of these transitions has different influencing circumstances, it appears that there is opportunity to reduce the proportion of students who stagnate or regress in their math progression. One of the goals of math Professional Learning Councils is to improve student success after transition by focusing on issues of curriculum alignment and support services to students.