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Middle School Predictors of High School Achievement in Three California School Districts

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Highlights:

► **Academic achievement in middle school strongly predicts high school achievement and graduation.**

► **Early middle school signals of academic success or failure include: grade retention, course failures, grades and test scores, and enrollment in algebra by 8th grade.**

► **In each district in this study, only 1/3 of students who failed two or more courses in 7th grade graduated from high school.**

► **Higher scores on the English portion of the 8th grade California Standards Test are strong predictors of passing the CAHSEE on the first attempt.**

► **Schools and districts have the necessary information in middle school to identify students at risk of not completing high school or passing the CAHSEE.**

► **Policymakers need to make sizeable investments for early interventions if they want to improve graduation outcomes and CAHSEE passing rates.**

Many students experience sharp declines in academic motivation and achievement in middle school (*see CDRP Policy Brief 12*). These changes can lead to lower levels of achievement and engagement in high school, and ultimately negatively influence a student's decision whether to remain in school. Identifying at-risk students in middle school (7th and 8th grades), and providing interventions *before* students enter high school, could significantly improve high school achievement and graduation in California.

This study followed a group of students in three California school districts—Fresno Unified, Long Beach Unified, and San Francisco Unified—from 7th grade through their scheduled graduation in 2006, to investigate the impact of several middle school academic achievement indicators (along with student demographic and background factors) on three aspects of high school achievement: (1) passing the California High School Exit Examination (CAHSEE) in 10th grade, (2) academic performance in 11th grade, and (3) graduating in their districts by the end of 12th grade.

Figure 1: Probability of Passing Both Sections of the CAHSEE on First Attempt by 8th Grade English Language Arts CST Score
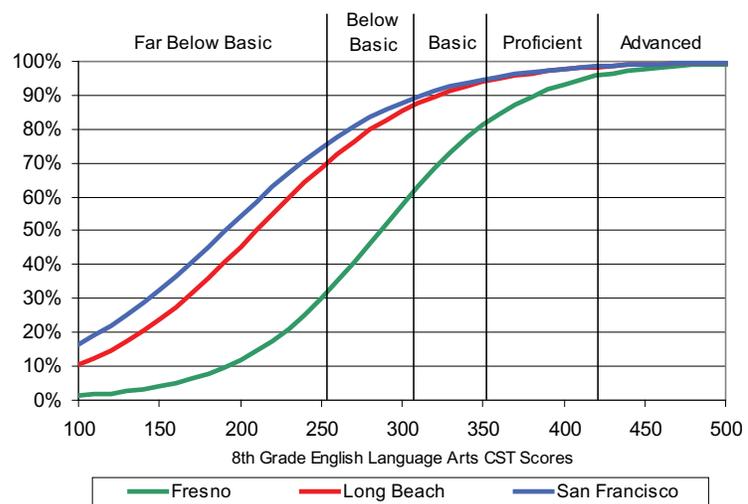
NOTE: *The figure displays the average passing rate for a "typical" student across the three school districts (i.e., a student with the same average characteristics).*

► Indicators of Middle School Achievement

The study investigated four indicators of middle school academic performance that previous studies have found to predict high school performance:

1. Students' grade point average (GPA) in the 7th grade.

2. The number of core courses (English language arts, mathematics, science, and social studies) that students failed in the 7th and 8th grades.

3. Whether students took (but not necessarily passed) algebra in 8th grade (as recommended by the state).

4. Scores on the state's standards-based assessment—the California Standards Test (CST)—in English language arts and mathematics in 8th grade.

► Passing the CAHSEE

All students must pass the CAHSEE—a test of basic skills in math and English language arts—in order to graduate from high school in California. While students are not required to pass the CAHSEE on their first attempt in 10th grade, those who fail to do so may require continued support to pass the test. Identifying students in middle school who might struggle with the exam in high school would increase the chances that an early intervention would help them pass the exam on their first attempt.

Statewide, 64% of students in the class of 2006 passed the CAHSEE on their first attempt in the 10th grade. Among 7th graders in this study, 60% of Fresno, 69% of Long Beach, and 77% of San Francisco students passed the CAHSEE on their first attempt.

Three measures of middle school achievement had a strong positive influence on passing the CAHSEE in 10th grade: GPA in 7th grade, completing algebra by 8th grade, and scores on the CST in 8th grade.

In each of the three districts in this study, students in 8th grade who had higher scores on the English language arts portion of the CST had much higher probabilities of passing the CAHSEE on their first attempt, relative to students with lower CST scores (*see Figure 1*).

Yet, for students who scored at the two lowest proficiency levels (below and far below basic) on the CST, there is considerable variation across the three districts in the probability of passing the CAHSEE on the first attempt. What accounts for such disparities remains unclear, though demographic differences among students in the three districts may be one factor.

Eighth grade algebra was another important predictor. Across the three districts, the odds of passing the CAHSEE on the first attempt were over twice as high for students who had taken algebra by the 8th grade, compared to students who had not.

► 11th Grade Achievement

Three measures of middle school achievement predicted student achievement in 11th grade: GPA in 7th grade, the number of course failures (Fs) in 8th grade, and mathematics and English CST scores in 8th grade.

Even after accounting for differences in middle school achievement and other background characteristics, on average, male students had significantly lower GPAs relative to female students, and Latinos fared worse relative to Whites in their 11th grade achievement.

► High School Graduation

In 2005-06, the graduation rate for the 7th grade group in this analysis was 55% for Fresno, 59% for Long Beach, and 65% for San Francisco. It is important to note that these rates underestimate the actual overall graduation rates for these districts; some students may have moved from one district to another or to a private high school, while others who dropped out may have returned to school or enrolled in an alternative program and subsequently obtained a high school diploma.

Across all districts, graduation rates were lower than CAHSEE passing rates at first attempt, suggesting that some students may not graduate as a result of *other* district graduation requirements, such as earning sufficient course credits. Another possibility is that students exit the districts either to transfer or as dropouts *after* passing the CAHSEE.

Students with higher achievement levels in middle school—as measured by the number of course failures in 7th grade, whether students took algebra in 8th grade, and test scores in 8th grade—were

Figure 2: District Graduation Rates for 7th Grade Sample, by Number of Fs in 7th Grade
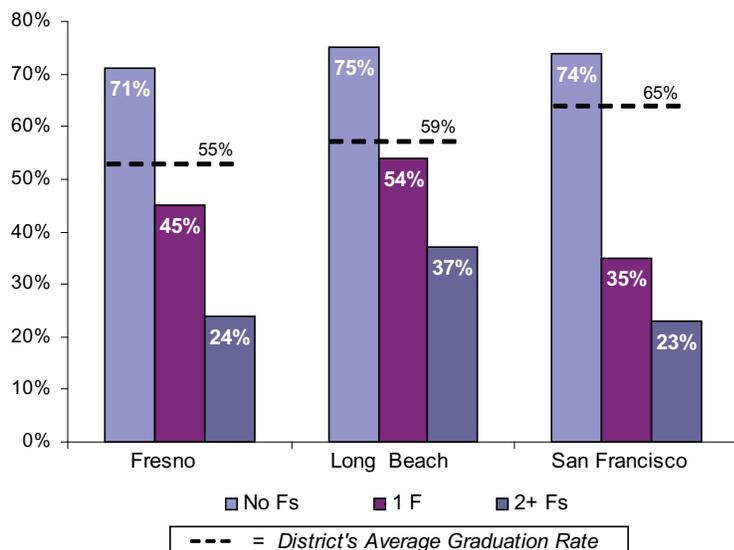
more likely to graduate than their counterparts with weaker middle school achievement records. In Fresno, for example, 54% of all students who completed algebra by 8th grade obtained a diploma, compared to 22% of students who first took algebra in high school.

Students who failed two or more courses in middle school had substantially lower high school graduation rates. In Long Beach, nearly one-third of all students failed two or more courses in 7th grade, and among those students only 37% graduated; of students with no failed courses, 75% graduated (*see Figure 2*).

In San Francisco, although only 11% of all students received two or more Fs in 7th grade, just 23% of those students graduated; of students with no failed courses, 75% graduated.

After adjusting for middle school achievement and a variety of other characteristics, most demographic and background fac-

tors were *not* significant predictors of passing the CAHSEE or of high school graduation, with some exceptions. One factor that was significant in all three districts was that students who were retained or who were older than their fellow students were less likely to pass these two academic hurdles.

► **School Differences**

Student outcomes varied widely among schools within each of the three districts. There were substantial differences in initial CAHSEE passing rates among schools. Perhaps more importantly, there were also substantial differences among schools in improvement in CAHSEE passing rates between the first attempt in 10th grade and the fourth attempt in 12th grade.

Lastly, there were widespread differences among schools in the rates that students left the district—either as dropouts or as transfers—by 12th grade.

► **Improving High School Success and Graduation**

California is facing a high school dropout crisis (*see CDRP Policy Report: Solving California's Dropout Crisis*). The state currently allocates over $50 million a year to improve CAHSEE passing rates in an effort to increase graduation rates. However, most of these monies are restricted to interventions after 10th grade, or after students either pass or fail the CAHSEE. Given what we know from middle school indicators, this is far too late in students' high school graduation trajectories. Targeting interventions *early* is the primary purpose of identifying students at risk of dropping out or not meeting graduation requirements.

The findings from this study contribute to a growing body of research identifying early signals of academic success or failure. These signals include: grade retention, course failures in core academic subjects in middle school, middle school grades and test scores, and enrollment in algebra by 8th grade.

Schools and districts have the necessary information in middle school to identify students at risk of not completing high school or not passing the California High School Exit Exam.

Policymakers need to make sizeable investments for early interventions if they want to see the desired improvements in CAHSEE passing rates and graduation outcomes.

Research Reports and Policy Briefs in Print

1. **The Economic Losses from High School Dropouts in California** *(August 2007)*

2. **The Return on Investment for Improving California's High School Graduation Rate** *(August 2007)*

3. **Does State Policy Help or Hurt the Dropout Problem in California?** *(October 2007)*

4. **Can Combining Academic and Career-Technical Education Improve High School Outcomes in California?** *(November 2007)*

5. **Student and School Predictors of High School Graduation in California** *(December 2007)*

6. **California Schools that Beat the Odds in High School Graduation** *(December 2007)*

7. **Alternative Pathways to High School Graduation: An International Comparison** *(January 2008)*

8. **Giving a Student Voice to California's Dropout Crisis** *(March 2008)*

9. **Building System Capacity for Improving High School Graduation Rates in California** *(April 2008)*

10. **Improving California's Student Data Systems to Address the Dropout Crisis** *(May 2008)*

11. **Struggling to Succeed: What Happened to Seniors Who Did Not Pass the California High School Exit Exam?** *(June 2008)*

12. **Can Middle School Reform Increase High School Graduation Rates?** *(June 2008)*

13. **Middle School Predictors of High School Achievement in Three California School Districts** *(June 2008)*

Forthcoming

14. A Profile of High School Completion in the Los Angeles Unified School District

15. Why Students Drop Out of School

The California Dropout Research Project is an affiliated project of the University of California Linguistic Minority Research Institute and the UC Santa Barbara Gevirtz Graduate School of Education