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The Role of College Prep Course Offerings and Course-Taking in Long-Term Educational Outcomes

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Executive Summary

In this study, we describe the distribution of college prep course offerings across Texas high schools and determine which school characteristics are associated with higher and lower numbers of college prep course offerings. We also examine how the number of college prep courses offered is related to how many students take these courses and, in turn, how course-taking behaviors are related to long-term educational outcomes. This investigation reveals that a greater number of college prep courses are offered at larger urban and suburban schools that have higher levels of academic achievement and lower levels of economic disadvantage. Offering more college prep courses is associated with higher levels of course-taking, which is associated with improved chances of completing a postsecondary credential, particularly for lower-achieving students.

Purpose of the Study

Increasing access to college prep coursework and encouraging more students to complete these courses may prepare students for the rigors of a postsecondary education and contribute to their success. This study used administrative data from Texas public schools to ask the following:

1. Which types of high schools offer a greater number of college prep courses?

KEY FINDINGS

Schools that offered more college prep courses were larger, urban or suburban, and had more higher-achieving students and fewer economically disadvantaged students.

Offering more college prep courses increased college prep course-taking, but only slightly.

Taking more college prep courses increased postsecondary attainment. Each additional college prep course increased postsecondary credential completion by zero to 1 percentage points and bachelor's degree completion by 1 to 2 percentage points.

The role of college prep course offerings on course-taking varied by student achievement level. When more college prep courses were offered, higher-achieving students enrolled in more college prep courses, but the lowest-achieving students did not.

The role of college prep course-taking on postsecondary outcomes varied by student achievement level. Lower-achieving students appeared to benefit the most from taking additional college prep courses. Their likelihood of completing a postsecondary credential increased as they took more college prep courses, and at very high levels of course-taking, they appeared to catch up to their higher-achieving peers.

2. Do a greater number of students take college prep courses in schools that offer more of them?
3. Is taking more college prep courses associated with more postsecondary attainment?
4. How do the roles of college prep course offerings and course-taking differ by student achievement level?

Background

According to a longitudinal analysis that tracked students from the 1998-1999 school year, when they were in the eighth grade, through the 2014-2015 school year, only 29% of public school students in Texas completed a postsecondary credential within 12 years of high school graduation (Kinder Institute for Urban Research, 2018). Concerned with this low rate of postsecondary completion, the Texas Higher Education Coordinating Board set a new goal called 60x30TX, which aims to increase the share of 25- to 34-year-olds with a certificate or degree to 60% by 2030 (Texas Higher Education Coordinating Board, 2015). The state also revised its school accountability system to integrate measures of college, career and military readiness like earning high scores on Advanced Placement (AP) and International Baccalaureate (IB) exams, completing dual course credits and enlisting in the military (Texas Education Agency, 2018).

The state's increasing focus on college prep coursework[1] may help it achieve the 60x30TX goal if college prep courses are widely available to schools and students and if college prep courses demonstrate positive impacts on long-term educational outcomes. Previous research has shown, however, that the opportunities to take these courses are not evenly distributed across public schools. Schools with higher levels of achievement are more likely to offer AP and IB courses than schools with lower levels of achievement (Iatarola, Conger & Long, 2011), and poor students are less likely to take AP and IB courses than non-poor students (Conger, Long & Iatarola, 2009). Despite these disparities, college prep coursework increases two- and four-year college enrollment (Long, Conger & Iatarola, 2012), and for those who earn college credit through their AP exam scores, college prep coursework is associated with higher rates of bachelor's degree completion and reduced time to degree (Evans, 2018).

Schools that offered more college prep courses were larger and urban or suburban and had more high-achieving students and fewer economically disadvantaged students.

Data and Methods

We used administrative data for all students attending Texas public schools, which were available at the University of Houston Education Research Center. Building on prior work (Holzman, 2018; Kinder Institute for Urban Research, 2018; National Center for Higher Education Management Systems, 2012), we focused on one cohort of eighth graders during the 1998-1999 school year and followed them through high school and 12 years thereafter (through the spring of 2015). All analyses were limited to students who graduated high school with their cohort (in the spring of 2003).

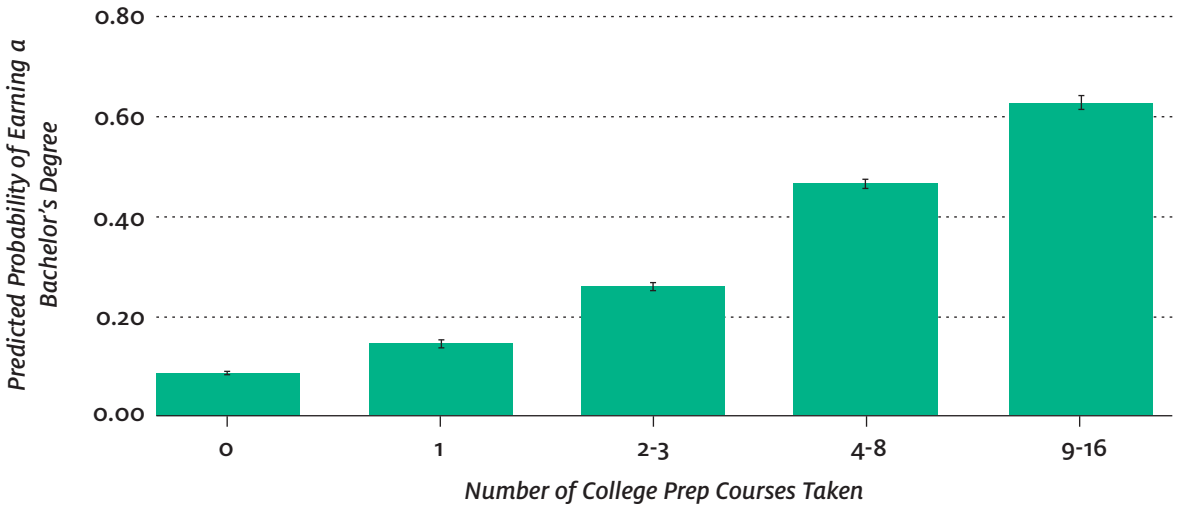
To address Research Question 1, we estimated an ordinary least squares (OLS) regression model to predict the number of unique college prep courses a high school offered. For Research Question 2, we used an OLS regression model to predict the number of college prep courses a student took during high school. The key covariate of interest measured the number of unique college prep courses a high school offered.

Research Question 3 determined how college prep courses affected long-term educational outcomes—

1 We define college prep coursework as AP, IB or other advanced courses as outlined by the Academic Excellence Indicator System (Texas Education Agency, 2001).

FIGURE 1

Relationship between College Prep Course-Taking in Bins and Earning a Bachelor's Degree



earning a postsecondary credential or a bachelor's degree within 12 years of high school. A problem with testing the relationship between college prep course-taking and postsecondary attainment was that students who took these courses (and more of them) might have done so because they planned to graduate from college. We addressed this issue in three ways:

1. First, we included a robust set of student and school characteristics that were thought to predict college prep course-taking and postsecondary attainment.
2. Second, we estimated school fixed-effects models to account for between-school variation in patterns of course-taking and attainment.
3. Third, we estimated an instrumental variables model using two-stage least squares. The instrument we used measured the average college prep curriculum (i.e., the mean number of courses students took) at the school level. The goal of this instrument was to eliminate omitted variable bias tied to unobserved ability or motivation.

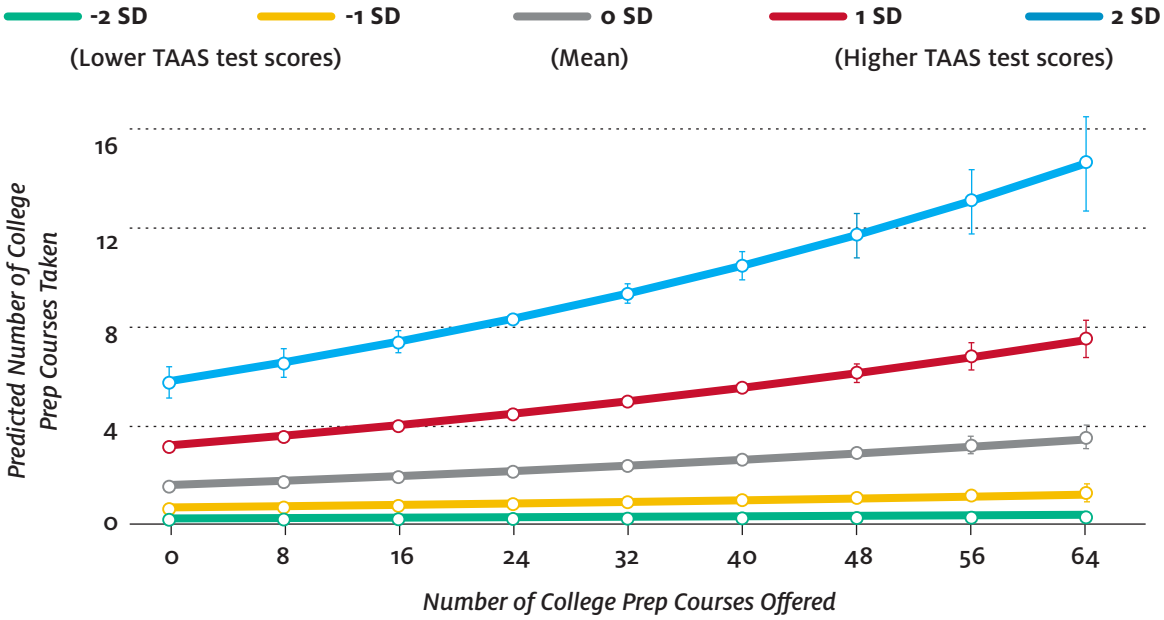
Finally, for Research Question 4, we estimated OLS regression models like those estimated in Research Questions 2 and 3. When testing how the role of college prep course offerings varied by achievement level, we interacted the number of course offerings with a student's composite Texas Assessment of Academic Skills (TAAS) score. When testing how the number of college prep courses taken varied by achievement level, we interacted course-taking with a student's composite TAAS score.

Findings

First, we determined whether the number of unique college prep courses offered at a high school was associated with other school-level characteristics. Net of other factors, schools with higher percentages of economically disadvantaged students offered fewer numbers of unique college prep courses. For each 10 percentage point increase in the share of economically disadvantaged students, 1.31 fewer courses were offered. Academic achievement was also related to college prep course offerings. A

FIGURE 2

Relationship between Student-Level College Prep Course-Taking and School-Level College Prep Course Offerings by Eighth Grade Composite Test Scores



Note. SD = Standard Deviation; TAAS = Texas Assessment of Academic Skills

100-point increase in a school's average SAT score was associated with 2.29 additional courses offered.

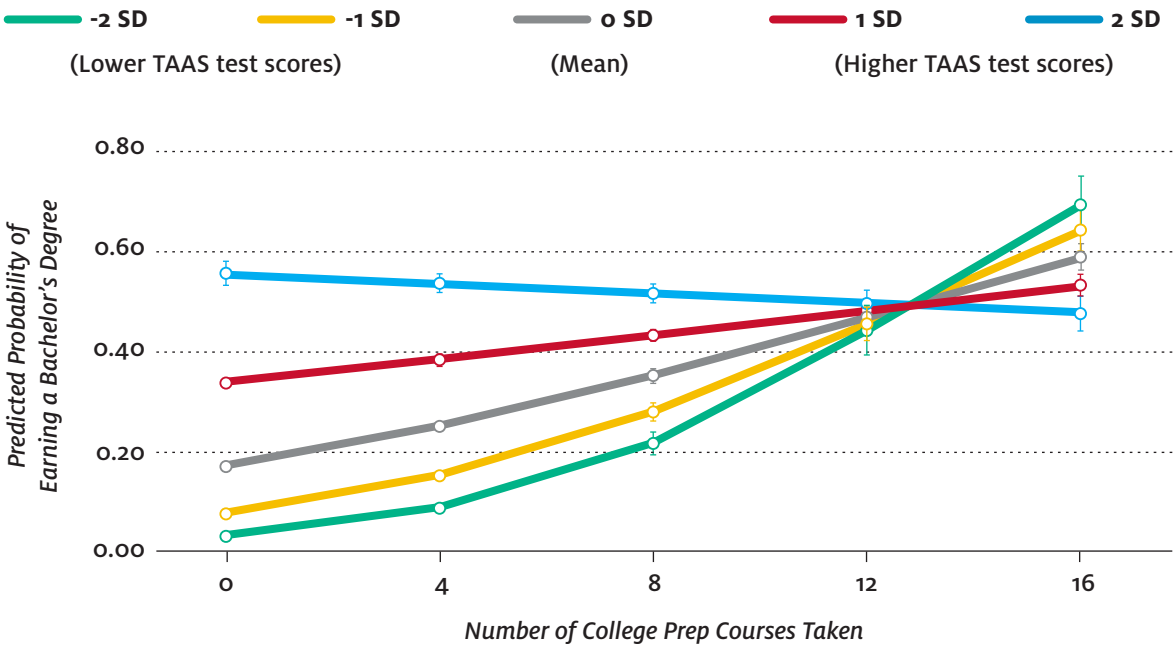
Building on the findings that college prep course offerings were related to other school characteristics—like the sociodemographic composition of the student body and its level of academic achievement—we determined whether course offerings predicted student-level course-taking patterns. Through a multivariate analysis that accounted for a variety of student and school characteristics, we found that each additional college prep course offered increased the number of college prep courses taken by a student by 0.06. To put this in perspective, for the average student to take an additional college prep course, a school must offer roughly 17 additional courses.

Next, we examined the relationship between college prep course-taking and postsecondary degree completion. Net of other factors, an additional college prep course taken during high school increased the likelihood of completing a postsecondary credential by zero to 1 percentage points and the likelihood of completing a bachelor's degree by 1 to 2 percentage points. Given the low levels of postsecondary attainment in Texas, these results were substantial.

We then tested whether college prep course offerings and course-taking demonstrated differential associations by academic achievement. Figure 2 shows that as the number of courses offered at a school increased, students with higher test scores took more college prep courses. In contrast, students with the

FIGURE 3

Relationship between Earning a Bachelor's Degree and Student-Level College Prep Course-Taking by Eighth Grade Composite Test Scores



Note. SD = Standard Deviation; TAAS = Texas Assessment of Academic Skills

lowest test scores enrolled in roughly the same number of college prep courses, regardless of the course offerings. This makes sense if test scores are a barrier to entry into these courses (e.g., schools use them or other measures of achievement in the course recommendation and assignment process).

Finally, we tested whether college prep course-taking had differential associations with postsecondary attainment for students with higher and lower test scores. Figure 3 shows that college prep course-taking did not appear to have much influence on the highest-achieving students' probability of earning a bachelor's degree; regardless of the number of courses they took, they were more than likely to complete college. In contrast, college prep course-taking had disproportionate associations for lower-achieving students; their exposure to these rigorous courses had large relationships with their likelihood of college completion. In fact, at very high levels of college prep course-taking, low-achieving students appeared to catch up to their higher-achieving peers.

POLICY BRIEF

Policy Recommendations

It may not be cost-effective for schools to dramatically increase their college prep course offerings with the goal of increasing course-taking. Based on our analysis of college prep course-taking, it would take 17 additional courses offered for a student to take one additional course. Increasing the number of college prep course offerings in such a substantial way may not be practical for many schools to implement, especially if it involves hiring new or different types of teachers or providing them with additional professional development. While a cost-benefit analysis is beyond the scope of this study, there may be other, more effective means to increase college prep course-taking that do not involve expanding course offerings. Furthermore, schools should consider encouraging students to take more of the college prep courses already offered and gradually increase course offerings as more students enroll in them.

Based on our analysis of postsecondary attainment, students, particularly those who are lower-achieving, should be encouraged to enroll in college prep courses and more of them. Taking any college prep courses is positively associated with postsecondary credential completion, and the likelihood of completion increases as students take more courses. Moreover, since college prep courses appear to benefit lower-achieving students the most, there should be more targeted efforts to enroll them in more courses. Doing so may potentially reduce postsecondary attainment gaps by academic achievement.

Of course, we cannot assume that all students will be equally prepared for the rigor of college prep courses, let alone tackling a full schedule of college prep courses. If students are encouraged to enroll in these courses, then schools should ensure they are introduced to pre-college prep coursework (i.e., pre-AP, pre-IB) in middle school and early on in high school. They should also identify novel instructional strategies or academic support systems to ensure that lower-achieving students taking these courses can be successful.

KEY POLICY RECOMMENDATIONS

Since it may not be cost-effective for schools to dramatically increase college prep course offerings with the goal of increasing course-taking, schools should consider encouraging students to take more of the college prep courses already offered and gradually increasing course offerings as more students enroll in them.

Students, particularly those who are low-achieving, should be encouraged to enroll in college prep courses and more of them.

Since some students will be less prepared for the rigor of college prep courses than others, schools should ensure students are introduced to pre-college prep coursework (i.e., pre-AP, pre-IB) in middle school and early in high school. They should also identify novel instructional strategies or academic support systems to ensure low-achieving students taking these courses can be successful.

Each additional college prep course increased postsecondary credential completion by zero to 1 percentage points and bachelor's degree completion by 1 to 2 percentage points.

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