

Impacts of Providing Information to Parents about the Role of Algebra II

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Background

In June 2013, former Texas Governor Rick Perry signed House Bill 5 (HB5) into law, which changed high school graduation requirements for public school students in Texas. Prior to this, most students were required to complete algebra II in order to graduate from high school.¹ Commencing with the incoming cohort of grade 9 students in 2014/15, completing algebra II became optional. The authors of this study partnered with the Texas Education Agency to carry out an experiment to determine whether providing information, prior to students' selection of their grade 11 courses, to parents/guardians on the importance of students' completing Algebra II for college access had an impact on the percentage of students who completed Algebra II during grade 11.

Research Question

Does providing parents/guardians with information about the role of algebra II in college access have an impact on the percentage of students who complete algebra II during grade 11? Do the impacts vary by the percentage of students in a school who are low-income or minorities?

Setting

The study took place in 109 high schools across Texas—54 treatment schools and 55 control schools.

Population

¹ All students were required to complete Algebra II in order to graduate from high school unless they received parent permission after grade 10 to drop the state's lowest graduation option—the Minimum High School Plan.

Compared to all public high schools across Texas, the schools that participated in the study contained higher percentages of minority students, limited-English-proficient students, economically disadvantaged students, and lower achieving students. Study schools were also substantially larger, on average. Students were included in the analyses if they met three criteria: (1) they were enrolled in grade 10 in a study high school during the 2015/16 school year, (2) they were enrolled in a Texas public high school during the 2016/17 school year, and (3) they had not completed algebra II prior to the 2016/17 school year. A total of 29,483 students were included in the analyses—14,415 treatment students and 15,068 control students.

Intervention

Parents/guardians in the treatment group received full-color brochures displaying information about the role of Algebra II in four-year college access. These brochures were a low-cost, two-sided, tri-fold, informational brochure outlining the course requirements for each of the new graduation options paired with the entrance requirements of public four-year colleges and universities in Texas. Parents/guardians in the control group received one-page, full-color brochures outlining the primary changes to the high school graduation requirements. Spanish and English versions of both brochures were distributed to parents in study schools. Dissemination of the informational brochures was timed to coincide with the time period during which grade 10 students select courses for their junior year—January through March 2016.

Research Design

The study was conducted as a randomized controlled trial in which schools randomized to the treatment condition received the tri-fold brochure and schools randomized into the control condition received the one-page brochure.

Data Collection/Analysis

This study used longitudinal student- and school-level datasets available from TEA's Public Education Information Management System (PEIMS), statewide assessment files, and Texas Academic Performance Report (TAPR) files. PEIMS contains student-level data on student enrollment and demographic characteristics, special program participation, and course completion data. TAPR contains organizational data for schools and districts, such as percentage economically disadvantaged students, percentage of students of each racial/ethnic group, percentage of special education students, percentage of limited English proficient students, and percentage of students who passed the state achievement tests.

Multilevel regression models were used to compare Algebra II completion rates during grade 11 for students in treatment and control schools. Interaction terms were included in the model in order to look for differential impacts for high-minority or low-income schools.

Findings/Implications

Overall, the study found no statistically significant differences in algebra II completion rates during grade 11 between students in treatment in control schools (figure 1), controlling for student background characteristics and school characteristics. Although the algebra II completion rate for treatment group students was higher than that of students in control schools, the difference was not statistically significant. Similarly, algebra II completion rates during grade 11 did not differ by a statistically significant amount for students in treatment and control schools with high percentages of minority students (figure 2). However, the algebra II completion rates during grade 11 of students in control schools with high percentages of low-income students were statistically significantly higher than those of students in treatment schools with high percentages of low-income students (figure 3).

Interpreting the statistically significant difference in algebra II completion between low-income treatment and control schools is difficult, since both treatment and control schools distributed informational brochures to parents/guardian. Parents/guardians of students in control schools received materials informing them that the state high school graduation requirements had changed. The brochures pointed parents to websites containing information about the new graduation requirements. Parents/guardians of students in treatment schools received the same information plus information about the role of algebra II in college access. It is possible that not having this additional information prompted parents and their students in control schools with high percentages of low-income students to consult counselors or other school staff to find out more information about the changes to the graduation requirements. It is also possible that school staff encouraged these students to complete algebra II. Parents/guardians of students in treatment schools may have believed they had all the information they needed and did not reach out to counselors or other school staff.

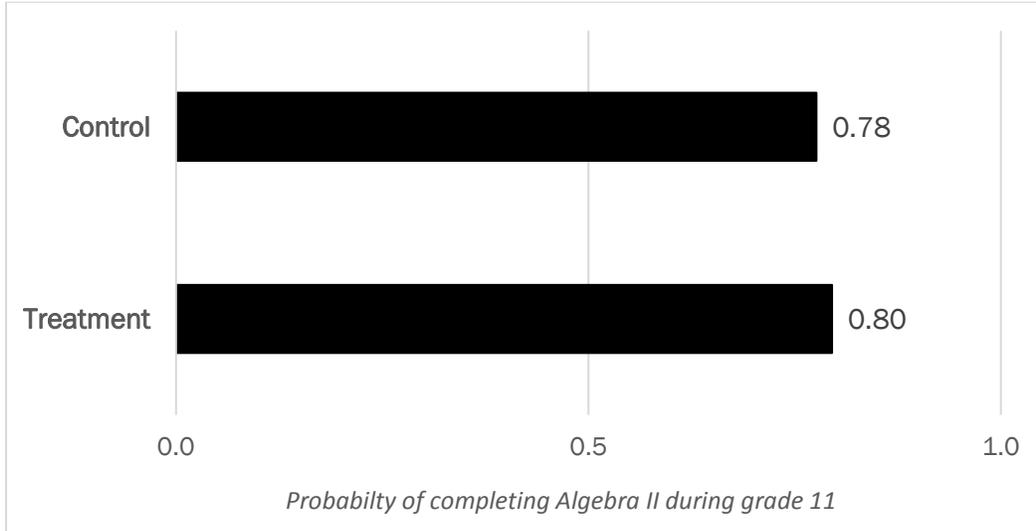
Limitations

Due to the timeline of the study, it was only possible to follow students until the end of grade 11. While most students—over 75%—in Texas complete Algebra II by the end of grade 11, some students complete Algebra II in grade 12. Additionally, the control group did not carry on “business-as-usual”. Moreover,

although it was possible to determine with some certainty that the informational brochures were delivered, there was no way to ascertain if parents opened the envelopes, read the content of the brochure, and/or shared the brochure with their children.

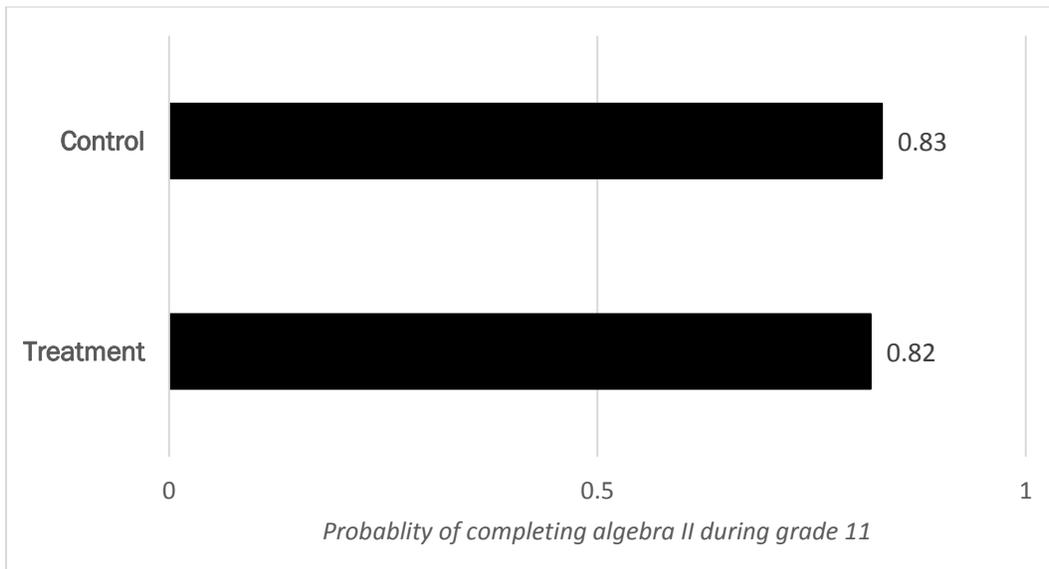
Figures

Figure 1. Probability of completing Algebra II during grade 11 for students in treatment and control schools



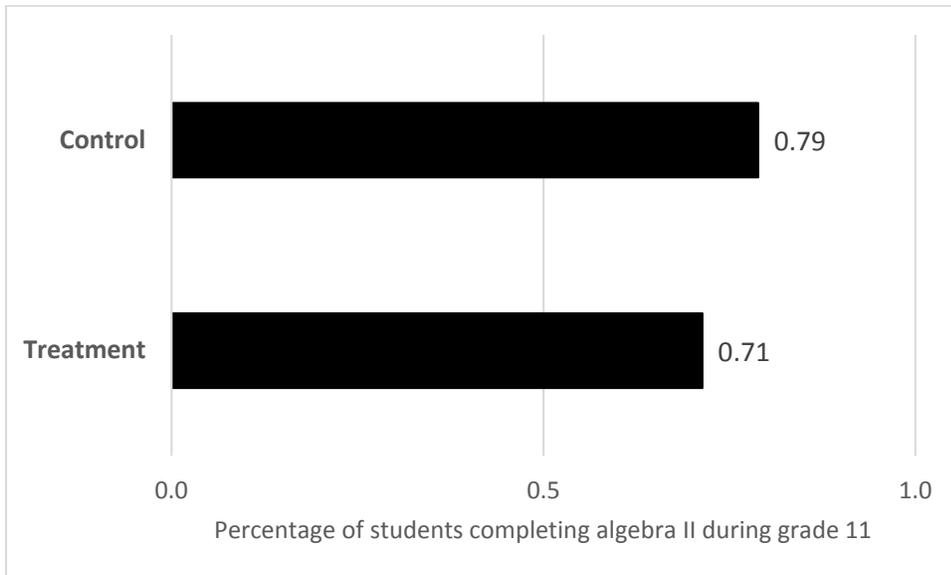
Source: Author compilation using data from the Texas Education Agency's Public Education Information Management files, statewide assessment files, and Texas Academic Performance Report files

Figure 2. Probability of completing algebra II during grade 11 for students in treatment and control schools with high percentages of minority students



Source: Author compilation using data from the Texas Education Agency's Public Education Information Management files, statewide assessment files, and Texas Academic Performance Report files

Figure 3. Probability of completing algebra II during grade 11 for students in treatment and control schools with high percentages of low-income students



* Significant at $p < .05$; ** significant at $p < .01$.

Source: Author compilation using data from the Texas Education Agency's Public Education Information Management files, statewide assessment files, and Texas Academic Performance Report files
