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The conclusions of this research do not necessarily reflect the opinion or official position of Dallas Independent School District, the Texas Education Research Center, the Texas Education Agency, the Texas Higher Education Coordinating Board, the Texas Workforce Commission, or the State of Texas.

Abstract

Advanced high school courses predict subsequent student success, but fewer Black and Hispanic students take advanced courses compared to their White peers. One strategy to increase advanced course enrollment is to use an "opt-out" approach, in which all students are enrolled in advanced courses unless they decline. We use a synthetic control design to evaluate the impact of an opt-out policy in a large urban district in Texas on the early uptake of Algebra I in the 2019-20 school year. The policy increased enrollment in Algebra I before high school by 11.7 percentage points relative to a synthetic district. The Hispanic–White enrollment gap decreased substantially, while the Black–White enrollment gap did not change.

Keywords: automatic enrollment, advanced course taking, Differences in Differences

Background

Importance of Advanced Coursework

In most US schools, students have the opportunity to take advanced courses in all four core curriculum areas in middle school, which significantly impacts the courses they can take in high school. That impact is uniquely identifiable in mathematics coursework; middle school honors pathways allow students to take Algebra I in 8th grade and Calculus (or other advanced mathematics courses) by 12th grade. The *single-jump[1] pathway*, shown in Figure 1, is one way to achieve this acceleration, making 5th grade a critical juncture to determine a student's readiness.

Access to and completion of advanced courses in high school are consistently associated with positive outcomes, including higher standardized test scores, higher graduation rates, higher rates of college attendance, and greater persistence in postsecondary education (Adelman, 2006; Long et al., 2012). These gains are especially large for groups that have been marginalized in the past: Black and Hispanic students, and students from low-income backgrounds (Austin, 2017; Jackson, 2014). For example, Austin (2017) finds that a one-unit increase in the curricular intensity for Hispanic high school students is associated with a 1.32- unit increase in the log odds of attending college compared to White Students. Similar increases were found for Black students (a 1.28-unit increase in the log odds).

Limitations of Traditional Approaches to Access

Despite well-documented benefits of taking advanced coursework, underrepresented minorities are much less likely than White students to take advanced courses. In mathematics for instance, only 30% of eligible Black and Hispanic students enroll in AP math, compared with 40% of White students and 60% of Asian students (College Board, 2014). Moreover, these enrollment disparities persist, even when prior academic achievement is controlled for (Austin et al., 2025; Klopfenstein, 2004; McBee, 2016). Researchers instead attribute this gap to systemic barriers including information asymmetry, and inconsistent placement policies (Card & Giuliano, 2016; Miller et al., 2018). As such, unequal access to advanced coursework is deeply connected to traditional (opt-in) approaches, and understanding the status quo provides necessary context of considering alternatives.

Historically, enrollment in advanced courses has been based on an opt-in model, requiring active engagement from students, parents, teachers, and other school officials. Typically, students demonstrate ability by performing at a satisfactory level on assessments and/or coursework before they can be considered for enrollment in an advanced coursework pathway. Then, school officials often switch students to the advanced pathway. This approach focuses on individual students and can put underrepresented minority students at a disadvantage because it relies on access to information, advocacy, and resources that are not equally available across different demographic groups (Card & Giuliano, 2016; Conger et al., 2009). By contrast, opt-out policies automatically enroll eligible students in advanced courses based on objective measures, such as standardized test scores, unless the students or their guardians actively opt out of this enrollment. Reversing the default to one of enrollment, these policies are designed to eliminate barriers to entry while still leaving open the prospect of both parental and student choice-making (Austin et al., 2025; Johnson & Goldstein, 2003). The growing adoption of these policies nationwide reflects their potential as a possible solution to enrollment gaps in advanced course enrollment.

Emergence of Opt-out Policies

Opt-out or automatic enrollment policies are a transformative approach to leveraging behavioral insights to address disparities in advanced course enrollment. Under an opt-out policy, the beneficial option (advanced course enrollment) is set as the default, while giving the decision-makers the possibility of opting out. The policy mechanism exploits the status quo bias – the cognitive tendency for people to stick with a preselected or default choice – to reduce the need for proactive decision-making while addressing unequal access to information and advocacy (Johnson & Goldstein, 2003; Madrian et al., 2014). In this specific context, an opt-out policy design helps to eliminate dependence on subjective gatekeeping mechanisms (such as teacher recommendations and parental requests) through which historically marginalized students have had unequal access to advanced coursework (Austin et al., 2025; Plucker et al., 2022).

Notwithstanding limited causal evidence about the effects of automatic enrollment policies on advanced course enrollment, these policies have gained traction across the United States. At the national level, Senator Cory Booker (D-NJ) introduced a 2023 bill favoring the implementation of opt-out policies for advanced coursework (Booker, 2023). This follows Washington State's rolling implementation beginning in 2010, with several states - including North Carolina, Colorado, Illinois, Nevada, and Texas - adopting similar policies (EdTrust, 2024). While the implementation details differ across state contexts, the policies share a common design that combine an opt-out model premised on standardized measures to expand access to advanced coursework.

Texas Policy Setting

In Texas, Dallas Independent School District (DISD) implemented an automatic enrollment policy in 2019-2020 for grades 5-8 making it one of the first districts to adopt an automatic enrollment policy. Given early accounts of the policy's implementation, Texas enacted Senate Bill 2124, which mandated all middle school campuses to create an advanced pathway in mathematics to prepare for a 2025-2026 academic year automatic enrollment in mathematics policy rollout.

As the pilot to Texas's statewide reform efforts, DISD is an important case study for implementing automatic enrollment within one of the largest and most diverse school districts in the nation. The district serves over 140,000 students across 220 campuses, and its demographic makeup includes roughly 70% Hispanic and 21% Black students, more than 87% economically disadvantaged students and slightly over 40% English Language Learners. DISD's size, diversity, and long-term focus on equity-oriented reforms makes it an important context for examining the implementation of its automatic enrollment policy. Although both DISD's 2019-2020 policy and Texas's SB 2124 seek to expand access, the district's pilot differed in two main ways: it expanded the use of automatic enrollment from mathematics to reading language arts, science, and social studies (Napolitano, 2023; The Hub, 2022), and it required students score within the Meet or Masters achievement bands for the relevant 5th-grade STAAR tests (Napolitano, 2023).

Descriptive evidence from DISD's administrative records, shown in figure 2, reveal the 2019-2020 opt-out policy was linked to notable increases in early enrollment in Algebra I, particularly for Black and Hispanic students. Average enrollment for Black and Hispanic students was at 15.4% and 23.4% respectively, compared to 44.7% for White students, before the policy was established. After the policy, average enrollment rates increased to 20.1% for Black students, 37.2% for Hispanic students, and 50.5% for White students, with Hispanic students showing the greatest increase[2].

While these patterns indicate that automatic enrollment could help narrow gaps in early access to advanced coursework, the impact of these policies has not yet been quantified using causal methods. This study is the first to address that gap by leveraging administrative data to examine the effects DISD's 2019-2020 opt-out policy. By examining one of the country's most extensive and diverse school districts, this paper offers evidence that is relevant for Texas and the growing number of states and districts across the nation that are adopting similar policies.

Previous Research and Conceptual Framework

Academic literature relates taking advanced courses in high school to positive postsecondary outcomes through several academic and extracurricular mechanisms. First, rigorous classes deepen subject matter knowledge and cultivate higher-order thinking skills, which improve academic performance and college readiness (Adelman, 2006; Long et al., 2012). Second, in these advanced courses, students work alongside other motivated students, offering peer groups that reinforce academic engagement (Conger et al., 2009). Third, advanced courses are often taught by teachers with deeper content knowledge, who can enrich the instructional environment by offering extensive content expertise (Evans, 2019; Jackson, 2014). Fourth, college and university admission officials often see advanced coursework as a signal for a student's motivation and aptitude. As a result, students who take more advanced courses may have access to a broader array of post-secondary opportunities (Card & Giuliano, 2016; McBee, 2016). Finally, while the mechanisms that affect student outcomes are largely positive, it must be noted that there may be diminishing returns for increasing advanced courseloads, considering the amount of stress individual courses place on students (Long et al., 2012). As these mechanisms produce long term benefits, differential access to advanced coursework translates to unequal exposure to related opportunities.

Differential access itself cannot solely be attributed to differences in prior achievement, but also by frictions embedded in identification and placement policies (Card & Giuliano, 2016;

Klopfenstein, 2004). Traditional opt-in systems can require active intervention from students and/or families to collect information about advanced coursework, understand the eligibility requirements, and navigate the system to obtain a spot in the advanced course. These processes may be problematic when there is limited institutional knowledge or access to guidance (Conger et al., 2009). Additionally, when information can be incomplete or asymmetrically distributed, students may be unaware of the advanced academic opportunities available or form inaccurate beliefs about individual ability, thereby creating disparities among academically similar students (Hoxby & Avery, 2013; Dynarski et al., 2021). These are further compounded by the inherent procedural and decisions costs of an opt-in model, including administrative requirements, counseling interactions, and parental advocacy, which can dissuade participation, particularly for historically underserved students (Dynarski et al., 2021). The traditional model also relies subjective or inconsistent identification processes, including teacher referral or local-level screening, which may be ineffective as providing students with access to advanced courses (Card & Giuliano, 2016; Miller et al., 2018). Because the initial course placement is critical to the long-run academic trajectory, these initial disparities may result in growing disparities in the long-run opportunities available to students through path dependent mechanisms (Adelman, 2006).

Behavioral economics offers a conceptual framework to shed light on the mechanisms through which default rules shape decision outcomes in the face of informational and procedural hurdles. A body of evidence shows that opt-out defaults, where the beneficial option is set as the default, but the choice set is left intact, can improve participation in various domains, including retirement savings, insurance, and health-related decisions (Johnson & Goldstein, 2003; Loewenstein et al., 2015; Yan & Yates, 2019). These findings are driven by the defaults' power to reduce decision costs and take advantage of the status quo bias, or the tendency for people to stick to their initial decisions, which is well-supported in the literature (Johnson & Goldstein, 2003; Madrian et al., 2014). In the context of education, the implementation of the automatic enrollment policy translates the above logic into practice, effectively transforming the decision to take advanced courses into an opt-out decision, thereby mitigating the effects of information asymmetry, complexity, and procedural hurdles. Despite the growing body of research on this issue, the evidence on the causal impact of automatic enrollment policies is still limited.

Evidence from education-specific settings further supports the power of default-based reforms. Bartlett et al. (2026) examine a default policy in the reclassification of English Learners and show that alterations in institutional defaults have a significant effect on reclassification outcomes while underlying eligibility standards remain the same. This supports the underlying premise that institutional defaults in course selection have the potential to affect enrollments in advanced courses via analogous behavioral pathways.

While causal evidence on the effects of Automatic Enrollment and opt-out policies in education is still comparatively limited, such policies are increasingly being implemented across states and districts (Johnson & Goldstein, 2003; Madrian, 2014; Plucker et al., 2022). The best available evidence on the effects of Automatic Enrollment and opt-out policies comes from studies that exploit quasi-experimental variation due to policy rollout structures or eligibility thresholds, which allow researchers to isolate the effects of these policies on student behavior and academic performance.

Among the strongest causal evidence to date, Austin et al. (2025), which examines the effects of Washington State's Academic Acceleration policy using statewide administrative data and a difference-in-differences approach that exploits staggered adoption of the policy across school districts. Under this policy, students performing at or above state proficiency standards are automatically enrolled into advanced courses, thus switching from an opt-in to an opt-out policy structure for course enrollment. Estimates from this study show that, on average, the probability of enrolling into any advanced course increases by five percentage points relative to the baseline, according to the study's estimates. Moreover, evidence on student performance and other downstream effects shows that students do not appear to be worse off; changes to course grade point averages and other student performance metrics are small and statistically indistinguishable from zero, suggesting that expanded access to these courses does not harm student performance or course rigor.

Additional complementary causal information is provided by Dougherty et al. (2017), whose research focuses on North Carolina's acceleration policy implemented within Wake County Public Schools. The predicted probabilities of success were employed to determine student eligibility for accelerated mathematics courses using EVAAS models. Consequently, a discontinuous assignment function is formed to identify the effects using a fuzzy regression discontinuity design. The results show that the impact of acceleration on advanced mathematics course uptake is considerable. For instance, students who were at the margin of meeting the acceleration requirement were 62.2 percentage points more likely to complete Algebra I by the eighth grade (Dougherty et al., 2017). These effects extend into the secondary mathematics curriculum because the probability of taking Precalculus increases by 13.8 percentage points, while the probability of achieving high grades increases by 9.4 percentage points (Dougherty et al., 2017). These findings clearly show that objective-based placement mechanisms influence on student academic trajectories.

The aforementioned studies provide two important findings. First, the studies show that automatic assignment mechanisms have considerable causal influence on advanced course participation (Austin et al., 2025; Dougherty et al., 2017). Second, based on the available research studies, expanding opportunities through default-based mechanisms may not necessarily lead to a decline in student academic performance (Austin et al., 2025). Nevertheless, the current causal research has been conducted within narrow contexts with limited diversity in policy design and implementation. For instance, most studies have been conducted within small school districts with limited diversity in student demographics. Consequently, this study contributes to the literature by exploring the causal impact of Dallas Independent School District's opt-out policy, which is significantly different from the Washington State and North Carolina studies in scale, student demographics, and policy design.

This study is a contribution to the body of research on the effects of automatic enrollment policies by focusing on the effects on placement policy variation. It is a continuation of the work done by other researchers on the effects of the Academic Acceleration policy on student placement in the state of Washington. The Academic Acceleration policy was analyzed using the intent-to-treat effects using staggered district adoption by Austin et al. (2025), while the effects on local students around an eligibility threshold using a targeted placement policy were analyzed by Dougherty et al. (2017). This research focuses on the effects of a district-wide opt-out policy using a centralized assignment policy in the Dallas Independent School District (DISD), which is one of the largest and most diverse school systems in the United States. In contrast to the other studies done on the effects of the Academic Acceleration policy, the DISD policy placed students into advanced courses at an early stage in the student placement process. Using a synthetic control approach with administrative data, the effects of the automatic enrollment policy on the participation rates of early Algebra I were isolated and analyzed.

Data and Methods

The data for this study comes from the Texas Schools Project (TSP) at the University of Texas at Dallas. The TSP operates the UT Dallas Education Research Center (UTD-ERC), one of three legislatively mandated ERCs in the state that makes administrative data from the Texas Education Agency, Texas Higher Education Coordinating Board, and Texas Workforce Commission available for approved research to benefit education in Texas. Drawing upon these resources, researchers can produce longitudinal datasets tracking all students from K12 schools into postsecondary institutions and the workforce, if they remain in Texas.

Given that the opt-out policy applies exclusively to Dallas ISD while all other districts remain unaffected, and we are interested in measuring the causal impact of the policy on students' outcomes, a Differences in Differences approach provides a suitable causal framework for analysis[3]. The main dataset was constructed to be able to compare the impact of the opt-out policy on DISD to other Texas school districts. Our dataset contains demographic information and tracks academic outcomes for cohorts of all Texas 5th graders of all 1,207 school districts from 2011-12 through 2021-2022. If a student was enrolled in 5th grade in DISD, they are counted as part of DISD from then on, even if they change districts. The first cohort analyzed is the 2011-2012 cohort, as this marks the introduction of the STAAR exam as the standardized test, which also determines whether a student is automatically enrolled in honors classes in 6th grade. The latest 5th grade cohort we observe is 2018-2019, so we can observe the first 6th grade cohort impacted by the policy and allow enough time to capture enrollment in Algebra I before the cohort reaches high school. The opt-out policy was implemented in the 2019-2020 school year for all grades in middle school. Thus, as shown in table 1, three cohorts were impacted by the policy. The 2016-2017 and 2017-2018 cohort were impacted partially, while the 2018-2019 cohort was fully impacted by the policy.

A key challenge with a traditional two-way fixed effects DiD model is the construction of the counterfactual. If we were to apply a standard DiD approach with only one treated unit, Dallas ISD, the counterfactual would be an average of all other districts in Texas. This broad comparison would be problematic, as it would contrast a single district against the entire state, reducing the validity of the estimate. Most school districts in Texas are not similar to DISD along many demographic dimensions. A more refined approach would be to restrict the control group by selecting only the districts that serve as the best comparisons for Dallas ISD. Therefore, we further reduce the sample to the 47 largest districts, including DISD since DISD is the second-largest district in Texas, surpassed only by Houston ISD. Table 2 shows the 5th grade cohorts' summary statistics variables used in the study for DISD and the other 46 school districts aggregated by pre-policy (2011-2012 to 2015-2016) and post-policy (2016-2017 to 2018-2019).

Even with a more refined control pool, identifying a single district that closely mirrors Dallas ISD remains extremely difficult since Dallas ISD is unique. Dallas ISD has a majority Hispanic and Black student population, and almost all students qualify for free or reduced-price lunch. No single district serves as a perfect counterfactual for Dallas ISD. Manually selecting them introduces an element of subjectivity. To address the counterfactual issue, we follow Abadie, Diamond, & Hainmueller (2010) and employ the Synthetic Control Method (SCM).

SCM is a generalized extension of Differences-in-Differences that uses a data-driven approach to construct a weighted combination of control districts that best resemble Dallas ISD in the pre-opt-out policy period. This synthetic comparison group provides a more transparent and credible counterfactual, allowing us to estimate the policy's impact in the post-policy period. Formally, we have that the treatment effect τ_t at time t of the opt-out policy on taking algebra before high school is:

$$\tau_t = Y_{1t} - Y_{1t}^N$$

Dallas ISD is $i = 1$ without loss of generality. Y_{1t} is the percentage of students taking algebra before high school in Dallas ISD with the opt-out policy and Y_{1t}^N is the percentage of students taking algebra before high school in Dallas ISD without the opt-out policy. We do not observe Y_{1t}^N so we estimate it by using the weighted outcome of each of the control district j.

$$\widehat{Y_{1t}^N} = \sum_{j=2}^{J+1} W_j Y_{jt}$$

To create a weighted combination of control districts that best represent Dallas ISD, we select weights W so that the combined characteristics of these districts closely match those of Dallas ISD in the pre-policy period. The optimal weights, denoted w_j^*, are those that make the synthetic control group resemble Dallas ISD as closely as possible in the factors that influence Y_{it}.

$$w_j^* = \min(W, v) \sum_{m=1}^{k} v_m (X_{1m} - X_{0m} W)^2$$

Where v_m is the importance assigned to each m matching characteristic. $X_{1m}$is the vector of matching characteristics for Dallas ISD and X_{0m} is the vector of matching characteristics of the control district j. The matching characteristics that were included are Y, the pre–opt-out period outcome, the percentage of students meeting opt-out criteria, the percentage eligible for free or reduced-price lunch, the percentages of Hispanic and Black students, and 5th-grade cohort enrollment size. These factors capture demographic, socioeconomic, and structural characteristics that shape early Algebra participation in Dallas ISD. Cohort size influences the district's capacity to allocate teachers and offer advanced math courses, while the share of students meeting opt-out criteria directly determines the pool eligible for honors math and early

Algebra. Socioeconomic status, proxied by free or reduced-price lunch eligibility, and racial composition are linked to disparities in access to advanced coursework. At last, we get:

$$\tau_t = Y_{1t} - \sum_{j=2}^{J+1} w_j^* Y_{jt}$$

τ_t is the difference in enrollment in algebra before high school between Dallas ISD and the synthetic Dallas ISD constructed from all other 46 control districts in the sample in the post-policy period.

Lastly, to verify whether the difference is statistically significant, synthetic control methods use placebo tests. Unlike two-way fixed effects regressions, synthetic control methods do not estimate significance through conventional confidence intervals. In these tests, each control district is treated as if it had received the policy, and a synthetic control is created for it. This approach helps determine whether the observed effect in the treated unit is truly significant rather than a result of low statistical power (Abadie, Diamond, & Hainmueller, 2010). In our case, to reject the null hypothesis of DISD having no differences in the number of students taking algebra before HS after the opt-out policy was implemented, DISD's synthetic control result needs to have a larger or equal impact than 95% of all the 47 districts in the sample to reject the null hypothesis at the 5% level. The p-value is the probability of randomly selecting a district with an effect as large as DISD.

Results

This section presents the procedure and findings from the Synthetic Control Method analysis to evaluate the impact of the opt-out policy implemented in DISD on early Algebra I enrollment. The primary outcome of interest is the proportion of students enrolling in Algebra I before entering high school, a key indicator of academic acceleration and participation in advanced coursework. In addition to overall enrollment, the analysis examines equity-related outcomes by assessing changes in early algebra enrollment gaps between White and Black students, as well as between White and Hispanic students. The results below compare these trends before and after policy implementation, providing insight into both the effectiveness and equity implications of the opt-out reform.

The first step of SCM is trimming down the control pool to avoid overfitting through interpolation (Abadie, 2021), which we have already accomplished when we selected the 46 largest districts other than DISD. The second step is finding the optimal combination of districts that best resemble DISD in the pre-policy period.

Table 3 shows the districts that were selected through SCM and the weights that each of the districts receives. Among all potential control districts, the optimal synthetic DISD was composed of four districts: Houston ISD, San Antonio ISD, Alief ISD located West of Houston, and Aldine ISD, located North of Houston, with 39.5%, 28.2%, 20.8%, and 11.5% respectively. All four districts are comparable individually to DISD. All four are among the largest districts in Texas, and they have a majority of Hispanic and Black student population and serve a vast number of free or reduced-price lunch eligible students. None of the selected control districts implemented any automatic enrollment policies during the studied period. Table 4 compares DISD, the synthetic DISD composed of the four districts, and the sample means of all 46 control districts across the matching variables used in the synthetic control method.

Table 4 demonstrates that synthetic DISD is more closely aligned with DISD on all matching variables, whereas the sample mean of the control districts deviates significantly. This underscores the importance of using the synthetic control method rather than a simple difference-in-differences approach. Given that synthetic DISD provides a much closer match to DISD, we can proceed with analyzing the differences between DISD and its synthetic counterpart.

Figure 3 shows how the percentage of students taking Algebra I before HS in DISD and in synthetic DISD changes for each 5^{th} grade cohort. Figure 4 is like Figure 3, but it shows the treatment effect which is the difference in the percentage of students taking Algebra I before HS between DISD and synthetic DISD rather than the levels. Both figures show how closely the proportion of students taking Algebra I before high school in synthetic DISD mirrors the proportion of DISD in the pre-policy period and how much DISD differs from its counterfactual in the post-policy period. This is the policy effect.

As we can see from Figures 3 and 4, the policy was effective. DISD experienced a 11.7 percentage point increase in students taking algebra before high school compared to the synthetic DISD. This increase was not only positive but also statistically significant, as confirmed by the placebo tests. Figure 5 is our placebo test, which plots the change in the difference in the proportion of students taking algebra before eighth grade relative to synthetic DISD for each of the 47 school districts.

The results indicate that Dallas ISD exhibited the largest increase in algebra enrollment before high school among all districts. Given the 47 total districts, the probability of randomly selecting a district with an effect as large as Dallas ISD is approximately 1 in 47, yielding a p-value of 0.021, statistically significant at the 5% level.

Black–White & Hispanic–White gap in enrollment

One goal of the opt-out policy was to reduce racial and ethnic gaps in advanced course enrollment. Prior to the policy, as seen on figure 2, Black and Hispanic 5th grade cohorts in DISD enrolled in Algebra I before high school at much lower rates than White students. After the policy, Hispanic students saw the largest gain in early algebra enrollment, 13.8 percentage points, compared to 5.7 points for White students and 4.8 points for Black students. These shifts altered the relative gaps: the Black–White gap grew slightly from 29.3 to 30.3 percentage points, while the Hispanic–White gap narrowed from 21.3 to 13.3 percentage points. We next assess whether these descriptive changes are statistically significant using the placebo test approach.

Figure 6 shows the SCM difference plot between DISD and synthetic DISD in the Black–White enrollment in algebra before HS gap alongside the placebo test. Using our synthetic control approach and running placebo tests for the Black–White student gap, we find that there was an increase, but it was not statistically significant. DISD's gap increase was in the middle of all placebos in the first year and the sixth highest increase in the second year, which would indicate at best a p-value of 0.128 that the policy led to an increase in the Black–White student gap.

In the case of the Hispanic–White student gap, the synthetic control method showed that the policy had a significant reduction in their gap. Figure 7 shows the SCM difference plot between DISD and synthetic DISD in the Hispanic–White student enrollment in algebra before HS gap alongside the placebo test. We find that there was a reduction of 7.6 percentage points in the Hispanic–White student gap and DISD had the second largest reduction in the Hispanic–White student gap after the implementation of the opt-out policy in the placebo test, yielding a 2 in 47 chance (p-value of 0.043) that the policy led to a decline in the Hispanic–White student gap.

The results were robust to several alternative specifications outlines in Appendix A. First, we restricted the sample to students who remained in the same district throughout the observation period, excluding students who transferred across districts. Under this specification, the estimated effects became larger, suggesting that student mobility attenuated the baseline estimates and that the positive effect of the policy was even stronger among students who remained in the same district. Second, we tested the sensitivity of the findings to the set of comparison districts by excluding districts in the Houston area, where disruptions associated with Hurricane Harvey could have represented a potential confounding shock. The results remained similar in both magnitude and direction, suggesting that the findings were not sensitive to the inclusion of these districts. Finally, we examined alternative outcome measures by analyzing both Algebra I course taking and successful course completion. The overall pattern of results remained consistent. However, the large increase in Algebra I enrollment observed for the 2017-2018 cohort was somewhat attenuated when focusing on course passage yet remained positive and significant. This attenuation reflected a lower pass rate for that cohort, approximately 90 percent compared to nearly universal passage among earlier cohorts, rather than a change in the underlying enrollment response.

Because enrollment in Algebra I before high school depends in part on whether students are placed into honors math classes in 6th grade, we analyzed student pathways from their STAAR test results to enrolling into algebra I to better understand the mechanisms driving racial gaps. Unfortunately, the ERC data did not contain information on honors designation for classes. Therefore, we created a proxy 6th grade honors designation based on the percentage of students who met the opt-out criteria and were part of the 5th grade DISD cohort. If the policy has good compliance, it would be expected that if a class is composed of a large percentage of students who met the criteria, then there should be a high likelihood of that class being an honors class. We used 80% as the cutoff, as this cutoff matched closely with the reported number of students enrolled in honors in DISD. Napolitano (2023) reported that there were 17% Black students, 33% Hispanic students, 36% other students, and 51% White students who were enrolled in 6^{th} grade honors math during the 2018-2019 school year. In our data, this would coincide with the 2017-2018 5^{th} grade cohort. Using 80% as the cutoff for the composition of meeting students, we get 16.51% Black students, 32.42% Hispanic students, and 53.21% White students enrolling in honors. Therefore, the proxy for enrollment in honors is close to the actual enrollment in honors.

Figure 8 presents a Sankey chart illustrating the progression of students through regular and honors math courses, from 5th grade enrollment to Algebra I enrollment in 8th grade, disaggregated by race/ethnicity and cohort. The first two nodes represent 5th grade: the total number of students enrolled in DISD and, among them, the number who met the STAAR threshold for automatic placement into honors. The next milestone, in 6th grade, shows the number of students enrolled in honors math (Math 6/7). The final node on the top and the bottom captures enrollment in Algebra I by 8th grade, while the middle node captures how many students unenrolled from DISD at any point during 6,7, and 8^{th} grade.

In Figure 8, the 2015-2016 and 2016-2017 cohort represents the partially impacted cohorts by the opt-out policy. While the 2018-2019 cohort marks the first cohort that was fully impacted when the policy rolled out. The chart provides insight into the underlying mechanisms driving the synthetic control results, revealing a clear increase in algebra enrollment across all groups. However, while the Hispanic–White enrollment gap narrows, the Black–White gap remains unchanged.

A key factor contributing to this disparity is the difference in math proficiency across racial groups. Since meeting the grade-level math standard is the primary requirement for entering the honors track, a critical pathway to early algebra enrollment, students who do not meet this benchmark face significant barriers. The data show that Black students consistently had the lowest rate of proficiency, with only 35% meeting the standard, compared to 54% of Hispanic students and 70% of White students. As a result, Black students were less likely to gain access to the honors track, limiting their opportunities to enroll in Algebra I before high school.

Beyond academic performance, student mobility also played a role in shaping algebra enrollment patterns. Across all three cohorts, Black students had the highest attrition rates, with 46% leaving Dallas ISD, compared to 26% of Hispanic students and 32% of White students. Given that students who exit DISD may not benefit from the opt-out policy in their new district, this high rate of mobility likely reduced its overall impact on Black student outcomes.

Another important mechanism at play is the variation in pathways to algebra outside of the honors track. The data indicate that while Black students who followed the honors pathway did enroll in algebra, their likelihood of doing so without honors was significantly lower than that of their Hispanic and White peers. Among students who began in regular (non-honors) classes, only 9% of Black students eventually enrolled in algebra before high school. In contrast, 18% of Hispanic students and 20% of White students made this transition, with Hispanic and White students experiencing similar gains after the opt-out policy was introduced. This suggests that while the policy expanded access to algebra, White and Hispanic students were more likely to take advantage of alternative pathways outside the honors track, whereas Black students remained disproportionately dependent on honors placement.

One possible explanation for these disparities lies in the construction of the honors track indicator. The threshold for honors placement was set at 80%, which may have resulted in false negatives, students who qualified for honors but were misclassified as non-honors in the dataset. If some of these students later enrolled in algebra, this misclassification could obscure the true effect of the policy on different student groups.

Overall, while the opt-out policy increased algebra enrollment before high school, its impact was not uniform. Structural barriers such as lower math proficiency, higher attrition rates, and fewer alternative pathways to algebra enrollment limited its benefits for Black students. As a result, while the Hispanic–White student achievement gap narrowed, the Black–White student gap persisted, highlighting the need to further examine how policy interventions interact with pre-existing inequities in educational access and opportunity.

Discussion & Conclusion

This research presents novel causal evidence regarding the effects of automatic enrollment policies on the first-time taking of Algebra I, with an emphasis on racial differences in access to advanced coursework. Employing a synthetic control method based on the demographic and academic profile of the Dallas Independent School District (DISD), our findings indicate that the district's opt-out policy, initiated in the 2019–20 academic year, was linked to a substantial rise in the percentage of students mastering Algebra I before high school. These are timely results amid ongoing state and national efforts to reduce structural barriers to high-level academic opportunities, particularly for historically underrepresented groups of students.

Policy Effectiveness and Mechanisms

Our results show that the implementation of the opt-out policy was linked to a 11.7-percentage point increase in the uptake of Algebra I prior to high school relative to the synthetic control group. Although causal estimates from other settings are unlikely to be precisely comparable, this effect size is substantial. For instance, Austin et al. (2025) estimate that Washington State's Academic Acceleration policy raised advanced math course uptake by roughly 4 percentage points for proficient students, with stronger effects for proficient students from underrepresented minority groups (5 percentage points) and who are eligible for free or reduced-price lunch (5 percentage points). Daugherty et al. (2017) similarly demonstrate that a targeted placement initiative in North Carolina raised Algebra I enrollment by more than 60 percentage points for 8th-grade students at the eligibility threshold. Although the policy instruments and identification methods vary between these studies, the collective evidence indicates that automatic enrollment can have a large effect on initial course trajectories, especially when done at scale.

Compared to Washington State, DISD intervention produced a larger estimated effect, likely reflecting differences in policy design and implementation. First, Washington's statewide reform featured heterogeneity in implementation across districts and campuses (Austin et al., 2025). Alternately, DISD centrally assigned eligible students to the honors pathway, likely reducing variation in policy implementation across campuses. Further, DISD's intervention occurred much earlier in a student's trajectory. Since Mathematics courses are highly path dependent (Adelman, 2006; Daugherty et al., 2017), earlier intervention may generate larger downstream effects on Algebra I enrollment. Together centralized assignment and earlier intervention are plausible explanations for the stronger effects observed.

For DISD, the rising participation in Algebra I was accompanied by a narrowing Hispanic–White enrollment gap that decreased by around 8 percentage points relative to the synthetic counterfactual. The Black–White gap barely moved, and if anything, it increased. This trend appears to be driven in part by differential eligibility for the policy: as assignment was based on passing the STAAR "Meets Grade Level" threshold in 5th-grade math, fewer Black students met the automatic enrollment eligibility criteria. In addition, even among those who were eligible, differences in later course placement suggest that eligibility in and of itself may be insufficient to ensure equal access. Our finding that the Black–White enrollment gap increased slightly for cohorts immediately following the initial implementation of the policy is corroborated by ongoing descriptive research being conducted by DISD, which is not yet available publicly. However, the DISD study, which includes additional cohorts, suggests that this pattern may have reversed for more recent cohorts.

Equity Considerations in Policy Development

The results of this study point to an important caveat in the design of opt-out policies: although the establishment of default options lowers the advocacy and information burdens under normal opt-in systems, it does not alleviate the existing disparities in academic readiness. As a result, such policies can enhance access for certain historically underrepresented students but can leave others behind unless accompanied by other support structures. In DISD, for example, Hispanic students were more apt than Black students to complete Algebra I via non-honors pathways, suggesting that greater transparency about course sequence and multiple points of entry could alleviate participation barriers.

These trends underscore the imperative to craft automatic enrollment policies that are equitable in their priorities. Streamlining eligibility criteria, utilizing multiple indicators of academic performance, or infusing early academic support could expand access without sacrificing standards. Alongside these recommendations, attention to implementation fidelity, training for counselors, scheduling of courses, and family outreach could make a significant difference in turning policy levers into equitable outcomes.

Implications of Wider Implementation

As Texas proceeds with broader application of automatic enrollment in mathematics in Senate Bill 2124, the DISD experience has valuable lessons to offer. The evidence here indicates that automatic enrollment has the potential to increase enrollment in gateway courses like Algebra I prior to high school. At the same time, the differential effects by student subgroups underscore the need for special effort to ensure all eligible students will benefit. Despite the fact that the opt-out model solves many procedural issues related to placement into courses, it does not completely eliminate disparities in readiness levels and opportunities to access advanced coursework through other mechanisms.

Additionally, given that a primary way that Black students in DISD deviated from the honors track was by leaving the district, it may be useful for the state to coordinate with districts and other stakeholders to streamline communication and data-sharing efforts between districts as the state moves toward a statewide opt-out policy. Such efforts may increase the likelihood that students who begin on an advanced course track are able to stay on that path when they move between districts. This will require investment in systems for timely data-sharing and coordination, so that placement decisions can follow students and support continuity in their academic trajectories. State-level support and guidance may be necessary to help districts implement these practices consistently.

Moving forward, future studies are needed to explore the longer-term implications of early acceleration under automatic enrollment policies, including persistence in advanced coursework, high school completion, and postsecondary success. Additionally, more effort is needed to study how district-level implementation decisions, like eligibility thresholds, family communication, and support services for accelerated students, mediate the policy impacts for different student subgroups.

Finally, utilizing the DiD methodology with synthetic controls, this paper estimates the causal impact of implementing Dallas ISD’s opt-out policy on enrollment in advanced mathematics coursework. While expanding equitable access to advanced courses is an objective of the policy, the paper does not directly evaluate the impact of actually taking advanced courses on students' trajectories or other outcomes. However, the fact that assignment to honors courses in Middle School is based on strict cut scores on standardized assessments renders DISD's Opt-Out policy an ideal setting for assessing the causal impact of taking advanced coursework on student outcomes via an RDD. In future research, we will leverage an RDD to isolate the causal impacts of taking advanced courses on student outcomes, including achievement, college readiness, and non-academic outcomes. This research will contribute significantly not only to the research base on the benefits of advanced course-taking, but also towards a more comprehensive understanding of the potential for opt-out policies to serve as a policy intervention for addressing gaps in advanced course-taking.

Endnotes

[1] The term "single jump" is introduced by the authors to describe academic acceleration strategies that enable a student to effectively skip one grade level. This term can be applied to subject-based skipping in a course sequence, as well as grade-level-based skipping. Although "grade skipping" is a common concept in academic acceleration literature, "single jump" adds additional context and is not commonly used.

[2] Enrollment statistics are calculated from Dallas ISD administrative records for 5th grade cohorts in 2016–2018 (pre-policy) and 2019-2020 (first year of policy implementation). These figures are descriptive and not causal estimates. Records were approved for use and obtained from the Texas Education Agency through the State of Texas' Education Research Center at the University of Texas at Dallas.

[3] Crucially for our quasi-experimental design, to our knowledge, no other large districts in Texas implemented an auto-enrollment policy in the years immediately following DISD's implementation of its opt-out policy.

Tables and Figures

Table 1

5th Grade Cohorts Impacted by the Opt-Out Policy

		Academic Year				
		2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Cohort	2015-2016	5th Grade	6th Grade	7th Grade	8th Grade	9th Grade
	2016-2017	4th Grade	5th Grade	6th Grade	7th Grade	8th Grade
	2017-2018	3rd Grade	4th Grade	5th Grade	6th Grade	7th Grade
	2018-2019	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade

Table 2

Summary Statistics 5th grade cohorts from DISD and Non-DISD pre and post opt-out policy

	Pre-Policy		Post-Policy	
	DISD	Non-DISD	DISD	Non-DISD
Enrollment	12073	3680	12229	3870
5th Grade Math Staar Score	1591	1631	1623	1641
Scoring Meets or Masters on STAAR Math 5 (%)	31.8	43.3	49.6	54.0
Taking Algebra I before HS (%)	22.7	29.2	33.8	30.7
Eligible for FRP Lunches (%)	91.6	55.6	90.9	56.4
Black (%)	23.1	14.7	22.2	15.1
Hispanic (%)	70.7	48.0	70.5	49.5
White (%)	4.3	28.4	5.1	25.4

Table 3

Composition of the Synthetic Control District

Control District	Composition (%)
Houston ISD	39.5
San Antonio ISD	28.2
Alief ISD	20.8
Aldine ISD	11.5
The other 42	0
Total	100

Table 4

Comparison of Pre-Treatment Matching Variables among DISD, Synthetic DISD, and Sample

Characteristics	Treated District (DISD)	Synthetic Control Districts (4 Districts)	All Control Districts (46 Districts)
Taking Algebra I before HS (%)	22.7	22.7	29.2
Scoring Meets or Masters on STAAR Math 5 (%)	31.8	33.2	43.3
Free or Reduced-Price Lunch Eligibility (%)	91.6	85.6	55.6
Hispanic (%)	70.7	69.8	48.0
Black or African American (%)	23.1	20.4	14.7
5^{th} Grade Enrollment	12,073	8,541	3,679

Figure 1

Math Course Pathways Available in Texas

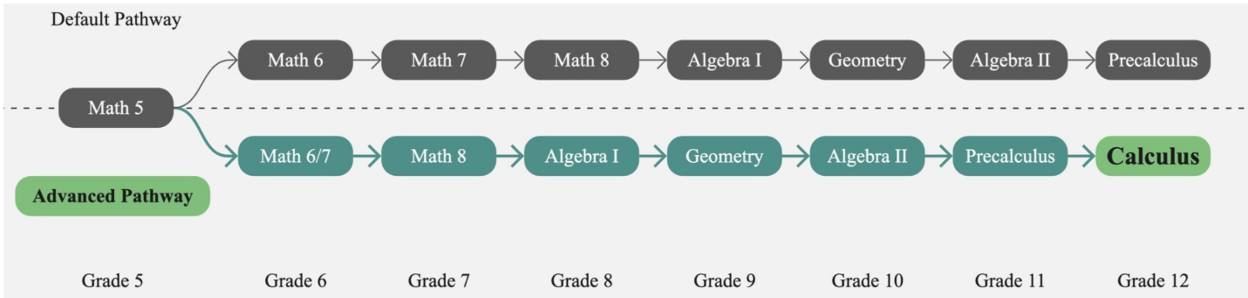

Figure 2

Enrollment in Algebra Before High School for 5th grade cohorts by student subgroup

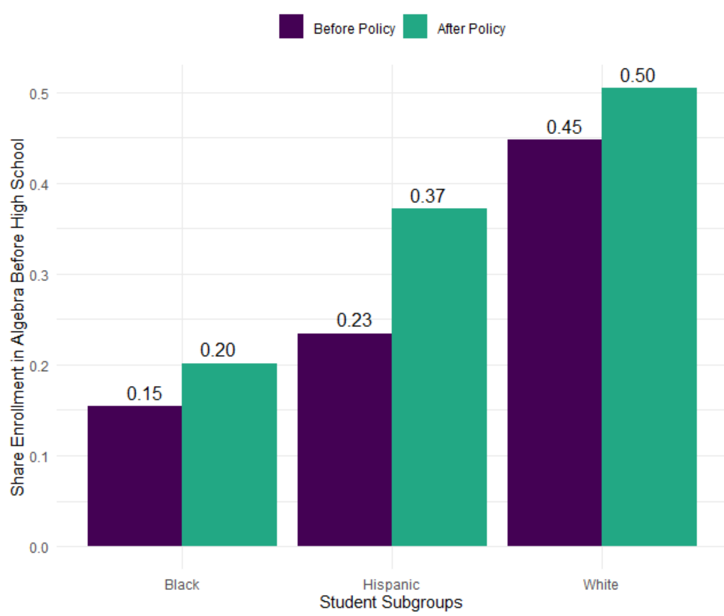

Figure 3

Algebra I Enrollment SCM Levels Result

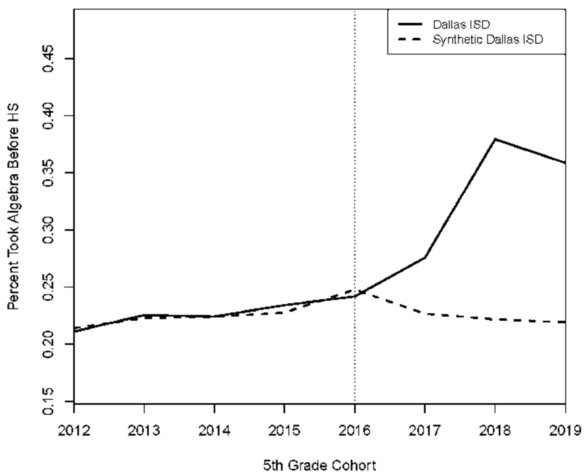

Figure 4

Algebra I Enrollment SCM Gaps: Treated – Synthetic

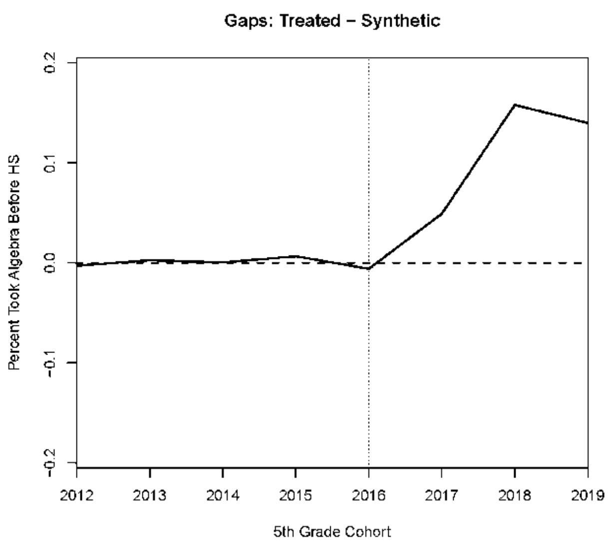

Figure 5

Algebra I Enrollment Placebo Test

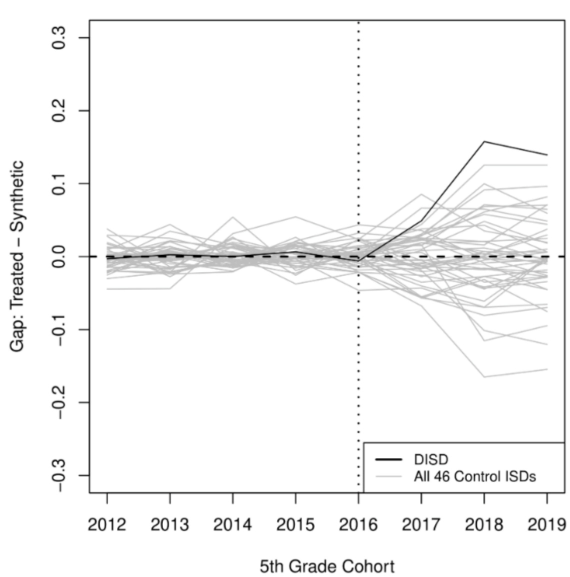

Figure 6

Black–White Student Algebra I Enrollment Gap SCM and Placebo Test

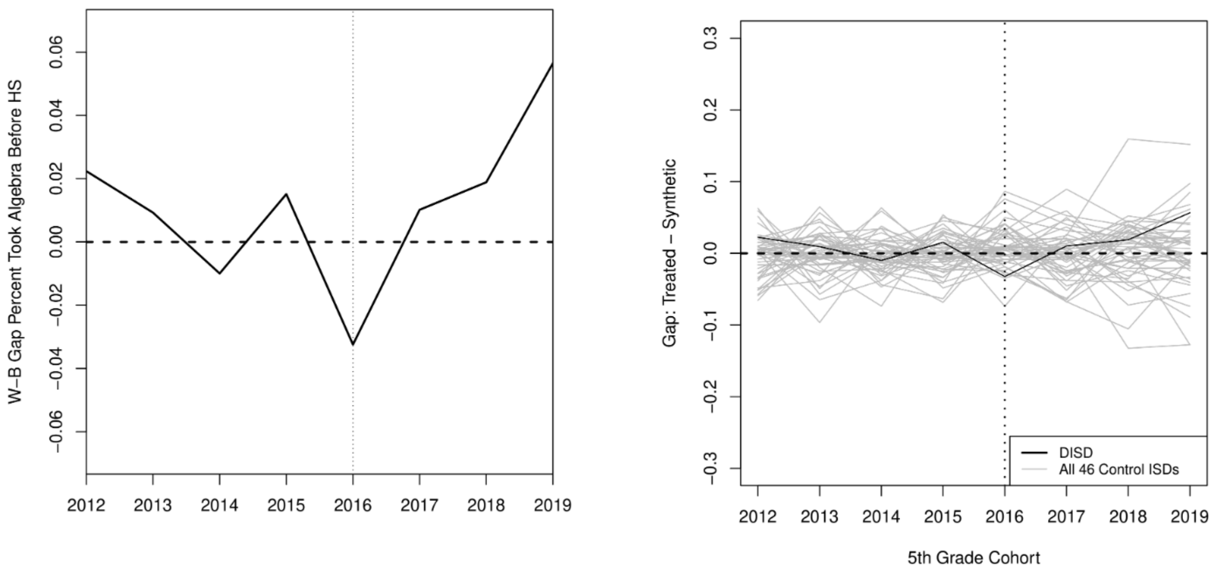

Figure 7

Hispanic–White Student Algebra I Enrollment Gap SCM and Placebo Test

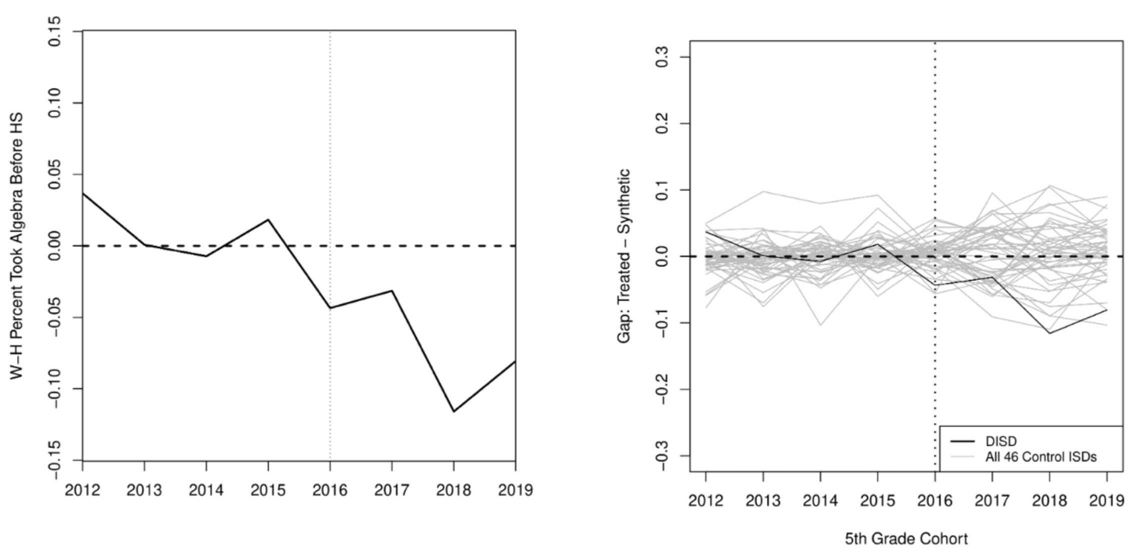

Figure 8

5th Grade Cohort Pathways Flow

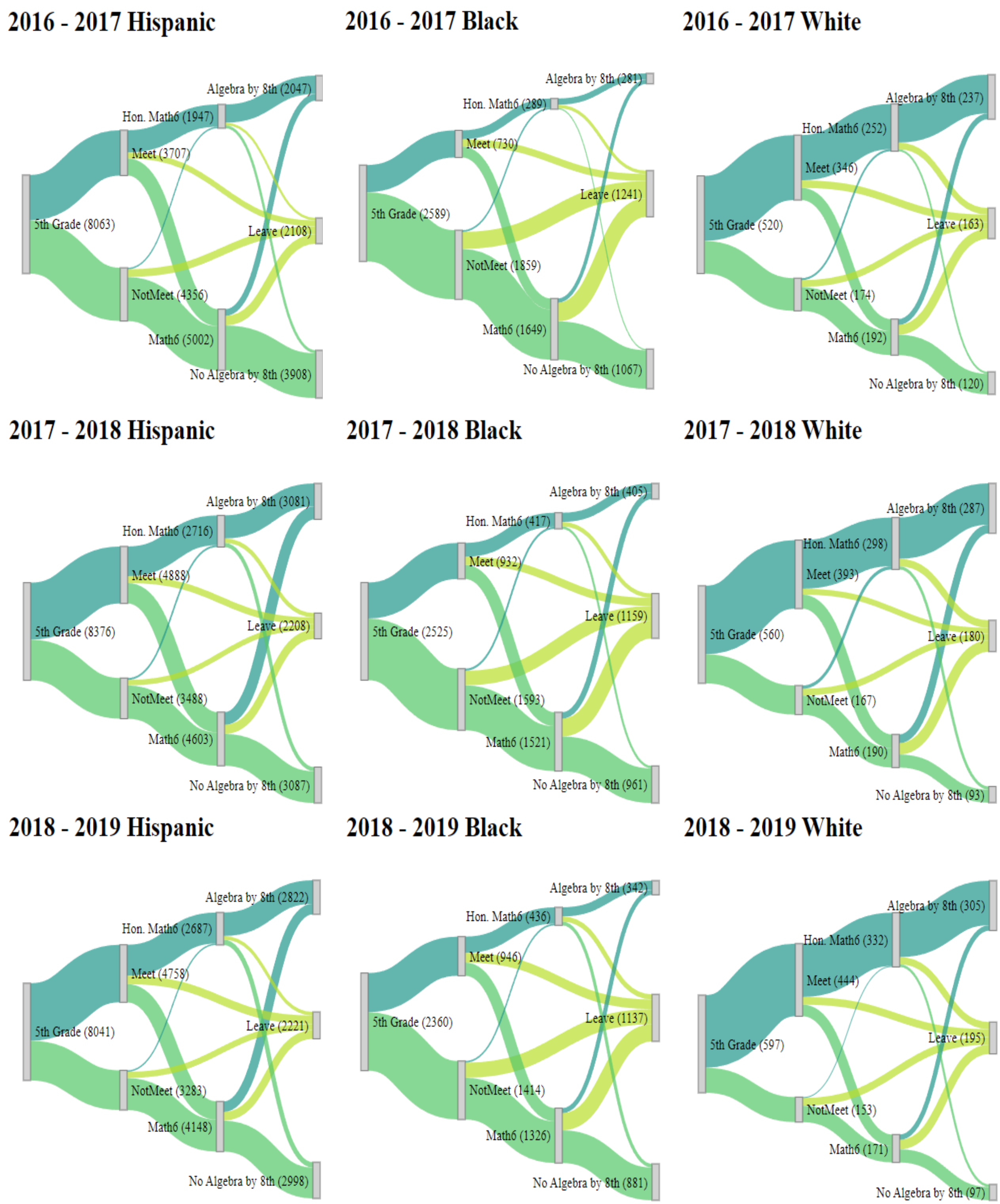

Table and Figure Captions

Table 1

5th Grade Cohorts Impacted by the Opt-Out Policy

This table tracks four 5th grade cohorts across academic years from 2015–2016 through 2019–2020 and shows their corresponding grade levels over time. The opt-out policy was implemented in the 2019–2020 academic year. As a result, all cohorts that were enrolled in middle school during the 2018–2019 academic year, including those in grades 5 through 7 that year, were exposed to the policy once it took effect. Data source: Author's analysis of data from the Texas Schools Project Education Research Center.

Table 4

Composition of the Synthetic Control District

Note. The table presents the weights assigned by the synthetic control method to construct the optimal synthetic Dallas ISD (DISD) using a combination of 4 control districts. Data source: Author's analysis of data from the Texas Schools Project Education Research Center.

Figure 1

Math Course Pathways Available in Texas

Note. This figure shows the traditional grade-level and advanced math pathway options from Grade 5 to Grade 12 in Texas. The gray rectangles represent the grade-level trajectory, while the teal rectangles represent the advanced trajectory. Figure created by the authors.

Figure 2

Enrollment in Algebra Before High School for 5th grade cohorts by student subgroup

Note. The figure shows the share of students enrolled in Algebra I before high school for Black, Hispanic, and White students before and after the policy. Data source: Author's analysis of data from the Texas Schools Project Education Research Center.

Figure 3

Algebra I Enrollment SCM Levels Result

Note. The figure shows the percentage of students taking Algebra I before HS across the cohorts for both DISD and synthetic DISD. The year denotes the latter half of the academic year; for example, 2018 cohort corresponds to the 2017–2018 cohort. Data source: Author's analysis of data from the Texas Schools Project Education Research Center.

Figure 4

Algebra I Enrollment SCM Gaps: Treated – Synthetic

Note. The figure plots the treatment effect of the policy on Algebra I enrollment before HS: the difference between the level SCM results of DISD and Synthetic DISD. The year denotes the latter half of the academic year; for example, 2018 cohort corresponds to the 2017–2018 cohort. Data source: Author's analysis of data from the Texas Schools Project Education Research Center.

Figure 5

Algebra I Enrollment Placebo Test

Note. The graph shows the placebo test for enrolling in Algebra I before HS in DISD. The year denotes the latter half of the academic year; for example, 2018 cohort corresponds to the 2017–2018 cohort. The black line is the DISD treatment effect, while grey lines show the estimated treatment effects for all control districts as if they were treated. Data source: Author's analysis of data from the Texas Schools Project Education Research Center.

Figure 6

Black–White Student Algebra I Enrollment Gap SCM and Placebo Test

Note. The left graph shows the enrollment gap in Algebra I before HS between Black and White students in DISD and its synthetic counterpart. The year denotes the latter half of the academic year; for example, 2018 *cohort* corresponds to the 2017–2018 cohort. The right graph presents the placebo test. The black line is the DISD treatment effect, while grey lines show the estimated treatment effects for all control districts as if they were treated. Data: Author's analysis of data from the Texas Schools Project Education Research Center.

Figure 7

Hispanic–White Student Algebra I Enrollment Gap SCM and Placebo Test

Note. The left graph shows the enrollment gap in Algebra I before HS between Hispanic and White students in DISD and its synthetic counterpart. The year denotes the latter half of the academic year; for example, 2018 cohort corresponds to the 2017–2018 cohort. The graph on the right is the placebo test. The black line is the DISD treatment effect, while grey lines show the estimated treatment effects for all control districts as if they were treated. Data source: Author's analysis of data from the Texas Schools Project Education Research Center.

Figure 8

5th Grade Cohort Pathways Flow

Note. This figure illustrates pathways from 5th grade enrollment to 8th grade Algebra I, by race/ethnicity and cohort. Nodes represent total 5th grade enrollment, STAAR eligibility for honors, 6th grade honors math enrollment, 8th grade Algebra I enrollment, and students unenrolling from DISD at any point, disaggregated by cohort and race. Source: Author's analysis of data from the Texas Schools Project Education Research Center.

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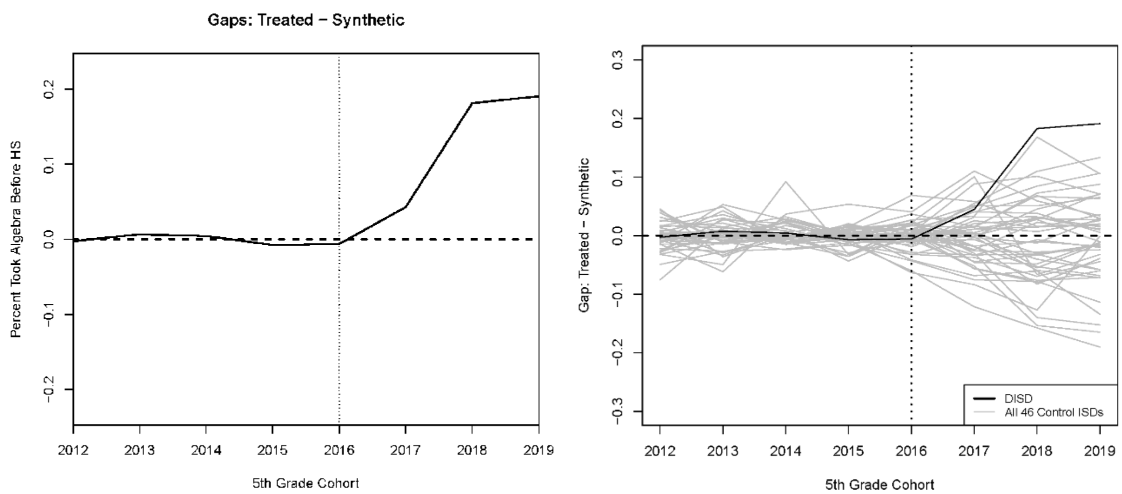
Appendix A

Supplementary Tables and Figures

Figure A1

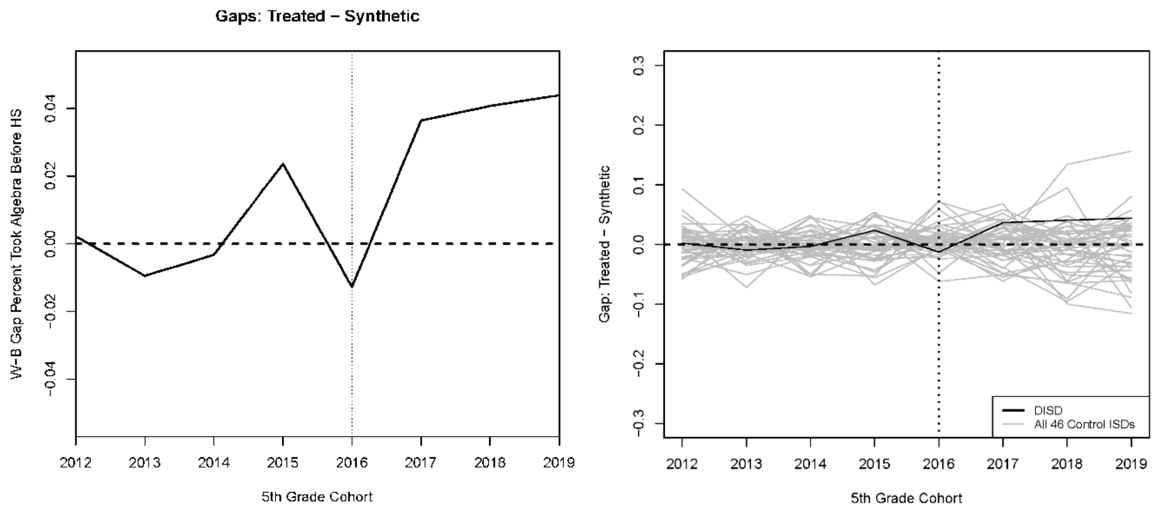
Algebra Enrollment SCM Gap (Students Remaining in District, Grades 5–8)



Note. The figure only uses data of students who did not change from 5th grade until HS. The left graph shows the percentage of students who took Algebra I before HS in DISD and its synthetic counterpart. The graph on the right is the placebo test. The black line is the DISD treatment effect, while grey lines show the estimated treatment effects for all control districts as if they were treated. The year denotes the latter half of the academic year; for example, 2018 cohort corresponds to the 2017–2018 cohort. Data source: Author’s analysis of data from the Texas Schools Project Education Research Center.

Figure A2

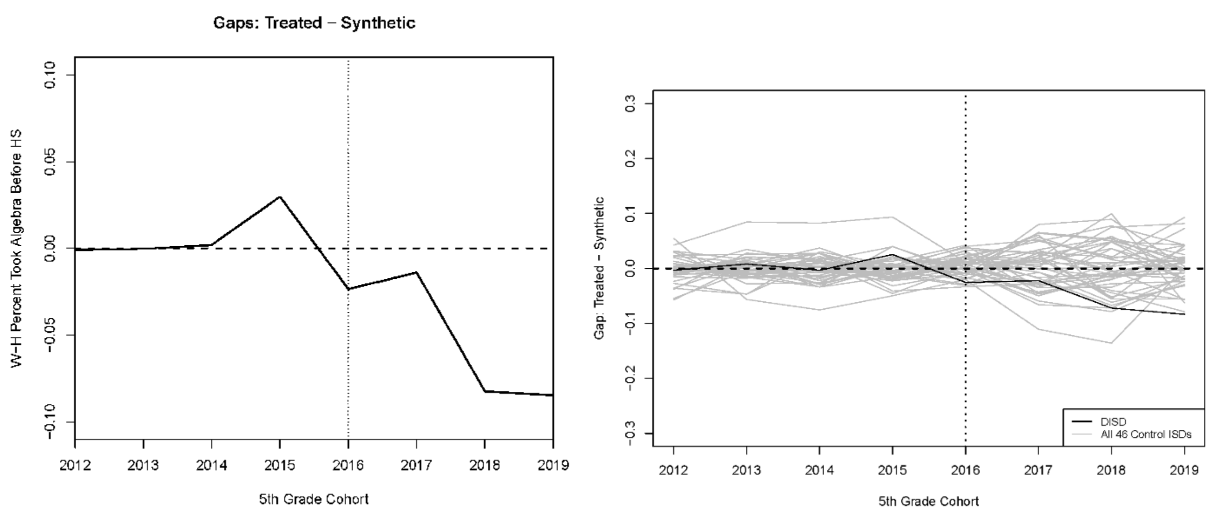
Black–White Algebra Enrollment Gap (Students Remaining in District, Grades 5–8)



Note. The figure only uses data of students who did not change from 5th grade until HS. The left graph shows the enrollment gap in Algebra I before HS between Black and White students in DISD and its synthetic counterpart. The graph on the right is the placebo test. The black line is the DISD treatment effect, while grey lines show the estimated treatment effects for all control districts as if they were treated. The year denotes the latter half of the academic year; for example, 2018 cohort corresponds to the 2017–2018 cohort. Data source: Author's analysis of data from the Texas Schools Project Education Research Center.

Figure A3

Hispanic–White Algebra Enrollment Gap (Students Remaining in District, Grades 5–8)



Note. The figure only uses data of students who did not change from 5th grade until HS. The left graph shows the enrollment gap in Algebra I before HS between Hispanic and White students in DISD and its synthetic counterpart. The graph on the right is the placebo test. The black line is the DISD treatment effect, while grey lines show the estimated treatment effects for all control districts as if they were treated. The year denotes the latter half of the academic year; for example, 2018 cohort corresponds to the 2017–2018 cohort. Data source: Author's analysis of data from the Texas Schools Project Education Research Center.

Table A2

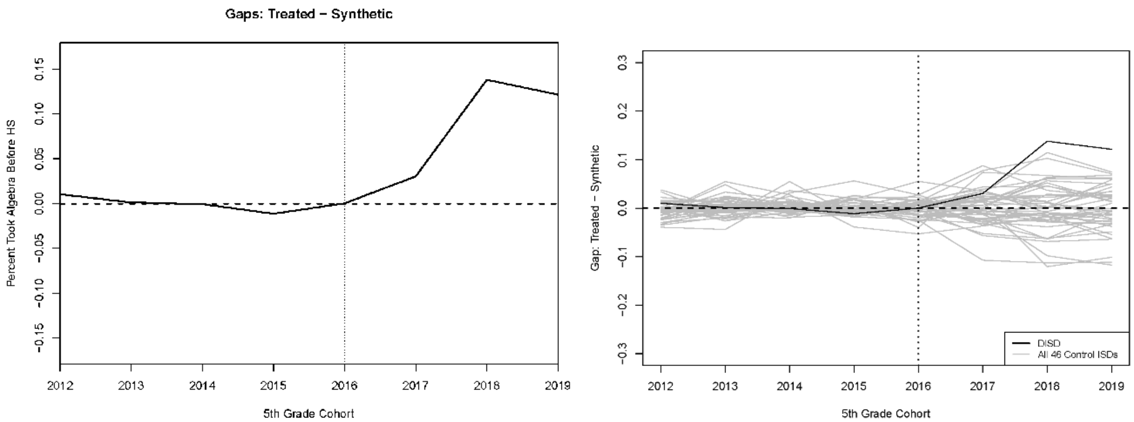
Composition of the Synthetic Control District (Houston Area Districts Removed)

Control District	Composition (%)
Fort Worth ISD	98.1
North Side ISD	1.9
The other 45	0
Total	100

Note. The table presents the weights assigned by the synthetic control method to construct the optimal synthetic Dallas ISD (DISD) using a combination of 2 control districts when Houston and adjacent ISDs were removed from the sample. This check accounts for Houston area disruptions related to Hurricane Harvey in the pre-treatment period. Data source: Author's analysis of data from the Texas Schools Project Education Research Center.

Figure A4

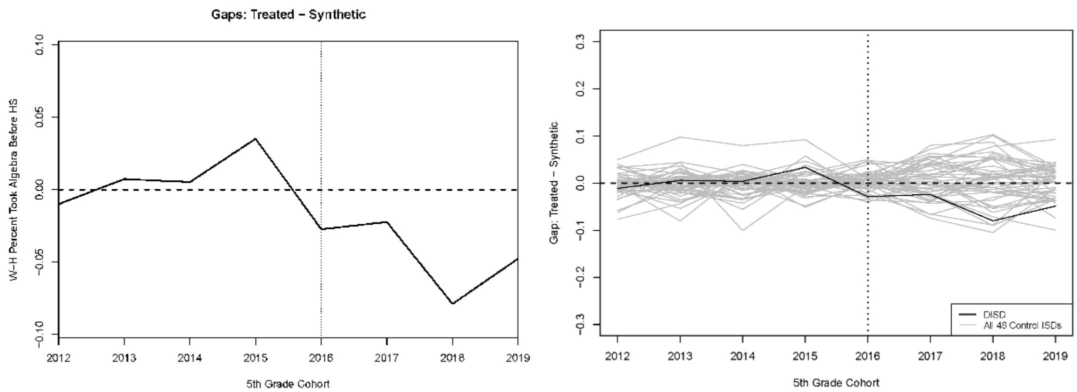
Algebra Enrollment SCM Gap (Houston Area Districts Removed)



Note. The figure only uses data of students from non-Houston Districts. The left graph shows the percentage of students who took Algebra I before HS in DISD and its synthetic counterpart. The graph on the right is the placebo test. The black line is the DISD treatment effect, while grey lines show the estimated treatment effects for all control districts as if they were treated. The year denotes the latter half of the academic year; for example, 2018 cohort corresponds to the 2017–2018 cohort. This check accounts for Houston area disruptions related to Hurricane Harvey in the pre-treatment period. Data source: Author's analysis of data from the Texas Schools Project Education Research Center.

Figure A5

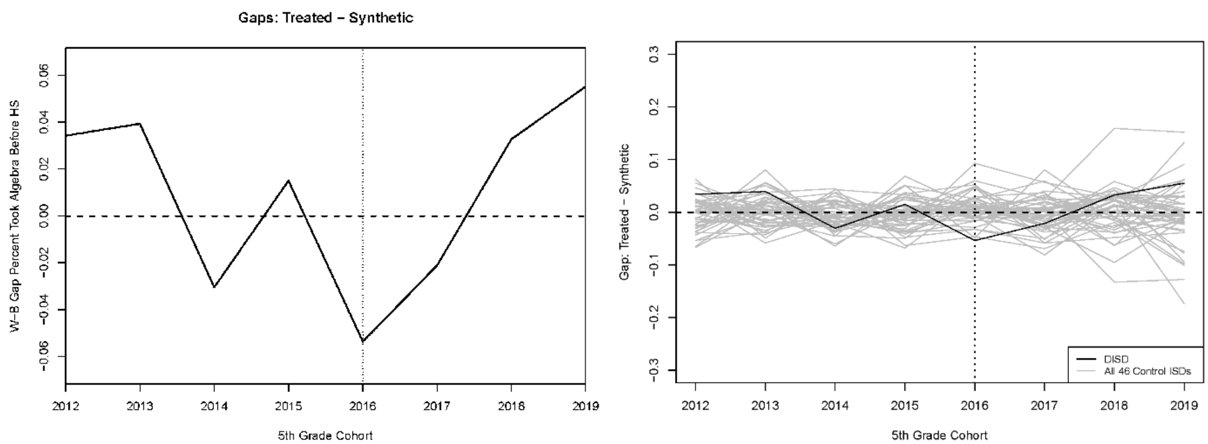
Hispanic–White Algebra Enrollment Gap (Houston Area Districts Removed)



Note. The figure only uses data of students from non-Houston Districts. The left graph shows the enrollment gap in Algebra I before HS between Hispanic and White students in DISD and its synthetic counterpart. The graph on the right is the placebo test. The black line is the DISD treatment effect, while grey lines show the estimated treatment effects for all control districts as if they were treated. The year denotes the latter half of the academic year; for example, 2018 cohort corresponds to the 2017–2018 cohort. This check accounts for Houston area disruptions related to Hurricane Harvey in the pre-treatment period. Data source: Author's analysis of data from the Texas Schools Project Education Research Center.

Figure A6

Black–White Algebra Enrollment Gap (Houston Area Districts Removed)



Note. The figure only uses data of students from non-Houston Districts. The left graph shows the enrollment gap in Algebra I before HS between Hispanic and White students in DISD and its synthetic counterpart. The graph on the right is the placebo test. The black line is the DISD treatment effect, while grey lines show the estimated treatment effects for all control districts as if they were treated. The year denotes the latter half of the academic year; for example, 2018 cohort corresponds to the 2017–2018 cohort. This check accounts for Houston area disruptions related to Hurricane Harvey in the pre-treatment period. Data source: Author's analysis of data from the Texas Schools Project Education Research Center.

Table A2

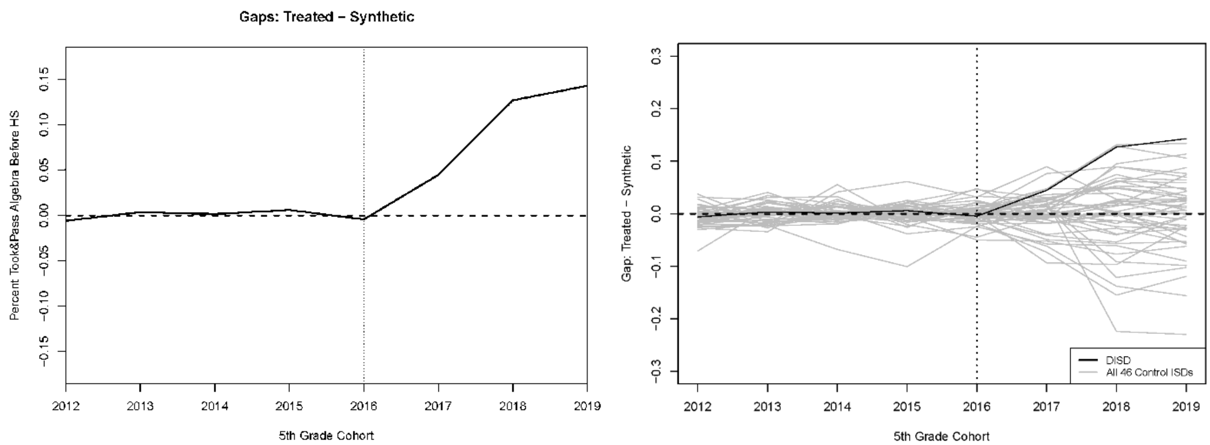
Pass Rate of Algebra before HS in DISD

5th grade Cohort	Algebra Pass Rate
2011-2012	99.8%
2012-2013	99.5%
2013-2014	99.8%
2014-2015	99.7%
2015-2016	99.6%
2016-2017	96.4%
2017-2018	87.4%
2018-2019	98.0%

Note. This table indicates the percentage of DISD students who took and passed Algebra I before HS, organized by 5th grade cohorts. Across cohorts the pass rate is relatively high except for policy-impacted cohorts in the years 2016-2017 and 2017-2018. In the related SCM specification in Figure A7, this shift corresponds with slight attenuation, without reversing the overall positive impact of the policy. Data source: Author’s analysis of data from the Texas Schools Project Education Research Center.

Figure A7

Early Algebra Pass Rate SCM Gap (Students Taking and Passing Algebra)



Note. The left graph shows the percentage of students who took and passed Algebra I before HS in DISD and its synthetic counterpart. The graph on the right is the placebo test. The black line is the DISD treatment effect, while grey lines show the estimated treatment effects for all control districts as if they were treated. The year denotes the latter half of the academic year; for example, 2018 cohort corresponds to the 2017–2018 cohort. Data source: Author's analysis of data from the Texas Schools Project Education Research Center.