The Effect of Merit-Based Free Community College*

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Abstract

Free community college is often promoted as a way to expand access and reduce student debt, but may have unintended consequences if it reduces bachelor's degree completion for students diverted from better resourced four-year universities. By examining a merit-based free community college program in Chicago called the Star Scholarship, we identify the impact of free community college on a distinct set of students: those likely to be deciding *where* to enroll rather than *whether* to enroll in college. Using a regression discontinuity design around the 3.0 GPA cutoff, we find that eligibility for merit-based free community college does not increase overall college enrollment, but does significantly shift students from starting at 4-year universities to first enrolling at community colleges. Notably, this diversion does not reduce the probability of eventually earning a bachelor's degree within six years of graduating high school and eligible students are 2.1 percentage points more likely to earn an associate degree within three years. There is no evidence of a large decrease in the quality of the first college a student enrolls in nor do we see a decline in STEM degree completion for eligible students. Take-up is highest among students likely to be from immigrant families, highlighting unmet financial need among this group. These findings suggest that for the average student near the merit threshold, free community college can increase degree attainment without causing students to substitute two-year degrees for four-year degrees.

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Introduction

Despite the well-documented monetary and non-monetary benefits of higher education (Card, 1999; Oreopoulos and Petronijevic, 2013; Heckman, Humphries and Veramendi, 2018), many Americans believe college is not worth the cost if it requires taking on debt (Pew Research Center, 2024). High college costs play a central role in students' decisions about whether and where to enroll, increasing the financial risk of pursuing a degree and deterring many from higher education. Recent policy initiatives have sought to address these challenges by making the first two years of college free through free community college, but these policies could have unintended consequences if they deter students from attending better resourced four-year universities (Long and Kurlaender, 2009; Cohodes and Goodman, 2014; Jenkins and Fink, 2016; Mountjoy, 2022; Velasco Rodriguez et al., 2024).

There are currently over 30 publicly funded free community college promise programs in the U.S. implemented at the state and local level (Miller-Adams et al., 2024). President Obama's America's College Promise proposal, which outlined a plan to offer free community college for high performing students across the country, propelled much of the momentum behind this expansion. The federal focus continued under the Biden administration, which proposed $90 billion to further expand free community college access (U.S. Department of Education, 2024). Despite the prevalence of free community college programs across the U.S., there is limited evidence of the causal impact of these programs on students' long-term outcomes, particularly for students on the margin between first enrolling in a two-year college or first enrolling in a four-year university.

Our study examines the Star Scholarship, a merit-based community college promise program announced in the fall of 2014 that enabled any Chicago Public Schools (CPS) graduate with a high school GPA of at least 3.0 to attend community college in Chicago tuition-free. Through unique partnerships with both the City Colleges of Chicago and CPS, we construct a comprehensive dataset covering the universe of high school graduates for one

of the largest school districts in the country. By combining these sources, we are able to measure an unusually rich set of postsecondary outcomes including college enrollment choices, persistence, college quality, major selection, and degree completion across public, private, and out-of-state institutions. While most prior studies rely on difference-in-differences or matching strategies comparing students across geographic areas, we exploit the Star Scholarship's sharp GPA eligibility cutoff and implement a regression discontinuity (RD) design, allowing us to compare similar treated and control students within the same high school. Finally, the program's relatively high merit threshold identifies a distinct set of compliers: students near the 3.0 GPA cutoff are generally deciding *where* to enroll rather than *whether* to attend college, enabling us to isolate the effect of free community college for the group most likely to experience diversion from four-year to two-year entry. Consistent with this interpretation, we find that eligibility for the Star Scholarship does not affect overall college enrollment for students near the eligibility cutoff but does meaningfully shift where students enroll. Eligible students are 4.2 percentage points more likely to first enroll in one of Chicago's community colleges and 2.9 percentage points less likely to begin at a four-year university. These patterns reinforce that CPS students near the cutoff are primarily deciding between starting at a two-year or a four-year institution, rather than deciding whether to pursue postsecondary education at all. We estimate that approximately 20 percent of marginally eligible Star Scholars would have attended a four-year university had they not been eligible for the Star Scholarship. Given the documented influence of college quality on bachelor's degree completion rates (Cohodes and Goodman, 2014) and the negative labor market and degree attainment outcomes for students diverted from four-year universities (Long and Kurlaender, 2009; Mountjoy, 2022; Goodman, Hurwitz and Smith, 2017), these findings raise concerns about the potential unintended consequences of diverting students from better-resourced four-year universities to community colleges.

Despite the documented diversion effect, we find no evidence that eligibility for the Star Scholarship decreases the probability that students earn a bachelor's degree; we find

positive but insignificant increases in both bachelor's degree attainment and overall degree attainment for students near the eligibility cutoff six years after high school. Additionally, we see a 2.1 percentage point increase in associate degree attainment three years after high school. Eligibility for the Star Scholarship slightly decreases the instructional spending of the first college a student attends, reflecting a shift from initially enrolling in a four-year university to enrolling in a two-year college. However, it does not reduce other institutional characteristics associated with college "quality," such as completion rates or median earnings of graduates. This pattern suggests that, on average, students are being diverted from four-year colleges to two-year colleges of comparable "quality". When we examine degree attainment by degree field and find that access to free community college does not decrease the probability of earning a STEM degree. These findings provide evidence that community college promise programs can increase overall degree attainment for students diverted from initial four-year enrollment without reducing bachelor's degree attainment or causing students to switch out of higher paying majors, while likely leaving students with less college debt.

Using home language as an imperfect proxy for students from immigrant families, we find that these students are twice as likely to take-up the Scholarship conditional on being eligible and low income students who speak a language other than English at home are more likely to enroll in college as a result of being eligible for free community college. These findings highlight a potential gap in financial support for students from immigrant families pursuing higher education that can be mitigated by free community college policies. However, when examining whether there are differential effects of access to free community college for different groups of students, we find no statistically significant differences in overall college enrollment and degree completion between students by household income or immigrant background. However, both students below median household income and students likely from immigrant families are less likely to first enroll in a four-year university as a result of eligibility for the Star Scholarship, compared to their higher-income and non-

immigrant peers, respectively.

The paper proceeds as follows: Section I provides an overview of previous literature and highlights our contribution, Section II describes our context and the Star Scholarship policy in greater detail, Section III describes our data and provides sample descriptives, Section IV outlines our empirical strategy, Section V describes our main results, Section VI describes findings from qualitative interviews with students, and Section VII concludes.

I Previous Literature

Much of the prior research on the impacts of free community college initiatives is in the context of Tennessee, which was the first state to implement statewide free community college. This work finds that free community college promise programs boost overall college enrollment (Carruthers and Fox, 2016; Gurantz, 2020; Nguyen, 2020; Gándara and Li, 2020) and reduce average student loan amounts for community college students (Odle, Lee and Gentile, 2021). However, the long-term effects remain unclear, particularly in terms of degree completion. Using a difference-in-differences design comparing students from Knox county to students in other Tennessee counties before and after program implementation, Carruthers, Fox and Jepsen (2023) find a 0.8 percentage point increase in associate degree completion at Tennessee's public colleges and no detectable effect on earnings or bachelor's degree attainment at public four-year universities. Because their data cover only public institutions within the state, they are unable to measure degree completion at private colleges or institutions outside Tennessee. Similarly, using a cross-state difference-in-differences design with data from the American Community Survey, Attridge, Carruthers and Welch (2025) document increases in enrollment and in associate degree attainment (that fade out over time) but again find no change in bachelor's degree attainment. Both of these studies' difference-in-differences estimates are a weighted average of the impact for students in several distinct groups: those on the margin of enrolling in college at all, those on the margin of choosing between two-year and four-year entry, and those who would have enrolled in com-

munity college regardless; they are unable to disentangle the effect between these groups. Bell and Gándara (2021) and Bell (2021) disentangle the impact of this policy for one particular group; those who would have attended community college regardless of whether they had access to a free community college promise program. To do this, they evaluate a merit-based promise program in Tulsa, similar to the one being studied in this paper but with a lower high school GPA cutoff of 2.0. Their findings indicate that community college students who exceeded this GPA threshold demonstrated higher rates of bachelor's degree attainment than community college students who were not eligible. However, since their sample was limited to community college students, they are unable to estimate the impact of free community college for students who would have not attended college or who would have first enrolled in a four-year university in the absence of free community college.

Our study builds on and extends the free community college literature in several ways. First, previous research on the effects of free community college on high school students utilized difference-in-differences strategies for identification, comparing similar groups of treated and control students across different geographic regions over time. These strategies required strong assumptions, namely that outcomes for students in different geographic regions would have moved in parallel in the absence of the implementation of free community college. By taking advantage of the unique implementation of free community college in Chicago, our study is able to relax this assumption by using regression discontinuity (RD) design that allows us to compare similar treated and control students within the same high school in the same year, instead of having to compare treated and control students across different geographic areas over time. In place of the parallel trends assumption, our RD strategy requires us to assume that students cannot precisely manipulate their GPA to gain eligibility and that no other factors change discontinuously at the 3.0 threshold, which we believe is a weaker assumption in this setting. Second, our analysis uses the full population of high school graduates, not only those who enrolled in community college (in contrast to Odle, Lee and Gentile (2021), Bell and Gándara (2021), and Bell (2021)) and we are able to measure

college enrollment and degree completion for private and out-of-state universities (in contrast to Attridge, Carruthers and Welch (2025), Carruthers and Fox (2016), and Carruthers, Fox and Jepsen (2023)). Third, by combining multiple administrative datasets we are able to examine a broader set of outcomes including measures of college quality and student major selection in addition to enrollment and degree completion. Fourth, our focus on an urban setting provides insights into the policy's impact on a diverse population, including students likely to be from immigrant families, contrasting with the less urban settings of prior studies.

Our study also contributes to the literature estimating the returns to community college and the consequences of policies that shift students between the two-year and four-year sectors. Prior work examining changes in community college prices such as expansions of in-district tuition discounts (Denning, 2017) or sharp tuition differentials at community college district boundaries (Acton, 2021) has found that lowering two-year tuition can increase community college enrollment and improve persistence, transfer, and degree completion, with limited evidence of large crowd-out from four-year enrollment on average. Complementary evidence from reductions in the geographic distance to two-year college, such as new community college openings, also suggests that proximity primarily reallocates students across institutions and increases associate degree attainment without reducing bachelor's degree completion (Miller, 2024). However, other work examining differences in access to 4-year colleges through admissions cutoffs or differences in geographic distance to two-year vs four-year colleges has found that diversion from immediate four-year entry can negatively impact degree attainment outcomes and later-life earnings for students diverted from four-year universities (Goodman, Hurwitz and Smith, 2017; Mountjoy, 2022). The Star Scholarship's relatively high 3.0 GPA eligibility threshold lets us cleanly study this diversion margin for students in our context: students near this threshold are much less likely to be deciding whether to attend college and more likely to be deciding where to attend. This setting allows us to identify the causal effect of access to free community college for students who are likely on the margin between two-year and four-year entry, which are precisely the group

most likely to experience negative impacts of the policy, if any exist. The next section describes our institutional context in greater detail.

II Context

The Chicago Public School (CPS) system, one of the largest school districts in the United States, serves over 340,000 students in more than 600 schools. It encompasses a diverse array of educational institutions including neighborhood, magnet, and charter schools, providing a broad spectrum of educational opportunities. The demographic composition of CPS is diverse. Approximately 47% of the students are Latinx, and about 39% are Black. White students constitute around 9% of the student body, while Asian and other racial groups make up the remaining percentage (Table 1). A significant portion of CPS students come from low-income families. Approximately 60% qualified for free or reduced-price lunch programs every year they attended CPS, a key indicator of low socioeconomic status (Domina et al., 2018). To estimate household income, we use median household income from the 2015 American Community Survey 5-Year Estimates at the census block level based on students' home addresses and find that average household income is approximately $44,000 (Table 1). Graduation rates in CPS have historically been low but the district has made significant strides in academic performance in recent years, marked by improvements in both standardized test scores and graduation rates. Most recently, graduation rates were as high as 84%, up from 55.8% in 2010 (Chicago Public Schools, 2024, 2020). However, only about 27% of CPS high school students will earn a college degree within 10 years of their high school graduation (To&Through Project, 2021). These numbers trail national figures; as of 2022, 91% of the population age 25 and older had a high school degree and 47% had completed an associate degree or higher (U.S. Census Bureau, 2023). This contrast highlights the ongoing need for targeted educational policies and programs within CPS to address the specific needs of its student population and ensure that all students have support they need for their academic development.

City Colleges of Chicago (CCC) is the largest community college system in Illinois and one of the largest in the nation. CCC has an open enrollment policy and serves over 73,000 students annually at seven colleges and five satellite sites across the city of Chicago.

In the fall of 2014, the city of Chicago announced a promise program called the Star Scholarship, which ensured free CCC tuition for all CPS students who graduate with a weighted high school GPA of 3.0 or higher[1]. The first cohort of students who were eligible for the Star Scholarship were students who graduated in 2015. These students found out about the scholarship when it was announced during the first semester of their senior year of high school. Students apply for the Star Scholarship at the same time they apply to attend CCC. Because City Colleges of Chicago are open enrollment, any student who applies for enrollment is admitted. Currently, to apply for the Star Scholarships, students only need to check a box on their college application and agree to share their CPS transcripts with CCC. To continue receiving the Star Scholarship, students must maintain a cumulative college GPA of at least 2.0 and must complete the FAFSA annually.[2] Students are not required to enroll full-time, but they must be enrolled in a degree/certificate-seeking pathway to be eligible for the scholarship. The Star Scholarship is available for up to three years post-graduation from CPS. This allows students who delay their enrollment at CCC to still access the scholarship benefits. For example, if a student enrolls at CCC one year after graduating high school, they can still utilize the Star Scholarship for up to two years.

The Star Scholarship is a last-dollar program designed to cover any remaining tuition

[1]In addition to the GPA requirement, earlier cohorts of Star scholars were required to be completion-ready, meaning they needed to place into CCC Math and English courses that are either college-level or developmental courses that are one level below college-level. Students can be considered completion ready by earning either (A) a score of 21 or higher on the English and math ACT, (B) a score of 540 or higher on the English SAT and 530 or higher on the math SAT, or (C) the designation of "Completion Ready" on the CCC placement exam. The best score from any of these components (ACT, SAT, or CCC placement exam) will be used to qualify the student. In practice, the completion ready requirement was not strictly enforced, students could take developmental coursework at CCC until they were completion ready. In April 2022, CCC removed the completion-ready requirement and now only use GPA to determine eligibility for the scholarship.

[2]Students who are not eligible to complete the FAFSA can fill out the internal Certificate of Ineligibility to Complete FAFSA annually instead.

costs after applying federal and state aid. Since in-district tuition at City Colleges of Chicago is well below the maximum federal Pell grant amount, most Pell-eligible students can already attend tuition-free. However, the Star Scholarship also simplifies information and reduces uncertainty about the financial aid process, which has been shown to independently increase college enrollment, even without extra financial support (Dynarski et al., 2021). Students who do not qualify for federal grant aid (such as some High- or Middle- income students) could benefit from this policy both through the simplification of financial aid information in addition to increased financial aid amounts.

III Data and Descriptive Statistics

We construct a novel dataset made possible through a unique partnership with both Chicago Public Schools and City Colleges of Chicago. Data from Chicago Public Schools includes student demographics (including gender, race, language spoken at home and student home address), high school transcripts, course-taking history (including courses attempted, course grades, and weighted/unweighted GPA), as well as standardized test scores (including SAT and ACT). Data from City Colleges of Chicago includes a flag for whether a student was a Star Scholar in addition to information on degrees earned from CCC. College outcome variables come from CPS' merge of its data for students who graduated from CPS with the National Student Clearinghouse (NSC) database. Using this data, we can observe detailed information on college enrollment spells and degree completion for each student from 2011-2023. We supplement this data with information on institutional characteristics associate with college "quality" (e.g., completion rates, institutional spending, and median earnings of graduates) from the Integrated Postsecondary Education Data System (IPEDS), the College Scorecard, and the US Department of Education's Office of Federal Student Aid. National Student Clearinghouse data uses student name and date of birth to match students to their enrollment records. This process involves some error, so we supplement the National Student Clearinghouse data with enrollment and degree records from City Colleges. This allows for a comprehensive analysis of community college attendance at City Colleges. One important

limitation of National Student Clearinghouse Data is that it has less coverage of enrollment and degree completion at for-profit private institution than it does for all other colleges. Coverage was over 99 percent in 2011 among public four-year institutions but only 48 percent at for-profit schools (Dynarski, Hemelt and Hyman, 2015). However, this coverage has been growing substantially over time (up from close to 0% in 1995) and the for-profit sector makes up a small proportion of all post-secondary enrollment. Nevertheless, this limitation could cause us to overestimate increases in enrollment from the Star Scholarship if it causes students to shift from for-profit colleges that don't report to the National Student Clearinghouse to public or non-profit private college. If this is true, our results can still be interpreted as the change in enrollment in public and non-profit colleges, which is still of interest to policy-makers given the historically low average quality of for-profit private colleges (Deming, Goldin and Katz, 2012; Cellini and Turner, 2019).

Our main sample – which we use for our regression discontinuity analysis – includes all CPS students who graduated between 2015 (the first cohort who had access to the Star Scholarship) and 2020. We supplement this main sample with students who graduated from CPS between 2011-2014 to examine changes in outcomes before and after the policy. Table 1 shows a set of summary statistics. In our main sample, the largest racial group is Latinx students who make up 46.5% of all students at CPS, followed by Black students who make up 38.5%. These two groups make up the vast majority of students at CPS. White students comprise 9.2% and AAPI students make up 5%. The average estimated household income for students is around $44,500 and over 60% of students qualified for free/reduced price lunch every year we observe them in CPS.[3] Average weighted cumulative high school GPA is 3.2, which means that most students who graduate from CPS are eligible for the Star Scholarship.

One critique of merit-based financial aid is that this type of aid often allocates re-

[3]We use persistent eligibility for free/reduced-price lunch as an indicator of income, which has been show to be a more reliable measure of low income than whether a student ever qualified for free/reduced price lunch (Domina et al., 2018).

sources to wealthier students. We explore this concern with the Star Scholarship by analyzing which student groups are most likely to be eligible for the scholarship and which student groups are most likely to become Star Scholars. Figure 3a shows that the proportion of lower-income Star Scholars mirrors the proportion of lower-income students across Chicago Public Schools (CPS). When examining the proportion of Star Scholars by racial categories we see that Latinx students are over-represented among Star Scholars relative to the CPS population, whereas Black students are underrepresented. Only 19% of Star Scholars are Black (Figure 3b), despite the fact that Black students make up 38.5% percent of the student body in CPS within our sample (Table 1). This underrepresentation appears linked to eligibility and take-up differences. Figure 4b indicates that 70%-80% of White and AAPI students qualify for the Star Scholarship, in contrast to only 40%-50% of Black and Latinx students. Conditional on eligibility, approximately 10-11% of eligible White, AAPI, and Black students become Star Scholars. In contrast, eligible Latinx students are more than twice as likely to take up the Star Scholarship than their non-Latinx peers, accounting for their over-representation among Star Scholars. There are two reasons why Latinx students are more likely to take up the Star Scholarship. First, they are the group most likely to be low income as measured by proportion of students who qualify for free/reduced price lunch every year (75% for Latinx students as opposed to only 24% for White students as shown in Appendix Table D.1). Second, a non-trivial number of Latinx students in the Chicago public school system are from immigrant families and therefore face different barriers than other students. Immigrant students, particularly those from families less familiar with the U.S. education system, may find policies that simplify information and reduce uncertainty about the financial aid process especially beneficial as it reduces administrative barriers often linked with need-based aid. With over a half a million foreign-born residents from over 140 countries speaking over 100 languages, Chicago is a city of immigrants, highlighting the importance of understanding how the Star Scholarship affects immigrant students. Furthermore, in 2018, the City of Chicago estimated that over 19,000 students under age 18

were undocumented, and about 28,000 young adults ages 18-24 were undocumented (City of Chicago, Office of the Mayor, 2018). This is important to note because undocumented immigrant students cannot apply for federal aid such as Pell grants and subsidized loans, and therefore have the greatest potential to benefit from free community college. In Appendix Section B, we show some qualitative interviews with Star Scholars conducted as part of a different project (Hallberg et al., 2023), and one student mentioned they were a DREAMer and could not receive federal aid, so they attended CCC because they could get financial aid from the Star Scholarship.

We cannot observe which students are from immigrant families nor which students are undocumented, however we use language spoken at home as an imperfect proxy of immigrant status. Figure 4c shows that the take-up rate for students whose home language is not English is twice as high as students whose home language is English (21% vs. 11%) highlighting a potential gap in financial support for this group of students. Figure 4 shows that while higher income students are more likely to be eligible for the Star Scholarship, lower income students take-up the policy at higher rates. This is particularly interesting since low-income students are likely to already qualify for enough federal financial aid to cover the cost of community college. Given the differences in take-up rates, in our analysis we examine whether students' college outcomes in these groups are impacted differently by Star Scholarship eligibility.

Table 2 shows a more comprehensive picture of the average differences between eligible students who chose to become Star Scholars and eligible students who chose not to become Star Scholars. Star Scholars have lower family income on average, they are less likely to be Black students but much more likely to be Latinx and more likely to speak Spanish at home. Lastly, eligible students who become Star Scholars have lower GPA and lower SAT scores than eligible students who are not Star Scholars. Taken together, these stylized facts suggest that many high-income and/or high performing students are not taking up the Star Scholarship even though it is available to them.

IV Empirical Strategy

In this section, we describe our empirical strategy for estimating the causal effect of the Star Scholarship on students' college outcomes. Directly comparing the outcomes of students who are eligible with those who are not eligible would confound the true impact of the scholarship, since students with high GPAs are likely to have different college outcomes than students with low GPAs for reasons other than just eligibility for the Star Scholarship. To address this potential bias, we employ a regression discontinuity design, comparing students who are just above and just below the scholarship's GPA eligibility threshold to ensure that the only significant difference between the groups is whether or not they received the scholarship. This method relies on the assumption that students cannot precisely manipulate their GPAs to fall just above or just below the eligibility cutoff, thereby selecting into the treatment group. If students were able to precisely manipulate their GPAs to meet the threshold, the outcomes of those just above the cutoff might differ significantly from those just below who did not manipulate their GPAs to gain access to the scholarship.

One way to test for manipulation of the running variable near the cutoff is to examine whether there is a discontinuous jump in the density of the running variable just above the cutoff. However, because CPS only gives whole letter grades, we see a discontinuous jump in the density of students by construction at the 3.0 cutoff (as well as the 2.0 and 4.0 cutoffs). As shown in Figure 1(a), this heaping is present before and after the policy and thus is more likely a feature of this grading system, which makes whole number GPAs mechanically more common than it is to be a feature of manipulation.

To formally test whether the discontinuity in the density of the running variable is larger after the policy was implemented, we implement a variant of the McCrary density test (McCrary, 2008). To do this we bin the running variable, counting the proportion of students in each GPA bin, and estimate the change in density at the cutoff by fitting a 4th order polynomial to both sides and estimating the size of the discontinuity at the cutoff.

We do this for the distribution of GPAs both before and after the policy. In both cases, we see a significant change in the density at the cutoff, but the size of the discontinuities before and after the policy are not statistically different from each other (Figure 1b). This provides evidence that students are not precisely manipulating their GPA near the cutoff as a result of the policy. However, we do see an overall shift in the overall distribution of the running variable consistent with a change in the composition of students, a change in grading practices, and/or an overall increase in effort after the policy was implemented. Appendix Figure C.1 shows average weighted high school GPAs for CPS graduates by graduation year; we see that grades have been increasing over time over the course of our study period.

This "heaping" of the running variable we see in our context is common in other contexts as well, including infant birth weight Almond et al. (2010) and home sizes (Li et al., 2020). Since heaping points both near and away from our cutoff can introduce bias into our results if students with "heaping" GPAs are systematically different than students with "non-heaping" GPAs, following Barreca, Lindo and Waddell (2016) we provide an alternative specification in which we drop GPAs that are divisible by 0.25, which are much more common in our data. (For example, we drop students whose GPAs are exactly 3.5 but keep students whose GPAs are 3.501). When we drop "heaping" GPAs, we no longer see a discontinuity at the cutoff (Appendix Figure A.2). Results from this alternative specification can be found in Appendix A.B. We also show estimates using a donut regression discontinuity design in which we drop students who are just above and just below the eligibility cutoff. In both of these alternative specifications, the estimates are similar to our main specification (Figure A.3).

In addition to the density tests we show in Figure 1, we provide further evidence that students did not select into treatment by manipulating their running variable by testing for discontinuities in students' observed covariates at the eligibility threshold. To do this, we apply Equation 1 using a set of student demographics as the outcome variables. The output

of these regressions is shown in Table 3. Students just above the cutoff are equally likely to be Female, Latinx, or have taken an AP course. They also have similar estimated household income and were equally likely to be eligible for free/reduced price lunch every year they were in CPS. However, we do see an increase of 5 points in the average SAT score of students for students just above the cutoff as compared to students just below the cutoff. While this increase is statistically significant at the 10% level, it is small enough that we still believe students who are just above the cutoff are comparable to students who are just below.

Finally, through qualitative interviews with Star Scholars conducted as part of a different project (Hallberg et al., 2023), we learned that CCC was not the first option for many students who eventually became Star Scholars, which means they were unlikely to be purposefully manipulating their grades. We summarize some key findings of these interviews in Section VI and provide relevant excerpts of the interviews in Appendix Section B.

Students can apply for the Star Scholarship at the same time that they apply to enroll at City Colleges of Chicago as part of the same application. Students can choose to apply using either their weighted or unweighted cumulative high school GPA. In most cases, weighted GPA is greater than unweighted GPA, but at CPS there are a few instances of significantly modified courses graded on a 2.0 point scale; this means it is possible (though highly uncommon) for a student's weighted GPA to be lower than their unweighted GPA. We use the maximum of a student's unweighted and weighted cumulative high school GPA as our running variable to account for these cases, but we still refer to our running variable as weighted cumulative high school GPA for simplicity.

To estimate the causal effect of eligibility for the Star Scholarship on students' colleges outcomes, we implement a sharp RD specification using a local linear regression to estimate linear probability models of the form:

$$Y_{ijt} = \beta_1 Star_{ijt} + \beta_2 GPA_{ijt} + \beta_3 (GPA_{ijt} \times Star_{ijt}) + \delta_t + \gamma_j + \varepsilon_{ijt} \quad (1)$$

Where $Star_{ijt}$ is a binary variable indicating whether a student i who graduated from CPS school j in year t is eligible for the Star Scholarship (e.g. who has a cumulative weighted high school GPA greater than 3.0) and GPA_{ijt} is the running variable described above and centered around 0. γ_j represents high school fixed effects and δ_t represents graduation year fixed effects. In this specification, if all assumptions are met, β_1 identifies the causal effect of being eligible for the Star Scholarship on outcome Y_{ijt} for students near the eligibility cutoff.

We estimate this local linear regression using a first order polynomial with a triangular kernel, which weights data points near the eligibility threshold more heavily than those farther from the threshold. Bandwidths chosen using the MSE optimal bandwidth selection procedure for robust bias-corrected RD analysis described in Calonico, Cattaneo and Farrell (2020), which trades off precision for bias generated by deviations from linearity away from the threshold. Controls include CPS graduation year and high school fixed effects. Following Calonico, Cattaneo and Titiunik (2014a), we use robust bias-corrected standard errors clustered at the CPS high school level to account for within school correlations in the error term ε_{ijt}. Our results are robust to different specifications (In Appendix Section A, we present results from alternative RD specifications which show similar findings to our main specification). For instance, following Grembi, Nannicini and Troiano (2016) we also estimate a Difference-in-Discontinuity (also called Difference-in-RD) specification of the form:

$$
\begin{aligned}
Y_{ijt} = {} & \tilde{\beta}_1(Star_{ijt} \times Post_{ijt}) + \tilde{\beta}_2 GPA_{ijt} + \tilde{\beta}_3 Star_{ijt} + \tilde{\beta}_4 Post_{ijt} \\
& + \tilde{\beta}_5(GPA_{ijt} \times Star_{ijt}) + \tilde{\beta}_6(GPA_{ijt} \times Post_{ijt}) \\
& + \tilde{\beta}_7(GPA_{ijt} \times Star_{ijt} \times Post_{ijt}) + \delta_t + \gamma_j + \varepsilon_{ijt}
\end{aligned} \tag{2}
$$

In this specification, if all assumptions are met, $\tilde{\beta}_1$ identifies the causal effect of being eligible for the Star Scholarship on outcome Y_{ijt} for students near the eligibility cutoff.

V Results

V.A College Enrollment and Degree Achievement

In Figure 7 we visualize the effect of Star Scholarship eligibility on students' college enrollment decisions. We find that eligibility for the Star Scholarship did not increase overall college enrollment for students near the eligibility cutoff (Table 4). This result contrasts with previous research, which finds that eligibility for free community college increases college enrollment (Carruthers and Fox, 2016; Nguyen, 2020). One reason why our finding may differ is due to the local nature of the RD estimate. Given that high school GPA is positively correlated with college enrollment, students with higher GPAs are less likely to be deciding whether to attend college at all, and more likely to be deciding where to enroll (such as at a two-year college or four-year university). It is possible that if CPS students with lower GPAs were offered the Star Scholarship, their college enrollment would increase.

However, while we do not see an impact on *whether* students enroll in college, the Star Scholarship does impact *where* students enroll. Specifically, eligibility for the Star Scholarship increases the probability that the first college that a student enrolls in is one of the City Colleges of Chicago by 4.2 percentage points and decreases the probability that the first college a student enrolls in will be a four-year university by 2.9 percentage points (Table 4). This suggests that students near the GPA cutoff are likely to be on the margin between first enrolling in a two-year college and first enrolling in a four-year university. Given that we see a 15 percentage point increase in the probability of being a Star Scholar at the cutoff (Figure 6), we estimate that approximately 20 percent of marginally eligible Star Scholars would have attended a four-year university had they not been eligible for the Star Scholarship.

This shift in initial enrollment from four-year universities to two-year colleges could potentially be concerning if it is causing students to enroll in "lower-quality" institutions – where quality is measured by a variety of dimensions including instructional expenditures,

median earnings of graduates, completion rates, and repayment rates of students who took out loans – since two-year colleges generally score lower on these quality dimensions. For instance, Figure C.4 demonstrates that the two-year colleges where CPS students commonly enroll exhibit lower completion rates and median earnings compared to their four-year counterparts.

To test whether eligibility for the Star Scholarship decreases the "quality" of the first college a student enrolls in, we estimate the difference in regression discontinuities before and after the policy for several measures of college quality at the Star Scholarship eligibility cutoff. We use a difference in regression discontinuity design instead of the traditional regression discontinuity design used in our main specification because even though we did not see any significant discontinuities in college outcomes at the cutoff before the policy was implemented (Table 5), we observed some small differences in quality of the first college students attended for students just above the cutoff versus just below the cutoff (Appendix Table C.5). This is likely because some colleges have GPA cutoffs for admission which will sort students just above the cutoff into slightly different types of colleges.

We find that eligibility for free community college causes a slight decrease in the "quality" of the first college a student enrolls mostly driven by a decrease in instructional expenditures per student, suggesting that students first enroll in a college with fewer resources per student as a result of the Star Scholarship but are otherwise being diverted from similar "quality" four-year universities (Figure 9a).[4] This finding is consistent with Cohodes and Goodman (2014) who find that students are willing to forgo college quality for small increases in financial aid. However, this slight decrease in quality does not translate into lower degree completion rates. We see large increases in associate degree attainment as a result of the scholarship. In particular, we find that eligibility for the Star Scholarship increases a student's probability of earning an associate degree within three years of high school by 2.1

[4]It is important to note that many for-profit colleges, which are often low quality do not report to National Student Clearinghouse. If the policy induces students to switch from a low-quality for-profit to CCC after the policy, we will overestimate the decrease in college quality measures resulting from the Star Scholarship.

percentage points (Table 4). This represents a 40 percent increase from a 5 percentage point control mean. However, it is important to test whether this increase in associate degree completion is a result of students substituting associate degrees for bachelor's degrees as a result of being diverted from first enrolling in a four-year institution.

Despite students' initial diversion from enrolling in a four-year institution, we find that eligibility for the Star Scholarship does not decrease the probability that students eventually enroll in a four-year institution and complete a bachelor's degree within six years of high school (Table 4). In fact, we see a positive but statistically insignificant increase in both bachelor's degree attainment as well as overall degree attainment within this time frame. We see no impact on the probability of earning a certificate within three years of high school. [5]

We also estimate the change in the quality of the first four-year university a student enrolls resulting from eligibility for the Star Scholarship and do not see the same consistent decrease in college quality measures that we see with the quality of the first college that students enroll in. This means that students who are diverted from a four-year are not being diverted from high quality institutions and/or transferring to lower quality four-year institutions after attending community college as a result of the policy (Figure 9a).

Taken together, these results suggest that access to free community college can increase overall degree attainment without causing students to substitute two-year degrees for four-year degrees or attend lower-quality four-year institutions. These findings are particularly striking in light of prior research showing that diverting marginal students from four-year to two-year colleges can reduce the likelihood of earning a bachelor's degree (Goodman, Hurwitz and Smith, 2017; Mountjoy, 2022). However, they align with other evidence suggesting that lowering community college tuition can increase transfer rates to four-year universities (Denning, 2017; Acton, 2021) and increasing geographic access to community

[5]Not all schools provide information on the type of degree earned. When this information is unavailable, we impute missing degree information using the type of college the degree was earned at. For instance, if students earn a degree from a four-year university and we don't know what kind of degree, we assume it is a bachelor's degree.

college can increase associate degree attainment without decreasing bachelor's degree attainment (Miller, 2024).

One possible explanation is that in settings like Chicago—where transfer pathways exist between public community colleges and public four-year institutions—starting at a community college may not harm, and may even improve, students' chances of eventually earning a bachelor's degree. Additionally, students who would have enrolled in a four-year university but would never have completed a bachelor's degree could be better off by first enrolling in community college. These students may earn an associate degree more quickly, graduate with less debt, have better access to academic support (particularly for developmental coursework), and benefit from more flexible scheduling options such as evening classes.

V.B Degree Completion by Field

Two prevailing theories explain why students who start at a two-year institution with the intention of earning a bachelor's degree often do not transfer to complete their bachelor's degrees. The first is credit losses or other academic barriers and the second is that students who are diverted might end up getting a technical/professional degree such as cosmetology, welding, etc, instead of continuing down a bachelor's degree path (Monaghan and Attewell, 2015). Appendix Figure C.6 shows that CPS graduates who start out at a two-year are less likely to major in STEM fields and more likely to major in fields related to Human Services and Trades. This could either be due to the selection of the type of student who first enrolls in a two-year college instead of a four-year or this could be due to the availability of coursework or the focus on different majors by other students at faculty at a two-year institution. In this analysis, we want to know whether the Star Scholarship has an effect on the type of degree you earn, either through a change in the degrees that their peers are seeking or through a change in courses and majors offered.

To answer this question, we look at the effect of eligibility for the Star Scholarship

on degree completion by field. Our analysis faces two limitations. First, we only observe a student's major if they complete their degree.[6] The second limitation is that we can only observe degree field for about 80% of degrees earned in our data. The types of schools that provide degree information are likely to be different than the types of schools that don't. CCC does provide degree titles to National Student Clearinghouse, so we could be overestimating the effect of a type of degree earned if the Star Scholarship induces students who would have otherwise enrolled in a college that did not report degrees. However, in this exercise, we are less interested in the absolute magnitude of the effects than we are the relative impacts across majors. All the same, these results should be viewed as exploratory in nature.

We show our results in Figure 9b; the increases in two-year degree attainment as a result of eligibility for the Star Scholarship are not concentrated in any one field, but are spread out among Health, Human Services, Humanities/Social Science, and General Education, though none of these increases are statistically significant.

We also show estimates for the effect of eligibility for the Star Scholarship on earning a four-year degree in specific field. Our results indicate increases in Health and Human Services four-year degrees, with minimal and statistically insignificant effects on other four-year degree fields. This aligns with the fact that we found positive but noisy increases in Health, Human Services, and General Education two-year degrees. Notably, eligibility for the Star Scholarship does not decrease the probability that students will earn a STEM four-year degree. These findings suggest that the Star Scholarship does not significantly alter the types of bachelor's degrees students pursue, but it does seem to increase the number of students obtaining four-year degrees in Health and Human Services.

[6]Note that a student can earn more than one degree within our sample.

V.C Robustness and External Validity

To provide evidence that the effect of being just above the cutoff can be fully attributed to the change in eligibility for the Star Scholarship and not because there are other things changing for students at that cutoff, we estimate effect of being just above the 3.0 eligibility cutoff on students whose last year in CPS was between 2011-2014, which is before the Star Scholarship was implemented. We find no discontinuous changes in overall college enrollment, four-year enrollment, and degree completion for students who were just above the cutoff in pre-policy years (Table 5). In Appendix Section A we show that our findings are robust to different RD specifications including a difference-in-discontinuity specification (Appendix Figure A.4), a donut regression discontinuity, and dropping heaping values in the running variable (Appendix Figure A.3). In Appendix Figure A.1, we also show that our results are robust to a range of alternative bandwidth specifications.

Finally, while regression discontinuity designs provide strong evidence on the impact of the policy for students near the eligibility cutoff, note that students farther away from the cutoff might be impacted very differently and our regression discontinuity results might not reflect the true effect of the policy for all students. However, Figure 5 illustrates that the concentration of students near the eligibility cutoff is significantly higher than those farther from it, with students closer to the cutoff being more likely to participate in the policy. Consequently, this group forms the majority of the affected population, suggesting that our regression discontinuity (RD) estimates are representative of the effects experienced by most Star Scholars.

V.D Heterogeneity

Our results show that on average, students near the cutoff do not enroll in college more but are more likely to enroll in community college and earn an associate degree and are equally likely to enroll in a four-year university and earn a bachelor's degree. However, different groups of students may be impacted differently by this policy. There are two

dimensions on which we want to test for differences. The first is household income. While low-income students might in theory be more sensitive to increases in financial aid, the Star Scholarship is last-dollar, which means that students federal grants are applied first. Given that the cost of tuition at City Colleges is lower than the average Pell grant awarded to students who attend, low-income students are likely to not receive any additional financial aid from the scholarship. However, research has shown that not all students are aware of the aid they would receive if they were to apply to college and policies that simplify information and reduce uncertainty about the financial aid process can have large effects (Dynarski et al., 2021). By examining the impact of the policy on lower and higher income students separately, we can disentangle the impact of simplifying information around financial aid from the impact of both simplifying information and increasing the amount of aid provided to cover the cost of tuition at community college. We find no statistically significant differences in the impact of eligibility for the Star Scholarship on overall college enrollment and degree completion between students whose estimate household income is below the median in our sample ($39,000) and students whose estimated household income is above (Figure 10a). However, below-median household income students are less likely to first enroll in a four-year university as a result of eligibility for the Star Scholarship compared to their above median income peers.

We also examine the differential impact of the Star Scholarship on student groups that are more likely to be from immigrant families than the general population of CPS students. Students from immigrant families might be more sensitive to policies which simplify information and reduce uncertainty about the financial aid process since their families may be less familiar with the higher education system within the United States. Undocumented immigrant students are ineligible for federal student aid so may be more sensitive to increases in financial aid. In Figure 10b, we again see no statistically significant differences in the impact of eligibility for the Star Scholarship on overall college enrollment and degree completion between students who are likely to be from immigrant families and student who

are not. However, students who are likely from an immigrant family are less likely to first enroll in a four-year university as a result of eligibility for the Star Scholarship compared to their peers who are unlikely to be from an immigrant family.

VI Qualitative Interviews

To supplement our quantitative analysis, we examined fifteen interviews with Star Scholars who were enrolled in CCC at the time of the interviews. Note that this was not a random sample of Star Scholars; these interviews were conducted as part of a different research project focused on developing a best fit framework for postsecondary success (Hallberg et al., 2023). Specifically, this study interviewed CCC students who were considered to be academically under-matched. Nevertheless, these interviews still provide helpful context to students' decision-making processes regarding Star Scholarship take-up. Relevant excerpts from all fifteen of these interviews can be found in Appendix Section B.

From this qualitative analysis, we identified four key themes: First, most Star Scholars' initial plan was to attend a four-year university. However, some decided to start at CCC after learning how much a four-year university would cost while others attended a four-year institution first, then realized it was not a good fit for them. One student shared "I applied to eight other universities including CCC, and I got into all of them, which was really good for my self-esteem. Of course, the two that I loved the most was DePaul and Harold Washington. And then it's not until after winter break of your senior year where they send out that lovely bill of like, hey, this is what you're going to have to owe for us. That kind of took the wind out of my sails, because I was so ready to go to DePaul, and then that's when my mom reminded me. She was like, 'Well, you still have the CCC and the Star Scholarship." This quote highlights the influence of affordability on enrollment decisions and reinforces our quantitative finding that students eligible for the Star Scholarship are more likely to first enroll in community college rather than a four-year institution.

Second, a few Star Scholars mentioned that they were not sure if they were going to

college. Some didn't think they could afford college and some mentioned that they were considering joining the military. One student remarked, "I was rather undecided as to what I wanted to do with my life, so when I found out about this thing called Star scholarship, which gave me a full ride with tuition covered and books covered at the city colleges, I just went ahead and got that just so I could get the general education out of the way, if I decide to go to a four year." While we do not observe an overall effect on college enrollment in our data, these cases suggest that for some students, the Star scholarship may have been critical to the decision to enroll in college.

Third, students learned about the Star Scholarship through a range of sources, including CPS guidance counselors and teachers, friends, siblings, CCC advisors, and email outreach. One student recounted, "So in my senior year when I was in Northside, I didn't really know what I wanted to do. Universities were looking really expensive and my friend, his brother went to UIC, but his brother's friend went to CCC and he was telling him about how amazing it was. So my friend knew from the beginning of senior year that he was going to go into CCC with the Star Scholarship. And then he told me about the Star Scholarship and I was like, 'Wow, this sounds amazing. It sounds like exactly what I need." This quote also speaks to the importance of peer and institutional communication in supporting take-up of the scholarship.

Finally, many Star Scholars mentioned that their ultimate goal was to transfer to a four-year university. This long-term aspiration often shaped their decision to enroll in CCC with the Star Scholarship. One student shared, "I was initially slated to go to a four-year university in Louisiana. And financial aid covered most of it, but there was still going to be an out-of-pocket cost. So then I remember my advisor in high school telling us about the Star Scholarship and that City Colleges offers that if you graduate from a Chicago high school with a certain GPA ... There was no out-of-pocket fee for me for attending City Colleges. And I was just like that financially sets me up better so that when I can transfer,

we have more money to put into whatever school I go to."

VII Discussion

Existing research indicates that free community college programs increase college enrollment for some students but divert other students from first enrolling in four-year universities to first enrolling in community college, which could potentially decrease overall degree completion. Leveraging rich administrative data from the City Colleges of Chicago and Chicago Public Schools, and using a rigorous identification strategy, our study estimates the impact of access to free community college on students who are deciding where to enroll in college rather than whether to enroll, with many students deciding between enrolling in community college or enrolling in a four-year university. We find that these students are more likely to first enroll in community college and less likely to first enroll in a four-year university as a result of eligibility for a free community college scholarship. However, despite this initial diversion, eligible students are more likely to earn an associate degree and equally likely to enroll in a four-year university and earn a bachelor's degree six years after graduating high school. These findings complicate previous work suggesting that students who are diverted from immediate enrollment in a four-year university are on average worse off in terms of degree attainment.

It's important to note that our findings do not imply that *all* students are better off by first enrolling in community college rather than a four-year university. Our study shows that students near the 3.0 GPA eligibility threshold who are eligible for the Star Scholarship *and choose to take it up* are more likely to earn an associate degree and just as likely to earn a bachelor's degree as their peers. This suggests that for this group, starting at a community college does not come at the expense of long-term educational attainment and may even benefit them through lower debt burdens. However, we cannot draw conclusions about students who were eligible for free community college but chose not to enroll in community college and instead opted to begin at a four-year institution. We also cannot draw conclusions

about how this policy affects ineligible students (e.g. those with lower GPAs).

There are several mechanisms through which the Star Scholarship can affect college enrollment and completion. First, it provides increased financial aid for some students, directly reducing the cost barrier for college attendance. Second, by offering free college to all eligible students, the scholarship potentially shifts the college-going culture within high schools. This cultural shift may stem from heightened aspirations among peers and reduced racial disparities in educational expectations set by teachers and counselors. In addition, the implementation of the Star Scholarship has fostered enhanced cooperation between schools and higher education institutions in Illinois. Following its introduction, many four-year institutions established additional scholarships and transfer agreements specifically targeting Star Scholars from City Colleges of Chicago (CCC), facilitating smoother transitions for students pursuing bachelor's degrees. Finally, there is some research showing that marginal students can have higher academic confidence when they enroll in a lower-quality school than they would if they had enrolled in a higher quality school (Fabregas, 2023).

Given that most students who qualify for need-based federal aid can already attend community college for free, our findings suggest that offering a free community college broadly has additional advantages above only targeting aid to low-income students. This could be because the barriers to access targeted aid are too high for some students or because there are many students who are not eligible for need-based aid, but still struggle to afford college. These students are often hard to reach with traditional financial aid strategies, and offering a last-dollar free community college scholarship presents an effective, low-cost method to increase overall degree completion when offered in addition to need-based aid that can be used at any college.

While these findings are encouraging when it comes to free community college as a cost-effective tool to increase college access, it is important to highlight the limitations of this work in terms of both internal and external validity. First, this analysis can only highlight

the effect of free community college for students with an average high school GPA of 3.0. We don't know how students with lower or higher GPAs would be affected, but it is likely that lower GPA students would have larger increases in overall college enrollment and degree completion and higher GPA students would be largely unaffected by the policy. Second, as discussed above, several four-year universities created their own institutional scholarships and transfer pathways for Star Scholars in response to the Star Scholarship; we might not observe similar effects on bachelor's degree attainment in a different setting in the absence of this response. Third, we have fewer cohorts of students for whom we can observe four-year degree attainment within six years of high school than students for whom we can observe two-year degree attainment within three years of high school. For this reason, our estimates on the impact of free community college on associate degree attainment are more precise. While most of our estimates of the impact of bachelor's degree attainment are positive but insignificant, we cannot rule out either zero or small negative effects for bachelor's degree attainment. Finally, while we find positive impacts on college degree completion, we don't know how student labor market outcomes are affected. This is an important avenue for future research.

Our study adds to the ongoing debate about whether merit-based community college scholarships provide a cost-effective route through higher education or serve as a costly diversion that diminishes the likelihood of completing a bachelor's degree. We find that, on average, students with average academic performance in high school benefit from having the option to attend community college for free. Specifically, we find that the marginal student in our setting who is deciding where to enroll in college rather than whether to enroll and chooses to enroll in community college for free is not worse off on average in terms of bachelor's degree completion and may leave college with less debt.

VIII Exhibits

VIII.A Tables

TABLE 1
Summary Statistics

	All CPS Graduates		Post-Policy CPS Graduates	
	N	Mean	N	Mean
Female	226,045	0.53	138,197	0.53
Black	225,841	0.41	138,061	0.39
White	225,841	0.09	138,061	0.09
Latinx	225,841	0.44	138,061	0.46
AAPI	225,841	0.04	138,061	0.04
Spanish Spoken at Home	226,037	0.36	138,191	0.37
English Spoken at Home	226,037	0.56	138,191	0.55
Ever Failed a Course	186,478	0.49	110,605	0.44
FRPL Every Year	226,045	0.66	138,197	0.66
Household Income	222,722	$43,984	136,212	$44,353
Ever Homeless	226,045	0.13	138,197	0.15
High School GPA	176,430	3.05	104,431	3.20
Took an AP Course	186,478	0.52	110,605	0.54
SAT Score	214,728	960.55	130,665	969.21
Completion Ready	198,657	0.56	114,509	0.69
Total Number	226,045	-	138,197	-

Note: Mean of student demographics for all CPS graduates includes students who graduated from CPS between 2011 and 2020. Post-policy CPS graduates includes all students who graduated between 2015-2020, after the Star Scholarship was implemented. Household income is estimated using median income of the census block where the student resides at time of graduation from the American Community Survey 2015 5-year estimates. Completion ready indicates whether a student had either a score of 21+ on the English and math ACT or a score of 540 or higher on the English SAT and 530 or higher on the math SAT.

TABLE 2
Demographics of Eligible, Star Eligible Students and Star Scholars

	N	Star Eligible	Star Scholar	Difference
Female	56,519	0.61	0.62	0.019**
Black	56,427	0.29	0.18	-0.112***
White	56,427	0.17	0.09	-0.083***
Latinx	56,427	0.43	0.67	0.237***
AAPI	56,427	0.09	0.05	-0.033***
Spanish Spoken at Home	56,518	0.34	0.56	0.217***
English Spoken at Home	56,518	0.52	0.34	-0.179***
Ever Failed a Course	56,455	0.15	0.21	0.057***
FRPL Every Year	56,519	0.55	0.67	0.121***
Household Income	55,785	49,950.26	46,232.29	-3,717.97***
Weighted Cumulative High School GPA	56,519	4.01	3.73	-0.278***
Took an AP Course	56,455	0.79	0.75	-0.032*
SAT Score	54,658	1084.46	1012.26	-72.205***
Completion Ready	51,876	0.85	0.82	-0.028***

Note: The sample of star eligible consists of all students who graduated between 2015-2020 and had a high school transcript with a weighted cumulative high school GPA of at least 3.0. The sample of star scholar students includes all Star eligible students who became Star Scholars. Household income is estimated using median income of the census block where the student resides at time of graduation from the American Community Survey 2015 5-year estimates. Completion ready indicates whether a student had either a score of 21+ on the English and math ACT or a score of 540 or higher on the English SAT and 530 or higher on the math SAT. The estimated difference between the demographic means of these two groups and their standard error is calculated by regressing a dummy variable indicating whether a student is a Star Scholar on each demographic variable using the sample of all eligible students. *p<0.1; **p<0.05; ***p<0.01

TABLE 3
Estimated Discontinuities in Covariates at the Star Scholarship Eligibility Cutoff

	SAT Total	Female	Latinx	AP Course	FRPL Every Year	Household Income
	(1)	(2)	(3)	(4)	(5)	(6)
RD Estimate	5.836*	0.017	0.004	0.002	0.015	-103.08
P-value	0.052	0.195	0.638	0.872	0.179	0.851
Control Mean	918.265	0.527	0.490	0.515	0.691	43,737.49
MSE-Optimal Bandwidth	[2.45, 3.48]	[2.52, 3.61]	[2.35, 3.58]	[2.43, 3.62]	[2.54, 3.71]	[2.53, 3.63]
Effective Sample Size	33,878	38,073	43,045	41,354	39,932	37,570
Sample Size	99,411	104,431	104,331	104,243	104,431	103,102
Controls						
CPS Grad Year	X	X	X	X	X	X
CPS High School	X	X	X	X	X	X

Note: This table shows the estimated discontinuity in student demographics for students just above the 3.0 GPA Star Scholarship eligibility cutoff. This discontinuity is estimated using Equation 1. We use a first order polynomial with a triangular kernel. Bandwidths chosen using the MSE optimal bandwidth selection procedure for robust bias-corrected RD analysis described in Calonico, Cattaneo and Farrell (2020). Controls include CPS graduation year and high school fixed effects. Following Calonico, Cattaneo and Titiunik (2014a), we use robust bias-corrected standard errors clustered at the CPS high school level. Household income is estimated using median income of the census block where the student resides at time of graduation from the American Community Survey 2015 5-year estimates. $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

TABLE 4
RD Estimates of the Effect of Star Eligibility on College Enrollment and Completion

(a) College Enrollment

	Enrolled Within 3 Years (1)	Enrolled First CCC (2)	Enrolled First 4-Year (3)	Enrolled 4-Year Within 6 Years (4)
RD Estimate	-0.009	0.042***	-0.029**	-0.013
P-value	0.283	0.002	0.041	0.259
Control Mean	0.753	0.409	0.499	0.484
MSE-Optimal Bandwidth	[2.49, 3.68]	[2.51, 3.8]	[2.53, 3.9]	[2.49, 3.69]
Effective Sample Size	40,845	33,312	35,357	20,964
Sample Size	103,961	76,755	76,755	52,486
Controls				
CPS Grad Year	X	X	X	X
CPS High School	X	X	X	X

(b) College Degree Completion

	Earned Certificate Within 3 Years (1)	Earned Associate Within 3 Years (2)	Earned Bachelor Within 6 Years (3)	Earned Any Degree Within 6 Years (4)
RD Estimate	0.007	0.021***	0.011	0.016
P-value	0.174	0.001	0.309	0.269
Control Mean	0.029	0.050	0.124	0.236
MSE-Optimal Bandwidth	[2.39, 3.51]	[2.36, 3.38]	[2.46, 3.49]	[2.41, 3.61]
Effective Sample Size	39,101	36,098	18,634	21,346
Sample Size	103,961	103,961	52,486	52,486
Controls				
CPS Grad Year	X	X	X	X
CPS High School	X	X	X	X

Note: This table shows the estimated discontinuity in college enrollment and college completion for students just above the 3.0 GPA Star Scholarship eligibility cutoff. Note that not all colleges report degree information to National Student Clearinghouse, so when measuring the impact of eligibility for the Star Scholarship on Certificate, Associate, and Bachelor's degrees, we impute degree type when it is not available based on whether the college where a student earned the degree is primarily a certificate, associate, or bachelor's degree granting institution. This discontinuity is estimated using Equation 1. We use a first order polynomial with a triangular kernel. Bandwidths chosen using the MSE optimal bandwidth selection procedure for robust bias-corrected RD analysis described in Calonico, Cattaneo and Farrell (2020). Controls include CPS graduation year and high school fixed effects. Following Calonico, Cattaneo and Titiunik (2014a), we use robust bias-corrected standard errors clustered at the CPS high school level. *p<0.1; **p<0.05; ***p<0.01

TABLE 5
Pre-Policy Sharp RD Estimates of Being Above the GPA Cutoff
on College Enrollment and Completion

	Enrolled Within 3 Years (1)	Enrolled First 4-Year (2)	Earned Associate Within 3 Years (3)	Earned Bachelor Within 6 Years (4)
RD Estimate	-0.014	-0.010	0.001	-0.008
P-value	0.163	0.351	0.889	0.430
Control Mean	0.805	0.369	0.064	0.167
MSE-Optimal Bandwidth	[2.47, 3.45]	[2.65, 3.51]	[2.37, 3.45]	[2.48, 3.46]
Effective Sample Size	23,926	16,800	26,803	23,758
Sample Size	71,999	56,555	71,999	71,999
Controls				
CPS Grad Year	X	X	X	X
CPS High School	X	X	X	X

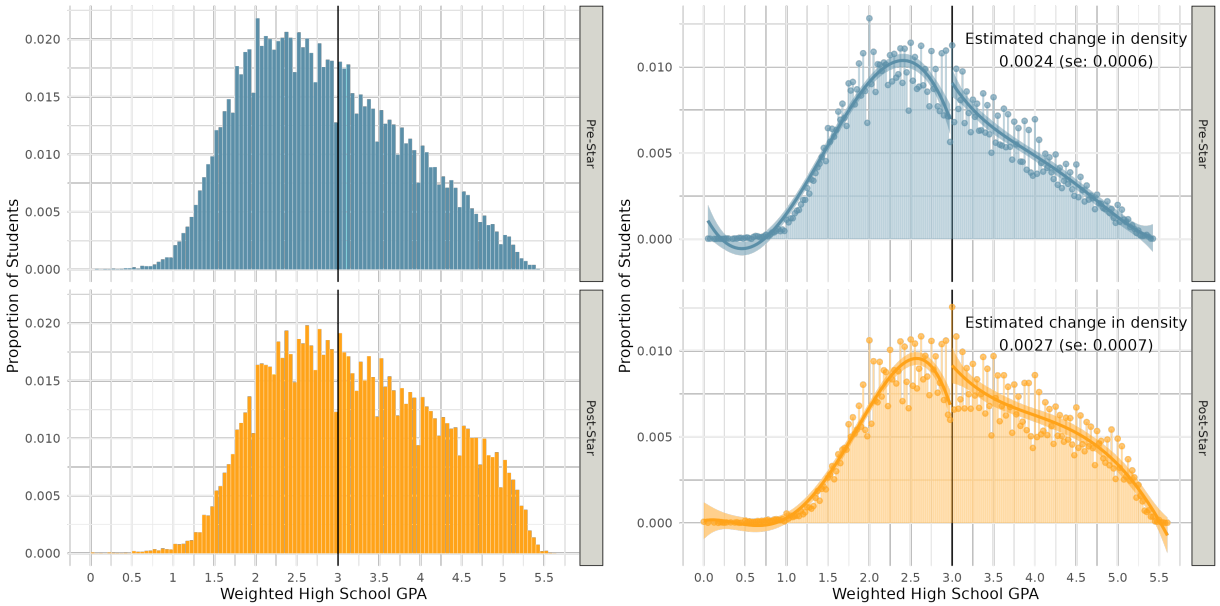
Note: This table shows the estimated discontinuity in college enrollment and college completion for students just above the 3.0 GPA Star Scholarship eligibility cutoff who graduated between 2011 and 2014 before the policy was implemented. This difference is estimated using Equation 1. We use a first order polynomial with a triangular kernel. Bandwidths chosen using the MSE optimal bandwidth selection procedure for robust bias-corrected RD analysis described in Calonico, Cattaneo and Farrell (2020). Controls include CPS graduation year and high school fixed effects. Following Calonico, Cattaneo and Titiunik (2014a), we use robust bias-corrected standard errors clustered at the CPS high school level. $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

VIII.B Figures

FIGURE 1
Distribution of GPAs Around the Cutoff

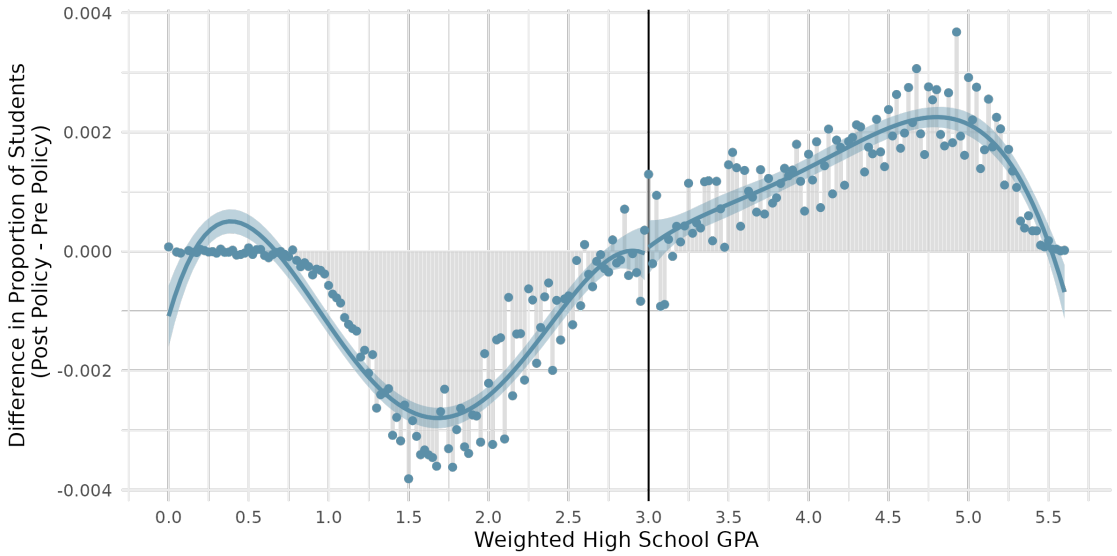
(a) Histogram of Running Variable

(b) McCrary Density Tests



Note: This figure shows the distribution of our running variable around the cutoff for Star Scholarship eligibility. We extend the McCrary (2008) density test to a difference in RD framework to test for discontinuities in the running variable at the cutoff. Usually, if there is a statistically significant discontinuity, this is taken as evidence that individuals are sorting into treatment by manipulating their running variable to be just above or just below the cutoff. In our setting, there is a discontinuity at the cutoff before the policy due to the nature of the ways grades are assigned at CPS. So we test to see if the discontinuity at the cutoff is larger after the policy than before the policy. We find no significant differences in the density change at the cutoff before and after the Star Scholarship was implemented.

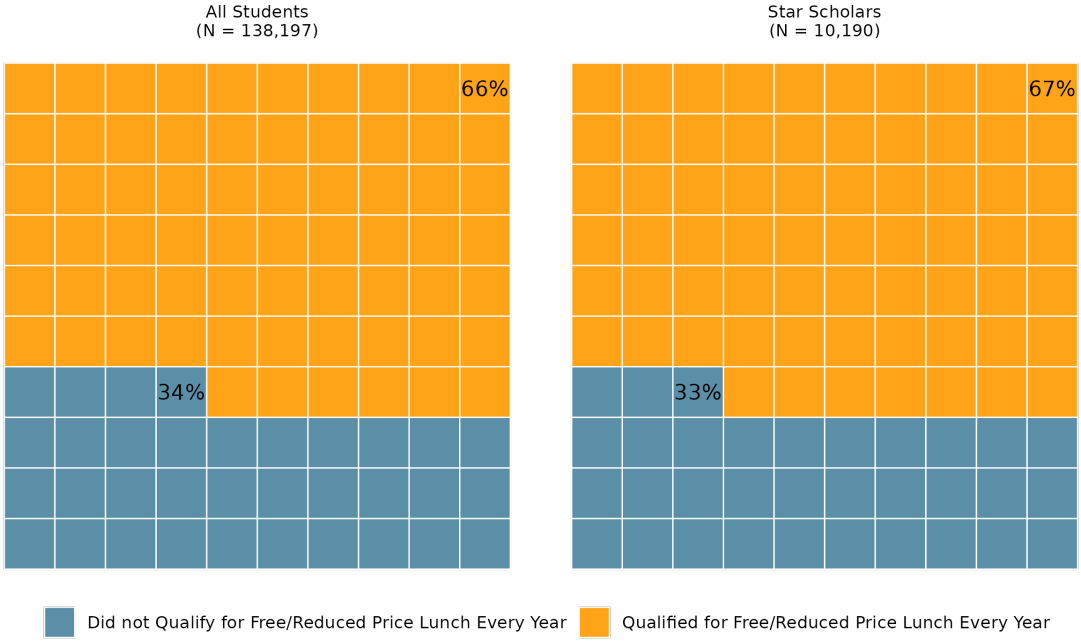
FIGURE 2
Difference Distribution of GPAs Around the Cutoff



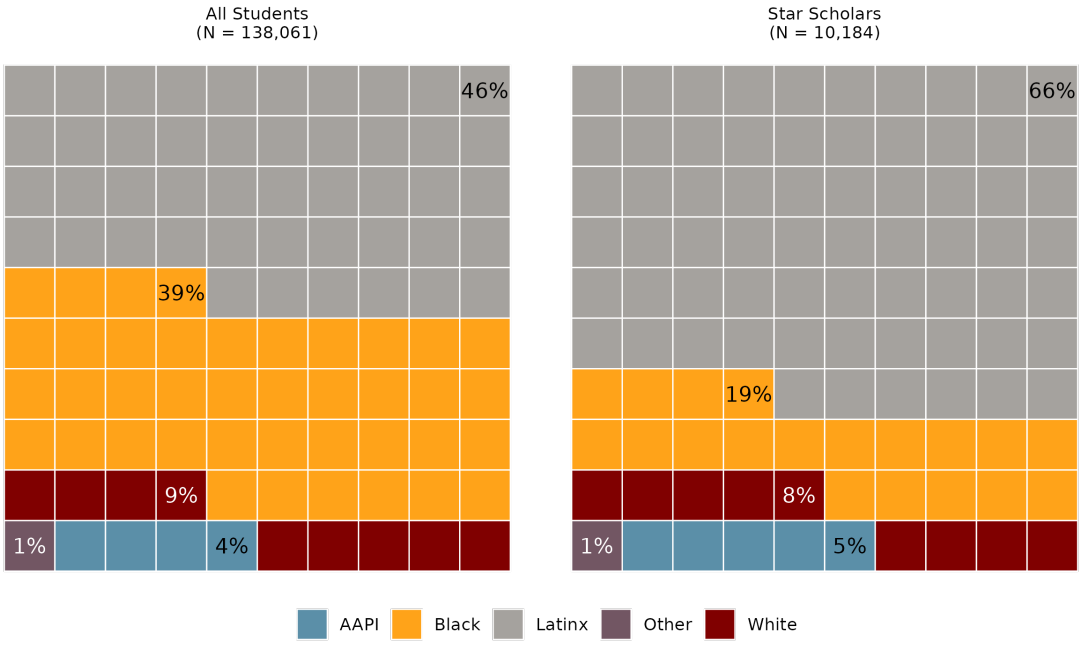
Note: This figure illustrates how we extend the McCrary (2008) density test to a difference in RD framework to test for discontinuities in the running variable at the cutoff. We take the difference in the proportion of students who belong in each GPA bin before and after the policy was implemented. Note that due to grade inflation, we see a decrease in students with lower GPAs and an increase in students with higher GPAs. We find no significant differences in the density change at the cutoff before and after the Star Scholarship was implemented.

FIGURE 3
Proportion of Students in CPS and Proportion of Star Scholars

(a) By Free/Reduced Price Lunch



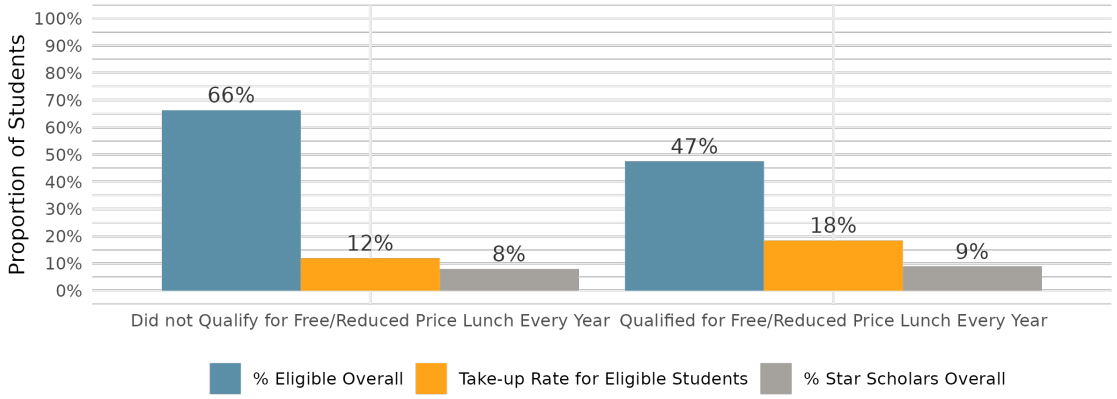
(b) By Race



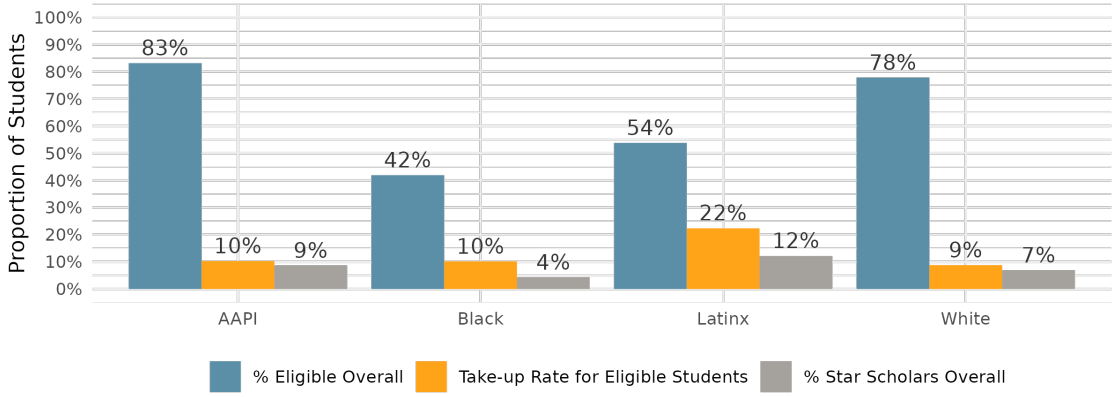
Note: This figure shows the proportion of students in CPS compared to proportion of Star Scholars by race and free/reduced price lunch status. Note that Latinx students are over represented in the population of students who become Star Scholars relative to their overall proportion of the total population of CPS students and Black students are under represented. A small number of students are missing a race category; we do not include those students in Panel (b).

FIGURE 4
Star Scholarship Take-Up and Eligibility

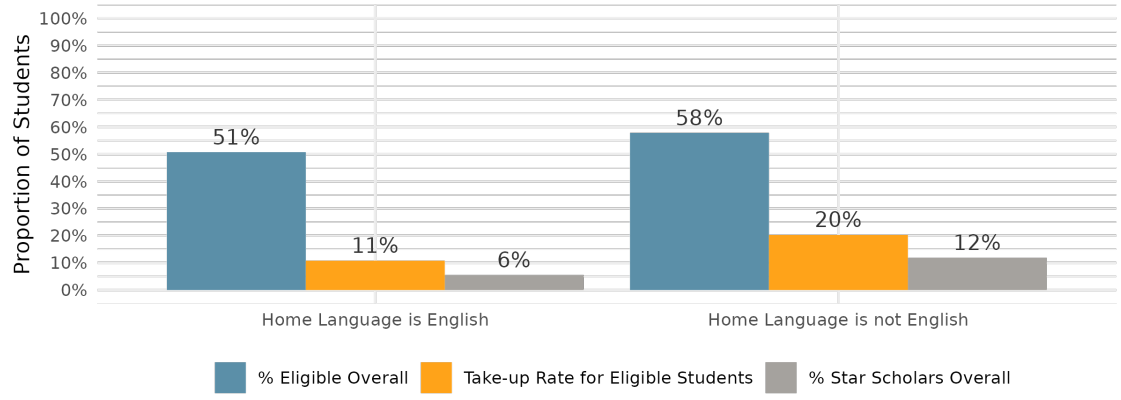
(a) By Free/Reduced Price Lunch Status



(b) By Race

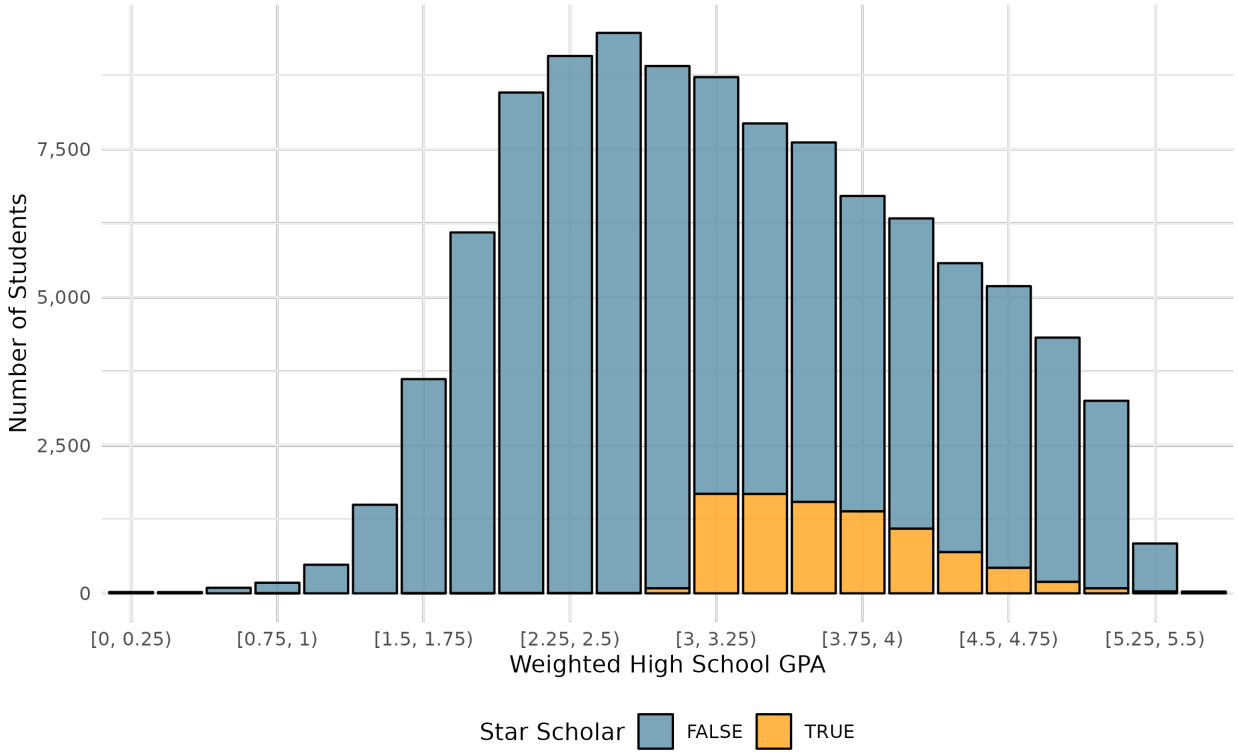


(c) By Home Language



Note: The blue bar shows the percentage of all students in a given category who were eligible for the Star Scholarship. The orange bar shows the percentage of all eligible students in a given category who became Star Scholars (the take-up rate of the Star Scholarship). The grey bar shows the percent of all students in a given category who became Star Scholars.

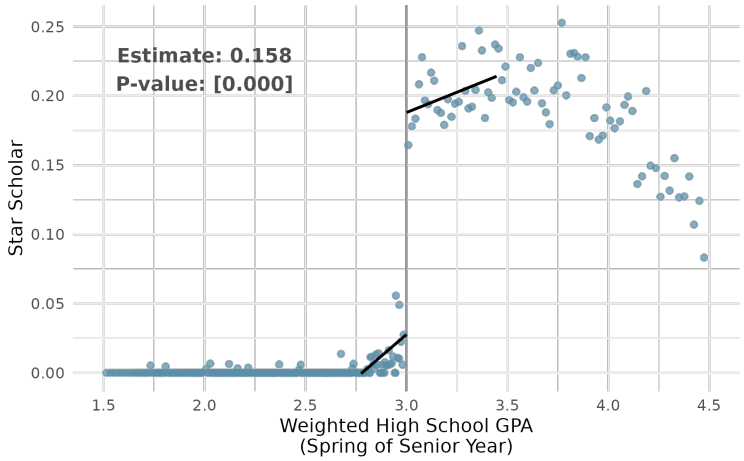
FIGURE 5
Distribution of Weighted Cumulative High School GPA by Star Scholarship Take-Up



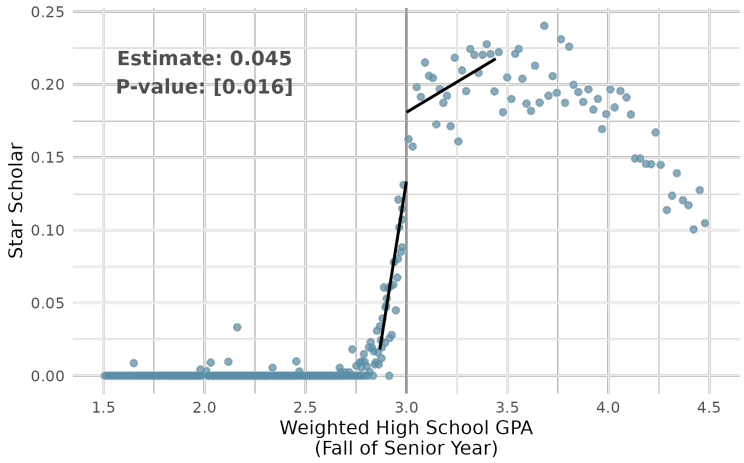
Note: This figure shows the number of students in each GPA bin who are Star Scholars and non-Star Scholars. Just below the cutoff we see a very small number of students who become Star Scholars. Most of the Star Scholars have GPAs near the cutoff. The higher your GPA, the less likely one is to become a Star Scholar.

FIGURE 6
First Stage RD Plots

(a) Final Cumulative Weighted High School GPA



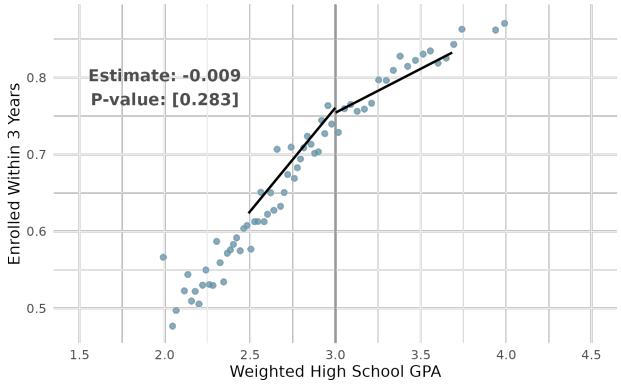
(b) Fall Semester Senior Year Cumulative Weighted High School GPA



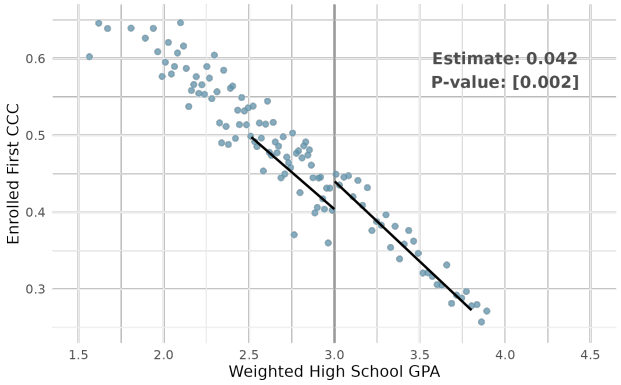
Note: Panel (a) shows the discontinuity of the probability of being a Star Scholar at the policy eligibility threshold of a 3.0 GPA using a student's final cumulative weighted high school GPA. Note that there are some students just below the cutoff that still get access to the scholarship, these students likely applied to the policy before they graduated using their GPA from the fall semester of their senior year. While this is theoretically possible, it is likely uncommon for students to apply to the Star Scholarship using their fall semester senior year GPA since the first stage using this GPA measure is much weaker as shown in Panel (b).

FIGURE 7
Sharp RD Plots for College Enrollment Outcomes

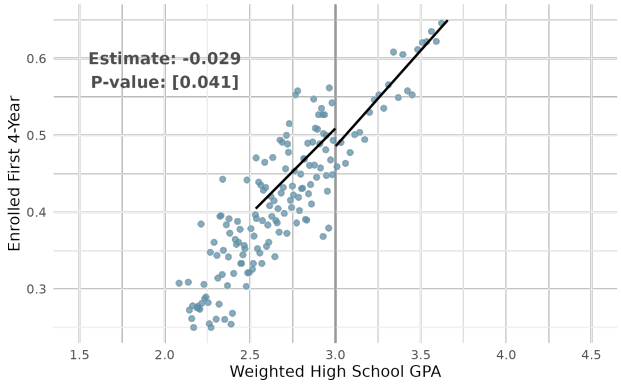
(a) Enrolled Within 3 Years



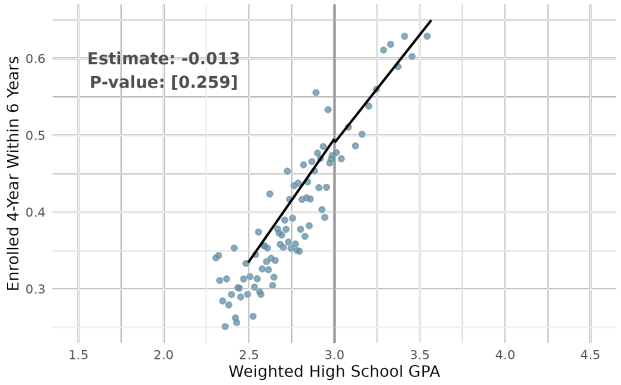
(b) Enrolled First in CCC



(c) Enrolled First in 4-Year



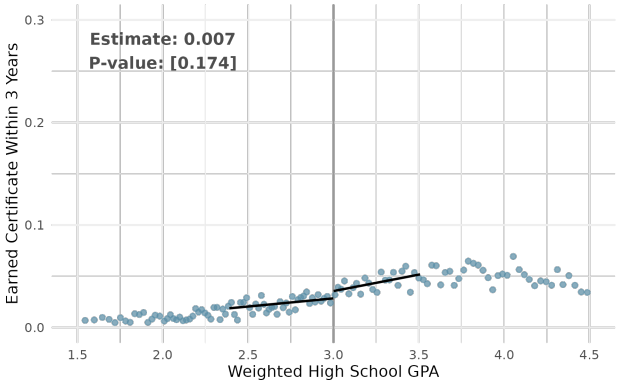
(d) Enrolled 4-Year Within 6 Years



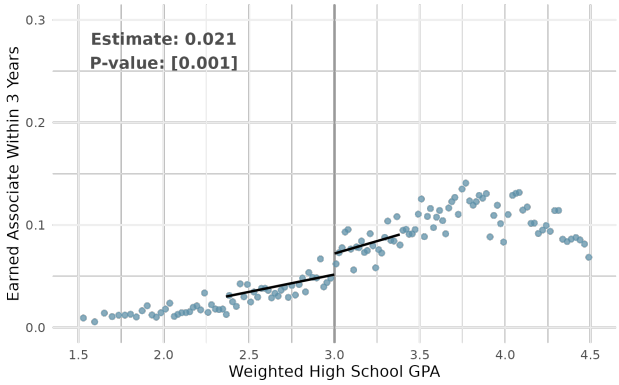
Note: This figure shows the discontinuity in college enrollment outcomes at the 3.0 GPA Star Scholarship eligibility cutoff. All specifications use a first-order polynomial, a triangular kernel, and include CPS graduation year and high school fixed effects. P-values are calculated from robust bias-corrected standard errors clustered at the CPS high school level (Calonico, Cattaneo and Titiunik, 2014a). Bandwidths chosen using the MSE optimal bandwidth selection procedure for robust bias-corrected RD analysis described in Calonico, Cattaneo and Farrell (2020). Bin sizes are chosen using the Integrated-MSE optimal quantile-spaced method described in Calonico, Cattaneo and Titiunik (2015b).

FIGURE 8
Sharp RD Plots for College Degree Outcomes

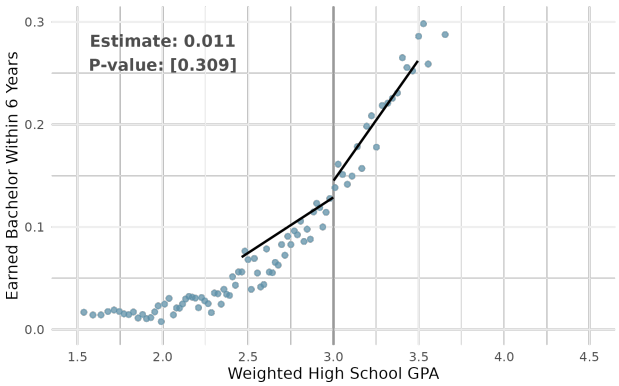
(a) Earned Certificate Within 3 Years



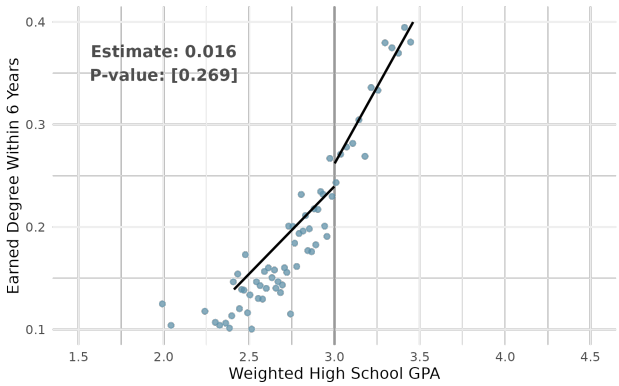
(b) Earned Associate Degree Within 3 Years



(c) Earned Bachelor's Degree Within 6 Years



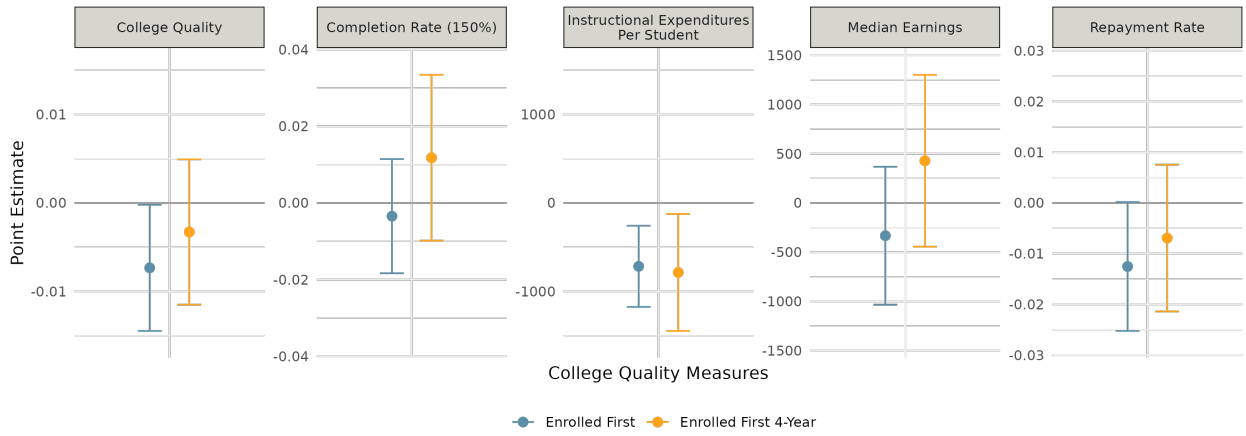
(d) Earned Any Degree Within 6 Years



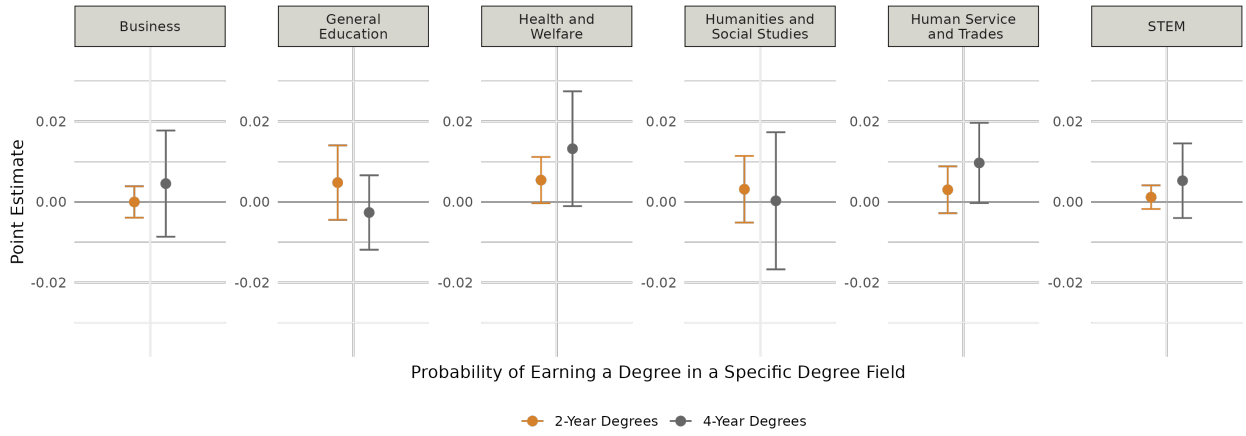
Note: This figure shows the discontinuity in college degree outcomes at the 3.0 GPA Star Scholarship eligibility cutoff. All specifications use a first-order polynomial, a triangular kernel, and include CPS graduation year and high school fixed effects. P-values are calculated from robust bias-corrected standard errors clustered at the CPS high school level (Calonico, Cattaneo and Titiunik, 2014a). Bandwidths chosen using the MSE optimal bandwidth selection procedure for robust bias-corrected RD analysis described in Calonico, Cattaneo and Farrell (2020). Bin sizes are chosen using the Integrated-MSE optimal quantile-spaced method described in Calonico, Cattaneo and Titiunik (2015b).

FIGURE 9
Difference-In-RD Estimates for the Impact of the Star Scholarship on College Quality and Degree Field

(a) College Quality



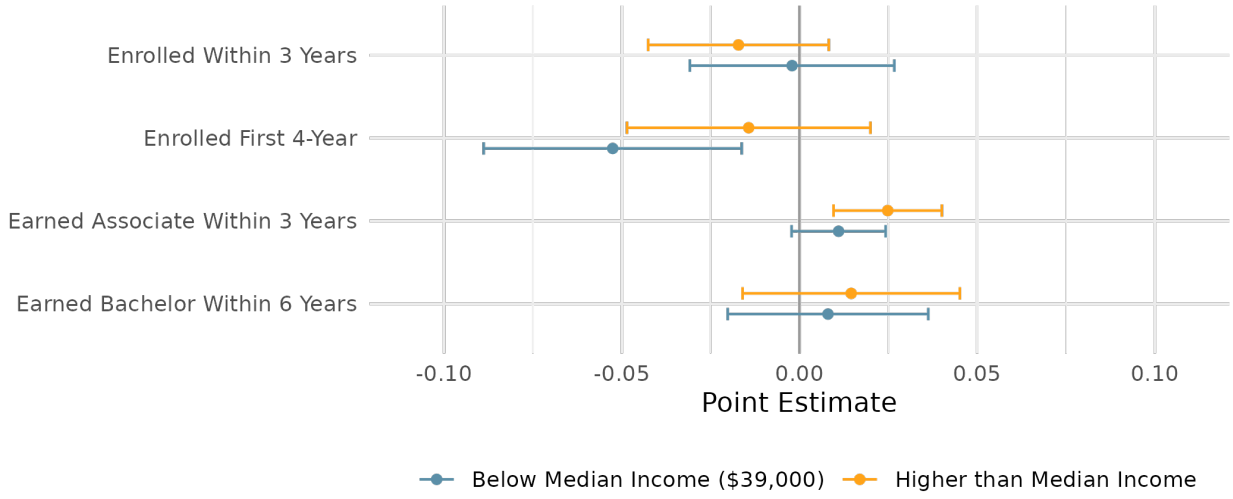
(b) Degree Field



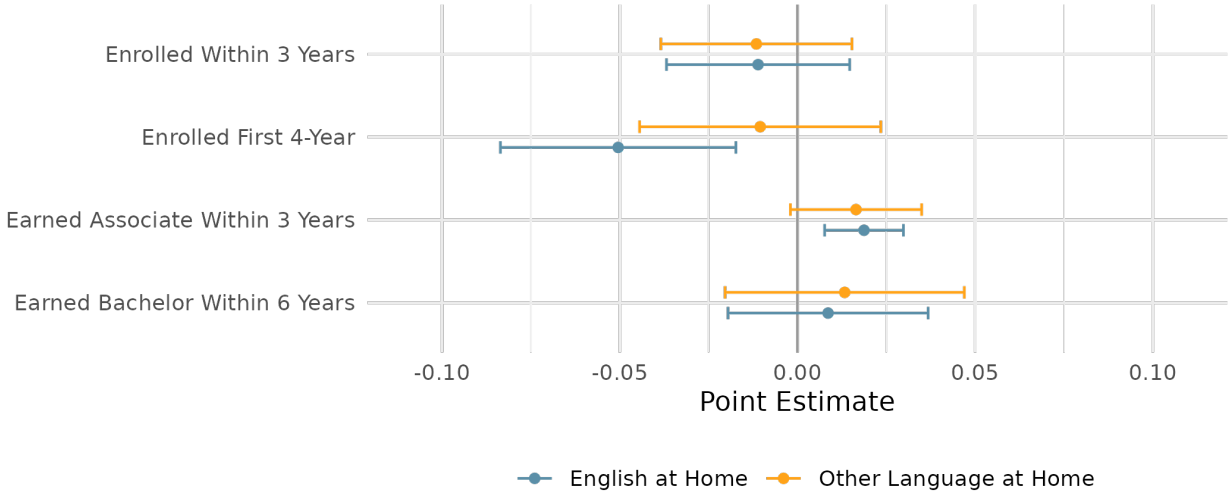
Note: This figure shows the estimated difference in discontinuity using Equation 2 for college quality and college degree field choices for students who were just above the Star Scholarship eligibility cutoff compared to students who were just below the cutoff before and after the scholarship program was implemented. Panel (a) shows the difference in college quality measures for the first college a student enrolls in as well as the first 4-year college a student enrolls in. Panel (b) shows the difference in the probability of earning a 2-year or a 4-year degree in a specific degree field. All specifications use a first-order polynomial, a triangular kernel, and include CPS graduation year and high school fixed effects. Standard errors clustered at the CPS high school level. We use the same MSE optimal bandwidths chosen for each outcome in our regression discontinuity specification estimated in the post-policy period.

FIGURE 10
RD Estimates of the Effect of Star Eligibility on College Outcomes by Student Subgroup

(a) By Estimated Household Income



(b) By Home Language



Note: This figure shows how different student subgroups were affected differently by eligibility for the Star Scholarship. Panel (a) shows the estimated discontinuity in college enrollment and college completion for students just above the 3.0 GPA Star Scholarship eligibility cutoff separately for students whose estimate household income was below the median in our sample and students whose estimated household income was below. Panel (b) shows the same thing as Panel (a) but separately for students whose home language is English and students for whom it is not. We use a 0.5 bandwidth on either side of the cutoff for all specifications.

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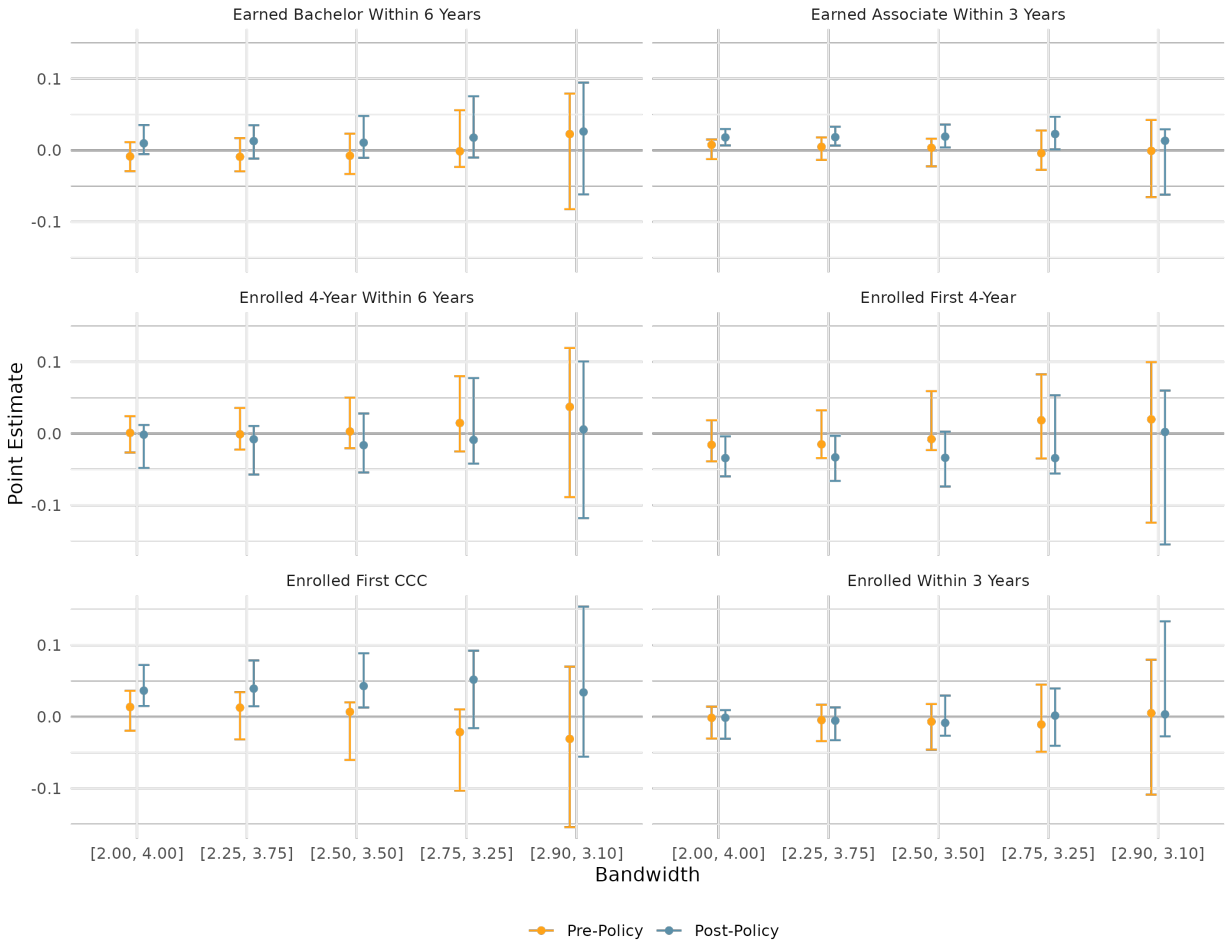
Velasco Rodriguez, Tatiana, John Fink, Mariel Bedoya-Guevara, Davis Jenkins, and Tania LaViolet. 2024. "Tracking Transfer: Community College and Four-Year Institutional Effectiveness in Broadening Bachelor's Degree Attainment."

Appendix

A Alternative RD Specifications

A.A Robustness to Different Bandwidth Specifications

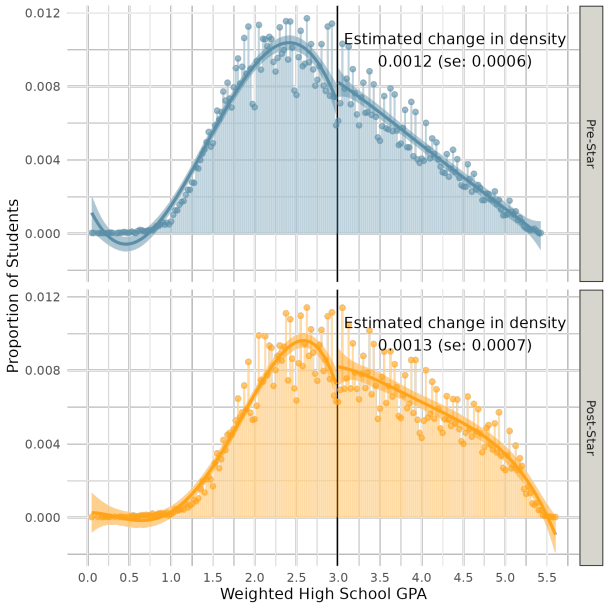
FIGURE A.1
RD Estimates by Bandwidth



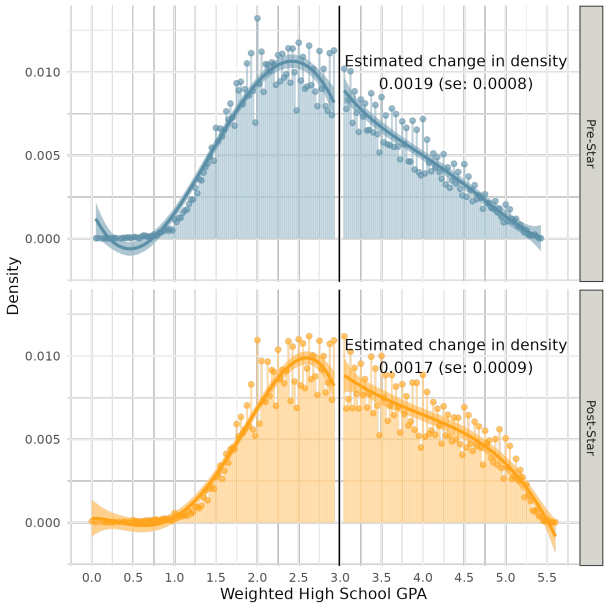
Note: This figure shows RD estimates for our main outcomes and their corresponding confidence intervals for a range of bandwidths. We show these estimates both for the pre-policy period and the post-policy period. We see from this figure that being above the eligibility cutoff increased the probability of earning a 2-year degree, and this is robust to a range of bandwidth choices. We also see that the probability of earning a 4-year degree or any degree is consistently positive but insignificant from zero for a range of bandwidth choices. We see no effect on college enrollment. We also don't see an effect on any of our main outcomes before the policy was implemented.

FIGURE A.2
Distribution of GPAs Around the Cutoff For Alternative Specifications

(a) Drop Heaps



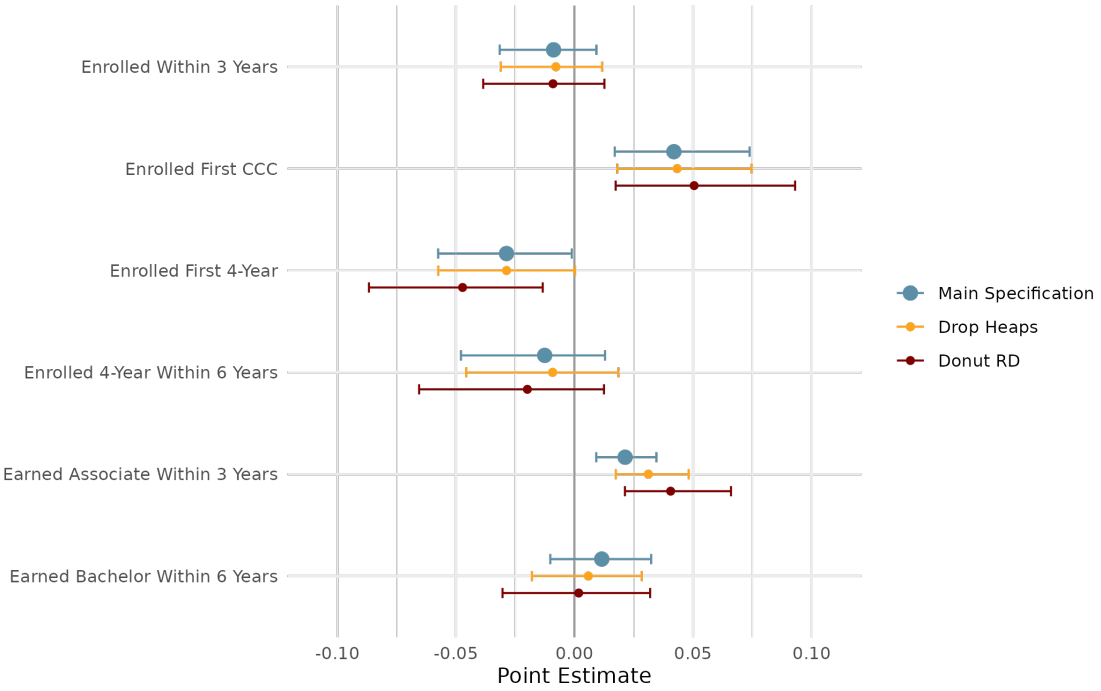
(b) Donut RD



Note: This figure shows the distribution of our running variable around the cutoff for Star Scholarship eligibility. We follow McCrary (2008) to test for discontinuities in the running variable at the cutoff. Usually, if there is a statistically significant discontinuity, this is taken as evidence that individuals are sorting into treatment by manipulating their running variable to be just above or just below the cutoff. In our setting, there is a discontinuity at the cutoff before the policy due to the nature of the ways grades are assigned at CPS. So we test to see if there is a discontinuity at the cutoff both before or after the policy. In Panel (a) we drop heaps in our running variable following Barreca, Lindo and Waddell (2016) and in Panel (b) we implement a donut RD following Barreca et al. (2011) by dropping GPAs within 0.05 points from the cutoff. We find no significant differences in the density change at the cutoff before and after the Star Scholarship was implemented.

A.B Donut RD and Drop Heaps in Running Variable

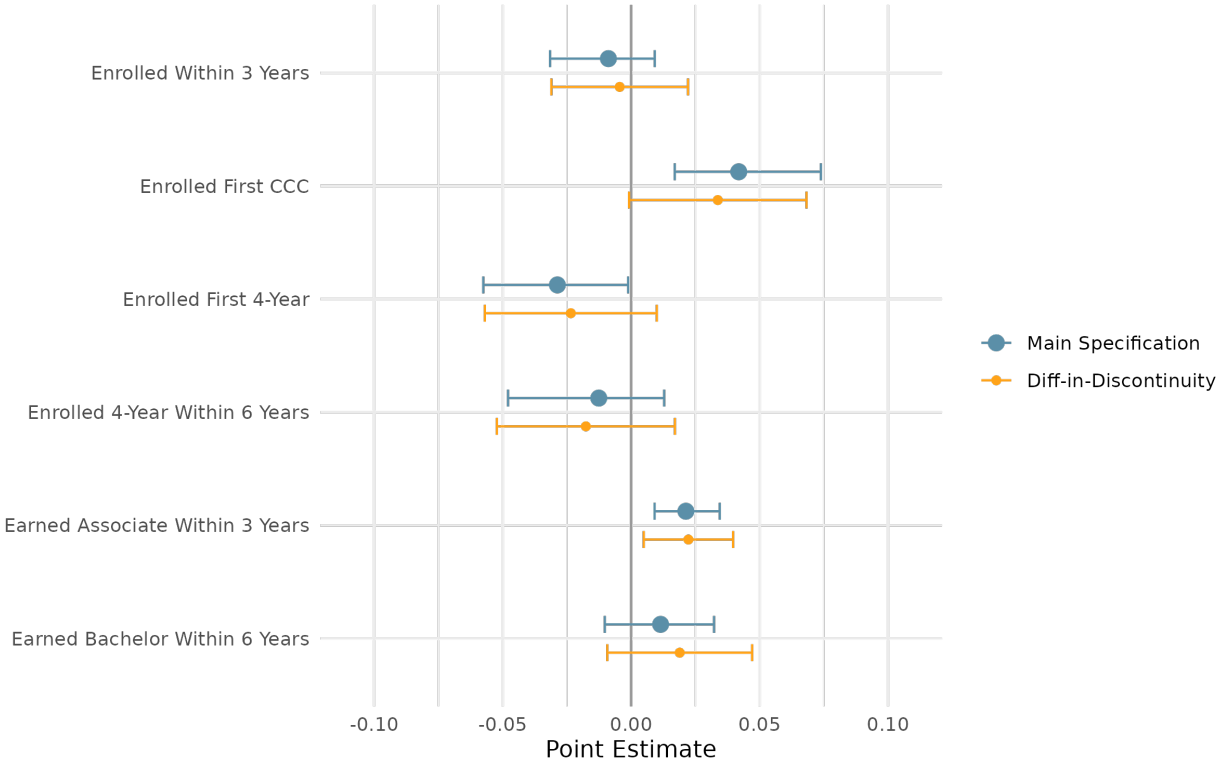
FIGURE A.3
Summary of RD Estimates using Alternative Specifications



Note: This figure shows the estimated discontinuity in college enrollment and completion outcomes at the 3.0 GPA Star Scholarship eligibility cutoff using different regression discontinuity specifications. All specifications use a first-order polynomial, a triangular kernel, and include CPS graduation year and high school fixed effects. 95% confidence intervals constructed using robust bias-corrected standard errors clustered at the CPS high school level (Calonico, Cattaneo and Titiunik, 2014a). Bandwidths chosen using the MSE optimal bandwidth selection procedure for robust bias-corrected RD analysis described in Calonico, Cattaneo and Farrell (2020). For the main specification, we estimate Equation 1 described in Section IV. For the specification where we drop heaps in the running variable, we drop all weighted cumulative high school GPA values that are multiples of 0.25. For the Donut RD, we drop observations that are near the cutoff. Specifically, we drop students whose GPA falls between 2.95 and 3.05.

A.C Difference-in-Discontinuity Estimates

FIGURE A.4
Difference-in-Discontinuity Estimates



Note: This figure compares the estimated difference in discontinuity estimates at the 3.0 GPA Star Scholarship eligibility cutoff to our main regression discontinuity estimates. All specifications use a first-order polynomial, a triangular kernel, and include CPS graduation year and high school fixed effects. 95% Confidence intervals constructed using robust bias-corrected standard errors clustered at the CPS high school level. For the difference in discontinuity specification (Diff-in-RD), we estimate Equation 2 using the same optimal bandwidths chosen for each outcome variable in our main specification for each main outcome for ease of comparison.

B Qualitative Interviews

In this section we provide relevant quotes from qualitative interviews with Star Scholars discussing why they chose to attend college at CCC. This is not a random sample of Star Scholars; the interviews were conducted as part of a different project focused on developing a best fit framework for postsecondary success (Hallberg et al., 2023) which interviewed a sample of CCC students who were considered to be academically under-matched. Nevertheless, these interviews still provide helpful context to students' decision-making processes regarding Star Scholarship take-up.

ID5 - 19; Hispanic; Female

"So, after seeing that I had no scholarships, I mean, I had good grades and everything, but seeing what was going on, and that I really couldn't afford a four-year, to pay every semester, my teacher was like, "Hey, you know, there's always city college. City college is really good. If you get the Star Scholarship, you have two free years, of books and tuition, and you know, it might help you to save up if you want to transfer to a four-year college."

"So, I started thinking, and I was like, honestly, it doesn't matter where you go. What matters is that you get your education, and that you don't have any debt for the first two years, so I was like, "Oh, yeah, sure. Like, what city colleges are there?" She explained all the city colleges to me, and she was like, "What do you want to major in?" I was indecisive, like in the beginning, so I was like, "Well, I want to do nursing, but I'm also interested in film, and photography, and..." I don't know. It was really random for me, because I love doing photography and film, but I know that nursing will get me a better job, and it's also something I want to do."

"So, she was like, "Hey, you know, we have Malcolm X. The first two years, you take your general classes, and then you start taking classes for your major. You have time to decide, but you're not paying anything," and I was like, "Okay, yeah," and, well, I did get accepted to... When I applied to colleges, I did get accepted to where I wanted to go first, which was UIC, but because of money, I was like, "No, I'm going to go to city college," you know? It's going to benefit me either way, and then I'm going to try getting a job, you know? And saving up, and then go to a four-year college, if I want to."

ID08 - 19; Hispanic (Mexican); Female

I mean, I knew scholarships were important. I didn't actually apply for any since I didn't think I would be going to a four year or just in general. And I knew what the FAFSA was and I knew how to fill it out. I filled it out with my mom and she obviously knew how to do it too, because the parts that I didn't understand she did it. But it was pretty self-explanatory. It wasn't really hard to do. Even the financial part where

it asked about your parents' income, we just linked it to the IRS and it was just there in front of you, the instructions. So I know about that. And at the time when I was attending Daley during high school, it was free because I was a CPS student and I also found out about the Star Scholarship very quickly too, from my Daley counselor because I was assigned one for that... or advisor. And she told me about that.

ID13 - 19; Hispanic; Female

"I also have a twin brother. That also kind of just makes the costs of college just a little crazy. Kind of at the last minute, like a week before the registration deadline for City Colleges of Chicago, that's when I was like well, okay, let me drop out of University of Arizona and sign into City Colleges of Chicago."

"So that's what I did. And I'm actually really glad I did that because it's just way super affordable. And I also was able to get the Star Scholarship."

ID14 - 19; African American; Female

"Sure. I was initially slated to go to a four year university in Louisiana. And financial aid covered some of it, but there was still going to be an out-of-pocket cost. So then I remember my advisor in high school telling us about the Star Scholarship and that City Colleges offers that if you graduate from a Chicago high school with a certain GPA...

...There was no out-of-pocket fee for me for attending City Colleges. And I was just like that financially sets me up better so that when I can transfer, we have more money to put into whatever school I go to."

ID16 - 18; Hispanic; Female

Interviewer: "What made you choose city college over UIC?"
ID16: "Well, I got my financial award letter from UIC and I made my calculations and it turned out to be around, I think, around $2,000, which wasn't bad for a four-year college for me. But choosing City Colleges was best for me right now because getting the Star Scholarship and paying nothing at all was a better choice for me. And then I can transfer to a four-year college."

ID17 - 20; Hispanic; Female

"Well, I kind of had trouble my senior year cause I applied to a lot of colleges and I got accepted to them.

The problem was the financial part of them, because since I am a dreamer student, so I'm not necessarily getting help from the government because I'm not a legal resident yet, I had to pay out of pocket.

So because the city colleges was offering me the Star Scholarship for my grades, I decided that that would be the best option for me until I had saved up more to transfer afterwards"

ID21 - 19; Black; Female

"At first I didn't think Harold could still be free or some reduced, even with financial aid. So I still qualify for the $12,000 for the Illinois MAP grant and stuff like that. I was still trying to compute my tuition. Because there were things like room and board on there, which makes no sense at community college. So, I'm still going through that process. And I knew that I would definitely pay less than $1,000, according to my advisor in high school. When I got an email and also spoke with my adviser about my GPA and SAT scores from high school, she said "Oh you qualify for the Star Scholarship." She said, "Just apply and enter your name and you should get it." It's a last dollar scholarship, which means whatever financial aid doesn't cover, like your own outside scholarship doesn't cover, they'll cover it. So, it's not like you get $10,000. Let's say if financial aid covered $12,000 and it was $13000, they'll cover that last $1,000, if that makes sense."

"It was really exciting to get that, because all the other schools that I applied to, all the four years, I would have had to take out student loans. Whether it ranged from $3,000 to $4,000, up to $12,000, and DePaul being the outlier at $20,000. So, it was very exciting to know that."

ID23 - 19; Samoan; Male

ID23: "I was rather undecided as to what I wanted to do with my life, so when I found out about this thing called Star Scholarship, which gave me a full ride with tuition covered and books covered at the city colleges, I just went ahead and got that just so I could get the general education out of the way, if I decide to go to a four year."

Interviewer: "Okay. If you didn't get the Star Scholarship, were you still prepared to go to Harold Washington?"

ID23: "Yeah. I feel like there was a period of time where I was stuck between community college; joining the military full-on, not National Guard, like active duty out in the field; and then, tradesman. Then, I just sort of realized. You know what? I don't want to

be a tradesman, I don't want to be in the field killing people, and this is the only finger left so I think I'll go with community college. That's what I did."

ID26 - 20; Latino; Male

Interviewer: "I mean the Star Scholarship is great because it does cover all of the costs. I'm glad that that was something that was an option for you. Could you imagine what you would have done if that wasn't available?"

ID26: "Yeah, so what I would have done, if that wasn't available, I would have probably either one, enlisted in the military right away, or if not enlist in the military, I was going to go straight to a trade school. Because my dad is a mechanical engineer, my brother's an operational engineer, and that math backing in my family should be good enough for me to pass all the exams I need to when it comes to engineering tests. So I was definitely going to try something in the trades, but I was just at that point in time, I didn't want to really ask for too much of people. I wanted to do something that had interest, you know?"

ID33 - 20; Ugandan; Male

"So in my senior year when I was in Northside, I didn't really know what I wanted to do. Universities were looking really expensive and my friend, his brother went to UIC, but his brother's friend went to CCC and he was telling him about how amazing it was. So my friend knew from the beginning of senior year that he was going to go into CCC with the Star Scholarship. And then he told me about the Star Scholarship and I was like, "Wow, this sounds amazing. It sounds like exactly what I need." So I applied and then I got in and, yeah."

ID38 - 19; Polish; Female

"So I got into my college university, I'm going to Seattle University, that's the school I accepted. And I was on track to go there May, June, July, August. And in August, beginning of August, the pandemic was where it was at in August and I didn't feel... I was looking at the scene. I was looking at all my friends who were staying back, who were going to school but they were saying they'd be in dorms the whole time. And I was thinking, "This would be my first year all the way across the United States in Washington, and was I really prepared to just sit in a dorm room day after day and take my classes online?" And so I started exploring my options, seeing if a gap year could maybe work out. And eventually I actually got an email from Community Colleges of Chicago saying I qualified to be a Star Scholar."

ID41 - 19; Black; Male

"Pretty much in the start of junior year, because there's a program here called CPFTA, Chicago Police and Firefighter Training Academy. And I knew that they were affiliated with the Star Scholarship as well, going into that. And through that experience, that's when I decided that it would be good for me."

ID43 - 19; Latino; Non-Binary

"Initially I didn't go right away. I had gone for a semester to UIC because I wanted the college experience, but after the first semester that I went I changed my mind because it was too expensive and I knew I was going to get the same education for less because they have the Star Scholarship. So I changed the second semester."

ID48 - 20; White; Male

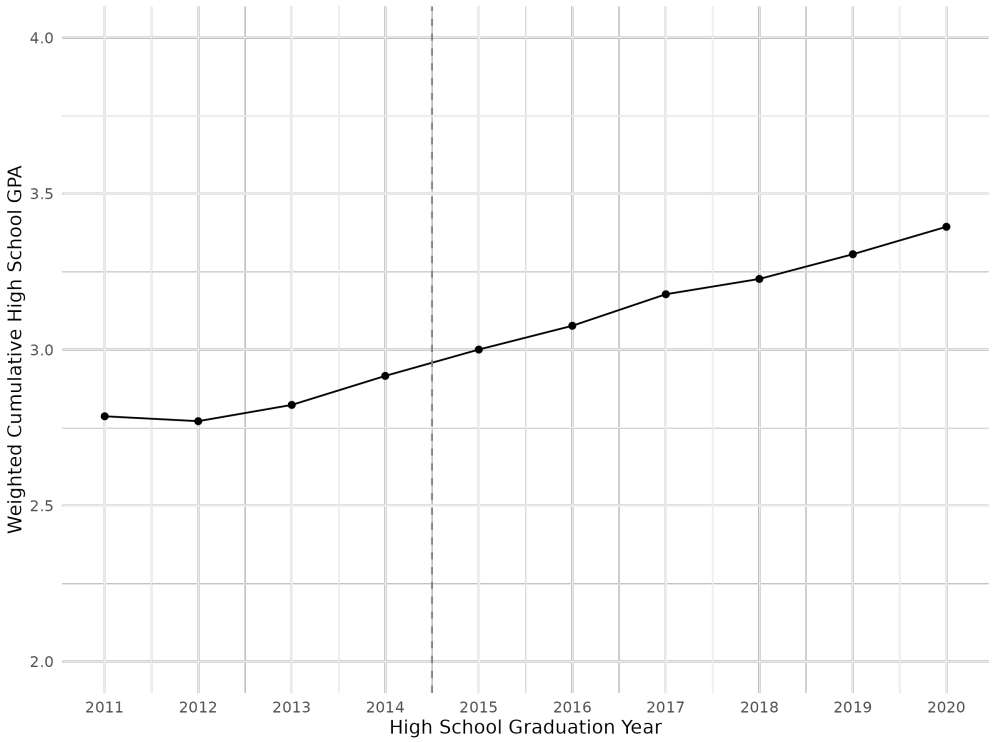
"So when I graduated high school, my plan was to go actually North Central College in Naperville and I went there for the small semester of 2019. While I was there I was really unhappy with just how the campus was. It was just not a good fit for me and so I started looking at other options and places to go. And so one of the options was City Colleges, because I know that they have something called the Star Scholarship Program and if you had a certain GPA in high school and a certain SAT score, you could go to City Colleges for free. And so that seemed like a natural next choice for me. So yeah, during that fall semester I had done all the paperwork and I had applied and gotten the scholarship. And so in spring of 2020 I transferred to City Colleges and I decided I would stay there until I graduated with an associates just in the interest of saving money, especially after we all went online. It was like, "Well, I'm not going to go pay tuition at a larger institution if I'm going to be sitting in my room either way." So it was just good timing, that's what it was."

ID49 - 20; White; Non-binary

"I still applied to other schools. I applied to nine. I applied to eight other universities including CCC, and I got into all of them, which was really good for my self- esteem. Of course, the two that I loved the most was DePaul and Harold Washington. And then it's not until after winter break of your senior year where they send out that lovely bill of like, hey, this is what you're going to have to owe for us. That kind of took the wind out of my sails, because I was so ready to go to DePaul, and then that's when my mom reminded me. She was like, "Well, you still have the CCC and the Star Scholarship."

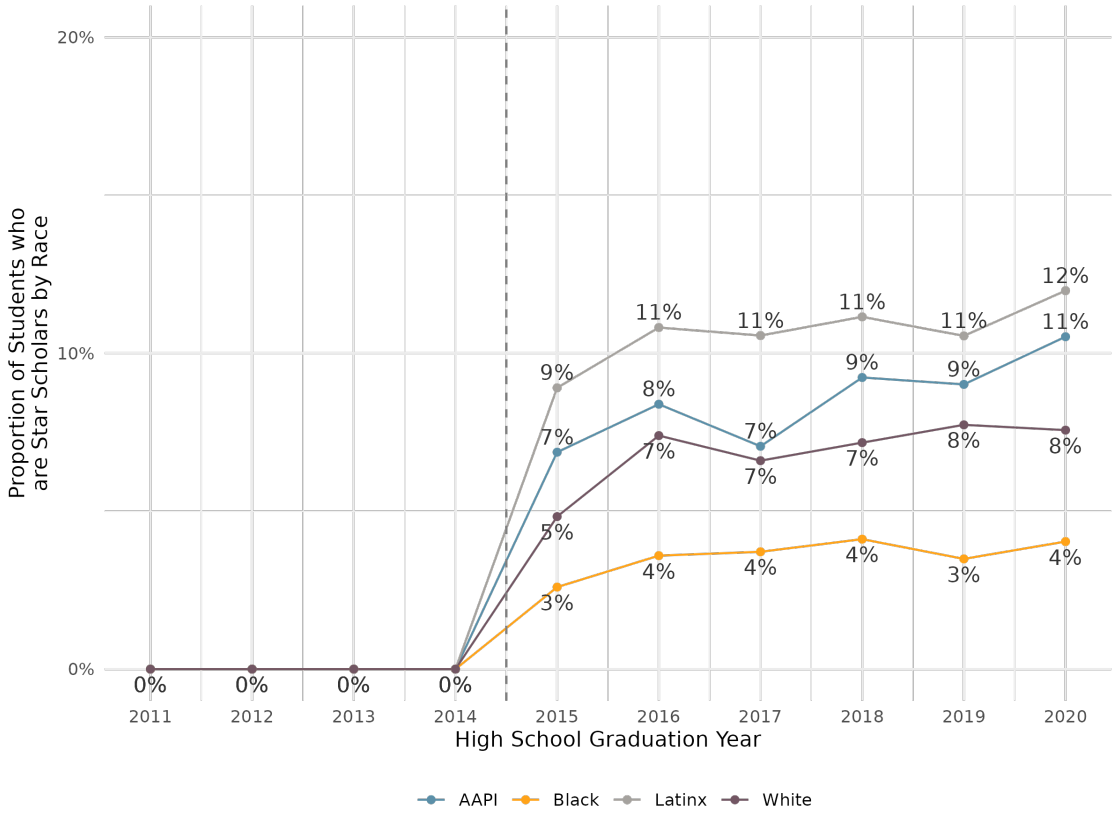
C Appendix Figures

FIGURE C.1
Average Weighted Cumulative High School GPA Over Time



Note: This figure shows the average weighted cumulative GPA over time for CPS high school graduates by high school graduation year. We see an upward trends in grades during the years in our sample.

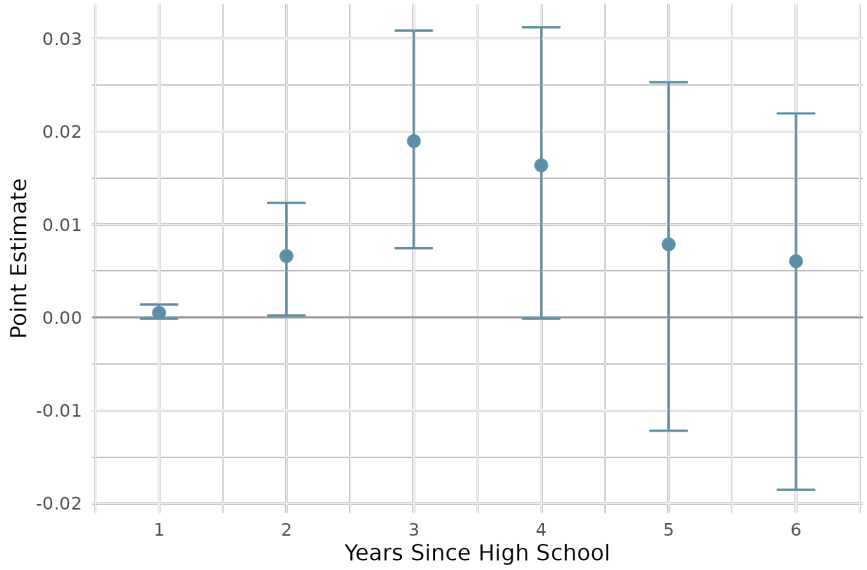
FIGURE C.2
Proportion of Students Who Become Star Scholars by Race Over Time



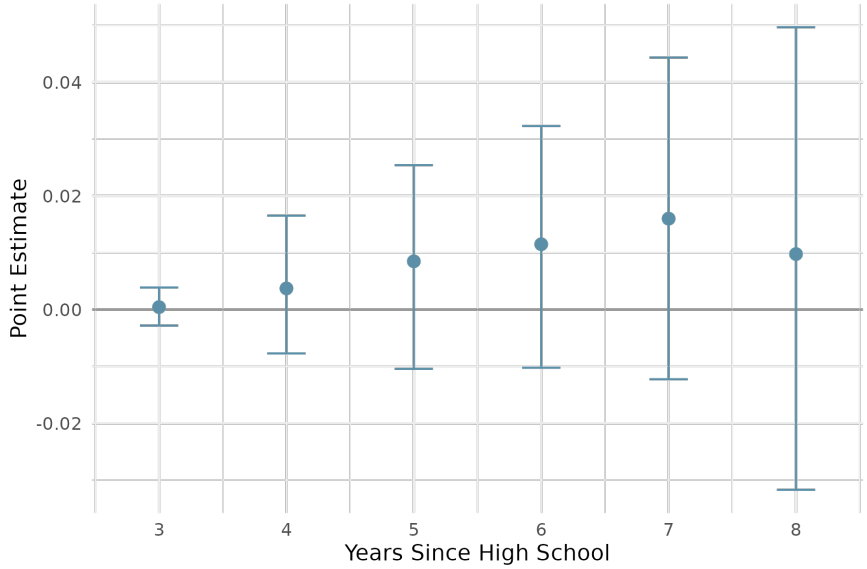
Note: This figure shows the proportion of students in CPS within a given racial category who become Star Scholars over time. Note that no students were retroactively eligible before the policy was implemented.

FIGURE C.3
Effect on Degree Attainment Over Time

(a) Associate Degree Completion



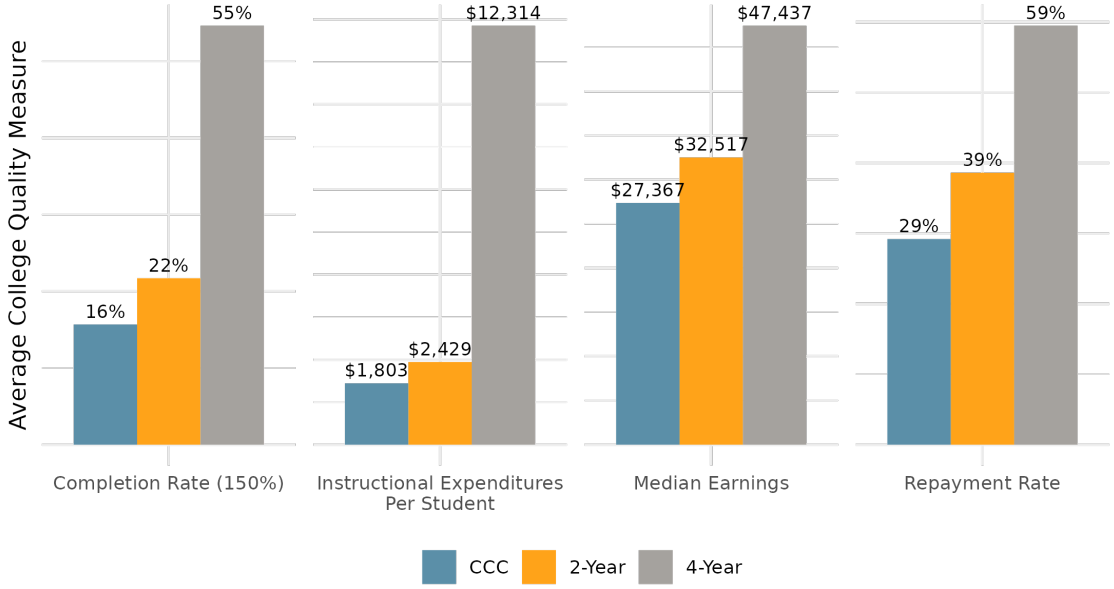
(b) Bachelor's Degree Completion



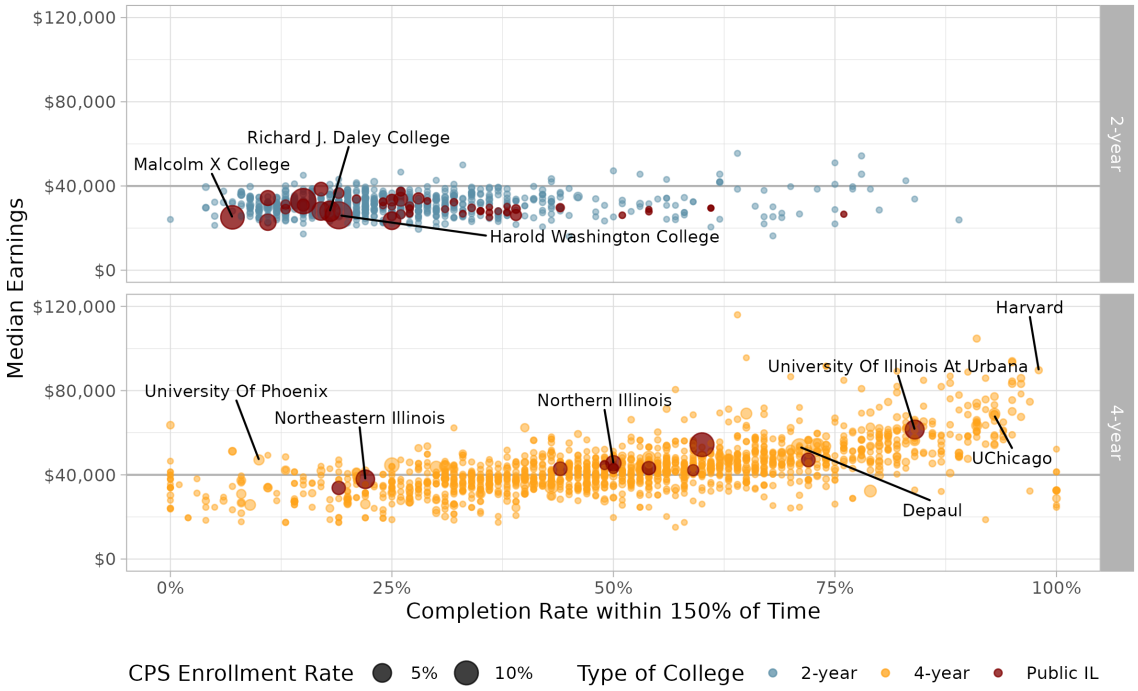
Note: This figure shows the estimated discontinuity in associate and bachelor's degree attainment at the 3.0 GPA Star Scholarship eligibility cutoff at different years post graduation. All specifications use a first-order polynomial, a triangular kernel, and include CPS graduation year and high school fixed effects. 95% confidence intervals were constructed using robust bias-corrected standard errors clustered at the CPS high school level (Calonico, Cattaneo and Titiunik, 2014a). Bandwidths chosen using the MSE optimal bandwidth selection procedure for robust bias- corrected RD analysis described in Calonico, Cattaneo and Farrell (2020). Note that our sample is not balanced across years since high school. As shown in Appendix Table D.2, we can observe college outcomes for up to three years after high school graduation for all cohorts in our sample. However, for each additional year after graduation, we can observe one fewer cohort of students. Consequently, we can only observe college outcomes eight years after high school graduation for one cohort of students who graduated in 2015 (the first year the Star Scholarship was available).

FIGURE C.4
College Quality by College Type

(a) Average College Quality by College Type

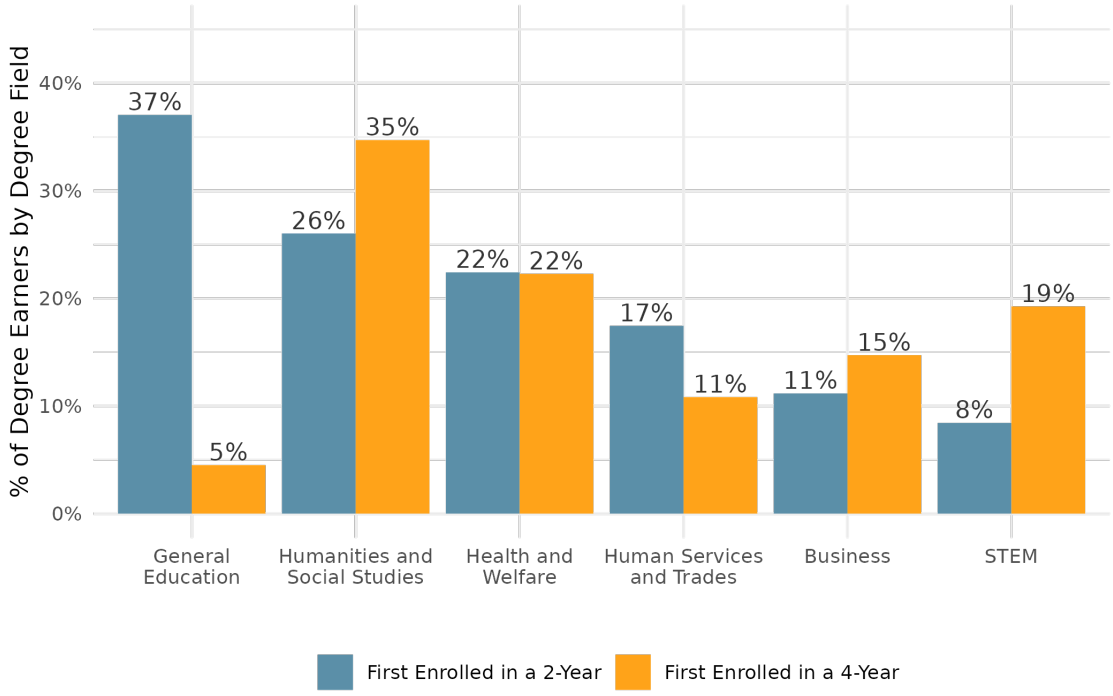


(b) College Completion Rates and Median Earnings by College Type



Note: This figure shows measures of college quality by the type of college (2-year or 4-year) that CPS students enroll in. Panel (a) shows average quality measures by college type weighted by the number of students who apply to a given college of a given type. Panel (b) shows a scatterplot of median earnings and completions rates for colleges that CPS students enroll in. The size of the points represents the number of students that enroll in a given college.

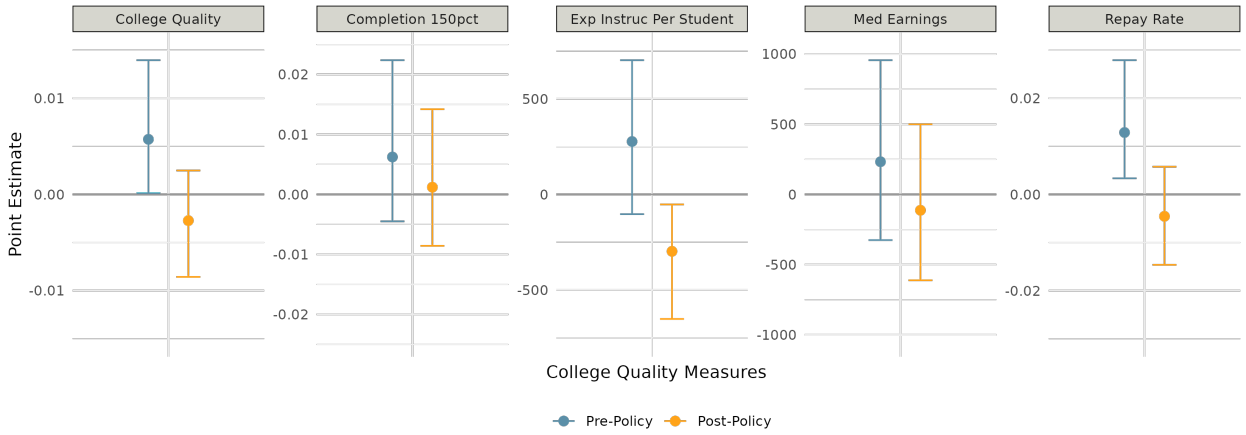
FIGURE C.6
Degree Field by First College Type



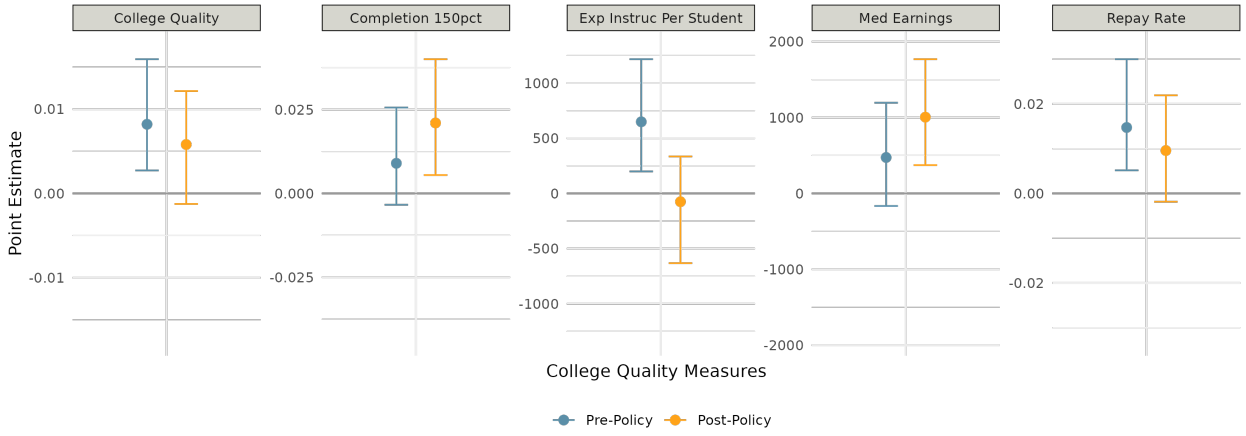
Note: This figure shows the proportion of college degree earners in our sample of CPS graduates who earned a college degree in a specific degree field separately for degree earners who first enrolled in a 2-year and degree earners who first enrolled in a 4-year. Note that some individuals earned multiple degrees, so the percentages across fields do not sum to 100%.

FIGURE C.5
Impact of Star Eligibility on College Quality by College Type, Pre- and Post-Policy

(a) Quality of First College



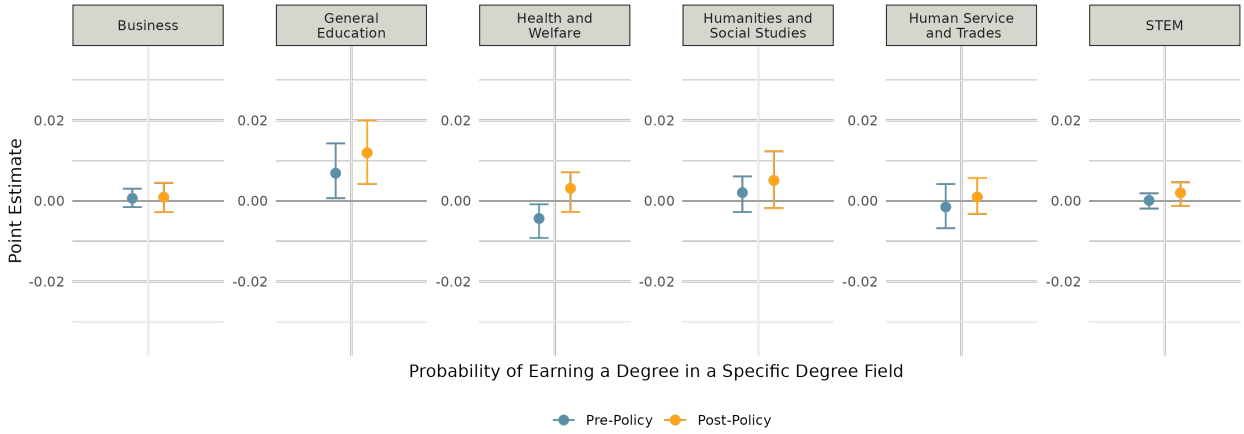
(b) Quality of First 4-Year College



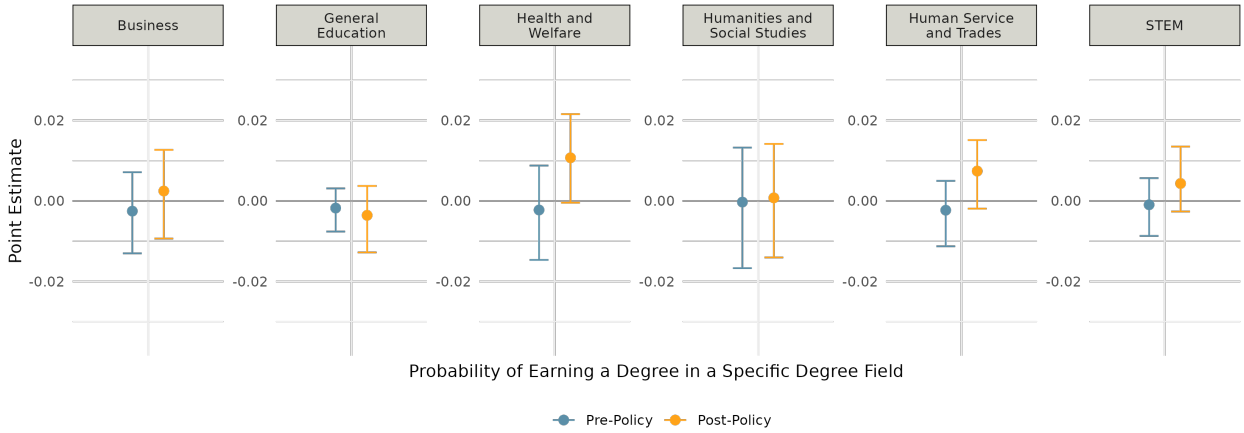
Note: This figure shows the estimated discontinuity in measures of college quality for students just above the 3.0 GPA Star Scholarship eligibility cutoff as compared to students just below. Data on college quality from the U.S. Department of Education's College Scorecard, accessed using the Urban Institute's educationdata R package (https://github.com/UrbanInstitute/education-data-package-r) accessed on June 1st, 2025. In Panel (a) we show the quality of the first college a student enrolls in and in Panel (b) we show the quality of the first 4-year college a student enrolls in. We show the estimated discontinuity in college quality at the cutoff before the policy and the same estimate after the policy was implemented. This discontinuity is estimated using Equation 1. We use a first order polynomial with a triangular kernel. Bandwidths chosen using the MSE optimal bandwidth selection procedure for robust bias-corrected RD analysis described in Calonico, Cattaneo and Farrell (2020). Controls include CPS graduation year and high school fixed effects. Following Calonico, Cattaneo and Titiunik (2014a), we use robust bias-corrected standard errors clustered at the CPS high school level. Following Cohodes and Goodman (2014), we construct a single measure of college quality using the first principal component of all the other college quality variables in columns (2)-(5). 58% of the variance is explained by this first principal component.

FIGURE C.7
Impact of Star Eligibility on Degree Fields by Degree Type and College Type, Pre- and Post-Policy

(a) Proportion of Students in Each Degree Field by First College Enrolled



(b) Proportion of Students in Each 4-Year Degree Field by First College Enrolled



Note: This figure shows the estimated discontinuity in the probability of earning a degree in a specific degree field for students just above the 3.0 GPA Star Scholarship eligibility cutoff as compared to students just below. In Panel (a) we show degree fields for 2-year degrees earned and in Panel (b) we show degree fields for 4-year degrees earned. We show the estimated discontinuity in the probability of earning a degree in a specific degree field at the cutoff before the policy and the same estimate after the policy was implemented. This discontinuity is estimated using Equation 1. We use a first order polynomial with a triangular kernel. Bandwidths chosen using the MSE optimal bandwidth selection procedure for robust bias-corrected RD analysis described in Calonico, Cattaneo and Farrell (2020). Controls include CPS graduation year and high school fixed effects. Following Calonico, Cattaneo and Titiunik (2014a), we use robust bias-corrected standard errors clustered at the CPS high school level.

D Appendix Tables

TABLE D.1
Student Demographics by Race

Race	Home Language is not English	Free/Reduced Price Lunch Every Year	SAT Score	Weighted High School GPA
AAPI	84%	55%	1116	4.00
Black	3%	68%	907	2.89
Latinx	81%	75%	967	3.16
Other	27%	41%	1092	3.63
White	33%	24%	1147	3.87

Note: This table shows average demographics by race/ethnicity for students who graduated from CPS between 2015-2020.

TABLE D.2
Data Availability by Cohort

	Number of Years							
High School Graduation Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
2015	X	X	X	X	X	X	X	X
2016	X	X	X	X	X	X	X	
2017	X	X	X	X	X	X		
2018	X	X	X	X	X			
2019	X	X	X	X				
2020	X	X	X					

Note: This table shows the number of years since high school graduation that we can observe college outcomes for students (e.g. enrollment, degree attainment, etc). Note that we can observe college outcomes for up to three years after graduation for all cohorts and there is only one cohort of students after the Star Scholarship was implemented for whom we can observe their college outcomes within 8 years of graduation.

TABLE D.3
Sharp RD Estimates of Star Eligibility on Other College Enrollment Degree Outcomes

(a) College Enrollment

	Enrolled First Chicago (1)	Enrolled First 4-Year Chicago (2)	Enrolled First Illinois (3)	Enrolled First 4-Year Illinois (4)	Enrolled Star Transfer Partner Within 4 Years (5)
RD Estimate	0.033**	0.007	0.012	0.002	-0.009
P-value	0.020	0.980	0.236	0.814	0.303
Control Mean	0.616	0.441	0.840	0.737	0.261
MSE-Optimal Bandwidth	[2.47, 3.52]	[2.67, 3.56]	[2.46, 3.57]	[2.63, 3.64]	[2.47, 3.44]
Effective Sample Size	27,386	14,357	28,743	16,377	28,756
Sample Size	76,755	51,187	76,755	51,187	87,373
Controls					
CPS Grad Year	X	X	X	X	X
CPS High School	X	X	X	X	X

(b) College Degree Completion

	Earned 2-Year Degree Within 3 Years (1)	Earned 4-Year Degree Within 6 Years (2)	Enrolled But Earned No Degree Within 6 Years (3)
RD Estimate	0.017**	0.015	-0.017
P-value	0.017	0.201	0.440
Control Mean	0.059	0.124	0.538
MSE-Optimal Bandwidth	[2.33, 3.43]	[2.46, 3.5]	[2.58, 3.48]
Effective Sample Size	38,919	18,645	16,019
Sample Size	103,961	52,486	52,486
Controls			
CPS Grad Year	X	X	X
CPS High School	X	X	X

Note: This figure shows the estimated discontinuity in college enrollment and degree completion outcomes for students just above the 3.0 GPA Star Scholarship eligibility cutoff. This discontinuity is estimated using Equation 1. We use a first order polynomial with a triangular kernel. Bandwidths chosen using the MSE optimal bandwidth selection procedure for robust bias-corrected RD analysis described in Calonico, Cattaneo and Farrell (2020). Controls include CPS graduation year and high school fixed effects. Following Calonico, Cattaneo and Titiunik (2014a), we use robust bias-corrected standard errors clustered at the CPS high school level. *p<0.1; **p<0.05; ***p<0.01