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Assessing Atlanta's Place-Based College Scholarship

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Academic Paper

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Abstract

We investigate whether and how Achieve Atlanta's college scholarship and associated services impact college enrollment, persistence, and graduation among Atlanta Public School graduates experiencing low household income. Qualifying for the scholarship of up to $5,000/year does not meaningfully change college enrollment among those near the high school GPA eligibility thresholds. However, scholarship receipt does have large and statistically significant effects on early college persistence (i.e., 14%) that continue through BA degree completion within four years (22%). We discuss how the criteria of place-based programs that support economically disadvantaged students may influence results for different types of students.

The views in this paper are those of the authors and not those of any organization. This research is based on evaluative work that was partially funded by Achieve Atlanta.

1. Introduction

Place-based college financial aid programs have emerged throughout the U.S. over the last two decades. One of the first was the Kalamazoo Promise in 2005, and since that time, over 100 communities have followed suit, typically with investments from local philanthropies, businesses, and individual donors.[1] Although the programs vary on several dimensions, including qualification criteria, financial generosity, and flexibility, they generally seek to support college enrollment, affordability, and success among students who attend and graduate from secondary school in a designated district. Outcomes related to college enrollment and persistence are targeted as strategic pathways to longer run goals, including regional economic vitality, population stabilization, and/or workforce development. Place-based scholarships also tend to explicitly or implicitly target students and communities experiencing low-income – the very students who are less likely to enroll and complete college compared to their better resourced peers.[2]

There are at least two related reasons placed-based financial aid programs have the potential to impact students as they move into and through college. First, over the past three decades, published "list" or "sticker" prices of college have increased faster than inflation in all sectors of higher education. For example, from 1991 to 2021, average list tuition and fees increased 158% (from $4,160 to $10,740 annually) to attend a public, four-year institution and increased 97% (from $19,360 to $38,070 annually) to attend a private, four-year institution. Such trends have fueled the perception that the U.S. is facing a crisis of college affordability (Heinrich, 2017), especially for students who are not from high-income backgrounds.

Second, financial aid, which increased at a rate slower than list prices (Ma & Pender, 2021), is a complex and uncertain process (Turner, 2018) that can hinder students' ability to access the

[1] See W.E. Upjohn Institute for Employment Research, "The Kalamazoo Promise and Place-Based Scholarships," https://www.upjohn.org/about/research-initiatives/promise-investing-community/kalamazoo-promise-and-place-based-scholarships

[2] See the NCES' *Digest of Education Statistics*, 2017, Table 302.30.

aid that is available to them (Dynarski & Scott-Clayton, 2006). For example, under the current system, students do not know how much they will have to pay to attend a given college until they have applied for admission and financial aid and received a financial aid package from that school.

Place-based financial aid programs offer a clearly defined group of students, at least on the dimension of location, an assurance that financial aid exists for them. The programs do not require a nationwide search of potential financial aid and many programs explicitly include supports to inform and encourage students about the application and eligibility process. Additionally, the group eligibility may encourage students to apply for aid because of the school culture or even interactions with peers in similar circumstances.

In sum, not only do such programs provide distinct financial support to students and families, but they also provide coaching and support services (e.g., help completing the FAFSA) to guide students through the complex process of making college affordable. In this way, such college scholarships have the potential to affect students' journeys into and through college in numerous ways: encouraging application for college and applying for sources of financial aid; facilitating enrollment, persistence, and success through support services; and increasing college affordability and reducing student debt through direct financial support.

In this paper, we report on the implementation and impact of a place-based college scholarship program and associated student supports administered by Achieve Atlanta (AATL), a non-profit organization founded in 2015 with the goal of improving college access, persistence and completion for students graduating from the Atlanta Public Schools (APS). Half of the district's students are classified as "economically disadvantaged,"[3] and three-quarters of students qualify for free or reduced-price meals.

[3] Economically disadvantaged is defined as a student living in a household that receives SNAP or TANF or identifying as a homeless, foster, or migrant youth (i.e., "directly certified").

A signature programmatic effort of AATL is the Achieve Atlanta Scholarship, available to students experiencing low-income to help cover the costs of postsecondary education (inclusive of tuition, room, board, and student fees).[4] The scholarship is generous, with a maximum value of $5,000 per year for up to four years to attend a four-year institution or $1,500 per year for up to two years to attend a two-year college or postsecondary technical program. AATL scholarship funds may be used at any accredited, non-profit school within the state of Georgia or a school outside of Georgia, so long as the school has a graduation rate of at least the national median.[5] This flexibility to take funds outside of the state is different from many other existing place-based scholarship programs that provide funding for students to attend specific institutions or institutions within a specific geographic region (e.g., a particular state). To date, over 4,400 scholarships have been awarded.

For several reasons, evaluating the Achieve Atlanta Scholarship and associated support services provided to scholarship recipients is important both for the program itself as well as for the broader policy and research community focused on college financing. First, AATL provides college-going support to students who graduate from APS, which serves predominantly Black students, many of whom come from families without postsecondary degrees and experiencing economic hardship. Students with these characteristics also have low rates of college attendance and college completion (Kena et al., 2015). Second and related to the first point, college scholarships have the potential to influence college enrollment, success, and completion, especially among groups with limited financial resources (Dynarski et al., 2022). This makes AATL (and other college scholarships) a potent tool to facilitate more equitable outcomes in postsecondary education.

[4] Achieve Atlanta Scholarship Fact Sheet.

[5] In 2016, the graduation rate threshold was set at 50%. For 2017, it was set at 44%, the national median based upon the U.S. Department of Education's College Scorecard. The 44% remains the threshold for 2018-2020 cohorts.

Third, scholarship granting entities make decisions regarding who receives scholarship funds, and there is substantial variation in selection criteria used. For example, some scholarships, such as the HOPE and Zell Miller Scholarships in Georgia, are awarded based on academic merit, whereas others, such as the federal Pell Grant, are awarded based on need. Still others are place-based and may have additional criteria, such as the Kalamazoo and Pittsburgh Promise Scholarships. Such sources of financial aid also differ along other dimensions, including generosity, qualifying colleges, and uses (e.g., tuition only versus full cost of attendance). These differences make each program and associated evidence unique and provide new insight into how the design of scholarships can influence student outcomes.

Qualifying for AATL's scholarship relies on a combination of place-, merit-, and need-based criteria. To be eligible, students must graduate from an APS high school, having attended for at least two years. In addition, students must have achieved a final cumulative GPA of at least 75 (out of 100) to qualify for the $1,500 / year scholarship and a GPA of at least 80 to qualify for the $5,000 / year scholarship. Finally, students must experience low income as indicated by an Expected Family Contribution (EFC) to the cost of college of below $8,000.

Fourth, unlike most postsecondary scholarships that have been evaluated, the AATL Scholarship can include additional support services. Specifically, several partnering colleges that enroll AATL scholars have a dedicated AATL counselor on campus. This counselor supports AATL scholars to navigate college-specific issues and processes, such as course registration. In addition, recent cohorts of AATL scholars have had access to one-time "emergency grants" of up to $500 to help pay for living costs, books, transportation, and other expenses as well as "completion grants" for those who need additional financial support in their final year of college. Beyond these partnering colleges, AATL additionally partners with two external coaching organizations – Beyond12 and Edu-Tech Enterprises – to provide support to students attending in-state, non-partner institutions.

Our evaluation of AATL's scholarship and associated services includes two primary components. First, we use a regression discontinuity design (RDD) to assess the impact of scholarship eligibility on college enrollment outcomes. At the 75 GPA threshold, the comparison is between eligibility for the $1,500 scholarship to support enrollment in a two-year institution (above) versus no scholarship (below). At the 80 GPA threshold, the comparison is between eligibility for the $5,000 scholarship to support enrollment in a four-year institution (above) versus the $1,500 scholarship (below).[6] Second, we use regression analyses to assess the impact of scholarship receipt on college persistence and completion. Because our examination of persistence and completion outcomes make use of fewer cohorts than the analyses on college enrollment, we do not have the statistical power to estimate treatment effects with sufficient precision using an RDD. However, we exploit several steps in the application, eligibility, and enrollment process to rule out most sources of bias that might threaten the internal validity of causal conclusions derived from a comparison of scholarship recipients to non-recipients with a common set of controls.

Based on our regression discontinuity analyses, we find no impacts of scholarship eligibility on overall college enrollment at either GPA threshold for those students around the threshold. We also find no evidence that the quality of college in which a student enrolls, as measured by the average SAT of students in attendance, is impacted by scholarship eligibility. These results cannot rule out small effects on scholarship eligibility, but our standard errors allow us to rule out large effects.

In regression analyses, we look beyond the specific eligibility thresholds and find large and statistically significant effects of scholarship receipt at all stages of college persistence through to college completion, conditional on initial college enrollment. For example, college enrollees receiving the AATL scholarship (and having access to the other support services) are 11.1

[6] GPAs of 75 and 80 on the 100-point scale correspond approximately to GPAs of 2.0 and 2.7 on the 4-point scale.

percentage points (13.6%) more likely to persist to the second semester, 8.9 percentage points (21.3%) more likely to persist to the fourth year of college, and 4.6 percentage points (22.4%) more likely to complete a four-year college degree compared to non-scholars, controlling for GPA, demographics, high school attended, and cohort. These results suggest an immediate improvement in college success that persists through to college completion. Through a set of sensitivity analyses, we show that these results are not driven by differences in applications to AATL, eligibility criteria (income or GPA), or even by college enrollment choice, the last of which is not impacted by the scholarship.[7] Rather, the evidence is consistent with scholarship receipt impacting students' persistence and completion.

These persistence and completion results we find are similar in magnitude to other scholarship studies, although they are not directly comparable.[8] For example, Page et al. (2019) estimate that receipt of the Pittsburgh Promise scholarship increased enrollment and persistence into the second year of college (a joint outcome) by approximately 7 percentage points. Bartik et al. (2021) estimate that for students from low-income backgrounds, the Kalamazoo Promise scholarship increased enrollment and early college persistence by about 10 percentage points and attainment of a bachelor's degree within six years of approximately 6 percentage points (but not statistically significant). The programs also serve students with different backgrounds and experiences, which make direct comparisons challenging.

Lastly, we find that the persistence effects vary by students' high school GPA. There are no positive effects for scholars who have a GPA between 75 and 80. Whether the lack of impact for students in this category is driven by the relatively small award ($1,500 per year) or the high likelihood of attending a two-year college is impossible to disentangle. The scholarship's effect is

[7] Results are not changed when using matching methods.

[8] The studies are not directly comparable because we estimate persistence effects, conditional on enrollment, noting that enrollment is not significantly impacted by scholarship eligibility. In other studies, enrollment is impacted and therefore the set of students who could plausibly persist is different than the AATL setting.

the largest for students with GPAs between 80 and 90. Many of these students, particularly those with GPAs below 85, are ineligible for Georgia's generous HOPE scholarship, which provides financial support to attend an in-state institution, and none of the students within this GPA range are eligible for the state's very generous Zell Miller scholarship.[9] The HOPE scholarship and to a greater extent, Zell Miller scholarship, cover a large fraction of the tuition for in-state students. We see almost no effect for scholars with GPAs above 90. These academically advanced scholars have access to other grants but also have higher rates of persistence than peers with lower GPAs.

Overall, this work contributes to our understanding of college scholarships and more specifically, place-based scholarship programs for students experiencing low income. This is particularly important in the Atlanta context, where the majority of students face financial hardship, and the other place-based scholarships available to them, HOPE and Zell Miller, are merit-based. At the end of this paper, we discuss in greater detail the potential factors that contribute to the set of results that we observe and the broad and practical lessons to learn. Next, we introduce the context of our study, the Atlanta Public Schools.

2. Background

2.1. Achieve Atlanta and Local Context

2.1.1. Atlanta Public Schools, Public Colleges, and State Scholarships

[9] HOPE and Zell Miller Scholarships use a different weighted GPA than AATL, based only on "core" courses and on a 4.0 scale. Although the two measures are highly correlated, there are a substantial number of AATL scholars who are ineligible for HOPE scholarship.

The Atlanta Public Schools (APS) serves approximately 52,000 students in Atlanta, Georgia.[10] It has 87 schools, 17 of which are high schools. Approximately 73% of students are Black, 16% White, and 8% Hispanic. Half of the district's students are classified as "economically disadvantaged,"[11] and three-quarters of students qualify for free or reduced-price meals. Almost 2,500 students earned a high school diploma in 2019, which represents an 80% graduation rate among freshmen. Approximately 60% of APS graduates continue to college and about half of these college-goers are AATL scholars.

Most APS students who enroll in college do so in a public college or university. Georgia has two public systems: the Technical College System of Georgia (TCSG) and the University System of Georgia (USG). TCSG has 22 colleges and primarily offers associates degrees and certificates. The USG includes 26 institutions of higher education including four research universities, four comprehensive universities, nine state universities, and nine state colleges. Although the USG system offers a range of programs and degrees, most students enroll to earn a bachelor's degree.

The context of college-going in Georgia includes two prominent, state-funded college scholarships for students. The HOPE Scholarship is a merit-based award available to Georgians.[12] Students must graduate from high school with a minimum 3.0 GPA[13] and can use HOPE funds to attend college in Georgia. The 3.0 corresponds very roughly to an 84 out of 100, which is above

[10] Statistics from this paragraph retrieved online from APS and the Governor's Office of Student Achievement. Access on 6/9/22.

[11] Economics disadvantaged is defined as being "directly certified" as being in a household that receives SNAP or TANF or identifying as a homeless, foster, or migrant youth.

[12] State-level merit aid programs like HOPE and those that followed suit fostered a number of positive educational outcomes, including improved college readiness (Pallais, 2009) and increased college enrollment, performance, and completion (Bruce & Carruthers, 2014; Carruthers & Ozek, 2016; Scott-Clayton, 2011). However, HOPE had unintended consequences too. Specifically, Long (2004) finds that colleges raised raising room and board costs after the introduction of HOPE.

[13] Georgia Student Finance Commission (GSFC) administers the scholarships and calculates the GPA using qualifying courses and weights. Most colleges in the state are eligible to receive scholarship funds, including all public colleges where the vast majority of APS students enroll.

AATL's scholarship academic eligibility thresholds. The exact amount of the HOPE Scholarship depends on the college and the credit hours attempted but is often more than $5,000 per academic year.[14] The Zell Miller Scholarship has similar conditions but requires a 3.7 GPA and a minimum SAT or ACT score. The award is generally more generous than HOPE and can be in the range of $10,000 per academic year. For example, for the 2022-23 academic year, a Zell Miller recipient at Georgia Tech would receive an award of $10,258, equivalent to 100% of tuition for two semesters of enrollment with 15 credit hours per semester.[15] Neither scholarship can be used for room and board.

2.1.2. Achieve Atlanta Scholarship

The Achieve Atlanta (AATL) Scholarship is a more targeted, place-based source of postsecondary funding available to students experiencing low income who graduate from APS. Different from HOPE and Zell Miller, AATL funds can be used to cover all costs of postsecondary education, inclusive of tuition, room, board, and student fees.[16] To receive AATL funding, students must apply via the program's online web application and meet the following criteria: (1) attend an APS school for at least two years prior to high school graduation; (2) earn a cumulative, weighted GPA of at least 75 to qualify for the two-year scholarship or at least 80 to be eligible for the four-year scholarship;[17] and (3) complete the FAFSA and have an Expected Family Contribution (EFC) of $8,000 or below, based on the federal calculation using data reported on the FAFSA.[18] In the program years that we consider in this paper, the AATL Scholarship opportunity had two funding

[14] Current and historical award amounts can be found here: https://gsfc.georgia.gov/award-amounts.

[15] Tuition levels at other University System of Georgia institutions can be accessed here: https://www.usg.edu/fiscal_affairs/tuition_and_fees.

[16] Achieve Atlanta Scholarship Fact Sheet.

[17] AATL has since removed the 80 GPA threshold for eligibility to a four-year institution, allowing any student above a 75 GPA to attend a four-year institution if admitted.

[18] The initial EFC requirement was being Pell Eligible, which is roughly $5,000. AATL changed to $8,000 in 2017.

levels. Students who meet the 75 GPA criterion can receive up to $1,500 per year for up to two years to attend a two-year college or postsecondary technical program; those who meet the 80 GPA criterion can receive up to $5,000 per year for four years to attend a four-year institution. A stipulation of the funding is that students attend college full time in the fall after high school graduation. The scholarship has considerable geographic flexibility. Students may use the funds at any accredited, non-profit school within Georgia or a school outside of Georgia, so long as it has a graduation rate of at least the national median.[19] Since the scholarship's inception in 2015, over 4,000 APS graduates have received AATL funds.

After initial receipt, to remain eligible for subsequent years of funding, students must: (1) not have exceeded the maximum funding and time limits; (2) remain enrolled full-time; (3) submit a renewal application online; (4) meet continuing academic requirements of earning a minimum college cumulative GPA of 2.0 and at least two-thirds of college credits attempted; (5) complete the FAFSA; and (6) continue to meet the financial need criterion in effect at the time of initial application.

2.1.3. Other Achieve Atlanta Services

In addition to direct financial support, AATL also provides APS students and funded scholars with a range of other support services to support college exploration, application, transition, and persistence once enrolled. AATL works inside and outside high schools by collaborating with school counselors and additionally funding advisors from the College Advising Corps to help students make the best college decision available to them. In 2020, for example, in collaboration with APS, AATL built a "Match & Fit List Builder" to support students in developing a balanced list of colleges to which to apply. Students can take advantage of this and other high-school-based supports regardless

[19] In 2016, the graduation rate threshold was set at 50%. For 2017, it was set at 44%, the national median based upon the U.S. Department of Education's College Scorecard. The 44% remains the threshold for 2018-2020 cohorts.

of scholarship eligibility. The counselors, high schools, and AATL also encourage and assist students and families complete the FAFSA, which is required for the AATL scholarship but also required for many other sources of financial aid.

For students who continue to college with scholarship support, AATL provides additional non-financial supports exclusively for scholars. For example, AATL "partner" institutions have on-campus staff designated to serve as advisors for AATL Scholars.[20] Students enrolled elsewhere can access counseling and guidance via AATL's partnership with the non-profit organization Beyond12.[21] Across all institutions, AATL scholars are eligible for several other services,[22] such as one-time emergency grants of up to $500 to help pay bills or rents, a program-specific hotline for seeking assistance with mental health and other personal issues, an AATL Scholar job board, and support from older AATL scholars who serve as Campus Ambassadors aiming to build community among scholars on campus and connect them to campus resources. . The combination provision of financial and non-financial supports is in recognition that improving college success outcomes for students may require help beyond paying for tuition and fees and is similar to integrated supports provide by other programs, like the Dell Scholars Program (Page, Kehoe, Castleman & Sahadewo, 2019).

Collectively, across all of AATL scholarship and support services, their vision is that "Atlanta is a city where race and income no longer predict postsecondary success and upward mobility."

2.2. Literature on Scholarships

The Achieve Atlanta Scholarship is an example of a place-based scholarship, a model of financial aid provision that has gained a substantial foothold in the U.S. college-going landscape over

[20] AATL's partner colleges and universities include Albany State University, Atlanta Technical College, Clayton State University, Georgia Tech, Georgia State University, Oglethorpe University, Kennesaw State University, Savannah State University, Spelman College and University of West Georgia.

[21] For more information on Beyond12, see https://www.beyond12.org/.

[22] Available services are detailed here: https://achieveatlanta.org/for-students/achieve-atlanta-scholars/.

the past two decades. Although AATL focuses exclusively on providing aid to students experiencing low income, this is not the case for all place-based scholarships. Nevertheless, many place-based scholarships that have been established focus on school districts or other geographic areas that serve large shares of economically disadvantaged students. For example, Kalamazoo Public Schools and Pittsburgh Public Schools, both districts supported by prominent and generous place-based scholarship programs, serve student bodies in which two-thirds of students are identified as economically disadvantaged.[23]

Typically supported by a mix of public and private funding, place-based scholarship programs have multifaceted goals, including promoting local economic and workforce development, stabilizing populations, fostering a college-going culture in the K-12 context, and directly promoting postsecondary attainment through financial subsidy (Swanson, Watson & Ritter, 2020). These place-based programs often adopt the "Promise" nomenclature to provide clear signaling or a promise that college can be a financially viable option for students. Indeed, qualitative work found that the Pittsburgh Promise "put college on the table" for students who perceived college to be out of reach financially (Page & Iriti, 2016).

Indeed, this aligns with quasi-experimental evidence, finding that place-based scholarship programs in localities such as Kalamazoo and Pittsburgh as well as New Haven, CT and Knox County in TN have contributed to increases in college enrollment, persistence and completion (Andrews, DesJardins & Ranchhod, 2010; Gonzalez, et al., 2014; Swanson & Ritter, 2020; Bartik, et al., 2021; Carruthers, et al., 2020; Page, et al., 2019; Daugherty & Gonzalez, 2016; Bozick, et al., 2015; Bell & Gandara, 2021; Ruiz, et al., 2020).

Looking across these place-based scholarships, factors such as program generosity, flexibility, complexity of programmatic requirements, and uncertainty of eligibility may help to

[23] https://www.mischooldata.org/student-enrollment-counts-report/; https://www.pghschools.org/Page/5804.

explain differential effects across programs (Dynarski & Scott-Clayton, 2006; Swanson, Watson & Ritter, 2020). In the context of other place-based programs, the AATL Scholarships are similar in terms of overall generosity and are comparatively more flexible, in that students can use scholarship funds to attend most institutions in Georgia and even some institutions in other states. On the other hand, accessing funds requires students to meet several criteria, leaving students potentially uncertain of their own eligibility prior to applying. Among those who do apply, students must wait until after high school completion for their high school cumulative GPA and their scholarship eligibility, in turn, to be finalized. Other sources of financial aid, including those directly from the institution to which the student enrolls, are equally if not more uncertain when students are applying to college.

Indeed, the complexity, uncertainty, and delayed timing in the financial aid process across the U.S. have been recognized as barriers both to college access and to the effectiveness of financial aid (Dynarski & Scott-Clayton, 2006; Dynarski, Page & Scott-Clayton, 2022). These points are elucidated by a pair of studies focused on the University of Michigan. First, Dynarski et al. (2021) collaborated to design and experimentally test an initiative through which the university sent targeted, personalized outreach to high-achieving high school seniors from low-income backgrounds who resided in the state of Michigan. This outreach included an offer of an unconditional guaranteed scholarship to cover tuition and fees for four years for those who applied, were accepted, and enrolled in the University of Michigan. Most of those students targeted would have had their tuition and fees covered regardless, but the outreach eliminated any uncertainty by making the promise of tuition and fees even before they filed the FAFSA. In fact, students did not have to file the FAFSA to be eligible (although most did). The effort led to large increases in application to and enrollment in University of Michigan among the students targeted.

In a follow-up study, Burland et al. (2022) add to the experiment a third informational arm. In this condition, students received information about a free-tuition program for which they are

likely eligible, contingent on providing proof of need. This less-certain offer produced smaller effects on application to the university and no effects on enrollment in the University of Michigan. Burland et al., (2022) interpret this result as indicating that low-income students highly value financial certainty in the process of making schooling decisions. This is especially sensible in the context of the U.S.'s high-price, high-aid model for funding higher education.

In this study, we aim to add to the broader literature on the impact of scholarship opportunities targeted to students experiencing low income, many of whom may be first-in-their-family to attend college. We do so by assessing the effects of eligibility for an AATL scholarship and services on scholarship take up and college enrollment. Then, conditional on enrollment, we explore the effect of scholarship receipt on persistence through college and degree attainment. Next, we describe the data on which we rely for exploring these questions.

3. Data

3.1. Data Sources and Variables

We use data from three primary sources – Atlanta Public Schools (APS), Achieve Atlanta (AATL), and the National Student Clearinghouse (NSC). To build our analytic sample(s), we begin with data that includes basic demographics, including sex, race, and /ethnicity, for 12,209 APS high school students from the graduating classes of 2016 through 2020.[24] Table 1 presents summary statistics for these students. More than half (55%) of the sample students are female, and a majority (80%) are Black. Approximately 13% of students are White and nearly 6% are Hispanic.[25]

The APS data also include three pieces of information used to define our analytic sample and eligibility for the AATL scholarship. First, we use APS student-year records to determine

[24] Initial data includes non-graduates and some limited information on earlier cohorts.

[25] Race/ethnicity are not mutually exclusive.

whether a student was ever eligible for free or reduced-price meals (FRPM) in any of the years available.[26] This is our only proxy for financial need in the APS data, although we recognize that it is an imperfect indicator of true income eligibility, which can be determined only after students complete the FAFSA.[27] Over three-quarters (76%) of students are indicated as ever-FRPM eligible. The high rate of ever-FRPM represents the economic disadvantage of many individual students. But some high schools in APS were also eligible for the Community Eligibility Provision (CEP), which provides FRPM for all students in the high school, regardless of individual eligibility.[28]

Second, again using student-year records, we identify those students who enrolled in an APS high school for two consecutive years prior to graduating, as this is a criterion for eligibility. Nearly all students (98%) in our sample meet this condition. In some analyses, we restrict our attention to a subsample of students who are ever eligible for FRPM and who attended APS for two consecutive years prior to graduation (see Appendix Table 1). Since nearly all students meet the attendance criterion, this subsample is primarily dependent on the ever-FRPM condition.

Third, we use the cumulative weighted GPA at the time of graduation.[29] This variable is calculated by APS and used by AATL to determine whether students are academically eligible for the scholarship. The average GPA across graduates is 83.6. From this continuous measure we define two new indicators for scholarship eligibility – whether GPA 75 or above and whether GPA is 80 or above. 86% of APS graduates earn a GPA of 75 or above and are therefore academically eligible for at least the smaller scholarship, while 67% of APS graduates earn a GPA of 80 or above and are academically eligible for the larger scholarship.

[26] We observe whether a student received FRPM as early as 2010 in some cases.

[27] Additionally, APS made use of the Community Eligibility Program in 2019 whereby all students, regardless of need, are eligible for FRPM. However, the data still code students as ineligible.

[28] The identity of these schools is not clear in the data and there are always students who are coded as not receiving FRPM in every school in every year.

[29] The weights are based on honors and advanced coursework.

Next, we augment the student-level APS data with student-level AATL scholarship data. These data include the 51% of APS graduates who applied for an AATL scholarship. The AATL data includes details on the reason(s) an applicant did not receive a scholarship (e.g., not income eligible, attending ineligible college). Table 1 further shows that 31% of students received some amount of scholarship, averaging almost $600 across all APS graduates in the first fall semester of college.[30] This first-semester level of funding is made up of 28% of students who received at least $750, which is the maximum amount awarded for students with a GPA of at least 75. 22% of students received $2,500, which is the maximum amount awarded for students with a GPA of at least 80. The AATL data also include the amount of scholarship distributed in subsequent semesters if a student persists and continues to receive AATL scholarship support.

Finally, we linked the APS and AATL data to NSC data on college enrollment and completion. NSC is a near census of college enrollment in the U.S., college-by-college and term-by-term. Our NSC data include enrollment and completion information through the end of the 2019-2020 academic year.[31] 63% of APS graduates in our sample enroll in college, and 48% do so full-time and on-time, both conditions of scholarship receipt. For those who do enroll, we additionally merge in information about the type of college in which students enroll with data from the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS). 15% and 48% of APS graduates initially enroll in a two-year college and four-year college, respectively. Also, 44% of students (and 71% of college enrollees) enroll in an institution in Georgia, and the bulk of these institutions have average SAT scores of matriculants between 900 and 1100. Approximately one-quarter of students enroll in an AATL partner college with explicit supports for AATL scholarship recipients.

[30] To note, this average of $600 includes all APS graduates in our analysis, including those who received no funding from AATL. The average amount received, conditional on receiving any funding, is $2000.

[31] Details on NSC deficiencies, such as for-profit enrollment, can be found in Dynarski, Hemelt, and Hyman (2015).

We also use the NSC term-by-term data to build measures of college persistence and degree receipt. 56% of students (89% of enrollees) persist to their second semester in college. Beyond the second semester, we can only build longer panels for persistence and completion for subsets of cohorts to which data are available. For example, we only have first-year enrollment data for the 2020 cohort and so we do not calculate second-year persistence rates (or beyond) for that recent cohort. Moving backward, we observe second-year persistence rates for the 2019 cohort but not third- or fourth-year persistence. We calculate a 46% second-year persistence rate for the 2016-2019 cohorts. Finally, only for the 2016 cohort can we calculate four-year college completion, which stands at 12% of all 2016 APS graduates (nearly 20% among college enrollees and 25% for full-time, on-time enrollees).

3.2. AATL Scholars

The middle and rightmost panels of Table 1 display summary statistics for AATL scholars and non-scholars, respectively. In total, there 3,762 scholars across the five cohorts we examine. Here, a few statistics deserve further attention. First, AATL scholars are disproportionately female (65%) and Black (90%). Second, AATL scholars are more likely to ever be FRPM eligible than non-scholars, mechanically because of the income requirements for scholarship receipt. Nevertheless, nearly 12% of AATL scholars are not indicated as ever FRPM. This highlights the challenge in assessing scholarship income eligibility with APS data. Furthermore, 71% of non-scholar graduates of APS are ever FRPM eligible, suggesting that many non-scholars also have financial need. In addition, it suggests that our measure of financial need is imprecise; we cannot easily distinguish two students with similar attributes (e.g., GPA) but who differ in financial circumstance. Analytically, this introduces noise and potentially some bias in estimates that compare scholarship "eligible" students to "ineligible" students. We discuss this further in the methods section below.

Third, we find that 29% of non-scholars applied for the AATL funding. This provides us with a natural control group for some analyses, as it serves to indicate students with both knowledge of and interest in the scholarship. Again, we discuss this further below.

Fourth, AATL scholars enroll and persist in college at higher rates. For example, 97% of scholars enroll in college, compared to 53% of non-scholars.[32] Similarly, 77% of scholars persist to their second year of college, compared to 37% of non-scholars (and about 70% of non-scholar college enrollees). These gaps are large in magnitude and motivate our primary research questions – to what extent does AATL scholarship receipt impact college enrollment and persistence?

Fifth and related to the previous point, these gaps in college enrollment and persistence are likely due, in part, to underlying differences in the scholars and non-scholars, independent of the influence of scholarship receipt. This is clear in many of the aforementioned statistics, but also the relatively higher GPA among scholars. However, as Figure 1 shows, scholarship recipients have a range of GPAs. Scholarship receipt is most common for students with GPAs at or around 90. The decline in prevalence of scholarship receipt for students with higher GPAs is likely because GPA is often correlated with parental income, making the highest GPA (and consequently, income) students less likely to be eligible for the scholarship. Beneficial for analyses discussed below is that there are scholarship recipients and non-recipients at all GPA levels; we need not compare students with GPAs below 70 who are academically ineligible to receive the grant to those above an 80, for example. Rather, in some analyses, we rely on idiosyncrasies in the application process, such as high school culture, knowledge, and supports around the scholarship, to find scholars and non-scholars who are otherwise similar.[33]

[32] Students only become scholars if they enroll in college so the statistic should be 100%. But data and matching deficiencies are the likely explanation for the shortcoming.

[33] Appendix Figure 1 shows differential AATL scholarship application rates by high school and trends over time.

4. Methods

We use two different analytic approaches to address questions regarding the impact of AATL scholarship eligibility and receipt on college access, persistence, and completion outcomes. First, we use a regression discontinuity design (RDD) that capitalizes on the GPA thresholds that determine scholarship eligibility. Second, given limitations of the RDD approach (discussed below), we additionally use ordinary least squares (OLS) regression analysis to consider the relationship between scholarship receipt and college-going outcomes, applying different sets of controls and sample restrictions that, we argue, allow us to rule out potential confounders to interpreting our estimates as causal. Here, we describe these two analytic approaches in detail.

4.1. Regression Discontinuity Design for Enrollment Impacts

4.1.1. Basic Design

We use an RDD to estimate the impacts of scholarship eligibility on college enrollment. The RDD uses high school GPA, which determines scholarship academic eligibility, as the running variable. This implies that we are comparing students just above and just below the academic eligibility thresholds (i.e., GPA of 75 and 80) with the assumption, for example, that students who earn a 74.8 GPA are, on average, almost identical to students who earn a 75.0 GPA, but for the opportunity to receive the AATL scholarship and associated services. Because the two groups of students are, on average, similar to one another, this allows us to isolate the impact of the scholarship without any unobservable confounding variables that may lead to bias. We conduct RD analyses separately at the 75 and 80 GPA thresholds. We estimate the following equation:

$$Y_{it} = \alpha_0 + \alpha_1 ABOVE_{it} + \alpha_2 GPA_{it} + \alpha_3 (ABOVE_{it} \times GPA_{it}) + X_{it}\delta + HS + T + \epsilon_{it} \quad (1)$$

GPA is the cumulative weighted high school GPA (recentered at the relevant threshold) for student *I* in cohort *t*. *ABOVE* is an indicator variable equal to one if *GPA* is above the scholarship eligibility threshold and zero otherwise. For example, when assessing the impact of the smaller valued scholarship, *ABOVE* equals one when *GPA* is greater than or equal to 75 and zero otherwise. We also interact *GPA* and *ABOVE* to allow for different slopes on either side of the scholarship eligibility threshold. *X* is a vector of student attributes, including sex and race/ethnicity dummy variables. *HS* and *T* are high school and cohort fixed effects, respectively, and ϵ_{it} is an idiosyncratic error term. Finally, *Y* represents various outcomes ranging from scholarship receipt (first stage) to college enrollment and college type. We cluster the standard errors on GPA, as suggested in Lee and Card (2008).

Before estimating equation (1), we restrict the sample to include only students who have been in APS for at least two consecutive years prior to graduating and those who were ever FRPM. Our goal in doing so is to remove students who are ineligible for the scholarship for non-academic reasons and, consequently, to increase the statistical precision around the threshold. In Appendix Table 1, we present summary statistics for the subsample of 9,219 students and for the two analytic samples within a 5-point bandwidth at each of the thresholds.

4.1.2. Interpretation of the Main Estimates

Our primary interest is in estimates of the coefficient α_1. Under certain assumptions, α_1 represents the impact of being eligible for the AATL scholarships and associated services. Importantly, this is the impact of eligibility and <u>not</u> scholarship receipt. In the results section, we discuss scaling the eligibility impact estimates to assess the impact of scholarship receipt.[34]

[34] This is analogous to running a two-stage least squares where the endogenous variable is scholarship receipt and the instrument is the *ABOVE* variable. In practice, this is similar to dividing any impacts of eligibility on enrollment by "first-stage" impacts of eligibility on scholarship receipt.

Because there are two thresholds and corresponding scholarship amounts, we estimate equation (1) separately for each threshold and rely on a relatively narrow bandwidth to avoid crossing the second threshold in an analysis on one threshold. Specifically, our main specification relies on a 5-point bandwidth at each threshold (70-80 and 75-85), which coincides almost exactly with the Imbens-Kalyanaraman optimal bandwidth for some of the primary outcomes.[35] When using the 75 GPA threshold, we interpret α_1 as the impact of eligibility for the smaller AATL scholarship (and services) relative to no scholarship eligibility. In contrast, when using the 80 GPA threshold, α_1 represents the impact of eligibility for the larger AATL scholarship (and services) relative to eligibility for the smaller AATL scholarship.

Lastly, RDDs are local average treatment effects, so our estimates on the impact of scholarship eligibility pertain only to students just around the 75 and 80 thresholds. We are not estimating the impacts of scholarship receipt at different margins, including the GPAs where scholarship take up is most prevalent (near a GPA of 90). Impacts may differ across GPA levels, and this possibility is partial motivation for our second analytic strategy.

4.1.3. Assessing RDD Identification Strategy

We perform a density test and covariate balance tests to assess the validity of our RDD. These exercises help alleviate concerns that students on either side of the GPA threshold are not comparable. Especially in this context, we rely on these analyses to address concerns about potential GPA manipulation. In practice, we believe that GPA manipulation to situate oneself exactly on one side of a particular threshold is difficult to accomplish as GPAs accumulate over the entirety of high school. Most students, even within our 5-point bandwidth, cannot strategically choose

[35] Unlike most RDD papers, we do not vary the bandwidth in our sensitivity tests. Using a smaller bandwidth compromises our precision. Using a bandwidth larger than 5 points introduces students that are on the other side of the second threshold, which makes for an unclear comparison.

classes or effort levels to get above a threshold. Those students at the margin within an even narrower bandwidth could be of concern, so we not only conduct the standard RDD tests, but we also use a donut hole RDD in some robustness tests. Our mostly null results on enrollment also mitigate concerns that strategic behavior above the threshold might generate positive results.

First, we plot the number of APS students by high school GPA in Appendix Figure 2. There are no large jumps right at 75 or 80, but there are at 74 and a few other points not associated with the scholarship. We also do not find a statistically significant discontinuity in the corresponding regressions.[36] Second, Appendix Table 2 shows the results of covariate balance tests. A limitation of the APS data is that it includes only a few covariates. Among the female, Black, and Hispanic indicators, only at the 75 threshold is the female coefficient statistically different from zero. There is no statistical imbalance at the 80 threshold. Lastly, we test the sensitivity of results to some of our analytic decisions, including adding a triangular kernel to more heavily weight observations close to the threshold, excluding covariates, and using a donut hole RDD that excludes observations within one GPA point of the thresholds. These alternate specifications do not have any qualitative impact on our results. Taken together, we judge the assumptions underlying the causal interpretation of our RD estimates to be reasonably well met.

4.2. OLS for Persistence and Completion Impacts

4.2.1. Basic Design

We turn to OLS to assess the effects of AATL scholarship and service receipt on college persistence and completion. OLS has several advantages relative to an RDD in this context. First,

[36] At the 75 threshold, coefficient is 1.1 (person) with standard error of 5.7. At the 80 threshold, coefficient is 9.8 (people) with a standard error of 7.3. There are about 400 students just below 80 so 9.9 people is less than a 3% increase that is still statistically insignificant.

there is an order of magnitude improvement in statistical power allowing us to make precise statements about our estimates. This is in part because we make use of the many observations outside the RDD 5-point bandwidth. Precision also improves because we are estimating the impact of scholarship receipt, which is perfectly observed, as opposed to scholarship eligibility, which is imperfectly measured. These gains in precision are particularly important as our persistence and completion analyses make use of fewer cohorts than our enrollment outcomes; an RDD with fewer cohorts may lead to larger standard errors and uninformative estimates as a result.[37]

Second, we can estimate average effects of scholarship receipt and consider how these effects vary across the range of GPAs. This is in contrast to RDD limiting us to estimating local average effects of scholarship receipt or eligibility at the specific GPA thresholds associated with qualifying for funds. In fact, an additional limitation of the RDD is that at the threshold for the more generous scholarship, the comparison is between eligibility for the smaller and larger scholarships. In short, although OLS leaves us open to potential threats to a causal interpretation, the benefits of this exploration are clear.

To estimate the effect of receiving an AATL scholarship and associated services on college persistence and completion, we estimate the following equation:

$$Y_{it} = \beta_0 + \beta_1 SS_{it} + GPA\_Bins_{it}\theta + X_{it}\delta + HS + T + \varepsilon_{it} \qquad (2)$$

This equation differs from equation (1) in two fundamental ways. First, *SS* is an indicator equal to one if student *i* in year *t* receives an AATL scholarship and zero otherwise. The corresponding coefficient, β_1, represents the effect of scholarship receipt, not scholarship eligibility. Second,

[37] We estimate the RDDs on all persistence and completion outcomes using the smaller number of cohorts (and observations). Results are in Appendix Table 4 and support our decision to use OLS.

GPA_Bins is a non-parametric set of dummy variables for each 2.5 GPA bin.[38] For example, one bin corresponds to GPAs in the range of 77.5 to 79.99 and another for 80.0 to 82.49, along with every other 2.5 GPA point increment. In this way, we use the full range of GPAs, not just a narrow bandwidth around the scholarship eligibility thresholds, and we flexibly control for the relationship between GPA the persistence outcome *Y*.[39]

Along with controls for student demographics and high school and cohort fixed effects, we continue to exclude students who do not attend APS for the two years prior to graduation. In some, but not all specifications, we include students who were never eligible for FRPM to test whether results are sensitive to this measure of financial hardship. We also cluster standard errors at the high school level.

Finally, in these analyses we restrict our sample to students who enroll in college and can therefore persist and graduate. Using a subsample of students who are plausibly induced by the scholarship to enroll in college might create an endogenously determined subsample. However, as we show below, we find no impacts of scholarship eligibility on college enrollment. This stands as partial justification for focusing on the subsample of enrollees when estimating college persistence and completion effects. Additionally, some of our analyses focus exclusively on students who earned high GPAs in high school. Most, if not all, of these students likely had the intention to enroll in college regardless of the scholarship.

4.2.2. Identification and Alternative Specifications

Our goal is to estimate the causal effect of the scholarship and services on persistence and completion, which means obtaining an unbiased estimate of β_1. The controls and fixed effects that

[38] Using 1 GPA point bins does not change the results.

[39] In practice, we exclude students with GPAs below 70, since there is no common support and the non-scholars are notably different than any scholars.

we include in equation (2) help in this endeavor and importantly, indicators corresponding to small GPA bins helps to limit comparison to scholars and non-scholars with very similar academic credentials. However, scholarship recipients and non-recipients differ on several observable dimensions, as exhibited in Table 1, and likely on several unobserved dimensions as well. For example, scholarship recipients may have more financial need than non-recipients, different knowledge or desire to apply for the scholarship and attend college, and even different goals and outcomes regarding where to attend college. These potential sources of omitted variable bias largely can be addressed through certain subsamples and control variables. We consider several in turn.

After running the main specification with the full sample, we first re-estimate the model only using students ever designated as receiving FRPM. As discussed above, this is a noisy measure of financial need that does not entirely rule out unobserved differences in financial need between scholars and non-scholars. Nevertheless, restricting the sample to ever FRPM students serves as a strategy for assessing the direction of the bias present from not accounting for financial need.

Second, we re-estimate the equation only using the sample of APS graduates who apply for the scholarship. This helps remove the concern that scholars and non-scholars differ in their general awareness of or interest in the scholarship and other college-related opportunities. Again, there are a few other potential lingering differences between scholars and non-scholars, conditional on applying for the scholarship, some of which we address next. In addition, these remaining differences allow us to consider the likely direction of any systematic bias that may remain after accounting for interest in and knowledge of the scholarship opportunity.

Third, we fit equation (2) again using the subsample of scholarship applicants but this time, further restrict to students with zero dollars in Expected Family Contribution (EFC) as calculated by the federal methodology used in the Free Application for Federal Student Aid (FAFSA). We only have measures of EFC for AATL applicants, as they complete and submit their FAFSA as part of

the AATL application process. By including only zero EFC students, we further remove concerns about differences in financial need among scholarship recipients and non-recipients. Zero EFC students are those with the most financial need, and all are eligible for the AATL scholarship on financial grounds.

Fourth, we use only the subsample of applicants that AATL determines are both academically and financially eligible for the scholarship. In this subsample students who do not receive the scholarship most typically attend a college at which AATL funds may not be used.

Fifth, we add college fixed effects to equation (2). This removes a concern, highlighted in the previous subsample, that scholars and non-scholars who are similar along most dimensions attend different colleges. The college fixed effects restrict comparison to scholars and non-scholars who attend the same college. Similar to the previous argument about only using college enrollees, this is potentially problematic if the scholarship induces students into different colleges. We will show that there is limited evidence that this is occurring, perhaps because students' scholarship status is not finalized until mid-June, by which time most students would have finalized their college choice.

Finally, we combine several of the above sample restrictions and controls to remove several of the sources of bias simultaneously. Across these alternative specifications, we deemphasize attention to any particular set of estimates and instead encourage focus on the qualitative changes across results to assess the potential direction and magnitude of any bias that exits.

5. Results on Enrollment

5.1. First-Stage Impacts – Scholarship Receipt

We begin with results from our RD analysis to assess the impacts of scholarship eligibility on scholarship application, receipt, and funding amounts. In Table 2, we present the local estimates separately at the 75 GPA eligibility threshold (top) and 80 GPA eligibility threshold (bottom).

At both thresholds, there are positive but statistically insignificant coefficients on the probability of applying to the scholarship. This insignificant result is sensible at the 80 threshold because those just below are still eligible for a scholarship, albeit a smaller one. On the other hand, the 4.6 percentage point estimate at the 75 threshold is of greater importance. The roughly 21% increase over the control mean is sizeable but perhaps not as large as we might expect. The modest size could be in part because students – and especially those close to the 75 threshold – do not know their final GPA and consequently their AATL academic eligibility until the end of the school year. In addition, they do not know their financial eligibility until after completing the FAFSA and receiving their EFC. Given this uncertainty, many students may apply even though they ultimately do not qualify. On the other hand, the uncertainty itself may discourage students from applying. This is further supported by Figure 1, where a relatively small fraction of scholarship recipients falls between 75 and 80.

Next, there is a 6.6 percentage point increase in the probability of receiving the scholarship for students just above the 75 threshold, compared almost nobody below the 75 threshold receiving a scholarship (column 2). At the 80 threshold, the jump is 9.7 percentage points (a 60%). Figure 2 shows the corresponding plot of this relationship and visually confirms the results, particularly at the 80 threshold. These results suggest that the scholarship is working as designed but that scholarship receipt among eligible students is far from universal and/or that we have some noise in our eligibility measures, such as financial need. The modest magnitude of these "first-stages" limits our ability to make precise statements as well as evaluate heterogeneous effects or impacts on downstream outcomes.

The last three columns of Table 2 evaluate the amount of the scholarship received. At the 75 threshold, there is a $38 discontinuous jump in scholarship funds awarded in the first semester. This corresponds to a 6.1 percentage point increase in the probability of receiving at least $750 in scholarship (the maximum level of funding at the 75 threshold) in the first semester. The analogous estimates at the 80 threshold are $267 and an 11 percentage point increase in the probability of receiving at least $2,500 (the maximum level of funding at the 80 threshold) in the first semester. Appendix Table 3 shows that the results for each outcome are robust to modeling decisions.

5.2. College Enrollment

In Table 3 we present the RD estimates for the impact of eligibility for the scholarship and services on college enrollment. Column 1 shows no impact of eligibility on the probability of enrolling in college at either threshold. This is visually confirmed in Figure 3. The coefficients are very small in magnitude but not precise. For example, although the point estimate on college enrollment suggests a 1 percentage point decline at the 75 threshold, we cannot rule out impacts of close to a 6-percentage point increase.

Next, we evaluate whether the AATL scholarship opportunity induces full-time, on-time enrollment, a necessary condition of scholarship receipt. The second column of Table 3 shows positive but modest and statistically insignificant estimates. Here again, the standard errors are large enough that we cannot rule out meaningful effects. In addition, if we were to scale these intent-to-treat estimates by the first-stage estimates on scholarship receipt (6.6 and 9.7 percentage points at the 75 and 80 thresholds, respectively), the impacts of scholarship receipt on college enrollment would be substantial.

The last two columns consider whether students are induced to enroll in two-year or four-year colleges, as the scholarship has different rules and incentives at the two margins. We see no

strong evidence of such a resorting of students across type of institutions. This is reaffirmed in Figure 3, as is the robustness of all the results in Appendix Table 3.

5.3. College Type

In Table 4, we present the results on how scholarship eligibility impacts the type of college in which students enroll. In the first two panels of column 1, we consider impacts on in-state (vs. out-of-state) college enrollment. The estimates at the two thresholds are small and statistically insignificant. In the third (bottom) panel, we consider the subsample of four-year college enrollees. Recall, we previously showed that four-year college enrollment is not influenced by scholarship eligibility. Here, we estimate a 5.3 percentage point increase in the probability of staying in-state for students who just barely are eligible for the full scholarship. Although the estimate is not statistically different from zero, it is suggestive of a meaningful change in staying in-state for college. Figure 5 shows a modest jump in the probability of enrolling in-state at the 80 threshold (not conditional on four-year enrollment).

Next, we show the results for the probability of enrolling in an AATL partner college (Table 4, column 2). This is potentially important because there are additional supports at partner colleges that could influence persistence. We see no evidence of an impact at the 75 threshold but suggestive evidence of an increase in partner college enrollment at the 80 threshold. The suggestive evidence at the 80 threshold is reinforced in Figure 6 and Appendix Table 3. Finally, the last four columns of Table 4 show little evidence that college selectivity, as measured by average SAT of students enrolled, is impacted by scholarship eligibility.

Overall, the results do not show evidence of a large-scale reshuffling of students at the GPA margins into different colleges because they are eligible for (and sometimes receive) the scholarship. Point estimates, although imprecisely estimated, suggest that students may be somewhat more likely to enroll in Georgia and at the AATL partner colleges, which are all in-state.

6. Results on Persistence and Completion

6.1. Main Results

We now turn to the OLS results on the effect of AATL scholarship (and services) receipt on college persistence and completion.[40] The results that we present in Table 5 show that, across the range of specifications and outcomes, scholarship receipt has a very large and statistically significant effect on persistence outcomes. These results also show no effect on two-year college graduation but a meaningful effect on four-year college graduation.

The first column and first row of results suggests that college enrollees who receive the AATL scholarship and services are 11.1 percentage points more likely to persist to the second semester than non-scholars, controlling for GPA, demographics, high school attended, and cohort. This represents a 13.6% increase relative to the mean of non-scholars who also enroll in college (see Appendix Table 5 for mean values for the outcomes of non-scholars).

Columns 2 through 11 of Table 5 estimate each step of the discussion in Section 4.2.2 that address potential unobservables correlated with scholarship receipt that may bias this initial estimate. For example, column 2 uses a subsample of only FRPM students and column 4 uses only scholarship applicants with zero EFC – both in response to potentially unobserved financial need. In both columns, the magnitude of the coefficient increases compared to column 1. Next, we address the potential for differences in college outcomes due to differences in academic preparation (column 5) and due to differences in postsecondary institution (column 7) by using only scholarship eligible students and including college fixed effects, respectively. The coefficient estimates are not

[40] Appendix Table 4 shows the persistence and completion results in the RDD framework. No estimates are statistically significant, and standard errors are large enough that we cannot rule out meaningful positive or negative impacts.

substantively different from those in column 1. The columns 9 – 11 include several of these restrictions simultaneously and the estimates once again increase. The smallest estimate in column 3, which only includes the subsample of scholarship applicants, is 8.8 percentage points.

The next row that considers persistence to the second year of college provides a window into the remainder of the persistence results. According to the first specification, college enrollees who receive a scholarship are 10.6 percentage points (16%) more likely to persist to their second year of college than non-recipients (approximately 400 scholars). The result fluctuates down a bit in some specifications (e.g., column 3) and up by more than 50% (e.g., column 9) but remains large in magnitude and statistically significant. These estimates rely on one fewer cohort than the previous row. In Appendix Table 6 we re-estimate the Table 5 results with the 2016 cohort only and show that changing sample composition is not driving the magnitude of the coefficients. The coefficients for persistence to the second semester and to the second year are similar, implying that the effect of scholarship receipt on persistence does not fade across the first several years of college.

The next few rows show persistence effects into the third and fourth years of college. Here, estimates continue to hover around 10 percentage points. They also fluctuate a bit across specifications, but they do not change much relative to the previous rows, suggesting a strong persistence effect that lasts throughout college.

The next few rows show marginal evidence of an effect of the AATL scholarship on college completion, but there are clear differences in the effects on two-year and four-year degree completion. We see no evidence that scholarship recipients are more likely to earn a two-year degree. In contrast, we estimate a 4.6 percentage point increase in the probability of earning a four-year degree in the basic specification; the point estimate associated with this effect only increases in the specifications that take additional steps to account for potential confounders. As before, we note that our statistical power to precisely estimate these longer-run college completion results is reduced, as we have completion data for only a subset of the cohorts considered above.

6.2. Robustness Test by Matching

In Appendix Table 7, we present results for the same set of persistence outcomes but instead based on matching techniques rather than OLS alone. Specifically, we exact match on a variety of student attributes (columns) before performing a nearest neighbor match on GPA. Fundamentally, matching and OLS are similar identification strategies. They differ in that matching relies on common support and a different functional form. It is unsurprisingly, then, that we do not get drastically different results. The estimates are generally on the smaller side of the distribution of estimates presented in Table 5, and the effect of scholarship receipt on four-year college completion is smaller in magnitude and no longer statistically significant in all specifications. However, these results generally show that our estimates are robust to estimation strategy and that scholarship receipt affects college persistence in an economically meaningful way.

6.3. Results by GPA

Finally, in Table 6 we consider how the previous persistence results differ by high school GPA. This is potentially important because some students may benefit more from the scholarship than others. In Georgia, this may be particularly true because additional scholarships are available to students with higher GPAs, notably the HOPE and Zell Miller Scholarships.

To examine the heterogeneous effects of the scholarship on persistence, we re-estimate the third column of Table 5 (only scholarship applicants) but separately for subsamples of students in 2.5 GPA point increments.[41] First, we find no impacts of the scholarship for students with GPAs below 75. This is sensible, as there are almost no such scholars. In the range of 75-80, where students primarily, but not exclusively, received the smaller scholarship and are eligible to go to a

[41] This necessarily implies that we no longer flexibly control for GPA. We also use 5 GPA point increments in Appendix Table 8, which reduces some oscillation likely due to noise, but yields consistent results..

two-year college or technical diploma, we observe an initial increase in persistence that quickly fades out. That is, these students, who frequently enroll in two-year colleges are persisting to the second semester at higher rates because of the scholarship, but the scholarship does not get them to persist to further semesters.

Moving across the columns, scholars with GPAs between 80 and 82.5 see the largest impacts, upwards of 20 percentage points, that last for multiple years, with some fall off in magnitude in the fourth year. These are the same students on the margin of receiving the larger scholarship that were under consideration in the RDD. They are also students with GPAs that are just below the HOPE scholarship levels, so the AATL scholarship may be a very important source of funding for these students in particular.

Next, scholars with GPAs between 82.5 and 90 generally are about 10 percentage points more likely to persist, for multiple years compared to similar non-scholars. These are students who are frequently eligible for HOPE scholarships as well.

We start to see a decline in the efficacy of the scholarship and services on persistence for students with GPA above 90. There are positive but statistically insignificant effects between 90 and 92.5. But between 92.5 and 100, there is no evidence of the scholarship impacting persistence or completion rates. These are students who tend to have more scholarship opportunities, including HOPE and Zell Miller merit scholarships, and who tend also to attend relatively more selective colleges with higher graduation rates. In this context, it is sensible that the marginal benefit of AATL scholarship would be smaller.

7. Conclusion

The Achieve Atlanta Scholarship program was designed with the goal of supporting APS graduates – specifically those from low-income backgrounds – to pursue postsecondary education after high school and doing so in an affordable way. Again, their stated vision is that "Atlanta is a

city where race and income no longer predict postsecondary success and upward mobility." The scholarships that AATL provides are generous enough to substantially reduce the out-of-pockets college costs that families may face, particularly when combined with other scholarships for which students may qualify, such as the HOPE Scholarship. In this paper, we examine the implementation and impact of the AATL scholarship in meeting these goals.

Our RDD results point to relatively modest take up of the opportunity to apply for the scholarship at the eligibility thresholds, particularly around the 75 threshold. This in turn leads to modest effects on scholarship receipt and null effects on college enrollment at these thresholds. The potential contributors of these modest effects may be both analytical and programmatic. First, as detailed previously, students must meet a specified financial-need criterion to qualify for funding. This criterion is based on a student's Expected Family Contribution, calculated from information students and families report on the FAFSA. Because we cannot observe this for all students, we rely on a proxy measure for financial need on which to condition our sample. The best proxy available in APS administrative data is whether or not students were ever eligible for free- or reduced-priced school meals. We recognize the imperfection of this measure, especially because of the role of CEP. For example, among the nearly 4,000 students who received AATL funding in the years we consider, approximately 13% were never flagged as FRPM. This means that when we condition on the ever FRPM indicator, we may be excluding in our sample some students who are financially eligible for the AATL scholarship as well as including some students who are financially ineligible. Particularly by including those who are not financially eligible, we are likely attenuating the effects that we estimate at the GPA thresholds.

Of equal – or perhaps greater – importance, however, are the potential ways in which the eligibility requirements themselves may affect student's willingness to apply for AATL funding. In order to qualify for funding, students must meet several criteria: they must have enrolled in APS for at least two years prior to graduation, meet the EFC threshold for financial need, and meet the

academic GPA standards noted above. Although the first requirement is easily known and readily understandable, the other two may introduce considerable uncertainty. Regarding the need-based requirements, students may have a tenuous understanding of the status of their family's finances. Therefore, many students and families may need to complete the FAFSA and obtain their EFC before knowing if they meet the AATL definition of need. The FAFSA is well understood to be a complex application to complete (Dynarski & Scott-Clayton, 2006) and the complexity of the FAFSA, itself, can hinder access to higher education (Bettinger et al., 2012). Therefore, this FAFSA-based requirement may discourage some students from applying. Although, AATL specifically works to encourage students and families complete the FAFSA, which is particularly important in Georgia where state scholarships are unlocked through FAFSA completion.

A second dimension of uncertainty relates to the academic eligibility requirements for AATL. Particularly for students who enter senior year with GPAs close to one of the eligibility thresholds, students may feel uncertain about banking on ultimately qualifying for AATL funds, even if they meet all of the other requirements, and therefore may be less inclined to apply. This uncertainty is coupled with the fact that final academic eligibility is not determined until mid-June, after students complete high school and their final cumulative GPA is tallied. For students who were on the margin of academic eligibility, even if they are ultimately awarded a scholarship, the timing of that award is likely too late to meaningfully influence choices about whether or where to apply. Although community colleges afford more flexibility, by mid-June, most four-year institutions already will have looked to students to commit for fall enrollment. For example, Georgia State University sets a due date of June 1 for intending first-year students to submit their intent to enroll form. In short, the timing with which this award is finalized is such that many students must make decisions about where to apply and where to enroll before being certain that they will receive financial support from AATL.

In sum, issues related to complexity in applying, uncertainty in eligibility, and non-optimal timing of final award notification may intersect to reduce students' likelihood of pursuing AATL funding and may diminish the chances of funding awarded to affect college enrollment decisions. This is consistent with the broader literature on postsecondary financial aid (Dynarski, Page & Scott-Clayton, 2022) and more specifically two studies that elucidate the power of clear and definitive messaging about financial aid (Dynarski et al., 2021) and the reduced effects that we might expect from financial aid programs that reduce certainty by placing more requirements on students to prove their eligibility (Burland et al., 2022). Because we cannot explicitly observe how the complexity and timing of AATL's scholarship application impacts students, we leave this for future exploration.

If these issues are potential drivers of the modest results that we see regarding scholarship application and receipt at the eligibility thresholds, a question that follows is whether there are programmatic remedies. We recognize that some, or all, of these remedies may be impossible to implement for some organizations, but other organizations should consider. Regarding the academic eligibility thresholds, one solution to increase student certainty would be to refrain from including students' performance during the spring semester of their senior year in the calculation of the GPA used to determine eligibility. Such a shift would allow students to know whether they met the academic requirements for the scholarship a semester earlier. For many students, this would be well before making decisions about whether or where to enroll in college. We recognize that some students may be made ineligible by not having one more semester to support their GPA, but it is worth exploring the number of students who could possibly be positively or negatively affected. Regarding student need, one possibility would be to allow students to satisfy the financial eligibility requirements in a variety of ways. For example, in addition to keeping the need definitions based on FAFSA, partnering with school districts to designate as financially eligible those students who qualified for FRPM, as is used as an indicator of financial need by Dynarski et al (2021) and Burland

et al. (2022). Such steps, together, would increase students' certainty about qualifying for funds as well as shift up the timing with which final eligibility is determined.

The results from our examination of the effects of AATL on college persistence and success among those who enroll in college suggests that any programmatic changes that induce enrollment could be well worth it in terms of furthering the core goals of AATL. Because we see that students who enroll with the scholarship have positive persistence and graduation rates, encouraging more students to enroll could result in positive long-run outcomes. We recognize that the causal interpretation of these analyses is weaker than for those from the RDD, but it is strengthened by a consistent set of results across a wide range of specifications. Additionally, regression analysis allows us to consider students beyond the specific eligibility thresholds.

Among APS graduates who do transition immediately to college, those who receive AATL scholarship funding are significantly more likely to persist for several years of college. Further, for the cohort that we can observe for a long enough duration, we additionally find that AATL scholarship recipients are more likely to earn a bachelor's degree within four years. When we consider how these effects vary by student academic performance (as measured by GPA), we find that effects are concentrated among students with GPAs in the range of 80 – 90. This is a positive and policy relevant finding for students in a context that does not have need-based aid. Some of these students are likely eligible for the HOPE scholarship, but many are not. In contrast, effects of the AATL scholarship on persistence and completion are essentially null for students with the strongest high school academic records, many of whom receive almost full support through the Zell Miller merit based scholarship or likely receive other merit based aid packages.

Unfortunately, we are not able shed light on the potential mechanisms through which the AATL Scholarship is affecting recipients' college trajectories and leave this for future research. AATL has an expressed goal of reducing the need for low-income families to borrow excessively for their children. Future work should consider how generous aid, such as the AATL funding, affects

students' borrowing, work behavior, and course-taking patterns, among other potential channels. In addition, future work should investigate the non-financial college success supports that AATL provides to its scholars, as this could prove to be a model for other place-based scholarship programs to provide more robust ongoing supports to their own students. Digging more deeply in these areas will continue to inform policy and practice about how financial aid can most effectively be deployed to improve the postsecondary outcomes of students from low-income backgrounds.

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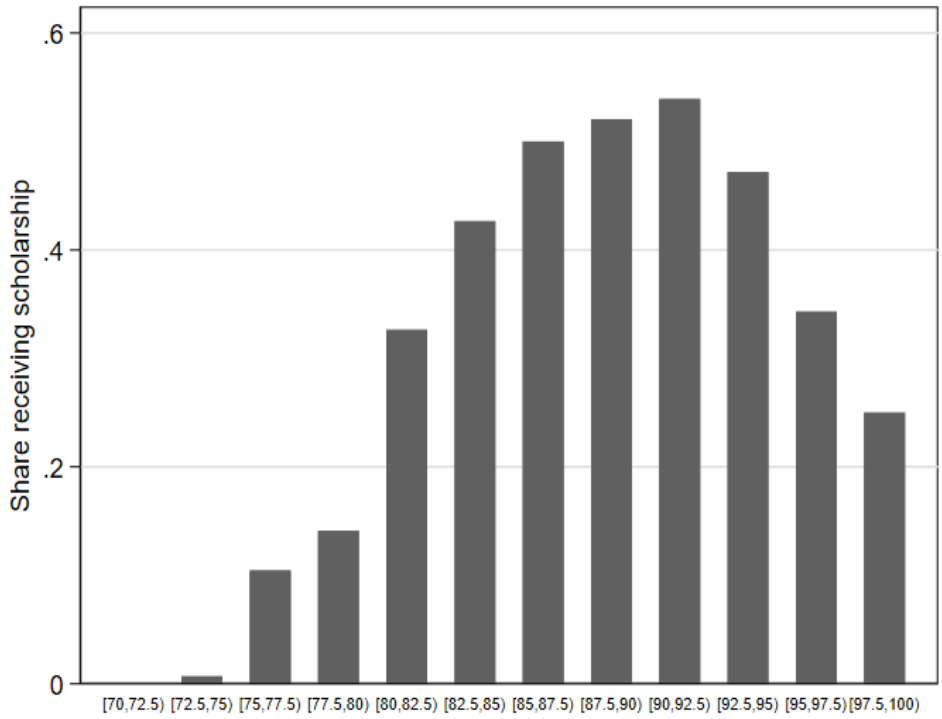
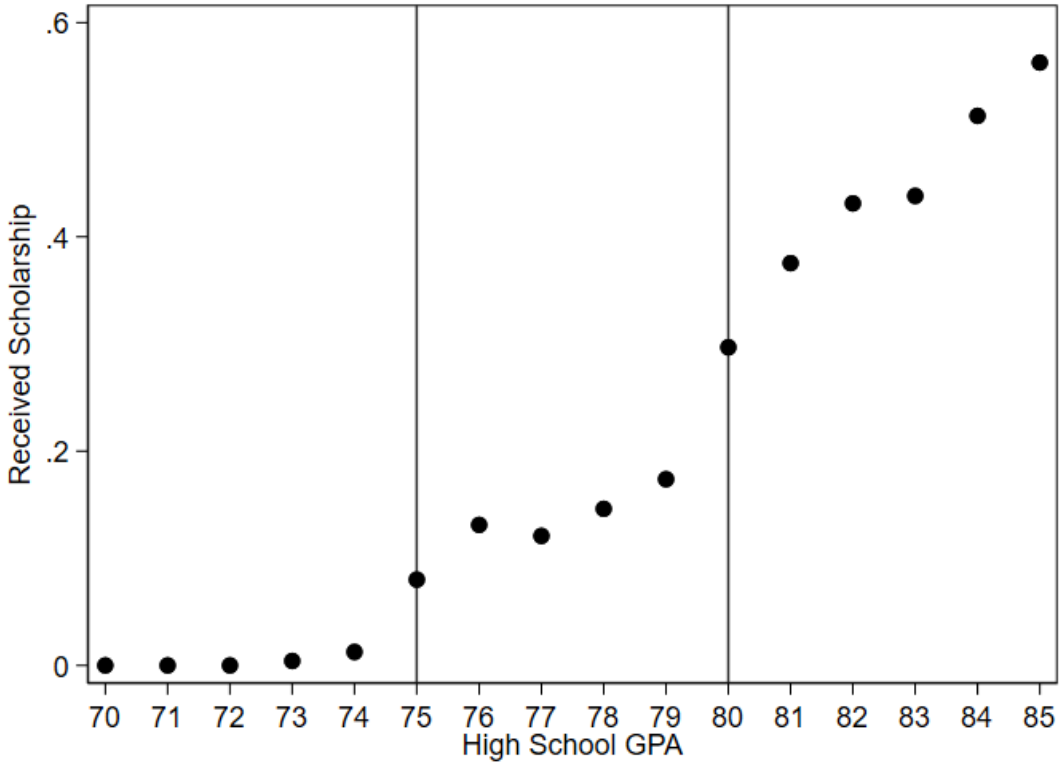
Figures and Tables

Figure 1: Share of APS graduates who receive AATL scholarship, by high school GPA.



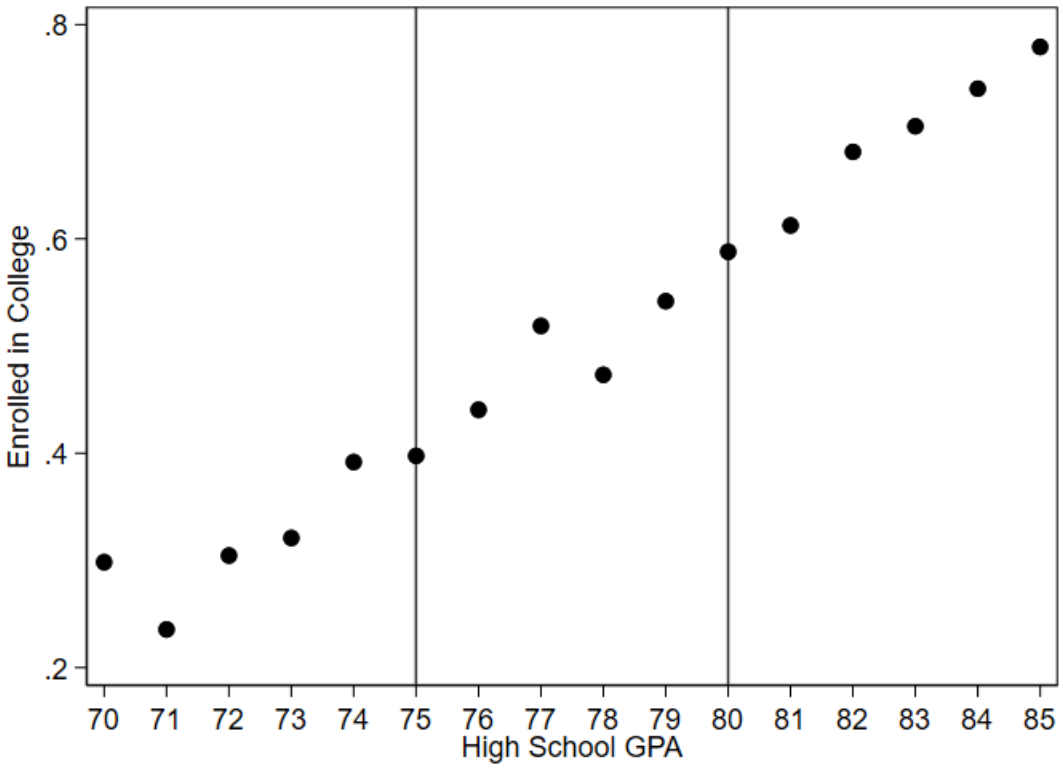
Notes: Includes APS graduates between the spring of 2016 and 2020 cohorts.

Figure 2 - Fraction of APS Students Who Received AATL Scholarship, by High School GPA



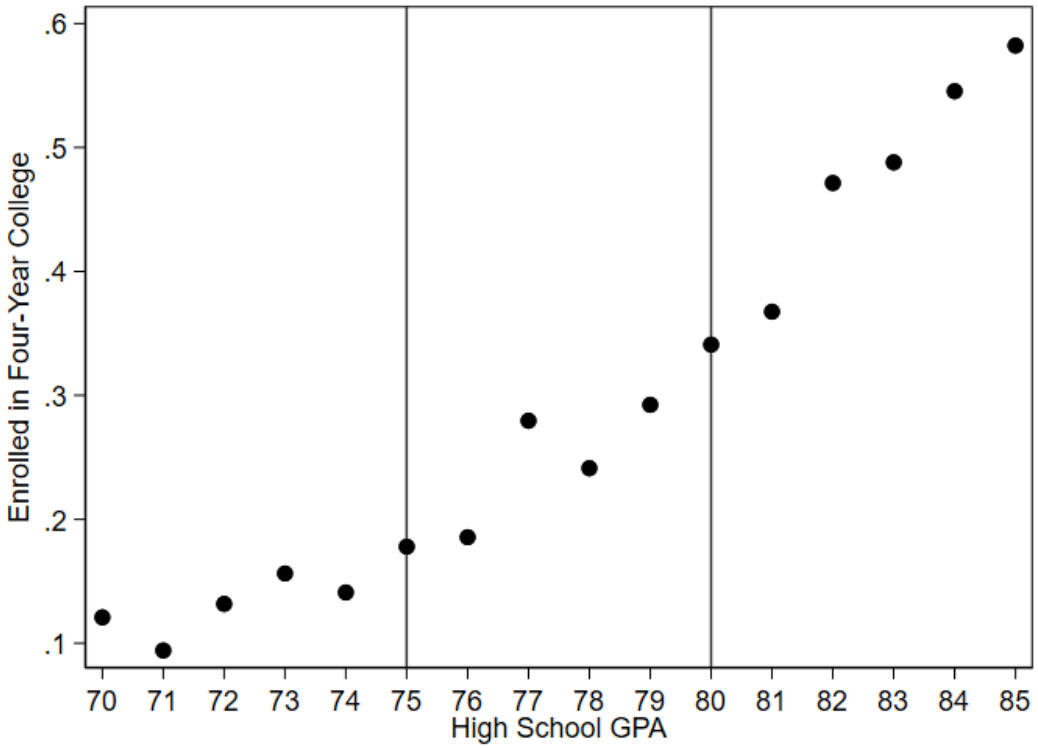
Notes: Includes APS graduates between the spring of 2016 and 2020 cohorts, who were ever received FRPM and attended APS for 2+ years prior to graduating.

Figure 3 - Fraction of APS Students Who Enrolled in College, by High School GPA



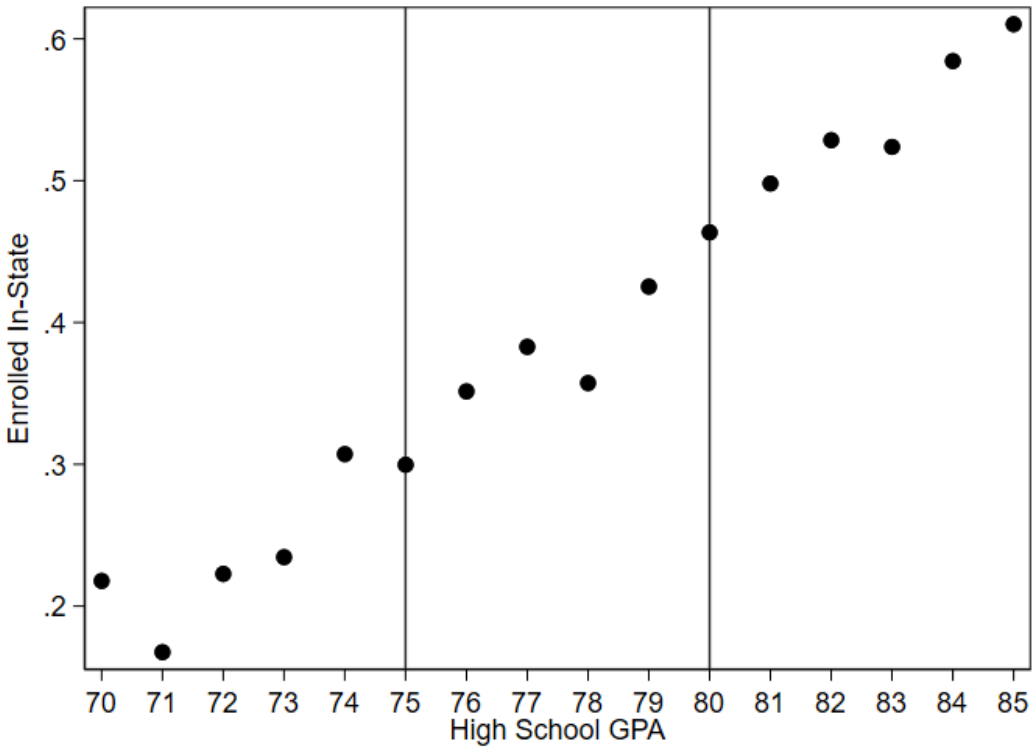
Notes: Includes APS graduates between the spring of 2016 and 2020 cohorts, who were ever received FRPM and attended APS for 2+ years prior to graduating.

Figure 4 - Fraction of APS Students Who Enrolled in Four-Year College, by High School GPA



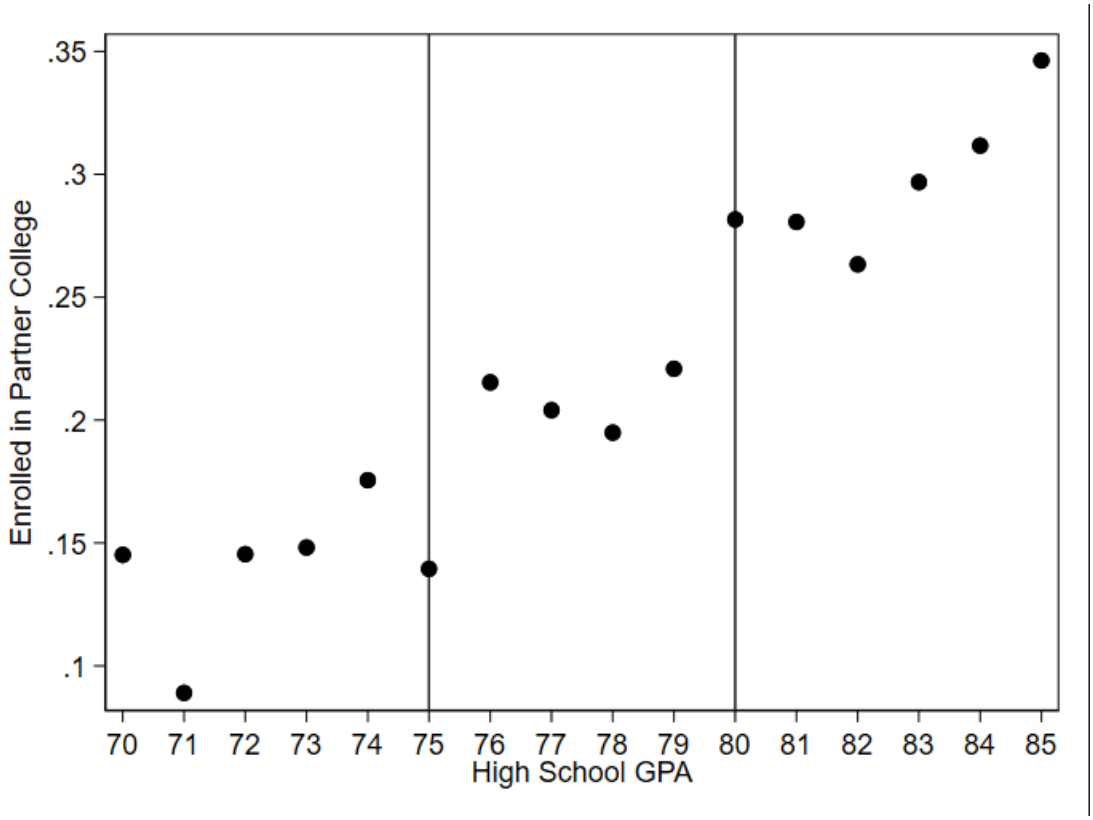
Notes: Includes APS graduates between the spring of 2016 and 2020 cohorts, who were ever received FRPM and attended APS for 2+ years prior to graduating.

Figure 5 - Fraction of APS Students Who Enrolled in an In-State College, by High School GPA



Notes: Includes APS graduates between the spring of 2016 and 2020 cohorts, who were ever received FRPM and attended APS for 2+ years prior to graduating.

Figure 6 - Fraction of APS Students Who Enrolled in an AATL Partner College, by High School GPA



Notes: Includes APS graduates between the spring of 2016 and 2020 cohorts, who were ever received FRPM and attended APS for 2+ years prior to graduating.

Table 1 - Summary Statistics of APS Students and AATL Scholars

	All students (N = 12,209)		AATL Scholars (N = 3,762)		Non-AATL Scholars (N = 8447)	
Baseline characteristics	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Female	0.553	0.497	0.651	0.477	0.509	0.500
Black	0.802	0.398	0.899	0.301	0.759	0.428
White	0.129	0.335	0.039	0.194	0.169	0.374
Hispanic	0.057	0.233	0.051	0.220	0.060	0.238
Multi-racial	0.017	0.128	0.013	0.113	0.018	0.134
Native American	0.04	0.196	0.038	0.192	0.041	0.198
Ever Free and Reduced Price Meal (FRPM)	0.763	0.425	0.877	0.328	0.712	0.453
Attend APS for 2+ years	0.978	0.145	1.000	0.016	0.969	0.173
Cumulative GPA (weighted)	83.612	7.899	87.023	5.371	82.063	8.363
GPA > 75	0.864	0.342	0.998	0.040	0.805	0.396
GPA > 80	0.673	0.469	0.921	0.269	0.563	0.496
Scholarship outcomes						
Applied for scholarship	0.505	0.500	1	0	0.285	0.451
Received scholarship	0.308	0.462	1	0	0	0
Fall scholarship amount	598.782	1,030.997	2,078.068	779.515	0	0
Fall scholarship $750+	0.283	0.450	0.998	0.040	0	0.031
Fall scholarship $2500	0.222	0.416	0.770	0.421	0	0.022
Enrollment outcomes						
Enrolled in college	0.625	0.484	0.970	0.171	0.532	0.499
Enrolled in college full-time on-time	0.482	0.500	0.876	0.330	0.371	0.483
Enrolled in a two-year college	0.147	0.354	0.203	0.402	0.136	0.342
Enrolled in a four-year college	0.478	0.500	0.767	0.423	0.396	0.489
Enrolled in-state	0.443	0.497	0.809	0.393	0.324	0.468
Enrolled in a partner college	0.245	0.429	0.468	0.499	0.168	0.374
Enrolled in a college, average SAT 900+	0.338	0.473	0.580	0.494	0.263	0.441
Enrolled in a college, average SAT 1000+	0.244	0.430	0.379	0.485	0.209	0.407
Enrolled in a college, average SAT 1100+	0.14	0.347	0.176	0.381	0.137	0.344
Enrolled in a college, average SAT 1200+	0.079	0.269	0.079	0.271	0.086	0.280
Persistence and completion outcomes						
Persistence, second semester	0.558	0.497	0.914	0.280	0.466	0.499
Persistence, second year (2016-2019 cohorts)	0.458	0.498	0.773	0.419	0.372	0.483
Persistence, third year (2016-2018 cohorts)	0.395	0.489	0.630	0.483	0.290	0.454
Persistence, third year or 2-year degree (2016-2018 cohorts)	0.406	0.491	0.637	0.481	0.302	0.459
Persistence, fourth year (2016-2017 cohorts)	0.326	0.469	0.518	0.500	0.245	0.430
Persistence, fourth year or 2-year degree (2016-2017 cohorts)	0.345	0.475	0.535	0.499	0.264	0.441
Two-year degree w/i 3 years (2016-2018)	0.013	0.107	0.013	0.114	0.013	0.112
Four-year degree w/i 4 years (2016 cohort)	0.12	0.325	0.278	0.449	0.125	0.331

Notes: All students include students who graduated from APS in the spring of 2016 and 2020 cohorts. College enrollment and completion data come from National Student Clearinghouse. Ever FRPM is whether a student received free or reduced-price meal in any year as far back as 2010.

Table 2 - Impact of Scholarship Eligibility on Scholarship Receipt (RDD)

	Applied to Scholarship	Received Scholarship	Scholarship Amount in 1st Semester	Received $750+ in 1st Semester	Received $2500+ in 1st Semester
Above 75 GPA	0.046	0.066***	38.314**	0.061***	-0.009**
	(0.032)	(0.015)	(14.290)	(0.015)	(0.004)
Control Mean	0.217	0.009	7.562	0.009	0
Observations	3,163	3,163	3,163	3,163	3,163
R-Squared	0.145	0.078	0.071	0.077	0.043
Above 80 GPA	0.025	0.097***	266.627***	0.100***	0.112***
	(0.027)	(0.023)	(44.095)	(0.024)	(0.018)
Control Mean	0.464	0.161	176.359	0.159	0.035
Observations	4,583	4,583	4,583	4,583	4,583
R-Squared	0.134	0.143	0.183	0.139	0.177

*Notes: Only includes students in APS 2+ years prior to graduating and ever on free and reduced-price meal. Running variable is high school GPA, whose slope we allow to vary above/below the scholarship eligibility threshold. Bandwidth of 5 GPA points around threshold. Includes controls for sex and race/ethnicity and fixed effects for high school enrolled and cohort. Standard errors in parentheses clustered on GPA. * p < 0.05 ** p < 0.01 *** p < 0.001.*

Table 3 - Impact of Scholarship Eligibility on College Enrollment (RDD)

	Enrolled in College	Enrolled in College Full-Time On-Time	Enrolled in Two-Year College	Enrolled in Four-Year College
Above 75 GPA	-0.010	0.023	-0.016	0.006
	(0.034)	(0.029)	(0.029)	(0.027)
Control Mean	0.361	0.149	0.214	0.148
Observations	3,163	3,163	3,163	3,163
R-Squared	0.095	0.070	0.044	0.059
Above 80 GPA	0.005	0.019	0.007	-0.002
	(0.028)	(0.027)	(0.024)	(0.026)
Control Mean	0.510	0.320	0.241	0.268
Observations	4,583	4,583	4,583	4,583
R-Squared	0.12	0.114	0.032	0.120

*Notes: Only includes students in APS 2+ years prior to graduating and ever on free and reduced-price meal. Running variable is high school GPA, whose slope we allow to vary above/below the scholarship eligibility threshold. Bandwidth of 5 GPA points around threshold. Includes controls for sex and race/ethnicity and fixed effects for high school enrolled and cohort. Standard errors in parentheses clustered on GPA. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.*

Table 4 - Impact of Scholarship Eligibility on College Type (RDD)

	Enrolled In-State	Enrolled in Partner College	Enrolled in College, Avg. SAT 900+	Enrolled in College, Avg. SAT 1000+	Enrolled in College, Avg. SAT 1100+	Enrolled in College, Avg. SAT 1200+
Above 75 GPA	-0.018	-0.019	0.001	-0.001	0.003	0.000
	(0.031)	(0.026)	(0.015)	(0.007)	(0.005)	(0.000)
Control Mean	0.276	0.164	0.039	0.005	0	0
Observations	3,163	3,163	3,163	3,163	3,163	3,163
R-Squared	0.074	0.047	0.034	0.032	0.019	0.005
Above 80 GPA	0.018	0.032	0.001	0.003	-0.001	0.003
	(0.028)	(0.024)	(0.020)	(0.013)	(0.009)	(0.002)
Control Mean	0.393	0.209	0.101	0.035	0.020	0
Observations	4,583	4,583	4,583	4,583	4,583	4,583
R-Squared	0.073	0.045	0.108	0.092	0.024	0.005
			Only Four-Year College Enrollees			
Above 80 GPA	0.053	0.033	0.024	0.022	-0.006	0.007
	(0.048)	(0.048)	(0.050)	(0.035)	(0.026)	(0.006)
Control Mean	0.591	0.308	0.372	0.126	0.069	0
Observations	1,608	1,608	1,608	1,608	1,608	1,608
R-Squared	0.060	0.048	0.104	0.140	0.035	0.014

*Notes: Only includes students in APS 2+ years prior to graduating and ever on free and reduced-price meal. Running variable is high school GPA, whose slope we allow to vary above/below the scholarship eligibility threshold. Bandwidth of 5 GPA points around threshold. Includes controls for sex and race/ethnicity and fixed effects for high school enrolled and cohort. Standard errors in parentheses clustered on GPA. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.*

Table 5 - Relationship Between Scholarship Receipt and Persistence and Graduation Outcomes

Subsample and Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Only students ever eligible for FRPM		X						X			
Only students who applied for scholarship			X					X			
Only students who applied for scholarship with zero EFC				X					X		
Only students who are eligible for scholarship					X					X	
Only students who are eligible for scholarship, but for EFC						X					X
Adding college fixed effects							X	X	X	X	X
Outcomes											
Persistence, 2nd semester	0.111***	0.145***	0.088***	0.120***	0.124***	0.112***	0.112***	0.142***	0.146***	0.171***	0.113***
Persistence, 2nd year	0.106***	0.148***	0.079***	0.090***	0.105***	0.107***	0.116***	0.147***	0.156***	0.163***	0.118***
Persistence, 3rd year	0.117***	0.156***	0.090***	0.127***	0.130***	0.118***	0.123***	0.178***	0.224***	0.214***	0.127***
Persistence, 3rd year or 2-year degree	0.112***	0.150***	0.090***	0.127***	0.130***	0.113***	0.127***	0.187***	0.237***	0.226***	0.132***
Persistence, 4th year	0.089***	0.130***	0.064***	0.115***	0.119***	0.090***	0.110***	0.134***	0.168***	0.203***	0.115***
Persistence, 4th year or 2-year degree	0.082***	0.124***	0.065***	0.122***	0.122***	0.083***	0.118***	0.153***	0.196***	0.224***	0.124***
Graduation from any college	0.011	0.016**	0.007	0.011	0.022**	0.011	0.013	0.010	0.019	0.029*	0.013
Graduation from 2-year college	-0.005	-0.005	0.000	-0.002	0.000	-0.005	0.012	0.018	0.023	0.022	0.013
Graduation from 2-year college within 3 years	-0.004	-0.004	0.000	-0.001	0.001	-0.005	0.012	0.019	0.025	0.024	0.014
Graduation from 4-year college	0.046**	0.081***	0.051***	0.087***	0.106***	0.046**	0.066*	0.079*	0.129**	0.146***	0.065*

*Notes: Sample includes all APS students in the district for 2+ years prior to graduation, a high school GPA above 70, and enrolled in college. Estimated using OLS with non-parametric controls for GPA (bins of 2.5 GPA point increments). Includes controls for sex and race/ethnicity and fixed effects for high school enrolled and cohort. Eligibility and EFC determined by AATL. Standard errors in parentheses clustered at the high school level. * p < 0.05 ** p < 0.01 *** p < 0.001.*

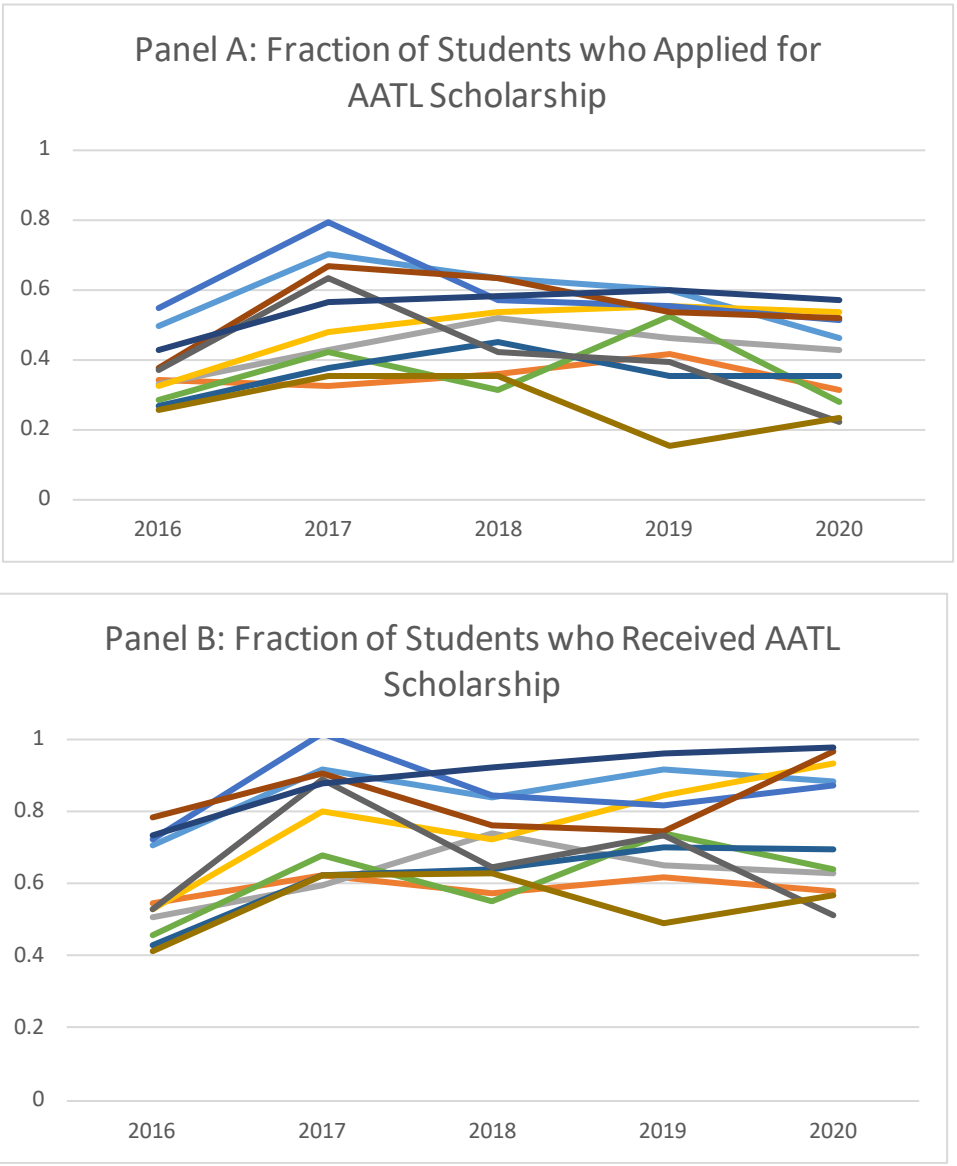
Table 6 - Relationship Between Scholarship Receipt and Persistence and Graduation Outcomes, by GPA

	High School GPA Range											
	[70,72.5)	[72.5,75)	[75,77.5)	[77.5,80)	[80,82.5)	[82.5,85)	[85,87.5)	[87.5,90)	[90,92.5)	[92.5,95)	[95,97.5)	[97.5,100)
Persistence, 2nd semester	0.000	0.030	0.096	0.106**	0.197***	0.089***	0.122***	0.052**	0.024	0.001	0.000	0.000
Persistence, 2nd year	0.000	0.531	0.019	0.011	0.183***	0.090**	0.175***	0.076**	0.033	-0.022	0.032	-0.010
Persistence, 3rd year	0.000	0.000	-0.010	0.011	0.186***	0.100*	0.167***	0.124**	0.076	-0.021	0.067	-0.056
Persistence, 3rd year or 2-year degree	0.000	0.000	-0.050	0.026	0.190***	0.107**	0.170***	0.115**	0.076	-0.013	0.067	-0.056
Persistence, 4th year	0.000	0.000	0.007	-0.029	0.113*	0.167**	0.075	0.100	0.015	0.081	0.054	0.046
Persistence, 4th year or 2-year degree	0.000	0.000	-0.022	0.016	0.128**	0.176***	0.082	0.064	0.015	0.081	0.054	0.046
Graduation from any college	0.000	0.000	0.008	0.000	0.024	-0.012	0.020	0.017	-0.019	-0.025	-0.034	-0.003
Graduation from 2-year college	0.000	0.000	-0.024	0.025	-0.002	-0.010	0.011	-0.016	0.000	0.008	0.000	0.000
Graduation from 4-year college	0.000	0.000	0.099	-0.059	0.070	0.009	0.096	0.152	-0.056	-0.284	-0.090	2.000
Graduation from 2-year college within 3 years	0.000	0.000	-0.024	0.025	0.007	-0.010	0.011	-0.016	0.000	0.008	0.000	0.000
Scholarship amount in first semester	0	759***	739***	1087***	1877***	2062***	2155***	2290***	2368***	2407***	2417***	2324***

*Notes: Uses sample and specification from column 3 of Table 6 (only scholarship applicants). Sample size changes across GPAs and with longer-term outcomes. Clustered standard errors at the high school level not shown. * p < 0.05 ** p < 0.01 *** p < 0.001.*

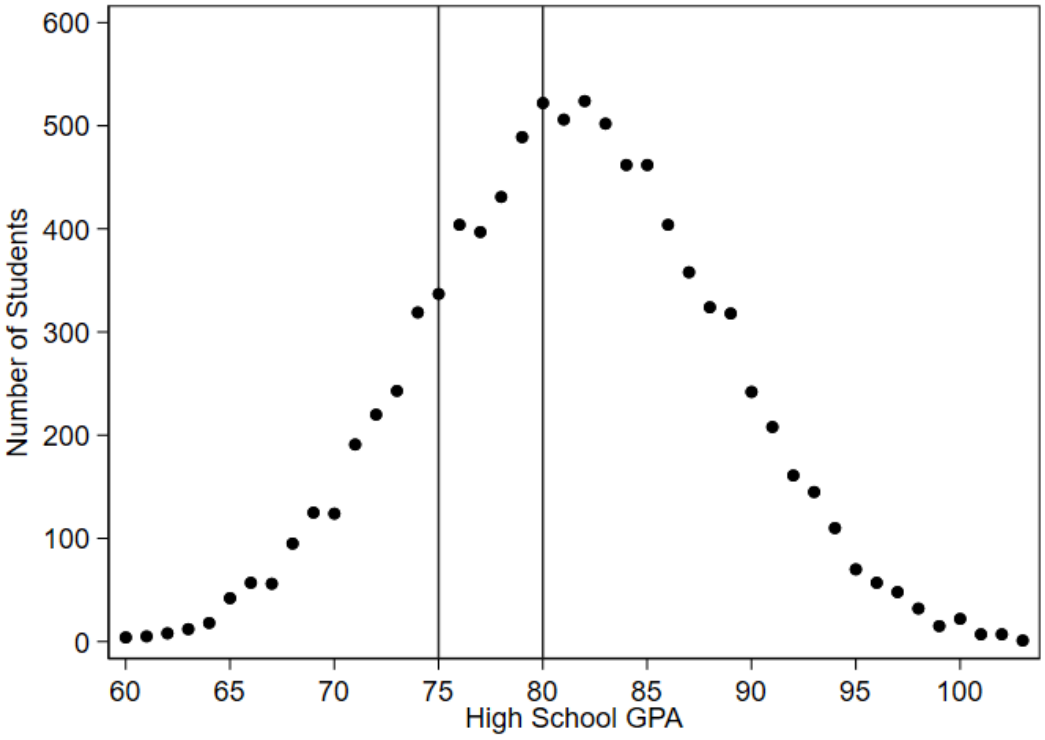
Appendix Figures and Tables

Appendix Figure 1: Fraction of Students Receiving FRPM who Applied and Received AATL Scholarship, Over Time, by High School



Notes: Includes APS graduates between the spring of 2016 and 2020 cohorts who attended APS for at least 2+ years prior to graduating and ever received free and reduced-price mealas early as 2010. Each line is a separate high school. Excludes high schoos withimbalanced panel or with very few students.

Appendix Figure 2 - Density of Students, by High School GPA



Notes: Includes APS graduates between the spring of 2016 and 2020 cohorts.

Appendix Table 1 - Summary Statistics of APS Students, Regression Discontinuity Sample

	Ever FRL and 2+ years in APS (N = 9,219)		Ever FRL and 2+ years in APS, +/- 5 of 75 GPA (N = 3,163)		Ever FRL and 2+ years in APS, +/- 5 of 80 GPA (N = 4,583)	
Baseline characteristics	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Female	0.564	0.496	0.488	0.500	0.543	0.498
Black	0.912	0.283	0.938	0.241	0.936	0.245
White	0.021	0.142	0.008	0.090	0.010	0.101
Hispanic	0.063	0.243	0.053	0.225	0.057	0.231
Multi-racial	0.011	0.105	0.009	0.092	0.006	0.075
Native American	0.049	0.215	0.04	0.197	0.043	0.202
Ever Free and Reduced Price Meal (FRPM)	1	0	1	0	1	0
Attend APS for 2+ years	1	0	1	0	1	0
Cumulative GPA (weighted)	81.822	7.039	76.016	2.677	80.295	2.786
GPA > 75	0.834	0.372	0.653	0.476	1	0
GPA > 80	0.611	0.488	0.003	0.050	0.551	0.497
Scholarship outcomes						
Applied for scholarship	0.563	0.496	0.328	0.47	0.547	0.498
Received scholarship	0.358	0.479	0.090	0.286	0.286	0.451
Fall scholarship amount	733.506	1,091.872	85.678	331.227	495.271	920.443
Fall scholarship $750+	0.351	0.477	0.088	0.283	0.28	0.449
Fall scholarship $2500	0.270	0.444	0.012	0.11	0.165	0.371
Enrollment outcomes						
Enrolled in college	0.617	0.486	0.425	0.494	0.581	0.493
Enrolled in college full-time on-time	0.461	0.499	0.226	0.418	0.398	0.489
Enrolled in a two-year college	0.182	0.386	0.223	0.416	0.231	0.421
Enrolled in a four-year college	0.436	0.496	0.202	0.402	0.351	0.477
Enrolled in-state	0.467	0.499	0.324	0.468	0.451	0.498
Enrolled in a partner college	0.270	0.444	0.180	0.384	0.246	0.431
Enrolled in a college, average SAT 900+	0.271	0.444	0.065	0.247	0.166	0.372
Enrolled in a college, average SAT 1000+	0.165	0.371	0.017	0.128	0.066	0.248
Enrolled in a college, average SAT 1100+	0.070	0.256	0.009	0.095	0.024	0.152
Enrolled in a college, average SAT 1200+	0.028	0.164	0	0.018	0.001	0.033
Persistence and completion outcomes						
Persistence, second semester	0.547	0.498	0.333	0.472	0.492	0.500
Persistence, second year (2016-2019 cohorts)	0.427	0.495	0.203	0.402	0.345	0.475
Persistence, third year (2016-2018 cohorts)	0.319	0.466	0.102	0.303	0.215	0.411
Persistence, third year or 2-year degree (2016-2018 cohorts)	0.332	0.471	0.119	0.324	0.232	0.422
Persistence, fourth year (2016-2017 cohorts)	0.248	0.432	0.068	0.251	0.156	0.363
Persistence, fourth year or 2-year degree (2016-2017 cohorts)	0.272	0.445	0.097	0.295	0.186	0.389
Two-year degree w/i 3 years (2016-2018)	0.017	0.125	0.02	0.131	0.021	0.137
Four-year degree w/i 4 years (2016 cohort)	0.115	0.319	0.021	0.143	0.055	0.229

Notes: All students include students who graduated from APS in the spring of 2016 and 2020 cohorts. College enrollment and completion data come from National Student Clearinghouse. Ever FRPM is whether a student received free or reduced-price meal in any year as far back as 2010.

Appendix Table 2 - Covariate Balance for Regression Discontinuity Design

	Female	Black	Hispanic
Above 75 GPA	0.076**	0.022	-0.013
	(0.035)	(0.014)	(0.013)
Control Mean	0.438	0.938	0.052
Observations	3,163	3,163	3,163
R-Squared	0.070	0.238	0.236
Above 80 GPA	-0.028	0.02	-0.012
	(0.028)	(0.013)	(0.012)
Control Mean	0.524	0.932	0.059
Observations	4,583	4,583	4,583
R-Squared	0.062	0.177	0.161

*Notes: Only includes students in APS 2+ years prior to graduating and ever on free and reduced-price meal. Running variable is high school GPA, whose slope we allow to vary above/below the scholarship eligibility threshold. Bandwidth of 5 GPA points around threshold. Includes fixed effects for high school enrolled and cohort. Standard errors in parentheses clustered on GPA. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.*

Appendix Table 3 - Impact of Scholarship Eligibility, Robustness Tests (RDD)

	Applied to Scholarship	Received Scholarship	Scholarship Amount in 1st Semester	Received $750+ in 1st Semester	Received $2500+ in 1st Semester	Enrolled in College	Enrolled in College Full-Time On-Time	Enrolled in Two-Year College	Enrolled in Four-Year College	Enrolled In-State	Enrolled in Partner College	Enrolled in College, Avg. SAT 900+	Enrolled in College, Avg. SAT 1000+	Enrolled in College, Avg. SAT 1100+	Enrolled in College, Avg. SAT 1200+
Above 75 GPA, No Controls	0.057*	0.067***	30.974**	0.063***	-0.008*	-0.001	0.027	-0.011	0.010	-0.006	-0.013	0.004	-0.001	0.004	0.001
	(0.032)	(0.015)	(14.431)	(0.015)	(0.004)	(0.034)	(0.029)	(0.029)	(0.027)	(0.032)	(0.026)	(0.015)	(0.007)	(0.005)	(0.001)
Above 75 GPA, Triangular Kernel	0.041	0.057***	29.091**	0.052***	-0.005*	-0.027	0.016	-0.040	0.013	-0.036	-0.036	0.010	0.007	0.009*	0.000
	(0.035)	(0.016)	(13.506)	(0.015)	(0.003)	(0.037)	(0.032)	(0.032)	(0.030)	(0.034)	(0.028)	(0.0160)	(0.007)	(0.005)	(0.000)
Above 75 GPA, Donut RDD	0.062	0.079***	20.307	0.076***	-0.019**	0.052	0.010	0.063	-0.011	0.044	0.041	-0.013	-0.012	-0.006	0.001
	(0.046)	(0.024)	(25.782)	(0.024)	(0.008)	(0.058)	(0.044)	(0.046)	(0.043)	(0.053)	(0.043)	(0.026)	(0.012)	(0.008)	(0.001)
Above 80 GPA, No Controls	0.031	0.098***	272.853***	0.101***	0.115***	0.007	0.019	0.005	0.002	0.018	0.033	0.001	0.001	-0.001	0.003
	(0.028)	(0.024)	(44.720)	(0.024)	(0.018)	(0.029)	(0.027)	(0.024)	(0.026)	(0.029)	(0.024)	(0.020)	(0.013)	(0.009)	(0.002)
Above 80 GPA, Triangular Kernel	0.028	0.099***	251.263***	0.103***	0.104***	0.006	0.018	0.010	-0.004	0.019	0.052**	-0.005	0.005	-0.003	0.004
	(0.029)	(0.025)	(46.729)	(0.025)	(0.019)	(0.031)	(0.029)	(0.027)	(0.028)	0.031	(0.026)	(0.021)	(0.014)	(0.010)	(0.003)
Above 80 GPA, Donut RDD	0.061	0.118***	308.905***	0.114***	0.129***	0.005	-0.005	0.016	-0.110	0.036	0.011	0.011	-0.016	0.004	0.000
	(0.044)	(0.037)	(69.022)	(0.037)	(0.028)	(0.043)	(0.043)	(0.039)	(0.042)	(0.044)	(0.039)	(0.032)	(0.019)	(0.013)	(0.003)

*Notes: Only includes students in APS 2+ years prior to graduating and ever on free and reduced-price meal. Running variable is high school GPA, whose slope we allow to vary above/below the scholarship eligibility threshold. Includes cohort fixed effects. Bandwidth of 5 GPA points around threshold. Controls include sex and race/ethnicity and fixed effects for high school enrolled. Donut RDD excludes +/- 1 GPA points from threshold. Standard errors in parentheses clustered on GPA. * p < 0.05 ** p < 0.01 *** p < 0.001.*

Appendix Table 4 - Impact of Scholarship Eligibility on Persistence and Completion (RDD)

	Persistence, second semester	Persistence, second year (2016-2019 cohorts)	Persistence, third year (2016-2018 cohorts)	Persistence, third year or 2-year degree (2016-2018 cohorts)	Persistence, fourth year (2016-2017 cohorts)	Persistence, fourth year or 2-year degree (2016-2017 cohorts)	Two-year degree w/i 3 years (2016-2018)	Four-year degree w/i 4 years (2016 cohort)
Above 75 GPA	0.017	0.025	0.037	0.038	0.035	0.034	0.002	0.033*
	(0.035)	(0.029)	(0.025)	(0.028)	(0.025)	(0.030)	(0.012)	(0.018)
Control Mean	0.257	0.152	0.065	0.077	0.039	0.062	0.015	0
Observations	2,555	2,555	1,934	1,934	1,271	1,282	1,834	673
R-Squared	0.077	0.071	0.060	0.051	0.063	0.131	0.029	0.038
Above 80 GPA	-0.003	-0.003	0.024	0.022	0.027	0.019	0.003	0.024
	(0.031)	(0.029)	(0.028)	(0.030)	(0.031)	(0.033)	(0.011)	(0.027)
Control Mean	0.426	0.273	0.145	0.172	0.097	0.138	0.025	0.025
Observations	3,725	3,725	2,827	2,832	1,861	1,879	2,827	959
R-Squared	0.101	0.110	0.100	0.090	0.083	0.104	0.026	0.038

*Notes: Only includes students in APS 2+ years prior to graduating and ever on free and reduced-price meal. Running variable is high school GPA, whose slope we allow to vary above/below the scholarship eligibility threshold. Bandwidth of 5 GPA points around threshold. Includes controls for sex and race/ethnicity and fixed effects for high school enrolled and cohort. Standard errors in parentheses clustered on GPA. * p < 0.05 ** p < 0.01 *** p < 0.001.*

Appendix Table 5 - Mean of Outcomes for Persistence and Completion Results for Non-Scholarship Recipients

Subsample and Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Only students ever eligible for FRPM		X						X			
Only students who applied for scholarship			X					X			
Only students who applied for scholarship with zero EFC				X					X		
Only students who are eligible for scholarship					X					X	
Only students who are eligible for scholarship, but for EFC						X					X
Adding college fixed effects							X	X	X	X	X
Outcomes											
Persistence, 2nd semester	0.819	0.732	0.830	0.758	0.781	0.841	0.819	0.783	0.758	0.781	0.841
Persistence, 2nd year	0.665	0.523	0.662	0.562	0.602	0.700	0.665	0.590	0.562	0.602	0.700
Persistence, 3rd year	0.497	0.329	0.497	0.357	0.399	0.534	0.497	0.394	0.357	0.399	0.534
Persistence, 3rd year or 2-year degree	0.509	0.347	0.508	0.372	0.413	0.547	0.509	0.408	0.372	0.413	0.547
Persistence, 4th year	0.418	0.251	0.414	0.260	0.295	0.452	0.418	0.307	0.260	0.295	0.452
Persistence, 4th year or 2-year degree	0.438	0.282	0.430	0.284	0.316	0.472	0.438	0.327	0.284	0.316	0.472
Graduation from any college	0.070	0.059	0.062	0.059	0.059	0.074	0.070	0.058	0.059	0.059	0.074
Graduation from 2-year college	0.018	0.026	0.016	0.024	0.021	0.017	0.018	0.020	0.024	0.021	0.017
Graduation from 2-year college within 3 years	0.016	0.023	0.015	0.022	0.019	0.016	0.016	0.018	0.022	0.019	0.016
Graduation from 4-year college	0.205	0.098	0.200	0.120	0.118	0.223	0.205	0.137	0.120	0.118	0.223

Notes: Sample includes all APS students who are not shcolarship recipients but were in the district for 2+ years prior to graduation, a high school GPA above 70, and enrolled in college. Eligibility and EFC determined by AATL.

Appendix Table 6 - Relationship Between Scholarship Receipt and Persistence and Graduation Outcomes, 2016 Cohort

Subsample and Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Only students ever eligible for FRPM		X						X			
Only students who applied for scholarship			X					X			
Only students who applied for scholarship with zero EFC				X					X		
Only students who are eligible for scholarship					X					X	
Only students who are eligible for scholarship, but for EFC						X					X
Adding college fixed effects							X	X	X	X	X
Outcomes											
Persistence, 2nd semester	0.099***	0.116***	0.063***	0.054*	0.060*	0.098***	0.082***	0.098**	0.098*	0.114*	0.084***
Persistence, 2nd year	0.119***	0.150***	0.089***	0.083*	0.109***	0.122***	0.107***	0.118***	0.139**	0.160***	0.104***
Persistence, 3rd year	0.130***	0.164***	0.104***	0.125***	0.120***	0.131***	0.137***	0.152***	0.229***	0.190***	0.137***
Persistence, 3rd year or 2-year degree	0.127***	0.160***	0.105***	0.128***	0.120***	0.128***	0.143***	0.165***	0.251***	0.205***	0.145***
Persistence, 4th year	0.104***	0.143***	0.074***	0.105**	0.119***	0.105***	0.120***	0.122**	0.144**	0.189***	0.120***
Persistence, 4th year or 2-year degree	0.110***	0.149***	0.083***	0.120**	0.130***	0.110***	0.142***	0.161***	0.205***	0.240***	0.141***
Graduation from any college	0.042*	0.077***	0.042*	0.068*	0.095***	0.040*	0.084**	0.102**	0.159**	0.177***	0.082**
Graduation from 2-year college	-0.003	-0.004	-0.009	-0.019	-0.011	-0.005	0.018	0.023	0.030	0.032	0.017
Graduation from 2-year college within 3 years	-0.001	-0.001	-0.006	-0.014	-0.006	-0.003	0.019	0.027	0.034	0.039	0.019
Graduation from 4-year college	0.046**	0.081***	0.051***	0.087***	0.106***	0.046**	0.066*	0.079*	0.129**	0.146***	0.065*

*Notes: Sample includes all APS students in the district for 2+ years prior to graduation, a high school GPA above 70, and enrolled in college. Estimated using OLS with non-parametric controls for GPA (bins of 2.5 GPA point increments). Includes controls for sex and race/ethnicity and fixed effects for high school enrolled. Eligibility and EFC determined by AATL. Standard errors in parentheses clustered at the high school level. * p < 0.05 ** p < 0.01 *** p < 0.001.*

Appendix Table 7 - Relationship Between Scholarship Receipt and Persistence and Graduation Outcomes - Matching

Outcomes	(1)	(2)	(3)	(4)	(5)
Persistence, 2nd semester	0.098***	0.084***	0.092***	0.087***	0.102***
Persistence, 2nd year	0.087***	0.051**	0.063***	0.085***	0.077***
Persistence, 3rd year	0.108***	0.100***	0.110***	0.158***	0.085***
Persistence, 3rd year or 2-year degree	0.107***	0.097***	0.105***	0.153***	0.086***
Persistence, 4th year	0.067***	0.050**	0.061***	0.073***	0.047**
Persistence, 4th year or 2-year degree	0.066***	0.043**	0.057***	0.067***	0.070***
Graduation from any college	-0.006	-0.011	-0.015**	-0.019**	-0.014*
Graduation from 2-year college	0.000	-0.002	-0.005	-0.006	-0.003
Graduation from 4-year college	0.049	0.022	0.020	0.005	0.053*
Graduation from 2-year college within 3 years	0.001	-0.001	-0.004	-0.005	-0.002
Exact matching variables					
High school	X				X
Black		X		X	
Female		X	X		X
Ever FRPM			X	X	
Nearest neighbor matching variables					
High school GPA	X	X	X	X	X

*Notes: Estimated using exact and nearest neighbor matching, all estimated separately. Standard errors not shown. * p < 0.05 ** p < 0.01 *** p < 0.001.*

Appendix Table 8 - Relationship Between Scholarship Receipt and Persistence and Graduation Outcomes, by 5 GPA Point Bins

	High School GPA Range (Estimates)						*High School GPA Range (Means)*					
	[70,75)	[75,80)	[80,85)	[85,90)	[90,95)	[95,100)	[70,75)	[75,80)	[80,85)	[85,90)	[90,95)	[95,100)
Persistence, 2nd semester	0.254	0.091**	0.133***	0.085***	0.012	-0.002	0.724	0.745	0.768	0.876	0.981	1.000
Persistence, 2nd year	0.673	-0.007	0.132***	0.114**	0.013	-0.002	0.368	0.524	0.563	0.752	0.924	0.975
Persistence, 3rd year		-0.018	0.144***	0.144***	0.010	0.025	0.185	0.296	0.365	0.592	0.883	0.923
Persistence, 3rd year or 2-year degree		-0.025	0.145***	0.142***	0.011	0.025	0.185	0.323	0.379	0.597	0.883	0.923
Persistence, 4th year		-0.023	0.152***	0.062*	0.010	0.036	0.194	0.200	0.247	0.510	0.807	0.909
Persistence, 4th year or 2-year degree		-0.003	0.152***	0.052*	0.010	0.036	0.194	0.236	0.268	0.523	0.807	0.909
Graduation from any college	0.006	0.004	0.009	0.018	-0.022	-0.007	0.011	0.029	0.060	0.064	0.144	0.052
Graduation from 2-year college		0.005	-0.008	0.001	0.001		0.000	0.023	0.030	0.010	0.000	0.000
Graduation from 4-year college		0.005	-0.011	0.001	0.001		0.067	0.047	0.103	0.176	0.596	0.444
Graduation from 2-year college within 3 years		-0.014	0.051*	0.105*	-0.094	-0.119	0.000	0.023	0.026	0.010	0.000	0.000
Scholarship amount in first semester	824***	949***	1970***	2206***	2394***	2406***	0	0	0	0	0	0

*Notes: Uses sample and specification from column 3 of Table 5 (only scholarship applicants). Sample size changes across GPAs and with longer-term outcomes. Clustered standard errors at the high school level not shown. * p < 0.05 ** p < 0.01 *** p < 0.001.*

About the Authors

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Carycruz M. Bueno is an assistant professor of economics at Wesleyan University. She is an applied microeconomist who studies how education policy can eradicate education inequality. Her research addresses topics such as virtual schools, school choice, teacher labor markets, and student non-cognitive skills. Her research interest stems from her experience as a special education teacher. She has received funding from the National Science Foundation, ASHE, and National Economics Association. She received a Ph.D. in economics from Georgia State University and a B.A. in economics and mathematics from Mount Holyoke College.

Lindsay C. Page

Lindsay C. Page is the Annenberg Associate Professor of Education Policy at Brown University and a faculty research fellow of the National Bureau of Economic Research. Her work focuses on quantitative methods and their application to questions regarding the effectiveness of educational policies and programs across the preschool to postsecondary spectrum. Much of her work has involved large-scale experimental or quasi-experimental studies to investigate the causal effects of strategies for improving students' transition to and through college. She holds a doctorate in quantitative policy analysis and master's degrees in statistics and in education policy from Harvard University. She earned her bachelor's degree from Dartmouth College.

Jonathan Smith

Jonathan Smith is an associate professor of economics at Georgia State University and a fellow with the Georgia Policy Labs. His research focuses on the behavioral and institutional factors that determine how students transition from high school to college and the consequences of those decisions. Prior to joining Georgia State University, he worked as a policy research scientist at the College Board. He received his Ph.D. in economics from Boston University and a B.A. in economics from Tufts University.

About the Georgia Policy Labs

The Georgia Policy Labs is an interdisciplinary research center that drives policy and programmatic decisions that lift children, students, and families—especially those experiencing vulnerabilities. We produce evidence and actionable insights to realize the safety, capability, and economic security of *every* child, young adult, and family in Georgia by leveraging the power of data. We work alongside our school district and state agency partners to magnify their research capabilities and focus on their greatest areas of need. Our work reveals how policies and programs can be modified so that every child, student, and family can thrive.

Housed in the Andrew Young School of Policy Studies at Georgia State University, we have three components: the Metro Atlanta Policy Lab for Education (metro-Atlanta K-12 public education), the Child & Family Policy Lab (supporting children, families, and students through a cross-agency approach), and the Career & Technical Education Policy Exchange (a multi-state consortium exploring high-school based career and technical education).

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