STATE REPORT | JUNE 2024

EXAMINING STUDENT TRANSITIONS INTO COLLEGE AND CAREER PATHWAYS IN GEORGIA

Strategic Data Project Education to Workforce Pathways Diagnostic Research Report

INTRODUCTION

In 2011, the Georgia Board of Regents and the State Board of Technical Colleges set an ambitious goal of increasing the percentage of Georgians with post-secondary credentials to 60 percent by 2025. This goal was motivated by the critical need to align state education attainment rates with the needs of the evolving state economy. By 2025, over 60 percent of jobs in Georgia will require some form of a postsecondary education.[1] Currently, only 48 percent of the state's young adults meet this qualification.[2]

Given the projected increase in demand for college-educated workers in Georgia, the state needs to address the gap between the current amount of qualified young adults and the anticipated workforce needs. Many system conditions and individual factors play a role in determining why and whether a student earns a postsecondary credential. For instance, students considering postsecondary education will weigh the costs and benefits of continuing their education. In these deliberations, expected earnings will play a large role in students' decision to attend college. Potential students will also weigh earnings in deciding which degree to pursue and what credentials to complete (45). Ascertaining the payoff to a college degree is especially important at a time of declining college enrollment, and of increased doubts about the value of a college degree.

In addition to having an interest in continuing their education, students also need to have access to postsecondary institutions and to successfully

1 Complete College Georgia. Goals. https://completega.org/goals

2 U.S. Census Bureau. "Educational Attainment." American Community Survey, ACS 1-Year Estimates Subject Tables, Table S1501, 2022, https://data.census.gov/table/ACSST1Y2022.S1501?q=education attainment in georgia. Accessed on April 18, 2024.

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ABOUT THE STRATEGIC DATA PROJECT

SDP partners with state and local K–12 education agencies to build capacity for managing, analyzing, and communicating with data. SDP cultivates analytic talent through a two-year fellowship program, in-person and online trainings, and widely accessible tools and resources. The Harvard Center for Education Policy Research launched SDP in 2008 to meet a need for analytical capacity in state and local K–12 agencies. Reform-minded school superintendents were experimenting with new programs and policies, but lacked the capacity to evaluate those efforts or to make data-informed decisions.

Since 2008, SDP has collaborated with nearly 300 school districts, charter management organizations, state education agencies, and nonprofits to sponsor close to 600 SDP Fellows. Fellows may already work at a partner agency, or SDP recruits and selects Fellows who are then placed at partner organizations. SDP alumni work at K–12 agencies and organizations around the country, and most alumni continue to take advantage of the SDP professional network, trainings, and analytical resources.

navigate their way through their programs to degree completion. Identifying and removing barriers to access and completion requires institution leaders and policy makers to understand students' movements through educational pathways, where many fall off, and who ultimately completes a postsecondary degree.

To help the state of Georgia understand its current progress toward the state education goal, set future benchmarks for success, and strategically identify barriers to remove, the Strategic Data Project designed a set of diagnostic analyses that tracks students from high school to their entrance into the workforce. These analyses are meant to:

1. Better inform state education leaders about the college-going, college-completion, and workforce pathways of their students—and barriers to completion of those pathways; and

2. Identify potential areas of action to better support students' postsecondary attainment and financial stability.

We leverage state longitudinal data housed by the Governor's Office of Student Achievement to follow Georgia's high school graduating classes of 2010 and 2011 for the first ten years after graduation. By focusing analyses on these graduating classes, we can observe students' progression to and through postsecondary education and into the workforce. The outcomes and disaggregates we explore in this diagnostic are informed by the Education-to-Workforce (EW) Indicator Framework[3]—a comprehensive guide that includes a common set of metrics and data equity principles for assessing and addressing disparities along the pre-K-to-workforce continuum.[4]

We begin by examining patterns in credential attainment for Georgia's public-school students 10 years after high school graduation. We disaggregate these analyses by student demographic, academic, and school characteristics to identify groups of students who may need additional support progressing toward credential completion. While a foundational understanding of degree attainment patterns is useful, action can only be taken if we understand what drives these patterns. We therefore explore potential root causes for attainment patterns by exploring whether college entry rates, completion rates amongst enrollees, or a combination of both explain variation in degree attainment. These analyses will help both K12 and postsecondary institutions identify patterns and potential gaps in access and completion for early intervention. Finally, we examine workforce outcomes in the form of wages for Georgia's high school graduates. We provide context to these analyses by benchmarking wages against the MIT living wage[5] threshold to better understand who is earning enough to meet a minimum standard of living and which degrees are associated with the largest earnings premiums.

In summary, this work leverages Georgia's P20W longitudinal data, managed at the Governor's Office of Student Achievement, to provide both strategic insights and support decision-making by system leadership to increase postsecondary attainment. Analysis and review of this Diagnostic will allow for the continual monitoring and improvement of structures and supports that will help students progress toward their goals.

3 https://www.mathematica.org/projects/education-to-workforce-indicator-framework
4 See Tables 1 and 2 for selected indicators and readings related to outcomes and disaggregates.
5 The average living wage, inflation adjusted, for the cohorts we observe is $32,126. See https://livingwage.mit.edu/ for methodology.

KEY FINDINGS

Patterns in Educational Attainment & Potential Drivers

1. Although 81% of GA high school graduates attempt college within 10 years of high school graduation, only around 40% have credentials by year 10.

2. The problem is not starting college, but finishing. College stop out largely drives low degree attainment rates.

- More than half of students who started college left at some point.
- Only a small fraction of students who stopped out return to college, suggesting that preventing initial stop out is a crucial strategy to increase degree attainment.
- Few stop outs are within striking distance of a credential at departure.
- Focusing on improving academic outcomes in the first semester of college may help prevent stop out.
- Those who don't enroll in college immediately after high school are 20 percentage points more likely to stop out if they eventually do enroll.

3. The roots of the problem begin prior to college. Students doing well academically in high school finish college at much higher rates.

- Students with the highest scores on standardized tests in high school were 40 percentage points more likely to complete than those with the lowest scores.
- Students who took advanced coursework in high school were between 15 and 45 percentage points more likely to complete college than those who took no advanced coursework
- Academic performance in middle school and early high school predicts college enrollment.

4. The drivers of educational attainment vary by student demographics.

- While Black students have favorable college-going rates compared to students from other racial/ethnic groups when accounting for high school achievement, they were the most likely group to stop out. These stop out rates place Black students among the least likely to earn a college credential by 10 years from high school graduation.
- Hispanic students, male students, those receiving free and reduced-price lunch (FRPL), and students who have had at least one discipline incident in high school had lower credential completion rates than their peers. Credential completion among these groups is driven by both lower college entry and higher stop out rates.

5. Attending a low-income high school has more of a bearing on educational attainment than attending a rural high school.

- Students in high-poverty schools may face barriers to access and completion, as they are around 20

percentage points less likely to enter and complete college than their peers in low-poverty schools.
- The geographic locale of a student's high school did not seem to influence educational outcomes post-graduation.

Workforce Outcomes

6. College graduates earn more at work.

- Students with bachelor's and graduate degrees experienced the largest earnings premiums.
- Nearly 50% of workers with only a high school degree did not earn over the living wage threshold in Georgia as compared to only 15% of those with bachelor's degrees.

7. Credentials alone do not determine wages. The wage premium associated with earning a college credential varies by student characteristics.

- Wages differ even among individuals who completed the same credential. Those who scored better on the High School Graduation Test earned more.
- A college degree does not erase racial differences in earnings. Racial earnings gaps are persistent across credential types and prior achievement.
- Earning gaps were present across other dimensions of student demographics including sex and pre-college socioeconomic status.

8. Where a student attends college matters for future earnings.

9. Career and technical (CTE) training pays off. Those with CTE degrees earn more than those with liberal arts degrees across credential levels.

DETAILED ANALYSES

Patterns in Educational Attainment and Potential Drivers

This section of the Diagnostic explores patterns in student credential attainment and their possible determinants. We present findings from three types of analyses:

1. First, we examine degree completion 10 years from high school graduation to establish a foundational understanding of students' postsecondary educational outcomes.

2. We then analyze patterns in college enrollment within one year of high school graduation to unearth some of the drivers of credential completion rates in Georgia. This section focuses on enrollment within one year when secondary schools and districts have the most leverage to impact college-going. Armed with this information, school districts and high schools can identify students who might need guidance navigating the college enrollment process.

3. Finally, we track college completion among Georgia's high school graduates with a particular emphasis on enrollment behaviors and composition of college stop outs. Results of these analyses provide further context to the potential causes of degree attainment rates in Georgia. These results will also provide postsecondary institutions with information needed to identify students who might need more support once enrolled and plan re-enrollment campaigns.

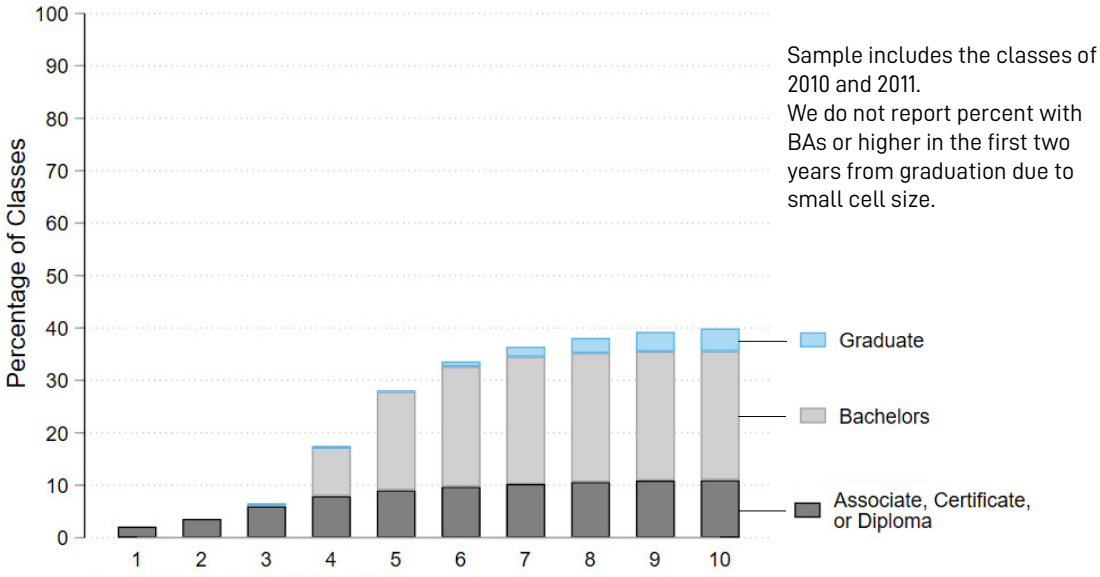
In addition to exploring broad patterns in access, completion, and attainment, we completed a series of analyses disaggregating educational attainment for Georgia high school graduates in the classes of 2010 and 2011 by student demographic, academic, and school characteristics. Prior research suggests that student background characteristics such as race, socioeconomic status, and academic preparation are predictive of educational attainment (see sources in Table 2). Understanding the extent to which postsecondary credential attainment rates, college entry, and stop out may vary for students with different academic and demographic characteristics can help Georgia identify potential strategies for supporting these students as they work toward college credentials.

Key Finding 1: Although 81% of GA high school graduates attempt college within 10 years of high school graduation, only 40% have credentials by year 10.

We begin our analysis of credential attainment patterns by plotting the percentage of students who earned a credential[6] 1-10 years after high school graduation from the classes of 2010 and 2011. As seen in Figure 1.1, the percentage of students who have received a college credential increased over time—with nearly 40% of graduates having earned a credential 10 years from graduation. Interestingly, many students did not earn degrees until five to seven years after high school, which emphasizes the necessity of examining college completion beyond the timeframe traditionally assumed for completion (four years).

6 Credentials include certificates, diplomas, associate degrees, bachelor's degrees, and graduate degrees.

Figure 1.1 Percentage of Graduating Classes with Postsecondary Credentials



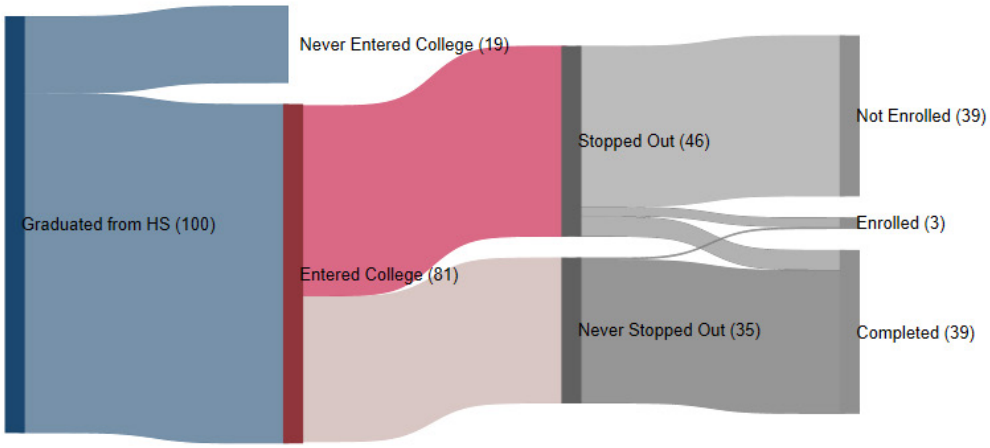
Sample includes the classes of 2010 and 2011.
We do not report percent with BAs or higher in the first two years from graduation due to small cell size.

Key Finding 2: The problem is not starting college but finishing. College stop out largely drives low degree attainment rates.

Almost half of students who started college left at some point.

To account for the activities of the nearly 60% of students who did not receive a college credential, we trace students to and through college over 10 years. As seen in Figure 2.1, we find that nearly 40% of Georgia high school graduates began but did not complete college within 10 years of high school graduation and 19% never attempted college. These results indicate that stop out[7] plays an outsized role in driving the attainment rates highlighted above.

Figure 2.1 Percentage of Graduating Classes who Completed, are Enrolled, Stopped Out, or Never Attempted College 10 Years from HS Graduation



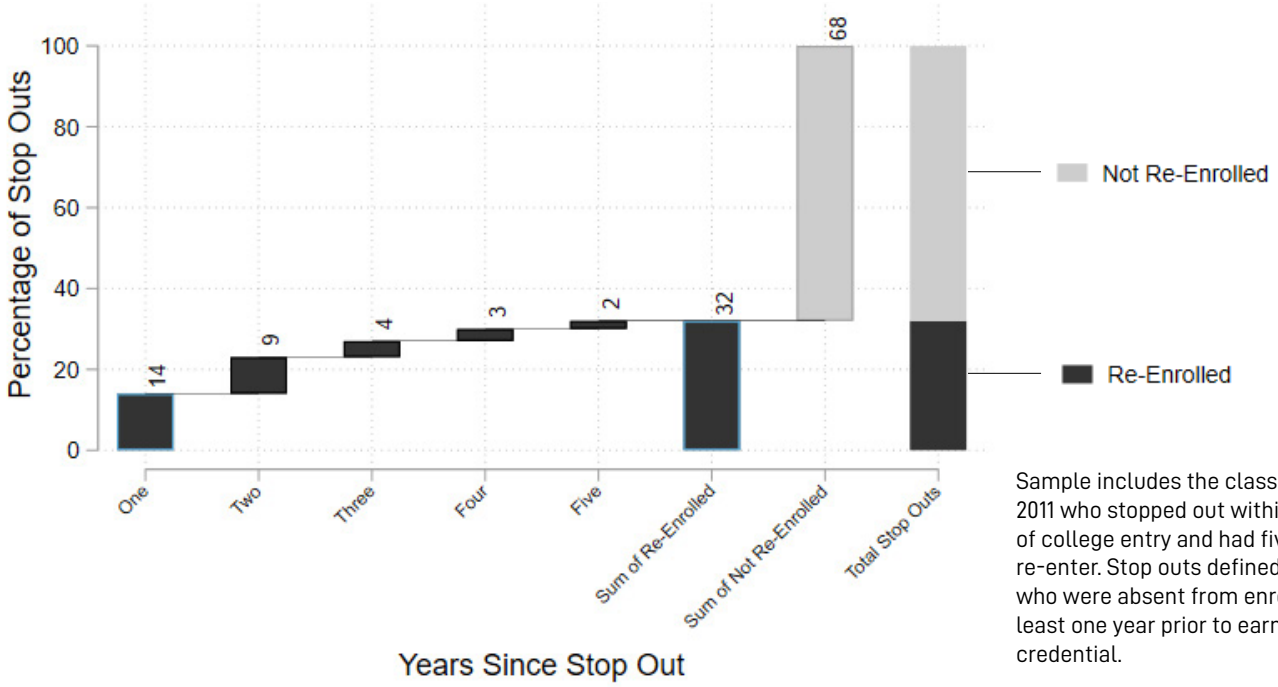
Sample includes the classes of 2010 and 2011 measured 10 years after high school graduation. Stop out defined as students who enrolled in at least one semester of college had not completed a degree, and were not enrolled at year 10.

7 A stop out is defined as a student who was enrolled in college for at least one semester, did not have a college degree prior to their first term of enrollment, did not complete a college degree, and was not enrolled at the time degree completion was measured.

Only a small fraction of students who stopped out return to college, suggesting that preventing initial stop out is a crucial strategy to increase degree attainment.

Our analyses above indicate that over half of degree attempters stop out prior to receiving their degrees. Preventing stop out before it occurs may be a critical strategy to support degree attainment rates in the state, as Figure 2.2 shows that only around a quarter of stop outs have returned within five years of stop out. Those who do generally re-enroll within two years of stop out. These findings suggest that the initial stop out, for many students, marks the end of their postsecondary careers. They also suggest that re-enrollment campaigns should focus on students who recently departed the institution.

Figure 2.2 Percentage of Stop Outs Who Re-Enrolled within Five Years of Departure

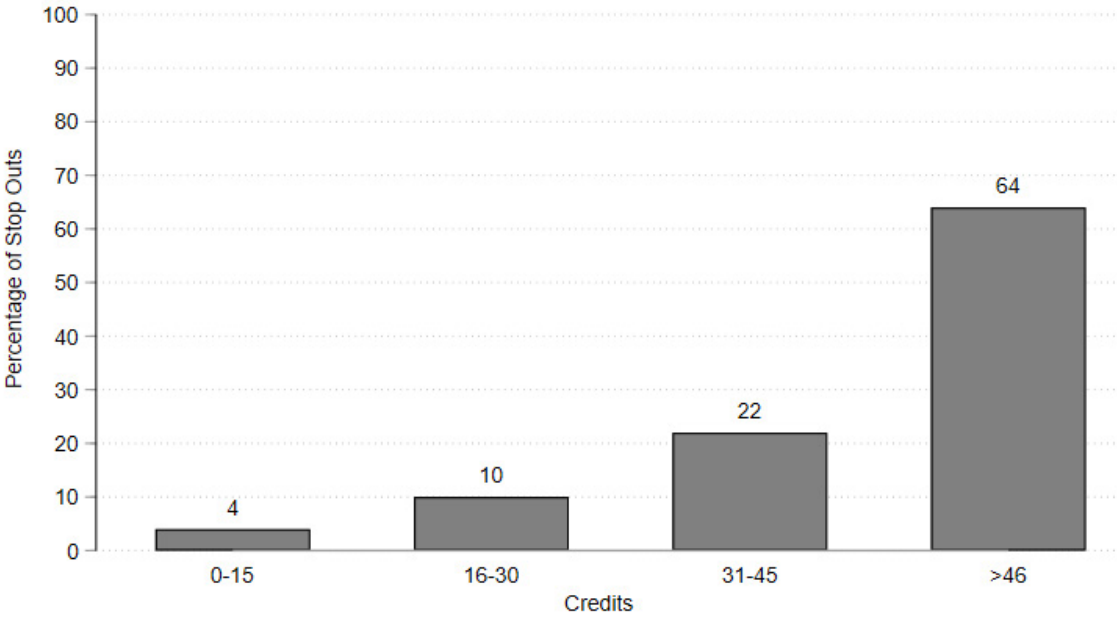


Sample includes the classes of 2010 and 2011 who stopped out within six years of college entry and had five years to re-enter. Stop outs defined as those who were absent from enrollment for at least one year prior to earning their first credential.

Few stop outs are within striking distance of a credential at departure.

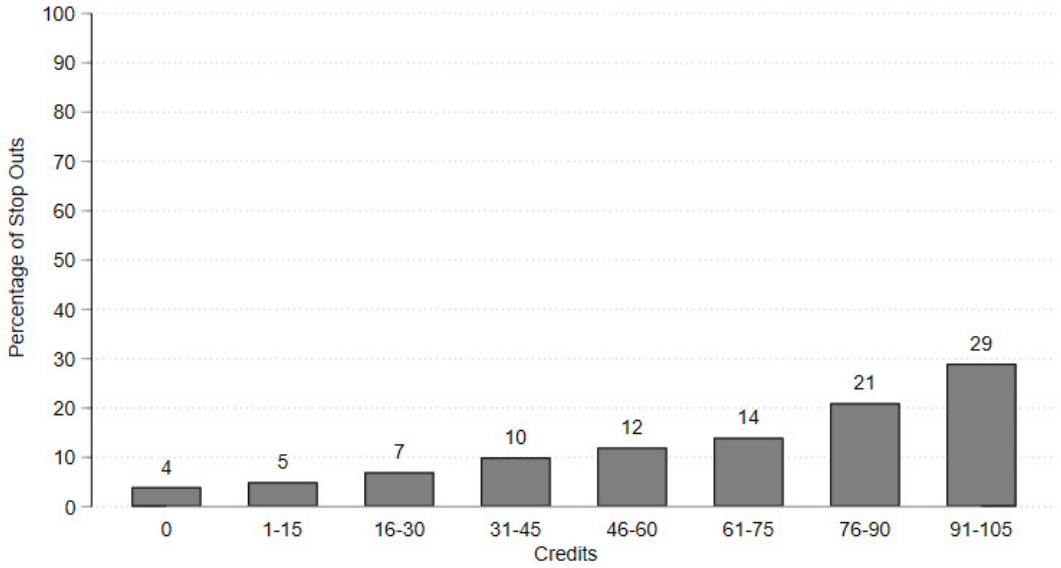
To better understand what proportion of stop outs are within striking distance (one year of full-time academic work—30 credits) of a credential at departure, we plot the percentage of stop outs by the number of credits they are from their credit minimums. Figure 2.3 indicates that 14 percent of stop outs enrolled in associate degree programs were within one year of full-time academic work away from the 60-credit degree minimum. As seen in Figure 2.4, 16% of bachelor's degree attempting stop outs were within one year of reaching the 120-credit minimum. These results suggest that most stop outs leave before they have made substantial progress in their degree programs.

Figure 2.3 Percentage of Stop Outs by Number Credits Away from Associate Degree Minimum



Sample includes the classes of 2010 and 2011 measured within three years after college entry.
Stop out defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured.
Credits include those earned at all institutions in which a student was enrolled.
Credits do not include remedial coursework.
Sample includes Georgia high school classes of 2010 and 2011 who attended college in Georgia.

Figure 2.4 Percentage of Stop Outs by Number Credits Away from Bachelor's Degree Minimum



Sample includes the classes of 2010 and 2011 measured at six years after college entry. Stop out defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured. Credits include those earned at all institutions in which a student was enrolled. Credits do not include remedial coursework. Sample includes Georgia high school classes of 2010 and 2011 who attended college in Georgia.

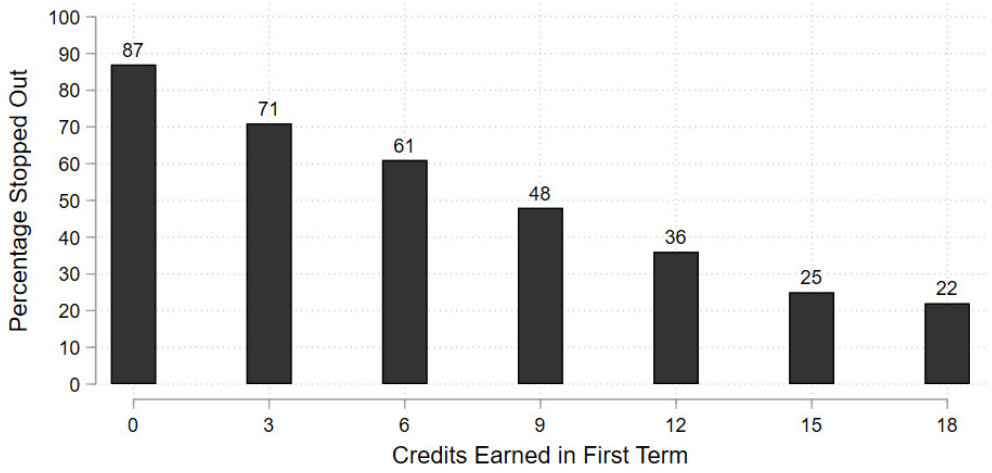
Focusing on improving academic outcomes in the first semester in college may help prevent stop out.

To help institutions identify key junctures for stop out prevention interventions, we look at the relationship between students' academic performance, specifically credit accumulation and GPA, and stop out once enrolled.[8] First, we examine whether credit accumulation in the first term is associated with credential completion, as prior work has found that students who earn credits at a faster rate are more likely to graduate (39-41). In Figure 2.5, we plot the percentage of students attempting associate degrees who stop out within three years of entry by credits earned in the first term. In this chart, we see that that students who

8 For these analyses, we limited the sample to Georgia high school graduates from the classes of 2010 and 2011 who entered college with at least three years to complete for sub-baccalaureate degree attempters and six years for bachelor's degree attempters (150% of time to degree).

earned fewer credits in their first term were more likely to stop out.

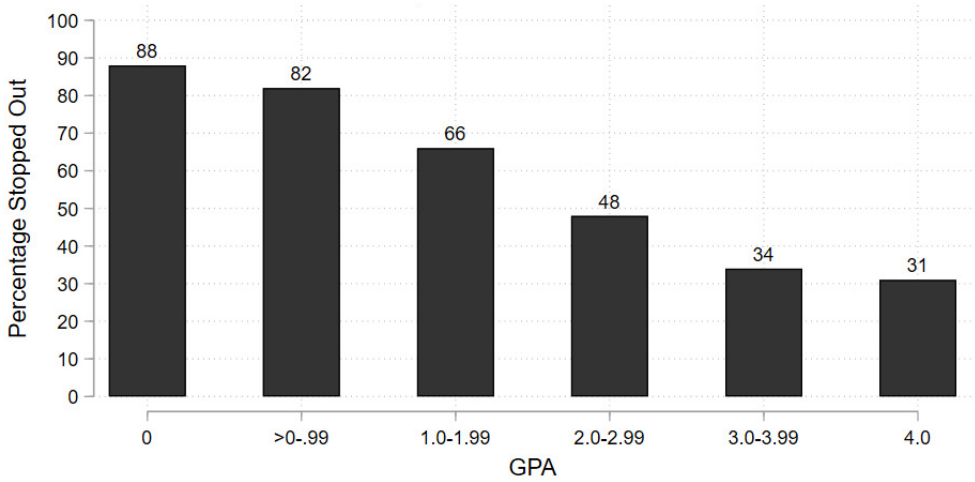
Figure 2.5 Percentage of Associate Degree Attempters Who Stopped Out by Number of Credits Earned in First Semester



Credits earned in the first term are grouped into three-credit intervals, labeled by the maximum of the interval.
Sample includes classes of 2010 and 2011 measured within three years after college entry (97% of attempters).
Stop out defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured.
Credits include those earned at all institutions in which a student was enrolled. Credits do not include remedial coursework.
Degree program taken from first term enrolled.
Sample includes Georgia high school classes of 2010 and 2011 who attended college in Georgia and attempted credits in the first term.

We also review stop out rates by GPA in the first term in Figure 2.6. Similarly, we see that students who earned better grades in their first semester were less likely to stop out than those who did not perform as well. These patterns were similar for BA attempting students (see Appendix Figures A.1-A.2). These figures highlight the importance of early momentum in predicting longer-term success and indicate that institutions may want to provide additional support to students who earn a limited number of credits or perform poorly in their first term.

Figure 2.6 Percentage of Associate Degree Attempters Who Stopped Out by GPA in First Semester

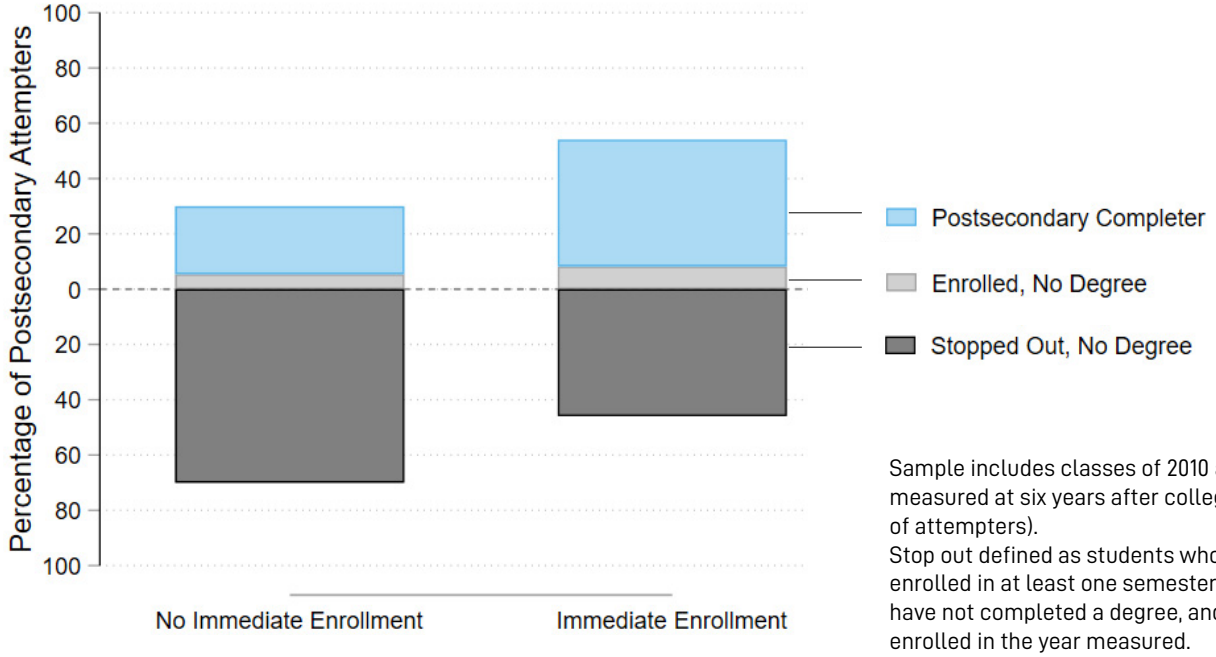


Sample includes classes of 2010 and 2011 measured at three years after college entry (97% of attempters).
Stop out defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured.
Credits include those earned at all institutions in which a student was enrolled.
Degree program taken from first term enrolled.
Sample includes GA HS classes of 2010 and 2011 who attended college in GA.

Those who don't enroll in college immediately after high school are 20 percentage points more likely to stop out if they eventually do enroll.

Prior research underscores the importance of immediate enrollment, as these students are more likely to complete degrees than their peers who delay college entry (1). Our analysis in Georgia reflects these findings. Figure 2.7 shows that students who enrolled in college within one year of high school graduation were around 20 percentage points less likely to stop out of college than those who delayed enrollment.

Figure 2.7 Percentage of Postsecondary Attempters by Enrollment Status Six Years After College Entry by Enrollment Immediately After High School



Sample includes classes of 2010 and 2011 measured at six years after college entry (97% of attempters).
Stop out defined as students who have enrolled in at least one semester of college have not completed a degree, and were not enrolled in the year measured.

Key Finding 3: The roots of the problem begin prior to college. Students doing well academically in high school finish college at much higher rates.

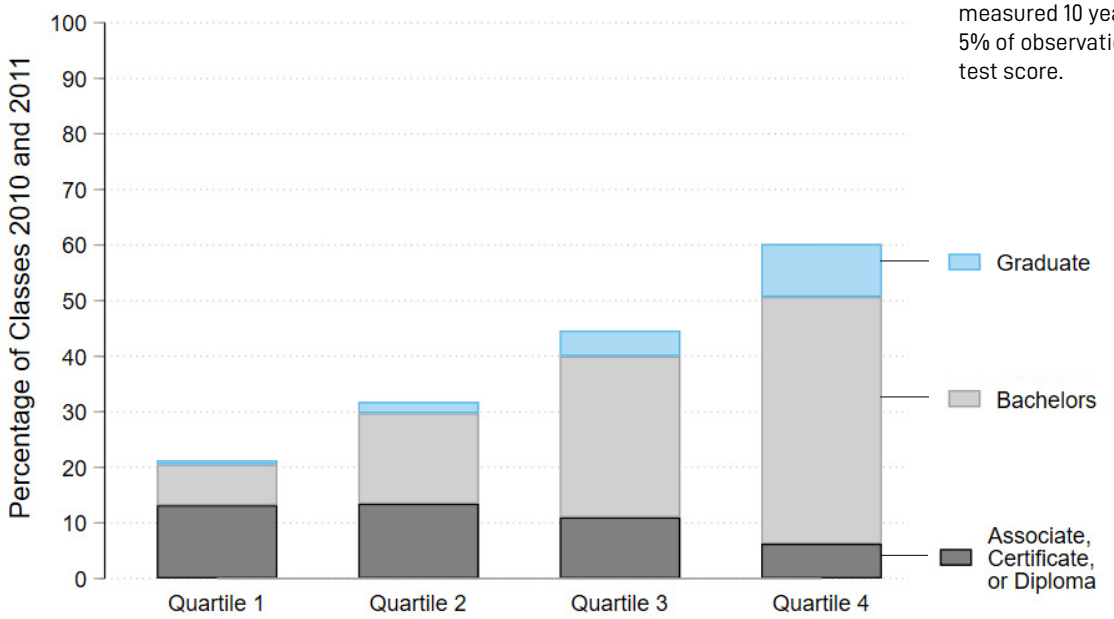
Thus far, we have found that college stop out largely drives attainment rates among Georgia's high school graduates. In Finding 3, and the findings that follow, we examine whether this pattern remains true when we examine outcomes for students broken down by their academic and demographic characteristics. We begin by plotting credential attainment by student characteristics. To identify potential drivers of variation in degree attainment rates, we also explore college enrollment and stop out broken out by student characteristics. These analyses will help Georgia identify students in need of additional support and target interventions to address key junctures in the road to and through college. See Table 2 for literature connecting disaggregates to students' outcomes.

Students with the highest scores on standardized tests in high school were 40 percentage points more likely to complete than those with the lowest scores.

First, we focus on the relationship between student academic performance and educational outcomes. We begin by plotting degree attainment by test score quartile on the math portion of the Georgia High School Graduation Test, which is usually administered in 11th grade.[9] Shown Figure 3.1, this analysis demonstrates that almost 60% of students who scored in the fourth quartile of the math portion of the test completed a postsecondary credential, while only 20% who scored in the first quartile earned a credential. Students in the upper quartiles were also more likely to earn bachelor's and graduate degrees.

9 Using a standardized test as a measure of academic achievement allows us to make "apples to apples" comparisons regardless of which high school a student attended and when.

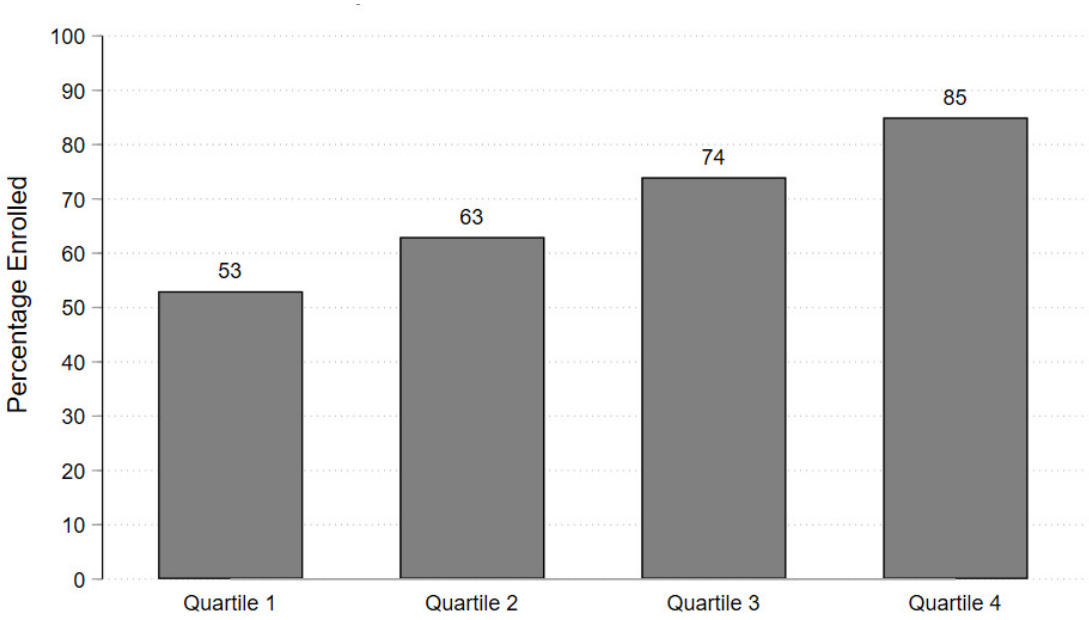
Figure 3.1 Degree Attainment 10 Years from High School Graduation by High School Graduation Math Test Score Quartile



Sample includes classes of 2010 and 2011 measured 10 years after graduation.
5% of observations do not have values for test score.

When considering college entry by test score, we find that students who scored in the fourth quartile of the math portion of the Georgia High School Graduation Test were around 30 percentage points more likely to enter college within a year of high school graduation than their peers scoring in the first quartile (Figure 3.2).

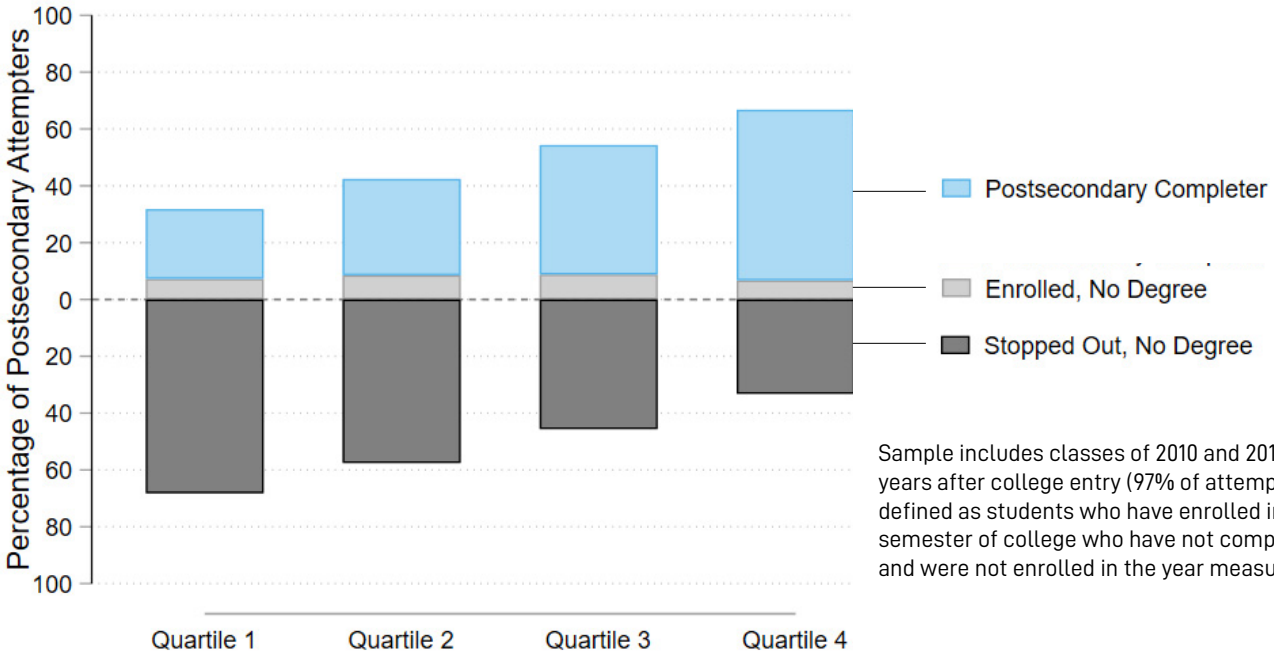
Figure 3.2 Percentage Enrolled in College One Year After High School by High School Graduation Math Test Score Quartile



Sample includes classes of 2010 and 2011 measured at one year after high school graduation.
5% of graduates do not have records for test score.

Patterns in college stop out mirrored entry patterns: as High School Graduation Math Test score increased, so did the chance a postsecondary attempter would complete (Figure 3.3). Overall, 30 percent of students who scored in the first quartile of the High School Math Graduation Test did not enter college and almost 70 percent of enrollees stopped out. This stands in stark contrast to the movements of students who scored in the fourth quartile. Among these students, only 8 percent did not attend college and about 30 percent of enrollees stopped out.

Figure 3.3 Percentage of Postsecondary Attempters by Enrollment Status Six Years After College Entry by High School Graduation Math Test Score Quartile

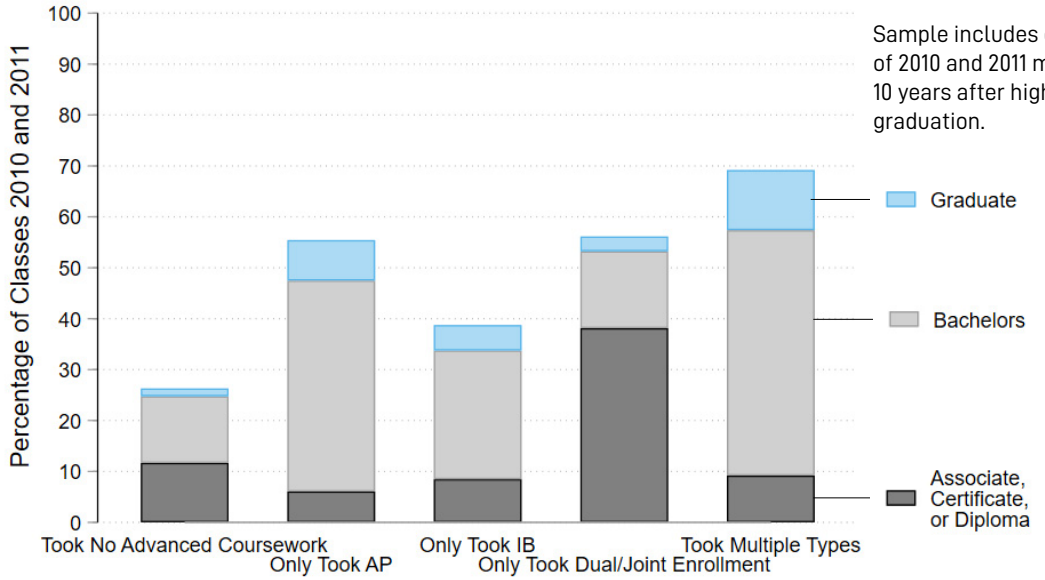


Sample includes classes of 2010 and 2011 measured six years after college entry (97% of attempters). Stop out defined as students who have enrolled in at least one semester of college who have not completed a degree, and were not enrolled in the year measured.

Students who took advanced coursework in high school were between 15 and 45 percentage points more likely to complete college than those who took no advanced coursework.

We also assess the relationship between participation in advanced coursework (AP, IB, Dual and Joint Enrollment) and student outcomes given a growing body of evidence showing participation in accelerated postsecondary pathways has a positive impact on postsecondary enrollment and completion (23-25). Aligned with the general idea that advanced coursework is linked to better student outcomes, our analysis in Figure 3.4 shows that most participants completed credentials by 10 years from high school, with students enrolled in multiple types of advanced coursework being most likely to attain a postsecondary credential. These attainment rates are likely driven by higher college entry and lower stop out rates for participants (see Figure A.3-A.4).

Figure 3.4 Degree Attainment 10 Years from High School by Advanced Coursework Taking in High School



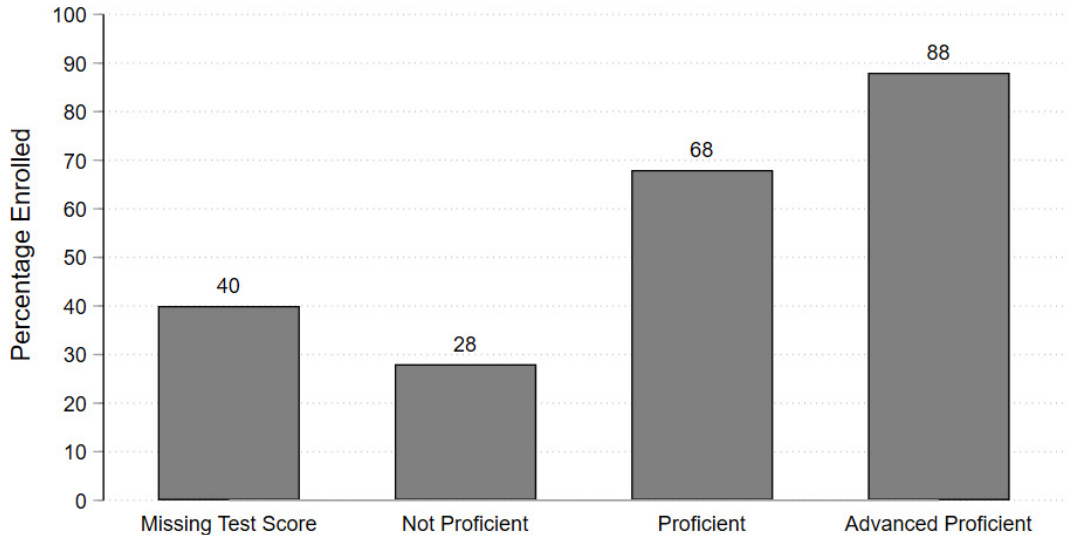
Sample includes classes of 2010 and 2011 measured 10 years after high school graduation.

Overall, these findings suggest that lower achieving students may have difficulty accessing and completing postsecondary education. Given that students who perform better in high school are more likely to attain degrees, intensive academic support at the secondary level for students demonstrating lower levels of achievement may help improve enrollment and completion rates. Further, postsecondary institutions should consider targeting academic services to students based on performance in high school.

Academic performance in middle school and early high school predicts college enrollment.

In addition to examining academic performance near the end of high school, we chart the relationship between performance in 8th and 9th grade and college enrollment—years which are shown to be foundational on students' paths to postsecondary education (28-33). As illustrated in Figure 3.5, we find that students who scored proficient or above on their 8th grade math assessment were between 40 and 60 percentage points more likely to attend college within six years of 9th grade than their peers who scored not proficient.[10]

Figure 3.5 Percentage Enrolled in College within Six Years After Ninth Grade by 8th Grade Math Assessment Score



Sample includes 2008 and 2009 9th grade students who did not transfer out of Georgia public schools measured at six years post-9th grade.
30 percent of 9th graders did not receive high school diplomas in Georgia and did not attend college in Georgia; as such, we were unable to trace their post-high school trajectories.
18% of students who did not graduate transferred to another school and 13% dropped out.
11% of 9th graders did not have a record for test score.

Analyses of 9th grade academic performance show similar trends—with course failure and chronic absenteeism being associated with a decreased likelihood of enrolling in college (see Figures A.5-A.6). The findings presented thus far mirror patterns in enrollment rates by academic performance later in high school and provide further evidence that achievement matters for college-going. Our work demonstrating the association between enrollment and 8th and 9th grade outcomes suggests that programs focused on improving student performance early in high school could be an important level to increase college enrollment later on.

Key Finding 4: The drivers of educational attainment vary by student demographics.

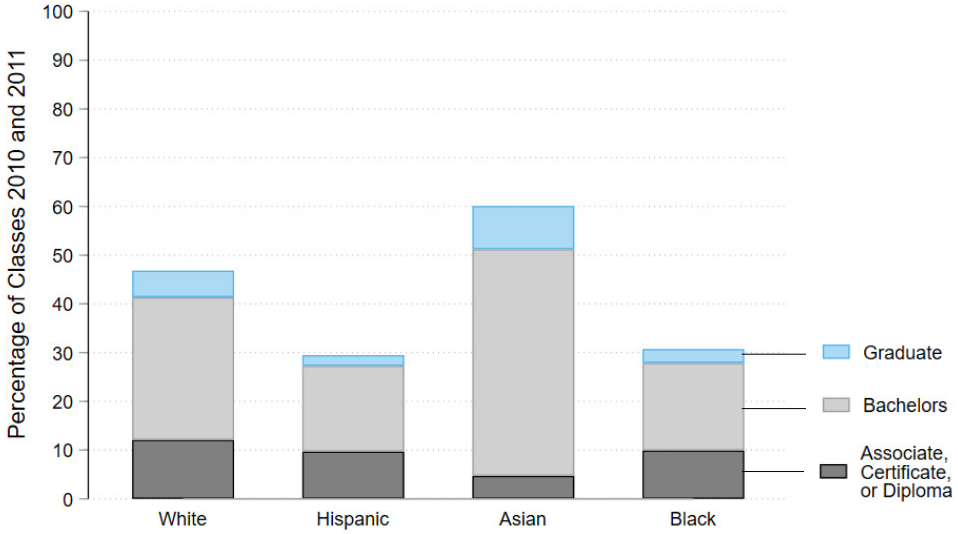
While Black students have favorable college-going rates compared to students from other racial/ethnic groups, when accounting for high school achievement, they were the most

10 14% of students have a missing test score, 13% scored not proficient, 52% proficient, 20% advanced proficient.

likely group to stop out. These stop out rates place Black students among the least likely to earn a college credential by 10 years from high school graduation.

In Key Finding 4, we explore how student educational outcomes vary by their demographic characteristics. We begin by plotting the percent of Georgia high school graduates by highest credential and race/ethnicity. Figure 4.1 shows that White and Asian graduates were most likely to earn postsecondary credentials. Meanwhile, Black and Hispanic students were far less likely to complete college—with completion rates hovering around 30%. These results are similar to national patterns in credential completion among people aged 25-29.[11]

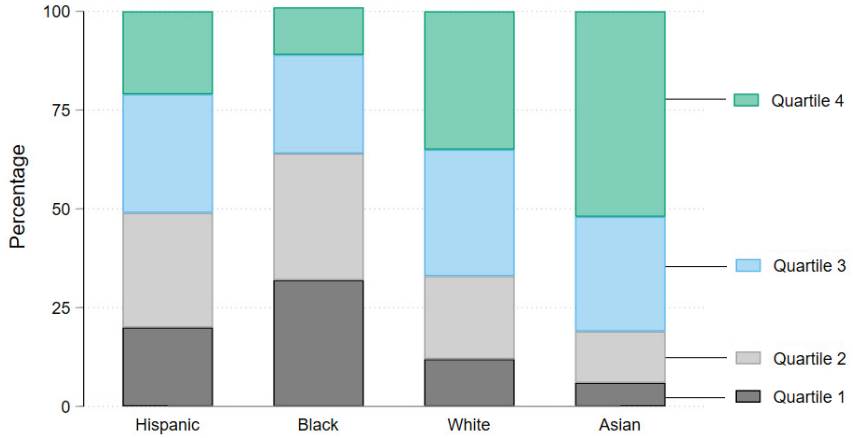
Figure 4.1 Degree Attainment 10 Years from High School by Race/Ethnicity



Sample includes the classes of 2010 and 2011 measured 10 years after high school graduation.

Given that students who performed better in high school were more likely to earn credentials (shown in Key Finding 3), it could be the case that the gap in attainment for Black and Hispanic students is tied to academic preparation. Perhaps Black and Hispanic students were more likely to score in lower quartiles of the High School Graduation Test and we can attribute their attainment patterns to overall lower test scores. Figure 4.2 lends some evidence to this point, as we see that there were larger proportions of Black and Hispanic students in the lower quartiles of high school math achievement and higher proportions of White and Asian students were in the upper quartiles of prior achievement.

Figure 4.2 Percentage of High School Graduation Math Test Score Quartile by Race/Ethnicity



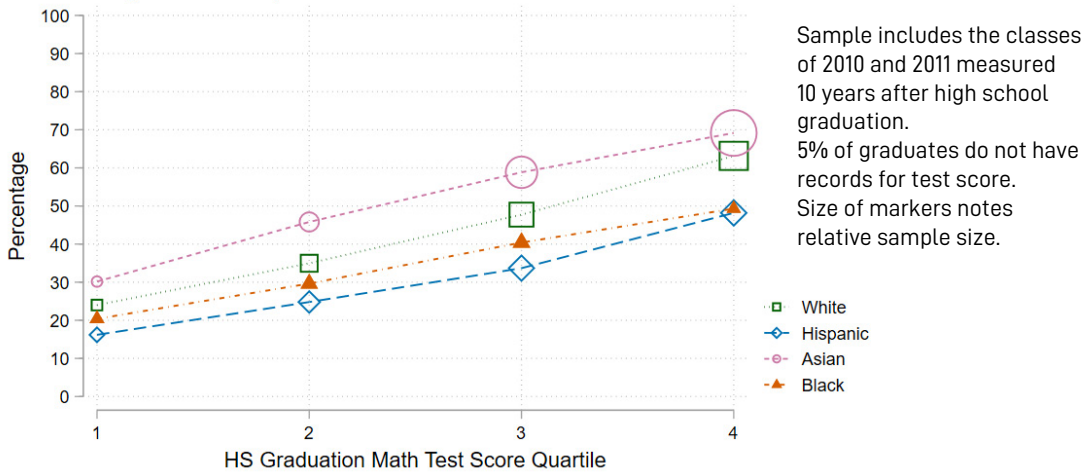
Students take High School Graduation Test in 11th grade.
Sample includes the classes of 2010 and 2011.
5% of graduates do not have records for test score.

However, when we repeat our analyses of completion patterns considering student test score, we see

11 National Center for Education Statistics. (2023). Educational Attainment of Young Adults. Condition of Education. U.S. Department of Education, Institute of Education Sciences. Retrieved June 13, 2024, from https://nces.ed.gov/programs/coe/indicator/caa.

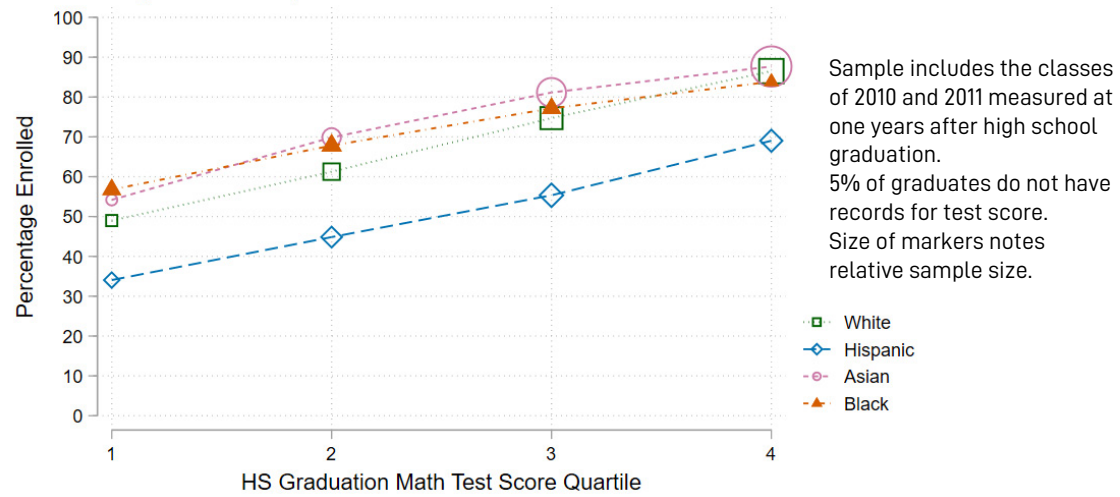
that gaps in credential attainment among Black and Hispanic students remained even when students are compared to similarly achieving peers. Figure 4.3 divides White, Hispanic, Asian and Black high school graduates into four quartiles, state-wide, based on their average test scores on the High School Graduation Test in math. This chart shows that Black and Hispanic students were between 10 and 30 percentage points less likely to earn a postsecondary credential than their White and Asian peers, regardless of test score quartile. This indicates that prior achievement alone cannot explain gaps in credential attainment among Black and Hispanic students.

Figure 4.3 Percentage Earned Postsecondary Credential within 10 Years of High School by Race/Ethnicity and High School Graduation Math Test Score Quartile



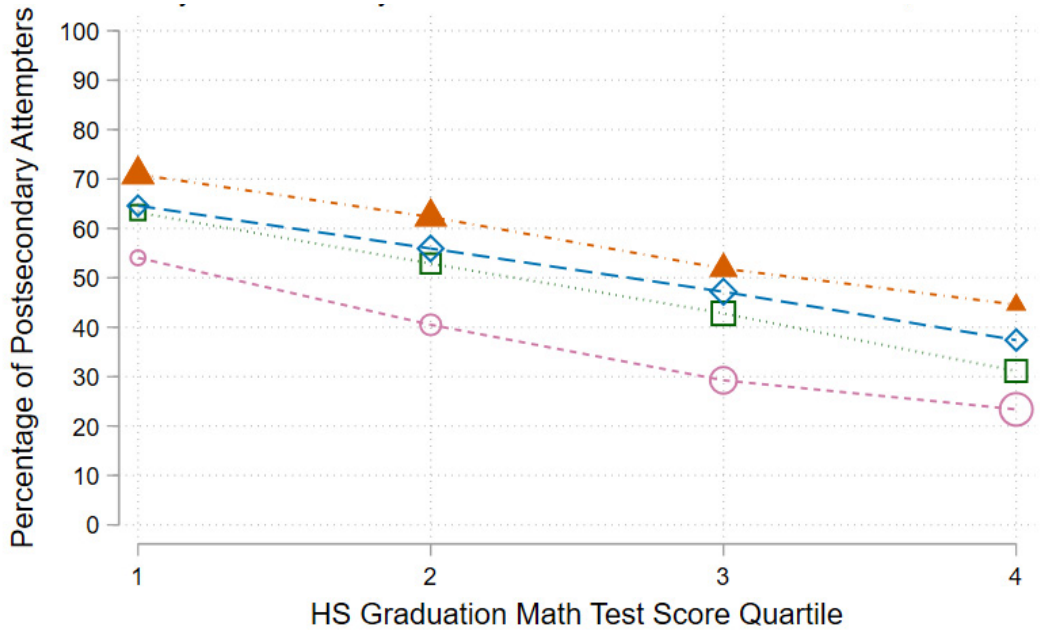
To explore potential root causes of these achievement disparities, we plot college entry and stop out rates by race and ethnicity. Beginning with college entry, Figure 4.4 shows that the bottom quartile of math achievement, the probability of enrolling in college ranged from 30% for Hispanic students to around 60% for Asian and Black students, a gap of around 30 percentage points. These gaps were similar across the bottom three achievement quartiles. Interestingly, Black students in each of these quartiles were more likely to attend college than White students. These patterns shift in the top quartile where White and Asian students were similarly likely to attend college and Black students were six percentage points less likely to enroll. As shown in Figure 4.2, the composition of students within each quartile also varied. While Black students were more likely to fall in the lower quartiles of achievement, their college enrollment rates were about on par or even greater than White and Asian students. This suggests that focusing on early academic preparation and support may be an important lever for increasing college entry among Black students.

Figure 4.4 Percentage Enrolled in College One Year After High School by Race/Ethnicity and High School Graduation Math Test Score Quartile



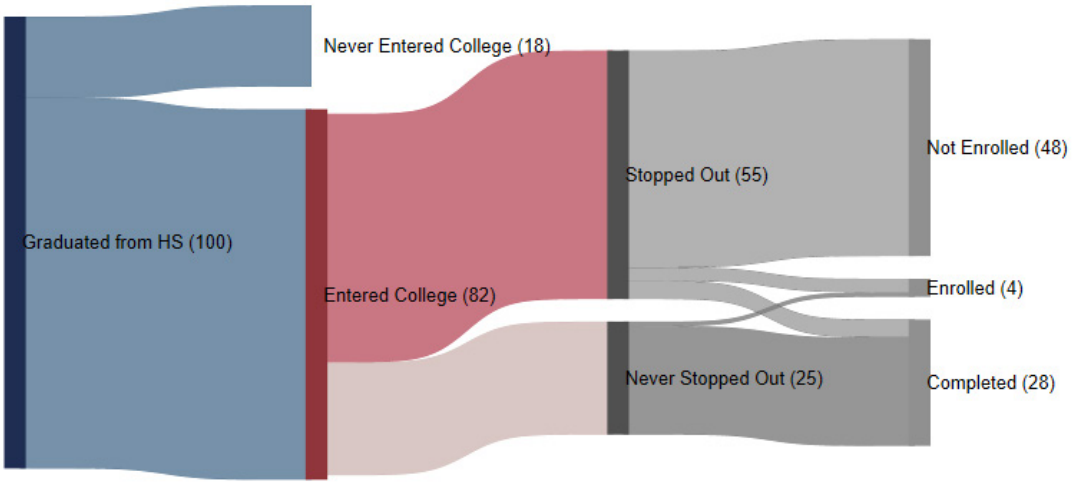
Turning to stop out, Figure 4.5 suggests that Black students were most likely of all their peers to stop out of college once enrolled, regardless of incoming academic achievement. Indeed, Figure 4.6 shows that 65% of Black students who attempted college stopped out (54% of entire sample). As such, it appears that the relatively low attainment rates among Black students as compared to their White and Asian peers is also due to their lower likelihood of college completion. These results suggest that Black students face other barriers to degree completion beyond only academic preparation, which prior research suggests could be financial constraints or adverse experiences in the classroom or on campus (14-17).

Figure 4.5 Percentage of Postsecondary Attempters Who Stopped Out by Race/Ethnicity and High School Graduation Math Test Score Quartile



Sample includes the classes of 2010 and 2011 measured at six years after college entry (97% of attempters).
Stopout defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured.
5% of graduates do not have records for test score.
Size of markers notes relative share of stopouts in sample.

Figure 4.6 Percentage of Black Students Who Completed, Are Enrolled, Stopped Out, or Never Attempted College Ten Years from High School Graduation



Sample includes the classes of 2010 and 2011 measured ten years after high school graduation.
Stopout defined as students who enrolled in at least one semester of college, had not completed a degree, and were not enrolled in year 10.

Students who were Hispanic, male, receiving FRPL, or who had at least one disciplinary incident in high school had lower credential completion rates than their peers. Credential completion among these groups is driven by both lower college entry and higher stop out rates.

Additional analyses (shown in supplemental Figures A.7-A.15) find that there are disparities in attainment based on other student characteristics. Specifically, Hispanic students (as seen in Figure 4.1), male students, those who received Free and Reduced-Price Lunch (FRPL), and students with a discipline record in high school were less likely to attain a college credential. Across these groups, students were similarly likely to have associate degrees, certificates, or diplomas. These patterns remained when accounting for student test scores.

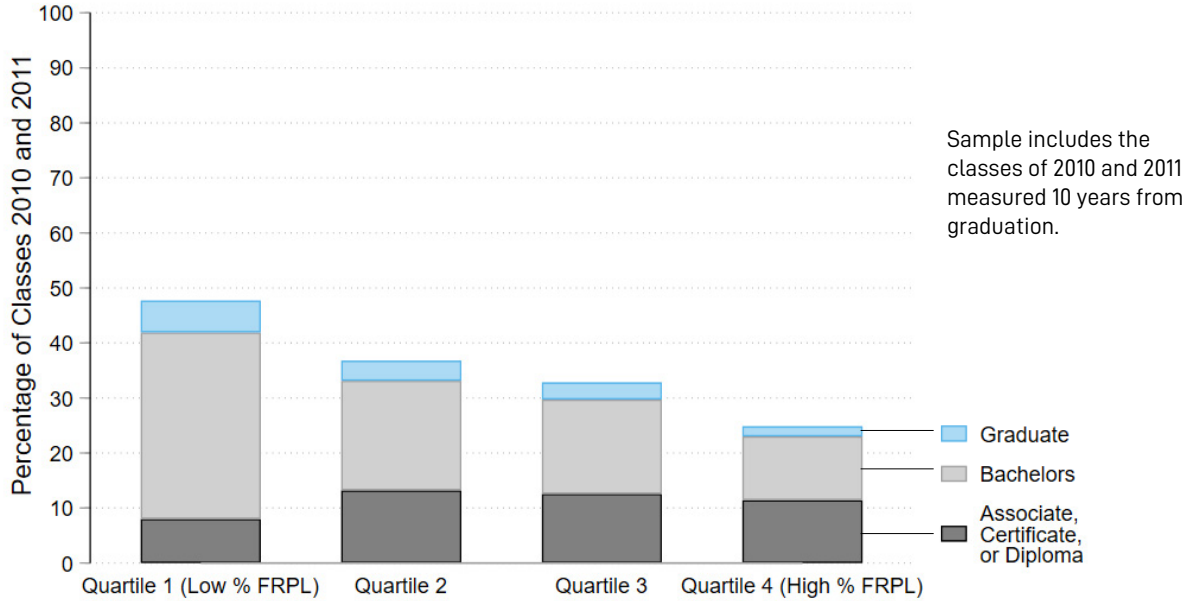
Analyses examining college enrollment by test score and demographic characteristics show that, regardless of academic achievement, male students, those receiving FRPL, and students with at least one discipline incident in high school were less likely to enroll than students who do not share those characteristics. Finally, stop out analyses demonstrate that students in these populations were more likely to stop out than their peers. The similarities in college-going and stop out patterns for these student populations suggest that increasing attainment will require intervention at the secondary and postsecondary levels.

Key Finding 5: Attending a low-income high school has more of a bearing on educational attainment than attending a rural high school.

Students in high-poverty schools may face barriers to access and completion, as they are around 20 percentage points less likely to enter and complete college than their peers in low-poverty schools.

Here, we examine credential attainment by school characteristics, specifically high school locale and poverty as measured by the percentage of a study body receiving FRPL. System conditions can help or hinder students' educational outcomes. Indeed, prior work has found that students in high-poverty communities are less likely to hold college credentials (34). Our analyses in Georgia generally reflect these trends. We find that students in low poverty high schools completed college credentials at higher rates (Figure 5.1). These students also earned more bachelor's degrees. Students in low poverty high schools were also more likely to enroll in college and less likely to stop out once enrolled (See Appendix A.16-A.17). These findings suggest school-level college-going resources may be the most needed in high-poverty high schools and that students from high poverty communities may need additional support once enrolled.

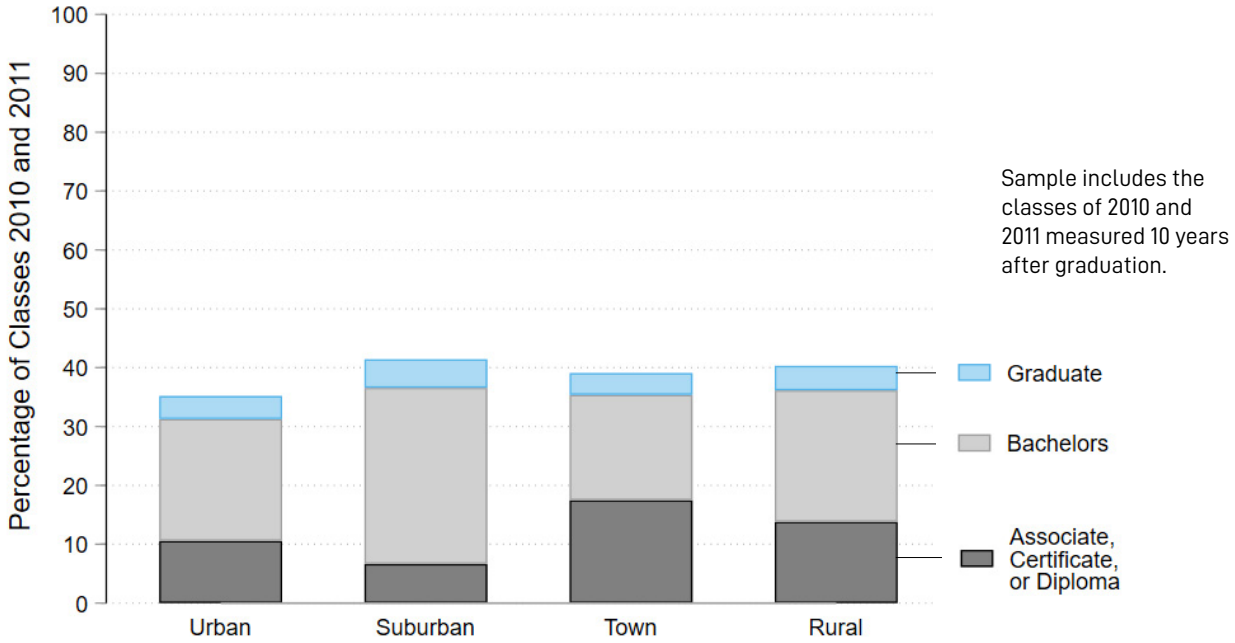
Figure 5.1 Degree Attainment 10 Years After High School by Percentage of Students Receiving FRPL



The geographic locale of a student's high school did not seem to influence educational outcomes post-graduation.

Finally, we investigate student outcomes by the locale of their high school. Prior research indicates that students from rural areas may face barriers to college access and completion (35-37). Nationally, between 2017–21, the share of working-age adults (ages 25-64) with at least an associate degree was 45 percent in urban areas and 31 percent in rural areas (38). Interestingly, degree attainment rates among Georgia's high school graduates do not reflect this pattern. As shown in Figure 5.2, degree attainment rates hover around 40%, regardless of locale. We do see that students from urban areas were about five percentage points less likely to earn credentials and those from suburban areas were most likely to earn bachelor's degrees.

Figure 5.2 Degree Attainment 10 Years After High School by High School Locale



Reflecting these findings, we see that students across locales entered college and stopped out at similar rates (See Appendix A.18-A.19). These findings, in conjunction with the results from analyses examining school poverty, indicate that community-level credential attainment campaigns should focus on low-income communities.

Workforce Outcomes

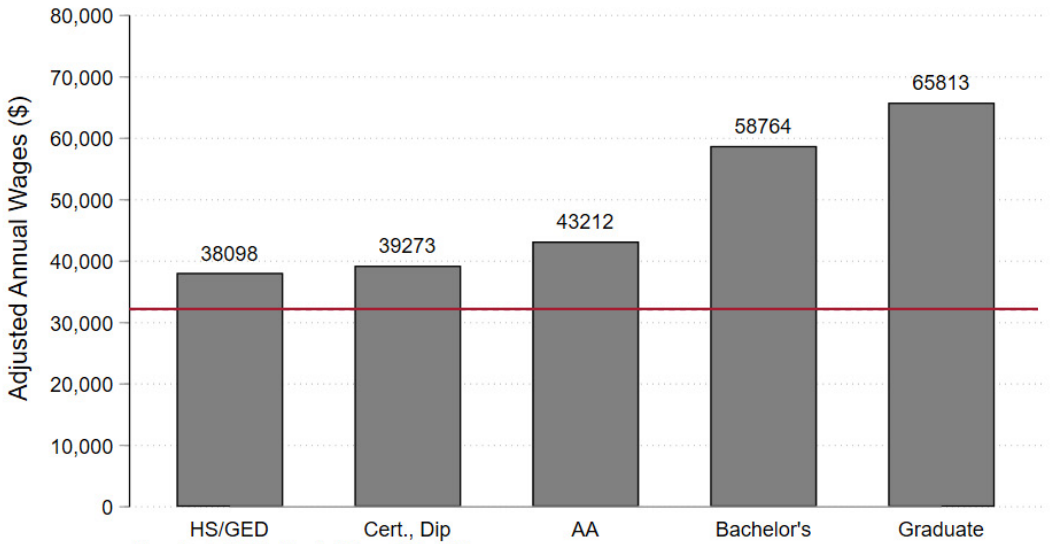
The second section of this diagnostic leverages wage data for Georgia's high school graduates to explore earnings across educational attainment and student background characteristics. We provide context to these analyses by benchmarking wages against the MIT living wage threshold. The results of these analyses will provide critical information about which educational pathways provide living wages and for whom. The results will also help Georgia determine whether the types of degrees necessary for meeting workforce needs are worth the investment for students. Please see endnote for important information about the sample, limits of unemployment insurance data, and potential bias.[†]

Key Finding 6: College graduates earn more at work.

Students with bachelor's and graduate degrees experienced the largest earnings premiums.

We begin by examining earnings 10 years out from high school for the graduating classes of 2010 and 2011.[12] Figure 6.1 below plots mean earnings (y axis) against the highest credential (x axis) a worker attained 10 years out of high school, benchmarked against the living wage threshold (dotted red line). Individuals who had not obtained any further qualifications 10 years out from high school earned on average $38,098 (about $5,900 over the living wage threshold of $32,126). Earnings premiums relative to a high school degree are small below the bachelor's level. Workers with an undergraduate certificate or diploma earned only $1,175 (3 percent) more on average than those with a high school degree, while workers with an associate degree earned on average $43,212, implying an earnings premium of 13 percent relative to a high school degree. The largest earnings premiums arise for credentials at the bachelor's level and above. Workers with a bachelor's or graduate degree earn on average $58,764 and $65,813—54 percent and 73 percent more than those with no more than a high school degree 10 years after high school graduation.

Figure 6.1 Mean Wages by Highest Degree 10 Years After High School Graduation Benchmarked Against the Living Wage Threshold



Wages adjusted to 2022 dollars. Wages for high school classes of 2010 and 2011. Dotted line is the average living wage threshold between 2020 and 2022 adjusted to 2022 dollars. Living wage estimates from MIT Living Wage Calculator. Sample comprises all individuals with three or four wage quarters observed in 10th year after HS graduation, N=96,513
Missing quarter imputed for individuals with only three wage quarters observed. Wages winsorized at top and bottom 1st percentiles.

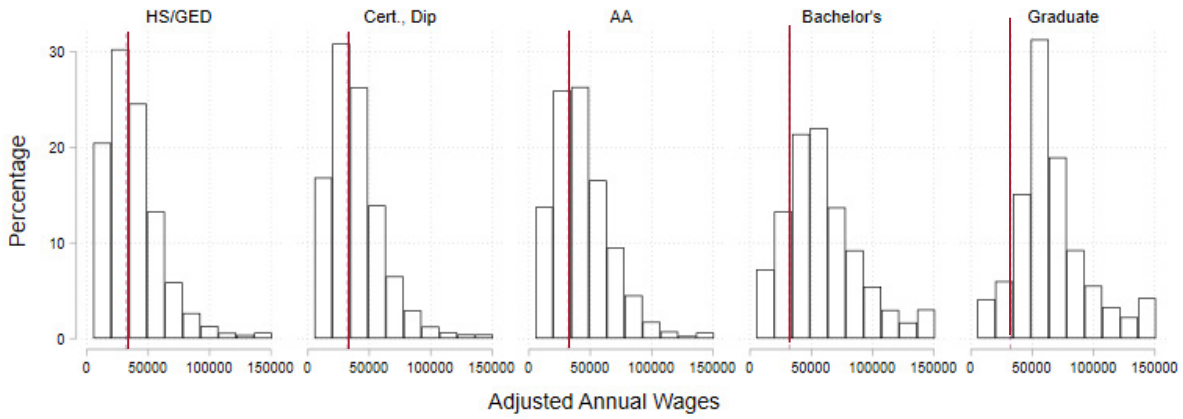
Nearly 50% of workers with only a high school degree did not earn over the living wage threshold in Georgia as compared to only 15% of those with bachelor's degrees.

While our findings in Figure 6.1 demonstrate that the average wages for workers in our sample are above the living wage threshold, this chart does not lend insight into the proportion of earners within credential type who pass this threshold. It is possible that reporting the mean masks substantial wage variation within credential type, which may lead us to miss populations of workers who earn below the threshold. To examine how wages vary within credential type, we show the distribution of earnings for each credential (Figure 6.2). For this analysis, we bin incomes into 10 groups at roughly $17,000 intervals; the height of bar corresponds to the percentage of individuals per credential type with earnings within that income group. Like in Figure 6.1, we see that those with college credentials generally earn more than those with high school diplomas. When examining the distribution of earnings relative to the living wage threshold, we see that, for bachelor's and graduate degree recipients, there are a larger proportion of workers earning wages to the right of (or higher than) the threshold. 50 percent of individuals with only a high school degree did not earn

12 We only included individuals with three or four wage quarters observed in that 10th year. For those with three wage quarters, we linearly imputed the missing wage quarter.

over the living wage threshold in Georgia—this number shrinks to about 18 percent for those with bachelor's degree. These findings indicate that high school diploma holders face challenges in securing high-paying jobs, as they often lack specialized skills or advanced training. This highlights the importance of investing in programs that provide vocational training and skill development opportunities for individuals without higher education qualifications. Bridging this gap can lead to increased earning potential and alleviate poverty among these workers.

Figure 6.2 Distribution of Wages by Highest Degree 10 Years After High School Graduation Benchmarked Against the Living Wage Threshold



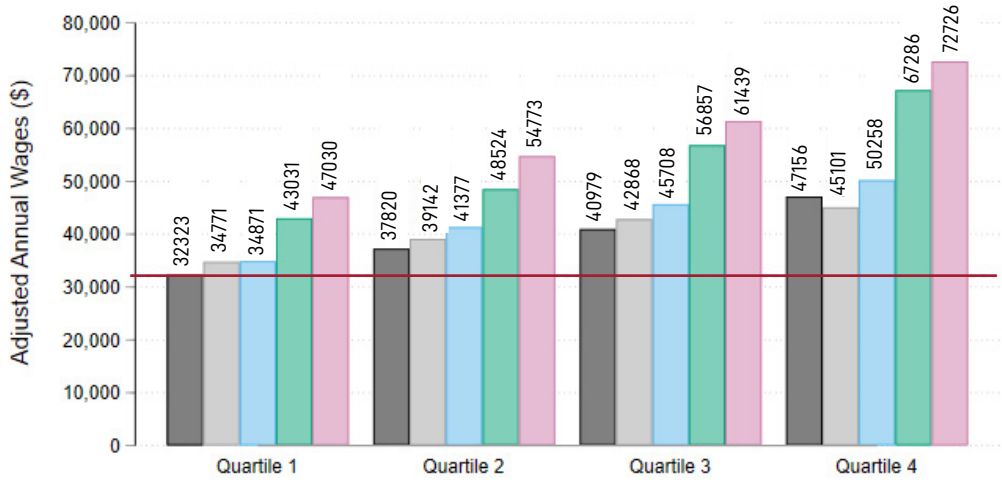
Wages adjusted to 2022 dollars. Wages for high school classes of 2010 and 2011.
Dotted line is the average of living wage data between 2020 and 2022 adjusted to 2022 dollars.
Living wage estimates from MIT Living Wage calculator.
Sample comprises all individuals with three or four wage quarters observed in 10th year after high school graduation, N= 96,513
Wages winsorized at top and bottom 1st percentiles.

Key Finding 7: Credentials alone do not determine wages. The wage premium associated with earning a college credential varies by student characteristics.

Wages differ even among individuals who completed the same credential. Those who scored better on the High School Graduation Test earned more.

The analyses in Key Finding 7 disaggregate the prior earnings analyses by credential type by performance on the math portion of the High School Graduation Test and other demographic characteristics. Figure 7.1 plots mean wages (y axis) by math test quartile (x axis), distinguishing between highest degree attained by color of bar. In general, across credential types, mean earnings for those who scored lowest on the test (the left-most set of bars) were lower than students who scored highest on the test (the right-most set of bars). When looking at earnings of workers with postsecondary credentials relative to those with a high school diploma, we again find that the wage premium is largest for those with bachelor's and graduate degrees; however, we also see that the size of the premium increases across test score quartiles. For example, Figure 7.1 shows that workers with a top-quartile math test score who hold a graduate degree earned 54 percent more than those with only a high school diploma or GED, while workers with a bottom quartile math test score with a graduate degree earned 46 percent more than those with only a high school diploma or GED. These findings underscore the complex relationship between educational attainment, academic performance, and earnings. They also suggest that efforts aimed at adult education and workforce training might be particularly beneficial for those who exhibited lower academic performance during high school.

Figure 7.1 Mean Wages by Highest Degree and by High School Graduation 10 Years After High School Graduation Benchmarked Against the Living Wage Threshold



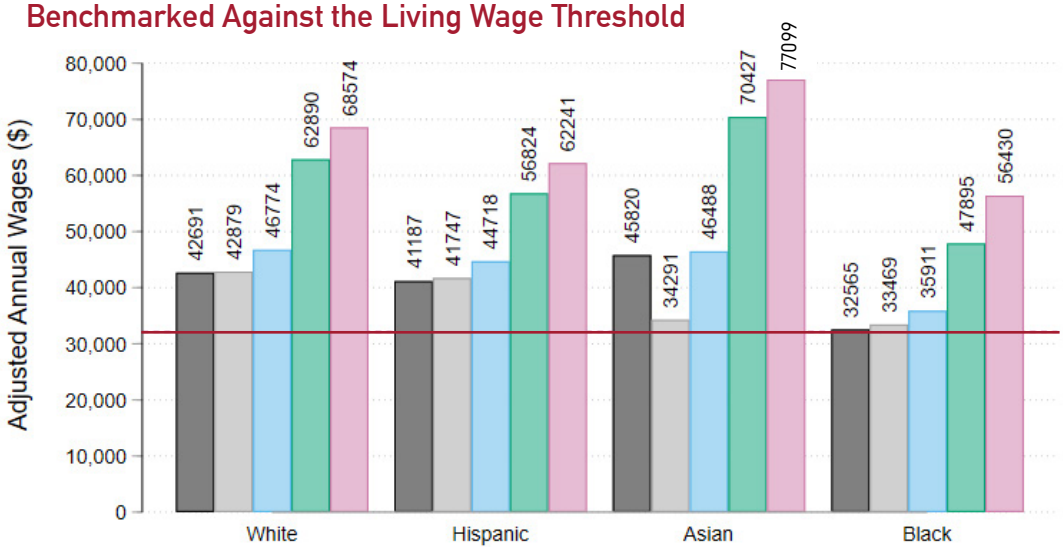
Wages adjusted to 2022 dollars.Wages for high school classes of 2010 and 2011. Dotted line is the average living wage between 2020 and 2022 adjusted to 2022 dollars.
Living wage estimates from MIT Living Wage calculator. Sample comprises all individuals with three or four wage quarters observed in 10th year after high school graduation, N= 96,513. Missing quarter imputed for individuals with only three wage quarters observed. Wages winsorized at top and bottom 1st percentiles.

A college degree does not erase racial differences in earnings. Racial earnings gaps are persistent across credential types and prior achievement.

To examine how wages further vary by student characteristics, we plot mean earnings 10 years after high school graduation by four racial/ethnic groups and highest credential, distinguishing between credentials by color (seen in Figure 7.2). This plot shows earnings disparities across credential types with White and Asian workers earning more than their Black and Hispanic peers, irrespective of credential type (with one exception of approximately 50 Asian students achieving primarily health science sub-baccalaureate certificates or diplomas).

Black workers with a high school diploma or GED, associate degree, or bachelor's degree earn on average 31 percent, 30 percent, and 31 percent less than White workers with the same credential. For workers with a graduate degree, the Black-White earnings gap drops to 21 percent. Racial earnings gaps are even more stark when we consider differences between Asian and Black workers. Black workers with a high school diploma or GED, associate degree, or bachelor's degree earn on average 42 percent, 29 percent, and 47 percent less than Asian workers with the same credential. These findings underscore that, while higher levels of educational attainment generally correlate with higher wages, Black and Hispanic workers may still face barriers to financial security despite obtaining similar credentials as their White and Asian counterparts.

Figure 7.2 Mean Wages by Highest Degree and by Race/Ethnicity 10 Years After High School Graduation Benchmarked Against the Living Wage Threshold

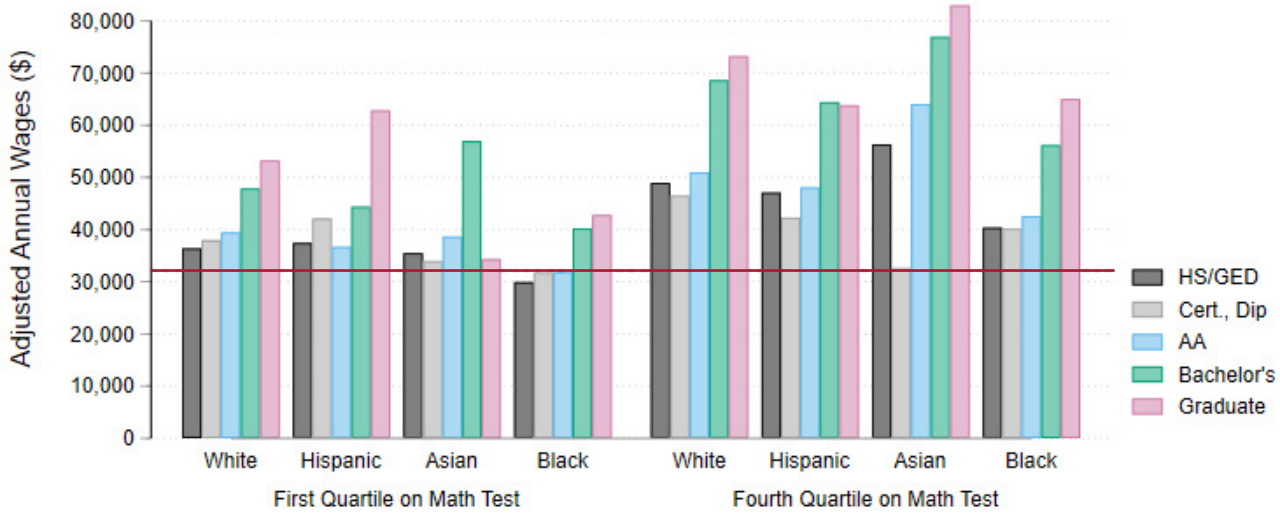


Wages adjusted to 2022 dollars. Wages for high school classes of 2010 and 2011. Dotted line is the average living wage between 2020 and 2022 adjusted to 2022 dollars.
Living wage estimates from MIT Living Wage calculator. Sample comprises all individuals with three or four wage quarters observed in 10th year after high school graduation, N= 96,513. Missing quarter imputed for individuals with only three wage quarters observed. Wages winsorized at top and bottom 1st percentiles.

We know from Figure 4.2 that White, Asian, Hispanic, and Black workers have very different test score profiles. In particular, 55 percent and 50 percent of White and Asian earners with a bachelor's degree, respectively, scored at the 75th percentile or above in the math portion of the High School Graduation Test, as opposed to just 20 percent of Black workers. Considering the relationship established in Figure 7.1 between higher test performance and increased earnings, we examine the extent to which the observed racial earnings gaps in Figure 7.2 can be related to differences in math test performance.

Figure 7.3 stratifies earnings by both race and by math score on the High School Graduation Test. The figure plots mean earnings by racial and ethnic group (x axis) per credential type (colored bars) for workers who scored in the first (left panel) and fourth (right panel) quartiles of the test. Even among similarly achieving workers, Black and Hispanic workers earned less than their White and Asian counterparts. This suggests that those who belong to marginalized racial groups and earned lower test scores face compounded challenges in accessing higher-paying employment opportunities. The differences in earnings within each test score group may partially stem from the varied composition of workers in these groups. For example, in the top quartile of test scores over 60% of Asian workers scored above the 75th percentile, whereas only 30% of Black workers achieved the same level. However, the earnings gap also reflects unmeasured factors such as the institutions attended by individuals from different racial backgrounds, their majors, and other employment-related characteristics. Additional analyses, shown in Supplemental Table A1, demonstrate that about 60 percent of the earnings gap between Black and White workers can be attributed to academic performance, field of study, and institution— with academic performance explaining the largest portion of the gap. This implies that early educational interventions could be an important remedy for reducing Black-White inequality.

Figure 7.3 Mean Wages by Highest Degree and by Race/Ethnicity 10 Years After High School Graduation Benchmarked Against the Living Wage Threshold

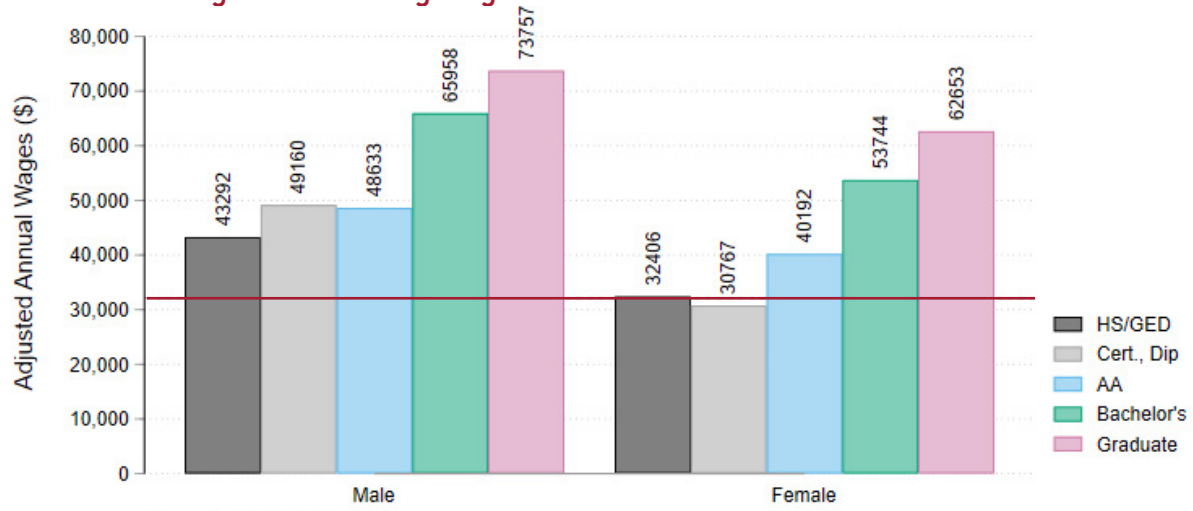


Wages adjusted to 2022 dollars.
Wages for high school classes of 2010 and 2011.
Dotted line is the average living wage between 2020 and 2022 adjusted to 2022 dollars.
Living wage estimates from MIT Living Wage calculator.
Sample comprises all individuals with three or four wage quarters observed in 10th year after high school graduation, N= 96,513
Missing quarter imputed for individuals with only three wage quarters observed.
Wages winsorized at top and bottom 1st percentiles.

Earning gaps were present across other dimensions of student demographics including sex and pre-college socioeconomic status.

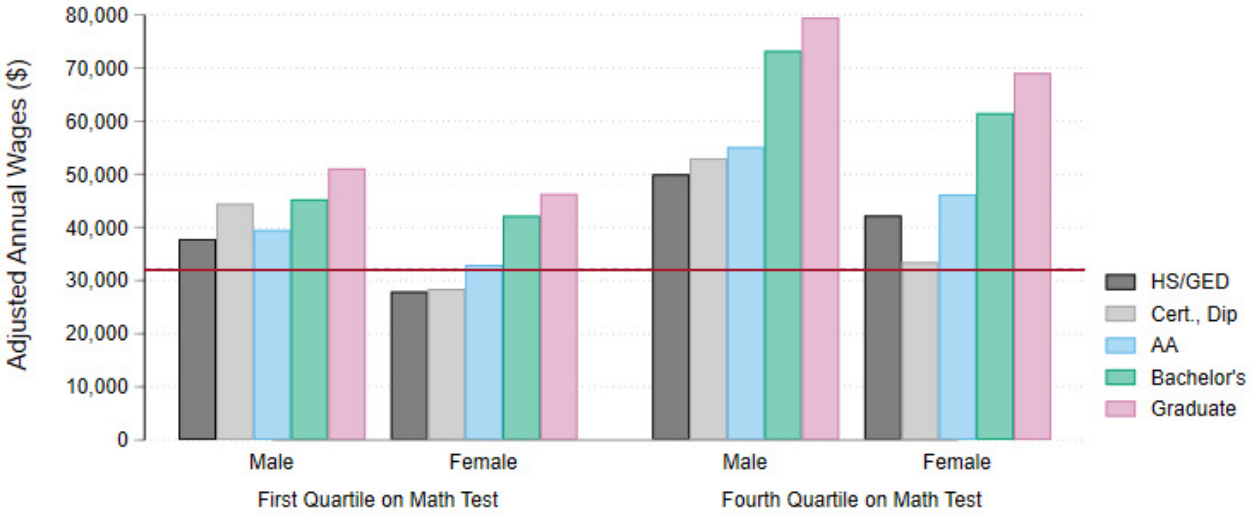
For many student groups, patterns in earnings were similar to those for race. Male students consistently earned more than female workers regardless of credential type and prior academic performance (as seen in Figures 7.4 and 7.5). Students in poverty in high school tended to earn less than their more advantaged peers, with the wage gap ranging from around $6,000 to $12,000, which reflects non-FRPL students' higher overall test scores (See Appendix Figure A.20).

Figure 7.4 Mean Wages by Highest Degree and by Sex 10 Years After High School Graduation Benchmarked Against the Living Wage Threshold



Wages adjusted to 2022 dollars. Wages for high school classes of 2010 and 2011. Dotted line is the average living wage between 2020 and 2022 adjusted to 2022 dollars. Living wage estimates from MIT Living Wage calculator. Sample comprises all individuals with three or four wage quarters observed in 10th year after high school graduation, N= 96,513
Missing quarter imputed for individuals with only three wage quarters observed. Wages winsorized at top and bottom 1st percentiles.

Figure 7.5 Mean Wages by Highest Degree, Sex, and Test Score 10 Years After High School Graduation Benchmarked Against the Living Wage Threshold



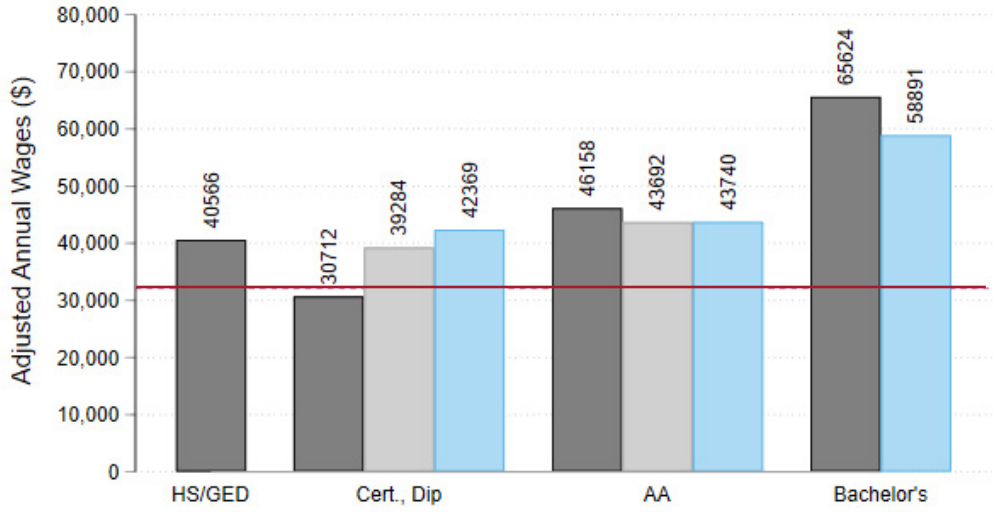
Wages adjusted to 2022 dollars. Wages for high school classes of 2010 and 2011. Dotted line is the average living wage between 2020 and 2022 adjusted to 2022 dollars. Living wage estimates from MIT Living Wage calculator. Sample comprises all individuals with three or four wage quarters observed in 10th year after high school graduation, N= 96,513
Missing quarter imputed for individuals with only three wage quarters observed. Wages winsorized at top and bottom 1st percentiles.

Key Finding 8: Where a student attends college matters for future earnings.

Given the investment that Georgia makes in its public institutions, it is important to understand whether workers with credentials from these institutions are experiencing positive labor market outcomes. In Figure 8.1, we see that Georgia workers with certificates and diplomas from the state's public colleges perform

better than those with degrees from other systems. However, as attainment increases, this trend reverses, as we see that those with associate and bachelor's degrees from private and out-of-state institutions tend to out-earn those with degrees from Georgia publics. This difference is particularly largest at the bachelor's degree level, where students who attended private or out-of-state colleges earned 11% more than those who attended USG colleges. These results should not be taken as proof that attending an out-of-state college causes higher earnings, because we are not accounting for student-level factors that influence a student's decision of where to go to college. For example, students who choose out-of-state colleges might come from wealthier families, which can affect their earnings, not just the college they attended.

Figure 8.1 Mean Wages by Highest Degree and by College System 10 Years After High School Graduation



Wages adjusted to 2022 dollars. Wages for high school classes of 2010 and 2011.
Dotted line is the average living wage between 2020 and 2022 adjusted to 2022 dollars. Living wage estimates from MIT Living Wage calculator. Sample comprises all individuals with three or four wage quarters observed in 10th year after high school graduation, N= 96,513
Missing quarter imputed for individuals with only three wage quarters observed. Wages winsorized at top and bottom 1st percentiles.

Private or Out-of-State
TCSG
USG

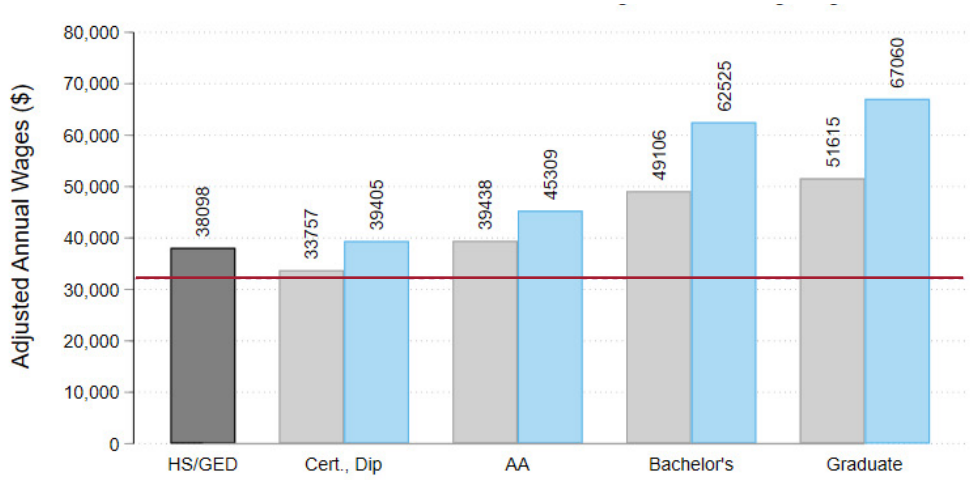
Key Finding 9: Career and technical training pays off. Those with career and technical (CTE) degrees earn more than those with liberal arts degrees across credential levels.

Our last analyses in this section examine wages by field of study. Understanding how wages vary by field of study will allow Georgia's leaders to identify whether majors that feed into high demand occupations yield competitive wages. To begin, we show average wages by credential type (x axis), disaggregated by broad field of study (distinguished by color) for the full population (Figure 9.1), and for workers disaggregated by their score on the math portion of the High School Graduation test (first and fourth quartiles, Figure 9.2). Gray bars correspond to wages for earners with liberal arts credentials at each credential type; blue bars correspond to wages for those with career and technical education (CTE) credentials.[13]

Examining first the plot in Figure 9.1: At each credential level, we see that workers with CTE degrees earn more. Further, reflecting previous findings, we see that the premium to a CTE relative to a liberal arts degree rises at higher credential levels, increasing from over $5,000 (17 percent) for workers with a certificate or diploma, to around $15,500 (30 percent) for workers with a graduate degree. These rising CTE premiums across higher credential types reflect primarily the high CTE premium at higher credential levels for individuals with test scores in the fourth quartile. The rightmost plot in Figure 9.2 shows the pronounced CTE premium for workers with test scores in the fourth quartile. For example, workers with scores in the fourth quartile who had a CTE bachelor's or graduate degree earned on average 28 percent and 31 percent more test takers in the same quartile with a liberal arts bachelor's or graduate degree, respectively. By contrast, workers with test scores in the first quartile who had a CTE bachelor's or graduate degree earned 16 percent and 17 percent more than test takers in the same quartile with a liberal arts, bachelor's, or graduate degree, respectively.

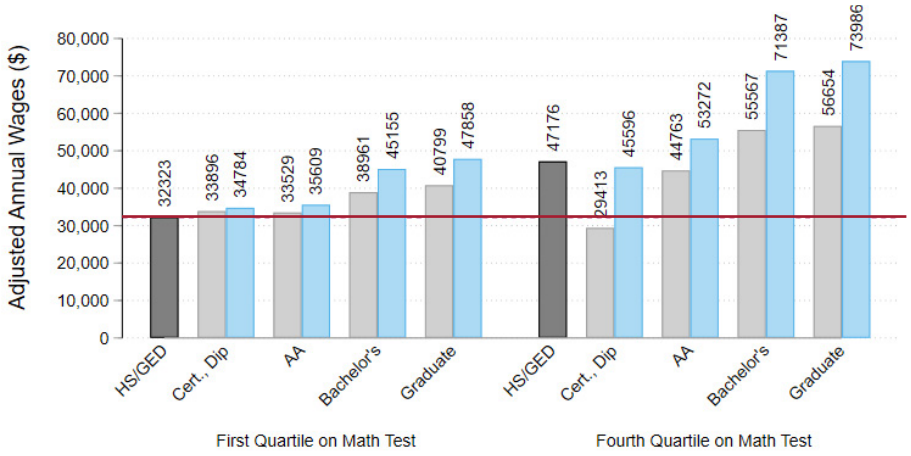
13 To categorize degree programs, we rely on NCES' CIP taxonomy. https://nces.ed.gov/surveys/ctes/tables/postsec_tax.asp

Figure 9.1 Mean Wages by Highest Degree and by Broad Field of Study 10 Years After High School Graduation Benchmarked Against the Living Wage Threshold



Wages adjusted to 2022 dollars.
Wages for high school classes of 2010 and 2011.
Dotted line is the average living wage between 2020 and 2022 adjusted to 2022 dollars.
Living wage estimates from MIT Living Wage calculator.
Sample comprises all individuals with three or four wage quarters observed in 10th year after high school graduation, N= 96,513
Missing quarter imputed for individuals with only three wage quarters observed.
Wages winsorized at top and bottom 1st percentiles.

Figure 9.2 Mean Wages by Highest Degree, Broad Field of Study, and Test Score 10 years after High School Graduation Benchmarked Against the Living Wage Threshold



Wages adjusted to 2022 dollars. Wages for high school classes of 2010 and 2011.
Dotted line is the average living wage between 2020 and 2022 adjusted to 2022 dollars.
Living wage estimates from MIT Living Wage calculator.
Sample comprises all individuals with three or four wage quarters observed in 10th year after high school graduation, N= 96,513
Missing quarter imputed for individuals with only three wage quarters observed.
Wages winsorized at top and bottom 1st percentiles.

We repeat the previous analyses but now disaggregating individuals' highest credential by narrow field of study (as opposed to broad field).[14] For each credential level, we show the top three most popular degree types measured by enrollments (Figures 9.3 and 9.4). Several points are of note.

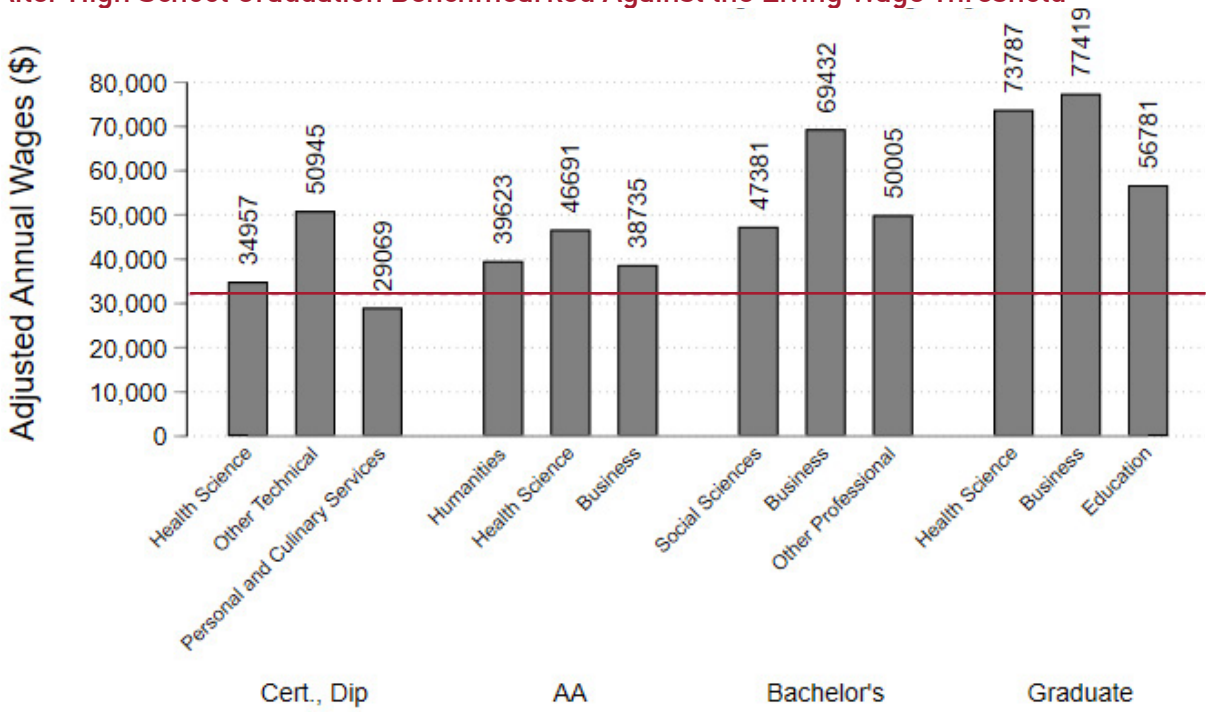
First, as seen in Figure 9.4, the ability premium within credential type holds only for certain credentials: at the graduate level, for instance, earnings premiums associated with higher math test scores hold for business and health science—but not education—degrees.

Second, some students with sub-Baccalaureate certificates and diplomas in popular majors earn under the living wage. Students with math scores in the first quartile with health science and personal and culinary service undergraduate diplomas had especially low earnings, at $30,423 and $27,086, while workers with math test scores in the fourth quartile with these same credentials earned a living wage (earning on average $40,042 and $32,999, respectively). Fourth quartile test scorers do not constitute the majority of workers with these credentials, which drives down the earnings for these groups in the full population (shown in Figure 9.3). Only 29 percent of personal and culinary service diploma earners, respectively, had math test scores above the median. This contrasts with higher credential groups, whose high earnings reflect the high earnings of workers' above-median math test scores—for example, 81 percent, 70 percent, and 67 percent of

14 We group CIP codes using a taxonomy adapted from Dynarski et al. (https://eric.ed.gov/?id=ED557080).

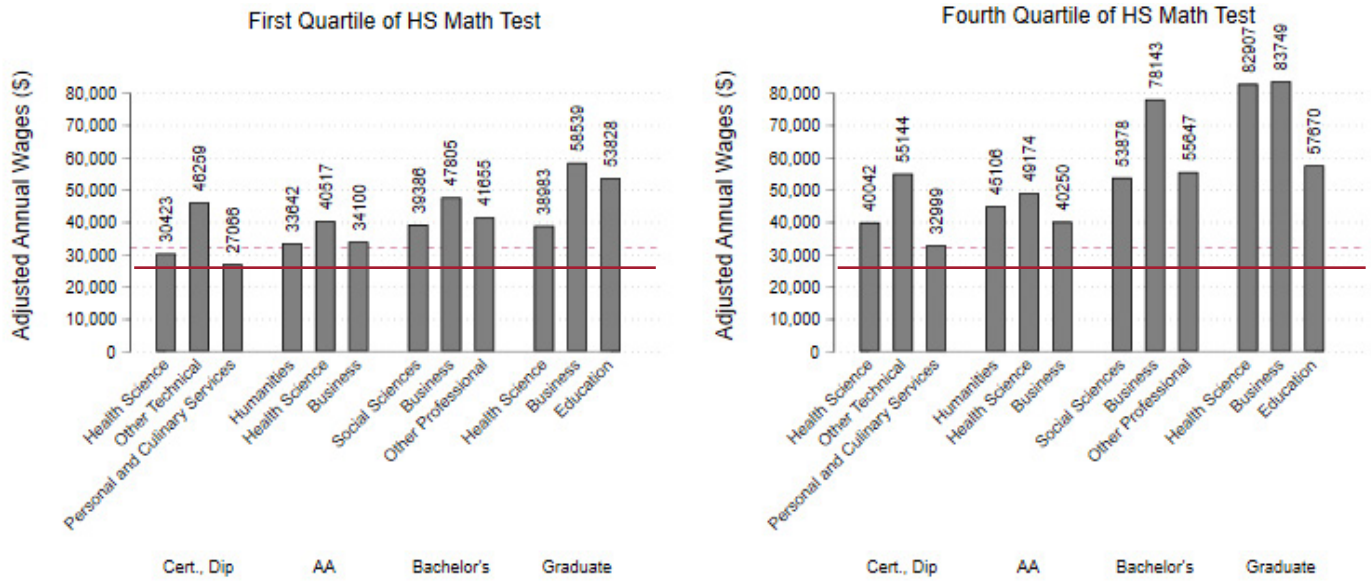
workers with a bachelor's degree in business, other professional services, and social sciences, respectively.

Figure 9.3 Mean Wages by Highest Degree and by Top Three Most Popular Narrow Field of Study 10 Years After High School Graduation Benchmearked Against the Living Wage Threshold



Wages adjusted to 2022 dollars. Wages for high school classes of 2010 and 2011.
Dotted line is the average living wage between 2020 and 2022 adjusted to 2022 dollars.
Living wage estimates from MIT Living Wage calculator.
Sample comprises all individuals with three or four wage quarters observed in 10th year after high school graduation, N= 96,513
Missing quarter imputed for individuals with only three wage quarters observed. Wages winsorized at top and bottom 1st percentiles.

Figure 9.4 Mean Wages by Highest Degree and by Top Three Most Popular Fields of Study Ten Years After High School Graduation Benchmarked Against the Living Wage Threshold



Wages adjusted to 2022 dollars.
Wages for high school classes of 2010 and 2011.
Dotted line is the average living wage between 2020 and 2022 adjusted to 2022 dollars.
Living wage estimates from MIT Living Wage calculator.
Sample comprises all individuals with three or four wage quarters observed in 10th year after high school graduation, N= 96,513
Missing quarter imputed for individuals with only three wage quarters observed.

The findings presented in this section underscore the significance of educational attainment and field of study in shaping individuals' earnings trajectories. While workers with bachelor's and graduate degrees generally experience substantial earnings premiums compared to those with only a high school diploma, not all students benefit equally from postsecondary credentials. Factors such as performance on the High School Graduation Test, race, gender, and socioeconomic status appeared to influence earning outcomes. Additionally, the variation in wages by field of study highlights the importance of aligning educational programs with high-demand occupations to ensure competitive wages and economic prosperity for all individuals.

CONCLUSION

The analyses presented in this diagnostic demonstrate that there are differences in credential attainment and earnings across students' academic, demographic, and school characteristics. For many students, completion rates seem to be driven by both low college entry rates and low completion rates among attempters. As such, increasing college attainment in Georgia will likely necessitate interventions at the secondary and post-secondary levels.

Prior research suggests several evidence-based practices that schools can incorporate to improve college-going rates. In particular, the E-W Framework suggests incorporating financial aid advising and hands-on FAFSA assistance to decrease financial aid barriers to enrollment, as well as enhanced college advising in high schools aimed to help students find the right college fit for their goals (48). In addition, schools may consider targeting students' academic preparation as a means of increasing college-going. The Framework identifies several programs that have shown promise in increasing student achievement, such as high-impact tutoring, out-of-school programs, and intensive support tied to early warning indicators (49-53).

Research has also identified several key practices that may help colleges prevent stop out. These include co-requisite support (in which students receive developmental education support alongside their coursework), comprehensive and integrated advising that connects students to individualized academic and nonacademic supports, as well as mentoring/coaching related to education and career goals (54-57). See the Framework for a complete list (47). Secondary institutions can also play a role in setting their students up for postsecondary success. Programs such as early college/dual enrollment and personalized college advising have shown promise as tools that may increase degree completion (58-60).

Our analyses of wages show that overall, workers with college degrees earn more. This is a promising finding considering Georgia's degree attainment goal, as students often consider future earnings when deciding to attend college. Our analyses also show a great deal of variation in earnings both by student background and field of study, which suggests that the return to college is not the same for every student. Efforts to increase the number of colleges educated workers in certain fields may require a closer look into the costs of these credentials. Additionally, the wage gaps we see by student background within credential type suggest a need for further analyses into the workforce outcomes of lower earning students. Prior work has shown that wage gaps can be attributed to both opportunity gaps, where certain workers are less likely to hold management positions, as well as occupational segregation where some are more likely to work in industries that generally pay less (13). Further inquiry into the types of positions workers hold and their industries may reveal policy and practice solutions that will help ameliorate wage gaps.

APPENDIX

Table 1: Outcomes and Associated Literature Mapped to Education-to-Workforce Framework Indicator

Outcome	Associated Literature	Education-to-Workforce Framework Indicator
Postsecondary enrollment within one year of high school graduation	1. Roksa, J. & Velez, M. (2012) A Late Start: Delayed Entry, Life Course Transitions and Bachelor's Degree Completion, Social Forces, 90(3), 769–794, https://doi-org.ezp-prod1.hul.harvard.edu/10.1093/sf/sor018 2. National Center for Education Statistics. (2019a). Table 302.20. Percentage of recent HS completers enrolled in college, by race/ethnicity: 1960 through 2018. Digest of Education Statistics. Institute of Education Sciences, U.S. Department of Education. https://nces.ed.gov/programs/digest/d19/tables/dt19_302.20.asp 3. Coca, V. M., Nagaoka, J., & Seekin, A. (2017). Patterns of two-year and four-year college enrollment among Chicago Public Schools graduates. University of Chicago Consortium on School Research. https://eric.ed.gov/?id=ED589667#:~:text=Nineteen%20percent%20of%202009%20CPS,year%20colleges%20within%20four%20years	Postsecondary enrollment directly after high school graduation
Postsecondary credential completion	4. U.S. Bureau of Labor Statistics. (2021). Earnings and employment rates by educational attainment, 2020. U.S. Department of Labor, Bureau of Labor Statistics. https://www.bls.gov/emp/chart-unemployment-earnings-education.htm 5. Jepsen, C., Troske, K., & Coomes, P. (2014). The labor-market returns to community college degrees, diplomas, and certificates. Journal of Labor Economics, 32(1), 95–121. https://doi.org/10.1086/671809 6. Oreopolous, P., & Petronijevic, U. (2013). Making college worth it: A review of research on the returns to higher education. National Bureau of Economic Research. https://www.nber.org/system/files/working_papers/w19053/w19053.pdf 7. Tamborini, C. R., Kim, C. H., & Sakamoto, A. (2015). Education and lifetime earnings in the United States. Demography, 52(4), 1383–1407. https://dx.doi.org/10.1007%2Fs13524-015-0407-0 8. Altonji, J. G., & Zhong, L. (2016). The labor market returns to advanced degrees. Journal of Labor Economics, 39(2), 303–360. https://www.journals.uchicago.edu/doi/full/10.1086/710959	Postsecondary certificate or degree completion; Graduate degree completion
College stop out	9. National Student Clearinghouse (2023). Some college, no credential student outcomes. https://nscresearchcenter.org/wp-content/uploads/SCNCReport2023.pdf 10. National Student Clearinghouse (2022). National college progression rates. https://nscresearchcenter.org/wp-content/uploads/2022_HSBenchmarksReport.pdf	Postsecondary persistence

Earnings above a living wage	11. Nadeau, C. A. (2020). New living wage data for now available on the tool. Living Wage Calculator. https://livingwage.mit.edu/articles/61-new-living-wage-data-for-now-available-on-the-tool 12. Carnevale, A. P., Strohl, J., Gulish, A., Van Der Werf, M., & Campbell, K. P. (2019). The unequal race for good jobs: How Whites made outsized gains in education and good jobs compared to Blacks and Latinos. Center on Education and the Workforce, Georgetown University. https://eric.ed.gov/?id=ED600048 13. Zhavoronkova, M., Khattar, R., & Brady, M. (2022).Occupational segregation in America. Center for American Progress. https://www.americanprogress.org/article/occupational-segregation-in-america/	Access to jobs paying a living wage

Table 2: Disaggregate and Associated Literature Mapped to Education-to-Workforce Framework Indicator

Disaggregate	Definition	Associated Literature	Education-to-Workforce Framework Indicator/ Disaggregate
Race/ ethnicity	Student race/ ethnicity	14. Belley, P., & Lochner, L. (2007). The changing role of family income and ability in determining educational achievement. Journal of Human Capital, 1(1), 37–89. https://doi.org/10.1086/524674 15. Chetty, R., Friedman, J., Saez, E., Turner, N., & Yagan, D. (2017). Mobility report cards: The role of colleges in intergenerational mobility. National Bureau of Economic Research. https://www.nber.org/papers/w23618 16. National Center for Education Statistics. (2019a). Table 302.20. Percentage of recent HS completers enrolled in college, by race/ethnicity: 1960 through 2018. Digest of Education Statistics. Institute of Education Sciences, U.S. Department of Education. https://nces.ed.gov/programs/digest/d19/tables/dt19_302.20.asp 17. Coca, V. M., Nagaoka, J., & Seekin, A. (2017). Patterns of two-year and four-year college enrollment among Chicago Public Schools graduates. University of Chicago Consortium on School Research. https://eric.ed.gov/?id=ED589667#:~:text=Nineteen%20percent%20of%202009%20CPS,year%20colleges%20within%20four%20years.	Race and Ethnicity
Sex	Student sex	18. Reeves, R. V., & Smith, E. (2021). The male college crisis is not just in enrollment, but completion. Brookings Institute. https://www.brookings.edu/blog/up-front/2021/10/08/the-male-college-crisis-is-not-just-in-enrollment-but-completion/	Gender

Free and Reduced-Price Lunch Receipt	Whether a student received FRPL while in high school	19. National Center for Education Statistics. (2015). Educational attainment differences by students' socioeconomic status. Condition of Education. https://nces.ed.gov/programs/coe/pdf/coe_tva.pdf 20. National Student Clearinghouse. (2017). HS benchmarks 2017: National college progression rates. https://nscresearchcenter.org/hsbenchmarks2017/	Income Level
Discipline Record	Whether a student was involved in disciplinary action in high school	21. Skiba, R., & Karega Rausch, M. (2004). The relationship between achievement, discipline, and race: An analysis of factors predicting ISTEP scores. Children left behind policy briefs. Supplementary analysis 2-D. Center for Evaluation and Education Policy, Indiana University. https://eric.ed.gov/?id=ED488899 22. Balfanz, R., Byrnes, V., & Fox, J. (2014). Sent home and put off-track: The antecedents, disproportionalities, and consequences of being suspended in the ninth grade. Journal of Applied Research on Children, 5(2), article 13. https://digitalcommons.library.tmc.edu/childrenatrisk/vol5/iss2/13/	Positive behavior
Advanced Course Enrollment	Whether a student took advanced coursework in high school (AP, IB, dual/joint enrollment)	23. Shields, K. A., Bailey, J., Hanita, M., & Zhang, X. (2021). The effects of accelerated college credit programs on educational attainment in Rhode Island. Regional Educational Laboratory, Northeast & Islands.Institute of Education Sciences, U.S. Department of Education. https://ies.ed.gov/ncee/rel/Project/5680 24. Cumpton, G., Schexnayder, D., King, C. T., & Stolp, C. (2012). Factors associated with education and work after HS for the classes of 2008 and 2009: A research report of the Central Texas Student Futures project. Ray Marshall Center for the Study of Human Resources, University of Texas at Austin. http://hdl.handle.net/2152/20410 25. Warne, R. T. (2017). Research on the academic benefits of the advanced placement program: Taking stock and looking forward. SAGE Journals, 7(1). https://doi.org/10.1177/2158244016682996	Early college coursework completion
High School Graduation Test Score	Quartile for student score on the high school graduation test.	26. Duncan, G. J., Claessens, A., Huston, A. C., Pagani, L. S., Engel, M., Sexton, H., Dowsett, C. J., Magnuson, K., Klevanov, P., Feinstein, L., Brooks-Gunn, J., Duckworth, K., & Japel, C. (2007). School readiness and later achievement. Developmental Psychology, 43(6), 1428–1446. https://doi.org/10.1037/0012-1649.43.6.1428 27. The Nation's Report Card. (2019e). NAEP report card: Reading. National student group scores and score gaps. https://www.nationsreportcard.gov/reading/nation/groups/?grade=12	Math and reading proficiency in high school

Performance on 8th Grade ELA and Math Tests	Student proficiency level on the 8th grade ELA and Math tests.	28. Cumpton, G., Schexnayder, D., King, C. T., & Stolp, C. (2012). Factors associated with education and work after HS for the classes of 2008 and 2009: A research report of the Central Texas Student Futures project. Ray Marshall Center for the Study of Human Resources, University of Texas at Austin. http://hdl.handle.net/2152/20410 29. The Nation's Report Card. (2019). NAEP report card: Mathematics. https://www.nationsreportcard.gov/highlights/mathematics/2019/ 30. The Nation's Report Card. (2019). NAEP report card: Reading. https://www.nationsreportcard.gov/highlights/reading/2019/	Math and reading proficiency in 8th grade
Course Failure in 9th Grade Core Courses	Whether a student failed one or more core course in 9th grade (math, English, social studies, science)	31. Allensworth, E. M., & Easton, J. Q. (2007). What matters for staying on-track and graduating in Chicago public HSs: A close look at course grades, failures, and attendance in the freshman year. Consortium on Chicago School Research at the University of Chicago. https://consortium.uchicago.edu/sites/default/files/2018-10/07%20What%20Matters%20Final.pdf	9th grade on track
9th Grade Core Course GPA	Student GPA in 9th grade core courses (math, English, social studies, science)	32. Easton, J. Q., Johnson, E., & Sartrain, L. (2017). The predictive power of ninth-grade GPA. University of Chicago. https://consortium.uchicago.edu/publications/predictive-power-ninth-grade-gpa	9th grade on track, grade point average
Chronic Absenteeism in 9th Grade	Whether a student was absent more than 10% of enrolled days in 9th grade.	33. Allensworth, E. M., & Easton, J. Q. (2007). What matters for staying on-track and graduating in Chicago public HSs: A close look at course grades, failures, and attendance in the freshman year. Consortium on Chicago School Research at the University of Chicago. https://consortium.uchicago.edu/sites/default/files/2018-10/07%20What%20Matters%20Final.pdf	Consistent attendance
% in School Receiving FRPL	Percent of students enrolled in high school receiving FRPL.	34. National Student Clearinghouse (2022). HS Benchmarks. https://nscresearchcenter.org/wp-content/uploads/2022_HSBenchmarksReport.pdf	School socioeconomic diversity

High School Locale	Locale of high school (rural, town, urban, suburban)	35. Croft, M., & Moore, R. (2019). Rural students: Technology, coursework, and extracurricular activities. ACT Center for Equity in Learning. https://eric.ed.gov/?id=ED596140 1350 36. National Center for Education Statistics. (n.d.). Rural education in America. Institute of Education Sciences, U.S. Department of Education, https://nces.ed.gov/surveys/ruraled/definitions.asp#:~:text=Urbanized%20areas%20and%20urban%20clusters,are%20designated%20as%20urban%20clusters 37. National Center for Education Statistics. (2023). The Condition of Education 2023. https://nces.ed.gov/programs/coe/pdf/2022/lbc_508.pdf 38. United States Department of Agriculture (2022). Educational attainment improved in rural America but educational gap with urban areas grew for bachelor's degrees and higher. https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=106147#:~:text=In%202017%E2%80%9321%2C%20the%20share,22%20percent%20in%20rural%20areas.	Urbanicity
Credit accumulation	Credits accumulated in the first term and at the time of stop out	39. Adelman, C. (2006). The toolbox revisited: Paths to degree completion from HS through college. U.S. Department of Education. https://www2.ed.gov/rschstat/research/pubs/toolboxrevisit/toolbox.pdf 40. Attewell, P., & Monaghan, D. (2016). How many credits should an undergraduate take? Research in Higher Education, 57, 682–713. https://doi.org/10.1007/s11162-015-9401-z 41. Belfield, C., Jenkins, D., & Lahr, H. (2016). Momentum: The academic and economic value of a 15-credit first semester course load for college students in Tennessee. Community College Research Center. http://ccrc.tc.columbia.edu/media/k2/attachments/momentum-15-credit-course-load.pdf	First-year credit accumulation

Table 3: Additional Literature

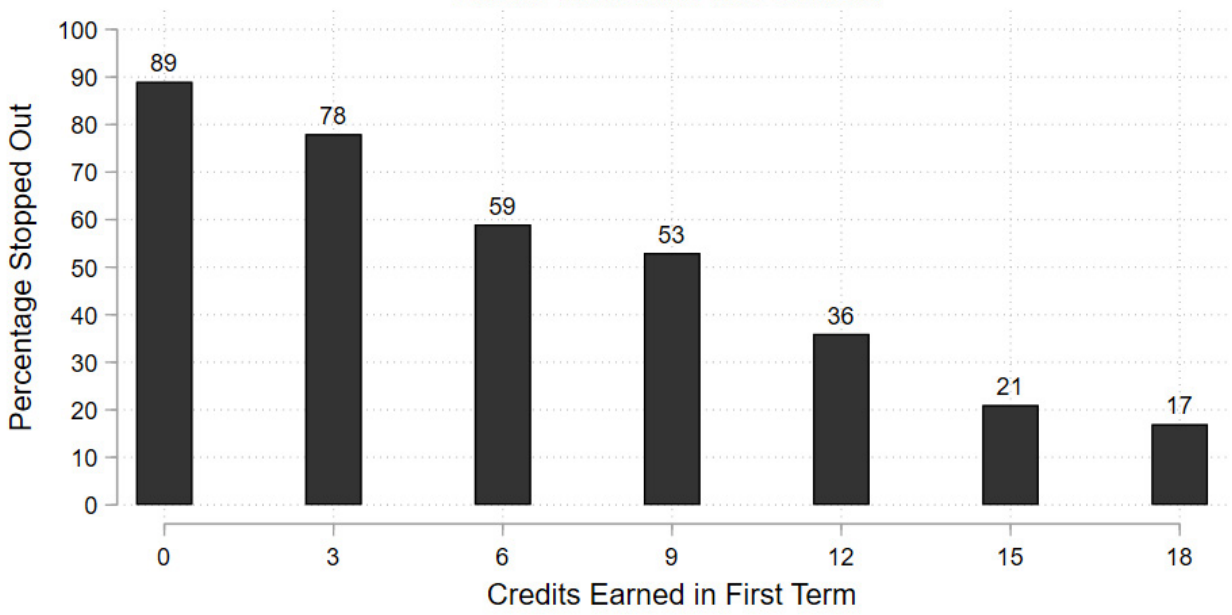
Citation	Topic
42. Lancaster, C., & Xu, Y. J. (2017). Challenges and supports for African American STEM student persistence: A case study at a racially diverse four-year institution. The Journal of Negro Education, 86(2), 176-189. https://doi.org/10.7709/jnegroeducation.86.2.0176 43. Solórzano, D., Ceja, M., & Yosso, T. (2000). Critical race theory, racial microaggressions, and campus racial climate: The experiences of African American college students. Journal of Negro Education, 69, 60–73. 44. Eller, C. C., & DiPrete, T. A. (2018). The Paradox of Persistence. American Sociological Review, 83(6), 1171–1214. https://doi.org/10.1177/0003122418808005	Black student college experiences
45. Perna L. (2006). Studying college access and choice: A proposed conceptual model. In Smart J. (Ed.), Higher education handbook of theory and research XXI (pp. 99-157). Dordrecht, The Netherlands: Springer.	College Choice

46. National Center for Education Statistics. (2023). Immediate College Enrollment Rate. Condition of Education. U.S. Department of Education, Institute of Education Sciences. Retrieved March 24, 2023, from https://nces.ed.gov/programs/coe/indicator/cpa.	College enrollment rate
47. Mathematica (2023) Educator-to-Workforce Framework. https://www.mathematica.org/projects/education-to-workforce-indicator-framework	Educator-to-Workforce Framework
48. What Works Clearinghouse (WWC). (2009d). Helping students navigate the path to college: What HSs can do. Institute of Education Sciences, U.S. Department of Education. https://ies.ed.gov/ncee/wwc/PracticeGuide/11	Interventions related to postsecondary enrollment
49. What Works Clearinghouse (WWC). (2009a). Assisting students struggling with reading: Response to Intervention (RTI) and multi-tier intervention in the primary grades. Institute of Education Sciences, U.S. Department of Education. https://ies.ed.gov/ncee/wwc/PracticeGuide/3 50. What Works Clearinghouse (WWC). (2009b). Assisting students struggling with mathematics: Response to Intervention (RTI) for elementary and middle schools. Institute of Education Sciences, U.S. Department of Education. https://ies.ed.gov/ncee/wwc/practiceguide/2 51. What Works Clearinghouse (WWC). (2008). Improving adolescent literacy: Effective classroom and intervention practices. Institute of Education Sciences, U.S. Department of Education. https://ies.ed.gov/ncee/wwc/PracticeGuide/8 52. Heinrich, C. J., Burch, P., Good, A., Acosta, R., Cheng, H., Dillender, M., Kirshbaum, C., Nisar, H., & Stewart, M. (2014). Improving the implementation and effectiveness of out-of-school-time tutoring. Journal of policy analysis and management, 33(2), 471–494. https://doi.org/10.1002/pam.21745 53. What Works Clearinghouse (WWC). (2009c). Structuring out-of-school time to improve academic achievement. Institute of Education Sciences, U.S. Department of Education. https://ies.ed.gov/ncee/wwc/PracticeGuide/10	Interventions related to student academic achievement

54. Smith Jaggars, S., Hodara, M., Cho, S. W., & Xu, D. (2014). Three accelerated developmental education programs: Features, student outcomes, and implications. Community College Review, 43(1). https://ccrc.tc.columbia.edu/publications/three-accelerated-developmental-education-programs.html 55. What Works Clearinghouse (WWC). (2016c). Strategies for postsecondary students in developmental education—A practice guide for college and university administrators, advisors, and faculty. Institute of Education Sciences, U.S. Department of Education. https://ies.ed.gov/ncee/wwc/PracticeGuide/23 56. Alamuddin, R., Rossman, D., & Kurzweil, M. (2018). Monitoring advising analytics to promote success (MAAPS): Evaluating findings from the first year of implementation. Ithaka S+R. https://doi.org/10.18665/sr.307005 57. 5 Bettinger, E. P., & Baker, R. (2014). The effects of student coaching an evaluation of a randomized experiment in student advising. Educational Evaluation and Policy Analysis, 36(1), 3–19. https://doi.org/10.3102/0162373713500523 58. Shields, K. A., Bailey, J., Hanita, M., & Zhang, X. (2021). The effects of accelerated college credit programs on educational attainment in Rhode Island. U.S. Department of Education, Institute of Education Sciences, Regional Educational Laboratory Northeast & Islands. https://ies.ed.gov/ncee/rel/Project/5680 59. Edmunds, J. A., Unlu, F., Glennie, E., Bernstein, L., Fesler, L., Furey, J., & Arshavsky, N. (2017). Smoothing the transition to postsecondary education: The impact of the early college model. Journal of Research on Educational Effectiveness, 10(2), 297–325. https://eric.ed.gov/?id=EJ1135800 60. Barr, A., & Castleman, B. (2021). The bottom line on college advising: Large increases in degree attainment. EdWorking Papers, Brown University. https://www.edworkingpapers.com/ai21-481	Interventions related to postsecondary completion

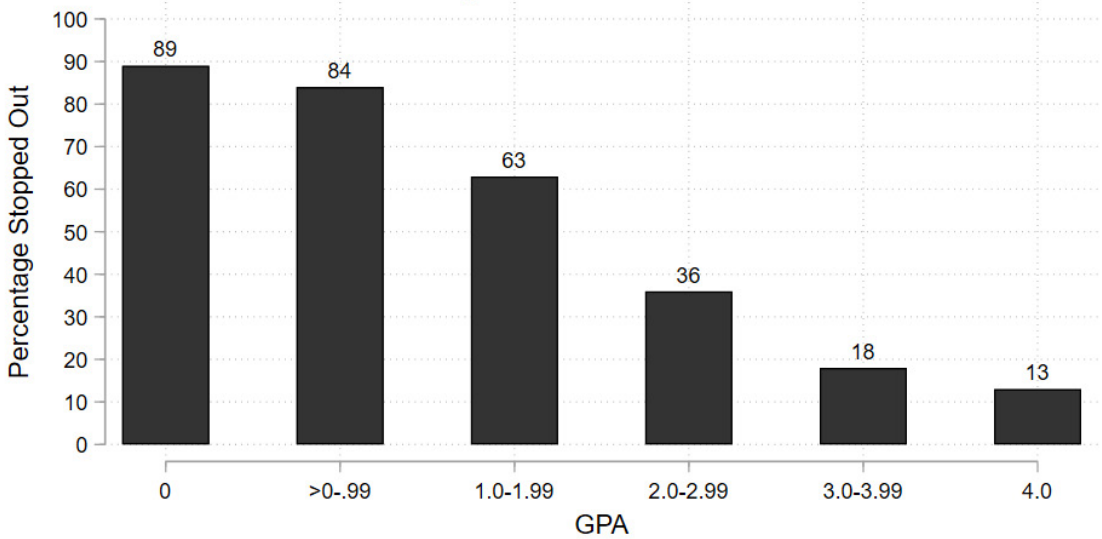
Supplemental Figures

Figure A1 Percentage of Bachelor's Degree Attempters who Stopped Out by Number of Credits Earned in First Semester



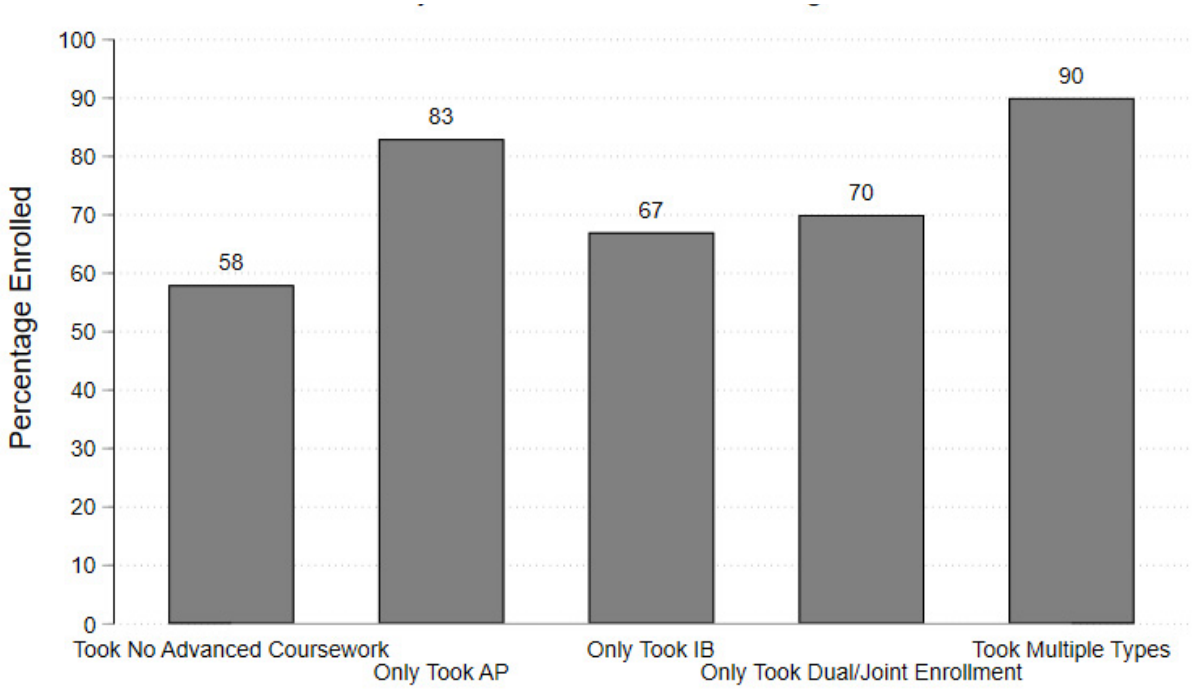
Credits earned in the first term are grouped into three-credit intervals, labeled by the maximum of the interval.
Sample includes classes of 2010 and 2011 measured within six years after college entry (97% of attempters).
Stopout defined as students who have enrolled in at least one semester of college and left for at least one year.
Credits include those earned at all institutions in which a student was enrolled.
Credits do not include remedial coursework. Degree program taken from first term enrolled.
Sample includes Georgia High School classes of 2010 and 2011 who attended college in Georgia and attempted credits in the first term.

Figure A2 Percentage of Bachelor's Degree Attempters who Stopped Out by GPA in First Semester



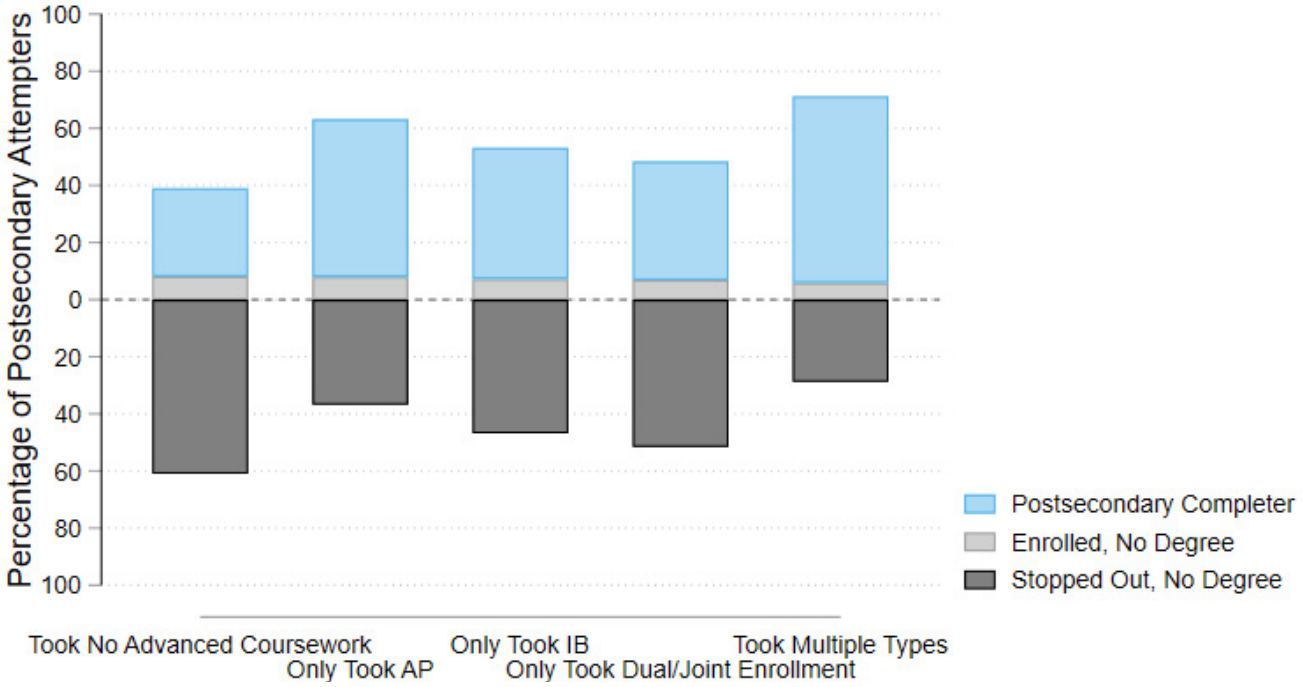
Sample includes classes of 2010 and 2011 measured within six years after college entry (97% of attempters).
Stopout defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured.
Credits include those earned at all institutions in which a student was enrolled.
Degree program taken from first term enrolled.
Sample includes Georgia High School classes of 2010 and 2011 who attended college in Georgia and attempted credits in the first term.

Figure A3 Percentage Enrolled in College One Year After High School by Advanced Coursework Taking in High School



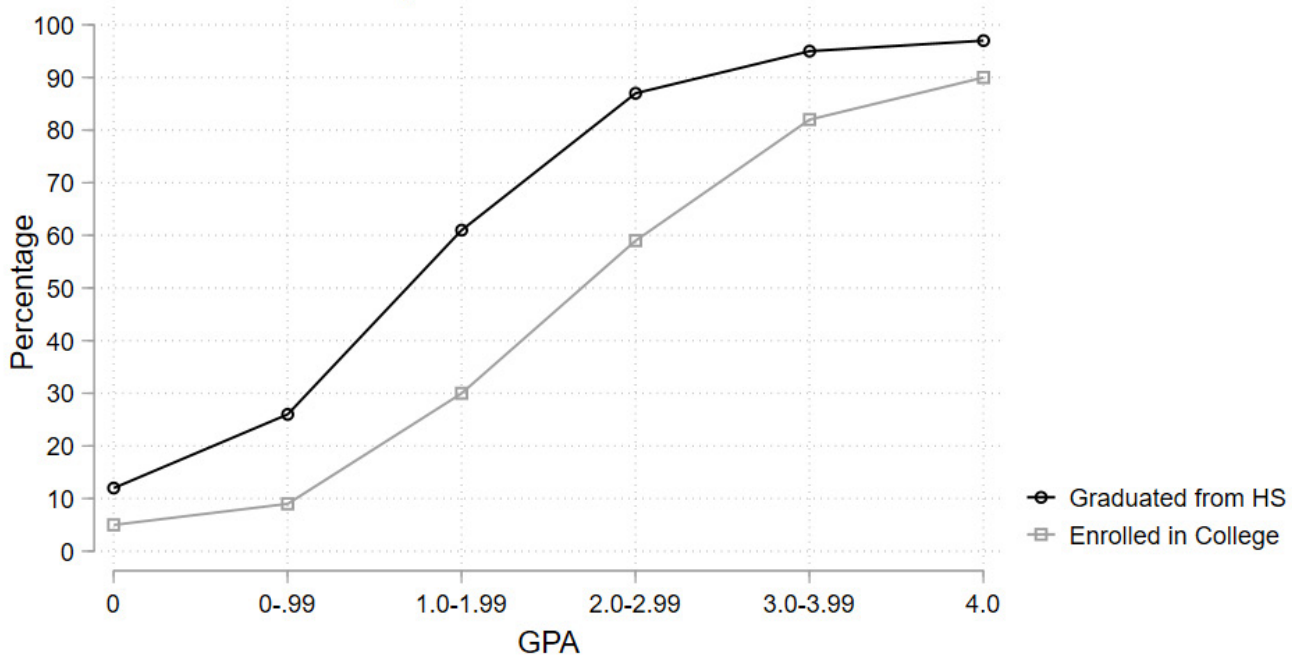
Sample includes classes of 2010 and 2011 measured at one year after high school graduation .

Figure A4 Percentage of Postsecondary Attempters by Enrollment Status Six Years After College Entry by Advanced Coursework Taking in High School



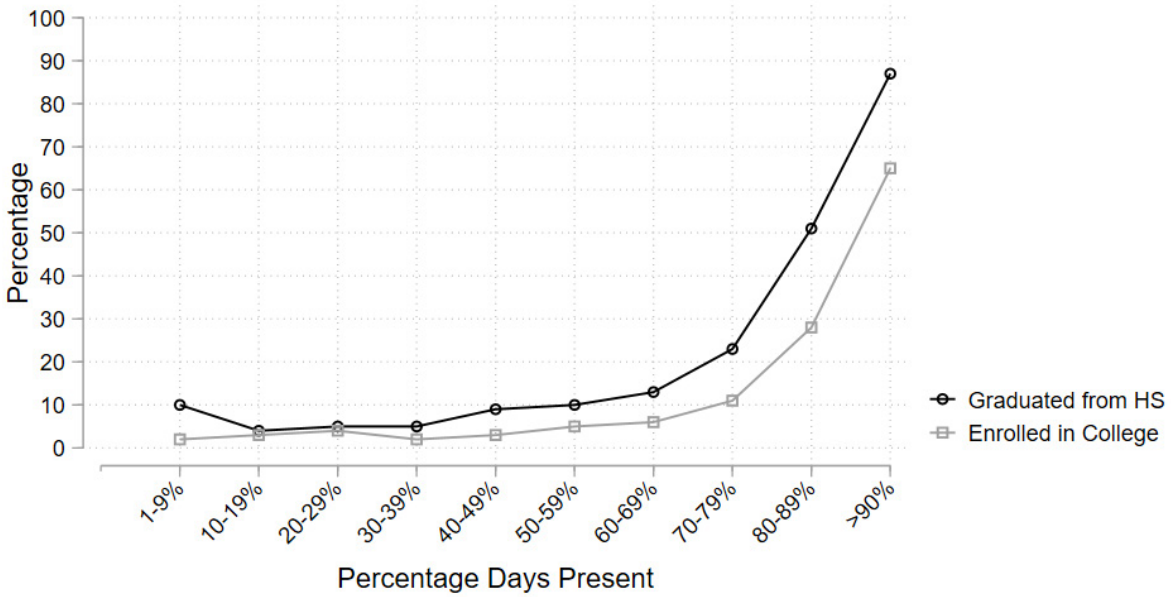
Sample includes classes of 2010 and 2011 measured at six years after college entry (97% of attempters).
Stop out defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured.

Figure A5 Percentage Graduated from High School and Enrolled in College Six Years After Ninth Grade by Ninth Grade GPA in Core Classes



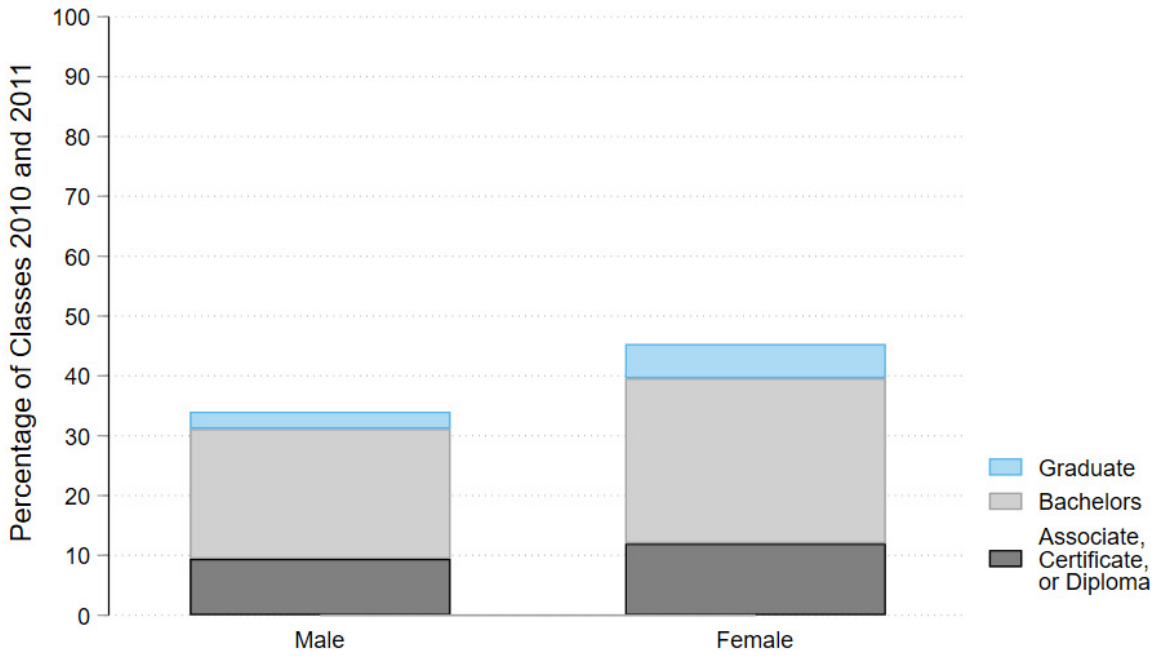
Sample includes 2008 and 2009 9th grade students who did not transfer out of Georgia public schools measured at six years post-9th grade.
30 percent of 9th graders did not receive high school diplomas in Georgia and did not attend college in Georgia; as such, we were unable to trace their post-high school trajectories.
18% of students who did not graduate transferred to another school and 13% dropped out.

Figure A6 Percentage Graduated from High School and in College Six Years After Ninth Grade by Percentage of Days Present in Ninth Grade



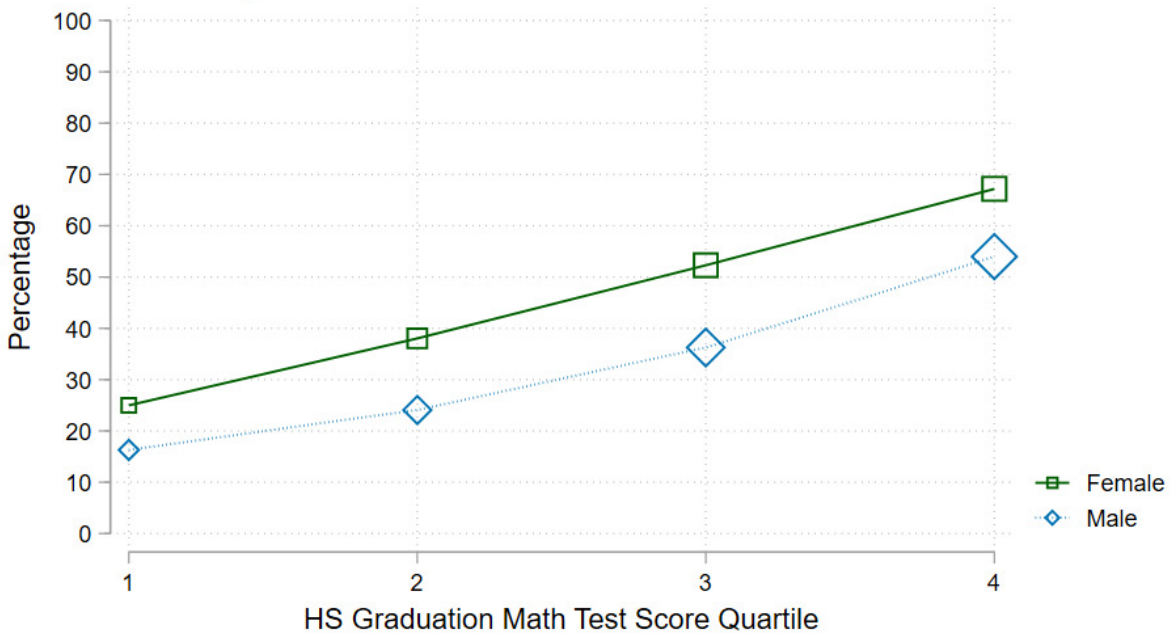
Sample includes 2008 and 2009 9th grade students who did not transfer out of Georgia public schools measured at six years post-9th grade.
30 percent of 9th graders did not receive high school diplomas in Georgia and did not attend college in Georgia; as such, we were unable to to trace their post-high school trajectories.
18% of students who did not graduate transferred to another school and 13% dropped out.

Figure A7.A Degree Attainment 10 Years from High School by



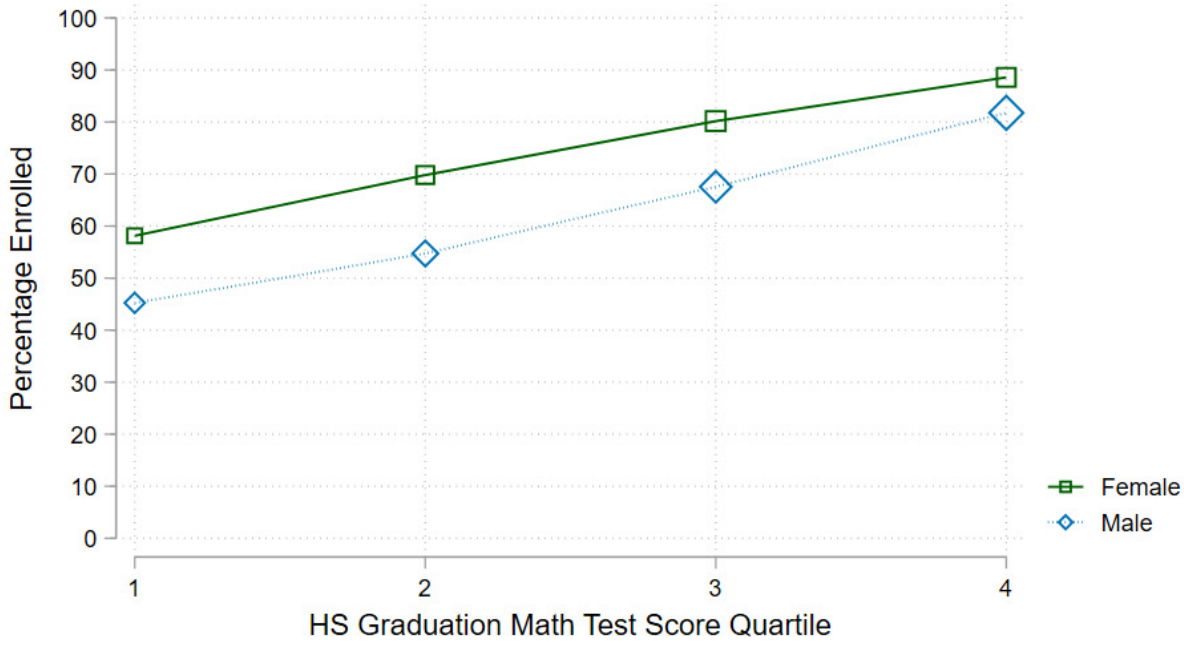
Sample includes the classes of 2010 and 2011 measured 10 years after high school graduation.

Figure A7.B Percentage Earned Postsecondary Credential within 10 Years of High School by Sex and High School Graduation Math Test Score Quartile



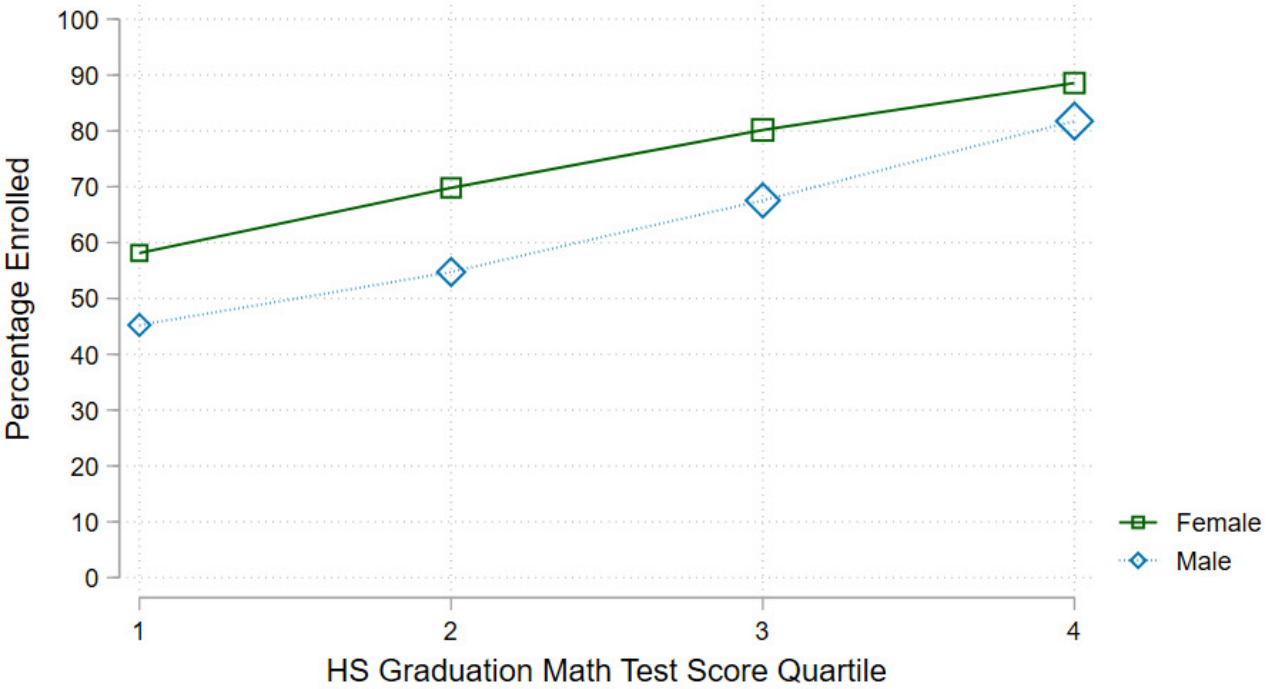
Sample includes the classes of 2010 and 2011 measured 10 years after high school graduation.
5% of graduates do not have records for test score.
Size of markers notes relative sample size.

Figure A7.B Percentage Enrolled in College One Year After High School by Sex and High School Graduation Math Test Score



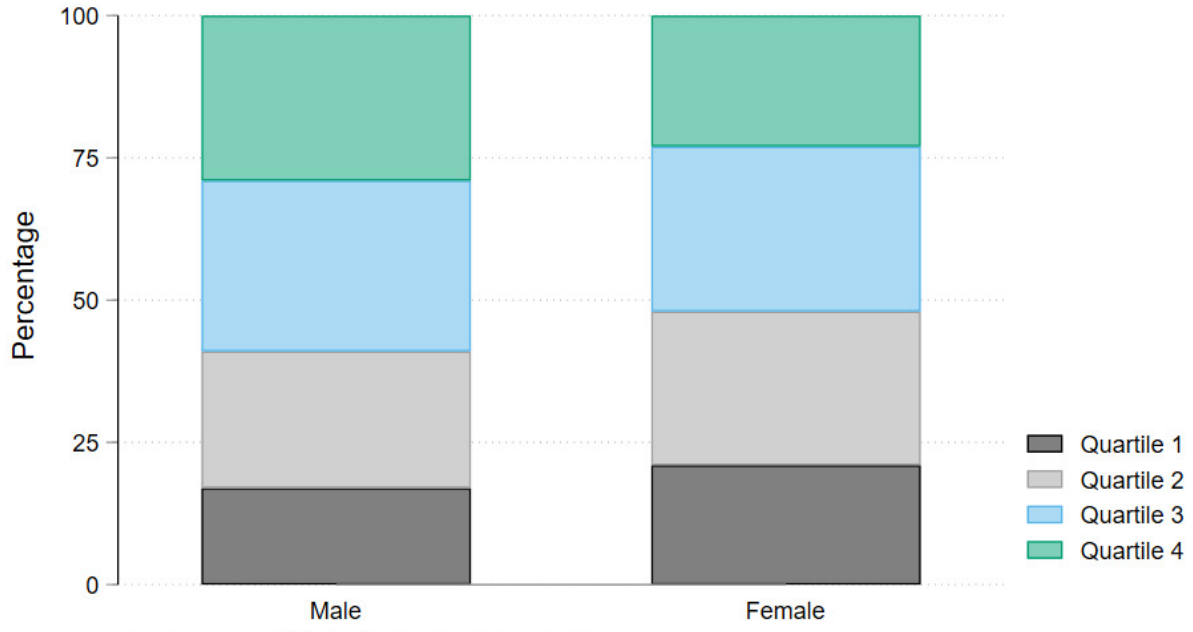
Sample includes the classes of 2010 and 2011 measured one year after high school graduation.
5% of graduates do not have records for test score.
Size of markers notes relative sample size.

Figure A8.A Percentage Enrolled in College One Year After High School by Sex and High School Graduation Math Test Score Quartile



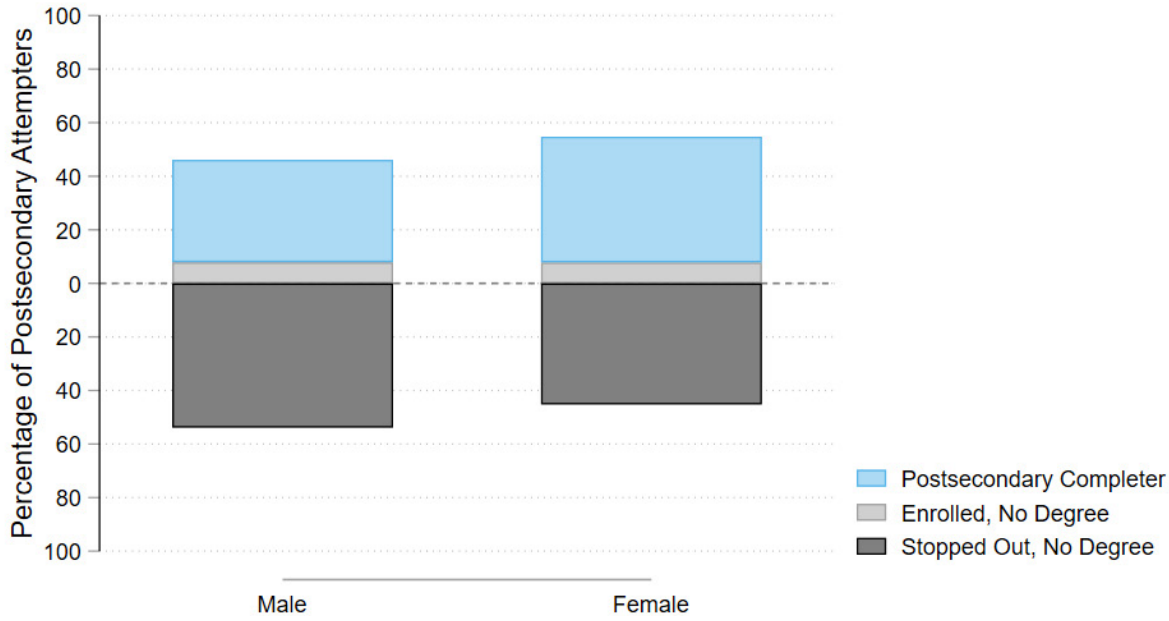
Sample includes the classes of 2010 and 2011 measured one year after high school graduation.
5% of graduates do not have records for test score.
Size of markers notes relative sample size.

Figure A8.B Percentage of High School Graduation Math Test Score Quartile by Sex



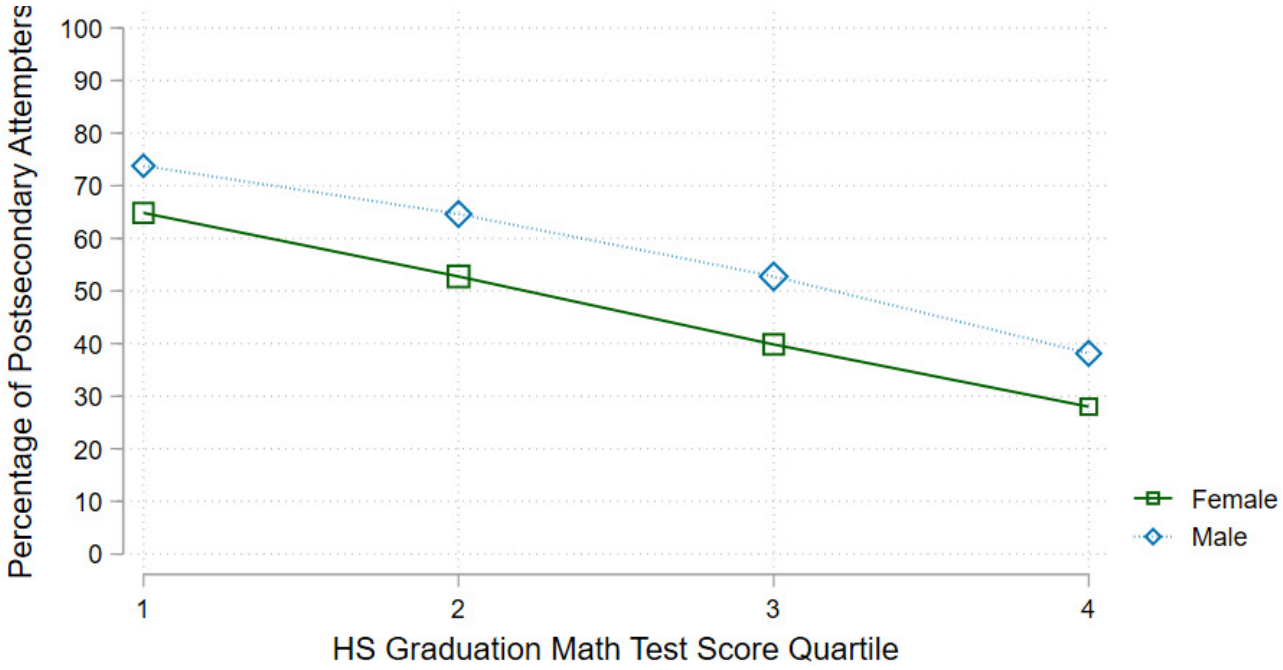
Students take high school graduation test in 11th grade.
Sample includes the classes of 2010 and 2011.
5% of graduates do not have records for test score.

Figure A9.A Percentage of Postsecondary Attempters by Enrollment Status Six Years after College Entry by Sex



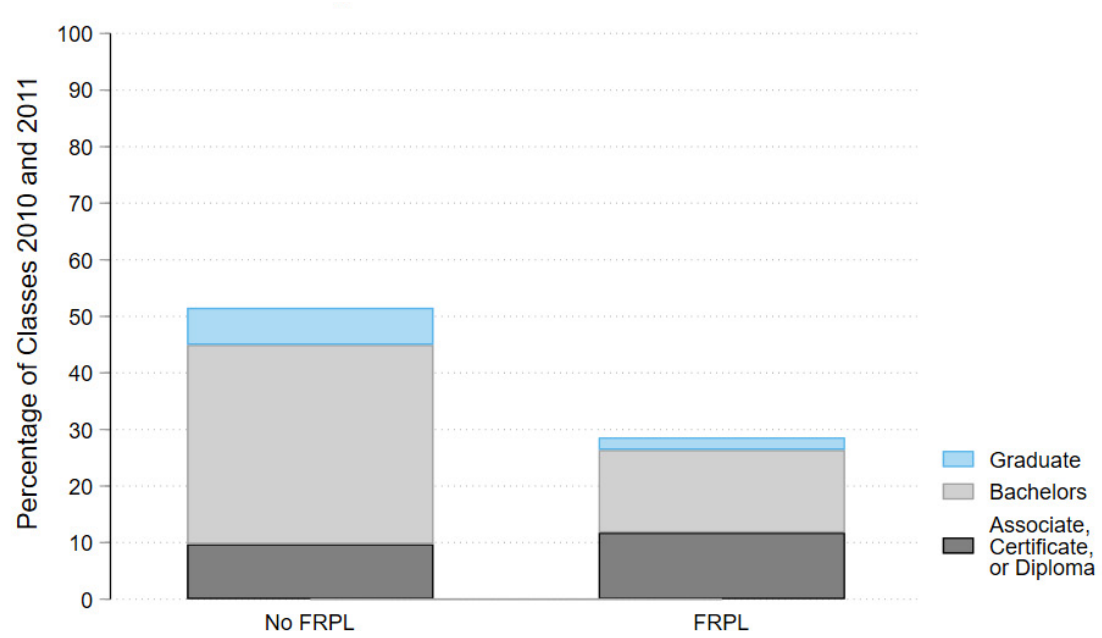
Sample includes the classes of 2010 and 2011 measured six years after college entry (97% of attempters).
Stop out defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured.

Figure A9.B Percentage of Postsecondary Attempters who Stopped Out by Sex and High School Graduation Math Test Score Quartile



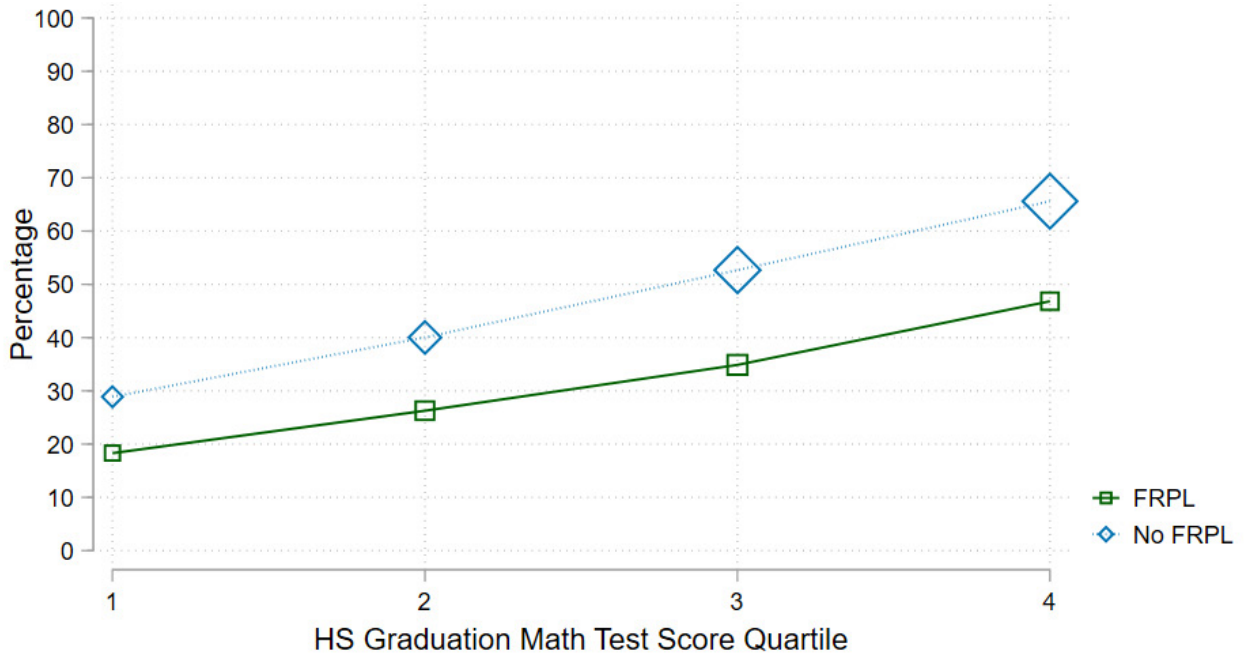
Sample includes the classes of 2010 and 2011 measured six years after college entry (97% of attempters).
Stop out defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured.
5% of graduates do not have records for test score.
Size of markers notes relative share of stopouts in sample.

Figure A10.A Degree Attainment 10 Years from High School by Free and Reduced-Price Lunch Status



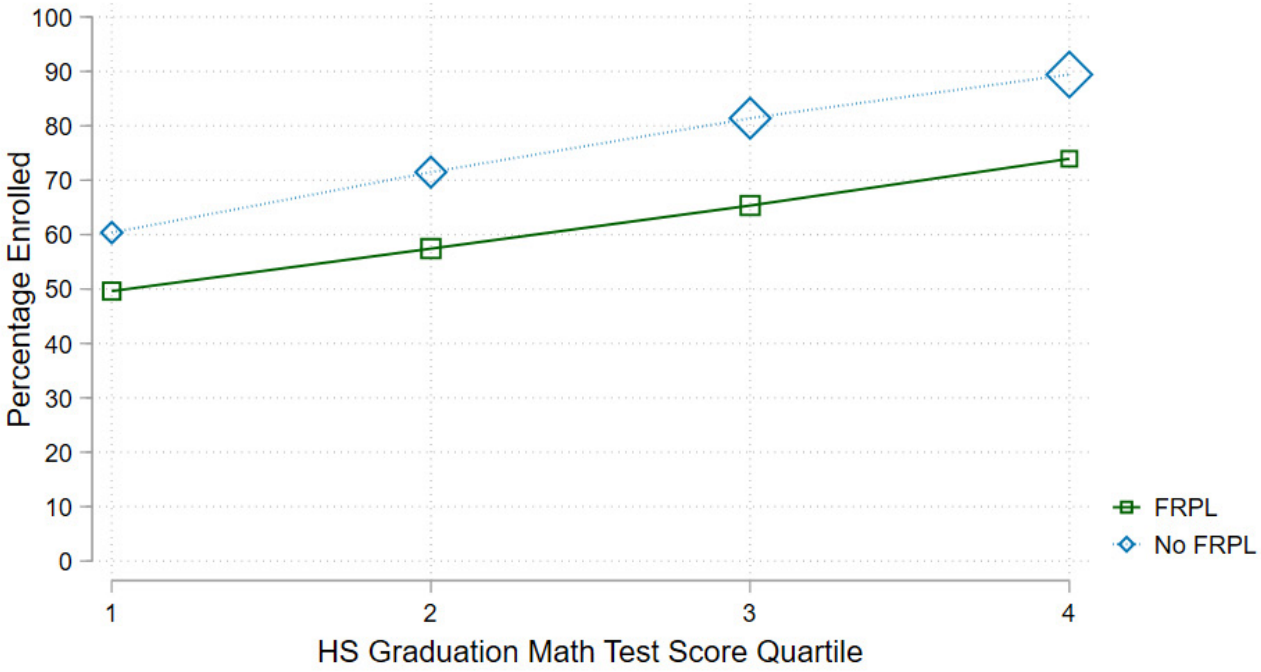
Sample includes the classes of 2010 and 2011 measured 10 years from graduation.

Figure A10.B Percentage Earned Postsecondary Credential within 10 Years of High School by Free and Reduced-Price Lunch Status and High School Graduation Math Test Score Quartile



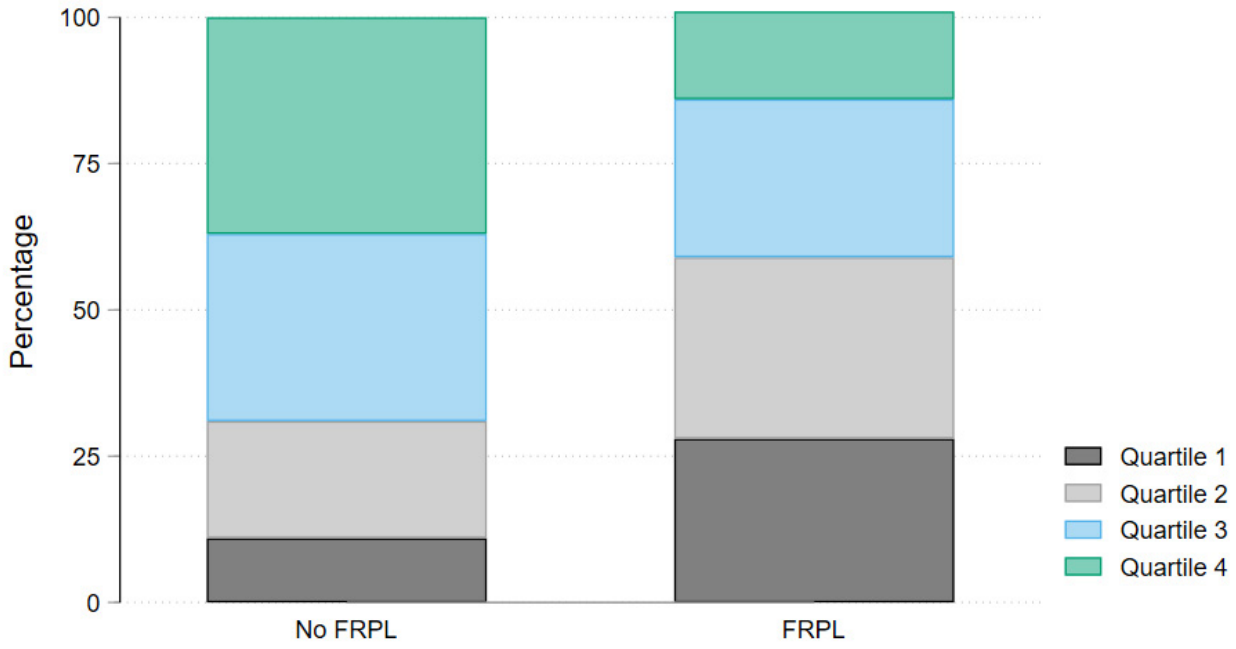
Sample includes the classes of 2010 and 2011 measured at 10 years post-high school graduation.
5% of graduates do not have records for test score.
Size of markers notes relative sample size.

Figure A11.A Percentage Enrolled in College One Year After High School by Free and Reduced-Price Lunch Status and High School Graduation Math Test Score Quartile



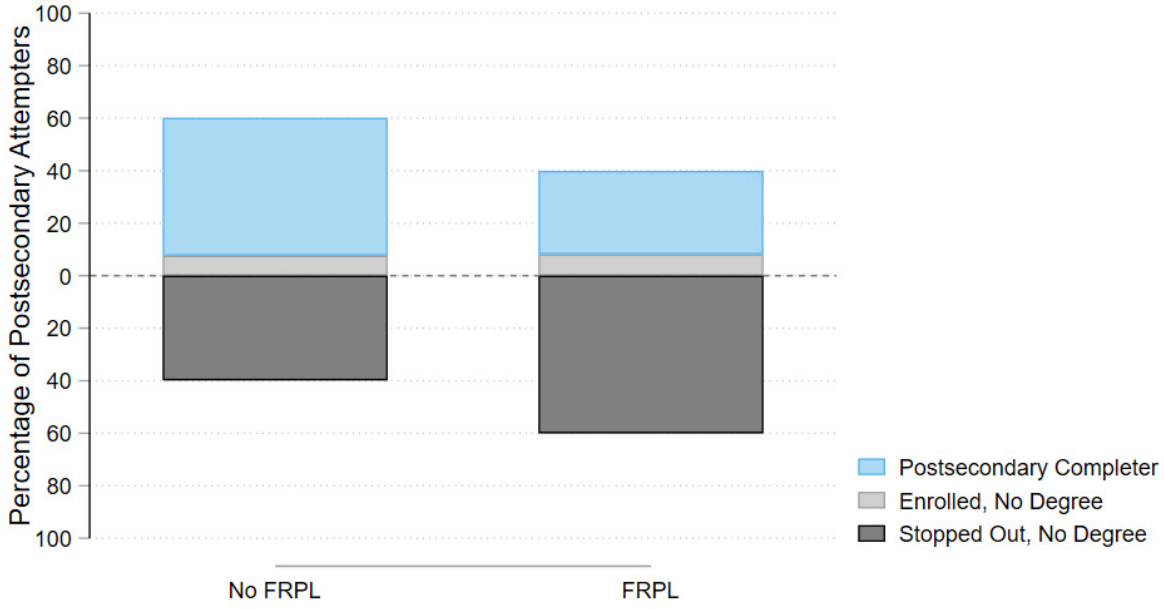
Sample includes the classes of 2010 and 2011 measured at one year post-high school graduation.
5% of graduates do not have records for test score.
Size of markers notes relative sample size.

Figure A11.B Percentage of High School Graduation Math Test Score Quartile by Free and Reduced-Price Lunch Status



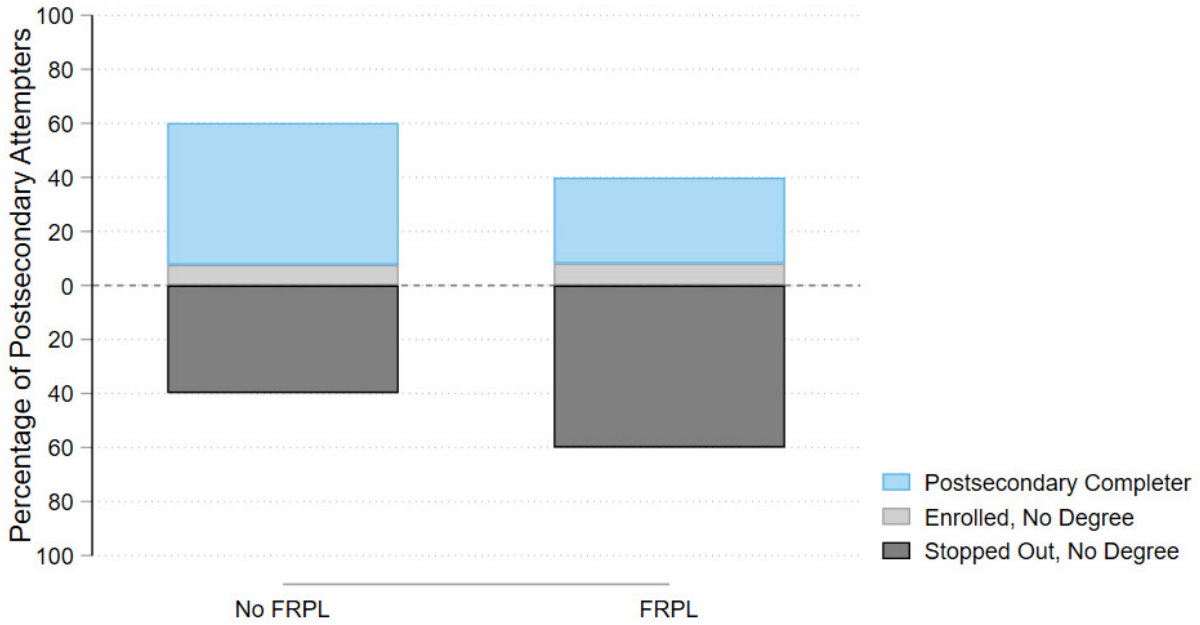
Students take high school graduation test in 11th grade.
5% of graduates do not have records for test score.

Figure A11.B Percentage of Postsecondary Attempters by Enrollment Status Six Years After College Entry by Free and Reduced-Price Lunch Status



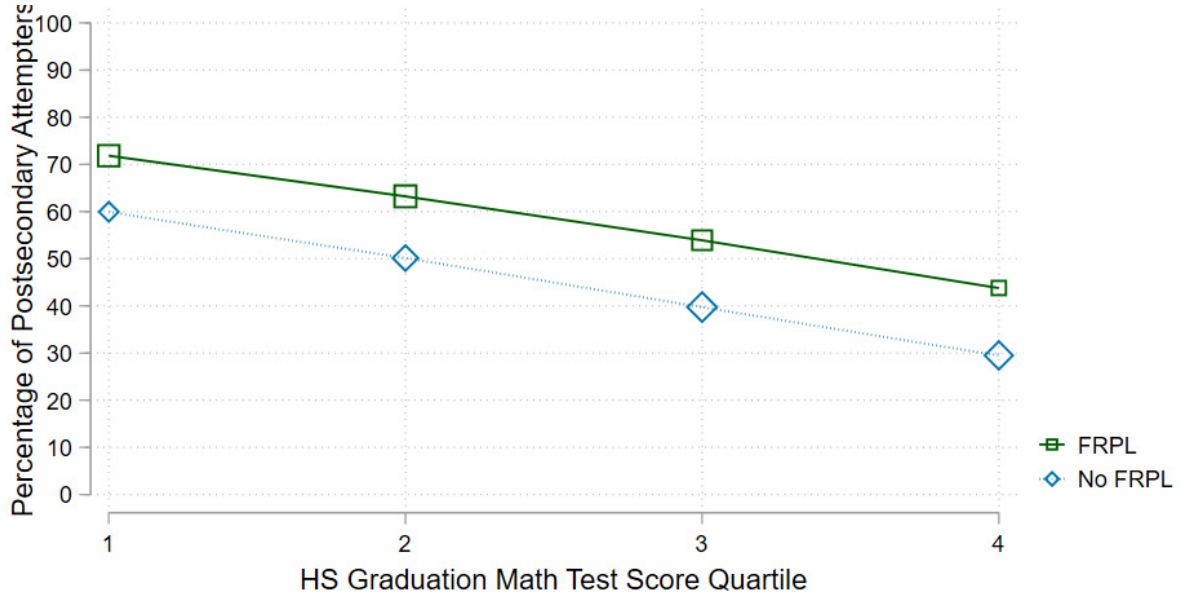
Sample includes the classes of 2010 and 2011 measured at six years after college entry (97% of attempters).
Stop out defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured.

Figure A12.A Percentage of Postsecondary Attempters by Enrollment Status Six Years After College Entry by Free and Reduced-Price Lunch Status



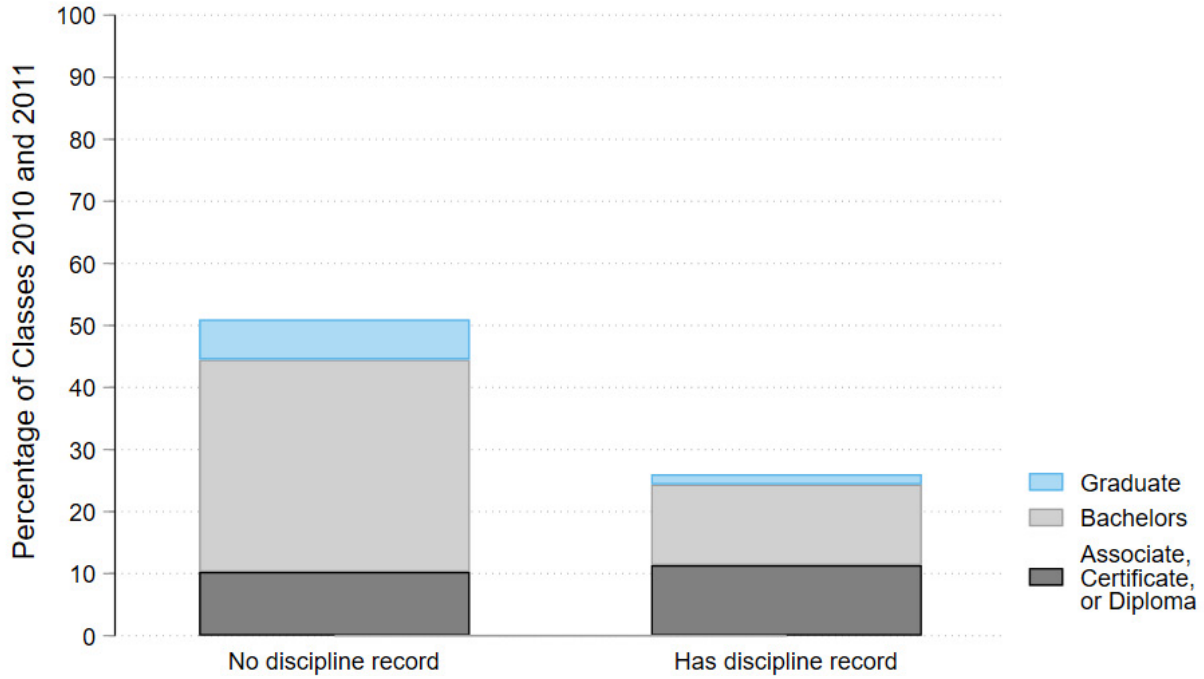
Sample includes the classes of 2010 and 2011 measured at six years after college entry (97% of attempters).
Stop out defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured.

Figure A12.B Percentage of Postsecondary Attempters Who Stopped Out by Free and Reduced-Price Lunch Status and High School Graduation Math Test Score Quartile



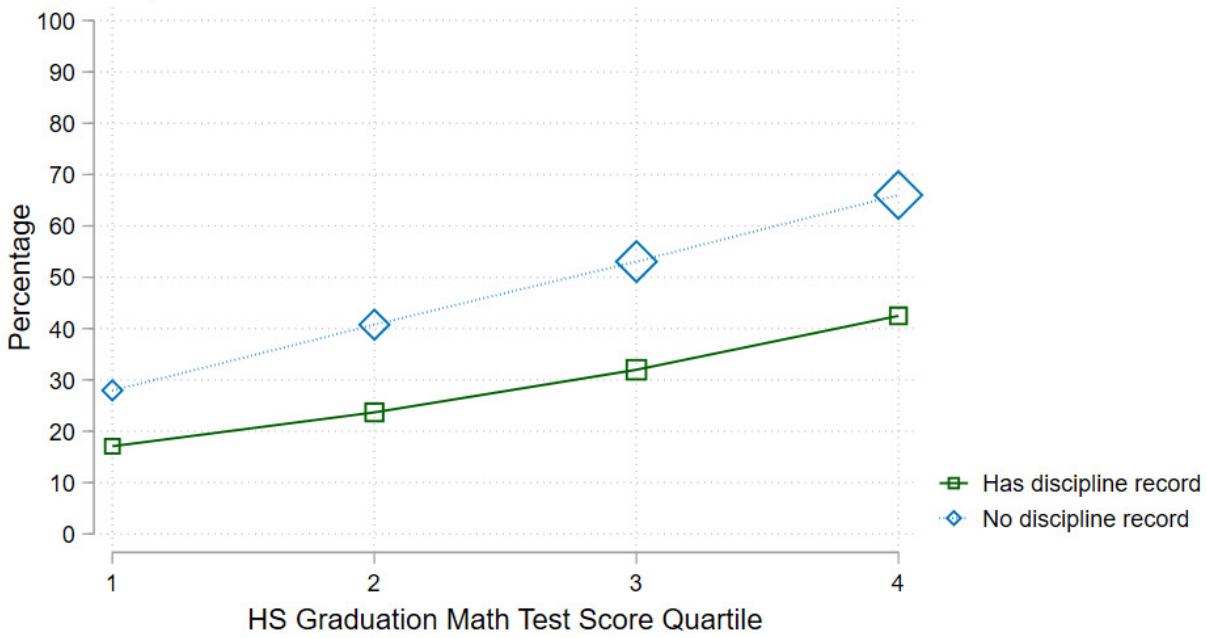
Sample includes the classes of 2010 and 2011 measured at six years after college entry (97% of attempters).
Stop out defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured.
5% of graduates do not have records for test score.
Size of markers notes relative share of stopouts in sample.

Figure A13.A Degree Attainment 10 Years from High School by Discipline Record in High School



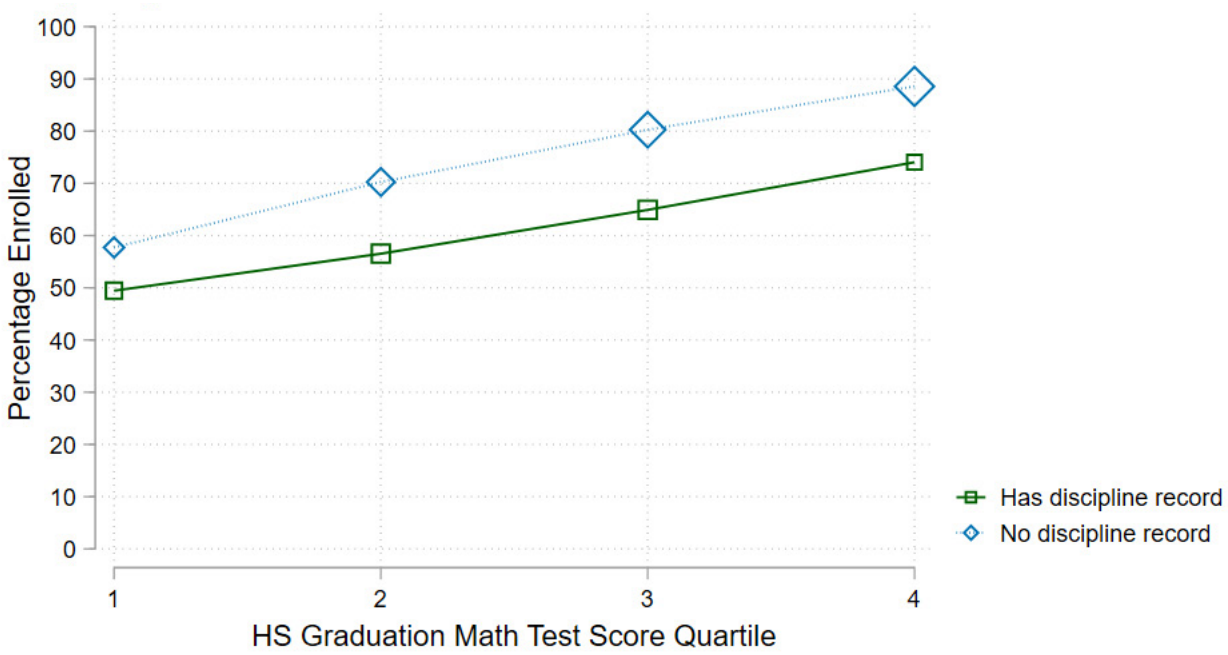
Sample includes the classes of 2010 and 2011 measured 10 years after high school graduation.

Figure A13.B Percentage Earned Postsecondary Credential within 10 Years of High School by Discipline Record in High School and High School Graduation Math Test Score Quartile



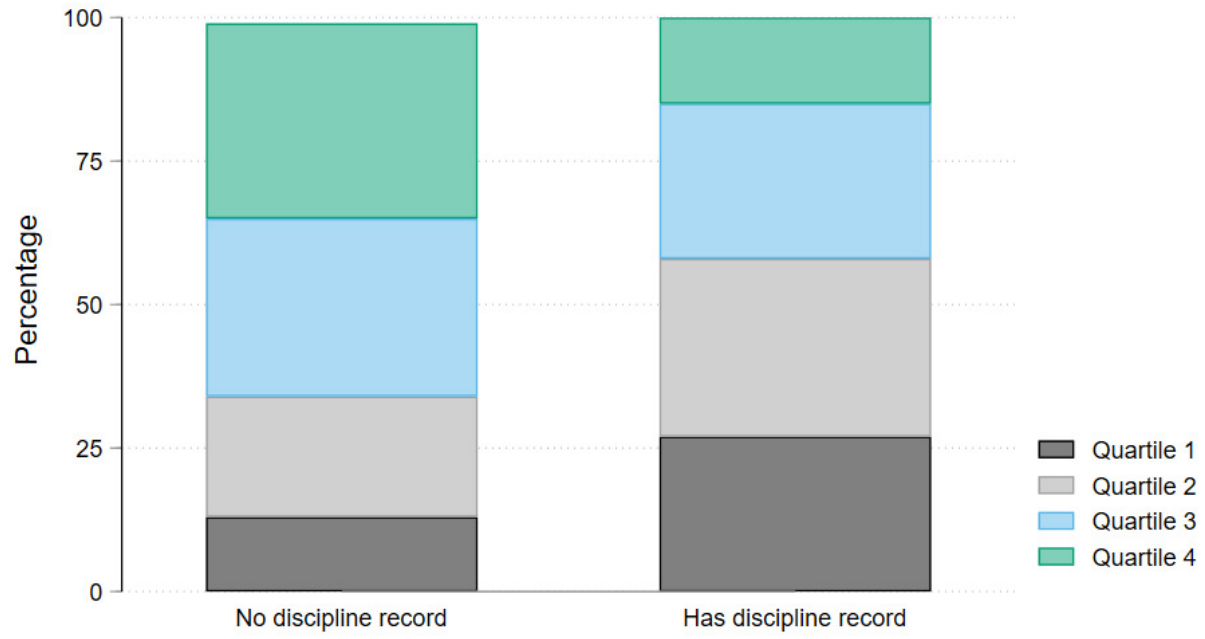
Sample includes the classes of 2010 and 2011 measured at 10 years after high school graduation.
5% of graduates do not have records for test score.
Size of markers notes relative sample size.

Figure A14.A Percentage Enrolled in College One Year after High School by Discipline Record in High School and High School Graduation Math Test Score Quartile



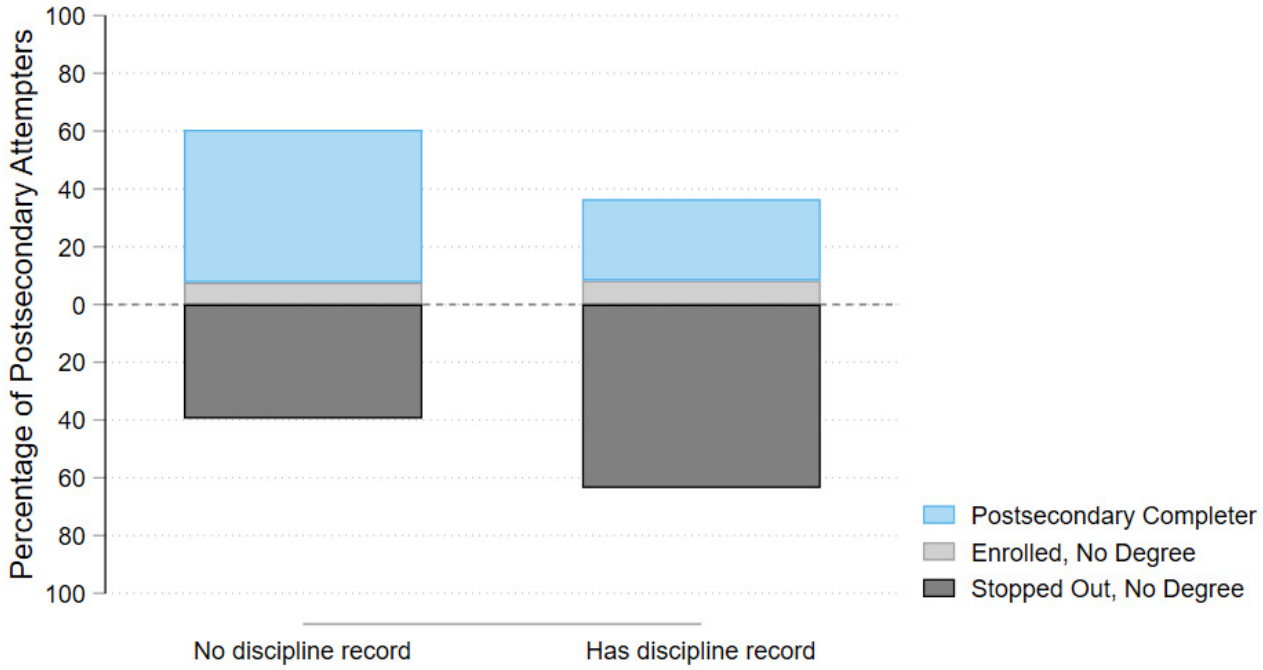
Sample includes the classes of 2010 and 2011 measured at one year after high school graduation.
5% of graduates do not have records for test score.
Size of markers notes relative sample size.

Figure A14.B Percentage of High School Graduation Math Test Score Quartile by Discipline Record in High School



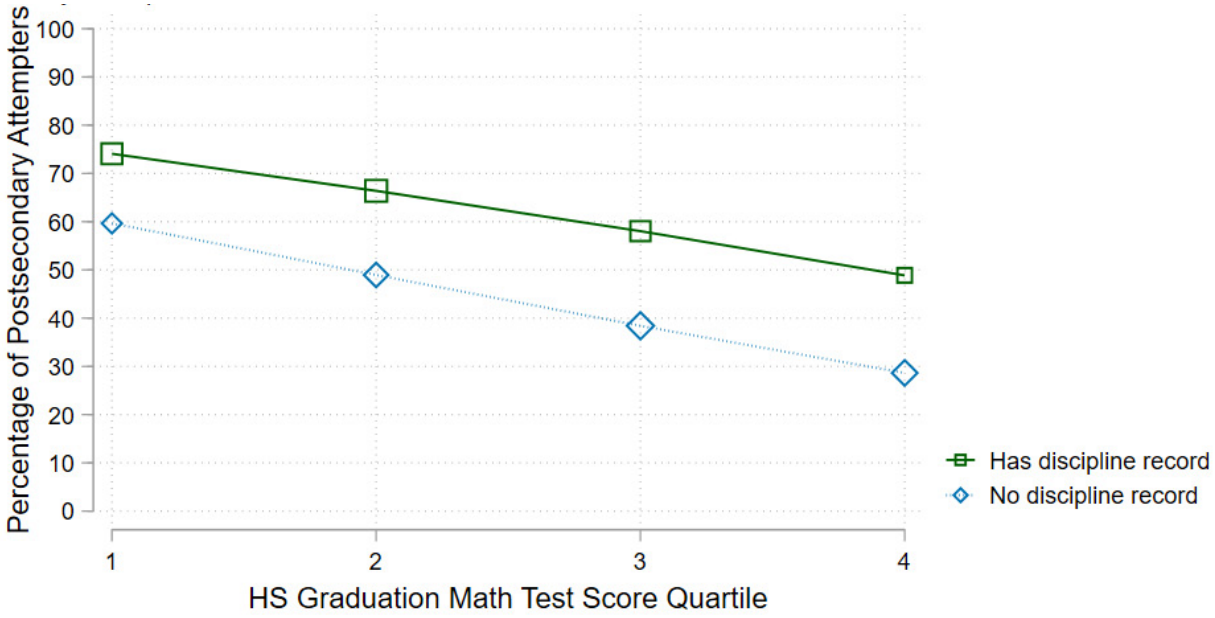
Students take high school graduation test in 11th grade.
Sample includes the classes of 2010 and 2011.
5% of graduates do not have records for test score.

Figure A15.A Percentage of Postsecondary Attempters by Enrollment Status Six Years After College Entry by Discipline Record in High School



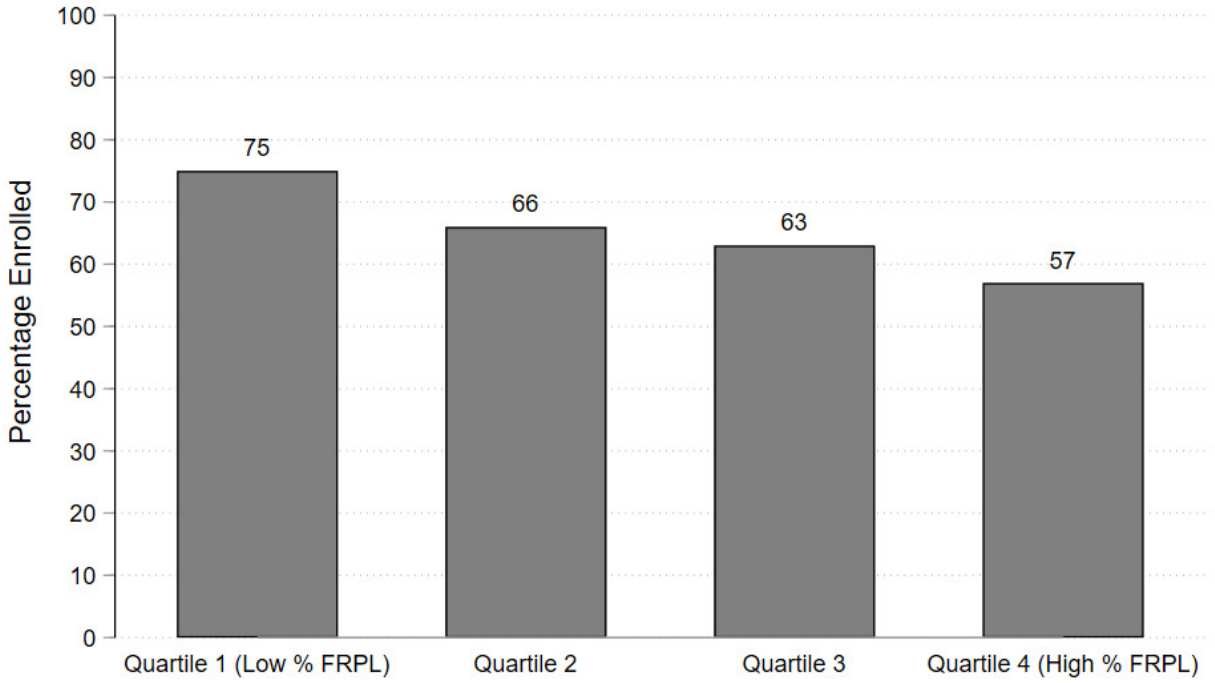
Sample includes class of 2010 and 2011 measured at six years after college entry (97% of attempters).
Stop out defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured.

Figure A15.B Percentage of Postsecondary Attempters who Stopped Out by Discipline Record in High School and High School Graduation Math Test Score Quartile



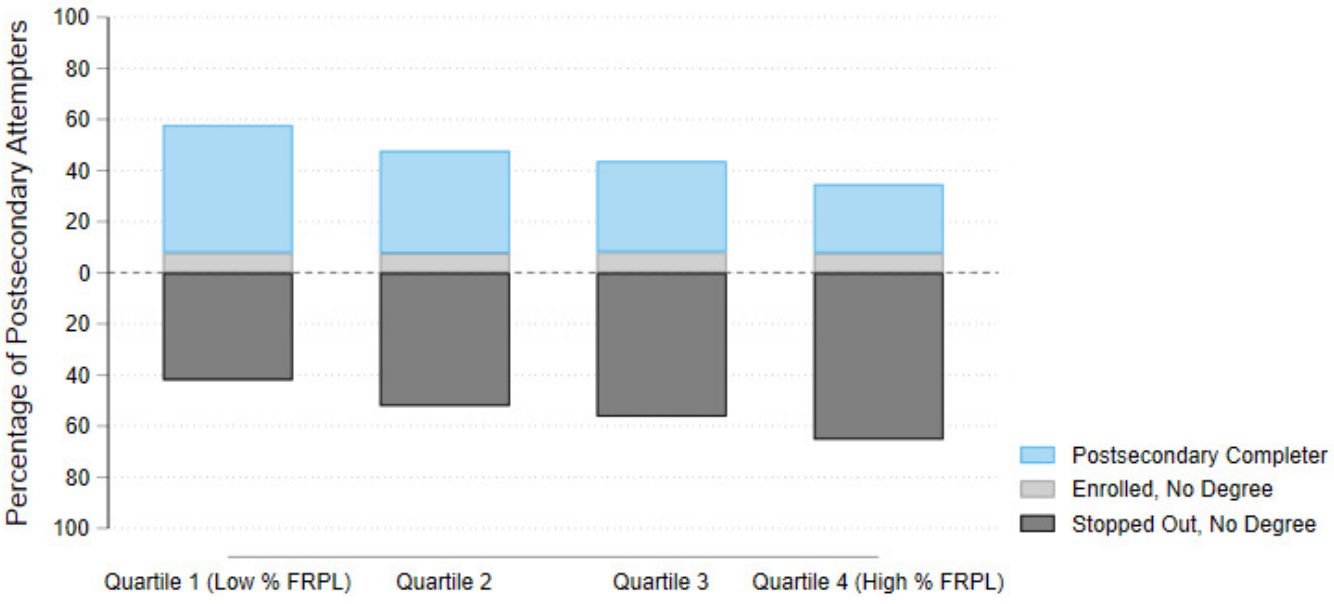
Sample includes the classes of 2010 and 2011 measured at six years after college entry (97% of attempters)
Stop out defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured.
5% of graduates do not have records for test score.
Size of markers notes relative share of stopouts in sample.

Figure A16 Percentage Enrolled in College One Year after High School by Percent of Students in High School Receiving Free or Reduced-Price Lunch



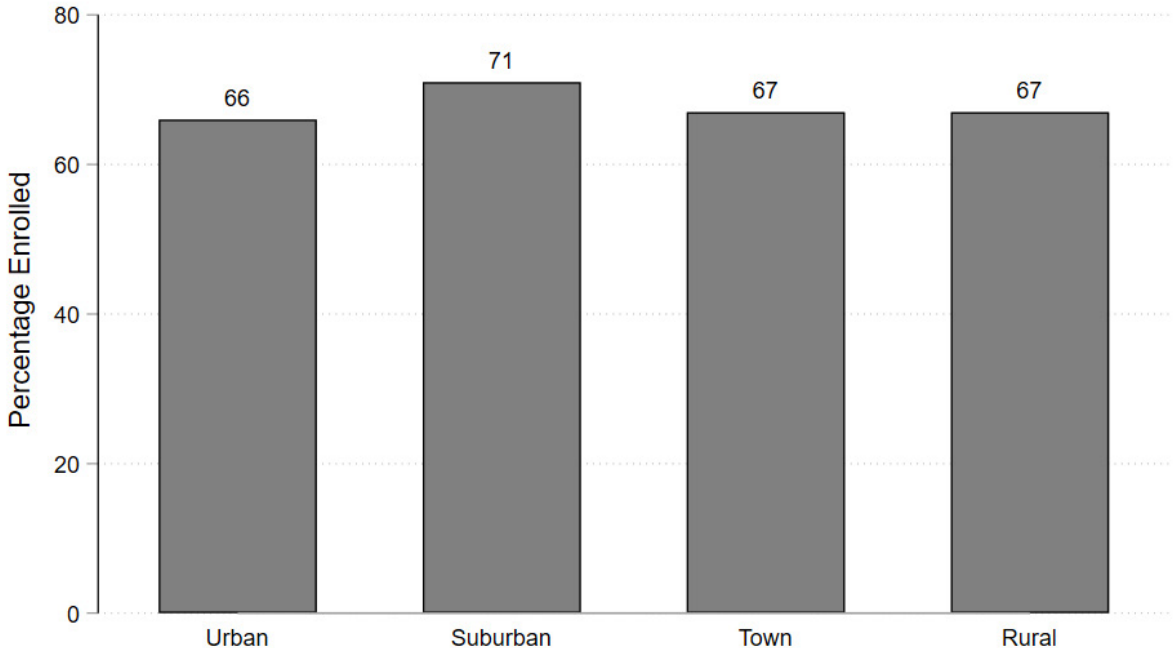
Sample includes the classes of 2010 and 2011 measured at one year after high school graduation.

Figure A17 Percentage of Postsecondary Attempters by Enrollment Status Six Years After College Entry by Percent of Students in High School Receiving Free or Reduced-Price Lunch



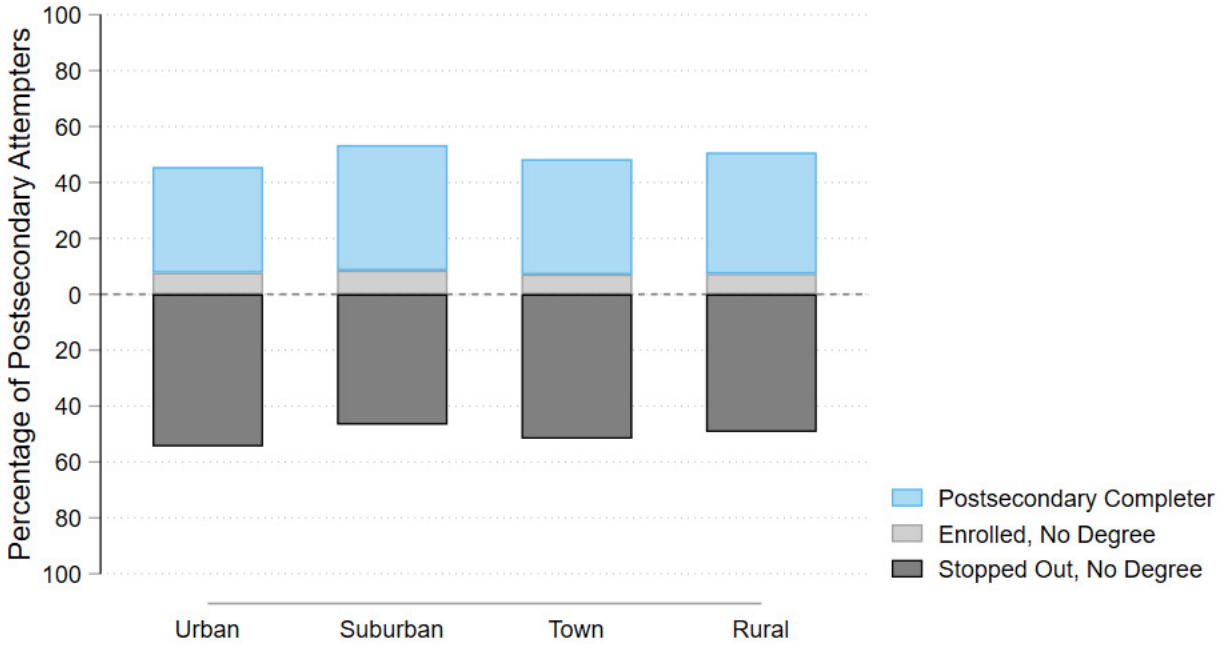
Sample includes the classes of 2010 and 2011 measured at six years after college entry (97% of attempters).
Stop out defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured.

Figure A18 Percentage Enrolled in College One Year After High School by High School



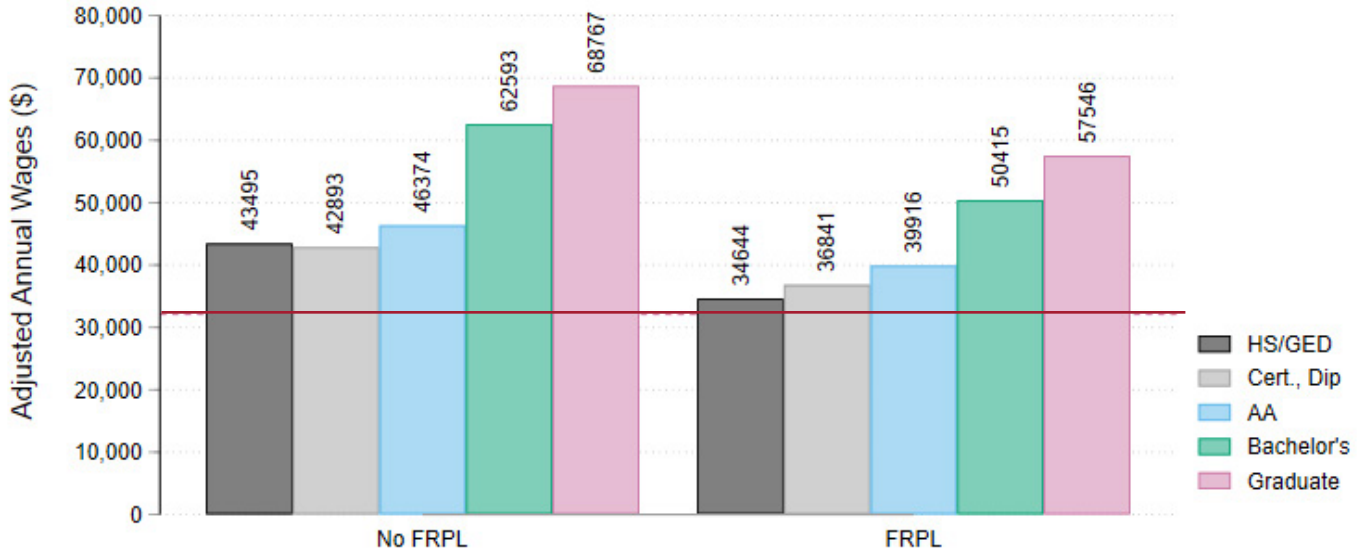
Sample includes the classes of 2010 and 2011 measured at one years after high school graduation.

Figure A19 Percentage of Postsecondary Attempters by Enrollment Status Six Years After College Entry by High School Locale



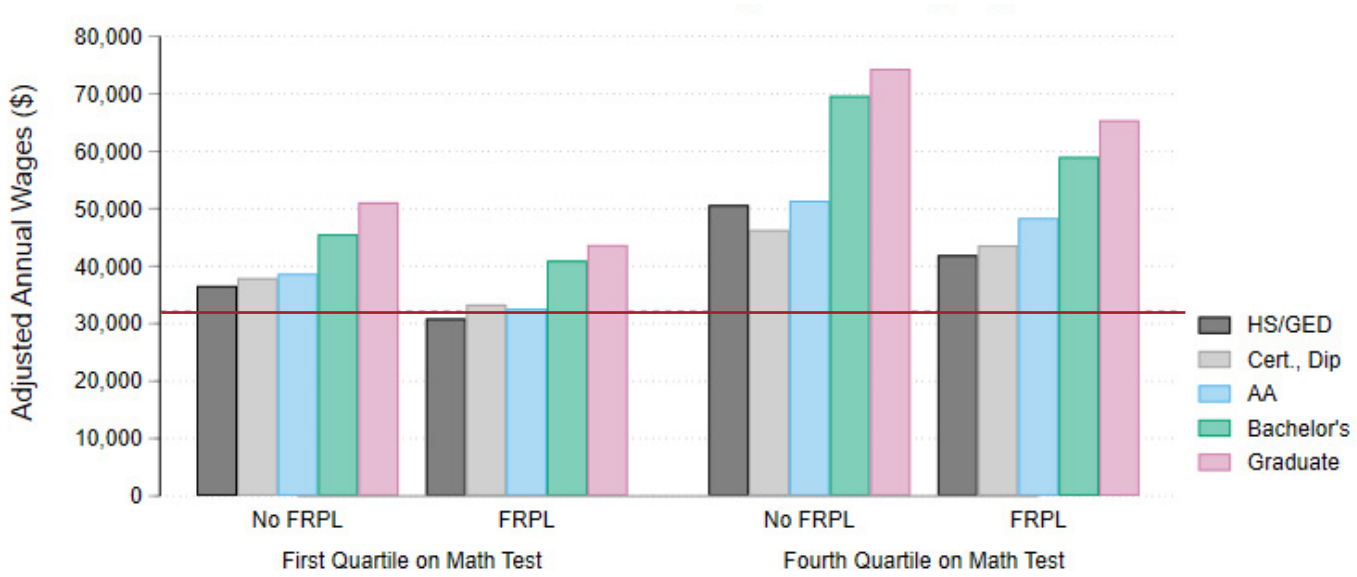
Sample includes the classes of 2010 and 2011 measured at six years after college entry (97% of attempters).
Stop out defined as students who have enrolled in at least one semester of college, have not completed a degree, and were not enrolled in the year measured.

Figure A20.A Mean Wages by Highest Degree and Free and Reduced-Price Lunch Status 10 Years After High School Graduation Benchmarked Against the Living Wage Threshold



Wages adjusted to 2022 dollars.
Wages for high school classes of 2010 and 2011.
Dotted line is the average living wage between 2020 and 2022 adjusted to 2022 dollars.
Living wage estimates from MIT Living Wage Calculator.
Sample comprises all individuals with three or four wage quarters observed in the 10th year after high school graduation, N=96,513.
Missing quarter imputed for individuals with only three wage quarters observed.
Wages winsorized at top and bottom 1st percentiles.

Figure A20.B Mean Wages by Highest Degree and by Free and Reduced-Price Lunch Status 10 Years After High School Graduation Benchmarked Against the Living Wage Thresholdd



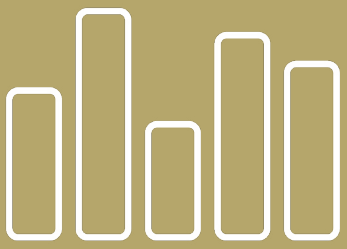
Wages adjusted to 2022 dollars.
Wages for high school classes of 2010 and 2011.
Dotted line is the average living wage between 2020 and 2022 adjusted to 2022 dollars.
Living wage estimates from MIT Living Wage Calculator.
Sample comprises all individuals with three or four wage quarters observed in the 10th year after high school graduation, N=96,513.
Missing quarter imputed for individuals with only three wage quarters observed.
Wages winsorized at top and bottom 1st percentiles.

Supplemental Table A1

Category	Black-White Gap ($)	% of Overall Gap (Black-White)
Black, Observed Earnings	48,033	-
Black, Adjusted for HS Math Score	52,411	-
Black, Adjusted for HS Math Score and Postsecondary Institution	55,016	-
Black, Adjusted for HS Math Score and Postsecondary Institution and Field of Study	56,596	-
White, Observed Earnings	63,391	-
Overall Gap	15,358	100.00%
Explained by HS Math Score	4,377	28.50%
Explained by Postsecondary Institution	2,805	18.26%
Explained by Field of Study	1581	10.29%
Unexplained	6795	44.24%

Endnotes

† The wage data housed in most state P20W systems are derived from unemployment insurance data. While these data cover most employed in the state, there are several key sources of missingness that will affect estimates of the returns to college. UI data only include those working in the state and do not include federal and self-employment. In our analyses, we are only able to observe wages for about 60% of our sample. As such, we are unable to distinguish between unemployed persons and those who have left the state for other employment, are federal employees (military), or are self-employed. As such, earnings estimates generated by work using state UI wage data may be subject to bias due to systematic differences in rates of migration, unemployment, labor force participation, and selection into non-covered employment. If unemployment is higher among people with only a high school diploma, we may be underestimating the wage differential between high school and college. If people with more advanced degrees are more likely to move out of state and those who move out of state are likely to be higher earners, excluding the out-of-state earners (zero earnings in state) may be further underestimating the wage differential. Preliminary data analysis using data from the American Community Survey in Georgia indicates that those without a college degree are more likely to attrit from Georgia data over time. Analyses suggest that this is largely due to labor force participation; however, there is little evidence of systematic attrition by higher or lower earning students, which suggests our inability to observe earnings for non-Georgia-resident workers and those not covered by UI may not impact our results greatly. As such, our analyses estimating wages for those with only a high school diploma will likely be biased upward. To deal with individuals with missing wages, we dropped students without positive wages in the time measured. In addition to contending with completely missing wages in a given time period, we must also consider how to approach individuals who are missing some, but not all quarters of wage data in a year. Prior work generally either drops individuals with any missing wage quarters in a year or drops those with more than one wage quarter and imputes the missing quarter. In this diagnostic we used the following procedure: dropped individuals with more than one missing wage quarter in a year, linearly imputed the missing quarter using data from other wage quarters in a given year, dropped observations with imputed wage values below the 1st or above the 99th percentiles (with dollar values of X and Y, respectively).



STRATEGIC DATA PROJECT

Center for Education Policy Research

HARVARD UNIVERSITY