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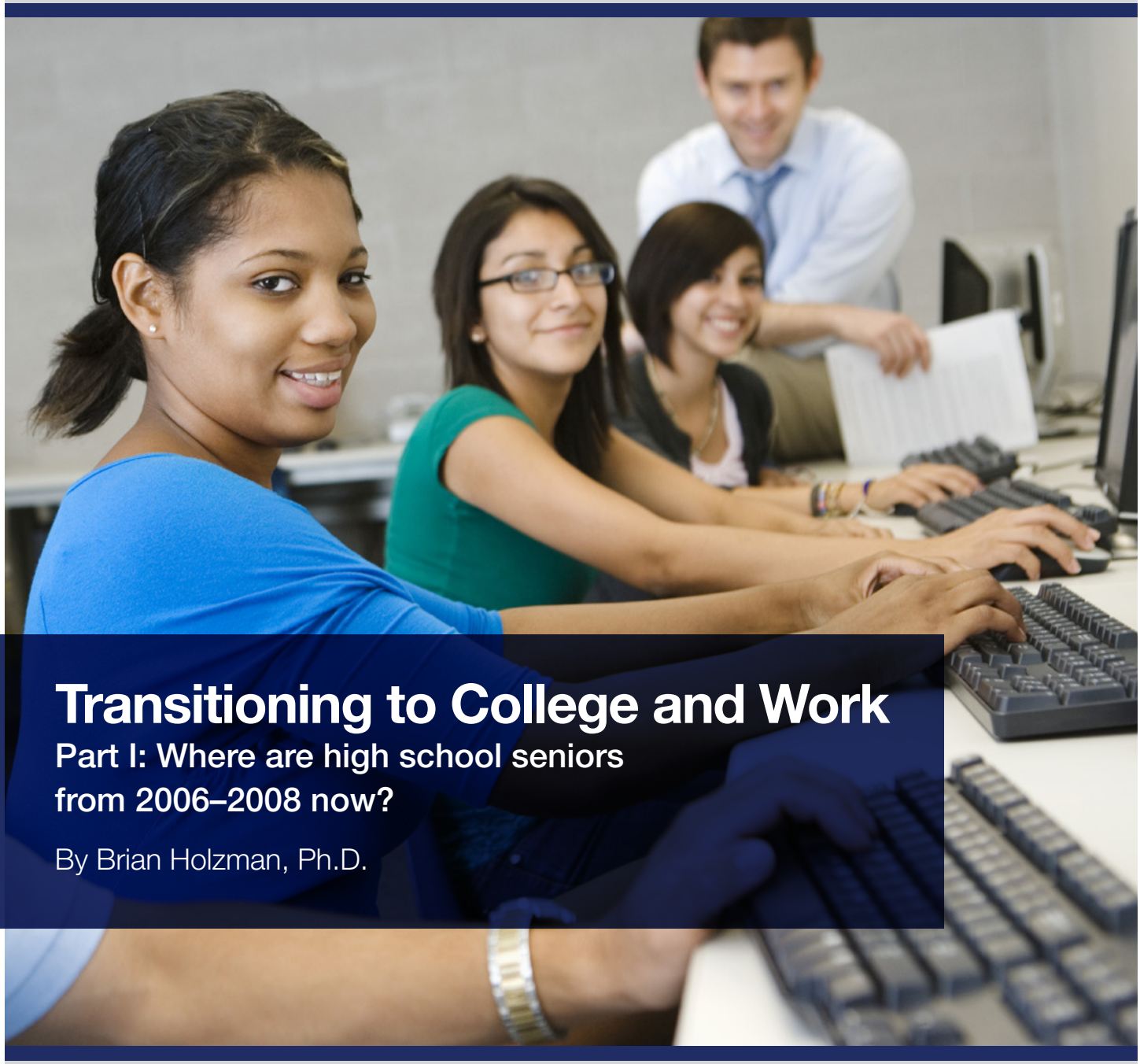

Transitioning to College and Work

Part I: Where are high school seniors from 2006–2008 now?

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Research Report
for the Houston Independent School District

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RESEARCH REPORT ABSTRACT

Transitioning to College and Work

Part I: Where are high school seniors from 2006–2008 now?

In this report, we describe the college outcomes of three cohorts of 12th grade students in the Houston Independent School District, prior to the implementation of the district's college advising program. We find significant racial and ethnic disparities in postsecondary enrollment and completion, with Hispanics, in particular, exhibiting low rates of attainment. When Hispanic students do enroll, compared to white, black, and Asian students, they disproportionately attend community colleges or technical/vocational schools and earn sub-baccalaureate credentials. While academic performance is a powerful predictor of college enrollment and completion, earning college-level credits appears to be a particularly important path to postsecondary attainment. High school graduates who earn Advanced Placement, International Baccalaureate, or academic dual enrollment credits in the 12th grade are more likely to attend college and complete a degree than students who earn none. Finally, an analysis of the pathway from high school to college reveals that attending college immediately after high school, specifically four-year institutions, is associated with higher rates of certificate and degree attainment.

Executive Summary

College Enrollment

- The fall following expected high school graduation, 46 percent of 12th grade students were enrolled in college.
- Hispanics disproportionately chose to attend sub-baccalaureate institutions.
- College enrollment appeared out-of-reach for students with high numbers of absences and poor or mediocre test scores and grades.
- While 56 percent of high school graduates enrolled in college the next fall, there was a substantial number of students who delayed enrollment.
- Also concerning is the high rate of idleness: one-third of graduates were neither studying nor working after high school.
- The low college enrollment rate among Hispanic students, the largest racial and ethnic group in HISD, was also concerning.

College Completion

- While long-term enrollment rates were quite high across the district, the completion rates were quite low: just 31 percent of students earned a postsecondary credential within six years of high school.
- Entering college immediately after high school was associated with higher rates of certificate, diploma, and degree completion
- Conditional on enrollment in a two- or four-year institution, Hispanics had similar completion rates to the population at large.
- Only 14 percent of high school graduates who failed to earn any college-level credits in the senior year—the majority of students in HISD—earned a postsecondary certificate, diploma, or degree within six years.
- It appears that college-level course-taking in high school is one potential lever for improving college enrollment and completion rates.
- Starting at a four-year institution resulted in higher college completion rates than starting at a two-year institution.

Background

In 2012, the National Center for Higher Education Management Systems (NCHEMS) released a report that showed that only one in five Texas eighth graders had completed a postsecondary certificate or degree within six years of high school graduation (2012). This low rate of postsecondary attainment is concerning, especially since completing some sort of credential yields greater labor market returns than a high school diploma and since earnings gaps are growing over time (Ma, Pender, & Welch, 2016). For males 25–34 years old, the gap in median earnings between high school graduates and bachelor's degree holders grew from $9,969 in 1975 to $26,174 in 2015 (constant dollars). For females, the gap grew from $12,187 to $23,200. More importantly, the economic returns to a high school diploma are declining over time. In 1975, the median earnings for males and females with a high school education were $51,994 and $32,972, respectively. By 2015, median earnings had reduced to $34,803 for males and $27,475 for females. Although the returns to completing some level of postsecondary education have seen small declines or remained relatively stable, it is clear that not going to college is increasingly a penalty in the labor market.

Recognizing the benefits of a higher education and the troubling rates of college completion, the Texas Higher Education Coordinating Board (THECB) produced a strategic plan called *60x30TX*, which aims to have 60 percent of all Texans between 25–34 years old who attended public schools complete a postsecondary credential—from a certificate or diploma to a doctoral or professional degree—by 2030 (2015). The plan also seeks to ensure that college graduates complete a program aligned with the local job market and have a manageable amount of student debt.

The NCHEMS report shed light on an important problem facing the state, but it did not seek to explain what might be driving the leaky pipeline to and through college. The Houston Longitudinal Study on the Transition to College and Work (HLS) seeks to fill in these gaps by (1) examining patterns in postsecondary attainment by demographic, socioeconomic, behavioral, and academic characteristics; (2) developing and testing indicators of college readiness; and (3) analyzing regional and state labor market trends.

Building on the NCHEMS report, the research team at the Houston Education Research Consortium (HERC) has analyzed data from the Houston Independent School District (HISD), the largest local education agency in Texas.[1] This first report presents descriptive statistics of college outcomes; future reports will identify key predictors of college readiness and examine labor market outcomes.

In the last two years, HISD has designed a college access program in which counselors work with high school seniors on college application and financial aid. The cohorts in this study graduated before this program was implemented, but may serve as a comparison to more recent cohorts that have access to the new initiative's services.

A Note on the Sample

In this research report, we pool data on three cohorts of 12th grade students. Annual estimates using district or state data may differ from those produced for this report.

1 Separate from the HISD three-part series, county- and state-wide analyses are planned and will be available in early 2018. Given stakeholder interest in regional analyses, we supplemented the HISD data with information from the American Community Survey (ACS), an annual, nationally-representative survey administered by the U.S. Census Bureau, to examine patterns in educational attainment in the Houston metropolitan area. These results are available in Appendix G.

Research Questions

1. For 12th grade students in HISD, how many enroll in college or earn a degree within six years of high school?[2] Are there differences by demographic, socioeconomic, behavioral, or academic characteristics?

2. What is the average annual income for students who attended HISD? Are there differences by level of education and postsecondary field of study?

A Note on High School Graduation

Many analyses in this report use high school graduation to define college enrollment or are limited to high school graduates. This is different from the state and district's definition of *on-time high school graduation*, which is a longitudinal measure that assesses whether ninth grade students graduate from high school within four years.

While longitudinal, the analyses presented begin with 12th grade students in fall 2006–2008 and measure high school graduation in spring 2007–2009. It is possible that some seniors in the sample repeated the 12th grade (e.g., a senior in fall 2005 was still a senior in fall 2006). It is also possible that some seniors graduated in a later year (e.g., seniors in fall 2006 graduating in spring 2008). Although these dynamics are interesting, we do not focus on them here because of data limitations before the 2006–2007 school year and because we wanted to measure several outcomes six to seven years after graduation using a consistent sample. Had we included students who graduated in a later year, we would probably need to include students who received a Certificate of High School Equivalency, which we would not observe.

2 The NCHEMS report analyzed eighth grade students in fall 1996–1998. Using the HERC Longitudinal Database, we were unable to track students from eighth grade to and through college because (1) the database only contained student-level data from the past decade and (2) the eighth graders we were able to track had not had enough time to complete college. For this reason, this report focuses on HISD 12th graders.

Data and Methods

Data

For this research report, we used restricted data from three different sources, the Houston Education Research Consortium (HERC) Longitudinal Database, the National Student Clearinghouse (NSC), and the Texas Workforce Commission (TWC).

The HERC data were provided by HISD and used to construct a dataset of three cohorts of 12th grade students in the 2006–2007 through 2008–2009 school years. All statistics in this report pool the three cohorts. Students in the sample were followed for seven years, allowing us to calculate six-year college graduation rates, a standard metric in higher education research, and examine employment outcomes approximately one year after that.

Measures of college enrollment and completion came from the NSC, a nonprofit that collects information on enrollment and degree verification from U.S. colleges and universities.[3] Wage data were provided by the TWC and assessed seven years after high school graduation. A key limitation of the TWC data is that they do not contain information on individuals who are not in the labor force, unemployed, or living outside the state. HISD matched student-level data to the NSC and TWC using Social Security numbers.

Roughly one-quarter of students in the HERC dataset were missing data on at least one covariate, so we filled in missing values by implementing multiple imputation with chained equations 10 times.[4] The statistics provided in this report come from those 10 imputed datasets, adjusting coefficients and standard errors accordingly.

3 For college outcomes six years after high school, we limited the sample to high school graduates. Enrollment and completion data were incomplete or missing for students who dropped out of school or were retained for another year.

4 The variables with the highest rates of missing data were 11th grade test scores from the Texas Assessment of Knowledge and Skills (TAKS), administered during the prior academic year. Missing data rates on attendance, grades, and course-taking were much lower.

Measures

This report presents descriptive statistics on numerous measures of college enrollment and completion as well as annual income. First, we provide cross-tabulations of students' post-high school status (Dropped out, Still in school, No college or work, Work only, College & work, College only). We also examine the level (No college, 2-year or less, 4-year), control (No college, Public, Private not-for-profit/for-profit), and intensity (No college, Part-time, Full-time) of college enrollment. Since students may drop out of college or delay their enrollment, we provide cross-tabulations of first-year persistence and enrollment within six years of high school graduation. In terms of persistence, we examine whether a student is still enrolled in college and, if they are still enrolled, if they attended a different institution or the same, initial institution.

In this report, we measure college completion outcomes six years after high school graduation and focus on whether students completed a postsecondary degree within that six-year period as well as the highest degree completed (No postsecondary credential, Certificate/diploma, Associate's degree, Bachelor's degree, Master's/doctoral/professional degree). We also classify college majors into the 10 groups shown in Table 1 to examine the fields in which students complete degrees.

Enrollment and completion outcomes are cross-tabulated by key demographic, socioeconomic, behavioral, and academic characteristics. In terms of demographic and socioeconomic characteristics, we focus on gender, race/ethnicity (White, Black, Hispanic, Asian), and economic disadvantage.[5] The definition of economic disadvantage is broad and includes students receiving free or reduced price lunch, students participating in other federal

5 Although we included Native students in the analysis, we do not report their statistics in this report because of concerns with small sample size.

poverty programs, or students living below the federal poverty line.

The behavioral measures include whether a student is chronically absent (absent for 10 percent of the school year or more), had an in-school suspension, or had an out-of-school suspension.[6]

In terms of academic performance, we focus on composite test scores, letter grades, and college-level credits earned during the 12th grade. The composite test score is an average of reading, mathematics, social studies, and science test scores from the 11th grade Texas Assessment of Knowledge and Skills (TAKS). In cross-tabulations, we describe outcomes by composite test score quartiles: students in the first quartile are the lowest performing while students in the fourth quartile are the highest performing. We also summarize outcomes by the average grade earned during the senior year of high school. We calculate average grades among all courses taken and categorize them into five groups: A (90–100 percent), B (80–89 percent), C (75–79 percent), D (70–74 percent), and F (0–69 percent).[7] The last academic measure examined is the number of college-level credits (i.e., Advanced Placement, International Baccalaureate, academic dual enrollment) earned in the senior year (0.0, 0.5–1.0, 1.5–3.0, 3.5+). Each credit corresponds to a full-year course.[8,9]

Table 1. College Major Groups

Computer and information sciences
Engineering and engineering technology
Biological and physical sciences, science technology, mathematics, and agricultural sciences
General studies and other
Social sciences
Humanities
Health care fields
Business
Education
Other applied

Finally, we provide some information on the labor market outcomes of HISD students. Specifically, we examine annual income by postsecondary attainment and major group. The annual income measure comes from the second fiscal quarter approximately seven years after high school graduation (multiplied by four), and should be interpreted as students' early career wage.

Analytic Strategy

Part I of this report presents descriptive statistics—means and cross-tabulations—of college enrollment, college completion, and annual income. Part II traces the pathway from 12th grade to and through college for HISD students, Hispanics, and students who do not earn college-level credits during the senior year in an effort to understand the barriers to postsecondary attainment. Part III focuses on closing gaps in college enrollment and completion by race/ethnicity and college-level credits. Using multilevel logistic regression, we assess educational gaps before and after demographic, socioeconomic, behavioral, academic, and school characteristics are factored in. Educational gaps before these characteristics are considered show the raw magnitude of the gap, while gaps after these characteristics are considered show which ones are most important.

6 Given the growing interest in the school-to-prison pipeline, we initially sought to examine other measures of discipline like truancies and referrals to alternative education programs operated by HISD or the Harris County Juvenile Probation Department. Less than 1 percent of 12th grade students was marked truant and less than 1 percent was referred to an alternative education program. The immediate college enrollment rates for students with truancies and referrals to alternative education programs were 17 and 18 percent, respectively. Due to the small sample size and collinearity with the two suspension variables—nearly all students referred to an alternative education program received an out-of-school suspension—we decided to exclude these measures from the current analysis.

7 Groupings are aligned with district policy detailed here: http://www.houstonisd.org/Page/71973.

8 In calculating the number of college-level credits, we excluded Career & Technical Education (CTE) courses. CTE courses are quite different from AP and IB courses, and the students who take them may plan to enter a trade rather than earn a postsecondary degree. Therefore, counting these courses in the credits measure might bias estimated effects downward. Including them in the measure might also induce collinearity since they would already be part of the CTE variable in the statistical models.

9 The number of credits earned was based on whether a student had a passing grade in a college-level course. Semester courses counted for a half credit, while yearlong courses counted for a full credit. Data on whether a student took or passed an AP or IB exam were unavailable for these years. It is also unclear if postsecondary institutions would grant college credit for these courses; colleges and universities make these decisions on a case-by-case basis.

Results

College Enrollment

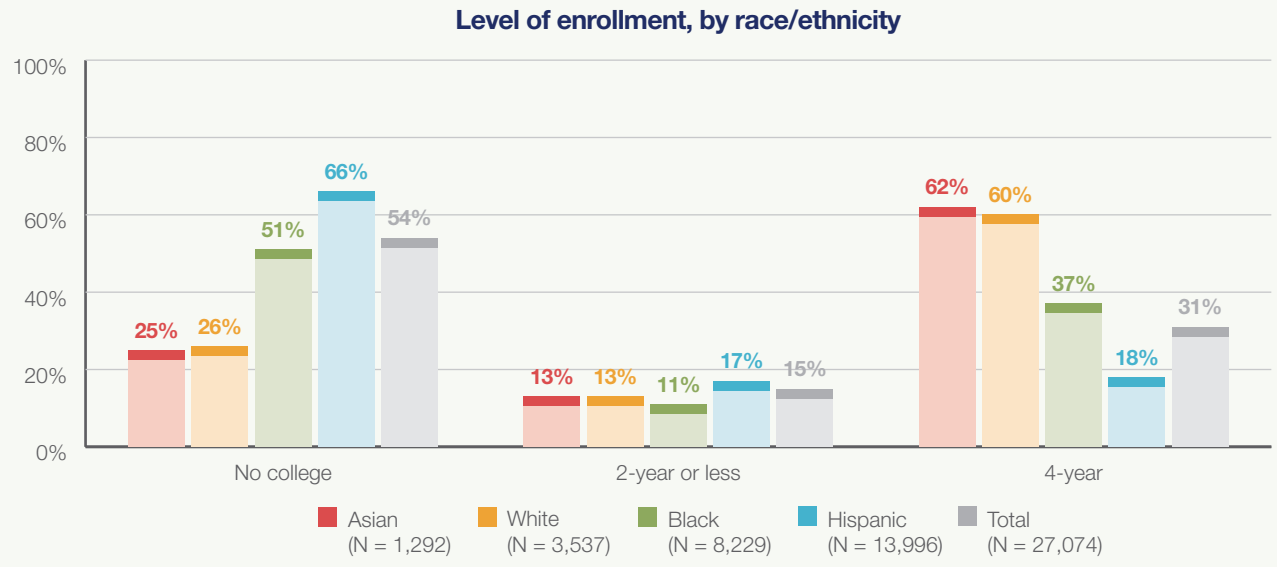
In this section, we highlight key patterns in college enrollment by demographic, socioeconomic, behavioral, and academic characteristics. Appendix A presents cross-tabulations for all enrollment outcomes, including those not highlighted in this section of the report. Using the HERC data, we found that 82 percent of HISD 12th graders in fall 2006–2008 graduated the next spring (see Table A1). Six percent dropped out sometime during the senior year and 12 percent continued for another year. There were higher rates of dropout and continuation for blacks, Hispanics, and economically disadvantaged students. Dropout and continuation were also positively associated with chronic absence and suspensions and negatively associated with academic performance.[10]

10 Approximately 21 percent of continuing students were in special education.

The fall following expected high school graduation, 46 percent of 12th grade students were enrolled in college (see Table A2). Thirty-one percent of students attended four-year institutions, while the remaining 15 percent attended community colleges or technical/vocational schools. Females and non-economically disadvantaged students were more likely to be enrolled than males and economically disadvantaged students, respectively. Figure 1 graphs the level of college enrollment by race/ethnicity. The majority of whites (73 percent) and Asians (75 percent) enrolled in college the fall following high school graduation. While approximately half of black students enrolled in college, a minority of Hispanic students (34 percent) did so. Compared to other racial and ethnic groups, **Hispanics disproportionately chose to attend sub-baccalaureate institutions.**

College enrollment appeared out-of-reach for students with high numbers of absences and poor or

Figure 1.



Note: Figure is based on HISD 12th grade students in fall 2006–2008. Students who dropped out during 12th grade or did not graduate are in the "no college" category.

mediocre test scores and grades. For example, only 29 percent of students with a C average attended college immediately after high school (see Table A14). Although a C average is not sufficient to get accepted to selective institutions, many four- and two-year colleges have open admissions requirements and simply require a high school diploma. Even among students with a B average, college was not universal: 46 percent neither attended a four- nor two-year institution. While just 36 percent of HISD students earned Advanced Placement, International Baccalaureate, or academic dual enrollment credits during the senior year, college-level credits appeared to be a significant bottleneck in the pipeline to college. Nearly three-quarters of students who earned college-level credits enrolled in college, but only 30 percent of those who did not subsequently enrolled.

Conditional on enrollment, there were relatively high levels of college persistence. Eighty-four percent of the students enrolled in college the fall following high school were still enrolled a year later (see Table A5). There were, however, differences by race and ethnicity. While 92 and 95 percent of white and Asian students persisted into the second year of college, respectively, only 80 percent of blacks and Hispanics did so. There were also gaps by academic performance. Ninety-four percent of students with an A average continued into the second year, but just 70 percent of students with a C average persisted (see Table A17).[11]

The final enrollment outcome examines whether students attended college within six years of high school graduation. This measure not only includes students who enrolled in college right after graduating, but also those who delayed their postsecondary education. For this outcome, we limited the sample to high school graduates because missing data prevented us from tracking dropouts or continuing students longitudinally.[12] **While 56 percent of high school graduates enrolled in college the next fall, there was a substantial number of students who delayed enrollment.** Within six years of high school, three-quarters of graduates attended a postsecondary institution (see Table A6). Over 90 percent of whites and Asians ever enrolled, but just two-thirds of Hispanics did so.

11 The statistics on persistence were calculated by dividing the number of students still enrolled in college one year after entering (even if they were enrolled in a different institution) by the number of students who entered college the fall following high school.

12 HISD only requested NSC data for high school graduates. Since most students who dropped out or continued high school did not graduate, including them in the analysis would skew the sample.

College Completion

Like long-term enrollment, we focus on college completion six years after high school, limiting the sample to high school graduates. Tables with all completion statistics are in Appendix B. **While long-term enrollment rates were quite high across the district, the completion rates were quite low: just 31 percent of students earned a postsecondary credential within six years of high school (see Table B1).** There was, once again, considerable variation by race and ethnicity. Although the majority of white and Asian students were able to complete a certificate or degree, the college completion rates for blacks and Hispanics were much worse, around one-quarter.

Behavioral and academic measures correlated strongly with long-term enrollment and completion outcomes. Figures 2A–2D plot enrolling and completing college within six years of high school by attendance rates, composite test scores, course grades, and college-level credits. Although the measures are all positively related to enrollment, the completion trends are noteworthy. In the attendance and grades graphs, there are sharp changes in the slope around the 80 percent mark; that is, students who missed 20 percent or more of the days in the 12th grade or who earned less than a B average had very low likelihoods of college completion. While the number of college-level credits earned correlates with enrollment, it appears more predictive of completion. Whereas students who earned no college-level credits during the 12th grade had a 65 percent chance of enrolling within six years of high school, students must have earned 3.5 credits or more to have had a similar chance of completion.

Turning to postsecondary attainment, the majority of credentials earned were bachelor's degrees. Seventy-seven percent of students who completed a college education held a B.A., with the remainder earning a certificate or diploma (6 percent), an A.A. (14 percent), or a master's, doctoral, or professional degree (4 percent). Figure 3 graphs postsecondary attainment by race and ethnicity among college completers. The most striking pattern was that Hispanics disproportionally earned certificates, diplomas, and associate's degrees. Given Hispanic students' high rates of community college attendance, this finding was not surprising.

There appeared to be differences in postsecondary attainment by measures of academic performance. Figure 4 graphs the highest degree completed by the number of college-level credits earned during the senior year of high school. Earning more credits was, not surprisingly, associ-

ated with earning a B.A. While students who completed no college-level credits had lower college completion rates (15 percent), the ones who did finish a postsecondary education were disproportionately likely to earn a certificate or diploma (16 percent) or an associate's degree (27 percent).

The final educational outcome analyzed is the major group. Using the NSC data, we classified college majors into 10 broad groups. Aside from general studies and other applied fields, business, social science, humanities, and biological and physical science were the top fields in which students earned degrees.

Next, we present statistics on income by the highest degree completed and major group. These tables may be found in Appendix C. Even though we focused on early career wages—just seven years after high school—there already appeared to be variation by the level of education. In Figure 5, the average annual wage among students in the sample was $31,615. However, individuals with a bachelor's degree ($41,367) and a master's degree or higher ($52,961) had significantly higher earnings. Differences among students with no postsecondary credential, certificates or diplomas, or associate's degrees were relatively small.

There were also differences in income by major group. Among degree completers, students who studied engineering and engineering technology had the highest incomes ($63,103), followed by computer and information sciences ($47,753) and business ($47,753) (see Table C2).

Figure 2A.

College Enrollment and Completion, by Attendance Rate

6 years after high school graduation

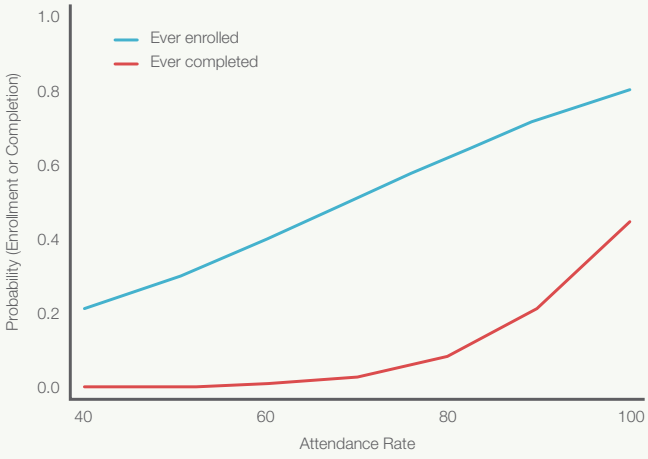


Figure 2B.

College Enrollment and Completion, by Composite Score

6 years after high school graduation

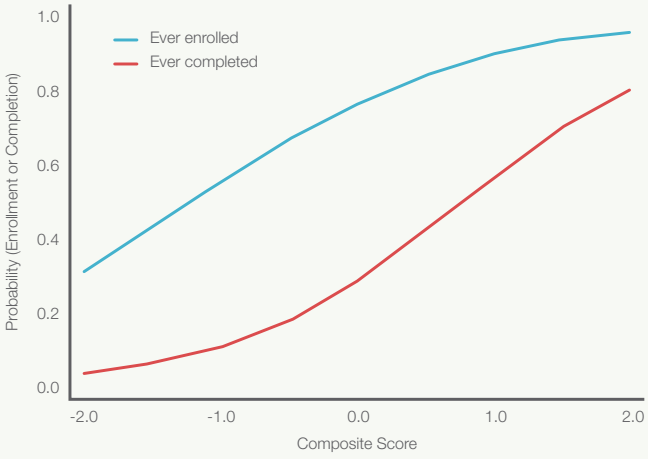


Figure 2C.

College Enrollment and Completion, by Course Grade Average

6 years after high school graduation

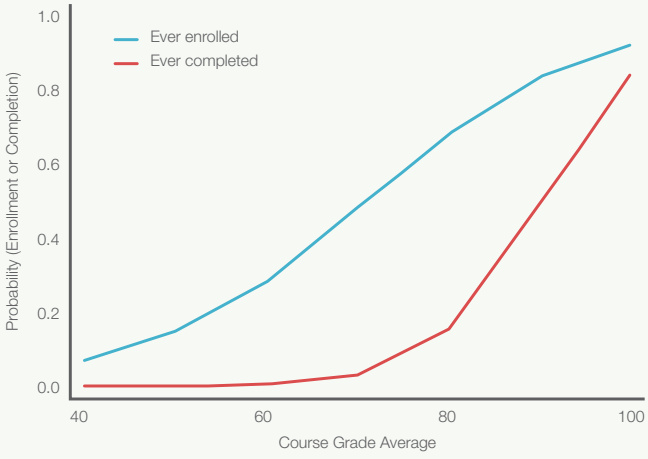
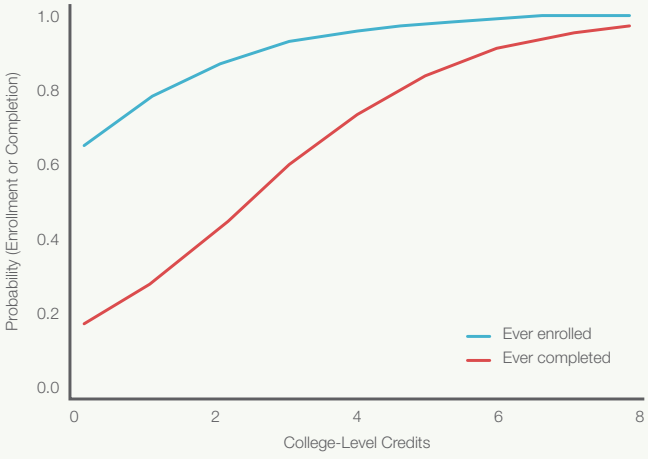


Figure 2D.

College Enrollment and Completion, by College-Level Credits

6 years after high school graduation

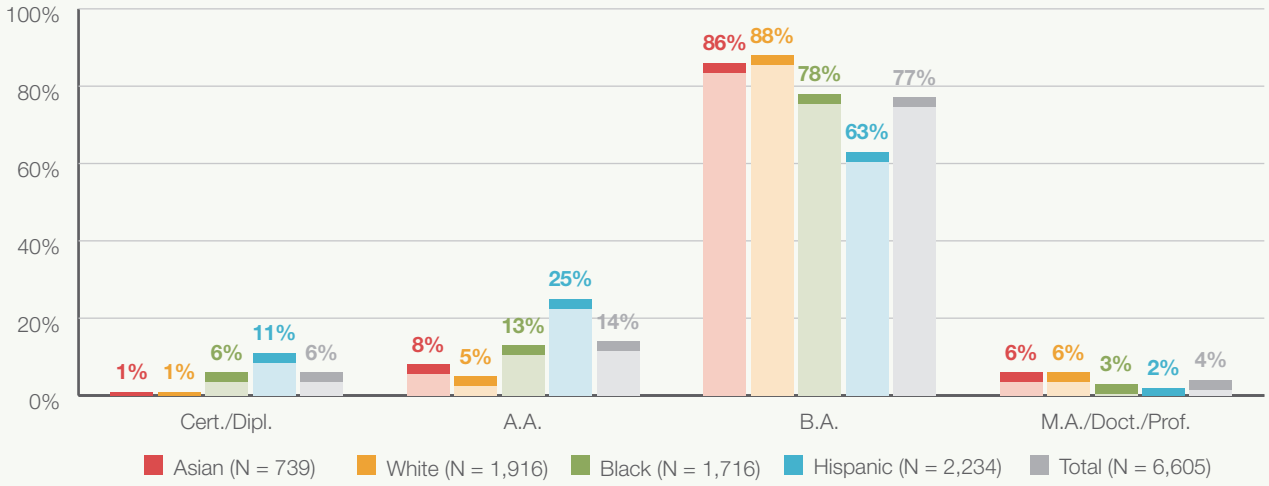


Note: Figures are based on HISD 12th grade students in fall 2006–2008 who graduated high school the following spring. Composite score is an average of 11th grade reading, mathematics, social studies, and science TAKS scores. Course grades average is based on all courses taken during the 12th grade. College-level credits include AP, IB, and academic dual enrollment courses.

Figure 3.

Highest degree completed, by race/ethnicity

college completers only

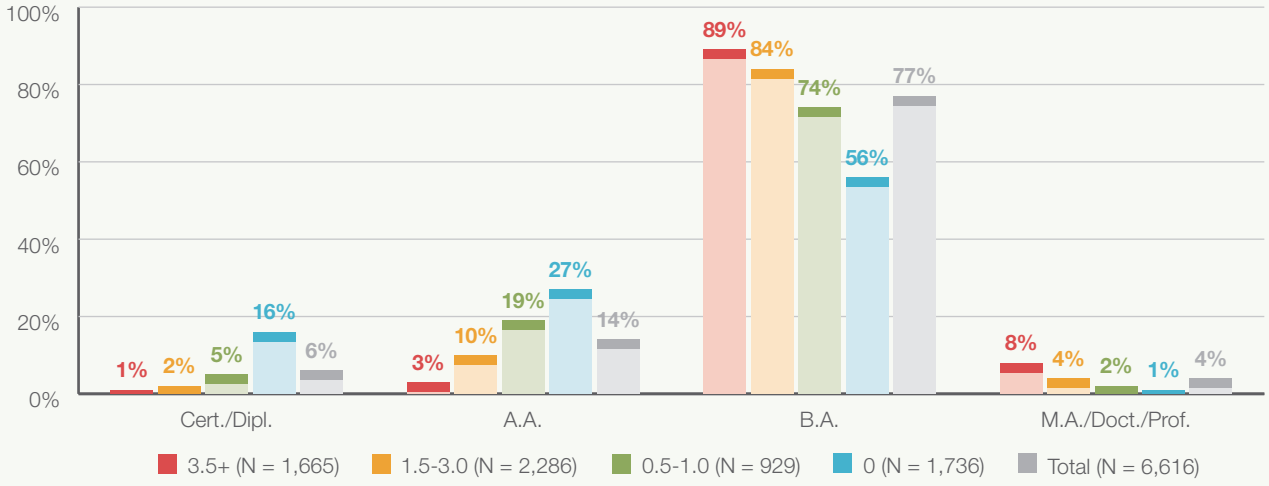


Note: Figure is based on HISD 12th grade students in fall 2006–2008 who graduated high school the following spring and completed a postsecondary credential within six years of high school.

Figure 4.

Highest degree completed, by number of college-level credits

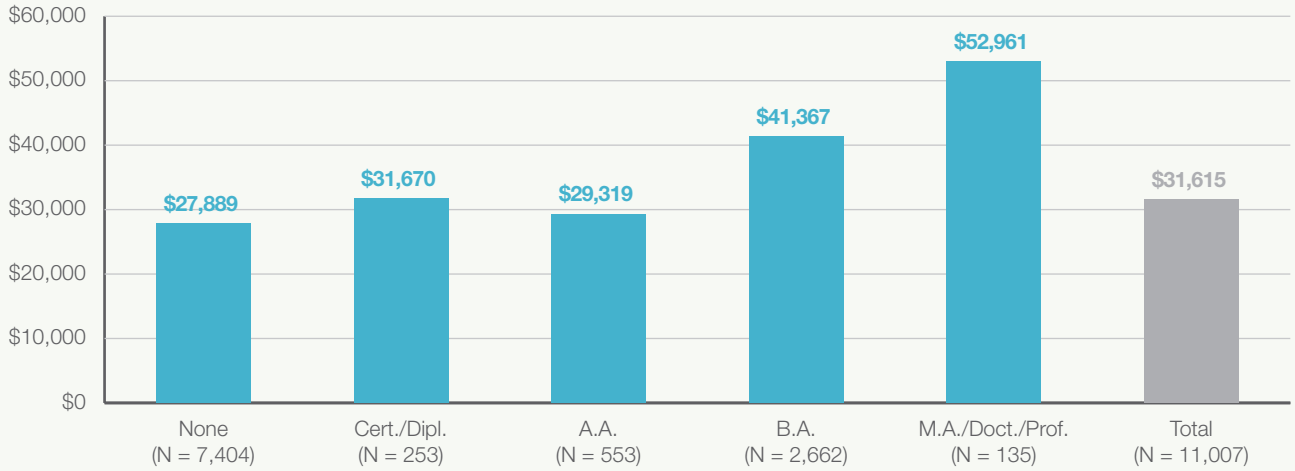
college completers only



Note: Figure is based on HISD 12th grade students in fall 2006–2008 who graduated high school the following spring and completed a postsecondary credential within six years of high school.

Figure 5.

Annual wage, by highest degree completed



Note: Figure is based on HISD 12th grade students in fall 2006–2008 who graduated high school the following spring and were in the Texas labor force during the second quarter of 2014–2016.

Student Pathways to and through College

The previous section showed that while 75 percent of HISD high school graduates enrolled in college within six years of graduation, only 31 percent completed a postsecondary credential. In this section, we trace students' pathways from high school graduation for six years in an effort to identify the greatest barriers to educational attainment.[13]

Figure 6 draws the pathway to college completion among all HISD 12th graders in fall 2006–2008. For every 100 12th graders, approximately six dropped out of high school during their senior year and 12 were retained another year. The remaining 82 students graduated from high school that academic year in spring 2007–2009.

Of the 82 high school graduates, more than half enrolled in college the next fall. Most attended college only, while some attended college and worked at the same time. Approximately two-thirds of immediate college enrollees first attended a four-year institution, while the remaining third attended a community college or technical/vocational school. Only 22 of the 46 students who enrolled in college immediately after high school graduation earned a postsecondary credential within six years. The completion rate was higher among individuals who started at a four-year institution (58 percent) than a sub-baccalaureate institution (30 percent).

Not surprisingly, the majority of students who started at a four-year institution and completed a postsecondary credential earned a B.A. Students who started at a sub-baccalaureate institution and completed college were nearly evenly divided between associate's and bachelor's degrees, so it appears that some students transferred to a four-year institution.

Less than half of the 82 high school graduates failed to enroll in college the following fall. Only one-third of these non-enrollees was in the labor force; the remainder was idle, neither in college nor working.[14] Within six years of high school, 42 percent of these students *did* enroll in college. However, most did not complete a certificate, diploma, or degree. This is expected since students who delayed enrollment probably needed more time to complete their course requirements.

The chart shows that **entering college immediately after high school was associated with higher rates of certificate, diploma, and degree completion.** Furthermore, students who initially entered a four-year institution were more likely to earn a postsecondary credential than students who initially entered a sub-baccalaureate institution like a community college.

It is encouraging that a non-trivial number of students who did not enter college immediately after high school eventually pursued a postsecondary education. High schools should be aware of this pattern and provide a college preparatory curriculum for all students, even if a substantial number of them do not anticipate enrolling immediately after graduation. The dropout and continuation rates are concerning. **Also concerning is the high rate of idleness: one-third of graduates were neither studying nor working after high school.**

Given the inequalities in educational outcomes by race and ethnicity and college-level course-taking, Figures 7 and 8 draw the pathway to college for Hispanic students and students who took no college-level courses in 12th grade. Hispanic students represented approximately half the students in the sample while students who took no college-level courses represented 64 percent.

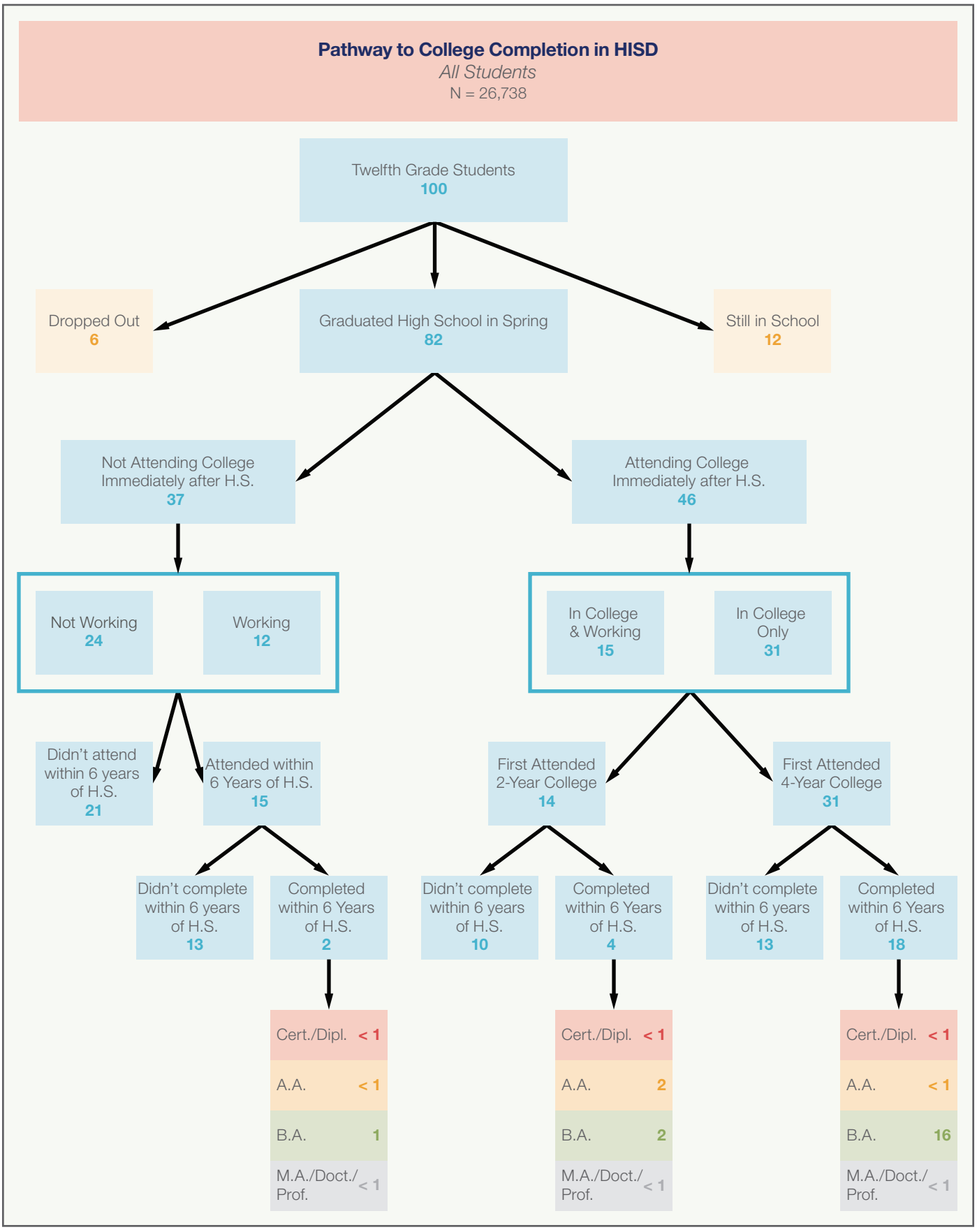
Compared to the population at large, Hispanics were less likely to graduate from high school. Of the 77 who did graduate, less than half enrolled in college immediately after high school. Hispanic college enrollees were equally likely to attend two- and four-year institutions; this is a pattern in line with national statistics (Snyder & Dillow, 2015). While 30 percent of high school graduates in HISD completed a postsecondary credential within six years, for Hispanics, the figure was much lower, 21 percent. However, **conditional on enrollment in a two- or four-year institution, Hispanics had similar completion rates to the population at large:** 29 percent for individuals starting at a sub-baccalaureate institution and 52 percent for individuals starting at a four-year institution.

The pathway to college completion for students who did not complete any college-level credits in 12th grade shows a number of barriers. Like Hispanics, the high school graduation and immediate college enrollment rates were lower than the population at large. Of the students who did enroll in college, slightly more than half started in a two-year institution. However, conditional on enrollment,

13 The statistics presented in this section might not correspond perfectly with those presented in the tables in the appendices due to sample restrictions.

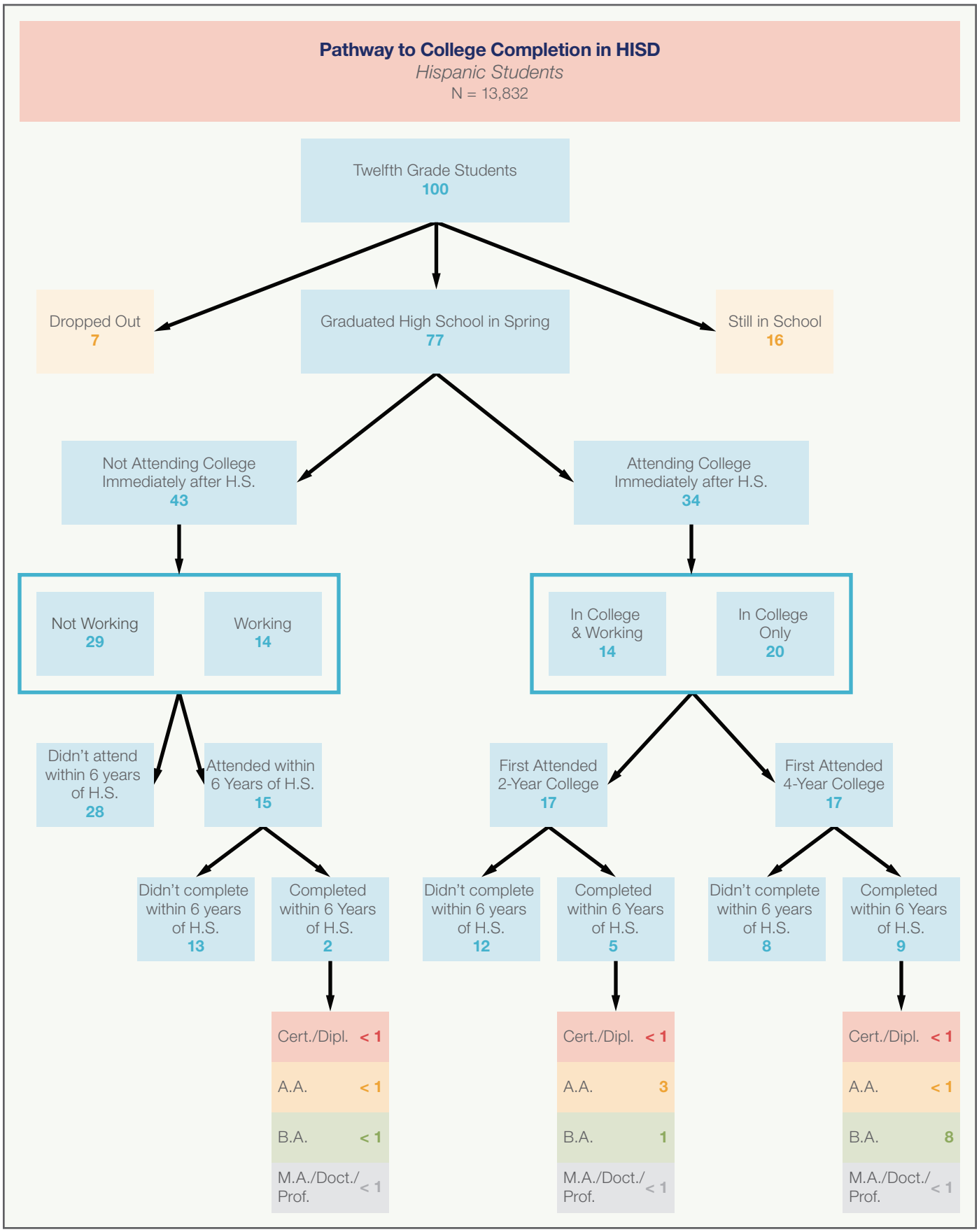
14 It is possible that some of these students were in the military. None of the datasets we had access to allowed us to estimate this pathway. According to nationally-representative data, approximately two percent of high school seniors enrolled in the military within eight years of high school (author calculation using National Center for Education Statistics PowerStats and the Education Longitudinal Study of 2002).

Figure 6.



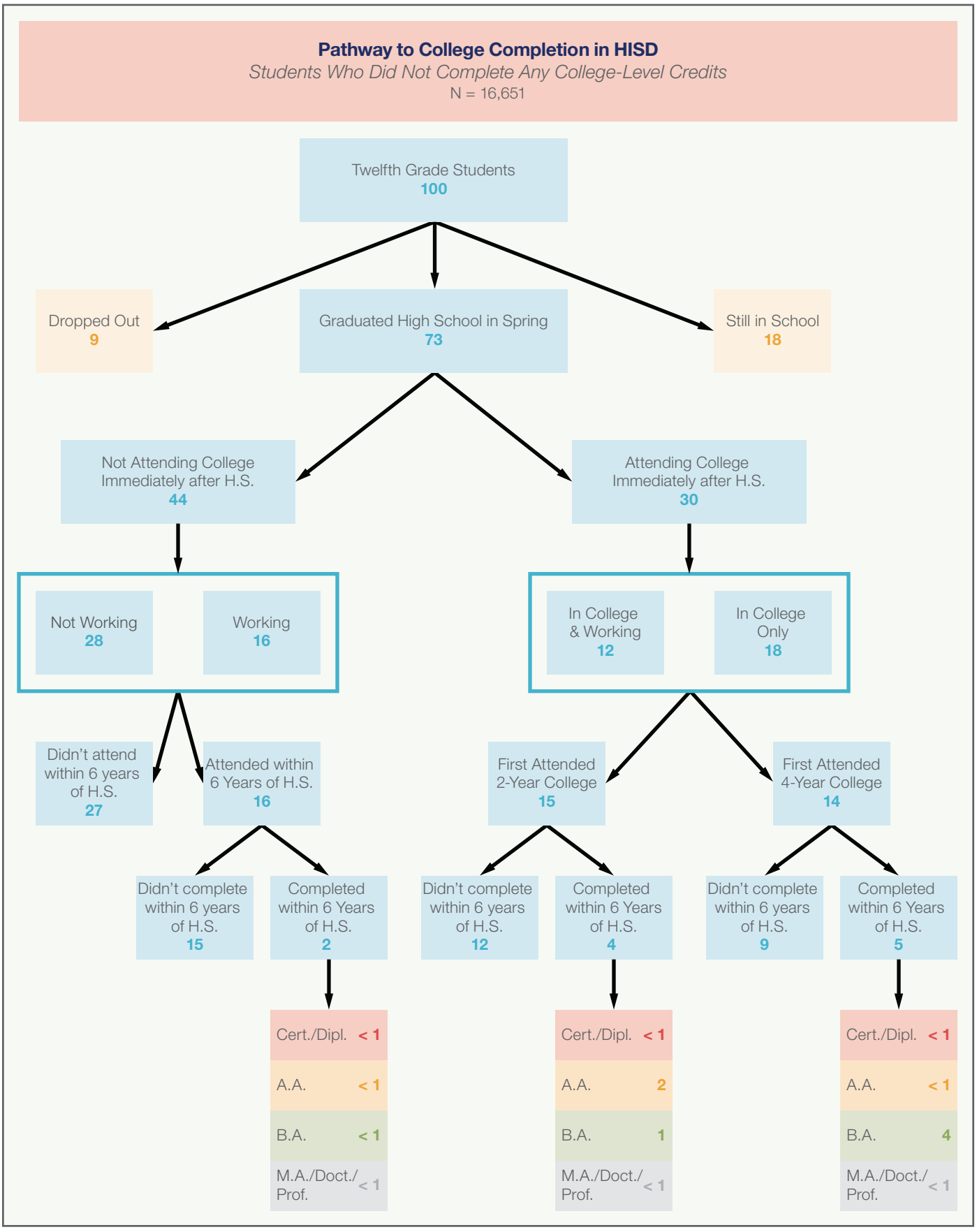
Note: Figure is based on HISD 12th grade students in fall 2006–2008. The sample is limited to individuals with non-missing data on the relevant outcome variables. Numbers in the figure may not match the numbers in cross-tabulations exactly due to missing data

Figure 7.



Note: Figure is based on HISD 12th grade students in fall 2006–2008. The sample is limited to individuals with non-missing data on the relevant outcome variables. Numbers in the figure may not match the numbers in cross-tabulations exactly due to missing data.

Figure 8.



Note: Figure is based on HISD 12th grade students in fall 2006–2008. The sample is limited to individuals with non-missing data on the relevant outcome variables. Numbers in the figure may not match the numbers in cross-tabulations exactly due to missing data.

the completion rates were low: 24 percent for those first attending a two-year college and 34 percent for those first attending a four-year college. Even if students did enroll in a four-year institution, it is possible that their lack of college preparatory coursework in high school hindered their ability to complete a degree. **Only 14 percent of high school graduates who failed to earn any college-level credits in the senior year—the majority of students in HISD—earned a postsecondary certificate, diploma, or degree within six years.**

Closing the Gaps in College Outcomes

Gaps in college enrollment by race and ethnicity and college-level credits were quite large. To explore these gaps further, we estimated multilevel logistic regression models that predicted two binary outcomes, ever enrolling in college and completing a postsecondary credential within six years of expected high school graduation. The models controlled for the cohort (seniors in fall 2006 were the reference group) and accounted for school-level random-effects. We estimated separate models in which we focused on (1) gaps by race and ethnicity and (2) gaps by college-level credits earned during the senior year of high school, without additional control variables (called the "no controls" model). We also estimated models with the full set of controls (called the "controls" model), in which we calculated gaps by race and ethnicity and the number of college-level credits earned, accounting for student demographic background, socioeconomic status, behavior, academic performance, and school characteristics. In terms of race and ethnicity, whites were the reference group, so we present black-white, Hispanic-white, and Asian-white educational gaps. For the college-level credits models, students who earned no credits during the senior year of high school were the reference group. Appendix D lists the independent variables in the analysis, Appendix E describes the statistical models, and Appendix F shows the regression results.[15]

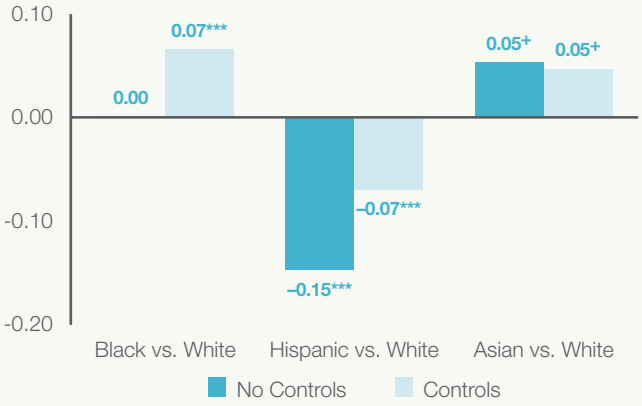
The bar graphs in Figures 9A and 9B show gaps in enrollment and completion by race and ethnicity. The first bar in each graph ("no controls") shows the raw racial and ethnic difference in college enrollment or completion—the gap if we simply compare whites with blacks, Hispanics, and Asians. Comparing black and white students, we found no statistically significant gap in college enrollment: within six years of high school, blacks and whites who graduated attended college at approximately the same rate. In contrast, we found a large Hispanic-white gap, with Hispanics 15 percentage points less likely to enroll than whites. Although Asian students were five percentage points more likely to enroll than white students, the gap was only marginally significant.

The second bar in each graph ("controls") shows the racial and ethnic difference in college enrollment or completion if we compare, for example, black and white students with the same grades, course-taking patterns, etc. Controlling for student and school characteristics, the black-white gap in college enrollment increased to seven percentage points, in black students' favor. This means that when comparing black and white students with similar characteristics, black students were *more* likely to enroll in

15 The regression results are presented in odds ratios. Numbers above 1 reflect positive relationships (e.g., more likely to enroll), while numbers below 1 reflect negative relationships (e.g., less likely to enroll).

Figure 9A.

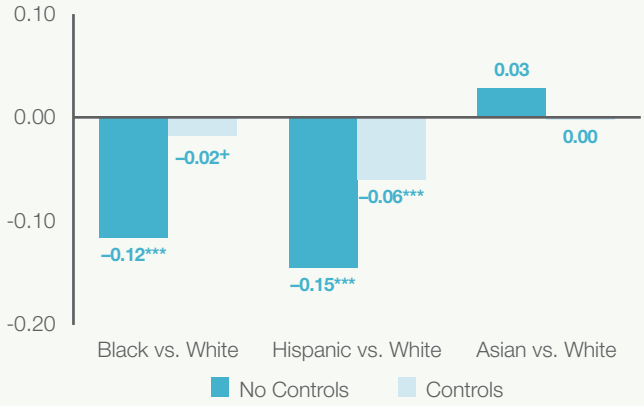
Race/ethnicity gaps in enrolling in college within six years of high school graduation



Note: Figure is based on HISD 12th grade students in fall 2006–2008 who graduated high school the following spring.

Figure 9B.

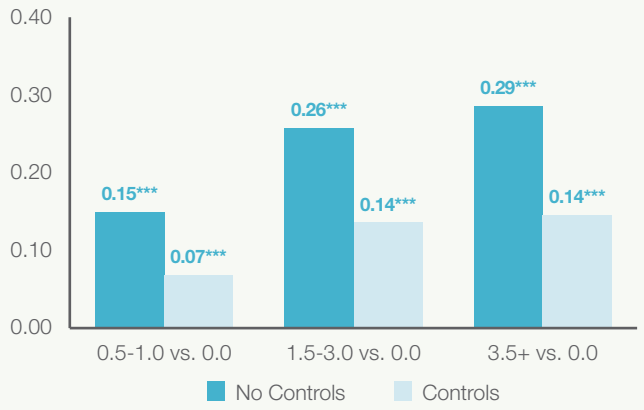
Race/ethnicity gaps in completing a postsecondary credential within six years of high school graduation



Note: Figure is based on HISD 12th grade students in fall 2006–2008 who graduated high school the following spring.

Figure 10A.

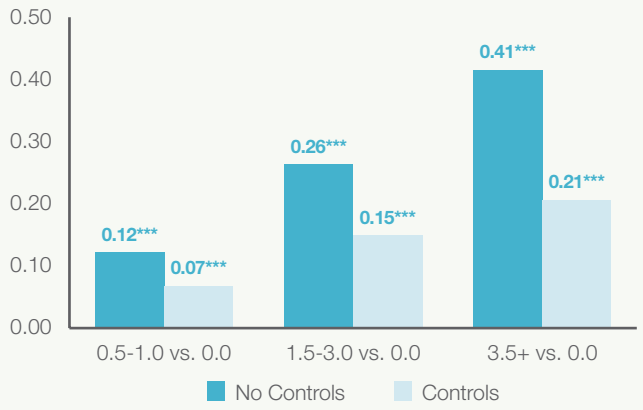
College-level credits gaps enrolling in college within six years of high school graduation



Note: Figure is based on HISD 12th grade students in fall 2006–2008 who graduated high school the following spring.

Figure 10B.

College-level credits gaps in completing a postsecondary credential within six years of high school graduation



Note: Figure is based on HISD 12th grade students in fall 2006–2008 who graduated high school the following spring.

college. The Hispanic-white college enrollment gap was attenuated with control variables, but remained negative and statistically significant: Hispanics were seven percentage points less likely to enroll in college than whites. What this means is that if we were to improve the grades and course-taking patterns, for example, of Hispanics to match the grades and course-taking patterns of whites, Hispanic students would see some gains in college enrollment, especially when compared to the other groups. The Asian-white gap remained unchanged with controls.

In terms of college completion, black-white and Hispanic-white gaps were large. Black and Hispanic students were 12 and 15 percentage points less likely, respectively, than white students to complete a postsecondary credential. Controlling for student and school characteristics, blacks were still two percentage points less likely to complete a certificate, diploma, or degree than whites (although the difference was marginally significant), while Hispanics were six percentage points less likely to do so. There were no statistically significant Asian-white gaps in college completion, with or without control variables. Although improving the grades, course-taking patterns, etc., of Hispanics might improve their educational attainment, Hispanic students still remained at a disadvantage. There might be unobserved factors (e.g., financial need, attending institutions with fewer resources and supports) driving the lower college completion rates of Hispanic students.

Figures 10A and 10B show gaps in college enrollment and completion by the number of college-level credits earned during the senior year of high school. It is clear that students who completed college-level credits in 12th grade were more likely to enroll in college and complete a postsecondary credential within six years of high school graduation. Although these patterns were attenuated when controlling for student and school characteristics, they remained large and statistically significant. Furthermore, earning 1.5 to 3.0 or 3.5 or more college-level credits appeared more beneficial than earning just 0.5 or 1.0. The relationship between earning 3.5 or more college-level credits and college completion was particularly strong: with controls, it increased the likelihood of earning a credential by 21 percentage points.

Discussion and Recommendations

Using the HERC data, we found that almost half of HISD 12th graders from the fall 2006–2008 cohorts attended college the fall following high school graduation. Among high school graduates, the share increased to 56 percent. There was considerable variation by race and ethnicity. Hispanic students were less likely to enroll in college than whites and Asians, but when they did enroll, they disproportionately attended sub-baccalaureate institutions. Another striking finding was the variation by measures of academic performance. Students with low to mediocre state test scores and course grades and who did not earn college-level credits during the senior year of high school—the majority of the sample—exhibited especially low levels of college enrollment.

Although three-fourths of HISD high school graduates attended college within six years of high school, only one-third earned some sort of credential. Black and Hispanic and low- to middle-performing students had particularly low levels of postsecondary attainment. These patterns were concerning since early career wages, approximately seven years after high school, already appeared to differ by the level of education and major.

While we are living in a college-for-all era, college access appears to be a privilege afforded to the highest achieving students in HISD. A C average may not be enough to get admitted to selective institutions, but should be sufficient to attend open enrollment institutions, community colleges, or technical/vocational schools. **The low college enrollment rate among Hispanic students, the largest racial and ethnic group in HISD, was also concerning.** Hispanics were 15 percentage points less likely to enroll in college than whites. Although the gap was reduced after accounting for student and school characteristics, it remained significant—seven percentage points. Nevertheless, the pathways analysis showed that conditional on enrolling in two- or four-year institutions immediately after high school, Hispanic students exhibited similar completion rates to the population at large. For Hispanics in HISD, boosting college access may be key to college success.

A future report will tease out the leaks in the pipeline to and through college, but **it appears that college-level course-taking in high school is one potential lever for improving college enrollment and completion rates.** Students who earned 0.5 or more AP, IB, or academic dual enrollment credits during the senior year were more likely to enroll in college and complete a degree. These relationships persisted even after controlling for student- and school-level factors.

A related lever worth exploring is providing all students, regardless of academic performance, with college options. Low- and middle-performing students may not be qualified for or successful at a four-year institution, but could certainly enter an associate's or certificate program at a two-year, technical, or vocational institution. Students may simply be unaware of these college options, so, perhaps, increasing access for low- and middle-achieving students is a function of information and outreach. (It should be noted that in recent years, HISD has hired College Success Advisors to assist high school seniors with college application and financial aid. The cohorts examined in this report did not receive these services.)

The findings also showed that **starting at a four-year institution resulted in higher college completion rates than starting at a two-year institution.** Although the analyses do not permit us to say whether this is a causal relationship, prior research generally shows this to be the case (e.g., Doyle, 2009; Long & Kurlaender, 2009; Sandy, Gonzalez, & Hilmer, 2006). Community colleges often have fewer resources than four-year colleges and may "cool-out" students' postsecondary aspirations (Clark, 1960). Persuading students who otherwise would attend a community college or open

access college to consider a selective institution, could impact postsecondary attainment.

This research report is a snapshot of the state of college access in HISD. Future analyses will examine more recent cohorts of students and focus on leaks in the educational pipeline between eighth and 12th grade. This work can shed light on how practitioners and policymakers ought to define college readiness and provide guidance on when and how to intervene.

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For additional information on the findings presented here, contact the Houston Education Research Consortium at 713-348-2802 or email herc@rice.edu.

Appendix A. Cross-Tabulations of College Enrollment Outcomes in HISD

Table A1.
Post-High School Plan by Selected Demographic and Socioeconomic Measures (Fall after High School)

	Dropped out	Still in school	No college or work	Work only	College & work	College only	N
All Students	6%	12%	24%	12%	15%	31%	27,074
Gender							
Male	6%	13%	25%	13%	13%	29%	12,884
Female	5%	11%	23%	12%	17%	33%	14,190
Race/Ethnicity							
White	1%	4%	15%	6%	16%	58%	3,537
Black	6%	10%	21%	15%	15%	33%	8,229
Hispanic	7%	16%	29%	13%	14%	21%	13,996
Asian	1%	4%	16%	3%	16%	60%	1,292
Economic Disadvantage							
Non-Disadv.	6%	8%	19%	9%	15%	43%	10,401
Disadv.	5%	15%	27%	14%	14%	24%	16,673

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.
Note: Native American respondents are suppressed due to small sample size. Cells containing five or fewer students are masked.

Table A2.
Level of College Enrollment by Selected Demographic and Socioeconomic Measures (Fall after High School)

	No college	2-year or less	4-year	N
All Students	54%	15%	31%	27,074
Gender				
Male	58%	14%	28%	12,884
Female	51%	15%	34%	14,190
Race/Ethnicity				
White	26%	13%	60%	3,537
Black	51%	11%	37%	8,229
Hispanic	66%	17%	18%	13,996
Asian	25%	13%	62%	1,292
Economic Disadvantage				
Non-Disadv.	42%	14%	44%	10,401
Disadv.	62%	15%	24%	16,673

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.
Note: Native American respondents are suppressed due to small sample size. Cells containing five or fewer students are masked.

Table A3.
Control of College Enrollment by Selected Demographic and Socioeconomic Measures (Fall after High School)

	No college	Public	Private not-for-profit or for-profit	N
All Students	54%	39%	7%	27,074
Gender				
Male	58%	36%	6%	12,884
Female	51%	42%	8%	14,190
Race/Ethnicity				
White	26%	53%	21%	3,537
Black	51%	43%	6%	8,229
Hispanic	66%	31%	3%	13,996
Asian	25%	61%	14%	1,292
Economic Disadvantage				
Non-Disadv.	42%	46%	12%	10,401
Disadv.	62%	35%	4%	16,673

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.
Note: Native American respondents are suppressed due to small sample size. Cells containing five or fewer students are masked.

Table A4.
Intensity of College Enrollment by Selected Demographic and Socioeconomic Measures (Fall after High School)

	No college	Part-time	Full-time	N
All Students	56%	10%	34%	26,312
Gender				
Male	60%	9%	31%	12,523
Female	52%	10%	38%	13,789
Race/Ethnicity				
White	27%	7%	65%	3,405
Black	55%	8%	37%	7,730
Hispanic	66%	11%	22%	13,883
Asian	25%	9%	65%	1,274
Economic Disadvantage				
Non-Disadv.	43%	9%	47%	10,044
Disadv.	63%	10%	26%	16,268

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.
Note: Native American respondents are suppressed due to small sample size. Cells containing five or fewer students are masked.

Table A5.
First-Year Persistence by Selected Demographic and Socioeconomic Measures

	Not enrolled in college in fall after high school	No longer enrolled in college	Enrolled at different college	Enrolled at same college	N
All Students	54%	7%	5%	33%	27,074
Gender					
Male	58%	8%	5%	29%	12,884
Female	51%	7%	6%	37%	14,190
Race/Ethnicity					
White	26%	6%	10%	58%	3,537
Black	51%	10%	7%	33%	8,229
Hispanic	66%	7%	3%	24%	13,996
Asian	25%	4%	8%	64%	1,292
Economic Disadvantage					
Non-Disadv.	42%	7%	7%	44%	10,401
Disadv.	62%	8%	4%	26%	16,673

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.
Note: Native American respondents are suppressed due to small sample size. Cells containing five or fewer students are masked.

Table A6.
Enrollment within 6 Years of High School by Selected Demographic and Socioeconomic Measures

	No	Yes	N
All Students	25%	75%	22,295
Gender			
Male	28%	72%	10,379
Female	23%	77%	11,916
Race/Ethnicity			
White	10%	90%	3,354
Black	21%	79%	6,946
Hispanic	35%	65%	10,753
Asian	8%	92%	1,223
Economic Disadvantage			
Non-Disadv.	17%	83%	8,958
Disadv.	31%	69%	13,337

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.
Note: Native American respondents are suppressed due to small sample size. Cells containing five or fewer students are masked.

Table A7.
Post-High School Plan by Selected Behavioral Measures (Fall after High School)

	Dropped out	Still in school	No college or work	Work only	College & work	College only	N
All Students	6%	12%	24%	12%	15%	31%	27,074
Chronic Absence							
No	2%	7%	24%	12%	17%	38%	19,757
Yes	15%	24%	26%	14%	8%	13%	6,508
In-School Suspension							
No	6%	12%	24%	11%	15%	33%	23,449
Yes	4%	14%	27%	19%	15%	21%	3,625
Out-of-School Suspension							
No	6%	12%	24%	12%	15%	32%	24,984
Yes	7%	15%	27%	19%	12%	19%	2,090

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.

Table A8.
Level of College Enrollment by Selected Behavioral Measures (Fall after High School)

	No college	2-year or less	4-year	N
All Students	54%	15%	31%	27,074
Chronic Absence				
No	44%	17%	39%	19,757
Yes	79%	9%	12%	6,508
In-School Suspension				
No	53%	14%	33%	23,449
Yes	64%	17%	19%	3,625
Out-of-School Suspension				
No	53%	15%	32%	24,984
Yes	69%	12%	19%	2,090

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.

Table A9.
Control of College Enrollment by Selected Behavioral Measures (Fall after High School)

	No college	Public	Private not-for-profit or for-profit	N
All Students	54%	39%	7%	27,074
Chronic Absence				
No	44%	47%	8%	19,757
Yes	79%	19%	3%	6,508
In-School Suspension				
No	53%	40%	8%	23,449
Yes	64%	34%	2%	3,625
Out-of-School Suspension				
No	53%	40%	7%	24,984
Yes	69%	29%	3%	2,090

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.

Table A10.
Intensity of College Enrollment by Selected Behavioral Measures (Fall after High School)

	No college	Part-time	Full-time	N
All Students	56%	10%	34%	26,312
Chronic Absence				
No	46%	11%	43%	19,150
Yes	80%	7%	13%	6,358
In-School Suspension				
No	54%	10%	36%	22,814
Yes	66%	12%	22%	3,498
Out-of-School Suspension				
No	54%	10%	36%	24,299
Yes	71%	9%	20%	2,013

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.

Table A11.
First-Year Persistence by Selected Behavioral Measures

	Not enrolled in college in fall after high school	No longer enrolled in college	Enrolled at different college	Enrolled at same college	N
All Students	54%	7%	5%	33%	27,074
Chronic Absence					
No	44%	8%	6%	41%	19,757
Yes	79%	6%	3%	12%	6,508
In-School Suspension					
No	53%	7%	5%	35%	23,449
Yes	64%	10%	5%	22%	3,625
Out-of-School Suspension					
No	53%	7%	5%	34%	24,984
Yes	69%	8%	5%	18%	2,090

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.

Table A12.
Enrollment within 6 Years of High School by Selected Behavioral Measures

	No	Yes	N
All Students	25%	75%	22,295
Chronic Absence			
No	22%	78%	18,028
Yes	38%	62%	3,993
In-School Suspension			
No	24%	76%	19,309
Yes	32%	68%	2,986
Out-of-School Suspension			
No	25%	75%	20,667
Yes	31%	69%	1,628

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.

Table A13.
Post-High School Plan by Selected Academic Measures (Fall after High School)

	Dropped out	Still in school	No college or work	Work only	College & work	College only	N
All Students	6%	12%	24%	12%	15%	31%	27,074
Composite Score							
Quartile 1	7%	20%	28%	17%	12%	16%	4,503
Quartile 2	2%	3%	27%	18%	20%	31%	4,919
Quartile 3	1%	1%	22%	12%	22%	42%	4,960
Quartile 4	0%	1%	15%	5%	17%	62%	4,994
Letter Grade							
F	31%	43%	15%	7%	1%	3%	1,504
D	11%	27%	27%	18%	7%	9%	1,579
C	4%	13%	31%	20%	13%	18%	4,141
B	1%	6%	25%	13%	18%	37%	13,981
A	0%	4%	18%	5%	17%	56%	4,132
No. College-Level Credits							
None	6%	16%	29%	17%	13%	20%	15,311
1-2	1%	4%	23%	12%	22%	39%	3,162
3-4	0%	1%	16%	6%	21%	56%	4,602
5+	*	*	13%	2%	14%	72%	2,262

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.

Table A14.
Level of College Enrollment by Selected Academic Measures (Fall after High School)

	No college	2-year or less	4-year	N
All Students	54%	15%	31%	27,074
Composite Score				
Quartile 1	72%	16%	12%	4,503
Quartile 2	49%	21%	30%	4,919
Quartile 3	36%	19%	45%	4,960
Quartile 4	20%	9%	71%	4,994
Letter Grade				
F	95%	3%	2%	1,504
D	84%	10%	6%	1,579
C	68%	16%	15%	4,141
B	45%	18%	37%	13,981
A	27%	11%	62%	4,132
No. College-Level Credits				
None	68%	17%	16%	15,311
1-2	40%	21%	40%	3,162
3-4	23%	13%	64%	4,602
5+	14%	3%	82%	2,262

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.

Table A15.
Control of College Enrollment by Selected Academic Measures (Fall after High School)

	No college	Public	Private not-for-profit or for-profit	N
All Students	54%	39%	7%	27,074
Composite Score				
Quartile 1	72%	27%	2%	4,503
Quartile 2	49%	48%	3%	4,919
Quartile 3	36%	57%	7%	4,960
Quartile 4	20%	58%	22%	4,994
Letter Grade				
F	95%	4%	0%	1,504
D	84%	15%	1%	1,579
C	68%	30%	2%	4,141
B	45%	48%	7%	13,981
A	27%	55%	18%	4,132
No. College-Level Credits				
None	68%	30%	2%	15,311
1-2	40%	54%	6%	3,162
3-4	23%	63%	14%	4,602
5+	14%	56%	30%	2,262

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.

Table A16.
Intensity of College Enrollment by Selected Academic Measures (Fall after High School)

	No college	Part-time	Full-time	N
All Students	56%	10%	34%	26,312
Composite Score				
Quartile 1	74%	12%	14%	4,383
Quartile 2	51%	14%	35%	4,703
Quartile 3	37%	12%	51%	4,797
Quartile 4	21%	6%	73%	4,862
Letter Grade				
F	96%	2%	2%	1,495
D	85%	7%	8%	1,555
C	71%	12%	18%	4,008
B	46%	12%	41%	13,520
A	28%	7%	65%	4,007
No. College-Level Credits				
None	70%	11%	19%	14,867
1-2	41%	13%	46%	3,055
3-4	24%	9%	67%	4,461
5+	15%	4%	81%	2,202

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.

Table A17.
First-Year Persistence by Selected Academic Measures

	Not enrolled in college in fall after high school	No longer enrolled in college	Enrolled at different college	Enrolled at same college	N
All Students	54%	7%	5%	33%	27,074
Composite Score					
Quartile 1	72%	8%	3%	17%	4,503
Quartile 2	49%	11%	6%	34%	4,919
Quartile 3	36%	9%	8%	46%	4,960
Quartile 4	20%	5%	8%	66%	4,994
Letter Grade					
F	95%	2%	1%	2%	1,504
D	84%	7%	1%	8%	1,579
C	68%	9%	5%	18%	4,141
B	45%	9%	7%	39%	13,981
A	27%	5%	7%	61%	4,132
No. College-Level Credits					
None	68%	8%	4%	20%	15,311
1-2	40%	10%	8%	42%	3,162
3-4	23%	7%	10%	60%	4,602
5+	14%	2%	8%	76%	2,262

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.

Table A18.
Enrollment within 6 Years of High School by Selected Academic Measures

	No	Yes	N
All Students	25%	75%	22,295
Composite Score			
Quartile 1	37%	63%	3,288
Quartile 2	25%	75%	4,702
Quartile 3	17%	83%	4,848
Quartile 4	8%	92%	4,938
Letter Grade			
F	53%	47%	392
D	45%	55%	965
C	36%	64%	3,421
B	23%	77%	13,058
A	12%	88%	3,961
No. College-Level Credits			
None	36%	64%	11,968
1-2	18%	82%	3,019
3-4	9%	91%	4,550
5+	5%	95%	2,260

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008.

Appendix B. Cross-Tabulations of College Completion Outcomes in HISD

Table B1.
Ever Completed College by Selected Demographic and Socioeconomic Measures

	No	Yes	N
All Students	69%	31%	22,295
Gender			
Male	74%	26%	10,379
Female	64%	36%	11,916
Race/Ethnicity			
White	41%	59%	3,354
Black	74%	26%	6,946
Hispanic	78%	22%	10,753
Asian	38%	62%	1,223
Economic Disadvantage			
Non-Disadv.	57%	43%	8,958
Disadv.	77%	23%	13,337

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008 who graduated from high school the following spring.
Note: Native American respondents are suppressed due to small sample size. Cells containing five or fewer students are masked.

Table B2.
Highest Degree Completed by Selected Demographic and Socioeconomic Measures

	No postsecondary credential	Certificate/ diploma	Associate's degree	Bachelor's degree	Master's/ doctorate/prof. degree	N
All Students	70%	2%	4%	23%	1%	21,959
Gender						
Male	75%	2%	3%	19%	1%	10,243
Female	65%	2%	5%	26%	1%	11,716
Race/Ethnicity						
White	42%	1%	3%	51%	3%	3,292
Black	75%	1%	3%	19%	1%	6,854
Hispanic	79%	2%	5%	13%	0%	10,589
Asian	39%	0%	5%	52%	4%	1,205
Economic Disadvantage						
Non-Disadv.	58%	2%	3%	35%	2%	8,818
Disadv.	78%	2%	5%	15%	1%	13,141

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008 who graduated from high school the following spring.
Note: Native American respondents are suppressed due to small sample size. Cells containing five or fewer students are masked.

Table B3.
Major Group from Highest Degree Completed by Selected Demographic and Socioeconomic Measures

	Computer and information sciences	Engineering and engineering technology	Biological, physical, and other natural sciences	General studies and other	Social sciences	Humanities	Health care fields	Business	Education	Other applied	N
All Students	2%	6%	10%	17%	14%	10%	7%	15%	1%	17%	6,476
Gender											
Male	3%	12%	12%	13%	11%	10%	3%	17%	1%	19%	2,491
Female	1%	3%	9%	19%	16%	10%	10%	14%	1%	17%	3,985
Race/Ethnicity											
White	2%	7%	11%	11%	17%	16%	4%	15%	2%	15%	1,868
Black	1%	4%	8%	14%	14%	7%	9%	15%	2%	25%	1,688
Hispanic	2%	6%	6%	25%	12%	8%	9%	14%	0%	17%	2,180
Asian	4%	11%	23%	12%	14%	6%	6%	18%	*	6%	729
Economic Disadvantage											
Non-Disadv.	2%	7%	12%	12%	16%	13%	5%	16%	1%	17%	3,632
Disadv.	2%	6%	8%	23%	13%	6%	10%	15%	1%	18%	2,844

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008 who graduated from high school the following spring and earned a postsecondary credential within 6 years of high school.
Note: Native American respondents are suppressed due to small sample size. Cells containing five or fewer students are masked.

Table B4.
Ever Completed College by Selected Behavioral Measures

	No	Yes	N
All Students	69%	31%	22,295
Chronic Absence			
No	65%	35%	18,028
Yes	86%	14%	3,993
In-School Suspension			
No	66%	34%	19,309
Yes	85%	15%	2,986
Out-of-School Suspension			
No	68%	32%	20,667
Yes	85%	15%	1,628

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008 who graduated from high school the following spring.

Table B5.
Highest Degree Completed by Selected Behavioral Measures

	No postsecondary credential	Certificate/ diploma	Associate's degree	Bachelor's degree	Master's/ doctorate/prof. degree	N
All Students	70%	2%	4%	23%	1%	21,959
Chronic Absence						
No	66%	2%	5%	27%	1%	17,740
Yes	87%	2%	3%	8%	0%	3,948
In-School Suspension						
No	67%	2%	4%	25%	1%	19,011
Yes	86%	2%	3%	8%	*	2,948
Out-of-School Suspension						
No	69%	2%	4%	24%	1%	20,348
Yes	85%	2%	3%	9%	0%	1,611

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008 who graduated from high school the following spring.

Table B6.
Major Group from Highest Degree Completed by Selected Behavioral Measures

	Computer and information sciences	Engineering and engineering technology	Biological, physical, and other natural sciences	General studies and other	Social sciences	Humanities	Health care fields	Business	Education	Other applied	N
All Students	2%	6%	10%	17%	14%	10%	7%	15%	1%	17%	6,476
Chronic Absence											
No	2%	7%	10%	16%	14%	10%	7%	15%	1%	17%	5,980
Yes	*	4%	7%	21%	12%	11%	14%	14%	*	17%	476
In-School Suspension											
No	2%	7%	10%	16%	15%	10%	7%	15%	1%	17%	6,084
Yes	1%	4%	5%	20%	9%	8%	13%	17%	*	22%	392
Out-of-School Suspension											
No	2%	6%	10%	16%	14%	10%	7%	15%	1%	17%	6,250
Yes	*	5%	5%	20%	11%	6%	13%	15%	*	23%	226

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008 who graduated from high school the following spring and earned a postsecondary credential within 6 years of high school.

Table B7.
Ever Completed College by Selected Academic Measures

	No	Yes	N
All Students	69%	31%	22,295
Composite Score	87%	13%	3,288
Quartile 1	77%	23%	4,702
Quartile 2	64%	36%	4,848
Quartile 3	38%	62%	4,938
Quartile 4			
Letter Grade			
F	94%	6%	392
D	94%	6%	965
C	89%	11%	3,421
B	69%	31%	13,058
A	39%	61%	3,961
No. College-Level Credits			
None	84%	16%	11,968
1-2	68%	32%	3,019
3-4	48%	52%	4,550
5+	25%	75%	2,260

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008 who graduated from high school the following spring.

Table B8.
Highest Degree Completed by Selected Academic Measures

	No postsecondary credential	Certificate/ diploma	Associate's degree	Bachelor's degree	Master's/ doctorate/prof. degree	N
All Students	70%	2%	4%	23%	1%	21,959
Composite Score						
Quartile 1	88%	3%	4%	6%	*	3,247
Quartile 2	78%	2%	5%	14%	0%	4,635
Quartile 3	65%	2%	6%	27%	1%	4,776
Quartile 4	39%	0%	3%	53%	4%	4,840
Letter Grade						
F	95%	*	2%	2%	*	388
D	95%	2%	2%	2%	*	955
C	90%	2%	3%	5%	*	3,373
B	70%	2%	5%	22%	1%	12,868
A	39%	1%	4%	52%	4%	3,881
No. College-Level Credits						
None	85%	2%	4%	8%	0%	11,810
1-2	69%	2%	6%	23%	1%	2,971
3-4	49%	1%	5%	43%	2%	4,462
5+	25%	0%	2%	67%	6%	2,222

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008 who graduated from high school the following spring.

Table B9.
Major Group from Highest Degree Completed by Selected Academic Measures

	Computer and information sciences	Engineering and engineering technology	Biological, physical, and other natural sciences	General studies and other	Social sciences	Humanities	Health care fields	Business	Education	Other applied	N
All Students	2%	6%	10%	17%	14%	10%	7%	15%	1%	17%	6,476
Composite Score											
Quartile 1	2%	3%	3%	28%	9%	3%	17%	13%	*	22%	384
Quartile 2	2%	2%	4%	24%	12%	5%	10%	15%	2%	25%	982
Quartile 3	1%	4%	6%	19%	15%	9%	8%	17%	1%	21%	1,655
Quartile 4	2%	10%	15%	10%	16%	14%	5%	15%	1%	12%	2,899
Letter Grade											
F	*	*	*	28%	*	*	*	*	*	33%	18
D	*	*	*	40%	*	*	17%	*	*	21%	48
C	2%	4%	6%	25%	11%	6%	13%	9%	*	25%	326
B	2%	5%	10%	18%	14%	9%	8%	15%	1%	19%	3,746
A	2%	9%	12%	13%	15%	13%	5%	16%	1%	14%	2,318
No. College-Level Credits											
None	2%	3%	5%	24%	9%	6%	12%	14%	1%	25%	1,666
1-2	2%	3%	6%	20%	12%	8%	8%	20%	1%	19%	907
3-4	1%	6%	8%	14%	17%	13%	6%	17%	1%	17%	2,243
5+	3%	13%	20%	10%	17%	12%	3%	12%	1%	9%	1,640

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008 who graduated from high school the following spring and earned a postsecondary credential within 6 years of high school.

Appendix C. Summary Statistics of Wages in HISD

Table C1.
Annual Wage by Highest Degree Completed

	Mean	N
No postsecondary credential	$ 27,889	7,404
Certificate/diploma	$ 31,670	253
Associate's degree	$ 29,319	553
Bachelor's degree	$ 41,367	2,662
Master's/doctorate/prof. degree	$ 52,961	135
Total	$ 31,615	11,007

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008 who graduated from high school the following spring and were in the Texas labor force during the second quarter of 2014–2016.

Table C2.
Annual Wage by Major Group

	Mean	N
No postsecondary credential	$ 27,889	7,404
Computer and information sciences	$ 47,753	67
Engineering and engineering technology	$ 63,103	208
Biological, physical, and other natural sciences	$ 36,332	281
General studies and other	$ 34,861	647
Social sciences	$ 32,925	457
Humanities	$ 35,213	282
Health care fields	$ 39,763	298
Business	$ 47,730	612
Education	$ 40,373	38
Other applied	$ 34,878	644
Total	$ 31,597	10,938

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016. Sample is limited to high school seniors in fall 2006–2008 who graduated from high school the following spring and were in the Texas labor force during the second quarter of 2014–2016.

Appendix D. Independent Variables

Variable	Description
Age	Continuous.
Age^2	Continuous.
Female	Binary.
Race/Ethnicity	Categorical: White (ref.), Black, Hispanic, Asian, and Native American. Statistics for Native Americans are suppressed due to small sample size.
Recent Immigrant	Binary: Immigrated to U.S. in past 3 years.
Limited English Proficient	Binary.
Special Education	Binary.
Economic Disadvantage	Binary: Eligible for free or reduced price lunch program or other federal poverty programs or living below the federal poverty line.
Attendance Rate	Continuous: Percentage of school days attended (reported in 10s).
In-School Suspension	Binary.
Out-of-School Suspension	Binary.
11th Grade Composite TAKS Score	Continuous: Average of reading, mathematics, social studies, and science test scores from the 11th grade Texas Assessment of Knowledge and Skills (TAKS). Reported in standard deviation units.
Exempt from TAKS	Binary: Students who were exempt from the 11th grade TAKS, primarily special education students.
Course Grades	Continuous: Average percentage grade among all courses taken in the senior year of high school (reported in 10s).
Failed a Course	Binary: Had a score below 69.5 in at least one course taken in 12th grade.
Career & Technical Education	Categorical: Not in CTE (ref.), In CTE Course, and In CTE Sequence/Program.
Number of College-Level Credits	Categorical: 0.0, 0.5–1.0, 1.5–3.0, and 3.5+. College-level courses include Advanced Placement (AP), International Baccalaureate (IB), and academic dual enrollment courses. Courses failed are not counted.
High School Graduation Program	Categorical: Minimum (ref.), Recommended, and Distinguished.
Cohort	Categorical: 2006–2007 (ref.), 2007–2008, 2008–2009.
School-Level Percent Economically Disadvantaged	Continuous: Percentage of economically disadvantaged (reported in 10s). Calculated by aggregating student data to the school level.
School-Level Percent Enrolled in College after High School	Continuous: Percentage of students enrolled in college immediately after high school graduation (reported in 10s). Calculated by dichotomizing the post-high school plan variable and aggregating to the school level.

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016.

Appendix E. Statistical Models

For Figures 2A–2D, we graph the relationships between ever enrolling in college and ever completing college by attendance, composite test scores, course grades, and college-level credits. These relationships are estimated using logistic regression models that predict each outcome as a function of each independent variable separately.

For the closing the gaps analysis, we estimate race/ethnicity and college-level credits gaps with and without control variables. We estimate multilevel logistic regression models of the following form:

Level-1

$$\text{logit}(P_{ij}) = \beta_{0j} + \sum_{q=1}^{q} \beta_{qj} X_{qij}$$

Level-2

$$\beta_{0j} = \gamma_{00} + \sum_{s=1}^{s} \gamma_{0s} W_{sj} + u_{0j}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\vdots$$

$$\beta_{qj} = \gamma_{q0}$$

where P_{ij} is a dichotomous indicator of enrolling in college or completing college within six years of high school graduation. The coefficient β_{0j} is a school-level random intercept and $\sum_{q=1}^{q} \beta_{qj} X_{qij}$ is a vector of student-level covariates, including the key predictors of interest, race/ethnicity and the number of college-level credits earned. Each school-level intercept is modeled as a function of school-level covariates $\sum_{s=1}^{s} \gamma_{0s} W_{sj}$ and a normally-distributed error term u_{0j}.

We first estimate multilevel logistic regression models controlling for 1) race/ethnicity and 2) the number of college-level credits earned. These estimates may be interpreted as the raw gap. Next, we estimate models with the full set of student- and school-level covariates; these estimates may be interpreted as an adjusted gap. After each regression, we use Stata's margins command to calculate raw and adjusted gaps.

Appendix F. Multilevel Logistic Regression Model Results

Table F1.
Multilevel Logistic Regression Model Predicting Ever Enrolling in College

	Odds Ratio	S.E.	
Level 1—Individual Characteristics			
Age	1.39	(0.43)	
Age^2	0.94	(0.03)	*
Female	1.03	(0.05)	
Race/Ethnicity (ref. = White)			
Black	1.64	(0.16)	***
Hispanic	0.64	(0.05)	***
Asian	1.41	(0.30)	
Recent Immigrant	1.72	(0.34)	**
Limited English Proficient	0.52	(0.05)	***
Special Education	0.57	(0.14)	*
Economically Disadvantaged	0.75	(0.04)	***
Attendance Rate (in 10s)	1.03	(0.05)	
In-School Suspension	1.01	(0.03)	
Out-of-School Suspension	1.08	(0.08)	
11th Grade Composite TAKS Score	1.25	(0.07)	***
Exempt from TAKS	0.94	(0.23)	
Course Grades (in 10s)	1.38	(0.09)	***
Failed a Course	0.97	(0.05)	
Career & Technical Education (ref. = Not in CTE)			
In CTE Course	1.10	(0.07)	
In CTE Sequence/Program	1.21	(0.08)	**
No. College-Level Credits (ref. = 0.0)			
0.5–1.0	1.53	(0.09)	***
1.5–3.0	2.59	(0.22)	***
3.5+	2.82	(0.39)	***
High School Graduation Program (ref. = Minimum)			
Recommended	1.56	(0.12)	***
Distinguished	1.21	(0.20)	
Cohort (ref. = 2006–2007)			
2007–2008	0.95	(0.05)	
2008–2009	1.09	(0.10)	
Level 2—School Characteristics			
% Economically Disadvantaged (in 10s)	1.02	(0.04)	
% Enrolled in College after High School (in 10s)	1.24	(0.06)	***
Intercept	0.03	(0.03)	***
School-Level Variance	1.14	(0.12)	
N	22,295		

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016.
Note: Sample is limited to high school seniors in fall 2006–2008 who graduated from high school the following spring. Native American coefficient is suppressed due to small sample size.
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table F2.
Multilevel Logistic Regression Model Predicting Ever Completing College

	Odds Ratio	S.E.	
Level 1—Individual Characteristics			
Age	1.41	(0.31)	
Age^2	0.95	(0.02)	*
Female	1.35	(0.07)	***
Race/Ethnicity (ref. = White)			
Black	0.89	(0.05)	+
Hispanic	0.67	(0.06)	***
Asian	0.99	(0.11)	
Recent Immigrant	2.06	(0.36)	***
Limited English Proficient	0.55	(0.07)	***
Special Education	0.92	(0.23)	
Economically Disadvantaged	0.84	(0.04)	***
Attendance Rate (in 10s)	1.34	(0.07)	***
In-School Suspension	0.85	(0.05)	**
Out-of-School Suspension	0.99	(0.09)	
11th Grade Composite TAKS Score	1.17	(0.06)	**
Exempt from TAKS	0.75	(0.18)	
Course Grades (in 10s)	2.67	(0.21)	***
Failed a Course	0.94	(0.04)	
Career & Technical Education (ref. = Not in CTE)			
In CTE Course	1.02	(0.05)	
In CTE Sequence/Program	1.06	(0.05)	
No. College-Level Credits (ref. = 0.0)			
0.5–1.0	1.54	(0.09)	***
1.5–3.0	2.49	(0.18)	***
3.5+	3.40	(0.29)	***
High School Graduation Program (ref. = Minimum)			
Recommended	1.63	(0.15)	***
Distinguished	2.36	(0.33)	***
Cohort (ref. = 2006–2007)			
2007–2008	1.04	(0.06)	
2008–2009	1.09	(0.07)	
Level 2—School Characteristics			
% Economically Disadvantaged (in 10s)	0.93	(0.04)	+
% Enrolled in College after High School (in 10s)	1.13	(0.04)	**
Intercept	0.00	(0.00)	***
School-Level Variance	1.08	(0.02)	***
N	22,295		

Source: Houston Education Research Consortium (HERC) Longitudinal Database, 2006–2016.
Note: Sample is limited to high school seniors in fall 2006–2008 who graduated from high school the following spring. Native American coefficient is suppressed due to small sample size.
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Appendix G. American Community Survey (ACS) Statistics

The analyses presented in this report are limited to students in HISD and cannot provide information on students in Harris County or the Houston metropolitan area. HISD and Houston Endowment are keenly interested in state and regional analyses. State and regional analyses are ongoing.

In the meantime, we used data from the American Community Survey (ACS), 5 Percent Sample, 2011–2015. The ACS is a nationally-representative survey administered by the U.S. Census Bureau. These data were used to provide a snapshot of college enrollment, educational attainment, and annual income for individuals living in the region. Although the ACS is useful, it is cross-sectional, not longitudinal, and does not permit us to trace student pathways from high school to and through college or examine heterogeneity by socioeconomic, behavioral, or academic characteristics. **The statistics presented in this appendix should, therefore, not be compared to statistics presented in the main body of the report.** Since the ACS data were a random sample of five percent of the U.S. population, we used the survey weights to calculate representative estimates.

Using the ACS data, college enrollment and educational attainment are shown by gender and race/ethnicity. We also examine income by the level of education and major group. We classify the 171 majors available into the 10 groups shown in Table 1—the same categories used in the district-level analysis. One important limitation of the ACS data is that majors are available for bachelor's degree recipients only.

Table G1 shows that in the Houston metropolitan area,[16] 36 percent of high school graduates 18–24 years old were enrolled in college. Females had higher enrollment rates than males and whites and Asians had higher enrollment rates than blacks and Hispanics. Interestingly, whites and blacks in the city of Houston had higher enrollment rates than they did in the metropolitan area and Harris County, while Asians had lower enrollment rates.

Table G2 shows that the majority of adults 25–34 in the region attained some level of postsecondary education: only 38 percent of individuals in the metropolitan area had a high school education or less. There were slightly higher rates of completing some college or more in Harris County and the city of Houston, and nearly one-third of adults had a bachelor's degree or higher. Like the college enrollment patterns, females had higher levels of educational attainment than males. Racial/ethnic differences in educational attainment were quite stark. Of note was the low level of education among Hispanics. In all three jurisdictions, a slight plurality had less than a high school education. In Harris County, only 13 percent of Hispanics had a bachelor's degree or higher.

The low rates of educational attainment among Hispanic and black adults were concerning given that earning a college degree appeared to pay off in the labor market. Table G3 shows that in Harris County, the average income for high school graduates was $22,325. Individuals who completed a bachelor's degree earned more than double that amount, $49,270. There were also differences in earnings among bachelor's degree recipients by college major group. In Harris County, the highest-paid adults completed a degree in engineering and, on average, earned $77,462 per year. This is not surprising given the strong energy sector in Southeast Texas. Other high-paying majors included computer science, biological and physical science, and business.

16 The Houston metropolitan area includes the following counties: Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller.

Table G1.
College Enrollment by Selected Demographic Measures

Gender									
Houston Metro				Harris County				City of Houston		
Male	33%	10,733		Male	32%	7,822		Male	35%	846
Female	40%	10,083		Female	40%	7,473		Female	38%	793
Race/Ethnicity									
Houston Metro				Harris County				City of Houston		
White	39%	6,585		White	41%	3,946		White	51%	357
Black	37%	3,606		Black	36%	2,850		Black	42%	383
Hispanic	29%	8,644		Hispanic	29%	7,051		Hispanic	26%	762
Asian	65%	1,541		Asian	63%	1,137		Asian	55%	112
Total									
Houston Metro				Harris County				City of Houston		
Total	36%	20,816		Total	36%	15,295		Total	36%	1,639

Source: American Community Survey (ACS), 5 Percent Sample, 2011–2015.
Note: Sample limited to high school graduates ages 18–24. Statistics adjusted using the sampling weight PERWT. City of Houston estimates for 2011 only.

Table G2.
College Completion by Selected Demographic Measures

Gender									
Houston Metro				Harris County				City of Houston		
Male				**Male**				**Male**		
Less than HS	18%			Less than HS	19%			Less than HS	25%	
HS	26%			HS	26%			HS	22%	
Some College	22%			Some College	22%			Some College	20%	
AA	6%			AA	6%			AA	6%	
BA	19%			BA	18%			BA	17%	
MA	6%			MA	6%			MA	6%	
Prof/Doc	3%			Prof/Doc	3%			Prof/Doc	4%	
N	16,014			N	12,092			N	1,244	
Female				**Female**				**Female**		
Less than HS	13%			Less than HS	14%			Less than HS	21%	
HS	21%			HS	21%			HS	18%	
Some College	24%			Some College	24%			Some College	21%	
AA	7%			AA	7%			AA	6%	
BA	25%			BA	24%			BA	23%	
MA	8%			MA	8%			MA	7%	
Prof/Doc	3%			Prof/Doc	3%			Prof/Doc	4%	
N	16,586			N	12,282			N	1,223	

Race/Ethnicity

Houston Metro		Harris County		City of Houston	
White		**White**		**White**	
Less than HS	4%	Less than HS	4%	Less than HS	4%
HS	18%	HS	15%	HS	10%
Some College	25%	Some College	22%	Some College	20%
AA	8%	AA	7%	AA	6%
BA	32%	BA	36%	BA	41%
MA	9%	MA	11%	MA	11%
Prof/Doc	4%	Prof/Doc	5%	Prof/Doc	9%
N	12,139	N	7,988	N	709
Black		**Black**		**Black**	
Less than HS	6%	Less than HS	6%	Less than HS	9%
HS	24%	HS	25%	HS	23%
Some College	34%	Some College	36%	Some College	38%
AA	7%	AA	8%	AA	7%
BA	21%	BA	20%	BA	18%
MA	6%	MA	5%	MA	3%
Prof/Doc	1%	Prof/Doc	1%	Prof/Doc	2%
N	4,724	N	3,718	N	431
Hispanic		**Hispanic**		**Hispanic**	
Less than HS	31%	Less than HS	32%	Less than HS	41%
HS	30%	HS	31%	HS	27%
Some College	20%	Some College	19%	Some College	15%
AA	6%	AA	5%	AA	4%
BA	11%	BA	10%	BA	9%
MA	2%	MA	2%	MA	3%
Prof/Doc	1%	Prof/Doc	1%	Prof/Doc	1%
N	12,452	N	10,249	N	1,102
Asian		**Asian**		**Asian**	
Less than HS	5%	Less than HS	5%	Less than HS	7%
HS	10%	HS	10%	HS	7%
Some College	13%	Some College	13%	Some College	12%
AA	6%	AA	6%	AA	10%
BA	36%	BA	35%	BA	26%
MA	21%	MA	22%	MA	21%
Prof/Doc	9%	Prof/Doc	9%	Prof/Doc	16%
N	2,737	N	2,013	N	184

Total

Houston Metro		Harris County		City of Houston	
Less than HS	15%	Less than HS	17%	Less than HS	23%
HS	23%	HS	24%	HS	20%
Some College	23%	Some College	23%	Some College	20%
AA	7%	AA	7%	AA	6%
BA	22%	BA	21%	BA	20%
MA	7%	MA	7%	MA	7%
Prof/Doc	3%	Prof/Doc	3%	Prof/Doc	4%
N	32,600	N	24,374	N	2,467

Source: American Community Survey (ACS), 5 Percent Sample, 2011–2015.
Note: Sample limited to adults ages 25–34. Statistics adjusted using the sampling weight PERWT. City of Houston estimates for 2011 only.

Table G3.
Income by Educational Attainment and Field of Study

Educational Attainment									
Houston Metro			**Harris County**			**City of Houston**		
Less than HS	$ 16,507	4,856	Less than HS	$ 16,513	3,836	Less than HS	$ 15,323	516
HS	$ 23,030	7,162	HS	$ 22,325	5,285	HS	$ 19,594	492
Some College	$ 29,328	7,065	Some College	$ 27,837	5,099	Some College	$ 24,426	456
AA	$ 33,238	2,188	AA	$ 31,502	1,562	AA	$ 26,799	126
BA	$ 49,364	7,683	BA	$ 49,270	5,737	BA	$ 51,900	552
MA	$ 61,289	2,525	MA	$ 62,264	1,978	MA	$ 68,079	198
Prof/Doc	$ 78,498	1,121	Prof/Doc	$ 78,790	877	Prof/Doc	$ 97,485	127
Total	$ 33,940	32,600	Total	$ 33,075	24,374	Total	$ 32,760	2,467

Major Group (Bachelor's Degree Recipients Only)								
Houston Metro			**Harris County**			**City of Houston**		
Computer and information sciences	$ 57,603	356	Computer and information sciences	$ 54,169	286	Computer and information sciences	$ 54,156	27
Engineering and engineering technologies	$ 79,588	1,521	Engineering and engineering technologies	$ 77,462	1,196	Engineering and engineering technologies	$ 79,204	115
Biological and physical sciences, science technology, mathematics, and agricultural sciences	$ 53,184	1,474	Biological and physical sciences, science technology, mathematics, and agricultural sciences	$ 53,315	1,108	Biological and physical sciences, science technology, mathematics, and agricultural sciences	$ 54,607	125
General studies and other	$ 40,410	305	General studies and other	$ 39,502	216	General studies and other	$ 49,680	23
Social sciences	$ 52,581	1,290	Social sciences	$ 55,384	1,009	Social sciences	$ 69,077	107
Humanities	$ 39,522	937	Humanities	$ 39,679	752	Humanities	$ 41,341	76
Health care fields	$ 51,498	681	Health care fields	$ 52,179	469	Health care fields	$ 76,423	42
Business	$ 57,429	2,680	Business	$ 58,046	2,033	Business	$ 67,025	238
Education	$ 36,846	777	Education	$ 38,231	548	Education	$ 40,783	37
Other applied	$ 47,701	1,308	Other applied	$ 48,186	975	Other applied	$ 46,681	87
Total	$ 54,390	11,329	Total	$ 54,664	8,592	Total	$ 61,304	877

Source: American Community Survey (ACS), 5 Percent Sample, 2011–2015.
Note: Sample limited to adults ages 25–34. Statistics adjusted using the sampling weight PERWT. City of Houston estimates for 2011 only.

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