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High School College-Conduciveness and Its Association with the Top Ten Percent Students' Academic Profiles

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High school college-conducive resources shape students' college readiness, which may explain the relative disadvantage racialized minority and low-income students face in accessing selective universities. Texas Top Ten Percent Plan (TTP) aims to bridge this gap by conditioning admission on class rank, which accounts for between-school differences. However, under policy complementarity theory, benefits from TTP may be diluted if schools drastically differ. Using state-administrative data, I examine college-conducive resources across high schools feeding into Texas's two most selective public universities. I find that high schools' college-conducive resources predict students' baseline position in college, with important implications for their college trajectories.

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Abstract

High school college-conducive resources shape students' college readiness, which may explain the relative disadvantage racialized minority and low-income students face in accessing selective universities. Texas Top Ten Percent Plan (TTP) aims to bridge this gap by conditioning admission on class rank, which accounts for between-school differences. However, under policy complementarity theory, benefits from TTP may be diluted if schools drastically differ. Using state-administrative data, I examine college-conducive resources across high schools feeding into Texas's two most selective public universities. I find that high schools' college-conducive resources predict students' baseline position in college, with important implications for their college trajectories.

Keywords: Texas Top Percent Plan, College-conducive Resources, College readiness, Policy Complementarity theory.

Introduction

Postsecondary education acts as a primary means to socioeconomic mobility (Ma et al., 2016; Thompson, 2019). The returns to a college degree are larger for low-income students than for their peers, especially for those attending prestigious institutions (Strohl et al., 2024). Yet access to selective universities remains limited. In Texas, college access policies like the Texas Top Ten Percent Plan (TTP) aim to reduce the access gap by enabling students from lower-resourced schools to attend any state public university, including the most competitive, state flagships: The University of Texas at Austin (UT Austin)[1] and Texas A&M University (TAMU) (Domina, 2007). These colleges offer greater instructional support and student services aimed at improving student retention and college completion (Andrews et al., 2020).

Per policy complementarity theory, policies are more effective when favorable preconditions exist, implying the gains from investment in postsecondary education depend on schooling conditions (Ahsan et al., 2024; Mbiti et al., 2019). In other words, TTP may act as a necessary policy lever in creating a level playing field in college admissions. Whether it suffices in equating college outcomes depends on policy-pull factors—schooling resources—that shape students' college readiness (Black et al., 2015; Flores & Horn, 2016). Texas schools are chronically underfunded, with funding disparities across schools that result in suboptimal preconditions for the TTP-like access policies.

The funding disparity reflects in high schools' (HS) college-conduciveness: course offerings and curriculum rigor, teacher quality, and college-going culture (Black et al., 2015; Tienda & Niu, 2006). As underfunded schools struggle to hire qualified and experienced teachers, their math, science, Advanced Placement (AP), and Dual Credit (DC) course offerings—traditionally linked to college success—are fewer than those of better-funded schools (Blankenberger et al., 2017; Xu et al., 2021). Students from such schools look less college-ready and have lower acceptance rates into prestigious universities (Black et al., 2015; Strohl et al., 2024). Even though the TTP breaks this barrier, students' college major may still

[1] By 2002, UT Austin was capacity-constrained under the TTP. Consequently, they lower automatic admission (AA) threshold annually. As of 2022, UT Austin could automatically admit top 6% (Office of the Executive Vice President and Provost, 2023). The AA applies for 75% of university seats and the remainder are allocated through holistic review, that enrolled students within top 11% in fall 2024 (Kepner, 2024).

be correlated with their HS-exit profile. Additionally, lower-resourced HSs have fewer counselors guiding students on the college application process and enrichment opportunities enhancing college readiness (Frost, 2005). Students from HSs with fewer college-conducive resources (CCR) have limited access to test preparation resources. Therefore, even top-decile graduates from low-resource HSs—those eligible to attend the state flagships—may look academically distinct from their higher-resourced HS counterparts.

Once ranked highly in their respective HSs, low-resource HS students who enter the flagship may see their academic profiles fall below the college-cohort average because of limited resources and opportunities at their HS (Fletcher & Tienda, 2010; Harris & Tienda, 2010). A change in relative position within one's class can lower academic self-concept and, in turn, college performance (Goldsmith, 2011; Marsh, 1987). Consequently, disparate HS CCR may minimize gains from college-access policies like the TTP. Because HS resources set the preconditions for college-access policies to succeed, identifying whether and how school resources predict flagship-university feeding patterns and TTP students' baseline profiles can improve policy timing, design, and efficacy.

To understand variation in CCR across schools and how HS CCR predicts TTP students' college readiness and academic profiles at public flagships, I ask the following research questions (RQs):

1. Do the feeder high schools vary in their college-conducive resources? If so, how are the resource differences related to school demographics and locale?
2. How do the resource differences translate to schools' sending patterns (i.e., annual sending probability and dosage)? Do the relations differ between the two flagship universities?
3. Among the top decile of high school graduates attending flagship universities, do differences in schools' college-conduciveness manifest through students' relative class standing and university major?

Researchers have examined TTP since its enactment in 1998. Evidence illustrates shifts in application behavior (Black et al., 2020; Niu & Tienda, 2008), demographic composition of selective colleges—mostly in the first decade of TTP (Long & Tienda, 2008; Niu & Tienda, 2010), and postsecondary outcomes across demographic groups (Harris & Tienda, 2010; Niu & Tienda, 2010). More recently, researchers documented strategic housing choice responses to TTP (Cullen et al., 2013; Fiel, 2022). However, there has not been, to my knowledge, a comprehensive classification of feeder HSs and the implications of their resources for TTP-admitted college students.

At best, existing studies evaluate college outcomes and attribute observed differences to HS-level factors without directly quantifying the specific or combination of HS factors and their relative contributions to explaining differential outcomes. In contrast, I directly quantify the various dimensions of HS college-conduciveness (AP, DC, math, and science offerings; teacher experience and qualification-subject-taught alignment; counselor caseload, SAT uptake, and HS SAT mean) and summarize them into a cohesive and comprehensive measure. By tying these literature-backed elements into one construct, this study defines the set of school resources that matter for college success. Additionally, it ranks the relative importance of resource types (e.g., how much an extra AP course as opposed to an additional counselor, or a bridge program as opposed to an experienced teacher relates to college success), that school leaders and policymakers can utilize when deciding between competing needs. Additionally, I examine how these factors evolve over time, identifying a previously missing yet important school-level response to TTP.

Then I quantify the association between HS CCR and flagship feeder patterns (i.e., how frequently and how many students each feeder school sends). This is important for flagship attendees' college experience since a greater HS presence helps locate peer matches that facilitate better resource navigation at flagships. Additionally, greater presence and frequent interactions inform college personnel about effective practices that ease flagship transition. Finally, I use the school's college-conduciveness to predict students' relative position in college and their major, since these serve as stepping stones that correlate with subsequent college outcomes and life opportunities upon graduation. The closest to my analysis is Klasik and Cortes (2022), who analyzed HS differences in pre-post TTP sending behavior; associations with demographics and SAT scores; and how these factors changed post-policy. Using Texas Education Research Center (TERC) data, I find that CCR varies widely across Texas HSs, which predicts school feeder patterns and students' relative position in flagships. The relationship between students' relative position at their college varies little across the flagships and matters less for students' major.

Literature Review

College-Conducive High School Resources

Various factors contribute to college enrollment decisions and subsequent outcomes, including student preparation, family and community context, and HS- and college-level factors (Adelman, 2006). College-conducive HS resources encompass the set of curricular, instructional, and support factors that prepare students for college-level courses, and create a guided pathway for seamless HS-to-college transition. These broad resources include instruction by quality teachers; a rigorous curriculum reflected in the availability of advanced courses and college acceleration programs (Black et al., 2015; Flores et al., 2017); and a demonstrated college-going culture through ample counselor support and preparatory practices, captured by SAT/ACT uptake and performance (Oseguera, 2013). College-conduciveness is a function of financial resources, and, due to residential segregation, schools' demographic composition and locale are correlated with the availability and quality of CCR (Baker et al., 2014; Gamoran & An, 2016).

Financial Resources: The Entanglement of School Finance and School Quality in Texas

Texas schools are primarily funded through local property taxes supplemented by limited state support. Each school receives an annual *basic allotment* of $6,140 per student—an amount $4,000 below the national average, placing it among the ten least funded K-12 systems (ECS, 2024; Sikes, 2022). Schools serving low-income, emergent-bilingual, and special-needs students receive supplementary *tier I* funding. Schools can also collect enrichment funds by raising property tax rates by 17% over the existing state rate, regardless of neighborhood property value. As property values vary substantially by neighborhoods, schools in lower-income neighborhoods can raise significantly less money even with the same tax effort under this uniform fundraising formula.

Consequently, Texas entails the seventh largest expenditure gap between the highest and lowest poverty schools, an annual gap of over $1,000 per pupil (Baker et al., 2014). The highest quartile minority districts receive $1,800 less state money per student than the lowest quartile districts (Morgan & Amerikaner, 2018). Educating these students as well as their more privileged peers would cost almost double, considering their familial and social disadvantages (Duncombe & Yinger, 2005). The inequitable funding structure further lowers their chances of succeeding. Similarly, rural schools face isolation and diseconomies of scale, factors that state funding formula fails to account for (Ladner & Bedrick, 2023; NREA, 2023). Despite having the largest rural student population in the nation and one-fourth of school districts classified as rural, Texas allocates merely 15% of state funding to rural districts. This amounts to an instructional funding of $5,999 per student as opposed to a national average of $7,174 per rural student. Consequently, rural schools, high-poverty schools, and high-minority schools have fewer CCR.

Teacher Quality

Good teachers are a prerequisite for effective learning and a key part in the HS-to-college transition (Jennings et al., 2015). Not all students have access and continued exposure to qualified teachers, due to the teacher wage penalty (Allegretto, 2023), and difficult working conditions coupled with structural issues like accountability standards that unfairly punish teachers serving underprivileged schools (Holme et al., 2018). Consequently, high-poverty, high-minority, and rural schools face hiring challenges and are twice as likely to provide instruction by novice teachers (Peske & Haycock, 2006), especially in STEM subjects (Carver-Thomas & Darling-Hammond, 2019).

Additionally, 33% of core classes in high-minority, high-poverty schools are taught by out-of-field teachers—those who did not major or minor in the subject they are teaching, which demonstrates content knowledge—as compared to 20% in low-poverty, low-minority schools (Peske & Haycock, 2006). Almost half of the math classes in high-poverty schools are taught by out-of-field teachers. Even though teacher credentials affect student achievement, and more so in math, minoritized school students are shortchanged into lower achievement through lower-quality teachers (Clotfelter et al., 2007). Overall, teacher quality and stability concerns arising from disparate funding and structural issues can greatly undermine students' college preparation, and high-poverty and high-minority schools are plagued with these issues, hurting students' chances of success (Baker et al., 2014; Bernell, 2021; Holme et al., 2018).

Curricular Rigor, Advanced Courses, and College Acceleration Programs

HS curricular rigor, as reflected in course offerings, is the single largest factor explaining college completion (Adelman, 2006). Alongside school demographics, two other factors govern HS curricular intensity. First, high-poverty, high-minority, and rural schools are less likely to attract and retain quality teachers (Baker et al., 2014) and serve a more heterogeneous student pool than affluent schools (Lee et al., 2017). Consequently, the former's language, math, and science course offerings and content are adjusted for the average student, where essential math, science, and writing skills and content required to advance in college are less accessible at minority-serving and high-poverty schools. For example, Latino majority schools are less likely to offer any trigonometry or calculus classes, and high-poverty schools are less likely to offer any math course beyond Algebra II, compared with affluent schools (Adelman, 2006).

The same logistical constraints govern the availability of college acceleration programs. College acceleration programs are primarily classified into two categories: Advanced Placement (AP) courses that can be used to waive college courses, and Dual Credit (DC) courses that simultaneously earn HS and college credits (Reyes et al., 2016). College-acceleration programs advantage students in the application process by signaling better readiness (Hemelt et al., 2019), yielding larger gains for low-income students and students of color (Taylor, 2013). However, AP and DC offerings remain unequal across HSs—notably by SES and locale (Xu et al., 2021). A U.S. Government Accountability Office report suggested high-poverty schools had limited college acceleration courses, lacking advanced math and science courses that colleges prefer in applicant profiles (US GAO, 2018). Thereby, high-poverty, high-minority, and rural HS students' college applications look inferior despite class offerings being beyond their control.

College-going Culture

The college application process involves many informational and financial intricacies that can be onerous for all, especially the minority and first-generation students (Dynarski et al., 2022). HS counselors play a pivotal role by assisting students in overcoming this barrier (Brown & Knight, 2023; Frost, 2005). Aside from advising students on the college applications process (e.g., essay writing, funding opportunities), advisors guide students with HS course-mapping and extracurricular activities that enrich student profiles (Oseguera, 2013). However, high-poverty and high-minority HSs are more likely to employ fewer counselors, resulting in higher caseloads (Gagnon & Mattingly, 2016; Perna et al., 2008). Consequently, students lack college preparation-related guidance and support, academically undermatching (Lee et al., 2017), missing the opportunities they automatically qualify for (Koffman & Tienda, 2008), or end up not applying for any postsecondary education (Bernell, 2021).

A school's college-going culture—exhibited through SAT uptake and performance, and past placement records—is an important predictor of future student applications (Person & Rosenbaum, 2006), and counselors disseminate this information, allowing students to construct a well-suited college choice set (Cumpton & Giani, 2014). Moreover, having a peer network in college allows assessing fit, understanding the application process, and cultivating a sense of security—a crucial factor for minority students (Oseguera, 2013). College-going culture and feeder patterns vary significantly by HS locale and demographics (Roderick et al., 2011). Rural students have the highest HS graduation rate, but are the least likely to apply and enroll in flagships (Hoxby et al., 2006). Distance to the flagship universities may explain their under-enrollment, but the absence of coaching and an illustrated history of sending students successfully to universities may also contribute (Bernell, 2021). Similarly, high-poverty, high-minority HS students are underrepresented in postsecondary education (Lee et al., 2017; Roderick et al., 2011). These students lack the community support required to navigate college access- and success-related hidden curriculum. Therefore, they rely heavily on school-based college guidance resources, and CCR gaps across HSs play an important role in students' college outcomes (Flores et al., 2017; Knox, 2023).

Conceptual Framework

Based on extant evidence, the availability and quality of college-conducive resources vary across HSs. Although many researchers discretely illustrate how one or more CCR-related factors predict college success, the literature lacks a holistic measure to reflect how CCR's correlates with college performance. In this study, driven by my review of the literature, I combine these factors—course availability, rigor, and college acceleration programs; teacher quality; college-going culture—to build a holistic construct—a CCR composite measure—relevant to college readiness.

To further understand how HS resource differences can lead to heterogeneous student gains from the TTP, I also consider HS contexts relevant to *policy complementarity* theory. The theory suggests that policy gains are larger when favorable preconditions are present (Aoki, 2001)—such as higher CCR. The education literature focuses on this model's human capital formation aspect, which predicts, early investments raise the productivity of later ones. This implies, early educational interventions supporting cognitive development build a strong learning foundation, which allows students to learn faster and more effectively. With that foundation, any later learning intervention adds greater value than in the absence of the earlier intervention. For example, children exposed to the Head Start Program (HSP) showed larger gains from attending better-funded schools than those not exposed to the HSP—the early intervention built momentum for the later intervention's success—whereas HSP students at inadequately funded schools exhibited an erasure of the earlier intervention's benefit (Johnson & Jackson, 2019).

Within the policy complementarity framework, HS financial and physical resources conducive to college are an important precondition for the TTP to act as an opportunity equalizer. TTP as a college access policy can only attenuate the resource disparity in early life (e.g., family) when their HSs provide adequate preparation for college-level coursework. Therefore, HS CCR—captured through access to college acceleration programs (AP/IB and DC courses); math courses including algebra-II and above, calculus, and statistics (Adelman, 2006); quality teaching; and strong guidance on school course-taking timing and sequence, and navigating the college admission and funding applications (Lee et al., 2017)—serves as a favorable precondition for college success under TTP admission.

Although research has not explicitly linked CCR and policy complementarity to TTP outcomes, some studies considered the link between TTP and compositions of both sending HSs and receiving universities. Flagship student compositions changed little soon after TTP enactment—racially minoritized and low-income students enrolled at lower rates than White and Asian students, echoing the pre-TTP year trends (Domina, 2007; Tienda & Niu, 2006). Although the enrollment gap narrowed in the second TTP decade, lower-resource HS students came with fewer college-level courses and lower SAT scores (Black et al., 2015). This preparatory gap translated to lower GPA and retention rates among those students (Black et al., 2020; Niu & Tienda, 2013), suggesting that college outcomes at higher-resource universities under the TTP still rely on HS college-conduciveness. Notably, HS demographics, feeder pattern, and

SAT scores changed—HS CCR appeared to increase post-TTP, at least to some extent (Klasik & Cortes, 2022). I analyze whether CCR expansion accompanies a narrowing or widening of HS-level differences.

State Context

Nationally, Texas educates the second-highest number of school-aged children, playing a vital role in future workforce preparation (Hanson, 2024). Recognizing this potential, the state invests $29,900 per college student, closely aligning with the national median. The potential could be further leveraged, and postsecondary education costs could be lowered through better schooling that boosts their college and career readiness. However, the average Texas school student receives one of the lowest annual allocations of $14,260. Such underinvestment in schooling creates pipeline leakage when many students have limited access to college readiness resources, diluting TTP-like well-intentional college access policies.

On top of this underinvestment, Texas schools, primarily funded through property taxes, are highly inequitable (Sikes, 2022). Due to residential segregation, high-poverty and high-minority schools are severely underfunded (Baker et al., 2014; Gamoran & An, 2016). The highest quartile minority schools—those where at least 75% of students are non-White—receive $1,800 less per student annually than the lowest minority quartile schools. Similarly, schools in the highest quartile of low-income students receive at least $1,000 less per student than their lowest quartile counterparts. One-fourth of the state school districts classified as rural are chronically underfunded (NREA, 2023).

On the postsecondary side, Texas is home to six distinct public university systems varying in size and mission: Texas A&M, Texas State, Texas Tech, University of Houston, University of North Texas, and University of Texas. Among these, UT Austin and Texas A&M University—the flagships of the UT and Texas A&M systems, respectively—are the only two state public universities considered highly selective in Barron's competitiveness index (Hoxby & Avery, 2013). These universities receive a high volume of applications and historically enroll students with high GPAs and SAT scores (Niu & Tienda, 2010b). Both have instructional and student-service resources that elevate the college experiences, which may contribute to their roles in improving students' college and labor market outcomes (Andrews et al., 2020). Due to capacity constraints, both flagships' admission decisions are largely tied to TTP.

Methods

Data and Sample

For this research, I utilized Texas Education Research Center (TERC) data for the years 2000-2023. TERC is a statewide clearinghouse for student-level K-12 (Texas Education Agency [TEA]), postsecondary (Texas Higher Education Coordinating Board [THECB]), and labor market data (Texas Workforce Commission [TWC]). I supplemented the TERC data with Texas Academic Performance Reports (TAPR) and the National Center for Education Statistics (NCES) geographic locale data.

To create the analytic samples, I identified flagship enrollees between 2000-2023 using institution codes and acceptance status from THECB application files. I delimited the sample to students admitted to a bachelor's program in the fall term as first-time in college, and marked as top 10%, capturing those admitted through TTP. I matched the students with HS graduation files, which served two purposes. It enabled identifying the feeder HS sample, consisting of 27,265 HS-by-year observations relevant to RQs 1 and 2 ($N_{2000} = 952$, $N_{2023} = 1418$), and linking HSs to State Board of Education Certification (SBEC), TAPR, and NCES data containing teacher, testing, and demographic information. Additionally, linking the flagship enrollees with various HS files enabled me to construct enrollees' HS-exit profiles, as described further below. This resulted in 321,342 student-level observations relevant for RQ3.

Variable Construction and Definition

Dependent Variables

Following the extant literature on CCR under the policy complementarity framework, I leveraged the HS-by-year level sample to address RQ1. I quantified the variation in feeder HSs' CCR using a three-component index: course offerings/curriculum rigor, college acceleration program, teacher quality, and college-going culture. As described below, I assigned HSs to quintiles for each dimension and took the average to construct the holistic CCR quintile. I classified HSs into five groups, as this classification captures the feeder HS resource distribution appropriately. The first quintile (Q1) indicates CCR scarce, and the fifth quintile (Q5) indicates CCR dense schools.

For course offerings and college acceleration program, I utilized the feeder HS sample, merged course information for all attendees in feeder HSs, and collapsed the sample so that the data captures HS-wide course information. I considered HS math, science, AP, and DC courses, and employed three measures for each: uptake, total offerings, and average credits. I defined uptake as the percentage of HS students taking that course, total offerings as the number of distinct courses (in credit hours) a HS offers, and average courses taken as the total credits the average HS student earns. I assigned quintiles for each course type and took their average to reflect the course offerings quintile. The highest quintile represents the most college-conducive schools in course offerings.

For teacher quality, I utilized the SBEC data to identify three quality criteria: teacher credentials, certification route, and the subject-grade they are certified to teach. Matching these records with HS class assignment data for feeder HSs, I defined in-field as the percentage of HS teachers teaching a class in the subject and grade level they are certified to teach; appropriately certified as the percentage of teachers who hold a valid license earned through the regular route (not emergency); and experienced as the percentage of teachers with at least three years of teaching experience. I assigned schools to quintiles such that Q5 reflects feeder HSs having the most qualified teachers.

College-going culture comprises counselor caseload, defined as the number of students a counselor is responsible for; SAT/ACT uptake, defined as the percentage of HS students taking the test; and SAT mean, defined as the HS SAT average score. I obtained the counselor count from the TEA non-class employee data and HS student count from TAPR. I also matched schools with TAPR data containing SAT/ACT campus mean scores, uptake, and demographic composition, assigned to quintiles.

For RQ2, I matched university enrollment files with the HS-level file containing CCR measures, and employed two measures to quantify HS sending patterns—sending probability and dosage. I started by exploring how HS CCR relates to dosage, the annual number of students a HS sends. To further identify any difference in sending patterns by CCR and flagship, I categorized HSs into four groups for each flagship: always, frequent, sporadic, and never senders, resulting in 15 different sending pairs (e.g., both always; UT always, TAMU frequent). I defined HSs as always senders if their students enroll in all years the HS appears in the sample, frequent if their students enroll in at least 50% of the years, sporadic if students enroll in less than 50% of the years the HS appears in the sample, and never if the HS never sent any student to the flagship. For each combination, I considered whether HS CCR predicts sending frequency to one or both the flagships (probability), and the number of students sent.

For RQ3, I constructed the flagship attendees' HS exit/college baseline profile based on total AP, DC, math, and science credits; and the SAT/ACT composite score, as the literature mentions students differ in these aspects. I mapped flagship attendees with HS course files and service codes to identify their accrual of the aforementioned four credit types. Additionally, I utilized the university application files for SAT/ACT scores. I aggregated the student profiles to construct college-cohort averages and classified students into three groups (tertiles) relative to the average, such that a higher tertile represents better standing in university. This facilitated comparing the flagship attendees' relative position in college based on their HS CCR levels. Additionally, I obtained students' demographic information from the TEA files and college majors from the enrollment files to link outcomes to student-level variables. I classified majors based on the 2-digit Classification for Instructional Programs (CIP) codes into twelve broad groups: Business; Communication Studies; Education Studies and Social Services; Engineering and Related Studies; Health; Humanities and Liberal Arts; Industrial, Manufacturing, and Construction Studies; Math and Computer Science; Natural Science; Service-oriented; Social and Behavioral Science; and Other Subjects (Baker, 2018). The detailed classification strategy is in the appendix, Table A1.

Independent Variables and Controls

Throughout the analysis, I incorporated HS-level controls correlated with school CCR: racial, SES, gifted, and ESL compositions; and campus size, and school locale. I obtained the school composition and size variables from TAPR and locale from the NCES data. For racial composition, I defined minority percentage as the percentage of Black, Hispanic, Native Hawaiian, and Pacific Islander students, and categorized it into four groups (quartiles) with the fourth quartile as the most minority intensive. Similarly, I classified SES into four quartiles based on the percentage of students considered low-income—those having a family income below 160% of the federal poverty line, qualifying for free or reduced-price lunch, or eligible for federal welfare programs. Students exhibiting greater academic ability than their grade level are considered gifted, and those speaking a language other than English as their native language are considered ESL students. I classified school locale using separate indicators for city, rural, suburb, and town. Campus size indicates the number of students enrolled in the school.

For the student-level analysis linking HS CCR and relative position in the flagship, I included demographic controls in RQ3. I defined gender using an indicator, with the value of 1 representing a female student. I classified race/ethnicity into Asian, Black or African American, Hispanic/Latino, Non-Hispanic White, and Other races, following the US Census definitions. Additionally, I controlled for low-income, gifted, and ESL indicators, using the same definitions as described for HS controls. I present the HS- and student-level variable description and summary statistics in Appendix Tables A2 and A3.

Sample Description

The HS-level sample consists of 1,624 unique HSs—952 unique feeder HSs in 2000, and 1,418 HSs in 2023. Table A1 reveals large variation in HS course offerings, with students taking 2-3 college credits, on average. Almost half of the teachers teach in-field courses, and one-fifth are appropriately certified. Among college-going culture characteristics, test-taking behavior and scores vary substantially. Notably, 39% of the feeder HSs are classified as rural, one-third belong in the highest minority quartile, and 37% of the HSs are in the second quartile (26-50%) of low-income students. The per-pupil expenditure also varies substantially, consistent with the funding disparity literature. Among the flagship enrollee sample, 64% of the students are White and 19% are Hispanic, despite 50% of the feeder HSs being minority heavy (>50% of HS student body). Almost 10% of the flagship attendees are considered gifted, and 7% are ESL students. The feeder HS distribution suggests TTP extended flagship access to a larger and more diverse pool of HSs. The student demographics underscore the possibility of opportunity hoarding through neighborhood sorting (Fiel, 2022), since 77% of attendees are from White and Asian backgrounds, even as half the feeder HS distribution is minority heavy.

RQ1 Methodology: Variation in Feeder Schools' College-Conducive Resources

I analyzed variation in flagship feeder HSs' CCR using descriptive statistics. I started by illustrating how HSs are distributed across the CCR quintiles over the years. Then I described the average values associated with each dimension for each quintile (e.g., the average AP offering for Q1 HSs) in the first and second decade of TTP (i.e., chose 2002 and 2016 for data completeness), to get a sense of whether and how HSs have reallocated resources across the dimensions, or shifted (increased/decreased) the full set of resources throughout the observation years. Finally, I described the HS demographics associated with each dimension-quintile in the years 2002 and 2016.

RQ2 Methodology: Resource Differences Translating to Feeder Patterns

To understand how HS CCR relates to the annual number of students each HS sends to the flagships, I employ an Ordinary Least Squares (OLS) regression. Next, I run a series of linear probability models (LPM) to evaluate how HS CCR predicts a school's annual presence in each of the flagship (e.g., always sends to both; always sends to TAMU, and frequently to UT). Finally, I run a series of OLS models to understand how HS CCR relates to the dosage for each of the school's annual presence groups. All models include demographic, campus size, and locale controls. I cluster the standard errors (SE) at the HS-level since the data is at the HS-year level, meaning the residuals for the same HS are serially correlated across the years. The SE clustering accounts for this.

RQ3 Methodology: Variation in HS CCR Translating to the Top Decile Graduates

To address how variation in HS CCR relates to the top decile's relative standing in flagship (e.g., tertile compared with university peers' HS-exit profile), I descriptively analyzed each tertile's average values for the dimensions in students' exit profiles (e.g., average AP credits in tertile 1[T1]), and how HS CCR and student demographics relate to each tertile in the three decades of the TTP. This gives a sense of whether the HS exit profile distribution and flagship student demographics have evolved over the years.

Next, I employed multilevel logistic models to examine the association between students' HS CCR and tertile in flagship, and HS CCR and university major. I estimate binary outcomes, whether a student belongs in the first tertile or not (separately for each of the three tertiles), and student major, run separately for each of the twelve majors. Multilevel modeling (MLM) is appropriate in this case since students (level 1, L1) are nested in HSs (level 2, L2), meaning students graduating from the same HS share common learning resources and possibly have similar outcomes (Hox et al., 2010; Raudenbush, 2002). The MLM structure takes care of this shared variance within the students from the same HS, giving unbiased estimates. The model is as follows:

$$(1)\ log(\frac{y_{ij}}{1-y_{ij}}) = \beta_{0j} + \beta_{1j}Demog_{ij}$$

$$(2.1)\ \beta_{0j} = \gamma_{00} + \gamma_{01}Quintile_j + \gamma_{02}City_j + \gamma_{03}Suburb_j + \gamma_{04}Town_j + \gamma_{05}Minority_j + \gamma_{06}(Low-inc)_j + \mu_{0j}$$

$$(2.2)\ \beta_{1j} = \gamma_{10}$$

$$(3)\ log(\frac{y_{it}}{1-y_{ij}}) = \gamma_{00} + \gamma_{01}Quintile_j + \gamma_{02}City_j + \gamma_{03}Suburb_j + \gamma_{04}Town_j + \gamma_{05}Minority_j + \gamma_{06}(Low-inc)_j + \gamma_{10}\,Demog_{ij} + \mu_{0j}$$

In equation (1), y_{ij} represents the outcome (i.e., college tertile, major) for student i from HS j. *Demog* contains students' race/ethnicity, gender, and low-income status. The L1 error variance is a function of, and directly determined by the population mean, and hence not a part of the estimation process in (1) (Luke, 2019). Equation (2.1) presents the L1 (student-level) intercept as a function of HS-level (L2) variables, meaning the intercept varies based on the HS j students attend. In the combined equation (3), γ_{00} represents the grand mean, the outcome for the white, male, and non-low-income students from the third quintile HSs from a rural location, in the first minority and low-income quartiles.

Results

RQ1: Variation in Feeder Schools' College-Conducive Resources

In Figure 1, I illustrate the distribution of HSs by CCR over the years. Most HSs are concentrated in the third quintile, and Q3 experienced the most growth in HS numbers. Additionally, the lower three quintiles experienced growth post-COVID, signaling the possibility of additional polarization in CCR, especially through teaching resources and due to test-optional college admission policies lowering SAT uptake. Table 1 presents the mean characteristics and demographics associated with each quintile in the first and second decades of TTP. Under the course offerings and college acceleration program dimension in 2002, average AP/IB uptake ranges from 26% to 77%, varying by roughly 9% for each quintile, except for a 18% difference between the Q1 and Q2 uptakes. In contrast, the uptake for Q3 HSs in 2016 is close to the uptake for Q5 HSs in 2002, showing a large increase in AP/IB uptake over the years. The DC uptake too ranges from 0 to 46 in 2002, with a doubling between Q4 and Q5. The AP offerings too are considerably higher across quintiles with a growing gap over the years. DC offerings show a large increase between the two decades, consistent with DC expansion in this time period. The difference between math and science credits is relatively nuanced as compared to college acceleration courses.

[Insert Table 1 here]

Within the teacher quality dimension, overall certification is low. The difference within the 2016 quintiles is more noticeable in the percentage of experienced and in-field teachers, ranging from only half to almost 100% experienced and one-fourth to three-fourths in-field teachers, respectively. Similarly, within the college-going culture dimension, the mean SAT score difference grows over the years, and counselor caseload is almost four times greater between the top and bottom CCR quintiles.

The school racial composition does not follow a clear pattern across quintiles and over the years. However, in 2016, the percentage of low-income students in lower CCR quintiles grew substantially from that of 2002. Additionally, a greater portion of ESL students are in lower quintiles. Smaller, potentially specialized or rural schools tend to be in the highest or the lowest quintiles. Finally, schools located in suburban areas tend to be in the middle quintiles in 2002, and experience growth in the number of feeder schools by 2016, claiming two-thirds of the two upper quintiles of CCR.

RQ2: Resource Differences Translating to Feeder Patterns and Variation by the Flagship

In Table 2, I present the LPM results relating HS CCR to how frequently the HS feeds to each flagship (panel A) and OLS results relating HS CCR to the number of students sent (panel B). There are fifteen possible combinations of flagship-sending patterns, where HSs might always, frequently, sporadically, and never send to each flagship (e.g., always to both; frequently to UT Austin, sporadically to Texas A&M University). I display the results only for the combinations with 1000 or more HS-year level observations. The results reveal, CCR does not meaningfully predict sending students to both flagships. Q4 HSs are 4.7 percentage points (pp) more likely than Q3 schools to be sporadic senders to UT and frequent feeders to TAMU (SF). For this group, Q1 and Q2 schools send 3 and 1 fewer students relative to Q3 schools, on average. Almost 60% of the schools are in either of the groups: sporadic to both (SS) or sporadic to UT and always to TAMU (SA). For these groups, sending probability does not follow a discernible pattern, but dosage does. For the SA schools, the Q5 schools send an additional 3 students relative to the Q3 schools. Both sporadic schools send almost 16 additional students over Q3, for each additional CCR quintile in Q4 and Q5. Considering the overall sample, each quintile CCR difference is associated with a meaningful difference in the total number of students sent to flagships. While Q1 sends almost two fewer students, Q4 sends almost 4 additional students, on average, relative to Q3. In sum, these results reveal school CCR relates to feeder patterns.

[Insert Table 2 here]

RQ3: Variation in HS CCR Translating to the Top Decile of Graduates

To understand how HS CCR relates to their top decile of graduates' HS exit profiles and relative position in college, I categorize students' HS exit profiles into three groups (tertiles) within the flagship cohort. I describe the student and HS characteristics associated with each tertile in the three decades post-TTP in Table 3. Between the first and third decades, the percentage of T1 students grows from 24% to 34%, and the difference between T1 and T3 scores and credits grows, consistent with the finding that the TTP has expanded access to a larger pool of feeder HSs. Over the decade, AP, math, and science credits saw a considerable increase across all tertiles. In 2002, students' AP credits ranged from 3 to 8.9 over the tertiles, with roughly a 3-credit difference for each tertile. Between the three decades, the T3 AP credits are similar to the next decade's T2 AP credits. In all years, Asian and White students occupy more than 80% of T3. On the contrary, the share of Black and Hispanic students in T1 grows from 19% to 45% in 2012, and 50% in 2022. The descriptives do not reveal a clear pattern for the CCR quintile and student tertile association. However, students from suburban schools consistently remain in the upper tertiles.

[Insert Table 3 here]

I present the MLM results predicting students' college tertile and major based on HS CCR in Table 4. The results suggest Q1 and Q2 HS students are at respectively 1.44 and 1.23 times the odds, while Q4 and Q5 HS students are at 0.78 and 0.40 times the odds of being in T1, as compared to Q3 HS students. In contrast, Q1 and Q2 HS students are at lower odds, and Q4 at 1.07 times the odds of being in T2 as compared to Q3 HS students. Similarly, Q4 and Q5 students show greater odds of being in T3 (1.30 and 1.85, respectively) than Q3 HS students. Thereby, it is reasonable to associate a higher CCR with a better relative position in college. Among the notable major coefficients in panel B, students from upper CCR HSs are at 1.05 to 1.47 times the odds of enrolling in a natural science major. Other majors do not show significant association with school CCR. Overall, school college-conduciveness varies substantially by school composition and locale, which eventually predicts feeder patterns and the relative college position of HS graduates automatically admitted into the flagships under the TTP.

[Insert Table 4 here]

Discussion

Using the TERC data within the policy complementarity framework, I evaluate how flagship feeder HSs under the TTP differ in college-conducive resources (CCR), and their implications for feeder patterns and students' college outcomes through their initial flagship standing. I find that feeder HSs differ substantially in course and college acceleration offerings, teacher quality, and college-going culture. I quantify this difference using a five-point typology that ranks feeder HSs from CCR-scarce to CCR-dense. High-minority and high-poverty schools tend to have lower CCR, which translates to fewer students sent. Between the flagships, UT admits a more heterogeneous student pool than TAMU, despite UT's capacity constraint. Finally, MLMs reveal that lower CCR HS graduates are in lower tertiles relative to the flagship average, meaning the top-decile HS graduates reflect CCR disparities. HS CCR is not meaningfully related to students' college major. The analysis supports, HS resources are salient for students' college orientation and can support access policies like the TTP to equalize student outcomes.

The extant HS quality literature alludes to one or more of the quality dimensions for student outcomes, including HS graduation, college readiness, and college performance. Although there is a general agreement on what HS quality means, the literature lacks a comprehensive measure that encapsulates the multifaceted nature of HS quality. When faced with difficult resource tradeoffs with the aim of improving college and career readiness under tight financial conditions, this gap can complicate school leader choices and policy decisions. Similarly, when student benefits differ from expectations under certain K-12 interventions, such comprehensive measures can highlight the complementarity across various elements that reinforce the gains from each other. The college access and automatic admission literature demonstrates, these policies expand access for a larger group of students varying in college preparation, and associate disparate college outcomes to HS quality differences without explicitly quantifying the combination of factors or each factor's relative importance. The closest to my study, Black et al. (2015) employs AP and SAT uptakes, and average teacher experience measures in presence of district size and financial controls to quantify how they matter for students' first two years of college outcomes, for the first decade of TTP.

I connect these two literature strands and consolidate thes HS quality dimensions into a cohesive measure that readily reflects HS college-conduciveness, for a larger and diverse group of feeder schools into the latter TTP decades that accompany an expansion of college acceleration programs. These developments allow me to capture curricular rigor through various course types and multiple indicators: AP, DC, math, and science course offerings, uptakes, and school averages. Additionally, the detailed administrative data enables me to robustly measure teaching resources through certification, in-field, and experience variable. Finally, I capture college-going culture through HS counselor caseload, SAT average, and uptake. By aggregating these themes that guide and prepare students for college access and success, I measure HS quality in college-conduciveness terms, and arrange them in a spectrum. Additionally, I quantify CCR variation by demographic composition and locale—which were previously quantified only in financial terms, as discussed in the state contexts subsection. Using the Policy Complementarity framework, I demonstrate that TTP acts as a policy lever that extends access. K-12 funding, accountability, and resource allocation policies accommodating the school contexts can complement the access policy by amply preparing students for college, that reflects in their initial standing in college, and ultimately their capacity to leverage the flagship access for improved college and life outcomes.

Implications for Policy, Practice, and Future Work

The findings highlight the importance of multipronged state interventions that simultaneously reduce funding disparity and improve CCR in minority, lower SES, and rural schools as a precondition for college access policies. Within the policy macrosystem, the school funding formula embeds funding gaps by levying a flat tax rate on uneven tax bases and matching enrichment funds at the same rate. When property taxes vary considerably across neighborhoods, a uniform funding formula leaves lower-income communities with significantly less funds (Sikes, 2022). Therefore, without raising the tax burden on less-privileged neighborhoods, the state can instead differentiate the enrichment tax rates and matching rate. Since the current system of equal matching exaggerates funding inequality, the state can implement tax matching brackets such that less-wealthy districts get larger enrichment funds that narrow some of the funding gap, allowing schools to hire enough high-quality teachers and counselors.

Aside from funding disparity, high minority and high-poverty schools face constant hiring and retention challenges due to the double burden of educating underprivileged children with limited learning resources and a harsh accountability system not adequately capturing teacher efforts (Holme et al., 2018). Therefore, policies that acknowledge school contexts and equalize rewards from working in less-privileged schools, are highly desirable. For instance, the recently implemented Federal Teacher Loan Forgiveness (TLF) program waives $5,000-$17,500 of educational loans for serving in low-income districts for five consecutive years (Jacob et al., 2024). However, it entails a large administrative burden and cannot be bundled with other programs, rendering it less effective for the high-poverty districts. Similarly, the Teacher Incentive Allotment (TIA) financially rewards teachers for displaying student learning growth. However, this requires significant district-level coordination and data systems, which higher-poverty districts typically lack, reducing the efficacy of the incentive program (Edison, 2025).

Since teacher quality is pivotal for curriculum rigor and counselors assist a smoother college transition, the state can reward them in form of housing subsidies, professional development opportunities—including college partnerships that lower certification costs, and apprenticeship opportunities to improve teacher and counselor availability in higher-poverty, minority serving, and remote districts (Breunlin, 2026). In addition to newer policies, creating complementary conditions and adapting existing policies to school contexts can lower staff burnout and turnover, create stability, and improve learning outcomes. As teacher incentives improve course offerings, the demand for rigorous courses can be fostered through provisions improving student preparation from an early age. For instance, proactive counseling from early grades can put students on guided pathways and prepare them to excel in advanced math and science courses (Dougherty et al., 2017). The combination of improved funding conditions alongside wrap-up support for staff can scale up school human resources, facilitating better coordination that ramps up availability and quality of dual credit courses, and after-school programs aimed at fostering college readiness. Additionally, state programs that make college acceleration courses affordable for low-income students (e.g., Financial Aid for Swift Transfer, FAST in Texas) can facilitate greater uptake. These interventions create complementary conditions for college access policies.

Both the flagships make substantial investments in creating an inclusive learning environment and better college outcomes. However, the interventions within the college, or only those on the postsecondary side, cannot compensate for the schooling disparity. Thereby, ramping up overall K-12 spending, reducing funding disparity, and adapting more informed policies that schools directly benefit from can improve the overall pipeline and generate larger benefits for society and the economy. Even though this analysis pertains to the state flagships and the top decile of HS graduates, well-coordinated K-12 investments can improve student preparation, lower the cost of postsecondary education, and improve statewide educational outcomes. In the next stage of this research, I will explore how HS CCR variation relates to flagship attendees' term-by-term outcomes. Future research can explore whether and how the TTP improved statewide CCR availability and how that feeds into student compositions, preparations, and outcomes at other state universities varying in selectivity.

References

Adelman, C. (2006). The toolbox revisited: Paths to degree completion from high school through college. *US Department of Education*, 223.

Ahsan, M. N., Emran, M. S., & Shilpi, F. (2024). Complementarities and intergenerational educational mobility: Theory and evidence from Indonesia. *Journal of Economic Behavior & Organization*, *225*, 170–191. https://doi.org/10.1016/j.jebo.2024.05.025

Andrews, R. J., Imberman, S. A., & Lovenheim, M. F. (2020). Recruiting and supporting low-income, high-achieving students at flagship universities. *Economics of Education Review*, *74*, 101923. https://doi.org/10.1016/j.econedurev.2019.101923

Aoki, M. (2001). *Toward a comparative institutional analysis*. MIT press.

Baker, B. D., Sciarra, D. G., & Farrie, D. (2014). *Is school funding fair? A national report card* (p. 49). ERIC. https://files.eric.ed.gov/fulltext/ED570455.pdf

Baker, R. (2018). Understanding college students' major choices using social network analysis. *Research in Higher Education*, *59*(2), 198–225. https://doi.org/https://doi.org/10.1007/s11162-017-9463-1

Beard, J. J., Hsu, J., Ewing, M., & Godfrey, K. E. (2019). Studying the relationships between the number of APs, AP performance, and college outcomes. *Educational Measurement: Issues and Practice*, *38*(4), 42–54. https://doi.org/10.1111/emip.12295

Bernell, K. R. (2021). *Beyond city limits: Does attending a rural public high school in Texas predict college matriculation, flagship attendance, and graduation outcomes?* [Policy brief]. ERIC. https://files.eric.ed.gov/fulltext/ED615426.pdf

Black, S. E., Cortes, K. E., & Lincove, J. A. (2020). Apply yourself: Racial and ethnic differences in college application. *Education Finance and Policy*, *15*(2), 209–240. https://doi.org/10.1162/edfp_a_00273

Black, S., Lincove, J., Cullinane, J., & Veron, R. (2015). Can you leave high school behind? *Economics of Education Review*, *46*, 52–63. https://doi.org/https://doi.org/10.1016/j.econedurev.2015.02.003

Blankenberger, B., Lichtenberger, E., & Witt, M. A. (2017). Dual credit, college type, and enhanced degree attainment. *Educational Researcher*, *46*(5), 259–263. https://doi.org/10.3102/0013189X17718796

Brown, C. H., & Knight, D. (2023). Staffing schools to support the classroom: Examining student-to-school-counselor ratios and academic student outcomes in Texas. *Professional School Counseling*, *27*(1), 2156759X231165497. https://doi.org/10.1177/2156759X231165497

Carver-Thomas, D., & Darling-Hammond, L. (2019). The trouble with teacher turnover: How teacher attrition affects students and schools. *Education Policy Analysis Archives*, *27*(36). https://doi.org/http://dx.doi.org/10.14507/epaa.27.3699

Clotfelter, C. T., Ladd, H., & Vigdor, J. L. (2007). *How and why do teacher credentials matter for student achievement?* https://doi.org/10.3386/w12828

Cullen, J. B., Long, M. C., & Reback, R. (2013). Jockeying for position: Strategic high school choice under Texas' top ten percent plan. *Journal of Public Economics*, *97*, 32–48. https://doi.org/10.1016/j.jpubeco.2012.08.012

Cumpton, G., & Giani, M. (2014). *Texas school counselor study: Exploring the supply, demand, and evolving roles of school counselors*. https://doi.org/https://sites.utexas.edu/raymarshallcenter/files/2015/01/Texas-School-Counselor-Study_Exploring-the-Supply-Demand-and-Evolving-Roles-of-School-Counselors.pdf

Domina, T. (2007). Higher education policy as secondary school reform: Texas public high schools after Hopwood. *Educational Evaluation and Policy Analysis*, *29*(3), 200–217. https://doi.org/10.3102/0162373707304995

Dougherty, S. M., Goodman, J. S., Hill, D. V., Litke, E. G., & Page, L. C. (2017). Objective course placement and college readiness: Evidence from targeted middle school math acceleration. *Economics of Education Review*, *58*, 141–161. https://doi.org/10.1016/j.econedurev.2017.04.002

Duncombe, W., & Yinger, J. (2005). How much more does a disadvantaged student cost? *Economics of Education Review*, *24*(5), 513–532. https://doi.org/10.1016/j.econedurev.2004.07.015

Dynarski, S., Nurshatayeva, A., Page, L. C., & Scott-Clayton, J. (2022). *Addressing Non-Financial Barriers to College Access and Success: Evidence and Policy Implications* [Working Paper]. http://www.nber.org/papers/w30054

ECS. (2024). *K-12 Funding 2024—Education Commission of the States*. https://reports.ecs.org/comparisons/k-12-funding-2024

Edison, J. (2025). Lawmakers want to expand Texas' teacher pay raise program. Many educators will still be left out. *The Texas Tribune*. https://www.texastribune.org/2025/05/06/texas-teacher-incentive-allotment-pay-raises/

Elescano, C. (2025). Yale teaching fellowship program expands to strengthen teacher pipeline in New Haven. *New Haven Registrar*. https://www.nhregister.com/news/article/yale-fellowship-teachers-new-haven-ct-20782031.php

Fiel, J. E. (2022). Opportunity seeking across segregated schools: Unintended effects of automatic admission policies on high school segregation. *Educational Evaluation and Policy Analysis*, *44*(3), 485–504. https://doi.org/10.3102/01623737221078286

Fletcher, J., & Tienda, M. (2010). Race and ethnic differences in college achievement: Does high school attended matter? *The ANNALS of the American Academy of Political and Social Science*, *627*(1), 144–166. https://doi.org/10.1177/0002716209348749

Flores, S. M., Park, T. J., & Baker, D. J. (2017). The racial college completion gap: Evidence from Texas. *The Journal of Higher Education*, *88*(6), 894–921. https://doi.org/10.1080/00221546.2017.1291259

Frost, M. B. (2005). *Texas students' knowledge of University admissions policies and standards: Do high school counselors matter?*

Gagnon, D. J., & Mattingly, M. J. (2016). Most US school districts have low access to school counselors: Poor, diverse, and city school districts exhibit particularly high student-to-counselor ratios. *Durham, N.H. : Carsey School of Public Policy, University of New Hampshire*. https://doi.org/https://dx.doi.org/10.34051/p/2020.275

Gamoran, A., & An, B. P. (2016). Effects of school segregation and school resources in a changing policy context. *Educational Evaluation and Policy Analysis*, *38*(1), 43–64. https://doi.org/10.3102/0162373715585604

Goldsmith, P. R. (2011). Coleman revisited: School segregation, peers, and frog ponds. *American Educational Research Journal*, *48*(3), 508–535. https://doi.org/10.3102/0002831210392019

Hanson, M. (2024, July 14). *U.S. Public Education Spending Statistics [2024]: Per Pupil + Total*. Education Data Initiative. https://educationdata.org/public-education-spending-statistics

Harris, A., & Tienda, M. (2010). Minority higher education pipeline: Consequences of changes in college admissions policy in Texas. *The ANNALS of the American Academy of Political and Social Science*, *627*(1), 60–81. https://doi.org/10.1177/0002716209348740

Hemelt, S. W., Lenard, M. A., & Paeplow, C. G. (2019). Building bridges to life after high school: Contemporary career academies and student outcomes. *Economics of Education Review*, *68*, 161–178. https://doi.org/10.1016/j.econedurev.2018.08.005

Holme, J. J., Jabbar, H., Germain, E., & Dinning, J. (2018). Rethinking teacher turnover: Longitudinal measures of instability in schools. *Educational Researcher*, *47*(1), 62–75. https://doi.org/https://doi.org/10.3102/0013189X17735813

Hox, J., Moerbeek, M., & Schoot, R. van de. (2010). *Multilevel analysis: Techniques and applications* (2nd ed.). Routledge. https://doi.org/10.4324/9780203852279

Hoxby, C. M., & Avery, C. (2013). Low-income high-achieving students miss out on attending selective colleges. *Brookings Papers on Economic Activity, Spring*, *10*.

Hoxby, C. M., Avery, C., Raman, M., Burek, K., Jackson, C. K., & Pope, G. (2006). Cost should be no barrier: An evaluation of the first year of Harvard's financial aid initiative. *NBER Working Paper Series*, 12029. https://doi.org/10.3386/w12029

Jacob, B. A., Jones, D., & Keys, B. J. (2024). The value of student debt relief and the role of administrative barriers: Evidence from the teacher loan forgiveness program. *Journal of Labor Economics*, *42*(S1), S261–S292. https://doi.org/https://doi.org/10.1086/728468

Johnson, R. C., & Jackson, C. K. (2019). Reducing inequality through dynamic complementarity: Evidence from head start and public school spending. *American Economic Journal: Economic Policy*, *11*(4), 310–349. https://doi.org/10.1257/pol.20180510

Klasik, D., & Cortes, K. E. (2022). Uniform admissions, unequal access: Did the top 10% plan increase access to selective flagship institutions? *Economics of Education Review*, *87*, 102199. https://doi.org/https://doi.org/10.1016/j.econedurev.2021.102199

Knox, P. N. (2023). Exploring factors associated with academic motivation and college and career readiness of rural adolescents. *The Rural Educator*, *44*(3), 34–52. https://doi.org/https://doi.org/10.55533/2643-9662.1370

Koffman, D., & Tienda, M. (2008). *Missing in application: The Texas Top 10% law and campus socioeconomic diversity*. https://www.researchgate.net/profile/Marta-Tienda/publication/254579047_Missing_in_Application_The_Texas_Top_10_Law_and_Campus_Socioeconomic_Diversity/links/541ae01d0cf2218008bfe7ce/Missing-in-Application-The-Texas-Top-10-Law-and-Campus-Socioeconomic-Diversity.pdf

Ladner, M., & Bedrick, J. (2023). *From Surviving to Thriving: K–12 Choice and Opportunity for Rural Texas Students and Teachers* (No. 3783). The Heritage Foundation. https://www.heritage.org/education/report/surviving-thriving-k-12-choice-and-opportunity-rural-texas-students-and-teachers

Lee, J., Weis, L., Liu, K., & Kang, C. (2017). Which type of high school maximizes students' college match? Unequal pathways to postsecondary destinations for students from varying high school settings. *Journal of Higher Education*, *88*, 529–560. https://doi.org/10.1080/00221546.2016.1272327

Long, M. C., & Tienda, M. (2008). Winners and losers: Changes in Texas university admissions post-Hopwood. *Educational Evaluation and Policy Analysis*, *30*(3), 255–280. https://doi.org/10.3102/0162373708321384

Luke, D. A. (2019). *Multilevel modeling* (Vol. 143). Sage publications.

Ma, J., Pender, M., & Welch, M. (2016). *Education pays 2016: The benefits of higher education for individuals and society* (Trends in Higher Education Series, p. 44). ERIC. https://eric.ed.gov/?id=ED572548

Marsh, H. W. (1987). The big-fish-little-pond effect on academic self-concept. *Journal of Educational Psychology*, *79*(3), 280. https://doi.org/https://doi.org/10.1037/0022-0663.79.3.280

Marsh, H. W. (2006). *Self-concept theory, measurement and research into practice: The role of self-concept in educational psychology*.

Mbiti, I., Muralidharan, K., Romero, M., Schipper, Y., Manda, C., & Rajani, R. (2019). Inputs, Incentives, and Complementarities in Education: Experimental Evidence from Tanzania*. *The Quarterly Journal of Economics*, *134*(3), 1627–1673. https://doi.org/10.1093/qje/qjz010

Mirmina, A. (2025). Quinnipiac launches program to address teacher shortages in East Haven and West Haven schools. *New Haven Registrar*. https://www.nhregister.com/news/article/quinnipiac-teacher-shortage-east-haven-west-haven-20206240.php

Morgan, I., & Amerikaner, A. (2018). *Funding gaps 2018: An analysis of school funding equity across the US and within each state* (p. 14). ERIC. https://files.eric.ed.gov/fulltext/ED587198.pdf

Niu, S., & Tienda, M. (2010a). Minority student academic performance under the uniform admission law: Evidence from The University of Texas at Austin. *Educational Evaluation and Policy Analysis*, *32*(1), 44–69. https://doi.org/10.3102/0162373709360063

Niu, S., & Tienda, M. (2010b). The impact of the Texas top ten percent law on college enrollment: A regression discontinuity approach. *Journal of Policy Analysis and Management*, *29*(1), 84–110. https://doi.org/10.1002/pam.20480

Niu, S. X., & Tienda, M. (2008). Choosing colleges: Identifying and modeling choice sets. *Social Science Research*, *37*(2), 416–433. https://doi.org/10.1016/j.ssresearch.2007.06.015

Niu, S. X., & Tienda, M. (2013). High school economic composition and college persistence. *Research in Higher Education*, *54*(1), 30–62. https://doi.org/10.1007/s11162-012-9265-4

NREA. (2023). *Why Rural Matters* [Research]. National Rural Education Association. https://www.nrea.net/why-rural-matters

Oseguera, L. (2013). Importance of high school conditions for college access. *Research Brief*, *7*(7), 1–18.

Perna, L. W., Rowan-Kenyon, H. T., Thomas, S. L., Bell, A., Anderson, R., & Li, C. (2008). The role of college counseling in shaping college opportunity: Variations across high schools. *The Review of Higher Education*, *31*(2), 131–159. https://doi.org/10.1353/rhe.2007.0073

Person, A. E., & Rosenbaum, J. E. (2006). Chain enrollment and college enclaves: Benefits and drawbacks of Latino college students' enrollment decisions. *New Directions for Community Colleges*, *2006*(133), 51–60. https://doi.org/10.1002/cc.227

Peske, H. G., & Haycock, K. (2006). *Teaching inequality: How poor and minority students are shortchanged on teacher quality: A report and recommendations by the education trust.* (p. 20). ERIC. https://files.eric.ed.gov/fulltext/ED494820.pdf

Raudenbush, S. W. (2002). Hierarchical linear models: Applications and data analysis methods. *Advanced Quantitative Techniques in the Social Sciences Series/SAGE*.

Reyes, P., Alexander, C., & Giani, M. (2016). Postsecondary access, persistence, and completion of Houston-area youth. *Texas Edcuation Research Center*, 1–106.

Roderick, M., Coca, V., & Nagaoka, J. (2011). Potholes on the road to college: High school effects in shaping urban students' participation in college application, four-year college enrollment, and college Match. *Sociology of Education*, *84*(3), 178–211. https://doi.org/10.1177/0038040711411280

Sikes, C. L. (2022). *How Texas schools are funded*. Intercultural Development Research Association. https://www.idra.org/wp-content/uploads/2022/08/How-Texas-Schools-Are-Funded-IDRA-Issue-Brief-2022.pdf

Strohl, J., Nyhof, E., & Morris, C. (2024). *Progress interrupted: Evaluating a decade of demographic change at selective and open-access institutions prior to the end of race-conscious affirmative action*. ERIC. cew. georgetown.edu/progressinterrupted

Taylor, J. L. (2013). *Community college dual credit: Differential participation and differential impacts on college access and completion*. University of Illinois at Urbana-Champaign.

Thompson, J. (2019). Mobility in the middle: Bachelor's degree selectivity and the intergenerational association in status in the United States. *Research in Social Stratification and Mobility*, *60*, 16–28. https://doi.org/10.1016/j.rssm.2019.02.001

Tienda, M., & Niu, S. X. (2006). Capitalizing on segregation, pretending neutrality: College admissions and the Texas Top 10% Llaw. *American Law and Economics Review*, *8*(2), 312–346. https://doi.org/10.1093/aler/ahl006

Turley, R. N. L., & Selsberg, B. (2024). *Texas School District Funding Gaps*. Houston Education Research Consortium, Kinder Institute for Urban Research, Rice University. https://s3.documentcloud.org/documents/25032852/ki-herc-report-funding-gaps-4-final.pdf

U.S. Department of Education. (2024). *Supporting a Diverse Educator Workforce to Strengthen Teaching and Learning*. https://www.ed.gov/media/document/supporting-diverse-educator-workforce-strengthen-teaching-and-learning-108640.pdf

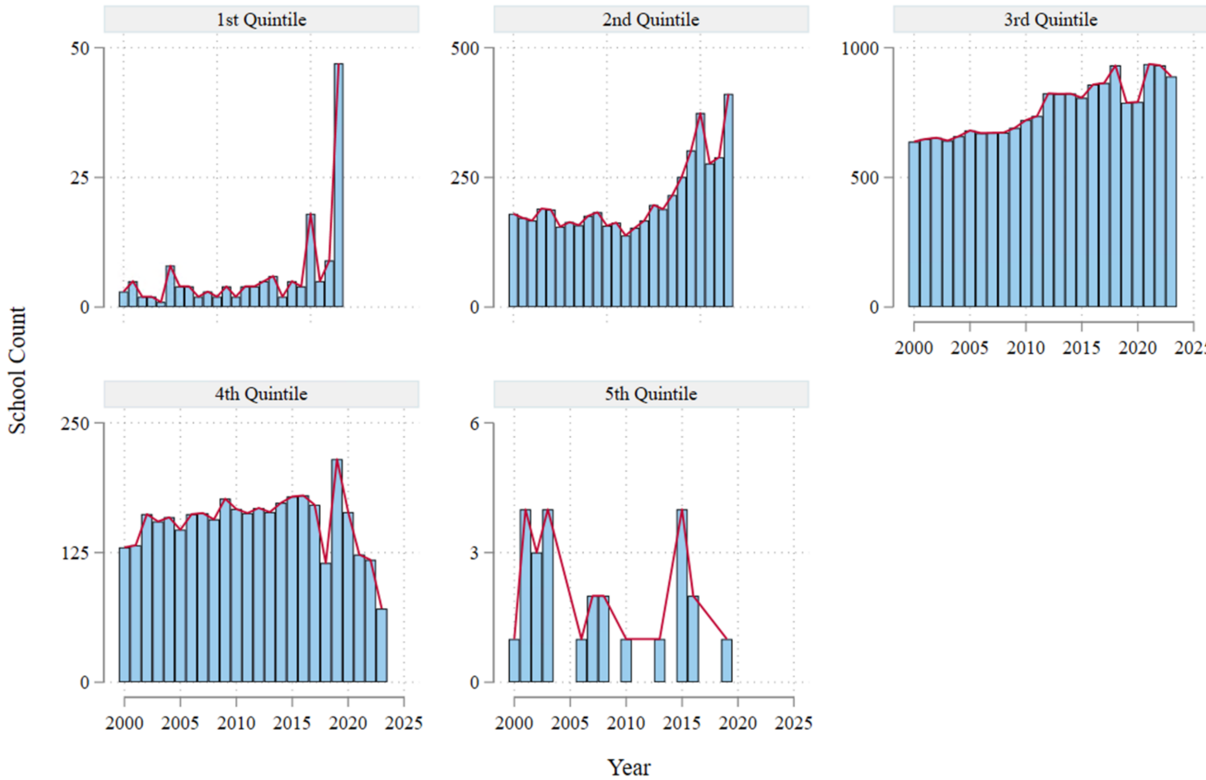
US GAO. (2018). *Public high schools with more students in poverty and smaller schools provide fewer academic offerings to prepare for college*. US Government Accountability Office. https://www.gao.gov/assets/gao-19-8.pdf

Xu, D., Solanki, S., & Fink, J. (2021). College acceleration for all? Mapping racial gaps in advanced placement and dual enrollment participation. *American Educational Research Journal*, *58*(5), 954–992. https://doi.org/10.3102/0002831221991138

Tables and Figures

Figure 1

School Count by Quintile Over the Years



Notes. This figure illustrates the number of high schools in each quintile of college-conducive resources (CCR) between 2000-2023. The first panel displays school count in the first quintile consisting of schools with the fewest CCR or CCR scarce schools in the sample. In 2000, among the 952 schools in my sample, 3 schools are considered the least college-conducive, and 1 school is considered the most college-conducive or CCR dense. In 2023, the sample consists of 1418 high schools. I rescale the y-axes for better visibility, since the range of high schools varies substantially across quintiles.

Source: TEA, SBEC, and TAPR/AEIS report.

Table 1

Detailed Characteristics of Each Dimension and Percentage of High Schools in Each Group, in Select Years

Dimension	Component		2002 (N = 981)					2016 (N = 1,235)				
			Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
College Acceleration[1]	AP/IB	Uptake (%)	26	44	53	62	77	45	69	72	84	100
		Total	5	16	20	16	10	12	19	25	29	30
		Average	2	2	3	3	3	2	3	3	4	8
	DC	Uptake (%)	0	6	14	23	46	7	20	28	45	75
		Total	0	3	5	4	9	3	7	11	13	10
		Average	.	1	1.5	1.8	2.4	1.7	2.1	2.8	3.7	3.3
	Math	Uptake (%)	74	93	95	96	98	97	99	99	100	100
		Average	2.0	2.7	2.9	3.1	3.4	2.7	3.5	3.7	4.1	3.9
	Science	Uptake (%)	74	94	96	98	100	97	98	99	99	100
		Average	1.9	2.5	2.7	3.0	3.1	2.6	3.1	3.2	3.5	5.2
	Percentage of HS		2.94	26.04	47.3	22.8	0.91	2.43	25.02	54.17	18.38	0.00
Teacher Quality	Certified (%)		20	18.6	19	20.4	20.7	4	15.1	25.1	33.2	28.9
	Experienced (%)		53.8	76.2	82.4	87.2	94.3	51.1	46.8	67.8	82.9	99.2
	In-field (%)		.	.	.	.	.	23.0	49.5	54.9	60	75.6
	Percentage of HS		0.74	13.67	53.00	25.24	7.36	4.22	18.21	44.68	30.17	2.73
College-going Culture	SAT/ACT uptake (%)		21.3	47.7	62.6	74.5	79.7	26.9	56.4	63.4	76.7	96.5
	SAT mean		1009	899	970	1012	1075	1327	1284	1386	1466	1509
	ACT mean							17.5	18.2	20.1	22.0	24.3
	Counselor		0.19	0.32	0.38	0.56	0.70	0.18	0.30	0.39	0.48	0.75
	Percentage of HS		3.26	20.85	41.61	25.94	8.34	4.55	22.58	40.37	26.00	6.50
Composition	Racial Minority (%)		37.4	59.3	43.0	33.1	34.1	60.8	68.9	56.7	47.4	77.3
	Low-income (%)		30.6	50.2	38.0	34.3	43.8	62.3	64.9	52.3	40.7	50.0
	Gifted (%)		2.9	7.5	9.8	12.4	12.6	6.5	6.4	8.5	15.7	26.9
	Bilingual (%)		0	5.9	3.9	2.6	0.7	13.7	8.5	6.2	3.6	0.8
	Campus size		481	1109	1122	665	187	942	1027	1200	1063	732
Locale (%)	City		50.0	36.7	23.9	13.7	0.0	16.7	37.0	24.0	31.7	0.0
	Suburb		0.0	22.8	27.5	19.3	0.0	33.3	13.8	19.9	21.1	50.0
	Town		50.0	10.1	15.5	13.0	33.3	0.0	17.5	15.0	5.6	0.0
	Rural		0.0	30.4	33.0	54.0	66.7	50.0	29.6	37.8	37.2	20.0

Notes. This table presents the mean value of each component within the overall quintile, in year 2002 as the baseline measures after TTP implementation, and in year 2016, within two decades of the TTP. For example, the average AP/IB uptake in 2002 for schools in the Q1was 26%. In contrast, the average 2016 AP/IB uptake for Q1 HSs was 45%. The percentage of HS row represents what percentage of HSs are within each

quintile in 2002 and 2016. For instance, 2.94% high schools belong to the first quintile of college acceleration resources in 2002. The percentages are calculated with respect to the sample size in that year – 2.94% schools in Q1 in 2002 translates to roughly 25 high schools (981*0.029). Within the teacher quality dimension, certification, in-field, and experienced variable-related data are available only since 2012, so the 2002 cell contains missing values.
[1] Measured in high school credit units. One high school course is typically equivalent to one credit.

Data Sources: TEA, SBEC, and AEIS/TAPR reports.

Table 2

Annual Presence and Dosage in the Flagships Over the Years

Panel A: Sending Probability							
HS Quintile (Ref: Q3)	AA	SF	AS	FS	SA	SS	
First Quintile	0.015	0.043	-0.016	0.032	-0.186**	0.008	
	(0.043)	(0.062)	(0.044)	(0.065)	(0.063)	(0.060)	
Second Quintile	-0.013	-0.006	0.022	-0.004	0.030*	-0.035**	
	(0.008)	(0.008)	(0.011)	(0.005)	(0.014)	(0.013)	
Fourth Quintile	0.003	0.047***	-0.015	0.018**	-0.071***	0.013	
	(0.008)	(0.011)	(0.009)	(0.006)	(0.015)	(0.013)	
Fifth Quintile	0.067	0.164	-0.071	-0.058***	-0.294**	0.120	
	(0.072)	(0.107)	(0.040)	(0.013)	(0.090)	(0.100)	
R-Square	0.019	0.127	0.180	0.060	0.318	0.480	
N	22789	22789	22789	22789	22789	22789	
Panel B: Students Sent/Dosage							
HS Quintile (Ref: Q3)	AA	SF	AS	FS	SA	SS	Both Flagships
First Quintile	6.641	-3.456**	0.794	-0.223	-2.102*	4.029	-1.953*
	(3.341)	(1.268)	(2.044)	(0.706)	(0.951)	(6.005)	(0.93)
Second Quintile	-0.928	-1.212***	-0.380	-0.168	-0.912***	-4.510***	-1.54***
	(1.735)	(0.293)	(0.555)	(0.181)	(0.200)	(1.034)	(0.18)
Fourth Quintile	6.353	0.124	0.668	0.759*	0.843**	15.698***	1.84***
	(4.349)	(0.112)	(0.903)	(0.305)	(0.288)	(2.514)	(0.42)
Fifth Quintile	5.324	0.148	-1.193	.	3.017***	16.884**	4.12***
	(5.292)	(0.240)	(1.835)	.	(0.586)	(6.140)	(1.13)
R-Squared	0.702	0.277	0.393	0.299	0.443	0.500	0.556
N	1350	2299	2241	747	7531	8426	23,574

*** p<0.001, ** p<0.01, * p<0.05

Notes. This table presents the results from eight separate LPMs (panel A) and eight OLS (panel B) models relating the probability and dosages of each quintile of HS, respectively, based on the HSs annual presence in each flagship throughout the sample period. HSs are defined as always senders (A), frequent senders (F), sporadic senders (S), and never senders (N) for each of the flagship, resulting in fifteen combinations – AA, AF, AS, AN, FA, FF, FS, FN, SA, SF, SS, SN, NA, NF, and NS. Here, the first letter corresponds to sending pattern to UT Austin, and the second letter corresponds to sending pattern to Texas A&M University. So, AF represents schools that always send to UT Austin and frequently send to Texas A&M University. Schools actively sending students each year they are in the sample are defined as always, those sending at least 50% of the years they are in the sample are frequent, those sending less than 50% of their active years as sporadic, and being present in the sample for one of the flagships but never sending to the other are defined as never senders. I only present the results for groups with at least 100 observations. All models include HS demographic composition controls.

Data Sources: TEA, SBEC, and AEIS/TAPR reports.

Table 3

Student Characteristics by Tertile

Year	2002 (N = 15,467)			2012 (N = 19,084)			2022 (N = 23,254)		
Student Characteristics	T1	T2	T3	T1	T2	T3	T1	T2	T3
Students (% of cohort size)	24.2	68.6	7.2	23.3	65.2	11.6	34.0	60.8	5.2
SAT mean	.	.	.	908.4	1027.0	1363.6	374.28	1086.5	1434.0
ACT mean	.	.	.	5.7	14.9	30.79	.	7.5	31.5
AP mean	3.0	6.2	8.9	5.7	8.0	10.6	5.6	9.7	12.1
DC mean	0.0	0.7	1.6	0.9	1.5	1.1	0.1	0.11	0.1
Math mean	2.7	3.8	4.5	3.7	4.0	4.2	3.8	4.6	5.0
Science mean	2.4	3.5	4.6	3.6	4.0	4.5	3.3	4.2	4.8
Demographics (%)									
Race/Ethnicity									
Asian	7.0	11.1	21.1	7.5	13.5	19.9	9.9	26.1	30
Black	5.2	3.2	2.5	11.0	3.6	1.6	8.0	4.13	1.50
Hispanic/Latino	13.4	11.4	10.9	34.8	20.2	8.3	41.4	23.1	11.5
White	74.2	74.2	65.4	45.8	61.9	69.8	32.4	40.6	50.9
Other races	0.2	0.1	0.0	0.9	0.5	0.3	6.7	3.6	2.9
Gender									
Male	43.0	46.1	58.6	35.5	46.7	55.5	32.5	50.0	61.0
Female	57.0	53.9	41.3	64.5	53.3	44.5	67.5	50.0	39.0
Sending HS Quintile (%)									
First	3.2	0.0	0.0	0.7	0.1	0.0	0.2	0.0	0.0
Second	17.2	7.1	3.4	14.1	4.1	1.4	16.6	11.2	9.0
Third	67.3	74.4	67.7	75.5	70.4	61.1	76.7	79.1	79.4
Fourth	12.2	18.4	28.9	10.3	25.4	37.5	6.5	9.7	11.6
Fifth	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HS Locale									
City	40.9	40.8	38.7	42.9	40.2	41.3	36.5	32.4	29.8
Suburb	38.4	39.0	41.3	31.8	37.7	43.1	32.7	39.1	42.9
Town	6.7	7.4	7.3	8.1	6.8	3.6	7.8	5.5	3.8
Rural	14.4	12.9	12.7	12.3	15.3	12.1	22.2	22.7	23.3

Notes. This table presents the descriptive statistics (students' HS exit profiles and HS description) of each college tertile over three decades of TTP, in 2002, 2012, and 2022. For example, the first row, second column (24.2) represents what percentage of 2002 flagship entrants were in the first tertile of their university cohort. In 2012, the percentage of first-tertile students originating from first-quintile HSs fell to 23.3%, then rose again to 34% in 2022.

Data Sources: TEA, THECB, SBEC, and AEIS/TAPR reports.

Table 4

School Characteristics' Association with Relative Position and Major in Flagship University

	First Q	Second Q	Fourth Q	Fifth Q
Panel A: Baseline College Profile				
First Tertile	1.44*	1.23*	0.78***	0.40**
	(0.21)	(0.18)	(0.01)	(0.13)
Second Tertile	0.74*	0.85***	1.07***	1.08
	(0.10)	(0.01)	(0.01)	(0.18)
Third Tertile	0.94	0.82***	1.30***	1.85**
	(0.26)	(0.03)	(0.02)	(0.36)
N	331,991	331,991	331,991	331,991
Panel B: College Major				
Business	0.61*	1.06**	0.96*	0.41*
	(0.15)	(0.02)	(0.02)	(0.16)
Communication Studies	1.24	1.03	0.97	0.41
	(0.39)	(0.03)	(0.03)	(0.30)
Education and Social Services/Policy	0.63	1.04	0.93	1.99
	(0.45)	(0.05)	(0.05)	(1.04)
Engineering and Related	1.21	1.01	0.97	1.16
	(0.21)	(0.02)	(0.01)	(0.23)
Health	1.21	1.02	0.90***	0.32*
	(0.32)	(0.03)	(0.03)	(0.15)
Humanities & Liberal Arts	0.83	0.96*	1.09***	0.90
	(0.14)	(0.02)	(0.02)	(0.23)
Industrial, Manufacturing, and Construction	1.37	1.10*	0.94	0.88
	(0.47)	(0.04)	(0.04)	(0.48)
Literature, Linguistics, & Fine Arts	1.14	0.93*	1.00	0.60
	(0.36)	(0.03)	(0.03)	(0.31)
Math and Computer Science	0.87	1.02	0.91***	0.93
	(0.28)	(0.03)	(0.02)	(0.34)
Natural Science	1.10	0.94***	1.05**	1.47*
	(0.18)	(0.02)	(0.02)	(0.26)
Service-Oriented	1.30	0.97	0.90**	1.10
	(0.48)	(0.04)	(0.0.03)	(0.57)
Social and Behavioral Science	1.04	1.05*	0.99	1.09
	(0.24)	(0.02)	(0.02)	(0.31)
N	321,342	321,342	321,342	321,342

*** p<0.001, ** p<0.01, * p<0.05

Notes. This table presents the results from three separate Multilevel Logistic regression models, one for each of three tertiles, illustrating how student (L1) demographics and HS College-conducive resources are related to students' probability of being in a higher tertile as compared to a lower tertile. Coefficients are in odds ratio format.

Data Sources: TEA, SBEC, and AEIS/TAPR reports.

Appendix

Table A1

Major Classification

Broad Field	2-digit CIP code	Subjects
Industrial, Manufacturing, and Construction	01, 46, 47, 48, 49	Agriculture and Related Services; Construction Trades, Mechanic and Repair Technologies/Technicians; Precision Production; Transportation and Materials Moving
Natural Science	03, 26, 40, 41	Natural Resources and Conservation; Biological and Bio Medical Sciences; Physical Sciences; Science and Technologies/Technicians
Business	04, 52	Architecture and Related Service; Business, Management, Marketing, and Related Support Services
Social and Behavioral Science	05, 19, 22, 42, 45	Area, Ethnic, Cultural, Gender and Group studies; Family and Consumer Sciences/Human Sciences; Legal Professions and Studies; Psychology; Social Sciences
Communication Studies	09, 10, 25	Communication, Journalism, and Related Programs; Communications technologies/Technicians, and Support Services; Library Science
Literature, Linguistics, & Fine Arts	16, 23, 50	Foreign Languages, Literature, and Linguistics; English Language and Literature/Letters; Visual and Performing Arts
Math and Computer Science	11, 27	Computer Technologies and Information Sciences and Support Services; Mathematics and Statistics
Education and Social Services/Policy	13, 43, 44	Education; Homeland Security, Law Enforcement, Firefighting, Related Protective Services; Public Administration and Social Service Professions
Engineering and Related Fields	14, 15	Engineering; Engineering Technologies and Related Fields
Humanities & Liberal Arts	24, 30, 38, 39, 54	Liberal arts/general studies; Multicultural/interdisciplinary; Philosophy and Religious Studies; Theology and Religious Vocations; History
Service-Oriented	12, 28, 29, 31, 36	Personal and Culinary Services; Military Science, Leadership, and Operational Art; Military Technologies and Applied Sciences; Parks, Recreation and Leisure Studies; Leisure and Recreational Activities; Homeland Security, Law Enforcement, Firefighting, Related Protective Services
Health	34, 51, 60	Health Related Knowledge and Skills; Health Professions and Related Programs; Residency Programs (health-related)
Other	32, 33, 35, 37, 53	Basic Skills and Developmental/Remedial Education; Citizenship Activities; Interpersonal and Social Skills; Personal Awareness and Self-Improvement; High School/Secondary Diplomas, and Certificates

Table A2
HS-level Summary Statistics

Name	Description	Mean (SD)	Range
Course Offerings & College Acceleration Program			
AP offering	The number of unique Advanced Placement credits a HS offers	17.23 (14.79)	0-117
AP uptake	Proportion of HS students taking any AP course	0.59 (0.23)	0-1
Average AP	The average number of AP credits students in a HS take	2.70 (1.52)	0-19.88
DC offering	The number of unique Dual Credit courses a HS offers (in credit units)	4.51 (7.02)	0-130
DC uptake	Proportion of HS students taking any DC course	0.19 (0.21)	0-1
Average DC	The average number of credits students in a HS take in DC	1.81 (1.48)	0-17.5
Math uptake	Proportion of HS students taking any math credit	0.89 (0.42)	0-1
Average math	The average number of math credits students in a HS take	2.78 (0.99)	0.1-6.78
Science uptake	Proportion of HS students taking any science credit	0.87 (0.27)	0-1
Average science	The average number of science credits students in a HS take	2.53 (0.90)	0.05-7.59
Teacher Quality			
In-field	The proportion of HS teachers teaching a course aligned with their certification	0.54 (0.22)	0-1
Experienced	The proportion of HS teachers having at least three years of teaching experience	0.67 (0.25)	0-1
Years in experience	Number of years in teaching experience	12.44 (2.76)	0-30
Appropriately certified	The proportion of HS teachers certified in a regular route	0.22 (0.18)	0-1
College-going Culture			
Counselor caseload	The average number of students each counselor is responsible for	0.01 (0.12)	0-10
SAT/ACT uptake	The proportion of HS students taking the SAT/ACT	65.87 (19.27)	0-100
SAT mean	HS average score on SAT	1077.58 (203.57)	612-1600
ACT mean	HS average score on ACT	19.95 (2.31)	11.7-29.9
HS Exit Test			
STAAR algebra-I	HS average standardized score in the Mathematics section of the State of Texas Assessments of Academic Readiness (STAAR) between 2012-2017	3737.27 (433.73)	247.5-6430
STAAR english-I	HS average standardized score in STAAR English-I section	3898.67 (378.06)	303.5-6560
STAAR english-II	HS average standardized score in STAAR English-II section	3917.03 (396.13)	268.33-6999
STAAR biology	HS average standardized score in STAAR Biology section	3871.03 (396.13)	302-6376

Name	Description	Mean (SD)	Range
STAAR US history	HS average standardized score in STAAR US History section	3883.21 (637.58)	106-5834
College-conducive Resource Quintile			
College acceleration quintile	Average quintile based on course offerings and college acceleration resources (i.e., AP, DC, math and science offerings, uptake, and average courses completed)	2.77 (0.81)	1-5
Teacher quality quintile	Average quintile based on teacher quality (i.e., experience, in-field, and appropriately certified)	3.15 (0.84)	1-5
College-going culture quintile	Average quintile based on college-going culture (i.e., SAT/ACT uptake, mean, and TSI readiness)	3.10 (0.98)	1-5
Overall quintile	Average quintile for overall college-conducive resources	2.89 (0.64)	1-5
Exogenous/Compositional Factors			
Campus size	Total number of students in the HS	1117.13 (963.08)	1-14814
Locale			
City	Indicator for HS located in city	0.27 (0.44)	0-1
Suburb	Indicator for HS located in suburb	0.19 (0.40)	0-1
Town	Indicator for HS located in town	0.14 (0.35)	0-1
Rural	Indicator for HS located in rural area	0.39 (0.49)	0-1
Minority quartiles			
First quartile	Proportion of high schools serving 0-25% racial minority students	0.24 (0.43)	0-1
Second quartile	Proportion of high schools serving 26-50% racial minority students	0.26 (0.44)	0-1
Third quartile	Proportion of high schools serving 51-75% racial minority students	0.20 (0.40)	0-1
Fourth quartile	Proportion of high schools serving 75% or more racial minority students	0.30 (0.46)	0-1
Low-income quartiles			
First quartile	Proportion of high schools serving 0-25% low-income students	0.18 (0.38)	0-1
Second quartile	Proportion of high schools serving 26-50% low-income students	0.37 (0.48)	0-1
Third quartile	Proportion of high schools serving 51-75% low-income students	0.28 (0.44)	0-1
Fourth quartile	Proportion of high schools serving 75% or more low-income students	0.17 (0.38)	0-1
Gifted	Percentage of students that are gifted (i.e., exhibit academic ability above their grade level)	9.57 (8.69)	0-100
Bilingual	Percentage of students that speak another language on top of English	6.54 (9.60)	0-100

Table A3

Student-level Summary Statistics

Race			
Asian	The proportion of students identifying as Asian	0.13 (0.33)	0-1
Black	The proportion of students identifying as Black	0.05 (0.21)	0-1
Hispanic/Latino	The proportion of students from Hispanic/Latino ethnicity	0.19 (0.39)	0-1
Other races	The proportion of students identifying as native, pacific islander, multiracial, or any other race other than the ones mentioned	0.02 (0.05)	0-1
White	The proportion of students identifying as white	0.64 (0.48)	0-1
Low-income status			
Yes	The proportion of students eligible for the Pell grant or Federal benefits	0.99 (0.05)	0-1
No	The proportion of students that are not low-income	0.01 (0.05)	0-1
Gender			
Male	The proportion students identifying as male	0.46 (0.50)	0-1
Female	The proportion students identifying as female	0.54 (0.50)	0-1
Age	Average student age	18.04 (0.48)	12-32
Gifted			
Yes	The proportion of students showing greater academic ability than their grade level	0.53 (0.50)	
No	The proportion of students showing academic ability at their grade level	0.47 (0.50)	
ESL			
Yes	The proportion of students participating in the English as Second Language Program (ESL)	0.08 (0.27)	0-1
No	The proportion of students participating in the ESL	0.92 (0.27)	0-1

Figure A1

Number of Students Sent Per Quintile

Notes. This figure displays the number of students that get accepted into the target flagship universities from each school quintile each year between 2000-2023. The bars on the left depict the total number of students accepted to Texas A&M University. The bars on the right depict the total number of students accepted to The University of Texas at Austin.

Table A4

High School Level Factors Associated with Sending Students the Flagships

Students sent	Model 1 Overall CCR	Model 2 College Accelerat ion	Model 3 Teacher Quality	Model 4 College-going Culure
Resource Quintile (Ref: Q3)				
First quintile	-1.953*	1.08**	0.03	-2.50***
	(0.93)	(0.40)	(0.40)	(0.36)
Second quintile	-1.54***	1.68***	-0.31	-1.44***
	(0.18)	(0.41)	(0.20)	(0.19)
Fourth quintile	1.84***	3.23***	0.33	1.16***
	(0.42)	(0.53)	(0.22)	(0.28)
Fifth quintile	4.12***	0.28	0.85***	3.14***
	(1.13)	(3.66)	(0.33)	(0.60)
Demographics				
Racial minority (Ref: Q1)				
Q2	-1.27	-1.35	-1.35	-1.27
	(0.76)	(0.76)	(0.76)	(0.76)
Q3	-3.70***	-3.86***	-3.77***	-3.67***
	(0.78)	(0.79)	(0.79)	(0.79)
Q4	-5.07***	-5.24***	-5.16***	-5.00***
	(0.89)	(0.89)	(0.89)	(0.88)
Low-income quartile (Ref: Q1)				
Q2	-2.80***	-2.76***	-2.67***	-2.85***
	(0.52)	(0.53)	(0.52)	(0.53)
Q3	-4.86***	-4.88***	-4.58***	-4.91***
	(0.68)	(0.68)	(0.67)	(0.68)
Q4	-3.95***	-3.90***	-3.45***	-3.99*
	(0.78)	(0.77)	(0.78)	(0.78)
Locale (Ref: Rural)				
City	2.58**	2.57***	2.83**	2.53**
	(0.81)	(0.81)	(0.98)	(0.81)
Suburb	2.69***	4.09***	3.07***	2.70***
	(0.41)	(0.67)	(0.46)	(0.41)
Town	0.28	0.29	0.31	0.33
	(0.24)	(0.24)	(0.25)	(0.24)
Gifted	0.22***	0.22***	0.21***	0.22***
	(0.04)	(0.04)	(0.04)	(0.04)
Bilingual	-0.06***	-0.06**	-0.06*	-0.07***
	(0.02)	(0.02)	(0.02)	(0.02)
Campus size	0.01***	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)
N	23,574	23,573	21,554	23,464
R-Squared	0.56	0.55	0.55	0.56

*** p<0.001, ** p<0.01, * p<0.05

Notes. This table presents the results from five separate OLS models, one with the overall index of college-conducive resources (model 1), followed by models with each of the four college-conducive resource dimensions (models 2 through 5), as the independent and students sent to flagships (dosage) as the outcome variable. Except for the HS exit test performance dimension, the number of students sent rises with resources. The model with college-going culture as the independent variable shows the most similarity with the overall index, and only this model predicts dosage better than the overall quintile (R-squared 0.56 as opposed to 0.54). All models include HS demographic composition controls, and the standard errors are clustered at the HS-level.

Data Sources: TEA, SBEC, and AEIS/TAPR reports

Table A5

The Association Between Flagship Attendees' Relative Position in College and Feeder High School's College-Conducive Resources

Panel A	UT Austin (N = 205,476)			Texas A&M University (N = 267,421)		
HS Quintile	First	Second	Third	First	Second	Third
First	0.54%	0.08%	0.01%	0.08%	0.10%	0.01%
Second	4.91%	5.47%	0.41%	4.12%	6.42%	0.53%
Third	21.12%	43.26%	5.01%	16.70%	46.71%	5.75%
Fourth	3.58%	13.14%	2.43%	2.65%	14.13%	2.75%
Fifth	0.00%	0.03%	0.01%	0.00%	0.04%	0.01%
Panel B Year: 2002	UT Austin (N = 7,550)			Texas A&M University (N = 7,917)		
First	1.54%	0.00%	0.00%	0.03%	0.00%	0.00%
Second	5.23%	4.79%	0.26%	3.13%	4.98%	0.23%
Third	16.94%	49.10%	5.06%	15.62%	52.99%	4.71%
Fourth	2.60%	12.29%	2.13%	3.30%	12.90%	2.03%
Fifth	0.01%	0.04%	0.00%	0.03%	0.06%	0.00%
Panel C Year: 2012	UT Austin (N = 8,207)			Texas A&M University (N = 10,877)		
First	0.04%	0.00%	0.00%	0.00%	0.01%	0.00%
Second	3.77%	2.92%	0.11%	2.91%	2.52%	0.20%
Third	17.72%	44.90%	7.71%	17.49%	46.63%	6.56%
Fourth	2.41%	15.94%	4.48%	2.40%	17.06%	4.21%
Fifth	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Panel D Year: 2022	UT Austin (N = 10,182)			Texas A&M University (N = 13,072)		
First	0.09%	0.03%	0.00%	0.04%	0.00%	0.00%
Second	5.35%	6.16%	0.41%	5.90%	7.31%	0.51%
Third	29.62%	46.12%	4.09%	23.38%	49.57%	4.17%
Fourth	2.43%	5.05%	0.65%	2.03%	6.53%	0.57%
Fifth	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%

Notes. This table presents the percentage of college students that fall under each college tertile-HS quintile subgroup, throughout the observation periods. For example, row 2 in panel A translates to: 4.91% of UT Austin students are in the first tertile and second HS quintile. At Texas A&M University, 0.41% of first-tertile students are from second-quintile HSs. Comparing panels B, C, and D, one can get a sense of how college tertiles are changing over the years (e.g., first tertile-third quintile student percentage at UT goes from 16.94% to 17.72% to 29.62%, so the proportion increases over the years).

Data Sources: TEA, THECB, SBEC, and AEIS/TAPR reports.