

THE EFFECTS OF THE TEXAS TOP 10% PLAN ON HIGH SCHOOL TO
UNIVERSITY FEEDER PATTERNS AND DIPLOMA TYPES

A Dissertation

by

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ABSTRACT

This study was an investigation of the effects of the University of Texas admission cap on a school's odds of being a Texas Flagship feeder school and a student's likelihood of earning a college preparatory diploma. Multinomial Logistic Regression (MLR), Logistic Regression (LR), and Difference-in-Differences (DID) models were used to test whether high school to university sending patterns and types of high school diploma attained by Texas high school seniors could be correctly predicted from knowledge of important K-12 school characteristics and demographic profiles. Findings were based on changes in diploma types earned and feeder school status before and after the UT Top 10% automatic admission cap. Findings indicate the UT admission cap reduced the number of high schools that sent students to Texas A&M and the University of Texas. Less than 5% of Texas public high schools sent at least 8% of their senior class to either Flagship school. A redistribution of Texas Flagship feeder schools might have occurred rather than the addition of new Texas Flagship feeder high schools. The UT admission cap also influenced the rigor of students' course-taking behavior to be eligible for the Texas Top 10% automatic admission guarantee. After the UT admission cap, more students earned a college preparatory diploma. However, they earned it by taking less rigorous coursework to qualify for the Top 10% automatic admission guarantee. Findings from this study will help K-12 administrators, legislators, and laities understand which school-based factors are related to students taking more rigorous coursework and draw more students from traditionally marginalized groups to enroll in more selective universities.

DEDICATION

This dissertation is dedicated to my family. You encouraged me to step out on faith and start this journey. To my husband and best friend, James, without your love and support, this dissertation would not have been completed. To my daughter Amerie Elise, you continue to motivate me to be my best. Mommy dreamed big so you can dream bigger. To my parents Ricardo and Anna, thank you for every sacrifice and for keeping me covered in prayer. To my sisters: Gina, Ruth, Reahna, Risa, and Vanya I needed you and you were there. I love you and thank you for being great cheerleaders. You all spoke great things into my future. My dreams became our dreams. Simply put, I am because we are...

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NOMENCLATURE

AEIS	Academic Excellence Indicator System
AYP	Adequate Yearly Progress
GPA	Grade Point Average
NAEP	National Assessment of Educational Progress
NCES	National Center for Educational Statistics
NCLB	No Child Left Behind
PEIMS	Public Education Information Management System
TAMU	Texas A&M University
TEA	Texas Education Agency
TTPP	Texas Top 10% Plan
UT	University of Texas

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CHAPTER I

INTRODUCTION

In Texas there is a pervasive racial gap in secondary and postsecondary attainment (Cortes, 2010; Harris & Tienda, 2010). The demographic mix of the State's flagship schools does not reflect the State's population. This postsecondary participation gap can be traced back to Texas' long history of legal segregation established through Dred Scott and Jim Crow Laws. Even with desegregation legislation such as *Delgado v. Bastrop ISD* (1948), *Brown v. Board of Education* (1954), and *Hernandez v. State of Texas* (1954), the Texas legislature continued to pass laws to resist federal and state ordered integration (De Leon & Calvert, 2010). Voluntary forms of affirmative action from Texas' higher education institutions did not begin until the 1980s after threats of federal intervention (Moses, 2001; Texas Higher Education Coordinating Board, 1998). Texas A&M University and the University of Texas were the only two higher education institutions that adopted a voluntary plan of affirmative action to eliminate all vestiges of its former *de jure* racially dual system of public higher education (Texas Higher Education Coordinating Board, 1998; Tienda et al., 2003).

Since then, closing the participation gap between African Americans and Hispanics and their peers has been a statewide initiative for Texas for over three decades (Texas Higher Education Coordinating Board, 1998). While Texas continues to address the historically low participation (enrollment) rates of African Americans and Hispanics in post-secondary education, the Texas legislature has increasingly become unsupportive

of affirmative action strategies to address the pervasive racial gap in secondary and postsecondary completion (Munoz, 2003).

Texas' College Squeeze

Meanwhile, Texas grew to have a larger share of potential African American and Hispanic college-goers than the national average (Tienda, 2006; Tienda et al., 2003; Ura & Daniel, 2015). High levels of immigration and rates of fertility have contributed to a fast growing Texas population that is more ethno-racially diverse (Tienda et al., 2003). A unique characteristic of this demographic shift has been the swell in the school-age population. Not only were the demographics of Texas shifting to become more ethno-racially diverse, the Texas population was becoming younger (Tienda, Cortes, & Niu, 2003). A younger Texas population meant a larger pool of college-eligible students and a 50% increase in college enrollment in Texas (Tienda, 2006). However, the available seats across post-secondary institutions in Texas rose only 27% (Tienda, 2006). Consequently, the demand for a college education from a selective university outstripped its limited supply of seats and has resulted in a college squeeze (Harris & Tienda, 2010; Niu, Tienda, & Cortes, 2004).

The college squeeze resulted in an increased premium on selective public higher education institutions such as Texas A&M (TAMU) and the University of Texas (UT) (Cortes, 2010). In addition to a greater financial investment in students at selective universities, there are higher graduation rates, which result in higher wages in life (Alon & Tienda, 2005; Long, 2007). However, the high volume of applications to selective universities has resulted in admission officers' overreliance on college entrance exams as

one of the top measures of merit for college admissions (Alon & Tienda, 2007). Heavy weight on standardized college entrance exams such as the Scholastic Aptitude Test (SAT) and American College Testing (ACT) in the admission process disadvantaged talented poor and students of color, namely African American, Latina/o(s), American Indians, and some Asians (e.g. Cambodian & Filipino) who often scored lower than their peers (Crosby et al, 2003; Koffman & Tienda 2008; Steele, 1997).

Some researchers have argued that high and low SAT and ACT scores more often reflected family wealth and access to resources (i.e. college preparatory credits, financial resources for SAT/ACT preparatory support) than academic ability (Alon & Tienda, 2007, Tienda, 2006; Kahlenberg, 2012; McDonough, 1997). Yet, many students of color attended schools where there was concentrated poverty (Darling-Hammond, 2010). Concentrated poverty has resulted in educational inequalities within schools and districts (Chambers, 2009; Darling-Hammond, 2010; Howard, 2010; Ingersoll & May, 2011; Kozol, 2012; Hansen & Ladd, 1999; Menchaca, 1997). Such differences in high school preparation and resources have resulted in differential effects on student college orientation and college entrance exam performance (Alon & Tienda, 2007; McDonough, 1997; Perez & McDonough, 2008; Rumberger, 2010). By narrowly defining merit by test scores, college admission officers have stratified college enrollees and made race-conscious plans necessary (Alon & Tienda, 2007). In other words, the rapid growth in Texas increased the volume of applications to Texas' Flagship schools, TAMU and UT. Due to high volumes of college applications, standardized college entrance exams were relied upon more heavily than other admission factors (i.e. personal essays, letters of

recommendation) (Alon & Tienda, 2007). The prevailing test score gap between African American and Latino students and their peers among other factors in Texas created a challenge for both TAMU and UT diversity initiatives (Chan & Eyster, 2003; Texas Higher Education Coordinating Board, 1998). Subsequently, both UT and TAMU relied on ancillary affirmative action strategies (e.g. outreach efforts to poor, underperforming schools) to help fulfill institutional goals (Andrews, Ranchhod, & Sathy, 2010, Long & Tienda, 2008; Texas Higher Education Coordinating Board, 1998).

Hopwood v. University of Texas

The demand for college access at selective schools coupled with strategic diversity efforts made by higher education institutions stirred up a heightened disapproval of affirmative action (Alon & Tienda, 2005; Orfield & Miller, 1998). Such tensions reached a climax when four college applicants brought a lawsuit against the University of Texas regarding their use of affirmative action in admission procedures. The ruling of this case, *Hopwood v. University of Texas* (1996), resulted in a ban on affirmative action in admissions, recruitment and retention, and financial aid decisions. This ban of affirmative action occurred during a time Texas' main source of new students was students of color and evidence that Texas was operating *de jure* dual higher education school systems (Moses, 2001).

Immediately, Hispanic and African American legislators rallied other education stakeholders to respond to the ban. These legislators foresaw the existing racial participation and attainment gap widening exponentially with the *Hopwood* (1996) affirmative action ban in education (Munoz, 2003). Their predictions were

correct. A year after the *Hopwood (1996)* ruling, there were drastic drops in applications and admissions of African American and Hispanic graduates (decline by 28% UT and 14% TAMU) while the admission rates for White and Asian applicants rose (Kain, O'Brien, & Jargowsky, 2005; Munoz, 2003). With such drastic drops and an anti-affirmative action political climate, the Texas legislators knew that they needed to develop an immediate response to the affirmative action ban. The response would need to be race neutral (Munoz, 2003). A race-conscious bill had a slim chance of passing through the Republican-controlled Texas Senate or the then Governor George W. Bush who opposed affirmative action in education (Munoz, 2003).

In 1997, Texas' race-neutral alternative to affirmative action was a percent plan that was established through House Bill 588 (codified as TEC 51.802 et seq.) of the 75th Texas legislature. House Bill 588 is now law and is more widely known as the Texas Top 10% Plan (TTPP). This law was enacted to neutralize the effects of the *Hopwood v. University of Texas Law School (1996)* decision that legally banned the consideration of race in college admissions, recruitment and retention, and financial aid decisions. The TTPP had strong appeal in both the Texas House and Senate because it was simple, met the race-neutral requirement, and was not based on test scores. To be clear, all Top 10% eligible high school students who plan to attend college after graduation are required to submit a full application and matriculate within two years of their high school graduation. The full application includes the submission of SAT/ACT entrance exam scores to their college of intent. However, under this law, class rank trumps college entrance exams in admission considerations for rank-eligible students.

Under the TTPP, all seniors who graduated in the top 10% of their class are guaranteed automatic admission into any Texas public post-secondary institution including its flagships, Texas A&M and the University of Texas. Guaranteed access to the State's premier public universities distinguishes the TTPP from other states like, Florida and California, who also use percent plans. Under the TTPP, class rank replaced college entrance exams as the exclusive measure of merit for rank-eligible students to help equalize the status of high schools that are distinguished by wealth and test scores (Koffman & Tienda, 2008, p.23). However, two decades later and the success of the Texas Top 10% Plan is still heavily disputed with mounting evidence that it is not a suitable substitute for affirmative action policies (Fletcher & Mayer, 2014; Horn & Flores, 2003; Kain, O'Brien, & Jargowsky, 2005).

Statement of the Problem

In this section, I outline two major factors that are either missing from the equation or not stressed enough when evaluating the efficacy of the House Bill 588, hereafter referred to as Top Ten Percent Plan (TTPP). Those two factors are judging the success of the TTPP based on (a) competing feeder definitions and (b) higher education effects dominantly. I emphasize the importance of research definitions used to inform conclusions and interpretations. For example, conclusions of whether the TTPP has broadened geographic access may vary based on feeder definition. I end this section by discussing how an important policy intent, level the playing field among Texas public high schools has largely been understudied at the K-12 level. Leveling the playing field means that the TTPP resulted in a greater representation of Texas high schools that

participate in sending students to the State's Flagships. I explain why a close and critical examination of school characteristics is necessary for a more holistic understanding of efficacy of this TTPP goal.

Competing Feeder Definitions

The success of the TTPP has often been measured by broadened geographic access and participation as evidenced by the number of feeder high schools (Montejano, 2001; Long, Saenz, & Tienda, 2010; Tienda & Niu, 2006). One of the goals of the TTPP was to mitigate the educational disparities that existed between resource-poor and resource-rich schools by eliminating the test score filter that precluded some poor and students of color from admissions to Texas' Flagship schools (Alon & Tienda, 2007). Specifically, the aim of the TTPP was that the policy "increases college access to a wide spectrum of the Texas population by attracting the very best students of every high school to the state's flagship universities" (Harris & Tienda, 2010, p. 60). Additional feeders signaled increased pathways and greater access to the most selective schools in the state.

However, there is not a direct study known where researchers have tested the existing definitions of feeders to see how change in definition can alter conclusions made about expanded geographic access. For example, under some feeder definitions, the TTPP might be receiving extra credit simply by including high schools that sent one student. That high school may not have been a repeat sender. Because of competing feeder school definitions, it is not clear whether the TTPP was able to interrupt deeply entrenched feeder patterns by geographic expansion. For example, in 2006, 104 out 1500

Texas public high schools supplied half of UT's freshmen class enrollment (Long, Saenz, & Tienda, 2010). Although, Long, Saenz, and Tienda (2010) found a decrease in this feeder concentration and increase in high schools with new characteristics (i.e. rural, small towns), feeder definitions still need to be tested to ensure these new schools are indeed feeders and not intermittent senders. Further, there is no known model where researchers have compared and contrasted UT and TAMU feeders based on key school characteristics. Previous studies (Montejano, 2001; Long, Saenz, Tienda, 2010) have not yet accounted for measures of school quality that may be related to feeder patterns. Applying untested feeder definitions give administrators, legislators, and laities the impression that there is broadened geographic access that is firmly established, and that school characteristics are unrelated to feeder school status.

Absence of K-12 School Characteristics

Second, there is not a direct study known where researchers have tested whether the TTPP has leveled the playing field among Texas public high schools by removing the SAT/ACT filter. In fact, this third policy intent has been largely understudied at the K-12 level. Researchers have provided evidence that assessing behavioral patterns of students (applications and enrollment) is much too late. Therefore, the relationship between school characteristics and the behavioral choices (i.e. diploma type pursued) while students are formulating their postsecondary decisions needs to be investigated. An analysis of such a relationship will help readers understand whether or not the TTPP was incentive enough for high school students to position themselves to be a TTPP college-eligible participant. Knowing which measures of school quality are most closely

related to student curricular choices (evidenced by diploma type earned) and feeder patterns will help administrators successfully prepare more college-eligible students from traditionally marginalized groups and better tailor their college readiness initiatives.

Purpose of the Study and Research Questions

The purpose of this study was to conduct an empirical examination of the impact of the UT Top 10% automatic admission cap on high school feeder status and high school diploma types. Specifically, I wanted to know if high school to university feeder patterns and the type of diploma a graduating senior receives could be correctly predicted from knowledge of a high school's: (a) demographics and (b) college orientation.

Research Questions

This study was guided by three research questions. They are as follows:

1. Which school characteristics predict that a high school will be a UT and/or TAMU feeder?
2. Are students more likely to earn a college preparatory diploma in a UT or TAMU feeder?
3. Did the relationship between Flagship feeders and college preparatory diplomas earned change when UT changed its admission cap (from 10% to 8%) in 2011?

I anticipated that differences in key school characteristics associated with the college orientation and enrollment of traditionally marginalized students groups would help explain differences in the type of high school diploma a student earned and a high

school's feeder status (Black et al., 2015; Fletcher & Tienda, 2006; Frost, 2007; Niu, Tienda, Cortes, 2006; McDonough, 1997; Niu & Tienda, 2008). Particularly, I was interested in these changes before and after the UT Top 10% automatic admission cap. After the implementation of the TTPP, UT became an even more popular choice for Texas high school graduates. For example, Texas high school graduates who qualified for the Texas Top 10% automatic admission filled more than 70% of UT's freshmen seats (Frustenberg, 2010; Tienda, 2006). UT worried that they were increasingly losing their autonomy to make college admission decisions and sought a modification to the TTPP requirement from the Texas legislature. In 2009, the Texas legislature allowed UT to place a cap on the number of Top 10% automatically admitted students it accepted to 75% beginning with the 2011-2012 admissions cycle. This allowed UT more latitude and admission decision power for the remaining 25% of its available seats. With this policy change, I anticipated that UT's Top 10% automatic admission cap would affect high school feeder distributions and the type of diploma students earned. This change was also expected to be distinguishable by certain school characteristics.

Theoretical and Conceptual Perspectives

Some may argue that differences in high school characteristics cannot explain the participation and achievement gap because enrollment is based on a voluntary decision (Fletcher & Tienda, 2010). However, within a growing body of literature, researchers have argued that high school context matters and helps shape high school students enrollment decisions (Black et al., 2015; Fletcher & Tienda, 2006; Frost, 2007; Niu, Tienda, Cortes, 2006; McDonough, 1997; Niu & Tienda, 2008). That is, where you

attend school still matters in students' academic choices, enrollment decisions, which ultimately determines a school's feeder status (Niu, Sullivan, & Tienda, 2008). This study was informed by previous scholarship driven by economic and sociological theories that indicated that differences in high school characteristics might be an important factor in the observed collegiate participation and performance gaps (Black et al., 2015; Fletcher & Tienda, 2010; Grodsky & Riegle-Crumb, 2010; McDonough, 1997; Palardy, 2015). The school characteristics that I focused on in this study were a high school's: (a) demographics and (b) college orientation. These two factors encompassed many school characteristics that were operationalized and used as predictive measures for my models.

Cultural Capital, Social Capital, and Social Mobility

The decision of which school characteristics to include in my models were informed by evidence-based findings presented in the extant literature and the theoretical assumptions of economic (human capital & individual utility maximization) and social reproduction scholars (see Bourdieu, 1986; Bourdieu & Passeron, 1990; Bowles & Gintis, 1976; Giroux, 1983; DiMaggio, 1991). Arguments made by these theorists are that schools reproduce social inequalities instead of resolving them. Bourdieu (1986) suggested that both cultural and social capital derive from economic capital, and that students bring different levels of social and cultural capital according to their social class. Schools typically align their pedagogic practices/actions with the dominant culture of power (White middle and upper class). As a result, students who bring cultural capital identical to the dominant culture have greater success and are rewarded while other

forms that stray further from the dominant culture (poor communities and certain communities of color) are often sanctioned. Thus, schools “convert social hierarchies into academic hierarchies” which often sustains the students’ original social order (Bourdieu, 1986, p. 60). In other words, students are likely to leave school in the same position they began, unless their capital is activated and legitimized by schools (Aschaffenburg & Mass, 1997; LaReau, 1987; LaReau & Horvat, 1999). Legitimization is based on what is valued and has determined moments of social inclusion or exclusion (LaReau, 1987). Lareau (1987) asserted, “any form or type of capital derives value only in relation to the specific field of interaction” (p.50). Therefore, adhering to those rules of engagement (interaction) and activating one’s capital play a large role in social reproduction. LaReau (1987) went on to explain how an “individual’s class and racial position affected social reproduction, but did not determine it” (p. 50).

Aschaffenburg and Mass (1997) conducted a study analyzing the effects of cultural capital (Bourdieu) and mobility (DiMaggio) on social reproduction, more specifically educational reproduction. Their findings illustrated that cultural and social capital played a large role in achieving educational success, especially post-secondary success. Interestingly, their findings also squared with DiMaggio’s theory of social mobility, which suggests that unlike Bourdieu’s theory, social status is not fixed or exclusive but can be accessed regardless of a lower socio-economic financial background. In fact, Aschaffenburg and Mass (1997) concluded that a shift might be occurring from fixed cultural capital that can only be transmitted through families to a process that youth can access independently from their family. This is evident in more

recent research on social networks used for college access (Martinez, 2012; Perez & McDonough, 2008). This study extends the more recent research.

College Choice Organizational Habitus

Specifically, I built upon the work of McDonough (1997), who provided evidence that organizations (high schools) served as a mediating factor for individual habitus. Habitus is “a largely unconscious constellation of preferences, behaviors, and styles of self-presentation shaped during childhood” (Grotsky & Riegle-Crumb, 2010, p. 4). Habitus drives the economic concept individual utility maximization. Individual utility maximization is the conscious decisions made by students and their families that bring them the most benefit or value with the least amount of risk (Grotsky & Riegle-Crumb, 2010). These decisions are presumed based on unbiased information and unrestricted access to important school resources (Grotsky & Riegle-Crumb, 2010). McDonough (1997) argued that high schools have an organizational habitus that can impede or promote individual utility maximization. According to McDonough (1997) high schools have an organizational habitus that influence students’ “view of the opportunity structure of American higher education” (McDonough, 1997, p. 106). Different high schools based on different school characteristics offer different views of the postsecondary opportunity structure (Grotsky & Riegle-Crumb, 2010). Not only do schools offer different viewpoints, they do not offer access to the same resources for postsecondary decisions (Perez & McDonough, 2008).

The underlying assumption of McDonough’s (1997) College Choice Organizational Habitus is that some students’ individual habitus, despite their college

aspirations, is bound by institutional and structural high school factors (Engberg & Wolniak, 2007). This concept is a direct challenge to standard college choice models. Such models are based on the premise that individual utility maximization is freely exercised and unconstrained by institutional or structural characteristics of a high school. Instead, a high school's organizational habitus can result in a distorted viewpoint about the postsecondary opportunity structure. A school's organization habitus can also result in actions and decisions that do or do not put students in the position to take advantage of their full postsecondary choice sets. Ultimately, the assumption is that students are more likely to operate from a point of view that has been filtered through their school's value-laden organizational habitus (Grodsky & Riegle-Crumb, 2010). A school's organizational habitus is similar to school culture in that it evolves slowly over time through interaction between parents, students, and staff (Grodsky & Riegle-Crumb, 2010). For example, differences in school characteristics like ethnic distribution or social economic composition may result in patterns of inequitable practice and school processes that affect postsecondary decisions. This conceptual framework not only helped to inform measures selected, it also guided data outcome interpretations.

Together, these conceptual and theoretical perspectives allowed me to explore the idea that students' postsecondary decisions are not independent from their school environment. By examining the relationships between important school characteristics, feeder status, and diploma types received, I tested how, if at all, the high school a student attends may confer important advantages or impose disadvantages.

Definition of Terms

In this section, I present 21 definitions for my study. For the purpose of this study, the following definitions apply:

Academic Excellence Indicator System (AEIS)

AEIS is a state-level database of information for all independent school districts and public school campuses in Texas. This information is available on an annual basis on the Texas Education Agency (TEA) website.

Advanced Course/Dual Enrollment Completion

This indicator is based on a count of students who complete and receive credit for at least one advanced course in grades 9-12. Advanced courses include dual enrollment courses. Dual enrollment courses are those for which a student gets both high school and college credit. Deciding who gets credit for which college course is described in Texas Administrative Code §74.25 (TAPR, 2014).

Affirmative Action

Affirmative action is, “voluntary and mandatory efforts undertaken by federal, state, and local governments; private employers; and schools to combat discrimination and to promote equal opportunity in education and employment for all” (Crosby, 2004, p. 5).

African Americans

African Americans are individuals who have origins in any of the black racial groups of Africa (U.S. Census Bureau, 2013).

American Indian or Alaskan Natives

American Indian or Alaskan Natives are individuals who have origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment (U.S. Census Bureau, 2013).

Asians

Asians are individuals who have origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam (U.S. Census Bureau, 2013).

Average Years Experience of Teachers

Weighted averages are obtained by multiplying each teacher's FTE count by years of experience. These amounts are summed for all teachers and divided by the total teacher FTE count, resulting in the averages shown. This measure refers to the total number of (completed) years of professional experience for the individual in any district (TAPR, 2014).

Civil Rights Act of 1964

The Civil Rights Act of 1964 represents a series of legislation that outlawed discrimination on the bases of race, color, religion, sex, or national origin.

Class Rank

Class rank is a mathematical summary of a student's academic record compared to those of other students in the class. It usually takes into account both the degree of difficulty of the credits a student is taking (advanced placement, honors, college-

preparatory or regular credits) and the grade the student earns. The compilation of credits and grades is converted to an overall grade point average (GPA), and the higher the GPA, the higher the student's class ranking (College Board, 2014).

Disproportionality

Disproportionality “is the representation of a group in a category that exceeds expectations for that group or differs substantially from the representation of others in that category” (Skiba et al., 2008, p. 266).

Discrimination

Discrimination is the differential treatment of individuals belonging to particular groups or categories in society.

Economically Disadvantaged

The percent of economically disadvantaged students is calculated as the sum of the students coded as eligible for free or reduced-price lunch or eligible for other public assistance, divided by the total number of students (TAPR, 2014).

Feeder School One

Under feeder definition one, a high school is classified as a Texas Flagship feeder if at least one student enrolled in Texas A&M University or the University of Texas in the current year.

Feeder School Two

Under feeder definition two, a high school is classified as a Texas Flagship feeder school if 20 or more students enrolled in either or both Texas A&M University and/or the University of Texas in the current year.

Feeder School Three

Under feeder definition three, a high school is classified as a Texas Flagship feeder school if ranked among the top 50 high schools that sent the greatest proportion of their graduating class to Texas A&M University and/or the University of Texas in the current year and the prior year.

First Generation

First Generation is the classification of a student when neither of their parents graduated from a four-year college (DARS, 2016).

First-Time in College (FTIC)

First time in college student is an undergraduate, degree-seeking student who applied and enrolled in college for the first time (regardless of whether the student has acquired college level credit through testing, advanced placement or summer enrollment) (DARS, 2016).

Gender

Gender identifies a student as either “male” or “female” (DARS, 2016).

Graduates

This is the total number of graduates (including summer graduates) for the academic school year, as reported by districts in the Fall. The value includes 12th graders who graduated as well as graduates from other grades. Students in special education who graduate are included in the totals, and are also reported as a separate group (TAPR, 2014).

Hispanics

Hispanic students are individuals of Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race (U.S. Census Bureau, 2013).

Historically Black Colleges and Universities

Historically Black Colleges and Universities are Institutions of higher education in the United States that was established before 1964 whose principal mission was the education of black Americans (Higher Education Act of 1965).

Historically Underrepresented Groups

Groups who are or have been denied access and/or suffered past institutional discrimination in the United States.

House Bill 588 (Texas Top 10% Plan)

House Bill 588 is a bill that was proposed in the Texas House of Representatives during the 75th Texas legislature and later passed into law (codified as TEC 51.802 et seq.) in 1997, establishing a percent plan as Texas' uniform admission criteria.

International

International denotes a person who is not a citizen or permanent resident of the United States and who is in this country on a temporary basis and does not have the right to remain indefinitely (DARS, 2016).

Native Hawaiian or Other Pacific Islanders

Native Hawaiian or Pacific Islanders are individuals who have origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands (U.S. Census Bureau, 2013).

Organizational habitus

Organizational habitus is “the impact of a cultural group or social class on an individual’s behavior through an intermediate organization” (McDonough, 1997, p. 107).

Predominantly White Institution

A predominantly White institution is an institution of higher learning where Whites account for more than 50% of the student enrollment (Brown & Dancy, 2010).

SAT Mean Score

The average (mean) score for the SAT total calculated as follows: total score (math plus verbal) for all students who took the SAT *divided by* number of students who took the SAT (TAPR, 2014).

School Size

School size is the total number of students in the respective high school campus as reported in the AEIS report in the current year (TAPR, 2014).

Teachers of Color

This is the sum of the FTE counts for all non-white staff groups (African American, Hispanic, Asian/Pacific Islander, and Native American) (TAPR, 2014).

Top 10% Students

Top 10% students are the first-time in college students who have graduated in the top 10% of their high school class and are either from a Texas high school or are Texas residents for tuition purposes (DARS, 2016).

Whites

Whites are individuals who have origins in any of the original peoples of Europe, the Middle East, or North Africa (U.S. Census Bureau, 2013).

Limitations, Delimitations, and Assumptions

In this section, I outline the limitations, delimitations, and assumptions for this study. They are listed as follows.

Limitations

The following two limitations are assumed to be true for the purposes of this study.

1. The data is limited to Texas public flagship schools, Texas A&M University and the University of Texas.
2. The data is also limited to Texas public high schools.

Delimitations

The following three delimitations are assumed to be true for the purposes of this study.

1. The scope of this study will be limited to traditional public high schools in Texas. This study does not include home, magnet, parochial, or private

schools. This study does not include schools with a student count less than fifty or schools that were newly opened and did not have state reported data yet.

2. University of Texas and Texas A&M University, the two universities most affected by the TTPP is the focus of this analysis. Other selective and less selective higher education institutions in Texas were not included in the analysis. Additionally, in this study, I focused only on the main campuses, University of Texas-Austin and Texas A&M University- College Station.
3. The study is limited to the years included in the study, 2004-2014.

Assumptions

There are three assumptions assumed to be true for the purposes of this study.

1. The researcher will be impartial in collecting and analyzing the data.
2. The estimation strategy (Multinomial logistic regression, Binary logistic regression) used in this study was the most appropriate for the data and research inquiry.
3. The interpretation of the statistical analyses will accurately reflect that which is intended.
4. High school feeder patterns are good indicators of geographic diversity.

Significance

In this section, I described how this study contributes to the literature and theory, practice in the field, and policy. I discussed how my findings allowed me to offer a new definition for feeder schools that can be tested or built upon in future research. For K-12

and college administrators, I tested which school characteristics are related to earned diploma types and high to university feeder patterns. Finally, this study contains important information that may help guide future conversations and critical legislative decisions regarding how to evaluate policies perceived to be race-neutral and whether other states across the United States should reverse Texas' TTPP as a national model for race-neutral alternatives.

Contribution to Literature and Theory

By tapping into the understudied school characteristics in relation to this law, I used my findings to contribute evidence to help researchers understand whether school characteristics serve as a mediating factor for individual habitus. In other words, I provide evidence of whether there is an interdependent relationship between the schools student attend, the type of diploma they earn, and postsecondary decisions they make. I used this study to extend knowledge and current thinking about social reproduction theories and standard college choice models. Standard college choice models are based on the premise that individual utility maximization is freely exercised and unconstrained by institutional or structural characteristics of a high school.

Contribution to Practice in Field

I used the findings from this study to help administrators (counselors, principals, and college administrators) critically assess school characteristics and processes that may be related to students' course-taking behavior (signaled by types of diploma earned) and their school's college sending patterns. Moreover, understanding which school characteristics were related to feeder status might help administrators better identify the

mechanisms that can explain whether or not they are a Flagship feeder. In other words, what are administrators doing or not doing that has been triggering students that attend their school to choose certain diploma types and whether to enroll in one of Texas' Flagships. Moreover, knowledge of Texas flagship feeder characteristics will be a foundation for future predictions to be made about whether new high schools from the same population are likely to be a TAMU or UT college feeder.

Contribution to Policy

Updated evidence of the effects of the TTPP from a K-12 perspective is presented for readers to judge risks, benefits, and the staying power of race-neutral alternatives. The evidence-based findings from this study will become increasingly significant to those involved in diversity efforts, as the Supreme Court continues to apply strict judicial scrutiny to race-conscious plans to verify that no race-neutral alternative exists that would achieve the same benefits. My K-12 education leadership perspective will allow readers to evaluate whether the TTPP should be adopted by other states based on the effects it has on student secondary and postsecondary outcomes.

Chapter Conclusion

To this point, I have discussed why most of the attention of affirmative action in education has been on college admissions. Although the literature contains more evidence in favor of affirmative action than in opposition, voting trends suggest that affirmative action policies, if left to vote, will likely be unsupported. This has compelled higher education administrators to increasingly weigh race-neutral alternatives such as the percent plans implemented in Texas, California, and Florida. The TTPP was

designed to be a race-neutral alternative that helped K-12 public schools create a diverse and academically prepared undergraduate applicant pool (Webster, 2007, p. 4).

Interestingly, because of Texas' historic and predictable de facto segregation by race and socio-economic status (Thompson & Tobias, 2000), the TTPP is neither color nor class blind. The architects of this policy have instead leveraged those factors for the policy's success (Long, Saenz, & Tienda, 2010). Still, the simple and straightforward nature of the Top 10% class rank admission criteria has resulted in expanded geographical access (Long, Saenz, & Tienda, 2010; Monetejano, 2001; Niu & Tienda, 2010) and provided an incentive for student achievement (Cortes & Zhang, 2011; Domina, 2007) for those educationally disadvantaged student groups, for whom attending a selective Texas university was out of reach.

In chapter two, I build upon the foundational knowledge of the TTPP established in chapter one. The focus of chapter two is on the extant research conducted to examine the efficacy of the TTPP. Through a systematic review of the literature, I provide a synthesis of the best available evidence reported on the effects of using a percent plan as a race neutral alternative to affirmative action in higher education admissions in Texas. A preview of the findings indicates that Texas' Ten Percent Plan (TTPP) is not a suitable substitute for affirmative action. Explanations for the staying power of the TTPP are offered with evidence for readers to judge risks and benefits of race-neutral alternatives.

CHAPTER II

SYSTEMATIC LITERATURE REVIEW

The purpose of this chapter is to provide a systematic review and synthesis of peer-reviewed published studies (quantitative and qualitative) that included the effects of using a percent plan as a race neutral alternative to affirmative action in higher education admissions in Texas. Essentially a study of studies, the analysis contains information that will provide a better understanding of the trustworthiness, relevance, and current direction of the reported evidence on the Texas Top Ten Percent Plan (TTPP). I begin the discussion by describing the methods, retrieval procedures, inclusion and exclusion criteria, and full text review criteria. Following the methods, I present the results, which include the studies' characteristics, sample characteristics, study design, measures, data analysis, and empirical findings. The empirical findings are grouped by the following themes: (a) knowledge of the law, (b) merit debate, (c) application and enrollment behavior, (b) Century and Longhorn Scholarship Schools, (c) gaming the system (d) high school incentive effects, and (e) geographic access. These findings are then discussed with limitations, recommendations and implications for research and practice presented.

Methods

In this section, I describe step by step how the systematic review was performed. I share my sources of information (electronic databases), retrieval procedures (search terms and delimitations), selection criteria employed, and conclude with a synthesis of the data. This systematic review consisted of six stages. The first stage required the

identification of a research question. Stage two required the development of inclusion and exclusion criteria. Stage three required an abstract screening based on the exclusion and inclusion criteria. Stage four required a full text review using the inclusion and exclusion criteria. Stage five required synthesis of the data. This included a summary of the studies and their characteristics, comparison of research design, and finally an interpretive synthesis. Stage six required that I consult knowledge users to ensure results are useful and practical. Findings are be used to inform policy decision and education leaders about the effects of the Texas Top 10% Plan on students' college-going behavior.

Central Questions

In this study, I used Garrard (2011) and Diep et al. (2013) systematic literature review process to understand the extent of knowledge presented in scholarly literature on the impact of using the Texas Top 10% Policy as a race neutral alternative to affirmative action in education. Five main research questions guided this systematic review of the literature. They are as follows:

1. What peer-reviewed scholarly articles on the effects of the Texas Top 10% Plan were published from 1997-2015?
2. What are key themes that emerged from the literature on the Texas Top 10% Plan?
3. What are the characteristics of these studies?
4. To what extent are effects of the Texas Top 10% Plan on K-12 schooling emphasized in the literature?

5. To what extent is the overall quality of the Texas Top 10% Plan literature evaluated in terms of key methodological traits?

Matrix Method

In this review, I adopted procedures for a Matrix Method for systematic reviews developed by Garrard (2011) and Diep et al. (2013). I used the Matrix Method to provide both structure and process to systematically reviewing the literature. The Matrix Method requires a review matrix table. This table is used as a place to record notes about each study. The review matrix table and process allowed me to create order and a coding scheme. The 37 articles were evaluated in ascending chronological order using a structured abstract form. There were 10 columns, which represent the coding scheme are: lead author's name, title of study, publication year, publication outlet (audience), purpose of study, conceptual or theoretical framework, study design, analytic strategy, education level of focus (K-12 or higher education), data sources, financially sponsored research, variables/unit of analysis, and findings. A synthesis of the Matrix Method was used to provide an in-depth appraisal and synthesis of how the Texas' Top 10% Plan has been empirically studied, interpreted, and framed within the published literature.

Retrieval Procedures

An extensive search across multiple databases was performed. Databases included: Google Scholar, ERIC, Education Source, Business Source, EconLit, Academic Search Complete, Educational Administration, PyschINFO, Pubic Affairs Index, and SocINDEX. I also referred to references of the included studies to conduct a hand search of articles. I used the following search terms: (a) Top Ten/Top 10, (b)

Percent Plans, (c) Texas Top 10% Plan/Texas Top 10% Law, (d) Hopwood, (e) Affirmative Action, and (f) Texas.

Inclusion and Exclusion Criteria

For inclusion in this review, articles had to be (a) published in peer-reviewed journals, (b) published between January 1997 and December 2015, (c) empirical studies that involved human subjects or reported research findings, (d) a study about Texas effects specifically. Among the 571 articles identified using the keyword search, duplicates and studies containing editorials, non-research based reports, news articles, opinion pieces/ commentaries, and conceptual articles were excluded. Information about other states in the nation that used a variation of percent plans (ex. California and Florida) were used to add depth to the analysis but were not included in the full text screening. Only 37 (15%) articles met these criteria and were included in the final sample (see Figure 1 for selection process).

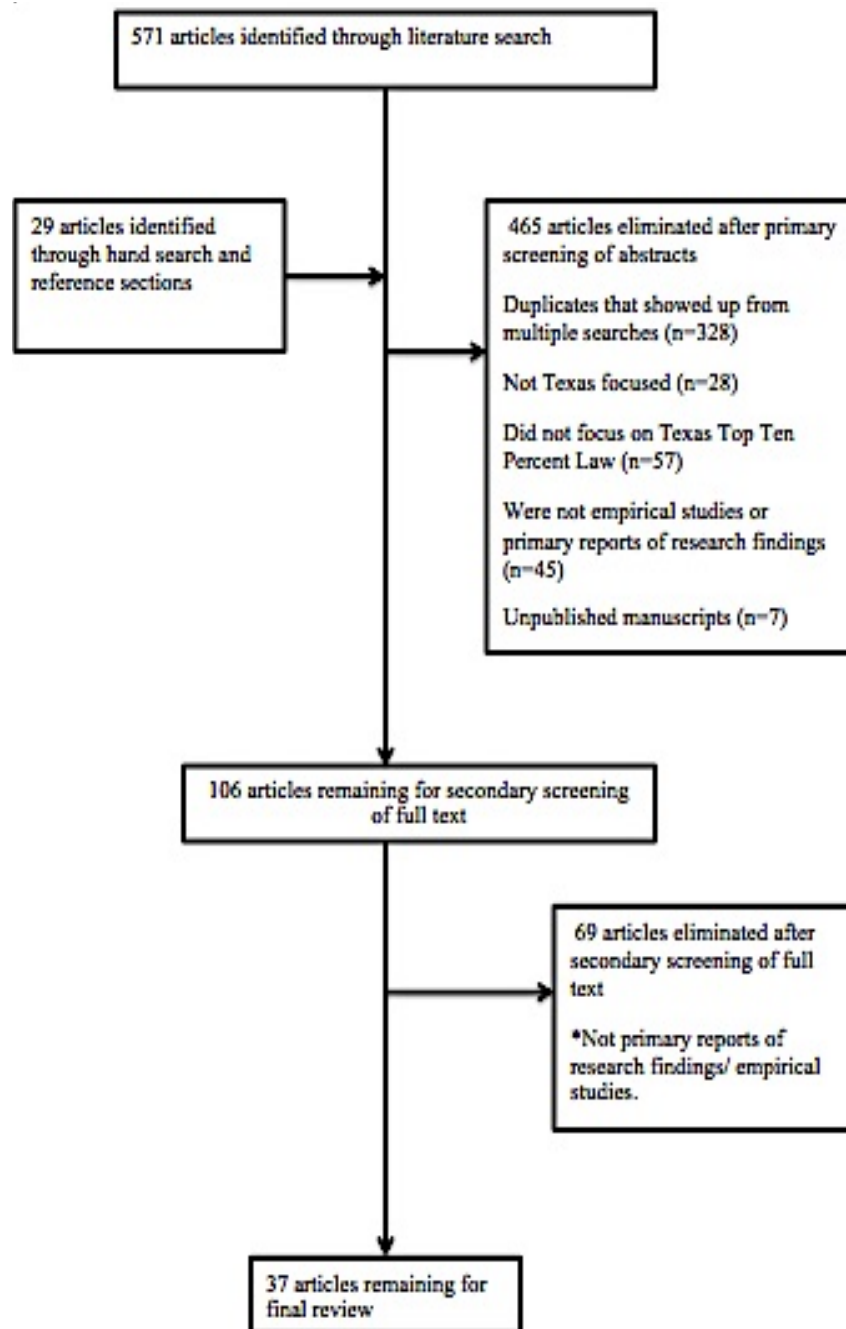


Figure 1. Selection procedures.

Results

Results include three parts: (a) studies' characteristics, (b) studies' methodological characteristics, and (c) empirical findings.

Study Characteristics

I screened 571 articles using a criterion-based selection that was uniformly applied to allow education leaders and policy shapers to assess the strengths and weaknesses of the investigation. Over 57% (n=328) of the screened articles were excluded because they were duplicates that showed up from multiple sources. This left a sample size of (n=243). Of the 243 articles, about 44% (n=137) were excluded in the title and abstract screening based on the exclusion and inclusion criteria. This left 106 articles that passed the title and abstract screening and were ready for a full text screening. During the full text screening, 69 articles were excluded based on the inclusion and exclusion criteria. These articles were excluded because they were not empirical research studies. There were 37 articles that received a full text appraisal to provide a synthesis of evidenced-based findings on the effects of using a percent plan as a race neutral alternative to affirmative action in higher education admissions in Texas (see Figure 1 for selection process).

The final articles represented 26 different peer-reviewed journals (see Figure 2). Thirty-eight percent of the studies (n=14) were published in an economic journal such as the *Economics of Education Review*. Other social science journals (e.g. Sociology) the second favored publication outlet representing 27% (n=10) of the studies. Only five articles (14%) were published in an education journal such as the *Journal of Higher*

Education or Education Evaluation and Policy Analysis. The remaining studies (n=8) were published in topic specific journals such as the *National Tax Journal* or the *American Annals for the Deaf*.

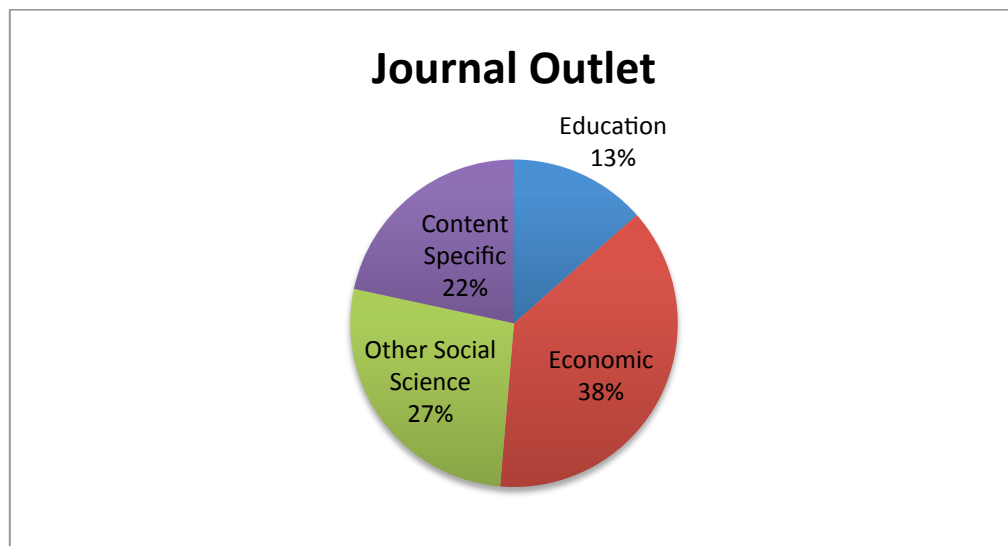


Figure 2. Article publication outlets.

These selected publication outlets often reflected the academic discipline of the author. For example, 43% of the studies' authors had an economic background, 39% had a sociology background, 7% had an education background, and the remaining 3% had either a history or statistics and measurement background (see Figure 3).

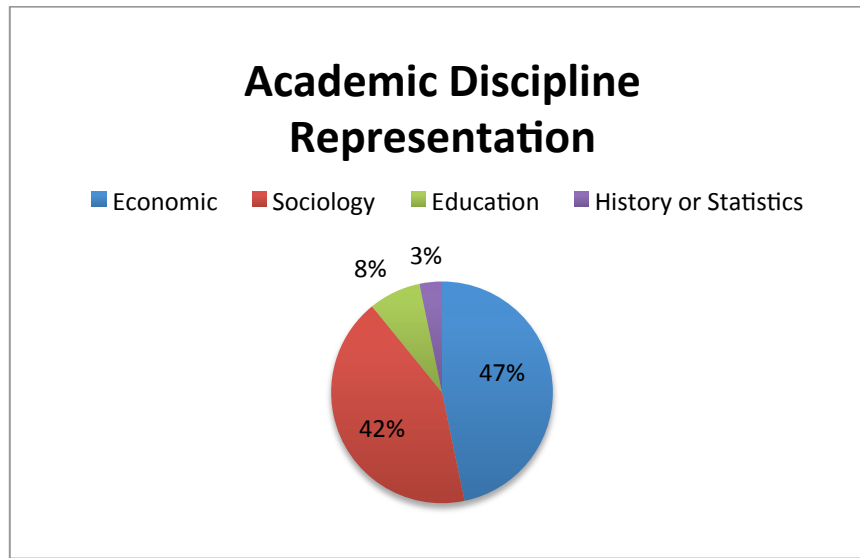


Figure 3. First author academic discipline.

All articles were published between 1998 and 2015, with the majority (65%) published after 2007 (see Figure 4). The final articles included data from 16 different data sources that included:

1. UT and TAMU administrative data (n= 18)
2. Texas Higher Education Opportunity Project (THEOP) (n=17),
3. Texas Education Agency (n=11)
4. National Center of Education Statistics
5. Common Core Data (n=5)
6. High School and Beyond (n=1)
7. Texas School Micropanel Data (n=1)
8. Interviews (n=2)

9. Legislative hearings (n=1)
10. U.S. Census Bureau (n=1)
11. Texas Comptroller Property Tax Division (n=1)
12. Uniform Crime Reporting (n=1).

The number one data source used by the researchers was survey and administrative data provided by the Texas Higher Education Opportunity Project (THEOP). Forty-six percent (n=17) of the researchers relied on data from the Texas Higher Education Opportunity Project (THEOP). The second most used data source was administrative data provided by Texas A&M University (TAMU) and the University of Texas (UT) (32%). Only 19% (n=7) used a national data set to evaluate the Texas Top 10% Plan. These studies used data from the Common Core Dataset, High School and Beyond, and National Educational Longitudinal Survey. Authors from three studies used interviews or legislative documents as their data. Many of the researchers relied on multiple data sources for their analysis. About 60% (n=22) of the studies received financial support through grants or sponsorships.

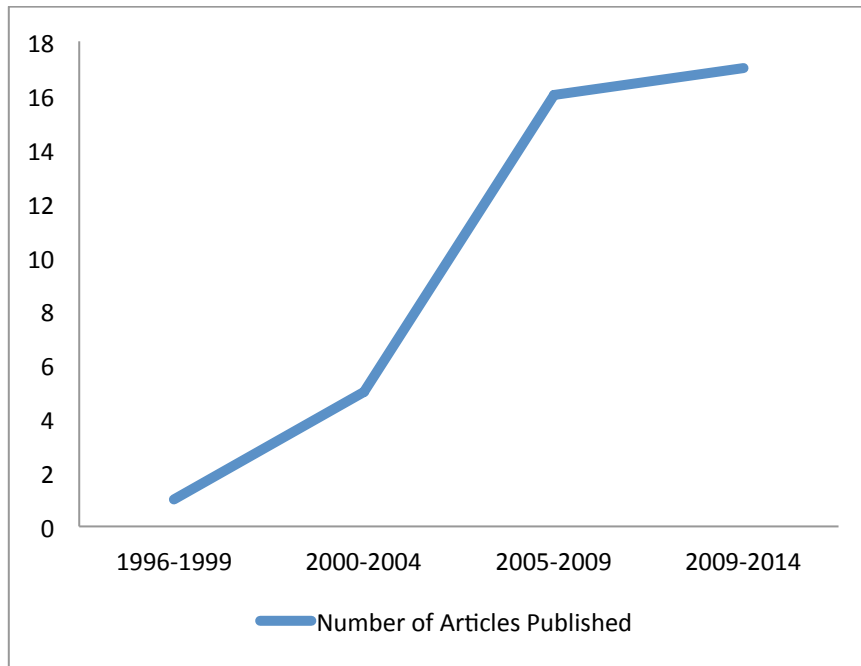


Figure 4. Article publication timeline.

Sample Characteristics

Researchers from all but four studies relied Texas public high schools as their population universe (statewide-level analysis). All of the studies excluded private, parochial, special education, correctional, magnet, or vocational schools from their analyses. Researchers used student-level data in twenty-six studies (70%), high school level data in four studies (11%), and college level (freshmen seats) data in seven studies (19%). The majority of the researchers focused on college application, admission, and enrollment behavior at the University of Texas or Texas A&M. Three studies had a sub-population focus: Graces (2012)-graduate students, Andrews & Martin, (1998)- deaf students, and Owens (2012)- international students. Although researchers from other

studies had a specific sample population of interest (top decile vs. third decile; low-income; Hispanic; Century or Longhorn eligible), analyses included students from all groups for comparison.

Texas Higher Education Opportunity Project (THEOP). Forty-six percent of the published studies (n=17), researchers relied on data from the Texas Higher Education Opportunity Project (THEOP). Marta Tienda, Teresa Sullivan, and their colleagues led the Texas Higher Education Opportunity Project from Princeton University. THEOP was made possible through grants sponsored by the Ford Foundation, the William and Flora Hewlett Foundation, and the Andrew W. Mellon Foundation. It was a multi-year study that began in 2000 and ended in 2010. Researchers from the THEOP investigated the college planning and enrollment behavior of students under the TTPP. Researchers on the THEOP project provided two major data sources.

THEOP survey data and sample. The first source of data was a two-cohort longitudinal survey of sophomores and seniors who were enrolled in Texas public schools in 2002. The seniors were surveyed three times, once in 2002, again in 2003, and a third time in 2006. The sophomore cohort was surveyed twice, once in 2002 and again in 2006 when they were seniors. The response rate was 70% and sample weights were used for the second wave of interviews to recalibrate to the original population (see THEOP Methodology, nd). THEOP survey data was based on a representative sample of Texas public high school seniors (n=13,803 first wave and n=5,836 second wave). From this survey, the THEOP team was able to gather data about (a) students course taking, (b) test scores, (c) perceptions about guidance from counselors, (d) college admission

knowledge, (e) future plans, (f) college perceptions, and (g) demographic information.

THEOP administrative data. Paired with survey data, the THEOP team was able to provide a second data source. This second source was administrative data from 7 public and 2 private universities in Texas. Those schools were as follows:

1. Texas A&M (1992-2002)
2. Texas A&M- Kingsville (1992-2002)
3. University of Texas (1991-2003)
4. University of Texas-Arlington (1995-2002)
5. University of Texas-Pan America (1995-2002)
6. University of Texas- San Antonio
7. Texas Tech University (1995-2003)
8. Rice University (2000-2004)
9. Southern Methodist University (1998-2005)

The administrative files included freshmen application and transcript data for students that enrolled on in of the universities from as early as 1990-2004. For each student, the THEOP team was able to have year and term applicant desired to enroll, demographics, class rank, high school grade point average, SAT scores, ACT score, number of AP classes taken, TOEFL score, desired major, hours earned, semester GPA, cumulative GPA, and department and field of major. The THEOP team merged the student information with their attended high school characteristics (name, address, city, state, senior class size). Participating colleges also provided application, admission, and enrollment decisions.

Study Design, Measures, and Data Analysis

This review comprised two qualitative studies, one mixed-method, and thirty-three quantitative studies. Twelve researchers (32%) obtained measures for application, admission, and enrollment data from administrative data provided by the University of Texas and/or Texas A&M. Seven researchers (19%) obtained SAT/ACT score data from the College Board. Fourteen researchers (38%) obtained state standardized test score measures from the Texas Education Agency, Academic Excellence Indicator System. Measures for college attitudes, knowledge of the TPPP were singularly obtained from THEOP survey data. Scholastic Achievement Test (SAT) scores were the most used proxy in the published studies. A variety of empirical strategies were used. The most favored empirical strategy (70%) was various regression models (probit, logistic, multivariate, discrete choice models, propensity score matching). Other empirical strategies such as descriptive statistics, content analysis, critical discourse analysis, and individual and focus group interviews were also used. Twenty researchers (54%) discussed how they addressed validity, reliability, sensitivity, robustness, or trustworthiness. The majority of the studies within this review were quasi-experimental. This body of work allows researchers, policymakers, and others to better understand which variables are most closely related to certain behavioral choices of high school seniors. It also allows for the ruling out of unrelated variables.

Empirical Findings

In this section, I describe the overall themes that emerged from the studies and the empirical findings. After reviewing the published studies, I found that the majority of the research was a response to public concerns about the fairness of the TTPP.

Knowledge of the Law

Within the published studies, researchers have found that knowledge of the TTPP is related to postsecondary enrollment decisions (Lloyd, Leicht, & Sullivan, 2008; Tienda, Cortes, Niu, 2003). In accordance with Texas Education Code (TEC), §28.026 and Texas Administrative Code (TAC), §61.1201 there is a legal mandate to advertise the TTPP within every school and specifically to rank eligible students. Despite legislative efforts, Lloyd, Leicht, & Sullivan (2008) found that less than half (43%) of Texas high school seniors reported knowing “a lot” or “some” about the law. Almost 20% of Top Ten percent eligible students did not know about the automatic college admission guarantee (Lloyd, Leicht, & Sullivan, 2008). Knowledge of the TTPP decreased as a student’s class rank position declined and was found to vary by race/ethnicity and gender (Lloyd, Leicht, & Sullivan, 2008). Lloyd et. al. (2008) found a 4% differential between females (46%) and males (42%) about their knowledge of the TTPP. They also found that Asian seniors (64%) had the greatest awareness followed by Whites (50%), African Americans (37%), and finally Hispanics (34%) (Lloyd, Leicht, & Sullivan, 2008). Niu, Sullivan, and Tienda (2008) found that rank-eligible minority students were less likely to know about the provisions of the law than their nonminority counterparts, which they claimed results in a potential loss of talented applicants (p.833).

Merit Debate

Within the published studies, researchers addressed concerns that the TTPP gave an advantage to students who attended schools that had weak academic and college-going traditions. Tienda (2006) wrote, “Public outcry intensified after the share of applicants who were automatically admitted [to UT and TAMU] soared from 47% to 70%” (p.12). Most of the studies contained empirical evidence that rank-eligible students under the TTPP perform on par or better with their non-Top 10 peers who attended schools with stronger college-going traditions (Tienda & Niu, 2006). In fact, collegiate outcomes, such as graduation rates, improve as selectivity of the college increased (Alon & Tienda, 2005; Alon & Tienda, 2007; Frustenberg, 2010). Tienda and Niu (2006) found that Top 10% students had higher grade point averages at the end of their freshmen year of college than students who were not rank-eligible for the TTPP but scored 200-300 points higher on the college entrance exams (p.12). Under the TTPP, negative collegiate outcomes were associated with students who ranked in the lower deciles (mostly third or lower) of their graduation class (Cortes, 2010; Long, 2007).

Application and Enrollment Behavior

Under the TTPP, African American and Hispanic students were less likely to apply and enroll in selective institutions in general (Andrews, 2007; Cortes, 2010; Dickson, 2006). However, there is heterogeneity in the presented results based on a student’s class rank. Several researchers found that ending affirmative action did not change their application behavior of students who ranked in the top decile of their senior class (Andrew, Ranchhod, & Sathy, 2010; Card & Krueger, Cortes, 2010). Students who

graduated from their school in the top decile were typically admitted into their first choice schools (Tienda & Niu, 2006). They would have likely got into these schools with or without the law (Andrew, Ranchhod, & Sathy, 2010; Card & Krueger, 2005; Cortes, 2010). Students who graduated in lower deciles of their senior class either applied to a less selective university, community college, or no postsecondary institution at all (Andrews et al., 2010; Fletcher & Mayer, 2014; Long & Tienda, 2010; Tienda, 2003). Additionally, students of color, who had the qualifications to be admitted into one of the state's flagships, opted for a less selective university post-*Hopwood* (Alfonso & Calcagno, 2007; Dickson, 2006; Lloyd, Leicht, and Sullivan, 2008; Tienda & Niu, 2004). Regardless of the TTPP and increased financial outreach programs, researchers found that the University of Texas and TAMU has not successfully been able to induce the decisions of its intended student populations in ways comparable to affirmative action policies (Niu, Tienda, Cortes, 2006).

Century Scholar and Longhorn Opportunity Schools

After the ban on affirmative action, both the University of Texas and Texas A&M designed financial outreach programs (TAMU-Century Scholar and UT-Longhorn Opportunity) to help mitigate the decline in applications from underrepresented student groups to their universities. Century and Longhorn schools were selected based on their college-sending traditions and also their high poverty rates (Andrews et al., 2010; Horn & Flores, 2003; Tienda & Niu, 2006). Within this review, no study has established evidence of negative effects of the Century and Longhorn Scholarship program has had on students from schools with low college-going traditions to their schools. Both of

these programs have strengthened institutional ties, provided much needed financial support, and credited with improving the school's college-going orientation (Andrews et al., 2010; Dickson, 2006; Niu & Tienda, 2008).

However, when researchers have compared the effects of the Longhorn and Century Scholarship programs to schools without this partnership, the results are disappointing. The Century and Longhorn Scholarship programs have not resulted in the anticipated spill over effects as hoped (Dickson, 2006; Tienda & Cortes, 2006). The enrollment odds were not any greater than average Texas high schools and other non-feeder schools (Cortes, 2010; Dickson, 2006; Niu, Tienda, & Cortes, 2006; Tienda & Niu, 2006). Students who attended resource-poor, Longhorn, or Century funded schools were still more likely to apply and enroll in a non-selective institution despite being a Top 10 percenter (Alfonso & Calcagno, 2007; Dickson, 2006; Lloyd, Leicht, and Sullivan, 2008; Tienda & Niu, 2004).

Gaming the System or Strategic Choice

The TTPP provided an incentive for students to make behavioral decisions to become rank-eligible. Cullen, Long, and Reback (2013) found that at least 5% of students elected to switch high schools to improve their chances of being in the Top 10% of the school's class rank. Cortes & Friedson (2014) also found families strategically choosing schools that increased their child's chances of being in the top 10% of their high school senior class. This option was generally taken when families had multiple schools within the district that did not call for parents to change jobs. As a result of these moves, property values changed. The schools in the lowest deciles reaped the most

benefits of now having a higher tax base and property values. Cortes and Friedson (2014) found that the “average district in the bottom quintile would have gained \$374.3 million in their tax base and the average district in the 2nd quintile would have lost \$162.5 million in their tax base” (p. 74).

On the other hand, Kain et al (2005) argued that the TTPP discouraged black and Hispanic parents from moving to better schools. He argued that the TTPP provided an incentive for students to stay in their highly segregated schools. This is significant because for every group except Whites, racially segregated schools means concentrated poverty and educational inequities (Darling-Hammond, 2010; Schneider, Martinez, & Owens 2006). These two examples illustrate strategic movers and de facto stayers and shed light on widespread school disparities. The first scenario, students are moving to a lower performing school to increase their odds of getting into a selective Texas university. The second scenario increases access for those families who cannot take advantage of school choice due to economic disadvantage but does not address issues of school quality (Tienda & Niu, 2004).

High School Incentive Effects

There is evidence of positive high school incentive effects that occurred after the implementation of the TTPP. Such effects include increased academic engagement, increased enrollment in advanced courses, slightly improved attendance rates, and improved college orientation of the school (Cortes &, 2011; Domina, 2007; Niu & Tienda, 2008). Cortes and Zhang (2011) also found improved academic achievement and that students tried harder at their coursework. A distinction made by Cortes & Zhang

(2011), however, is that increasingly more students strategically chose not to take advanced placement classes, so that it would not hurt their class rank standing. Skeptics of these benefits argue that the architects of the TTPP have provided incentives for students that are likely to motivate already engaged high school students (Domina, 2007). Further, these benefits are overshadowed by more empirical studies demonstrate negative effects that the race-neutral policy has on all student groups (Cortes, 2010).

Geographic Access

Within the published studies, researchers have drawn an early conclusion that the TTPP has resulted in broadened geographic access and that this question was settled (Long, Saenz, & Tienda, 2010; Montejano, 2001). However, Montejano's (2001) labeling a high school as a feeder if they sent at least one student was one of the most liberal definitions presented within the published studies. Further, Montejano (2001) further disclosed that his study only accounted for new feeders. Long, Saenz, & Tienda (2010) found that after the TTPP, there was a growing representation of students from low-income schools (where 40-60% of students receive free and reduced lunch) (p. 93). They found that TTPP resulted in loosened feeder patterns to UT but graduates from traditional feeder schools and resource-affluent schools were still more likely to enroll at either UT or TAMU (Long, Saenz, & Tienda, 2007). Unfortunately, deeply entrenched TAMU feeder patterns also remained even after the TTPP (Long, Saenz, & Tienda, 2007). The findings from these two studies suggest that the architects of the TTPP fulfilled their goal of broadened geographic access.

There was no direct study known where researchers have tested how competing

feeder definitions can alter conclusions about expanded geographic access. Montejano's (2001) definition is the most liberal giving feeder status to schools that send at least one student to UT. Long, Saenz, and Tienda (2010) tightened this definition by high school sending levels and further conducted survival analysis to show that new feeders were repeat senders. Both studies, however, compared feeder patterns to pre-*Hopwood* levels. Neither study accounted for the rapid demographic shifts that occurred in Texas, which would change the baseline. Although Long, Saenz, and Tienda (2010) examined the relationship between feeder status and some high school characteristics (socio-economic status and ethnic distribution), many other important school characteristics are left unaccounted. Within the published studies, however, broadened geographic access still seems to have received the greatest consensus, even if by generous metrics.

Limitations of the Published Studies

In this section, I will discuss the limitations of the published studies and offer empirically based recommendations for future evaluation of the TTPP.

Data Limitations

The THEOP provided rich survey and administrative data that informed 46% of the published studies on the TTPP. The data allowed researchers to answer questions about students' knowledge of the law, class rank, academic outcomes, and provided more context about the schools they attended. The work of Marta Tienda, Teresa Sullivan, and colleagues was a considerable contribution to what readers know about the effects of the TTPP on Texas seniors' educational planning statewide regardless of their race/ethnicity or type of school they attended. This longitudinal work was also powerful

because it captured students' attitudes about college "prospectively rather than retrospectively" (Tienda & Niu, 2006, p. 716). At the same time, however, there are some caveats to the THEOP survey data. THEOP survey data was based on student self-evaluation. Respondents may not have given the most accurate answers because they might not have wanted to present themselves or school in an unfavorable manner. They also may have lacked knowledge or memory of the subject of inquiry. Also, the survey data does not disaggregate responses by high school context, which could have influenced student responses.

Additionally, THEOP data covered the TTPP during its infancy. THEOP provided data from as early as 1990 to 2002 (in some cases 2006). The TTPP had only been in existence for five years. It is likely that since that time of the survey and collected administrative data, the TTPP has become much better known throughout the state and many of the findings could result in different conclusions based on the maturity of the law and Texas demographic changes. So although there are many recent publications on the TTPP (65% published after 2007), many of the findings reflect older time periods (1990-2006) and very early stages of the TTPP. A follow-up survey distributed to a representative sample will help readers understand whether there have been improvements in the dissemination of the information about the TTPP. Overall, the THEOP team took careful measures to avoid missing data and capturing inaccurate responses through clear survey directives, communication with THEOP team and school staff, and the presentation and organization of the survey itself.

Proxies for measures. Although the TTPP resulted in the removal of SAT/ACT as a college admission filter, researchers still used SAT scores as a proxy for high school quality and college selectivity (Andrews, 2007; Andrews et al., 2010; Card & Krueger, 2005; Cortes, 2010). SAT exam completion and score sending patterns were also used as a proxy for student application behavior. The researchers believed this was a reliable proxy because the submission of SAT/ACT scores is a mandate under the TTPP and requirement for most Texas college admissions. However, SAT score sending patterns does not mean that the student actually applied to the school where they sent their scores. The researchers also did not know the rank-order of the students' preferences to be able to better understand student college aspirations. Texas standardized test scores were also used as proxy for school quality (Cullen et al., 2013) and even for high school grade point average (Frustenberg, 2010). The use of these proxies suggests that there is limited data that provides information about high school quality and student capacity that is accessible for research inquiries. In such studies, researchers may be putting too much weight on a single indicator that does not truly capture school quality or student academic ability. In other words, under the TTPP, the architects sought to avoid the use of test scores as the dominant measure of merit for all students, but especially those students who come from disadvantaged groups. The heavy-handed use of such indicators to predict postsecondary academic outcomes seems counterintuitive to the essence of the TTPP. Such measures among others should be included in analyses. Further, the reliance on these college entrance exams may no longer be strong indicators of student academic

ability or school quality since the TTPP made these low-stakes exams for students who rank in the top decile of their graduating class and want to attend school in Texas.

TTPP Recommendations

First, the majority of the studies within this review were originated from a particular discipline (economics), utilized similar data (THEOP and UT/TAM administrative data), and methods (regression models). There is a need for an increase in multi-discipline and multi-method research approaches when evaluating the efficacy of the TTPP. Researchers from different disciplines may introduce and test different theories to better understand the relationship between the TTPP and student postsecondary enrollment decisions. For example, more research is needed to understand why there is a disparity of knowledge within the same schools depending on class rank and between schools based on school characteristics (Lloyd, Leicht, & Sullivan, 2008). At this point, application and enrollment patterns are clear. What was less clear are the root causes of those patterns.

Second, I would recommend a follow-up series of studies that goes beyond analyses of the 1990s and early 2000s. Most of the published studies presented results that occurred in the beginning stages of the TTPP. Although sixteen studies were published after 2010, over 90% of the studies were analyzed during the time periods, 1990-2006. More updated studies are needed to account for Texas' demographic growth and new shares of high schools. Further, more studies are needed to capture the relationship between high school characteristics and postsecondary enrollment decisions.

Third, there is no direct study that has presented a cost benefit analysis of the

Century and Longhorn Scholarship programs. No study has examined the total cost it takes to run these programs in relation to their returns (i.e. students who enroll). Also, it is unclear from the published studies if such outreach programs increased the representation of students of color in underrepresented fields such as STEM.

Benefits, Risks, and Staying Power of the TTPP

Benefits of Adopting the Texas 10% Plan

Although the literature is thin, there is a growing body of studies that provide evidence of the positive Top 10 incentive effects on student engagement and achievement in high schools across Texas (Frost, 2004; Cortes & Zhang, 2011; Domina, 2007). Documented incentive effects of the policy include expanded geographic access (Long, Saenz, Tienda, 2010; Montejano, 2001), increased student engagement (Cortes & Zhang, 2011), and slight increases in attendance rates (Domina, 2007). These benefits, however, have been overshadowed by critics who claimed that such gains come at cost at the higher social cost of racial and socio-economic segregation (Kain, Obrien, Jargowsky, 2005; Tienda & Niu, 2004), a cost that converts itself into considerable economic costs (Cross, 2000) and remains a fiscal vulnerability for Texas in the future (Harris & Tienda, 2010).

At face value, the TTPP has resulted in broadened geographic access (Montejano, 2001; Long, Saenz, & Tienda, 2010). The simple and straightforward nature of the Top 10% class rank admission criteria has expanded geographical access (Long, Saenz, & Tienda, 2010; Monetejano, 2001; Niu & Tienda, 2010) and provided an incentive for student achievement (Cortes & Zhang, 2011; Domina, 2007) for those

educationally disadvantaged student groups, for whom attending a selective Texas university was out of reach. Under the TTPP, applications to UT and TAMU have increased from students who attended schools that were not traditional high school sources (Long, Saenz, & Tienda, 2010; Niu & Tienda, 2010). However, increased application has not always translated into enrollment (Niu, Tienda, & Cortes, 2006). However, feeder definitions need to be tested. Second, the TTPP could serve as an important symbol to African American and Hispanic students in similar ways that affirmative action policies did (Orfield & Miller, 1998; Domina, 2007). The TTPP is a sign that UT and TAMU are making efforts to welcome more students from underrepresented groups at their institutions. The empirical evidence from the published studies suggests that the TTPP being in place is better than no policy at all.

Risks of Adopting the Texas Top 10% Plan

There are risks associated with sustaining the ban on affirmative action and keeping its replacement the TTPP. First, researchers have found that the ban on affirmative action in higher education lowered the odds that students (especially students of color not in the top decile) would apply to more selective universities (Tienda, Alon, & Niu, 2008). Second, to fulfill the legal requirements of TTPP has resulted in constraints on UT and TAMU admission decisions. Rank-eligible students occupied more than 70% of the freshmen seats at UT (Frustenberg, 2010; Tienda, 2006). As a result, in 2009, UT was allowed to trim the number of students it accepts with their approved 75% cap beginning with the 2011-2012 admissions. Although this legislative allowance relaxed some of the constraints for UT, it could create new problems.

For example, some researchers have found that African American and Hispanic top decile students more often fall on the lower end of the grade distribution (Forest, 2002; Tienda & Niu, 2004). The UT current acceptance of the top 8% could result in a loss of a large number of talented African American and Hispanic students. This problem could exist even if they attended a school where students of color are the majority (Tienda & Niu, 2004). Even within these schools that are majority African American or Hispanic, Whites and Asians are more likely to be in the top decile (Tienda & Niu, 2004). The chance of African Americans and Hispanics being in the top decile of their senior class in a more integrated school is even lower (Forest, 2002; Tienda & Niu, 2004). So essentially, the success of the TTPP depends on continued residential and school segregation by race and income (Forest, 2002; Tienda & Niu, 2004).

Additionally, the TTPP does not address issues of poverty (Munoz, 2003). This is a major flaw of the policy. Although there is overlap, issues of poverty are not synonymous with racial inequalities (Ladson-Billings & Tate, 1995). The architects of the TTPP clearly understood this, but out of fear of the legislation not passing ignored this important factor (Munoz, 2003). Within the published studies, there is evidence that low-income white students do not attend schools with concentrated poverty like students of color (Koffman & Tienda, 2008; Tienda, Alon, & Niu, 2008; Tienda & Niu, 2006). They may attend schools of higher quality but still struggle to qualify for the TTPP. This is unclear from the literature because this is an understudied population. On the other hand, there are students of color who are not poor, attend feeder schools, and are still less likely to be in the top decile of their senior class (Tienda & Niu, 2006; Forest,

2002). This needs to be further investigated. Both racial and socio-economic equalities should continue to be investigated separately and interdependently.

Staying Power of the Texas Top 10% Plan

Voting trends suggest that affirmative action policies, if left to vote, will likely be unsupported, thus compelling education administrators to increasingly weigh race-neutral alternatives such as the percent plans implemented in Texas, California, and Florida (Kahlenberg & Potter, 2012). In a state where affirmative action is unfavored, a percent plan could be a middle ground. In Texas, the TTPP has received political and judicial support. Democrats from minority districts and Republicans who represent rural white districts support the TTPP (Munoz, 2003). Legislators from both the Texas Democratic and Republican Party have argued that the law gives students from their districts access to the public flagships (Tienda, 2006, p. 13). States across the nation may also be considering variations of the Texas Top 10% plan because it seems only a matter of time before the Supreme Court Justices rule against the use of race conscious policies. This may happen with the upcoming *Fisher (2012)* case that may be reheard by the United States Supreme Court next term.

The TTPP may also have staying power because K-12 schools and higher education institutions because institutions have increasingly faced lawsuits because there is not guidance on the appropriate use of affirmative action. For example, the 2003 *Gratz v. Bollinger* 6-3 Supreme Court in ruling in favor of *Gratz* suggests that had UT kept their admission procedures the same, it would have been ruled unconstitutional. In the *Gratz* case, the University of Michigan undergraduate admission procedures was based

on 150 points and automatically assigned 20 points to underrepresented student groups and further did not provided individualized consideration to all students. It seems that institutions that voluntarily use affirmative action to achieve their organization purpose or mission learn by trial by fire (lawsuits). To avoid costly litigation and public outcry, schools and higher education institutions may choose race-neutral alternatives that may seem more palatable to the general public.

Implications

If a state is considering adopting the TTPP, there are several factors that must be considered. First, the TTPP has resulted in differential effects on all students, but especially for students of color who rank in the lower deciles of their senior class (Cortes, 2010; Long, 2007; Niu, Tienda, & Cortes, 2006). Students who graduated from their school in the top decile were typically admitted into their first choice schools irrespective of admission regime (Card & Kreuger, 2005; Tienda & Niu, 2006). After the TTPP, there was increased application and college entrance exams, but that has not always translated into enrollment (Niu, Tienda, & Cortes, 2006). Students who graduated in lower deciles of their senior class either applied to a less selective university, community college, or no postsecondary institution at all (Niu, Tienda, & Cortes, 2006; Tienda, 2003).

Second, because of Texas' historic and predictable de facto segregation by race and socio-economic status (Thompson & Tobias, 2000), the TTPP is neither color nor class blind. The architects of this policy have instead leveraged those factors for the policy's success (Forest, 2002; Long, Saenz, & Tienda, 2010; Tiena et al., 2003). Forest

(2002) found that there is an “inverse relationship between segregation at the local level and diversity at the university level. Hence the Texas Plan illustrates how a purportedly ‘colorblind’ policy actually relies on racial difference” (p. 856). However, the TTPP should not be considered a variation of affirmative action. Under the TTPP, African American and Hispanic students are more likely than any other student groups to receive an admission rejection (Tienda et al., 2003). Even with high levels of racial and socio-economic segregation, the TTPP has only resulted in minimal campus diversity (Tienda et al., 2003).

Third, evidence from this study also indicates that a top policy priority is the needed funding for public higher education participation. A student’s ability to be able to afford to go to college is still a major constraint and factor in postsecondary enrollment decisions (Andrews, Lloyd, Leicht, & Sullivan, 2008). This is important especially for students of color who are the fastest growing population in Texas (Horn & Flores, 2003; Tienda et al., 2003). TAMU and UT have picked up extra financial weight to support their outreach programs to help mitigate student financial need and the affirmative action ban (Tienda, Leicht, Sullivan, Maltese, & Lloyd, 2003). Like UT and TAMU, other universities may have to create additional programming and outreach efforts to signal that students of color are welcomed.

Fourth, the appearance of equal access to UT and TAMU could reduce political pressure for a more equitable distribution of educational resources (i.e. funding, qualified teachers) among Texas high schools (Forest, 2002). Forest (2002) wrote,

that it would be very difficult to argue that relatively poor schools need to have the same resources as relatively wealthy ones. Given a strong commitment to local control and financing, the Texas Plan may encourage greater educational inequalities among schools within districts and within states. (p. 875)

That is, there is mounting empirical evidence that top-decile students from low-performing schools are being admitted, enrolling, and are successful in selective schools (Alon & Tienda, 2007). This success may result in legislatures using this natural experiment (TTPP) as a way of asking school leaders to do more with less, strengthening the efficiency argument.

Fifth, the law also does not guarantee diversity within the university. For example, reports that indicate that UT has reached pre-*Hopwood* diversity levels (Montejano, 2001). Percent plans, like the TTPP, may racially stratify college enrollees at the undergraduate and graduate levels. However, like Texas, those who adopt percent plans may narrowly view diversity by race and income by the incoming freshmen class. It is unclear whether the TTPP resulted in diversity spilled over into classrooms and within different majors at the selective universities. That is, how likely is it for a student of color to attend a class where they are the only person of color? More research is needed to understand to the extent to which UT and TAMU has diversified not only its freshmen class but also within its departments, programs, and classes.

Those States that adopt percent plans should have a full public relations strategy. Because college admission procedures are unknown, it leaves the general public to draw

their own conclusions about what admission officers hold as most important. Influenced by media outlets, the general public has criticized both affirmative action plans and the TTPP (Hart, 2001; Leung, 2004; Sander & Taylor, 2012). It is not too aggressive to assume that families are more likely to pick up a newspaper, read an online article, or turn to social media to become informed about affirmative action than a manuscript in a journal that requires a paid subscription. Although not included in the full text analysis, several newspaper articles were consulted. I found that the majority of the arguments made within those articles were based on narratives that were not situated in the appropriate context and not based on evidence well established within the literature. Those articles seem to be informed by litigation where universities have made missteps in the ways they have used affirmative action. This should not cast a shadow on affirmative action but on the lack of guidance provided to organizations on the most effective or ineffective uses of affirmative actions. It is very possible that the important work established by researchers on this topic (e.x. Marta Tienda and her Princeton colleagues) is being circulated among academics instead of having an extended reach to the masses of people who need to be educated to make an informed vote. An informed vote will hopefully in good faith result in legislators representing the desires of their constituents.

Chapter Conclusion

To summarize, the preponderance of evidence presented in the literature does not support the continued use of the TTPP as an affirmative action replacement. A common misperception held by opponents of affirmative action is that considering race means

forfeiting merit (Alon & Tienda, 2005; Orfield & Miller, 1998; Republicanviews.org, 2015). Consequently, merit and race are often pitted against each other as a dichotomous pairing. However, the Supreme Court of the United States has established legal precedents that prohibit the use of affirmative action as a racial quota system (*University of California v. Bakke*, 1978), fixed point system by race (*Gratz v. Bollinger*, 2003), or a tiebreaker (*Seattle vs. Parents in Community*, 2007). The *Grutter* (2003) Supreme Court decision established that achieving racial diversity, reducing harms of racial isolation, and eliminating present effects of past discrimination are all compelling governmental interests and can be pursued through race-conscious policies (Garfield, 2005). However, race can only be considered in a narrowly tailored way. Narrowly tailored means that the way(s) race is used must be the least intrusive and effective way of pursuing such efforts. Further, the plan or strategy must be flexible, reviewed frequently, and have a time limit.

If percent plans are being considered, various models of percent plans should be researched. California and Florida have also implemented different variations of a percent plan. California guarantees admission to students ranked in the top 4% of their public or private high school. Florida guarantees admission to students ranked in the top 20% of their public school only. In California and Florida, students are provided access to the State university system. Only Texas offers access to its most selective schools, TAMU and UT. California has a more centralized education system and way of determining student eligibility. Texas and Florida allow individual high schools and districts to calculate class rank and determine eligibility. Unlike Texas, however,

California and Florida allow their State University System to have greater autonomy in their admission decisions. For a thorough comparative analysis of all three State plans, I would recommend the work of Horn and Flores (2003). The characteristics of each of these plans should be carefully weighed to determine which plan would be most beneficial for more students.

If affirmative action programs are used, they should come into play when the utilization of individuals does not match the availability of *qualified* people in that category (Crosby & Cordova, 1996, p. 35). Further, Supreme Court rulings (see *University of California v. Bakke, 1978; Gratz, 2003; Grutter, 2003*) clearly indicate that race could not be the determining factor used in admission decisions and all other affirmative action strategies must pass the *strict scrutiny test* to be constitutionally upheld. So if a student of color, for instance Black or Hispanic, were admitted under this regime, they had to be admitted because they fulfilled other qualification criteria set by the university. This does not imply that all higher education institutions' current admission practices are compliant. It does mean that there is a strict standard for race conscious policies in place. Thus, there is more evidence in favor of affirmative action as a way to expand the talent pool, which includes the less often discussed groups such as women, Asians/Pacific Islanders, American Indians, and U.S. covered veterans.

CHAPTER III

RESEARCH METHODOLOGY

My purpose for this chapter is to explain the empirical strategies and measures used to explore the relationships among key school characteristics, rigor in course-taking behavior (signaled by diploma type earned), and high school to college feeder patterns during a critical policy point of the TTPP. The policy point of interest occurred in 2009 when the Texas legislature allowed UT to cap the percentage of Top 10% students they accepted to 75% of their available freshmen seats. This change allowed UT to tighten the competition from the Top 10% to the Top 8% beginning in the 2011-2012 academic years. Percent plans were used for all students who qualified for automatic admission until the UT 75% cap was reached. When UT filled 75% of their freshmen seats, affirmative action among other traditional measures were used for the remaining 25% of available seats. Percent plans, however, are the primary tool used in admission decisions for UT.

My analyses will cover Texas public high school feeder patterns to the State's Flagships and changes in diploma types earned by high school graduates during this time period. Data requested and received were for 2004/5-2013/14 academic school years. This time span covers 10 academic school years. Using data before and after the UT admission cap policy implementation allowed me to create a research design to capture differences in high school feeder patterns and the types of diplomas earned based on important school characteristics. A high school's classification as a Texas Flagship feeder school was determined by the respective feeder definition applied and was

evaluated annually. The fluctuation in the number of high schools in the subsequent tables reflect changes in a high school's status as a Texas Flagship feeder school based on time and the respective feeder definition applied. The fluctuation in the number of high schools should not be interpreted as the total number of high schools that were open or closed across Texas in a given year.

In the following sections, the research design, data sources, sample, and model estimation strategies and procedures are discussed.

Research Design

In this study, the relationship among key school characteristics, the types of diploma high school graduates earn, and high school to university feeder patterns from 2004-2014 was investigated. The following three research questions guided my study:

1. Which school characteristics predict that a high school will be a UT or TAMU feeder?
2. Are students more likely to earn a college preparatory diploma in a UT or TAMU feeder?
3. Did the relationship between feeders and college preparatory diplomas earned change when UT changed its admission cap (from 10% to 8%)?

There were two outcome variables of interest in this study: (a) a high school's status as a feeder school, and (b) the type of high school diploma earned by high school graduates. Based on my research questions and variables of interest, a quantitative research inquiry was chosen. This is a quasi-experimental study. According to Edmonds and Kennedy (2013), quasi-experimental research

is conducted when the researcher does not have direct control of the independent variables simply because their manifestations have already occurred. That is non-experimental research is utilized when the variables of interest cannot be controlled through means of manipulation, inclusion, exclusion, or group assignment. However, one form of control that can be utilized for non-experimental research is through different types of statistical procedures.

(Edmonds & Kennedy, 2013)

My analysis of the relationships among school characteristics, the type of diploma a student earns, and status as a feeder school was a predictive design. I used Multinomial Logistic Regressions and Difference-in-Differences as my estimation strategies. STATA version 14 was used as my statistical software for analysis.

Data Sources

To test the effects of key high school characteristics on a school's status as a feeder and the type of diploma a student earns from this school, I gathered data from four sources: (a) the Academic Excellence Indicator System (AEIS) from the Texas Education Agency, (b) Texas Education Agency, (c) Office of admissions Research at the University of Texas (OAR), and (d) Office of Data and Research Services at Texas A&M (DAR). Data from these sources were merged to create a single master dataset.

Academic excellence indicator system (AEIS). Campus level demographic profiles came from a public dataset retrieved from the Academic Excellence Indicator System (AEIS) and Texas Academic Performance Reports (TAPR) that is managed by the Texas Education Agency.

Texas education agency. With a formal data request, the Texas Education Agency provided me with student level data that included the type of high school diploma earned by students from every Texas public high school. This data included the types of diploma earned (none, minimum, recommended, or distinguished) for the academic years 2004-2014. The student-level diploma data also included information about the student's gender, ethnicity, socio-economic, status as an English language learner, and special education status. To protect student identity, each student was randomly assigned a student id number by TEA before I received it.

UT (OAR) and TAMU (DAR). Upon a formal request, both UT (OAR) and TAMU (DAR) provided a list of all the Texas public high schools that sent students to their schools. Data included high school level summaries of all students that applied, were admitted, and enrolled from that school for the 2004-2014 academic school years.

Sample

My population began with the universe of Texas public high schools. I excluded home, magnet, alternative, parochial, and private schools. Elementary and middle schools were eliminated. New schools that did not yet have data and schools that did not serve twelfth graders were dropped from this study. Additionally, small schools with less than 50 students or no senior class were eliminated. Duplicate observations and observations before 2004 were also dropped. This left a sample of 12,766 Texas public high schools by yearly observations from which I drew my analysis. Of that 12,766, I focused only on Texas Flagship feeder high schools (see Table 1). I reported findings for 11,938 Texas high schools that were classified as a Texas Flagship Feeder high school.

The non-Flagship feeder high schools were used as reference group. Next, I merged student-level data that contained the diploma types earned by every Texas public high school graduate. This study contains student-level data for 2,136,879 students. In 2014, Texas was comprised of 43.5% White, 38.6% Hispanic, 4.5% Asian, and 12.5% African American (U.S. Bureau, 2014). In Table 2, I show that my sample is reflective of 2014 U.S. Census Bureau Quick Facts Report on Texas demographics.

Table 1

Feeder School, 2004-2014

Feeder Status	Observations	Percent
Not Flagship Feeder	3,043	23.84
TAMU Feeder	2,403	18.82
UT Feeder	1,048	8.21
TAMU/UT Feeder	6,272	49.13
Total	12,766	100.0

Source: Office of Admissions Research at the University of Texas (OAR) and Office of Data and Research Services at Texas A&M (DAR). Under feeder definition one, a high school is classified as a Texas Flagship feeder school if at least one student from that high school enrolled in Texas A&M and/or the University of Texas in the current year.

Table 2

Student Count by Race-Ethnicity, 2004-2014

Student Race-Ethnicity	Observations	Percent
African American	257,975	12.0
Hispanic	907,933	43.0
White	905,840	42.0
Asian	65,131	3.0
Total	2,136,879	100.0

Source: Texas Education Agency. Based on student-level high diploma data provided by TEA.

Outcome Variables

There are two outcome variables of interest in this study: high school feeder status and high school diploma type. Both are defined and discussed below.

Feeder school status. Status as a feeder school was used as my outcome variable and coded as a 4-level categorical dependent variable (0=non-feeder, 1=TAMU feeder, 2= UT feeder, 3=UT and TAMU feeder). One of the primary measures of success for the TTPP has been broadened geographic access and participation (college enrollment) as evidenced by the share of feeder high schools that send students to one or both of the State's Flagships. Testing the three competing feeder definitions allowed me to test whether the outcomes (feeder status and diploma types earned) were sensitive to feeder definitions. In the following list, I present the three competing feeder definitions:

1. Feeder Definition 1 (Montejano, 2001): any high school that sent at least one student to the University of Texas or Texas A&M in the current year.
2. Feeder Definition 2 (Long, Saenz, & Tienda, 2010): the top twenty high schools that sent at least twenty or more students to either UT and/or TAMU. I modified this definition to include any high school that sent twenty or more students to UT and/or TAMU in the current year.
3. Feeder Definition 3 (proposed by author): the top 50 high schools that sent the largest proportion of their high school's senior class to one or both of the State's Flagships in the current year and the year prior.

Feeder definition one. Feeder definition one was presented by Montejano (2001), who defined a feeder school as any high school that sent a student to the University of

Texas. He classified these high schools by their sending levels: (a) 1-9 students (low sender), (b) 10-19 high school students (intermediate sender), and (c) 20 or more students (high senders). Under this definition, if a high school sent at least one student to the University of Texas, they were a feeder regardless of their high school's sending level. Though his study focused only on high school sending patterns to UT, his definition will also be applied to TAMU feeders in this study. This definition is the most generous of the Texas high school feeder definitions presented in the literature.

Feeder definition two. The second definition is one presented by Long, Saenz, & Tienda (2010). These scholars built upon Montejano's (2001) work and defined a high school feeder as the top twenty schools that sent the largest number of students (20+ per high school) to either UT or TAMU. This definition is slightly stricter than the definition presented by Montejano (2001) because the school cannot be classified as a feeder if they did not send at least twenty students. In this study, I modified this definition to high schools that sent twenty or more students to either or both of the Flagships in the current year. In this study, I gave more latitude to Long, Saenz, and Tienda's (2010) feeder definition. However, I still found limitations in both presented feeder high school definitions. First, neither definition considered the proportion of students enrolled in the respective Flagships when compared to the graduating class. For example, twenty students enrolled from a graduating class of 100 (or 20%) is a much different result than a high school that sent twenty students from a graduating class of 1000 (2%). In other words, school size matters. Second, underemphasized is the measure

of time. A high school might send a student once and never again. These limitations made room for a new feeder definition.

Feeder definition three. Under my proposed definition, a feeder school is defined as the top 50 high schools that sent the greatest proportion of their high school's senior class in the current year and in the prior year. This feeder definition was constructed based on three criteria. First, the high schools had to have a student count greater than 25 students. Second, the high school had to have students enroll in either or both Texas Flagships the previous year. Third, the high school had to rank among the top 50 high schools that sent the greatest proportion of their high school's graduating class. The proportion is the total number of students who enrolled in either or both of the Texas Flagships divided by the total number of high school graduates within the school. Based on these three criteria, all of the eligible high schools were ranked in descending order based on the proportion of their graduating class sent to either or both Flagships (1, 2, 3, 4...50 (cut-off)...60, 61...*k*).

To be clear, more than 50 Texas public high schools can qualify under this definition if there were ties among the schools whose sending percentage was above the threshold of the cut-off percentage. High schools that sent the same percentage of students to either or both flagships could only hold one place as a tie. Thus, if the cut-off of the 50th high school was 8%, schools that sent 8% all ranked 50th and schools that sent less than 8% (i.e. 7% or 5%) would miss the cut-off and would rank 51st, 52nd, 53rd, and so on. Those schools with scores (percentages) below the threshold would not be captured in this definition. Essentially, this definition is a cut-off of scores (or

percentages) and not necessarily schools per se. The only scenario that would yield 50 high schools in my analysis for definition three was if there were no ties among the top 50 ranked high schools.

The cut-off of top 50 high schools was selected because it was flexible enough to capture all three levels of senders but stringent enough to account for school size and time. For example, my proposed definition could capture the low senders (1-9 enrolled students) and intermediate senders (10-19 enrolled students) in Montejano's (2001) feeder definition, as well as the high senders (>20 enrolled students) in Long, Saenz, & Tienda's (2010) feeder definition if the high school sent a large proportion of their students to one or both of the State's Flagships.

Additionally, because my proposed feeder definition restricts feeder eligibility by time constraints, I was able to test whether new high school senders were repeat senders. A repeat sender could symbolize the creation of a "historical legacy that will increase the likelihood of enrollment by future cohorts of students at these new sending schools" (Long, Saenz, & Tienda, 2010, p. 101). Overall, for each research question and analysis, I tested each of the three feeder definitions to investigate whether the outcomes of interest (status as a feeder school and type of diploma earned) were sensitive to feeder definition. Testing the competing feeder definitions also allowed me to investigate whether conclusions made about the TTPP broadening geographic access is reliable.

Diploma type. The second outcome variable of interest was diploma types. I used diploma types as a proxy for student course-taking behavior during the time period when high school seniors graduated under one of three plans: Minimum (least rigorous),

Recommended, or Distinguished (most rigorous). I coded diploma type as 4-level categorical variable (None, Minimum diploma, Recommended diploma, and Distinguished/advanced diploma). In Table 3, I provide a side-by-side comparison of graduation program options in Texas (Texas Education Agency, 2014a).

Table 3

Side-by-Side Graduation Program Comparison, 2014-2015

Subject Area	Foundation HSP	MHSP	RHSP	DAP
English Language Arts	4 credits	4 credits	4 credits	4 credits
Mathematics	3 credits	3 credits	4 credits	4 credits
Science	3 credits	2 credits	4 credits	4 credits
Social Studies	3 credits	3 credits	4 credits	4 credits
Physical Education	1 credit	1 credit	1 credit	1 credit
Languages Other than English	2 credits	0 credits	2 credits	3 credits
Speech	Demonstrated Proficiency	0.5 credits	0.5 credits	0.5 credits
Electives	5 credits	7.5 credits	5.5 credits	4.5 credits
Total	22 credits	22 credits	26 credits	26 credits

Source: Texas Education Agency, 2014a.

Minimum diploma. The highlights from Table 3 are that the Minimum diploma is the least rigorous and requires the least amount of course credit. Importantly, this degree plan does not require Algebra 2 or a second language other English, which are requisites for many college majors.

Recommended diploma. The recommended diploma is considered Texas' college preparatory degree plan mainly because of its Algebra 2 requirement. Unlike the

minimum diploma, this diploma requires Algebra 2, a foreign language, and requires both World History and Geography.

Distinguished diploma. To earn a distinguished diploma, the most rigorous coursework is required. Students earning this diploma had to successfully complete many more advanced courses beyond Algebra 2. Unlike the minimum and recommended high school diploma requirements, the distinguished plan requires that the majority of credits earned be through core disciplines (like English, math, and science) and not electives. On January 31, 2014, the State Board of Education adopted new graduation requirements (see Appendix, New Texas Graduation Requirements). Students entering high school after 2014-2015 academic year are now only eligible for the Top 10% automatic admission guarantee with a distinguished diploma.

Predictor Variables

The TTPP automatic admission is reserved for students ranked in the top 10% of their senior class. For students aspiring to attend UT, the automatic admission guarantee was trimmed to the top 8% beginning the 2011-12 academic school year. During the time period of this study, Top 10% students were eligible for the automatic admission guarantee if they earned a recommended or distinguished diploma¹. The type of diploma a high school senior earned was used as a proxy for the course-taking behavior of high school students. It was used as a proxy because each diploma type has state legislated

¹ Under the new Foundation plan, only Top 10% students who completed Distinguished Level of Achievement Endorsement can earn the automatic admission guarantee.

course and credit requirements. In other words, a student could not receive a particular diploma without successfully fulfilling the prescribed course requirements.

Primary coefficient. Thus, for this study, the most critical element of this analysis was how students gained automatic admission eligibility. In this study, the primary coefficient of interest was:

1. The percentage of students enrolled in advanced or dual credit courses on the campus.

This measure was included because of the empirical research that has demonstrated that enrollment in advanced courses enhance students chances for college enrollment and success (Black et al., 2015; Johnson, 2008; Schneider, Martinez, Owens, 2006; Struhl & Vargas, 2012; Engberg & Wolniak, 2007). Additionally, evaluating the advanced/dual course enrollment before and after the UT admission cap might reveal strategies employed by the students to better situate themselves for the Top 10% automatic admission guarantee to the two Flagships (Cullen, Long, & Reback, 2013; Webster, 2007).

Anticipated effect of UT cap on advanced course enrollment. Since students may qualify for the automatic admission with a recommended or distinguished diploma, I anticipate two scenarios that were likely to have occurred. The first scenario is that students pursued a distinguished diploma to edge out their competition by taking advanced courses that are weighted more heavily. A successfully earned grade of a A (5 points) or B (4 points) in an advanced placement or dual credit class may give the student a significant grade point average advantage over students taking regular courses

(ex. A=4 points, B= 3 points). Students with this strategy may bank on a smaller proportion of students who opt to take advanced courses.

The second scenario is that students may choose to pursue the recommended diploma. With this strategy, a less rigorous course load is required to secure a student's chance of being in the top ten percent of their senior class. A student using this strategy may opt to take less rigorous course work to ensure they receive what they might perceive as an easy A (4 pts.) (see Cortes & Zhang, 2011). Receiving the grade of an A in regular course is better than receiving a grade of a C (3 points) or D (2 points) in an advanced or dual credit course. This second strategy is interesting. More students opting for the recommended diploma could suggest that students are not choosing courses based on coursework they might need for their major or aspired discipline. Instead, students might make course decisions based on their eligibility odds for the automatic admission within their high school. In this study, I revealed such trends.

Covariates. In this study, I also focused on variables that would provide a better sense of: (a) school context and (b) college choice organizational habitus. These two factors encompassed many school characteristics that were operationalized and used as predictive measures for my models. Decisions about which measures to use for each predictor was informed by the extant literature and accessible data for the desired time period. All of the selected predictors have been empirically found to be associated with college enrollment and success for all students but especially those from traditionally marginalized groups (Black et al, 2015; Frost, 2007; Long, Saenz, & Tienda, 2010; Struhl & Vargas, 2012; Engberg & Wolniak, 2007).

Measures for school context. To help provide a better context for the school, I controlled for the following four variables:

1. The geographic location of the campus in relation to the Texas Flagships.
2. The percentage of students of each ethnicity.
3. The percentage of economically disadvantaged students.
4. The years of experience in education for teachers on the campus.

Geographic location. Geographic setting was measured by the average distance in miles of the high school to the nearest State flagship. I created a dummy variable for this measure. Geographic location was coded 0 if the school was located less than 60 miles away and 1 if more than 60 miles away from one or both the Texas Flagships. This measure was included because of empirical research that suggests that the greater the distance between a high school and a higher education institution, the less likely a student of color is to leave home to enroll in that school regardless of their eligibility (Frenette, 2004; Johnson, 2008; Long, Saenz, & Tienda, 2010; Tienda, Cortes, & Niu, 2003; Tienda & Niu, 2004). Researchers have shown that this trend begins to happen when the school is over a 60-mile radius (1 hour commute) away from the student's home (Johnson, 2008). Additionally, many students of color (most notably Hispanics) prefer to stay home and go to college, even if that school is a community college (Desmond & Turley, 2009; Tienda, Cortes, & Niu, 2003). In Texas, Hispanics are overrepresented in two-year community colleges (Chapa & De La Rosa, 2004). Although students may apply and enroll in a two-year community college with aspirations of transferring to a degree-granting institution, most students do not (Fry,

2002).

School demographic profiles. To capture the type of student population the school served, I used campus level summaries of the student ethnic distribution, percent of economically disadvantaged, and English learners in my model. These measures were included because evidence from the extant literature indicated that greater concentrations of students of color and students who are economically disadvantaged are associated with lower matriculation rates (Frost, 2007; Johnson, 2008; Engberg & Wolniak, 2007). The lower matriculation rates may stem from differences in high school preparation, resources, and college orientation (Alon, Domina, & Tienda, 2010, p. 1829). Lower matriculation rates persist despite evidence of high postsecondary aspirations and expectations when in schools where students of color are the majority (Frost, 2007; Goldsmith, 2004).

Teacher profiles. To describe the teaching population, I included the average years of teaching experience as my measure. Teacher experience has been associated with student outcomes (Black et al., 2015; Frost, 2007; Struhl & Vargas, 2012). Hanushek (2010) found that “having a good teacher for three to five years would eliminate the average gap between children who do and who do not receive free and reduced-priced lunch, and between blacks, whites, and Hispanics” (p. 7). However, underprepared or unqualified teachers are disproportionately teaching in high poverty schools and schools where students of color are the majority (Darling-Hammond, 2010, Hanushek, 2010; Ingersoll, 2002). Less experienced teachers are also very prevalent in schools that are low-income and in schools where students of color are the majority

(Darling-Hammond, 2010; Ingersoll, 2003; Ingersoll & May, 2011). On the other hand, more experienced and credentialed teachers transfer to schools with higher achieving, higher income, and fewer students of color (Hanushek, 2010, p. 7). With these measures, I investigated whether the average years of teaching experience were characteristics of Flagship feeder schools and types of diplomas students earned.

Measures for college choice organizational habitus. To help get a better sense of the school's organizational college choice habitus, I focused on the primary coefficient of interest, which is the percent of students enrolled in advanced or dual credit courses. In addition to this measure, the following two variables were included in the model:

1. The percentage of students taking a College Board exam (SAT or ACT) on the campus.
2. The campus average SAT score.

A high number of students attempting college entrance exams have been found to be associated with college application and enrollment (John, 2007). School-wide SAT averages could signal access to resources (i.e. college preparatory courses), wealth (financial resources for SAT/ACT preparatory support) and differences in academic preparation (Alon & Tienda, 2007, Tienda, 2006; Kahlenberg, 2010; McDonough, 1997; Reardon, 2013).

Estimation Strategies and Procedures

Multinomial Logistic Regression

Multinomial logistic regression (MLR) analyses are widely used to model outcomes of a categorical variable with more than two categories. MLR is an extension of Logistic Regressions. Similar to Logistic Regressions, MLRs allowed me to handle the outcome variables like dummy variables. When there are k categories (more than 2) of the outcome variable, using MLR I was able to compare the probability of being in each of the $k-1$ categories (ex. “TAMU feeder”, “UT feeder) to a base or reference category (ex. non-feeder). I used the MLR model to predict the probabilities of different possible outcomes of the categorical variable. With MLR, I was able to compare various combinations to the baseline (or reference group). The ability to run a combination of binary logistic regression models simultaneously using maximum likelihood estimation is the reason MLR was selected over a series of Logistic Regressions (Mertle & Vanatta, 2005; Pallant, 2007; Peng, Lee, Ingersoll, 2002). By running the estimates simultaneously, I also minimized the unexplained error. Specifically, I used MLR to estimate how the percentage of students enrolled in advanced/dual credit courses determine feeder status and the types of high school diploma high school graduates earned from 2004-2014.

In this study, consider the outcomes 1, 2, 3, ... k recoded in y , and the explanatory variables X . There are $k=4$ outcomes for a high school’s status as a feeder: “non-feeder” “TAMU feeder”, “UT feeder”, and “TAMU and UT Feeder”. The values of y are unordered. This distinguishes MLR from Linear Regression (which is appropriate for

continuous dependent variables), from ordered logistic regression (which is appropriate for ordered categorical data) and binary logistic regression (which is appropriate for two outcomes) (Mlogit, Stata.com, 2016).

To address the first research question, I began by building a model to estimate how the percentage of students enrolled in advanced/dual credit courses and other school characteristics determine the feeder status of Texas public high schools. I constructed a MLR model and estimated this first model (Model 1) for all high schools in the sample to examine the variation in high school feeder status. Essentially, I estimated how a set of coefficients corresponded to each outcome (feeder status):

$$\Pr(y_{st} = 0) \frac{1}{1 + e^{x_{st}b(1)} + e^{x_{st}b(2)} + e^{x_{st}b(3)}}$$

$$\Pr(y_{st} = 1) \frac{e^{x_{st}b(1)}}{1 + e^{x_{st}b(1)} + e^{x_{st}b(2)} + e^{x_{st}b(3)}}$$

$$\Pr(y_{st} = 2) \frac{e^{x_{st}b(2)}}{1 + e^{x_{st}b(1)} + e^{x_{st}b(2)} + e^{x_{st}b(3)}}$$

$$\Pr(y_{st} = 3) \frac{e^{x_{st}b(3)}}{1 + e^{x_{st}b(1)} + e^{x_{st}b(2)} + e^{x_{st}b(3)}}$$

To identify my model, I set $\beta^{(0)}$ to 0, which represents the probability that a high school will be a “non-feeder”. In other words, “non-feeder” was set as my reference category. The remaining coefficients $\beta^{(1)}$, $\beta^{(2)}$, $\beta^{(3)}$ was used to measure change relative to $y=0$ group (non-feeder high schools). Thus, my coefficient interpretations for the predicted probabilities of $y=1$, $y=2$, and $y=3$ is relative to my comparison group “non-feeders”. Formally, the equations represent the probability of outcome Y (feeder status) for school (s) at time (t); X is a vector of high school characteristics theoretically related to high

school students' postsecondary enrollment decisions. I estimated this model with and without high school covariates.

Logistic Regression

To address the second research question, I built a model to estimate how well the percentage of students enrolled in advanced/dual credit courses and other school characteristics explained the variation in high school diploma types earned by high school Texas public high school graduates. In this regression model, I was interested in the school characteristics that affect the likelihood of high school students earning a college preparatory high school diploma. The outcome (response) variable is binary (1/0); earned a college preparatory diploma or did not earn a college preparatory diploma. I applied the same predictor variables of interest (high school characteristics associated with postsecondary enrollment). I exponentiated the coefficient and interpreted them as odds ratios. I estimated how a set of coefficients corresponded to the binary outcome (college preparatory diploma):

$$\Pr(y_{ist} = 1|X) \frac{1}{1 + e^{x_{ist}b(1)+z_{ist}\eta(1)} + e^{x_{ist}b(2)+z_{ist}\eta(2)} + e^{x_{ist}b(3)+z_{ist}\eta(3)}}$$

Formally, the equations represent the probability of outcome Y (earning a college preparatory high school diploma) for student (i) from high school (s) at time (t); X is a vector of school characteristics theoretically related to high school students' postsecondary enrollment decisions. Z is a vector of student characteristics (ex. race/ethnicity). I estimated this model with and without student characteristics.

Difference-in-Differences

To address research question three, a difference-in-differences approach is used to analyze the effect of the UT admission cap on the types of diploma earned by high school graduates. Difference-in-differences is one way to simulate an experimental design. With this estimation approach, I observed outcomes for two groups over two time periods. The control groups are not exposed to the treatment (policy intervention-UT admission cap) during either time period. The treatment group is exposed to the treatment during one of the time periods. Both groups are observed in each time period. The changes observed in the control group are subtracted from change in the treatment group.

The assumption behind this empirical strategy is that the UT admission cap did not affect students who were ineligible for the Top 10% automatic admission guarantee. These were students who graduated without a high school diploma or a minimum diploma and would not have graduated in the top decile of their senior class to be affected by the UT admission cap. On the other hand, I anticipated that the UT admission cap did affect rank-eligible students. Top 10% rank-eligible are those students who graduated with a college preparatory diploma (recommended or distinguished diploma). In the difference-in-differences framework, students who were ineligible for the Top 10% automatic admission guarantee served as the control group. The treatment group was comprised of rank-eligible students who graduated with a recommended or distinguished diploma.

The following model specification is estimated by logistic regression to analyze the effect of the UT admission cap on diploma types earned by Texas public high school graduates:

$$Y_{ist} = \alpha + \beta_1 HS_{it} + \phi S_{it} + \gamma TREAT_{is} + \lambda d_t + \delta (Treat * d_t) + \varepsilon_{ist}$$

where Y is a binary variable (high school feeder school status) that indicates whether student (i) from school (s) at time (t) attended a Flagship feeder school; HS_{it} and S_{it} are vectors of high school level and student-level characteristics respectively. Specifically, HS_{it} includes mean high school SAT score, percentage of students taking SAT/ACT at the respective high school, percentage of students taking Advanced/Dual Credit courses, mean years of teacher experience at the high school, distance from UT and TAMU, and demographic characteristics of the high school. Demographic characteristics include percentage of students of color and students who are economically disadvantaged. S_{it} includes student level indicator variables for race-ethnicity and status as economically disadvantaged. $Treat$ is a dummy that is equal to 1 if the student is a Top 10% rank-eligible (i) and attended (s) UT feeder schools or TAMU feeder schools after the UT admission cap. The control group is comprised of students who were not rank-eligible and attended TAMU feeder schools or UT feeder schools before the UT admission cap; d is a post treatment dummy variable. The post treatment period marks the time UT was allowed an admission cap for rank-eligible students under the TTPP, which began the 2011-2012 year; δ represents the difference-in-difference estimates. Finally, ε_{ist} is a normally distributed random error term.

The coefficients of the above difference in differences framework have the following interpretation: δ captures the difference in differences estimator of the effects of the UT cap on diploma types on Top 10% rank-eligible students before and after the policy intervention. Specifically, these parameters measure the differences in outcomes (types of high school diploma students earned) in UT and TAMU high school feeder schools before and after the UT cap in 2011-2012. I conducted a sensitivity analysis of my model, by applying all three competing feeder definitions. This allowed me to explore whether the probabilities of outcomes were sensitive to feeder definition.

Interpretation of MLR and LR Models

I reported my findings using odds ratios and relative risk ratios. The exponentiated value of each coefficient is the relative risk ratio or odds ratio for a one-unit change in the corresponding variable. Risk is measured as the likelihood or multiplication of the risk that occurs with an event or intervention relative to the base outcome when a variable increases. Good rules of thumb for relative risk ratios (RRR) [and odds ratios] are as follows:

1. $RRR > 1$ = Expected increase in risk of the outcome falling into the comparison group relative to the risk of falling into the referent group as the variable increases.
2. $RRR = 1$ = No risk of a changed outcome.
3. $RRR < 1$ = Reduced risk of staying in the comparison group relative to moving to the referent group as the variable increases.

For example, a school leader might interpret a relative risk ratio of 2 as an increased

likelihood (2 times greater) of staying in the comparison group (e.g. TAMU feeder) relative to the referent group (non-TAMU feeder) as the variable increases. A relative risk of .88 can be interpreted as an expected increased risk of leaving the comparison group (TAMU feeder) by a factor of .88, as the variable increases when other variables in the model are held constant. Alternatively, relative risk ratios can also be expressed as a percentage using the following equations:

$$100 \times (RRR-1) = \text{expected increased risk}$$

$$100 \times (1-RRR) = \text{expected decreased risk}$$

A relative risk ratio of .88 could also be interpreted as 12% decreased risk of remaining in the comparison group (i.e. TAMU feeder). It could also be interpreted as a 12% increased risk of moving to the referent group (i.e. non-TAMU feeder). For an accurate interpretation, risk ratios must include two groups: a referent group and a comparison group. In this study the comparison groups were denoted by feeder status: (a) TAMU feeder, (b) UT feeder, and (c) TAMU and UT feeder. The referent group was also denoted by feeder status: (a) non-Flagship feeder school. In this study, a non-Flagship feeder school is a high school that did not send students to either TAMU or UT. In other words, the high school was not a Texas Flagship feeder school.

Model Validation Strategies

My models were validated by tests of regression coefficients, a significant test of the overall model, goodness-of-fit measures, validation of predicted probabilities using relative risk ratios, and marginal means (predicative probabilities). The significance of each predictor variable is determined by using Wald statistic and significance value. The

following indices will be used to assess overall model fit: (a) -2 Log likelihood, (b) Goodness of Fit, (c) Cox & Snell R^2 and Nagelkerke R^2 , and (d) Model Chi-Square (Hosmer & Lemeshow). Finally, I will assess my confidence bands and Z-residual values for clear outliers. What follows is a discussion of my selected research design, data sources, and study measures. This is followed by a detailed explanation of estimation strategies and procedures, model assumptions, and goodness of fit tests used to test the soundness of my models.

Model assumptions. MLR does not make assumptions concerning the distribution of the predictor variables (Mertle & Vanatta, 2005; Pallant, 2007; Peng, Lee, Ingersoll, 2002). That is, the predictor variables do not have to be “normally distributed, linearly related, or have equal variances within each group” (Mertle & Vanatta, 2005, p. 314). However, sample size matters (Mertle & Vanatta, 2005; Pallant, 2007; Peng, Lee, Ingersoll, 2002). According to Pallant (2007), a small sample cannot be accompanied by a large number of predictors (p.167). To address this model sensitivity, I ran descriptive statistics to check that each of my predictor variables has enough cases (Mertler & Vanatta, 2005; Pallant, 2007; Peng, Lee, Ingersoll, 2002). I considered merging or deleting categories that did not have enough cases (Pallant, 2007, p. 167).

MLR is also sensitive to multicollinearity and outliers (Mertler & Vanatta, 2005; Pallant, 2007; Peng, Lee, Ingersoll, 2002). To address this, I ran collinearity diagnostics to check for high correlations among other variables within my model. I removed highly correlated variables. I did not employ a stepping method because I did not want the computer to automatically eliminate variables based exclusively on statistical

significance. Instead, I retained variables associated with my theoretical assumptions. Variables were only excluded for two reasons. First, I excluded any variable that caused issues of collinearity. The second consideration to drop a variable was if it was not statistically significant and remained insignificant after a joint test of significance (F-test). No variable was dropped under these considerations. Finally, I inspected residuals for the presence of outliers that were not well explained by my model.

Chapter Conclusion

In this chapter, I explained the empirical strategies and measures used to explore the relationships among key school characteristics, rigor in course-taking behavior (signaled by diploma type earned), and high school to college feeder patterns before and after the UT admission cap. I tested the sensitivity in outcomes by applying the three competing feeder definitions. In the next chapter, I report the findings.

CHAPTER IV

RESEARCH FINDINGS

In this chapter, I present the findings for this study. The intent of my research was to conduct an empirical examination of the impact of the UT Top 10% automatic admission cap on high school feeder status and high school diploma types. Specifically, I wanted to know if high school to university feeder patterns and the type of high school diploma a graduating senior received could be correctly predicted from knowledge of a high school's: (a) demographics and (b) college orientation measures.

I used the Multinomial Logistic Regression (MLR), Logistic Regression (LR), and Difference-in-Differences (DID) models to investigate changes in diploma types earned and feeder school status among Texas high school seniors on the basis of school characteristics and demographic profiles. Findings are based on changes in diploma types earned and feeder school status before and after the 2011 UT admission cap. The results indicate that feeder school status, types of diplomas earned and related key school indicators vary based on feeder definition. Further, the UT admission cap had an effect on feeder status and diploma types earned in Texas public high schools. First, the descriptive statistics of this study are presented in the first section of this chapter. After a presentation of the descriptive statistics, regression findings are organized and presented by research question in the remaining sections.

Descriptive Statistics

In this section, I compared and contrasted a high school's status as a (a) non-feeder, (b) TAMU feeder, (c) UT Feeder, or (d) TAMU/UT Feeder using the following feeder definitions:

1. Feeder Definition 1 (Montejano, 2001): any high school that sent at least one student to the University of Texas. I modified this definition to include any high school that sent at least one student to the either or both of the Flagship schools in the current year.

2. Feeder Definition 2 (Long, Saenz, & Tienda, 2010): the top 20 high schools that sent at least twenty or more students to either UT or TAMU. I expanded this definition to any high school that sent twenty or more students to UT and/or TAMU in the current year.

3. Feeder Definition 3 (proposed by author): the top 50 high schools that sent the largest proportion of their high school's senior class to one or both of the State's Flagships in the current year and the year prior.

Essentially, a high school's classification as a Texas Flagship feeder school was examined each year of the analysis (2004-2014). For feeder definition three, each high school was examined for two years (the current year and the year prior). The fluctuation in the number of high schools should not be interpreted as the total number of high schools that were open or closed across Texas in a given year. The fluctuation in the number of high schools in the subsequent tables reflect changes in a high school's status as a Texas Flagship feeder school when examined annually. Subsequently, status as a

Texas Flagship feeder high school varied based on time and the respective feeder definition applied.

Texas Flagship Feeder High Schools Before UT Admission Cap

In this section, I illustrated how a high school’s status as a Texas Flagship feeder changed the six years before the UT admission cap (2004-2010) under different Texas Flagship feeder definitions (see Table 4).

Table 4

Texas Flagship Feeder High Schools Before UT Admission Cap by Feeder Definition, 2004-2010

	Feeder 1	Feeder 2	Feeder 3
TAMU Feeders	1,633	141	215
UT Feeders	742	136	209
TAMU/UT Feeders	4,256	212	27
High School Feeder Total	6,631	489	451

Source: Office of Admissions Research at the University of Texas (OAR) and Office of Data and Research Services at Texas A&M (DAR). Under Feeder definition one, a high school is classified as a Texas Flagship feeder school if at least one student enrolled in Texas A&M (TAMU) or the University of Texas (UT) in the current year. Under Feeder definition two, a high school is classified as a Texas Flagship feeder school if 20 or more students enrolled in TAMU and/or UT in the current year. Under Feeder definition three, a high school is classified as a Texas Flagship feeder if ranked among the top 50 high schools that sent the greatest proportion of their graduating class to TAMU and/or UT in the current year and the prior year.

Feeder definition one. In Table 4, I show that when feeder definition one (Montejano, 2001), the most generous feeder definition was used, there was an appearance of a broad representation of high schools that sent students to the State’s

Flagships. With this definition researchers such as Montejano (2001) have concluded that the Top 10% Plan has resulted in expanded geographic access. In other words, a drawn conclusion was that there was a greater share (higher number of high schools participating) of Texas public high school sending students to the Flagship after the implementation of the Texas Top 10% Plan.

Feeder definition two. To test whether a high school's status was sensitive to feeder definition, I continued by using definition two to classify a high school's feeder status. With feeder definition two (Long, Saenz, Tienda, 2010), a high school is classified as a feeder school if twenty or more students enrolled in either or both Texas Flagships in the current year. When I applied feeder definition two, there were drastic drops in the percentage of high schools that held the status as a TAMU feeder, UT feeder, or TAMU & UT feeder compared to high schools classified as Flagship feeders under definition one. Under this definition, about 95% of the Texas public high schools were not classified as Texas Flagship high school feeders. This indicates that roughly 5% of Texas public high schools were able to send at least twenty of their graduates to either or both Flagship.

Feeder definition three. Next, I applied a new feeder definition. Under my proposed definition, a feeder school is defined as the top 50 high schools that sent the greatest proportion of their high school's senior class in the current year and the year prior. Under this feeder definition, more than 50 Texas public high schools could qualify if there were ties among the schools whose sending percentage was above the threshold of the cut-off percentage. High schools that sent the same percentage of students to

either or both Flagships could only hold one place as a tie. Thus, if the cut-off of the 50th high school was 8%, schools that sent 8% all ranked 50th and schools that sent less than 8% (i.e. 7% or 5%) would miss the cut-off and would rank 51st, 52nd, 53rd, and so on. Those schools with scores (percentages) below the threshold would not be captured in this definition. The cut-off of 50 high schools was selected because it was flexible enough to capture high schools that would qualify as a feeder under the previous two feeder definitions. However, my definition is stricter in that it accounts for school size and requires high schools to be repeating Flagship senders.

By giving credit to repeat senders and factoring in school size, my proposed definition qualified an additional (n=74) TAMU feeders and (n=73) UT feeder schools when compared to feeder definition two high school feeder results. Under my proposed definition, however, 185 high schools were unclassified as TAMU/UT feeder schools based on the proportion of students that high school was able to send to both TAMU and UT before the UT admission cap. This is the result when compared to feeder definition two, which only considers the volume of students (20+) and not proportion of students who go on to enroll in a Texas Flagship from a particular high school.

Texas Flagship Feeder High Schools After UT Admission Cap

I then investigated whether a high school's status as a feeder school changed in the three years after the UT admission cap, 2011-2014. In Table 5, I show the number of high schools that were classified as a Texas Flagship feeder high school by the three competing feeder definitions.

Table 5*Texas Flagship Feeder High Schools Post UT Admission Cap by Feeder Definition, 2011-2014*

	Feeder 1	Feeder 2	Feeder 3	Total
TAMU Feeders	770	60	97	927
UT Feeders	306	60	101	467
TAMU/UT Feeders	2,016	98	19	2,133
High School Feeder Total	3,092	218	217	3,527

Source: Office of Admissions Research at the University of Texas (OAR) and Office of Data and Research Services at Texas A&M (DAR). Under Feeder definition one, a high school is classified as a Texas Flagship feeder school if at least one student enrolled in Texas A&M (TAMU) or the University of Texas (UT) in the current year. Under Feeder definition two, a high school is classified as a Texas Flagship feeder school if 20 or more students enrolled in TAMU and/or UT in the current year. Under Feeder definition three, a high school is classified as a Texas Flagship feeder if ranked among the top 50 high schools that sent the greatest proportion of their graduating class to TAMU and/or UT in the current year and the prior year.

Feeder definition one. Feeder definition one qualified a high school as a feeder if they sent just one student to either Flagship in the current year. When feeder definition one was applied, the UT admission cap did not change the share of high schools that were classified as a TAMU feeder school. In Tables 6, I show the number of high schools that were classified as a Texas Flagship feeder high school annually using feeder definition one

Table 6*Texas Flagship Feeder High Schools using Feeder Definition 1, 2004-2013/14*

	Before UT Admission Cap							After UT Admission Cap			Total
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
TAMU	239	229	223	215	245	245	237	247	248	275	2,403
UT	99	103	112	94	96	124	114	98	116	92	1,048
TAMU/UT	597	584	606	636	602	609	622	641	681	684	6,262
Feeder Total	935	916	941	945	943	978	973	986	1,045	1,051	9,713

Source: Office of Admissions Research at the University of Texas (OAR) and Office of Data and Research Services at Texas A&M (DAR). Under Feeder Definition 1, a high school is classified as a Texas Flagship Feeder if they sent at least one student to Texas A&M and/or the University of Texas under the current year of observation.

In Table 7, I show that TAMU high school feeders still comprised 25% of the share of Texas Flagship feeder high schools in Texas after the UT admission cap. After the UT cap, there was a small decrease in the number of high schools that were classified as a UT feeder school. This drop resulted in a 1% decreased share of UT Flagship feeder high schools. High schools that were able to successfully send students to both UT and TAMU increased after the UT admission cap. Before the UT admission cap, TAMU/UT high school feeders had a sizeable command of the Flagship feeder market at 64%. This share increased to 65% after the UT admission cap.

Table 7

Change in Texas Flagship Feeder High School Status After the UT Admission Cap using Feeder Definition 1, 2004-2014

	Before UT Admission Cap		After UT Admission Cap		
	HS Feeder Count	% Flagship Feeder Share	HS Feeder Count	% Flagship Feeder Share	% Change in Flagship Feeder Share
TAMU Feeder	1633	25.0	770	25.0	0.0
UT Feeder	742	11.0	306	10.0	-1.0
TAMU/UT	4256	64.0	2006	65.0	+1.0
HS Feeder Total	6631	100.0	3082	100.0	0.0

Source: Office of Admissions Research at the University of Texas (OAR) and Office of Data and Research Services at Texas A&M (DAR). High school feeder count is the total number of high schools that were classified as Texas Flagship feeder school during the specified time period. To obtain the percent Flagship feeder share, the high school feeder counts were divided by the high school feeder totals. The percent change in Texas Flagship feeder share is difference in percent shares before and after the UT admission cap.

Feeder definition two. With feeder definition two, I investigated if high schools sent at least twenty students to either Flagship and whether they were able to maintain this sending pattern after the UT admission cap. In Table 8, I show drastic drops in the number of high schools classified as a Flagship feeder when at least twenty students needed to enroll in either or both Flagship to earn the Flagship feeder status. When high schools were classified as a Texas Flagship feeder using feeder definition two, only 489 high schools were still considered a feeder schools. In Table 9, I show when the UT admission cap was implemented, there were drastic drops in the number of high schools that were classified as a Texas Flagship feeder school. More than 50% of high schools lost their Flagship feeder status when feeder definition two was used to classify feeder

status.

Under this definition, I also found there was a decrease in the number of high schools that were classified as a TAMU feeder school post the UT admission cap. In Table 9, I show that after the UT admission cap, there was a 1% drop in TAMU high school feeder schools. Interestingly, with unlike feeder definition one, I show that the UT admission cap did not have a decrease in number of high schools that were UT feeders under feeder definition two. In Table 9, I show that there was no change in UT's Flagship feeder share after the UT admission cap. This observed difference in outcomes could mean that the UT admission cap affected high schools that sent a small number of students to UT (see Table 7) but did not affect schools that were already sending large numbers of students (more than 20) (see Table 9). High schools that sent students to both of the State's Flagship schools experienced a 2% boost in the number of high schools that sent students to both TAMU and UT.

Table 8*Texas Flagship Feeder High School Count Before and After UT Admission Cap by Feeder Definition 2, 2004-2013/14*

	Before UT Admission Cap					After UT Admission Cap				
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
TAMU	23	21	17	21	18	23	18	17	24	19
UT	21	19	18	18	20	21	19	17	21	22
TAMU/UT	28	30	32	31	31	28	32	35	31	32
Feeder Total	72	70	67	70	69	72	69	69	76	73

Source: Office of Admissions Research at the University of Texas (OAR) and Office of Data and Research Services at Texas A&M (DAR). Under Feeder Definition 2, a high school is classified as a Texas Flagship Feeder if 20 or more students enrolled in Texas A&M and/or the University of Texas in the current year.

Table 9*Change in Texas Flagship Feeder High School Status After the UT Admission Cap using Feeder Definition 2, 2004-2014*

	Before UT Admission Cap		After UT Admission Cap		% Change in Flagship Feeder Share Before and After UT Cap
	HS Feeder Count	% Flagship Feeder Share	HS Feeder Count	% Flagship Feeder Share	
TAMU Feeder	141	29.0	60	28.0	-1.0
UT Feeder	136	28.0	60	28.0	0.0
TAMU/UT	212	43.0	98	44.0	2.0
HS Feeder Total	489	100.0	218	100.0	+1.0

Source: Office of Admissions Research at the University of Texas (OAR) and Office of Data and Research Services at Texas A&M (DAR). Under Feeder Definition 2, a high school is classified as a Texas Flagship Feeder if 20 or more students enrolled in Texas A&M and/or the University of Texas in the current year. To obtain the percent Flagship feeder share, the high school feeder counts were divided by the high school feeder totals. The percent change in Texas Flagship feeder share is difference in percent shares before and after the UT admission cap.

Feeder definition three. The biggest changes in high school sending patterns were observed under feeder definition three. Feeder definition three accounts for school size and requires high schools to be repeating Flagship senders. In Tables 10 and 11, I show that TAMU high school feeders had a 3% decrease in their share of the State’s Flagship high school feeder pool. UT high school feeders did not experience much change in the number of high schools that were feeders after the UT admission cap. High schools that were able to send students to both TAMU and UT had a 3% boost in their share of the State’s Flagship high school feeder pool.

Table 10

Texas Flagship Feeder High School Count Before and After UT Admission Cap using Feeder Definition 3, 2004-2013/14

Definition 3	Before UT Admission Cap					After UT Admission Cap				
Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
TAMU Feeder	0	40	33	36	36	33	37	29	34	34
UT Feeder	0	35	36	42	37	28	31	30	39	32
TAMU/UT	0	5	5	4	2	6	5	8	3	8
Feeder Total	0	80	74	82	82	75	67	73	76	74

Source: Office of Admissions Research at the University of Texas (OAR) and Office of Data and Research Services at Texas A&M (DAR). Under Feeder Definition 3, a high school is classified as a Texas Flagship Feeder if ranked among the top 50 high schools that the greatest proportion of their graduating class to Texas A&M and/or the University of Texas for the current year and the year prior. Since this feeder definition restricts high school feeder classification to repeat senders, the year 2004 reflects no feeders because 2003 data is outside of the scope of this analysis.

Table 11

Change in Texas Flagship Feeder High School Status After the UT Admission Cap using Feeder Definition 3, 2004-2013/14

	Before UT Admission Cap		After UT Admission Cap		% Change in Flagship Feeder Share
	HS Feeder Count	% Flagship Feeder Share	HS Feeder Count	% Flagship Feeder Share	
TAMU Feeder	215	48.0	97	45.0	-3.0
UT Feeder	209	46.0	101	47.0	0.0
TAMU/UT	27	6.0	19	9.0	3.0
HS Feeder Total	451	100.0	217	100.0	0.0

Source: Office of admissions Research at the University of Texas (OAR) and Office of Data and Research Services at Texas A&M (DAR). Under Feeder Definition 3, a high school is classified as a Texas Flagship Feeder if ranked among the top 50 high schools that the greatest proportion of their graduating class to Texas A&M and/or the University of Texas for current year and the year prior. To obtain the percent Flagship feeder share, the high school feeder counts were divided by the high school feeder totals. The percent change in Texas Flagship feeder share is difference in percent shares before and after the UT admission cap.

Earned Diploma Types

The Texas Education Agency provided student level data on the types of diplomas high school graduates earned from 2004-2013. From Table 12, I show the earned diploma types of over two million Texas public school graduates (n=2,136,879). The diploma type that the majority of Texas public high school graduates (75%) earned during the time period of this study was a Recommended diploma (n=1,599,026). Hispanic students were the largest holders of the Recommended high school diploma. The second most earned diploma type (13%) was the Minimum diploma (n=288,196).

The third most earned diploma type (12%) and most rigorous was the Distinguished diploma (n=248,166).

Table 12

Student Count of Diploma Types Earned by Race-Ethnicity, 2004-2014

Student Characteristics	Minimum	College Preparatory Diploma	
		Recommended	Distinguished
African American	46,177	207,976	3,753
Hispanic	118,264	696,314	92,303
White	123,036	649,592	132,842
Asian	719	45,144	19,268
Total	288,196	1,599,026	248,166

Source: Office of Admissions Research at the University of Texas (OAR) and Office of Data and Research Services at Texas A&M (DAR).

Table 13

Share of Diploma Types Earned Before UT Admission Cap by Race/Ethnicity Among Population Total, 2004-2010

	Minimum	College Preparatory Diploma	
		Recommended	Distinguished
African American	16.0	13.0	1.0
Hispanic	35.0	40.0	34.0
White	48.0	44.0	58.0
Asian	1.0	3.0	7.0
Total	100.0	100.0	100.0

Source: Texas Education Agency. Based on student-level high school diploma data.

Before the UT admission cap. In Tables 12 and 13, I show that White students were the largest holders of both Distinguished and Minimum high school diplomas, opposite ends of the spectrum. White students were overrepresented in both of these categories. For examples, White students made up 42% of the student population in this study but comprised 48% of the share of students who earned a Minimum diploma and 58% of the students who earned a Distinguished diploma. African Americans were the least likely to hold a Distinguished high school diploma. African American students were 12% of the student population in this study, but only comprised 1% of the students who earned a Distinguished high school diploma. Asian students were the most likely to earn a Distinguished diploma in this study and the least likely to leave high school with a Minimum Diploma.

After the UT admission cap. In Table 14, I show that the UT admission cap resulted in a larger percentage of students who pursued and earned a college preparatory diploma. When a Texas graduate earned a Recommended or Distinguished high school diploma, it meant they completed coursework that was considered college preparatory by the Texas State Board of Education. Post the UT admission cap, there were increases in the number of students who earned a Distinguished Diploma for every student group except White students. There was an 11% drop in the percentage of White students who earned a Distinguished Diploma after the UT admission cap (see Tables 14 and 15). There was an 8% increase in Distinguished high school diplomas earned among Hispanic students. While there was increase in the number of Hispanic students who

earned a Distinguished diploma after the UT cap, they also became the number one holders of the Minimum high school diploma. This distributional change among high school diploma holders may in part be explained by the changes in demographics. That is, during this time period (2004-2010), the White student population was decreasing while the Hispanic population was increasing in Texas. During the 2013-14 academic school year, Hispanic students accounted for more than half (51.8%) of the total student population in Texas (Texas Education Agency, 2014).

Table 14

Share of Diploma Types Earned After UT Admission Cap by Race/Ethnicity Among Population Total, 2011-2013/14

	Minimum	College Preparatory Diploma	
		Recommended	Distinguished
African American	17.0	13.0	2.0
Hispanic	53.0	49.0	42.0
White	30.0	35.0	47.0
Asian	0.0	3.0	9.0
Total	100.0	100.0	100.0

Source: Texas Education Agency. Based on student-level high school diploma data.

Table 15

Percent Change in Types of Diplomas Earned Before and After UT Admission Cap by Race/Ethnicity, 2004-2013/14

	Minimum	College Preparatory Diploma	
		Recommended	Distinguished
African American	1.0	0.0	1.0
Hispanic	18.0	9.0	8.0
White	-18.0	-9.0	-11.0
Asian	0.0	0.0	2.0
Total	1.0	0.0	-5.0

Source: Texas Education Agency. Based on student-level high school diploma data.

Overall changes in high school diplomas earned. In most cases, the evidence indicates that the UT admission cap resulted in more students pursuing and earning a college preparatory diploma. Asian students comprised 3% of the student population in this study but 9% of all Distinguished Diploma holders. Although Asian students were not the number one holders of the Distinguished high school diploma by sheer numbers, they were the number one Distinguished diploma holders by their population proportion. African Americans students were the most underrepresented student group among the Distinguished diploma holders. I also found drops in every diploma type category among White students.

Descriptive Statistics Summary

To this point, I used descriptive data to represent the trends of high school Flagship feeder statuses before and after the UT admission cap. From the descriptive statistics, I show evidence that a high school's status as a Flagship feeder school changes based on feeder definition. I also showed evidence that the type of high school diploma

students earn changed after the UT admission cap. Post the UT cap, there were fewer high schools classified as Flagship feeder schools no matter which feeder definition was applied. Post the UT cap, TAMU feeder high schools experienced the greatest declines.

In the next section, I report the findings of which school characteristics were related to a high school's feeder status and the type of high school diploma a student earned. To address my final research question, I examined the impact of the UT admission cap on a school's odds of being a Texas Flagship feeder and students' likelihood of earning a college preparatory high school diploma. All of the findings were reported using relative risk ratios and feeder definition three. Feeder definition three is my proposed definition. Under feeder definition three, I classified a high school as a feeder school only if they ranked among the top high schools that sent the largest proportion of students to either or both Flagship schools for more than one year. I chose to apply my definition over the two previously offered definitions because it is flexible enough to pick up schools that would have been classified as a Flagship feeder school under both of those definitions. My definition, however, would not give credit to schools that only sent one student at one point in time. This strictness allows educational leaders and policy makers to examine more completely whether the TTPP has resulted in a greater representation of high schools that are Flagship feeders. With this feeder definition, I was able to separate the intermittent high school senders from high schools that are actually Flagship feeder high schools. Subsequently, I did not carry in discussion the differences in feeder patterns and diploma types earned by each feeder definition. I did, however, estimate the models with each definition and briefly discussed

whether the outcomes were sensitive to feeder definition in the chapter closing. What follows is a presentation of findings from the Multinomial Logistic, Logistic and Difference-in-Differences Regression models, which were organized by my three research questions.

Research Question One

Which school characteristics predict that a high school will be a UT and/or TAMU feeder before and after the UT admission cap? To address research question one, I used multinomial logistic models to obtain a relationship between feeder status and school characteristics. The outcome variable, feeder status, is multinomial with four possible outcomes: (a) non-feeder, (b) TAMU feeder, (c) UT feeder, and (d) TAMU and UT feeder. Non-feeder high schools were set as the reference category. High schools were classified as a non-feeder high school if no students from that school enrolled in either of Texas' Flagship schools. The multinomial logistic regression analysis began with the selection of variables that have been empirically found to be associated with college enrollment and success for all students but especially those from traditionally marginalized groups.

Effect on TAMU Feeder Schools

In Table 16, I show that a high school increased its likelihood of being a TAMU flagship feeder school when there was an increase in (a) the percentage of students enrolled in advanced/dual credit courses (2.4% increased likelihood), (b) school-wide SAT average (1.5% increased likelihood), and (c) teacher average years of experience in education (13.5% increased likelihood). The racial-ethnic student composition also

helped to explain the odds of a high school being classified as a TAMU feeder school. High schools that had higher White and Asian student population averages were more likely to be classified as a TAMU feeder high school (12.6% increased likelihood) than high schools with larger percentages of African American and Hispanic students. Of the measures included in the model, the only risk to a school's odds of being a TAMU feeder high school was its distance from TAMU. I found that the further the high school was away from TAMU, the less likely students from that high school were to enroll in TAMU. Distance from UT and the percentage of economically disadvantaged students served were the only two school characteristics in the model that did not have a statistically significant affect on a school's status as a TAMU feeder school.

Table 16

Relative Risk Ratios for Status as a Texas Flagship Feeder School After UT Admission Cap using Feeder Definition 3, 2011-2014. (non-Flagship feeder is Reference Category)

	TAMU Feeder	UT Feeder	TAMU/UT Feeder
School Characteristics			
% Enrolled in Advanced/Dual Credit	1.024***	1.048***	1.039***
% Taking SAT/ACT	1.015***	1.006*	0.989*
% Economically Disadvantaged	0.999	0.935***	0.878***
% African American	1.095*	0.988	0.979
% Hispanic	1.108**	0.988	1.022
% Other	1.126**	0.964	0.995
Avg. Years of Teacher Experience	1.135***	1.106***	1.157*
Avg. SAT score	1.009***	1.006**	1.001
TAMU Distance	0.069***	2.061	1.306
UT Distance	0.715	0.094***	0.721
N	358	356	46

Source: Texas Education Agency, Office of Admissions Research at the University of Texas (OAR) and Office of Data and Research Services at Texas A&M (DAR). ***p<0.001 **p<0.01 *p<0.05

Under Feeder Definition 3, a high school is classified as a Texas Flagship Feeder if ranked among the top 50 high schools that the greatest proportion of their graduating class to Texas A&M and/or the University of Texas in the current year and the year prior. Other is comprised of White and Asian student percentages. It does not include Native American, Multiracial student groups.

Effect on UT Feeder Schools

In Table 16 (Column 2), I show that when a high school was located more than 60 miles away from UT, students from that high school were less likely to enroll in UT feeder relative to non-feeder high schools and high schools located less than 60 miles away from UT. Of the measures included in this model, distance from UT explained the most about a school's odds of being a UT feeder high school. Aside from distance, there were key school characteristics that affected a school's likelihood of being a UT feeder high school. For example, a high school increased its likelihood of being a UT flagship

feeder school when there was an increase in (a) the school-wide average of students enrolled in advanced/dual credit courses (4.8% increased likelihood) and (b) teacher average years of experience in education (10.6% increased likelihood). The school-wide average of students who took college entrance exams and the school-wide SAT average increased a high school's odds of being a UT feeder school minimally (less than 1%), when other variables in the model were held constant. Outside of a high school's distance from UT, there was one other risk identified that affected a school's odds of being a UT feeder school. That school characteristic was the percentage of economically disadvantaged students served within that high school. A high school increased its risk of being a non-UT feeder high school by 6.5% when the percentage of economically disadvantaged students the high school served increased. Unlike high schools that were classified as TAMU feeders, a high school's racial-ethnic student composition did not help explain the likelihood whether that high school would be a UT feeder high school.

Effect on TAMU/UT Feeder Schools

In Table 16 (Column 3), I show that a high school increased its likelihood of being a TAMU/UT flagship feeder school by 3.9% when the number of students enrolled in advanced/dual credit courses increased relative to non-Flagship feeder schools. Within this model, the number one factor that explained the likelihood of a high school being a TAMU/UT feeder school was teacher experience. When the average years of teacher experience increased, there was 15% increased likelihood that the high school would be a TAMU/UT feeder school. The second factor that explained the odds of a high school's status as a TAMU/UT feeder was the percentage of economically

disadvantaged students served within that high school. For TAMU/UT high school feeder schools, when there was an increase in the school-wide average of economically disadvantaged students served, there was a 12% increased risk that the school would no longer be a TAMU/UT feeder high school. The percentage of students taking college entrance exams explained about 1% of a high school's feeder odds. The racial-ethnic composition, school wide SAT average, and distance from both of Texas' Flagship schools did not explain the odds of a school being a TAMU/UT feeder high school when other variables in the model were held constant.

Sensitivity Analysis

Finally, I estimated the model by applying each feeder definition to see whether the relationship between key school characteristics and feeder status was sensitive to the feeder definition applied (see Tables 17 and 18).

TAMU feeders. I found that increasing the school-wide average of students taking SAT/ACT exams increased the likelihood of a high school being a TAMU feeder regardless of which feeder definition applied before the UT admission cap. The racial-ethnic composition of a high school helped to explain a school's odds of being a TAMU feeder school. The school-wide SAT average and distance from TAMU also helped to explain the likelihood that a high school would be a TAMU feeder regardless of the feeder definition applied.

UT feeders. There were four school characteristics that affected the odds of a high school being a UT feeder. Those school characteristics were (a) percentage of students enrolled in advanced or dual credit courses, (b) the percentage of economically

disadvantaged students served, (c) school-wide SAT average, and (d) the high school's distance from UT. Regardless of feeder definition applied, when a school increased the percentage of students enrolled in advanced/dual credit courses, they also increased their odds of being a UT feeder.

TAMU/UT feeders. The two school characteristics that had an effect on the likelihood that a high school would be a Flagship feeder school were (a) the percentage of students enrolled in advanced courses, (b) percentage of students who were economically disadvantaged, (c) teacher experience, and (d) the percentage of students who took college entrance exams regardless of which feeder definition was applied. Essentially, there were two school characteristics that improved the likelihood that a high school would be a TAMU/UT feeder school. Those two factors were the percentage of students enrolled in advanced or dual credit courses and teacher experience. These two school characteristics were not sensitive to feeder definitions.

Table 17

Relative Risk Ratios for Status as a Texas Flagship Feeder School using Feeder Definition 2, 2004-2014. (non-Flagship feeder is Reference Category)

	TAMU Feeder	UT Feeder	TAMU/UT Feeder
School Characteristics			
% Enrolled in Advanced/Dual Credit	1.018**	1.025***	1.046***
% Taking SAT/ACT	1.019***	1.021***	1.012***
% Economically Disadvantaged	0.893***	0.911***	0.853***
% African American	1.166***	1.051	1.018
% Hispanic	1.155***	1.039	0.995
% Other	1.116**	0.988	0.969
Avg. Years of Teacher Experience	0.980	0.985	1.122***
Avg. SAT score	1.002***	1.001***	1.001***
TAMU Distance	0.106***	4.932	0.315***
UT Distance	1.601	0.138***	0.676
N	511	506	310

Source: Texas Education Agency, Office of Admissions Research at the University of Texas (OAR), and (d) Office of Data and Research Services at Texas A&M (DAR). ***p<0.001 **p<0.01 *p<0.05

Under Feeder Definition 2, a high school is classified as a Texas Flagship Feeder if 20 or more students enrolled in Texas A&M and/or the University of Texas in the current year. Other is comprised of White and Asian student percentages. It does not include Native American, Multiracial student groups.

Table 18

Relative Risk Ratios for Status as a Texas Flagship Feeder School using Feeder Definition 1, 2004-2014. (non-Flagship feeder is Reference Category)

	TAMU Feeder	UT Feeder	TAMU/UT Feeder
School Characteristics			
% Enrolled in Advanced/Dual Credit	1.004	1.007*	1.013***
% Taking SAT/ACT	1.006***	1.002	1.011***
% Economically Disadvantaged	0.984***	0.977***	0.936***
% African American	1.064***	1.466***	1.112***
% Hispanic	1.057***	1.136***	1.105***
% Other	1.052**	1.098***	1.046**
Avg. Years of Teacher Experience	1.151***	1.099***	1.130***
Avg. SAT score	1.001***	1.001***	1.002***
TAMU Distance	0.265***	2.749**	0.552**
UT Distance	0.755	0.524**	0.292***
N	8,675	7,320	6,272

Source: Texas Education Agency, Office of admissions Research at the University of Texas (OAR), and (d) Office of Data and Research Services at Texas A&M (DAR). ***p<0.001 **p<0.01 *p<0.05
 Under Feeder Definition 1, a high school is classified as a Texas Flagship Feeder if they sent at least one student to Texas A&M and/or the University of Texas in the current year. Other is comprised of White and Asian student percentages. It does not include Native American, Multiracial student groups.

Research Question Two

Are students more likely to earn a college preparatory diploma in a UT or TAMU feeder? To address research question two, I used binary logistic models to obtain a relationship between odds of earning a college preparatory diploma and school characteristics. The outcome (response) variable is binary (1/0); earned a college preparatory diploma or did not earn a college preparatory diploma. A college preparatory diploma is earned when a student completes the Recommended or Distinguished diploma.

In model 1, I estimated the data using logistic regression. Model 1 included a selection of school characteristics that have been empirically found to be associated with

college enrollment and success for all students but especially those from traditionally marginalized groups. Model 2 included those school characteristics plus individual student characteristics. This model revealed whether the racial-ethnic background or economic status of a student served as a predictor of whether the student would pursue a college preparatory diploma when school characteristics included in the model were held constant.

Model 3 included school characteristics, individual student characteristics and flagship feeder types. This model revealed whether there were differences in the likelihood that a student would earn a college preparatory high school diploma depending on the type of high school they attended. Model 4 included school characteristics, individual student characteristics, and interaction terms of key variables of interest. This model revealed whether there were differences in the likelihood that a student would earn a college preparatory high school diploma depending on the type of high school they attended and whether school characteristics such as the percentage of economically disadvantaged students served and racial-ethnic composition of the high school mattered more in certain feeder schools than others.

The high schools were clustered into four categories: (a) TAMU feeder high school, (b) UT feeder high school, (c) TAMU/UT feeder high school, and (d) non-feeder high school. Feeder definition three was used for this analysis. Under feeder definition three, a high school is classified as a Texas Flagship feeder if ranked among the top 50 high schools that had the greatest proportion of their graduating class enroll in TAMU and/or UT during the current year and the year prior.

Model 1

In Table 19, I show which school characteristics best explained a student's odds of earning a college preparatory diploma (recommended or distinguished diploma) relative to students in non-feeder high schools. First, I found that a high school's distance from the University of Texas explained the odds of whether a student earned a college preparatory diploma most. Second, an increase in the average years of teacher experience within a high school decreased the likelihood that a student would earn a college preparatory diploma by 4.5%. Third, the racial-ethnic student composition of a school explained the odds of a student earning a college preparatory diploma by up to 2.9%. Finally, the percentage of students enrolled in advanced courses, taking college entrance exams, students who were economically disadvantaged, and school SAT mean minimally increased the likelihood that a student would earn a college preparatory diploma (~1%) when other variables in the model were held constant.

Model 2

In Table 19, model 2, I added individual student characteristics to high school characteristics. The individual characteristics included in this model were a student's racial-ethnic background and Texas classification as economically disadvantaged. The percent of economically disadvantaged students is calculated as the sum of the students coded as eligible for free or reduced-price lunch or eligible for other public assistance, divided by the total number of students. When individual student characteristics were included, I found that a student's racial-ethnic background explained the likelihood of earning a college preparatory diploma more than their economic status alone. The racial-

ethnic background of the student was a near perfect predictor of whether a student would earn a college preparatory diploma. In contrast, a student's status as economically disadvantaged explained less than 1% of whether than would earn a college preparatory diploma, when race and other variables in the model were held constant.

Model 3

In Table 19, model 3, I expanded the model to include high school feeder type. In this model, I show whether the type of high school a student attends increased the likelihood that a student would graduate with a college preparatory high school diploma. The high schools were clustered into three categories: (a) TAMU feeder high school, (b) UT feeder high school, and (c) TAMU/UT feeder high school. High schools that had no students to enroll in either Flagship school from 2004-2014 were classified as non-feeder schools. Feeder definition three was used to classify high schools as Flagship feeders. Under feeder definition three, a high school was classified as a Texas Flagship feeder high school if it ranked among the top 50 high schools that sent the greatest proportion of its graduating class to one or both of the Flagships in the current year and year prior.

Table 19*Likelihood of Earning a College Preparatory Diploma by School Characteristics, Individual Characteristics, and High School Feeder Type, 2004-2014*

	(1)	(2)	(3)	(4)
School Characteristics				
% Enrolled Advanced/Dual	1.017***	1.016***	1.015***	1.015***
% Taking SAT/ACT	1.005***	1.005***	1.005***	1.005***
% Economically Disadvantaged	1.001***	1.002***	1.002***	1.010***
% African American	1.022***	1.039***	1.040***	1.046***
% Hispanic	1.029***	1.045***	1.046***	1.051***
% Other	1.026***	1.038***	1.039***	1.045***
Avg. Years of Teacher Experience	0.955***	0.956***	0.954***	0.955***
Avg. SAT score	0.999***	0.999***	0.999***	0.999***
UT Distance	0.849***	0.835***	0.858***	0.856***
TAMU Distance	0.985	0.975***	0.995	1.013
Student Characteristics				
African American		0.015***	0.015***	0.018***
Asian		0.282***	0.273***	0.200***
Hispanic		0.017***	0.017***	0.018***
White		0.024***	0.024***	0.020***
Eco. Disadvantaged		1.002***	1.002***	0.284*
High School Feeder Type				
TAMU feeder			1.135***	0.211***
UT feeder			1.182***	24.091***
TAMU/UT Feeder			1.348***	0.573
Interactions				
TAMU feeder_EcoDis. %				1.021***
UT feeder_EcoDis. %				0.981***
TAMU/UT feeder_EcoDis. %				1.031***
TAMU_African American %				1.008
UT_African American %				0.985***
TAMU/UT_African American %				0.924***
TAMU_Hisp %				1.032***
UT_Hisp %				0.976***
TAMU/UT_Hisp%				0.979
TAMU_Other%				1.043***
UT_Other%				0.973***
TAMU/UT_Other%				0.986
TAMU_AdvEnr %				0.995**
UT_AdvEnr %				0.994***
TAMU/UT_AdvEnr %				1.059***
African American_Eco				1.392
Asian_Eco				4.759**
Hisp_Eco				1.763
White_Eco				1.464
Year	1.049***	1.056***	1.058***	1.059***
N	172,209	172,209	172,209	172,209

Source: Admissions Research at the University of Texas and Data and Research Services at Texas A&M. Under feeder definition three, a high school is classified as a Texas flagship feeder if ranked among the top 50 high schools that sent the greatest proportion of their graduating class to TAMU and/or UT in the current year and the year prior.

In model 3, I show that a student attending a high school that was able to successfully send students to both UT and TAMU were more likely to earn a college preparatory diploma than students in TAMU feeders, UT feeders, and non-Flagship feeder schools. High schools that were UT feeder high schools were 18.2% more likely to earn a college preparatory diploma than students in non-feeders and 4.7% more likely than students in TAMU feeder high schools.

Model 4

In Table 19, model 4, I included interaction terms of school characteristics, individual characteristics, and high school feeder types. In this model, I show whether certain school characteristics affected the likelihood of a student earning a college preparatory diploma more depending on the school attended.

First, I considered the percentage of economically disadvantaged students served within a particular high school. I found that students were more likely to earn a college preparatory diploma in a TAMU and TAMU/UT feeder high schools with higher percentages of economically disadvantaged students than in TAMU and TAMU/UT feeder high schools with lower percentages. In UT feeder high schools, the results were opposite. I found that students were less likely to earn a college preparatory diploma in a UT feeder high school when there were higher concentrations of students who were economically disadvantaged.

Second, I considered the racial-ethnic distribution within a high school and held the overall percentage of economically disadvantaged students within the school constant. I found that students were less likely to earn a college preparatory diploma in

UT feeder high schools that had high percentages of any specific racial-ethnic student group. This indicates that students were less likely to earn a college preparatory diploma in UT feeder high schools where one race/ethnicity was dominant. Students in TAMU/UT feeder high schools were less likely to earn a college preparatory diploma in schools with high percentages of African American students than in non-feeders and TAMU/UT feeder high schools with lower percentages. Students were more likely to earn a college preparatory diploma in TAMU feeder schools that had higher percentages of Hispanic, Asian, or White students than non-feeders and TAMU schools with lower percentages of Hispanic, Asian, and White students. This trend is the complete opposite of what was observed in UT feeder high schools.

Third, I examined whether the percentage of students enrolled in advanced/dual credit courses explained a student's likelihood of earning a college preparatory diploma. I found that students in TAMU and UT feeder high schools were less likely to earn a college preparatory diploma if there was a large percentage of students who were enrolled in advanced or dual credit courses. In TAMU/UT high school feeders, the likelihood that a student would earn a college preparatory diploma improved when more students were enrolled in advanced and dual credit courses.

Fourth, I examined the interaction between a students' racial-ethnic background and their status as economically disadvantaged. I found that Asian students were the only student group that was more likely to earn a college- preparatory high school diploma even if they were economically disadvantaged.

Research Question Three

Did the relationship between feeders and college preparatory diplomas earned change when UT changed its admission cap (from 10% to 8%)? Until now, I investigated the relationship between school characteristics, student characteristics, a high school's status as a Flagship feeder school, and the odds a student would earn a college preparatory diploma. The results from these previous questions helped provide context and a foundation for the final research question where I investigated the relationships between feeders and college preparatory diplomas earned when UT changed its admission cap. Essentially, in this final research question, I explored the impact of the UT admission cap on the likelihood that a high school would be a Texas Flagship feeder school and a student would earn a college preparatory diploma. In Table 20, I show the likelihood of being a Texas Flagship feeder school by key school characteristics, student characteristics, and interaction terms. I tested whether a school's likelihood of being a Texas Flagship feeder school was sensitive to the UT admission cap. I report the results in the following section by feeder definition. Under Feeder definition one, a high school is classified as a Texas Flagship feeder school if at least one student enrolled in Texas A&M (TAMU) or the University of Texas (UT) in the current year. Under Feeder definition two, a high school is classified as a Texas Flagship feeder school if 20 or more students enrolled in TAMU and/or UT in the current year. Under Feeder definition three, a high school is classified as a Texas Flagship feeder if ranked among the top 50 high schools that sent the greatest proportion of their graduating class to TAMU and/or UT in the current year and the prior year.

Table 20

Impact of UT Admission Cap on the Likelihood of Being a Texas Flagship Feeder by School and Student Characteristics, 2004-2014

	Feeder 1	Feeder 2	Feeder 3
College Going Behavior			
% Enrolled in Adv./Dual	1.065***	1.103***	1.064***
% Enrolled in Adv./Dual _Post UT Cap	0.972***	0.960***	0.969***
Rank-eligible	0.421***	1.030	0.790***
Rank-eligible_Post	3.034***	0.621***	0.896
% Taking SAT/ACT	1.021***	1.015***	1.008***
% Taking SAT/ACT_Post UT Cap	1.006***	0.989***	0.984***
School Characteristics			
Avg. Years of Teacher Experience	1.091***	1.064***	1.168***
Avg. SAT score	1.002***	1.001***	1.003***
% Economically Disadvantaged	0.965***	0.915***	0.957***
% African American	0.904***	0.942***	0.875***
% Hispanic	0.903***	0.934***	0.873***
% Other	0.869***	0.911***	0.867***
UT Distance	0.173***	0.418***	0.138***
TAMU Distance	0.369***	0.127***	0.177***
Interactions			
Rank Eligible_ EcoDis	0.909***	0.903***	1.000
Rank Eligible_ EcoDis_Post	0.997	1.328***	0.903***
African American_Rank Eligible	2.174***	0.748***	1.670***
African American_Rank Eligible_Post	0.413***	1.051	0.579***
Asian_Rank Eligible	4.073***	1.651***	3.496***
Asian_Rank Eligible_Post	1.081	0.814***	0.548***
Hispanic_Rank Eligible	2.038***	0.655***	1.505***
Hispanic_Rank Eligible_Post	0.484*	1.321***	0.942
White_Rank Eligible	1.903**	0.735***	1.514**
White_Rank Eligible_Post	0.398***	1.038	1.000
Post	0.290***	2.124***	1.067
N	1,967, 460	397,390	172,209

Source: Office of Admissions Research at the University of Texas (OAR) and Office of Data and Research Services at Texas A&M (DAR). Under Feeder definition one, a high school is classified as a Texas Flagship feeder school if at least one student enrolled in Texas A&M (TAMU) or the University of Texas (UT) in the current year. Under Feeder definition two, a high school is classified as a Texas Flagship feeder school if 20 or more students enrolled in TAMU and/or UT in the current year. Under Feeder definition three, a high school is classified as a Texas Flagship feeder if ranked among the top 50 high schools that sent the greatest proportion of their graduating class to TAMU and/or UT in the current year and the prior year. Other is comprised of White and Asian student percentages. It does not include Native American, Multiracial student groups.

Odds of being a Texas Flagship Feeder High School

Using feeder school definition one. In Table 20 (column 1), I show the impact of the UT admission cap on high schools that sent at least one student to Texas A&M University and/or the University of Texas. Under Feeder definition one, a high school is classified as a Texas Flagship feeder school if at least one student enrolled in Texas A&M (TAMU) or the University of Texas (UT) in the current year. With feeder definition one, I was able to capture schools with low-sending patterns to the State's Flagship schools. I examined which school characteristics improved a high school's odds of being a Texas Flagship feeder.

First, I examined the variables that helped me to capture the college going behavior of students: (a) enrollment in advanced/dual credit courses, (b) selection of a rigorous, college-preparatory high school diploma, and (c) taking a college entrance exam. Specifically, I tested whether the UT cap made any of these variables more or less important in explaining the likelihood of a high school being a Texas Flagship feeder school. I found in the presence or absence of the UT admission cap, increasing the percentage of students who were enrolled in advanced/dual credit courses improved a school's odds of being a Texas Flagship feeder school. After the UT admission cap, I also found that schools were 3x more likely to be classified as a Texas Flagship feeder school when they increased the percentage of students who successfully earned college preparatory high school diplomas (recommended or distinguished). Before the cap, increasing the percentage of students who earned a recommended or distinguished diploma did not improve a school's feeder odds. Finally, larger percentages of students

taking college entrance exams increased a school's odds of being a Texas Flagship feeder compared to non-Flagship feeder schools.

Second, I looked closely at how the UT admission cap affected rank-eligible students and their likelihood of being in (or choosing) a Texas Flagship feeder school. I found that increasing the percentage of students who were both rank-eligible and economically disadvantaged did not improve a school's odds of being a Texas Flagship feeder school. Before the UT admission cap, if a student were African American and rank-eligible, they were 2x more likely to attend TAMU or UT than African Americans who were not rank-eligible (did not earn a recommended or distinguished diploma). However, the odds of a rank-eligible African American being in a Texas Flagship feeder high school dropped by 50% after the UT admission cap. This drop was not enough to pose a risk to a school's feeder odds. High schools were still more likely to be a Texas Flagship feeder when there were more rank-eligible African American students in that high school than not rank-eligible. Before the UT admission cap, rank-eligible Asian students were 4x more likely to be in a Texas Flagship feeder school than non-ranked Asian students. After the UT admission cap, being an Asian student who was rank-eligible was not related to whether or not that school was a Texas Flagship feeder school. Rank-eligible Hispanic students were 2x more likely to be in school that was a Texas Flagship feeder than Hispanic students who were not rank-eligible. After the UT cap, the odds that a rank-eligible Hispanic student would be in a Texas Flagship feeder school dropped drastically. However, rank-eligible Hispanic students were still more likely to be in a Texas Flagship feeder high school than Hispanic students who were not

rank-eligible. White students who were rank-eligible were more likely to be in a Texas Flagship feeder school than White students who were not rank-eligible. After the UT admission cap, rank-eligible White students retained these odds even though there was a significant decrease.

Using feeder school definition two. In Table 20 (column 2), I show the impact of the UT admission cap on high schools that had higher sending patterns (20+ students) to Texas A&M University and/or the University of Texas. Under Feeder definition two, a high school is classified as a Texas Flagship feeder school if 20 or more students enrolled in TAMU and/or UT in the current year. With feeder definition two, I was able to capture schools that had a large number of their graduates enroll in either or both of the State's Flagship schools.

First, I examined the variables that helped me to capture the college going behavior of students: (a) enrollment in advanced/dual credit courses, (b) selection of a rigorous, college-preparatory high school diploma, and (c) taking a college entrance exam. Specifically, I tested whether the UT cap made any of these variables more or less important in explaining the likelihood of a high school being a Texas Flagship feeder school. I found that schools increased their likelihood of being a Texas Flagship feeder school when they increased the percentage of students who enrolled in advanced/dual credit courses. This held true even after the UT admission cap. After the UT admission cap, increasing the percentage of rank-eligible students did not improve the school's odds of being a Texas Flagship feeder school. Increasing the percentage of students who took college entrance exams did improve a school's likelihood of being a Texas Flagship

feeder school.

Second, I looked closely at how the UT admission cap affected rank-eligible students and their likelihood of being in (or choosing) a Texas Flagship feeder school. I found that before the UT admission cap, Texas Flagship feeder schools were less likely to have students who were rank-eligible and economically disadvantaged. After the UT admission cap, Texas Flagship feeder schools had more students who were rank-eligible and economically disadvantaged. Before the UT admission cap, I found that even when a high school increased the number of rank-eligible African American students, that school was still less likely to be classified as a Texas Flagship feeder school. In other words, neither of the Texas Flagship schools may be the school of choice for rank-eligible African American students. Schools that had higher numbers of Asian students who were rank-eligible improved their odds of being a Texas Flagship feeder school than schools that had Asian students who were not rank-eligible. After the UT admission cap, the number of Asian students who were rank-eligible explained less about a whether that school was a Texas Flagship feeder school. Finally, when a school increased the number of White students who were rank-eligible, they increased the likelihood that the school would be a Texas Flagship feeder school. After the UT admission cap, schools maintained these odds.

Using feeder school definition three. Under Feeder definition three, a high school is classified as a Texas Flagship feeder if ranked among the top 50 high schools that sent the greatest proportion of their graduating class to TAMU and/or UT in the current year and the prior year. With feeder definition three, I was to capture all three

levels of senders that would be captured under feeder definitions one and two. However, feeder definition three was stringent enough to account for school size and time. In Table 20 (column 3), I show the impact of the UT admission cap on high schools that sent a large proportion of their students to either or both of the State's Flagships for more than one year. On average, the top sending TAMU feeder high schools sent about 8% of their graduating class to TAMU and the top sending UT feeder high schools sent about 5% of their graduating class. I examined which school characteristics improved a high school's odds of being a Texas Flagship feeder.

First, I examined the variables that helped me to capture the college going behavior of students: (a) enrollment in advanced/dual credit courses, (b) selection of a rigorous, college-preparatory high school diploma, and (c) taking a college entrance exam. Specifically, I tested whether the UT cap made any of these variables more or less important in explaining the likelihood of a high school being a Texas Flagship feeder school. I found that high schools were more likely to be classified as a Texas Flagship feeder school when they increased the percentage of students who were enrolled in advanced/dual credit courses. Increasing the percentage of students who were rank-eligible decreased the likelihood that a school would be a Texas Flagship feeder school before the UT admission cap. After the UT admission cap, students' status as rank-eligible was not related a school's odds of being a Texas Flagship feeder school. Schools were more likely to be classified as a Texas Flagship feeder school if they had high percentage of students who took college entrance exams than in schools that had a less students taking college entrance exams.

Second, I looked closely at how the UT admission cap affected rank-eligible students and their likelihood of being in (or choosing) a Texas Flagship feeder school. I found that schools that were sending a large proportion of their students to the State's Flagships were less likely to do so after the UT admission cap, when there were a higher number of rank-eligible students who were economically disadvantaged. Before the UT admission cap, African American students who were rank-eligible were more likely to be in Texas Flagship Feeder School than African American students who were not rank-eligible. This remained true after the UT admission cap, even though these odds dropped significantly. When a school had a large number of Asian students who were rank-eligible, they were more likely to be a Texas Flagship feeder school. This remained true after the UT admission cap. When a school increased the number of Hispanic students who were rank-eligible, they also improved their odds of being a Texas Flagship feeder school. After the UT admission cap, I did not find a statistically significant relationship between the number of Hispanic students who were rank-eligible and a school's odds of being a Texas Flagship feeder school. Finally, when a school increased the number of White students who were rank-eligible, they also improved their odds of being a Texas Flagship feeder school. After the UT admission cap, I did not find a statistically significant relationship between the number of White students who were rank-eligible and a school's odds of being a Texas Flagship feeder school.

Chapter Conclusion

In this chapter, evidence indicates that the UT admission cap may have resulted in a reduction in the number of high schools that sent students to the Texas A&M and the University of Texas. Less than 5% of Texas public high schools sent at least 8% of their senior class to either Flagship school. A redistribution of Texas Flagship feeder schools might have occurred rather than the addition of new Texas Flagship feeder high schools. The UT admission cap might have also influenced the rigor of students' course-taking behavior to be eligible for the Texas Top 10% automatic admission guarantee. After the UT admission cap, more students earned a college preparatory diploma. However, they might have earned it by taking less rigorous coursework. Some students may have strategically taken less rigorous coursework to qualify for the Top 10% automatic admission guarantee.

This strategy may have been an incentive for students in highly competitive schools who did not want to jeopardize their grade point average by not earning high marks in advanced, honor, or dual credit courses. It may have also been an incentive to these students who understood that their automatic admission was based on their class rank standing and not necessarily their course selection. Alternatively, some students may have been more inclined to take less rigorous courses because they could still earn the Recommended college preparatory diploma and be eligible for the Top 10% automatic admission. The Recommended diploma program track does not require the advanced level coursework that the Distinguish program track requires. In other words,

why do more when you can receive the same reward doing less in some high school contexts?

There are more alternative explanations. Students may have been tracked into low-level course work based on previous achievement measures, recommendations, or class balancing. Under this scenario, the drop in the percentage of students taking advanced courses may not have been student choice but a result of systematic within-school tracking. Additionally, the drop in the percentage of students in advanced courses could stem from an information gap. Students might make course selections without fully understanding how those courses affect their class rank standing. Another explanation could also be that fewer students enrolled in advanced courses because they had no interest in or their college choice sets did not include attending UT or TAMU. In the next chapter, I draw conclusions from these findings, their implications, and end with recommendations.

CHAPTER V

CONCLUSIONS

Summary

In this study, I assessed the benefits and risks of using a race neutral policy to address racial inequities within the Texas education system. Specifically, I evaluated the use of percent plans as a race neutral alternative to affirmative action to address the postsecondary participation gap among African Americans and Hispanic students in Texas' Flagships. The implementation of the TTPP was a political experiment to test whether educational inequities that are clearly distinguishable by race could be addressed using a strategy that does not explicitly consider race. A major goal of the TTPP was to emphasize the individual merit of students within high schools across Texas by allowing class rank to trump other traditional college admission metrics such as SAT/ACT scores. An assumption made behind this policy was that if a student worked hard enough in high school they would be granted equal access to the State's premier public institutions. Idealistically, this policy would help close the participation gap and fulfill institutional diversity goals. Consequently, the design of the TTPP is such that if students do not enroll or do not qualify for the Texas automatic admission guarantee, it is believed to be a matter of personal choice (standard college choice models) or a question of students' merit and/or their family circumstances as opposed to any institutional or structural factors that may be in play.

In this study, I contributed evidence that high school context matters and helps shape high school students enrollment decisions. I built upon McDonough's College

Choice Organizational Habitus conceptual framework, which provided evidence that organizations (high schools) served as a mediating factor for individual habitus. Habitus is a deeply internalized, permanent system of outlooks and beliefs about the social world that an individual gets from his or her immediate environment (Bourdieu, 1977). The underlying assumption of McDonough's (1997) College Choice Organizational Habitus is that some students' individual habitus, despite their college aspirations, is shaped by institutional and structural high school factors (Engberg & Wolniak, 2007).

McDonough's College Choice Organizational Habitus framework drove my central hypothesis, which was high school context drives the probability of a school being a Texas Flagship feeder and students choosing a more rigorous (college-preparatory) high school diploma. This concept and my work is a direct challenge to standard college choice models that indicate that differences in high school characteristics cannot explain the participation and achievement gap because college enrollment is based on a voluntary decision that is freely exercised and unconstrained by institutional or structural characteristics of a high school.

I tested standard college choice models by conducting an empirical examination of the impact of the UT Top 10% automatic admission cap on high school feeder status and high school diploma types to illustrate how high school to university feeder patterns and the type of diploma a graduating senior received could be correctly predicted from knowledge of a high school's: (a) demographics and (b) college orientation. This was accomplished by determining the degree of the relationship between and among the study variables using Multinomial and Logistic Regression estimation strategies. These

relationships were investigated before and after the UT admission cap, which allowed for a Difference-in-differences model design.

The UT admission cap was an outgrowth and critical policy juncture of the TTPP. It was critical to this analysis because enrollment trends indicate that African American and Hispanic students have shown favoritism towards UT over TAMU despite both institutions' checkered past of racial discrimination and segregation (Moses, 2001; Office of Civil Rights Report, 2000; Texas Higher Education Coordinating Board, 1998). While more African American and Hispanic students choose UT over TAMU, my findings indicate that the current UT acceptance cut-off of the top 8% will result in a loss of a large number of talented African American and Hispanic students in part because they are not taking (or being placed) in the courses needed to position themselves to be in the top 8% of their graduating class. My findings squared with evidence in the extant literature that African American and Hispanic top decile students more often fall on the lower end of the grade distribution than White or Asian students because of their course taking patterns.

Second, I found that evidence that the UT admission cap might have reduced the number of high schools that sent students to Texas A&M and the University of Texas. While evidence from some research has made the call that the TTPP has expanded geographic access and provided greater access to the State's Flagship schools, my findings show those conclusions may have been premature. Many of the low sending schools (new feeders) lost their Flagship feeder status, post the UT admission cap. A redistribution of Texas Flagship feeder schools might have occurred rather than the

addition of new Texas Flagship feeder high schools. Ultimately, UT's Top 10% automatic admission cap affected a high school's odds of being a Flagship feeder school and the type of high school diploma students earned. Key high school characteristics helped to explain these odds.

In this final chapter, I discuss how percent plans, a purported race neutral alternative to affirmative action, has only served as a band-aid to the pervasive racial participation gap among African Americans and Hispanic students in Texas. Increases in the number of African American and Hispanic students in the State's Flagship schools is more likely a result of Texas' population surge than the implementation of the TTPP. For the TTPP to receive credit, more African American and Hispanic students need to be in the position to be rank-eligible. Further, the rank-eligible pool of TTPP candidates should be more reflective of Texas' demographic population.

My findings indicate that the TTPP is a placeholder that will likely never close the racial postsecondary participation gap. Institutional and structural factors that are systematically disadvantaging African American, Hispanic, and other marginalized student groups must be in the conscious of educational leaders and policy shapers and made manifest in subsequent policies and strategies. Evidence from this study deepens the understanding of the consequences of adopting race neutral policies and strategies to address educational inequities. The evidence-based findings from this study will become increasingly significant to all states and educational entities considering banning affirmative action in favor of strategies perceived to be race neutral such as percent plans. In this next section, I present the conclusions drawn from the findings of this

study, which are organized and presented by each research question. In the next section, I provide the conclusions to this study related to UT and TAMU feeder patterns and high school diploma patterns earned before and after the UT admission cap. The research questions are presented with a synopsis of the findings for each.

Research Question One

In research question one, I asked, which school characteristics predict that a high school will be a UT and/or TAMU feeder before and after the UT admission cap?

Conclusions

Before this study, because of competing feeder school definitions, it was not clear whether the TTPP was able to interrupt deeply entrenched feeder patterns. So, I began the study by establishing a foundation for what defined a high school feeder. I tested these three competing feeder definitions:

1. Feeder Definition One (Montejano, 2001): a high school was classified as a Texas Flagship feeder school if at least one student enrolled in TAMU and/or UT in the current year.

2. Feeder Definition Two (Long, Saenz, Tienda, 2010): a high school was classified as a Texas Flagship feeder high school if it ranked among the top 20 high schools that sent at least twenty or more students to either UT or TAMU. I expanded this definition to high schools that sent twenty or more students to UT and/or TAMU in the current year.

3. Feeder Definition Three: a high school was classified as a Texas Flagship feeder if ranked among the top 50 high schools that sent the largest proportion of their

high school's senior class to one or both of the State's Flagships in the current year and the year prior.

From my findings, I conclude that the TTPP did not interrupt deeply entrenched feeder patterns. Only under Montejano's (2001) feeder definition (sent at least one student) was there any resemblance of a large number of high schools participating in sending students to the State's Flagships. For example, in 2013, Montejano's (2001) definition (feeder definition one), 1,061 of the 1,420 high schools would have been classified as a Flagship feeder high school. Under this definition, 75% of Texas public high schools sent students to the State's Flagships. When feeder definition two was used (sent at least 20 students), only 73 of 1,420 high schools were classified as a Flagship feeder school. That is only 5% of Texas public high schools. Using feeder definition three, only one additional high school was added as a Flagship feeder school (n=74). Subsequently, only under feeder definition one could it be concluded that the TTPP broadened geographic access.

Further, the evidence indicates that the UT admission cap might have reduced the number of high schools that sent students to Texas A&M and the University of Texas. My findings indicate that after the UT admission cap, schools that were no longer classified as a TAMU high school feeder did not switch and become a UT feeder high school or vice versa. If that were so, this increase would have been reflected in their Flagship feeder share (see Table 10). Also, the high schools that sent students from the same high school to both Flagships would have increased their share of the Flagship pool considerably (see Table 11). Instead, my findings indicate that post the UT

admission cap, high schools simply lost their status as a Flagship feeder high school. It is possible that those high schools became feeders to other universities across Texas or the nation. This finding indicates that if a state were to adopt a percent plan similar to Texas, they might expect a decline in the number high schools that were flagship feeder schools. If students in other states responded like students in Texas, more students might turn away from the state's premier public institutions and choose less selective schools within the state or schools outside of the state.

Third, the success of the TTPP depends on continued residential and school segregation by race and income. Other states that are less segregated than Texas may not have success with a percent policy that is structured like Texas. The architects of this policy have leveraged Texas' deeply entrenched segregation by race and class as factors for the policy's success. Consequently, the TTPP is neither color nor class blind. Texas Flagship feeder high schools continue to be identifiable by race and class even after the TTPP. On average, Flagship feeder high schools served a smaller percentage of African American and Hispanic students and a larger percentage of White and Asian students than high schools classified as non-Flagship feeder high schools.

Fourth, school context matters. I found particular school characteristics that improved a high school's odds of being a Flagship feeder school. One of the ways is to increase the number of students from all racial-ethnic and economic background that enrolled in advanced or dual credit courses. Second, having teachers with more years of teaching experience also improved a high school's Flagship feeder odds. Third, I found

that the percentage of students who were classified as economically disadvantaged posed a considerable risk to a high school's odds of being a Flagship feeder school.

Conclusions drawn about the TTPP based on competing feeder definitions are critical to educational leaders. For example, the new *Every Student Succeeds Act* (2015) shifted accountability control from the federal government to states and local districts. Additionally, the National Professional Standards for Educational Leaders (formerly ISLLC) indicate a shift from the expectation of principals as managers to one of instructional leaders. School leaders are expected to educate all students at much higher skill levels than in the past. The challenge for principals, however, is that the stakes continue to rise in responsibilities and expectations oftentimes without the appropriate resources to meet such demand. For example, if feeder definition one was left unchecked in the policy arena, the faux appearance of equal access could reduce political pressure for a more equitable distribution of educational resources in public schools (i.e. funding, qualified teachers to teach advanced courses). In other words, principals would be held accountable for doing more with less regardless of the diverse needs or accumulated disadvantages experienced by their students. If feeder definition two was left unchecked, the needs of smaller public high schools may go under the radar. This could mean Flagships only focusing their outreach efforts to the larger public high schools. Feeder definition three was proposed to help fill some of these gaps but to also serve as a foundation for researchers to further improve how feeder schools are defined. However, regardless of which feeder definition is applied, school leaders must understand why

educational inequities exist to help change these feeder patterns from the inside-out. This study is a contribution to that understanding.

Research Question Two

In research question two, I asked, are students more likely to earn a college preparatory diploma in a UT or TAMU feeder?

Conclusions

By addressing this research question, I accounted for high school characteristics that may affect the likelihood that a student would earn a college preparatory diploma. Specifically, I examined the relationship between the school's overall college going behavior (enrollment in advanced courses and taking college entrance exams) and the type of high school diploma students received from that school.

First, I found that race mattered even under the purportedly race neutral college admission regime. The racial-ethnic background of a student served as a predictor of whether the student would earn a college preparatory diploma when school characteristics included in the model were held constant. I found that a student's racial-ethnic background explained the likelihood of earning a college preparatory diploma more than their individual economic status alone (see Table 19, model 2). A student's economically disadvantaged status explained less than 1% of whether that student would earn a college preparatory diploma, when race and other variables in the model were held constant. The school-wide percentage of economically disadvantaged students served was more of an indicator for whether the student would earn a college preparatory diploma than a student's individual status as economically disadvantaged.

Based on these findings, I conclude that race and class continue to matter in students' college going behavior despite the TTPP.

In all Flagship feeder high schools, the percentage of students enrolled in advanced or dual credit courses within that school increased the likelihood that students would earn a college preparatory diploma. Increasing the number of students in enrolled in advanced courses increased the odds of a student earning a college preparatory diploma in UT high school feeders most and TAMU high school feeders least. This difference in likelihood could stem from the UT admission cap. This is a question I addressed in the third research question.

Research Question Three

In research question three, I asked, did the relationship between Flagship feeders and college preparatory diplomas earned change when UT changed its admission cap (from 10% to 8%) in 2011?

Conclusions

To this point, my research questions were scaffolded to address this final research question. In the first research question, I tested two competing feeder definitions and introduced a third definition that would account for school size and if a high school was a repeat sender. With this definition, I found that there are certain school characteristics like the percentage of students enrolled in advanced courses and teacher experience that helped to explain whether or not a school was a Flagship feeder school and a student earned a college preparatory diploma. In this final research question, I tested these relationships to investigate the impact of the UT admission cap

on a high school's status as a Flagship feeder and a student's odds of earning a college preparatory diploma within that school.

I conclude that the UT admission cap was enough of an incentive to result in more high school students earning college preparatory diplomas. Ironically, when more students took advanced courses it decreased the likelihood that a high school would be a Flagship feeder school. At first glance, this seems counterintuitive. However, under the outgoing graduation plan, a student could qualify for the automatic admission with a Recommended diploma. The Recommended diploma does not require enrolling in advanced coursework. Thus, my findings indicate that even after the UT admission cap, students may have strategically chosen a less rigorous course load to secure their chance of being in the top 10% of their senior class. More students opting for the Recommended diploma suggests that students are not choosing courses based on coursework they might need for their major or aspired discipline. Instead, my findings indicate that students might make course decisions based on their eligibility odds for the automatic admission within their high school.

Implications

Implications for Theory

Challenging standard college choice models. By tapping into the understudied school characteristics in relation to the TTPP, I used my findings to contribute evidence to help researchers understand that school characteristics serve as a mediating factor for individual habitus. In other words, I provided evidence that there is an interdependent relationship between the schools student attend, the type of diploma they earn, and

postsecondary decisions they make. I used this study to extend knowledge and current thinking about social reproduction theories and standard college choice models. Standard college choice models are based on the premise that individual utility maximization is freely exercised and unconstrained by institutional or structural characteristics of a high school. From my findings, I show that there is a relationship between school characteristics and students' college going behavior within a school. From this study, I have shown that school characteristics such as the racial-ethnic demographic of the school, the percentage of economically disadvantaged students served, teacher experience, percentage of students enrolled in advanced courses, a school's distance from the Flagships are all factors that affect the likelihood that a high school would be a Flagship feeder school. The implementation of the percent plans was not enough to cancel out these school characteristics. Further, the UT admission cap made school context more relevant and influential in the likelihood that students within that school would pursue a college preparatory diploma.

Rethinking merit. A second implication for theory to be drawn from this study is a call to reframe how merit is defined and used to inform educational leadership and policy decisions. Many Americans misconceive achievement attributing it entirely to individual effort and talent ignoring systemic inequities and barriers that can alter students' life trajectories. This is perhaps why standardized testing and test scores are believed to be good measures of merit. I urge school leaders and policy makers to move away from this individualistic perspective of merit. Scheurich (1993) wrote,

Within the frame of this belief, individualism is seen as a naturally occurring, transhistorical, transcultural condition to which all humans naturally aspire. This belief, then, is deeply infused in White judgments about the way life works. For example, if a person does "well" in life, it is seen as being largely due to her or his own individual choices; if she or he does "badly" in life, it is also largely due to her or his choices. (p. 6)

This individualist perspective of merit obscures institutional and structural forms of racism that is not always overt and serves as an impediment to true equality (Pine & Hilliard, 1990; Crosby et al., 2003). A benefit of the TTPP is that the architects of the legislation deemphasized standardized test scores such as the SAT, which has been historically found to disadvantage poor students and students of color (Alon & Tienda, 2007, Crosby et al, 2003; Kahlenberg, 2012; Reardon, 2013; Steele & Aronson, 1995). However, the *Fisher* (2012) case, a lawsuit against the University of Texas' decision to reintroduce affirmative action in college admission decisions, is evidence that this individualistic perspective is still alive and well.

From an individualistic perspective, it would be difficult to understand the necessity of race conscious affirmative action strategies. From this school of thought, giving everyone the same thing and treating everyone the same achieves equality and justice. However, equality can only work if the competition is fair (opportunities and resources fairly distributed) and everyone in the competition is competing from the same starting point and as equals. A lineage of historic exclusion and racial discrimination of certain groups, most notoriously African Americans, Hispanics (largely Mexican), and

American Indians from equal opportunities in employment, housing, public facilities, the judicial system, and educational institutions in the United States makes the conversation about equality premature (Anderson, 1988; Donato, 1997; Howard, 2010; Kozol, 2012; Menchaca, 1997; Orfield & Miller, 1998; San Miguel, 1997; Tyson, 2013).

The second problem with a color-blind approach to equality is that merit has largely been defined and measured in the United States by individuals who were race-conscious. Lewis Terman who introduced standardized testing to the United States through Intelligence Quotient tests and Herrnstein and Murray (1996), fathers of the bell curve that is still in use today, were not color-blind. Historically rooted in eugenics, the interpretation of standardized test scores has been used to make far-reaching inferences and generalizations that have disadvantaged people of color and sustained positions of power and privilege (Delpit, 1988; Mondale & Patton, 2001). Standardized test scores have been used to label people of color as intellectually and genetically inferior, culturally deprived, and verbally deficient (Delpit, 1988; Ford & Grantham, 2003; Ford & Whiting, 2010; Mondale & Patton, 2001). Standardized tests have also been used to protect group membership, justify differential treatment and existing social conditions, and to determine the social order of the United States (Ford & Grantham, 2003; Mondale & Patton, 2001; Booher-Jennings, 2005; Mickelson, 2005). With this historical context, how fair or socially just would it be to protect a standardized system of merit which is based upon the social construction of race, while criticizing and calling for a ban of race conscious strategies to remediate it.

Colorblind methods impede progress towards racial equality and negate the narratives, ways of knowing/doing, and experiences of students of color, making them invisible. Colorblindness puts the burden on students of color to change and conform to dominant ideals to be seen, heard, and valued as equals. It leaves power structures unchallenged and legitimizes the current set of norms that often reflect middle-class, White norms. Race consciousness is needed to be able to identify and critique practices and mental processes that perpetuate racial inequality that are no different from times past.

Implications for Practice in Field

The findings from this study can help educational leaders critically assess school characteristics and processes that may be related to students' course-taking behavior (signaled by types of diploma earned) and their school's college sending patterns. The school characteristics highlighted in this study will help school leaders better identify the mechanisms that affects their school's likelihood of being a college feeder school and whether more students from their school pursue and earn college preparatory diplomas.

First, I found that the percentage of students enrolled in advanced courses affects the likelihood that the school will be a Flagship feeder and that a student would earn a college preparatory diploma. With this understanding, school leaders could identify the mechanisms or processes that encourage or discourage students from enrolling in advanced and dual credit courses. One area school leaders can evaluate is curriculum tracking. Curriculum tracking resegregates students within schools often by race and social class (Mickelson, 2005). Specifically, Mickelson (2005) found that African

American and Hispanic students were typically found in the lower tracks and were often excluded from accelerated courses. Students placed in low-tracked classes become locked into this pathway because they are not academically prepared with the knowledge or skills to transfer to more rigorous tracks. For example, if a student chose the minimum diploma their freshmen year, it would be extremely difficult to transfer to the distinguished program track as a sophomore or junior because the student may have missed opportunities for requisite coursework. It is important for school leaders to interrupt such trends and encourage and provide the support needed so all students can have access and the skills needed to have the option of taking more rigorous coursework. School leaders should also be aware of the hidden messages they may be sending through school policies, curriculum placements, course offerings, and teacher assignments that may socialize students to accept their position in these curriculum tracks and further direct these students to future occupations based on how the school identifies and labels their potential.

Second, I found that teacher experience improves the likelihood of a school being a feeder and students pursuing more rigorous coursework. On average, all of the high schools that were not classified as a Flagship feeder school employed teachers with less years of experience than Flagship feeder schools. Teacher experience is important, but it should not be overemphasized as evidence of teacher effectiveness. Teacher effectiveness is sensitive to school context (Kraft & Papay, 2014). School leaders can cultivate teacher effectiveness, but they first must understand and be able to communicate what is needed to be an effective teacher within their school context. This

could look like an aggressive plan for ongoing professional development that is culturally responsive. School leaders can examine the teaching loads assigned to beginning teachers or create leadership pipelines to encourage great teachers to stay in the classroom (Donaldson & Johnson, 2010).

Third, distance also mattered, especially when the high school was located more than 60 miles away from the Flagship. Knowing that distance is an important factor in students' college decisions, school leaders and university administrators could work together to come up with strategies to make distance less of a factor especially among rank-eligible students. This could mean revving up online degree programs. It could also mean providing small financial grants to help with the initial moving/transitional costs from the students' homes to the university. High school leadership may reach out to the community to fundraise to provide funding to charter a bus that would allow their students to travel back home to visit their families or supply care packages for their students, for example.

Fourth, in Texas, class rank is not state regulated and varies from district to district. Because class rank is the exclusive measure of merit used for college admissions for more than half of the available seats at Texas' flagships schools (Niu & Tienda, 2010), the appraisal of the discretionary use of class rank at the high school level will be critical. It is important because the schools not the law has the capacity to influence which students actually qualify for the admission guarantee (Niu & Tienda, 2010, p. 98). Thus, if the goal is to help more students who have been historically excluded from the most selective public universities due to race, wealth or geographic location, school

leaders should assess how class rank has been used at the high school level and whether using class rank exclusively has improved or restricted access for students in high schools across the state.

For example, some high schools have stopped reporting class rank to universities because ranking believed to have generated unhealthy competition and stress at highly competitive high schools (Fischer, 2005; Honorsadmin, 2013). Many of these reports often stem from small or more affluent schools (Wermund, 2012), who claim that the hard line drawn for only the top 10% of their senior classes rob a large number of hard working and college eligible students in the 11-25th percentile of the same opportunity. Other reports indicated principals' concern that miniscule differences in grade point averages can cause large differences in rank position causing students' with respectable grade point averages to be excluded from merit-based financial aid opportunities and admission into some the nation's most selective universities (Honorsadmin, 2013).

Further, there was concern of course credit inflation (Honorsadmin, 2013). Course credit inflation is believed to occur when a student receives credit for a college preparatory course (i.e. Advanced Placement Course), but fails the exam over that content or needs remediation during their freshmen year of college (Clinedist & Hawkins, 2007). The problem occurs when a school assigns more weight to a college preparatory class without the appropriate evaluation tools that assesses the instructional content and delivery of the course. As a result, students may receive extra Grade Point Average (GPA) points simply from enrolling in the course and not from demonstrated content mastery. As a result, some schools have changed they way they report class rank

to higher education institutions and others refuse to report ranking at all (Clinedinst & Hawkins, 2007). Evidence from this study indicates that superintendents and principals must be aware of how school characteristics and the relationships among the families they serve inform critical decisions about how class rank is measured and reported to higher education institutions. School leaders should be aware of these school factors to ensure that supportive policies and systems are in place that provide favorable outcomes for the majority of the students they serve and not just the top 10%.

Implications for Policy

Finally, this study contains important information that may help guide future conversations and critical legislative decisions regarding how to evaluate policies perceived to be race-neutral and whether other states across the United States should revere Texas' TTPP as a national model for race-neutral alternatives. In this study, I provided updated evidence of the effects of the TTPP from a K-12 perspective. I found that after the UT admission cap, a redistribution of Texas Flagship feeder schools might have occurred rather than the addition of new Texas Flagship feeder high schools. Additionally, students were less likely to take advanced/dual credit courses after the UT admission cap. These changes at the K-12 level can have grave implications in higher education.

Adopting percent plans as an affirmative action replacement not only has implications at the K-12 level but also could have spillover effects on student major selection and graduate student enrollment. If less students are taking advanced coursework, students may be admitted to college under the TTPP guarantee but fail to be

admitted into their major of choice. This may result in students deviating from their original major or career goal in high school course work to qualify for automatic admission. There is evidence that bans on affirmative action have had negative effects in graduate schools. Graces (2012) found drops in the percentage of graduate students of color who enrolled the (19%) natural sciences, (15.7%) social sciences, and the (11.8%) humanities (p.20). She furthered argued that that banning affirmative action is inhibiting efforts to increase women and students of color into critical fields, like Science, Technology, Engineering, and Mathematics. Drops in enrollments at the graduate level could stem from admission changes at the undergraduate level.

The TTPP emerged from litigation at the graduate/professional level, but the changes have been most prominent at the undergraduate level (see *Hopwood*, 1996 or *Grutter*, 2003). It seems that the uneven playing field would be most prominent at the undergraduate level before earning the first degree. Yet, changes continue to include the undergraduate level during a time when many students may not have a choice in which high school they attend. Policy makers should understand that the postsecondary participation gap neither begins nor ends with students' higher education enrollment choices. Policy influencers may reconsider or expand the measures used to judge the efficacy of the TTPP and its offspring the UT admission cap to include those that stem from the K-12 sector.

Recommendations

Recommendations Based on the Study

Theory, data collection, analysis, and examination led to particular conclusions. The following recommendations are based on these research results, which are presented with the hope more research will be conducted to expand upon these findings with implications for all students but especially African American and Hispanic students in K-12 settings.

Improve school-wide cultural competence. First, I recommend that school leaders engage in on-going professional development that will improve their cultural competence to view student groups considered to be at-risk through an asset-based framework (Banks & Banks, 2009; Gay, 2010). Many school practices aimed to address educational inequities have been an outgrowth of deficit thinking, which have led to deleterious outcomes for low income students and students of color (e.g. zero tolerance policies; tracking into low-level coursework). It is critical that administrators be educated and provided with a toolkit of strategies that enable them to successfully operate within and for culturally and linguistically diverse students because their actions greatly influence teacher effectiveness and the school's college choice organizational habitus. This asset-based perspective would compel school leaders to label services, policies, and practices instead of students. This means that evaluations would be focused more on instructional support as opposed to fixing students. School leaders should assess students' academic needs through school-wide data but also allow the students and their families to verbalize their interests, needs, and solutions instead of a blind prescription.

Another systemic approach to disrupt systemic inequities would be for educators to conduct equity audits (Skrla et al., 2010). Rooted in U.S. educational and civil rights history, an equity audit is a tool school leaders can use to help expose and correct deficit mindsets and behaviors that prevent the success of all student groups. Equity audits refocus school leaders from external issues to “patterns of inequity internal to schools,” which are in their control (Skrla et al, 2010, p.265). This redirected energy makes it possible for a substantive and systemic change to occur in schools and districts. Additionally, equity audits promotes systemic equity because this tool provides a clear, intuitive way for leaders to identify and address habitual practices of inequity that have deleterious outcomes for students. It is clear and simple enough for anyone to be able to use.

For example, schools leaders might begin by evaluating their program equity. Program equity is measured by the disproportionate assignment of students (disaggregated by ethnicity) assigned to special education, gifted and talented education, and student discipline. Within the literature, there is evidence that some schools and districts may have large variations of quality and equity among student assignments in school programs such as special education, gifted and talented, and student discipline (Skrla, Scheurich, Garcia, & Nolly, 2004). These inequities at the school level could help explain the persistent achievement gaps by race and class in the U.S. public schools. This is particularly evident among schools with large concentrations of students of color or students who are economically disadvantaged (Darling-Hammond, 2010). In this

study, I found that those are exactly the types of schools that are less likely to be classified as Texas Flagship feeder high schools.

Improvements in educational leadership preparation programs. We have to prepare our future educational leaders by exposing racism and not by covering or ignoring it, resulting in a color-muteness (Pollock, 2001). School leaders entrusted with leading in schools, especially ones that are poor and racially segregated, must have a clear understanding of why educational inequities exist. They should be prepared to be critical thinkers and problem-solvers. They should be able to challenge the racism, the larger institutional and structural inequalities, and injustices happening in schools across the nation. Beyond awareness, school leaders need knowledge, training, and strategies that will help them to act courageously and fearlessly in their pursuit of social justice for all students.

This training must come from faculty who has begun the work, beginning with themselves. To be clear, this transcends faculty labeling their work as social justice oriented, espousing a social justice agenda, or teaching a social justice class or component within their class. One can promote a social justice agenda but still perpetuate deficit thinking and educational inequities by completely being oblivious to their privilege, bias, positionality and the role it plays in their teaching, decision-making, mentorship, and preparation of future educational leaders. In other words, we must first see ourselves before we can truly see others (Terrell & Lindsey, 2009).

Use stricter feeder definitions. Second, I recommend that a high school not qualify as a Flagship feeder school for only sending one student. Doing so, curtails the

work that needs to be done to interrupt the pervasive educational inequities that exist in the K-12 public school system. Instead, researchers should test and build upon feeder definitions that consider school size and whether that school is a repeat sender, such as the one proposed in this study. The findings presented in the extant literature would change greatly if my proposed feeder definition were used. If it were used, some researchers might not have been concluded that the TTPP resulted in greater representation of high schools that were Flagship feeders. Previous conclusions that the TTPP expanded geographic access are based upon a single student attending the Flagship from a new area. Further, these new feeders could not withstand the UT admission cap. Many of the low sending schools (new feeders) lost their Flagship feeder status post the UT admission cap. Subsequently, feeder definitions used in policy analysis and leadership decisions must be weighed carefully.

Increase advance/dual credit enrollment. Third, I recommend that K-12 school leaders develop a strategic plan to increase the number of students from all racial-ethnic backgrounds who pursue and earn a distinguished college-preparatory diploma. For Texas, the specific group that should be of focus is African American students. African American students comprise only 2% of the Distinguished diploma holders but 12% of the student population. African American students were also the least likely of all the students groups to pursue a college preparatory diploma.

Improve family engagement. Fourth, family engagement is key and should not be taken for granted in the college preparation and enrollment process. Parents are students' first educators. They should know about the different services available for

their children and should be a part of the decision making process for their child. School staff should also develop authentic relationships with their student communities. This can be done by including the following: having an open door policy, attending after school events, attending community events, volunteering within the community, home visits, including parents and students in conferences, involving community leaders, supporting local businesses, and becoming knowledgeable about the history of the student population served (Mattai, Wagle, Williams, 2010). More outlets should be created and platforms given to increase the voice of families and building leadership (principals, teachers, coaches), so that problems can be assessed and solutions can originate and be sustained from within the communities.

Recommendations for Future Study

The findings from this study are a contribution to a growing body of literature on the effects of the percent plans as an affirmative action replacement. In this study, I presented some of the effects of the UT admission cap on a high school's status as a feeder school and a student's odds of earning a college preparatory diploma. The findings from this study uncover more questions that were unable to be answered in this study as they were beyond this study's scope. As a result, I make the following recommendations for future study.

Mixed methods research. First, the majority of the research conducted on the TTPP has been done quantitatively. Qualitative research inquiries that seek to explain some of the trends found from the extant quantitative research would help provide a more comprehensive understanding of the effects of percent plans in general but the UT

admission cap more specifically in K-12 educational settings. Specifically, a researcher could design a case study that includes high schools that are non-Flagship feeder schools, TAMU feeder schools only, UT feeder schools only, and TAMU/UT feeder schools. The researcher could interview school leaders, teachers, counselors, parents, and perhaps students on their perspective of how the UT admission cap shaped their decision to go to college, specifically either of the Flagships. The researcher would build context to why certain school characteristics identified in this study are related to a high schools Flagship feeder odds and a student's odds of earning a college preparatory diploma.

Include new Texas graduation requirements. Second, I recommend a study that includes data that is reflective of the new Texas graduation requirements to expand this study. The study could compare and contrast the high school sending patterns and college going behavior of students before and after the UT admission cap. The researcher could also compare differences in college going behavior under the two different graduation regimes.

Student under-matching. Third, I recommend more research towards understanding the affinity of rank-eligible students to choose less selective schools under the TTPP (Alfonso & Calcagno, 2007; Tienda & Niu, 2006; Fletcher & Mayer, 2014). Researchers have explored when students choose schools that have average college test scores above their own performance level (evidenced by test scores) performance (Alon & Tienda, 2005; Bowen & Bok, 1998; Frustenberg, 2010). However, under the TTPP more students are undermatching, or choosing schools below their performance level

(Cortes, 2010; Dickson, 2006; Niu, Tienda, & Cortes, 2006; Tiena & Niu, 2006).

Essentially, if test scores are singularly used to evaluate ability, many students are under-matched (Cortes, 2010; Dickson, 2006; Niu, Tienda, & Cortes, 2006; Tiena & Niu, 2006).

Effects on home schooled students. Fourth, the TTPP does not make provisions for students who are home schooled. More research is needed to understand how the TTPP affected the college-going behavior of families who did not choose the traditional public school system.

Increase school leader political acumen. Fourth, more research is needed to know how to help principals and principals in training increase their political acumen to make better instructional decisions for their schools. Although this study examined some internal school characteristics, it would be beneficial to have specific evidence-based recommendations to help school leaders promote the success of all students by collaborating with families and community members, responding to diverse community interests and needs, and mobilizing community resources to improve the school's college choice organizational habitus. For example, how can schools do a better job keeping students and their families abreast of college requirements and policy changes? What are effective ways to engage and empower families in goal setting and decisions? What are effective ways schools leaders create a school environment that is inviting and healthy for all students?

Chapter Conclusion

Regardless of which admission regime is in place affirmative action, percent plan, or a hybrid of both, cultural responsive leadership must be present. Cultural responsiveness is about becoming better stewards of what is within one's power to control. It is about changing mindsets to transform practice and improve student outcomes. This is accomplished by "questioning (and preparing school leaders, families, communities, and students to question) the structural inequality, the racism, and the injustice that exist in society" (Ladson-Billings, 2009, p. 140). Our educational system is precisely the place where matters of race should be exposed and efforts made to eliminate its effects in the quest for providing an equitable education for all students. I agree with Pollock (2001) who asserted that our quest, "to eliminate racial achievement patterns might profit from a more self-conscious look at the moments when Americans talk about achievement in racial terms—and the moments when we do not" (pg. 2). Understanding these moments will perhaps provide a better understanding of why racism still lives on though it manifests itself in more covert ways. Omitting race from the dialogue in strategies and policy for all students is dangerous and undoubtedly will yield false progress towards educational equity and access.

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APPENDIX

New Texas Graduation Requirements

The State Board of Education recently adopted new graduation requirements on January 31, 2014. Beginning in the fall of 2014, the default diploma type in Texas became the Foundation High School Plan, which will replace the Minimum, Recommended, and Distinguished plan that is being phased out. The Foundation Graduation Program is comprised of a single academic track that can be customized with one or more endorsements. This graduation plan requires high school students to complete 22 credit hours of coursework at a minimum. Most students will complete 26 credit hours with a completed endorsement (similar to college minor) in one or more of the following: (a) STEM, (b) Business and Industry, (c) Public Services, (d) Arts and Humanities, or (e) Multidisciplinary Studies.

Since diploma data is not yet available under the Foundation plan (expected with class of 2018) and because of the close similarities diploma requirements, using the old graduation requirements (minimum, recommended, and distinguished) will still provide meaningful information. The information is still meaningful because students who entered high school before 2014-2015 may still choose to graduate under the old Minimum, Recommended, or Distinguished High School Diploma Plans. Second, there is not a large difference between the distinguished level of achievement under the Foundation Plan and Distinguished Academic Diploma under the outgoing graduation plan. Both plans require 26 credit hours and four credits in math and science. There are key differences however.

The outgoing graduation plan (Minimum, Recommended, and Distinguished) required Algebra 2 (plus and additional advanced math course), Physics (plus and additional advanced science course), and three credits in the same language other than English. The Foundation Plan, giving more course latitude, does not. Perhaps the most distinguishing factor between the two graduation plans is the specialized electives (endorsements) under the Foundation Plan, which is non-existent under the Minimum, Recommended, and Distinguished Plan. Under the Foundation Plan, depending on the students' endorsement, more or less advanced math or science classes may be required (i.e. STEM vs. Public Service or Arts and Humanities). Under the Minimum, Recommended, and Distinguished Plan (hereafter MRDP), students have less leeway in their course selection, which is especially the case for core classes.