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SCHOOL CHOICE AND SOCIAL STRATIFICATION IN U.S. K-12 EDUCATION

Schugurensky, Alejandro

Princeton, NJ : Princeton University

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SCHOOL CHOICE AND SOCIAL STRATIFICATION IN U.S. K-12 EDUCATION

Alejandro Schugurensky

A DISSERTATION

PRESENTED TO THE FACULTY

OF PRINCETON UNIVERSITY

IN CANDIDACY FOR THE DEGREE

OF DOCTOR OF PHILOSOPHY

RECOMMENDED FOR ACCEPTANCE BY

THE DEPARTMENT OF SOCIOLOGY

Advisor: Jennifer L. Jennings

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Abstract

This dissertation investigates the relationship between school choice systems, educational inequality, and institutional legitimacy, advancing our understanding of how educational policies and structures contribute to social stratification. Across three empirical studies, I explore the heterogeneity of students' school choices, interrogate the material benefits of elite schools, and provide insights into how school admissions policies shape perceptions of fairness and inequality.

In the first chapter, I focus on understanding the heterogeneity among students in the school choice process. I use computational techniques on student-level application data to identify distinct clusters of school choosers based on their ranked school choices. This inductive approach reveals several categories of student choices, reflecting complex interactions between preferences, constraints, and tradeoffs that students and families make when they choose schools. My findings suggest that different groups of students place varying emphasis on distance, selectivity, curricular foci, and safety.

The second chapter critically examines the widely held belief that attending elite, selective schools universally benefits all students. More selective schools do not necessarily provide more opportunities for advanced coursework. I use a regression-discontinuity design to identify the causal effect of attending a more selective high school on advanced math course-taking. In some cases, internal stratification processes within these schools can create barriers to advanced course-taking, even for students with high academic achievement.

In chapter three, I conduct a survey experiment to examine how different school admissions policies influence individuals' perceptions of fairness and their attitudes toward

inequality. Using a national sample of U.S. adults, I found that exposure to meritocratic admissions systems and choice-based systems increased perceptions of fairness and deservingness, even after keeping constant the level of underlying educational inequality. My results suggest that meritocratic and choice-based frameworks can legitimize social hierarchies, even when they result in the same level of inequality as other admissions regimes.

Overall, my dissertation offers new insights into how educational systems reproduce or obscure inequality and underscores the need for policies that address not just access to opportunity, but also how those opportunities are allocated and perceived.

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Introduction

This dissertation broadly examines inequalities within the United States K-12 education system, with a particular focus on how school choice systems are linked to patterns of social and educational stratification. School choice, in its various forms, has become central to education policy in the United States and often promises to give families greater autonomy to choose educational institutions that best fit their needs. Nevertheless, education scholars have pointed to several disparities within school choice systems, showing that they perpetuate some of the inequalities that exist in systems with less choice. Though some students might benefit from expanded options, others continue to face significant structural barriers that prevent them from navigating these systems with the same degree of success. As such, one key empirical question in this field is to uncover the extent to which school choice policies contribute to disparities in educational outcomes. Across three empirical studies, this dissertation explores the heterogeneity of students' school choices, interrogates the material benefits of elite schools, and provides insights into how school admissions policies shape perceptions of fairness and inequality. Consequently, I ask three main research questions.

First, how do we characterize the heterogeneity among students in the school choice process? The prevailing literature often treats the school choice experience as homogeneous, or conditional on specific demographic characteristics, such as race, class, and gender. However, I argue that the presentation of school choices as averages or conditional averages obscures the full complexity underlying school choice decisions. In reality, different students navigate the school choice process in fundamentally distinct ways, explained not only by their demographic

characteristics but also by the complex interaction between their schooling priorities and structural constraints.

Second, I ask: do all students benefit from seemingly advantageous school environments? The assumption that advantageous school environments (e.g., elite schools) offer educational benefits to all students often overlooks how these supposed advantages are distributed among different student groups. Moreover, while attending elite schools may confer symbolic benefits such as institutional prestige or status, the extent to which they affect access to curricular opportunities, such as advanced coursework, has not been empirically substantiated. Moreover, the conferral of these skills may vary based on the organizational structure of these institutions. Here, I argue that the benefits of attending selective schools are contingent upon the organizational structures *within* schools that restrict some high-achieving students from having access to advanced educational opportunities.

Third, how might school admissions regimes shape perceptions of fairness and legitimacy? Scholars of educational inequality have thoroughly explored how diverse school environments shape the outcomes of students moving through education systems. While there is extensive literature on educational inequality, we know less about how people evaluate the fairness and legitimacy of the systems that sort students between unequal school contexts. Understanding these perceptions is crucial because they shape public support for educational policies and influence broader societal attitudes toward inequality. Thus, I consider how the structure of school choice systems not only impacts educational access and outcomes but also acts as a powerful socialization agent that legitimizes inequality.

In addressing these questions, this dissertation draws on a combination of different data analysis techniques to develop novel insights. The three chapters offer complementary

perspectives on how school choice systems affect educational inequality, both in terms of the distribution of educational opportunities and moral valuations of fairness and legitimacy. Through the use of different methodological approaches and datasets, each chapters contributes to understanding how school choice systems may both shape and reflect social stratification.

Beyond Averages: A Clustering Approach to School Choice Tradeoffs and Trajectories

In the first chapter, I use an inductive clustering approach to describe how students in New York City's high school choice system make trade-offs between features such as academic performance, proximity, safety, and academic interests. This analysis reveals six distinct groups of students whose application behaviors are shaped by differing sets of preferences and constraints. For example, some students tend to prioritize academic quality at the expense of proximity, while other students tend to apply to local, lower-performing schools. Crucially, many students face competing priorities, and their decisions are not driven by a singular characteristic, like academic performance alone. Additionally, I show that these different application strategies are not distributed randomly across student applicants. Rather, they map onto categorical inequalities along the lines of race, class, geography, gender, and student achievement. By using this approach, I argue that school choice is not just a reflection of individual preferences; rather, it is deeply influenced by social and institutional contexts.

The Paradox of Prestige: How Selective High Schools Shape Advanced Math Enrollment

The second chapter critically examines the widely held belief that elite or selective schools universally benefit all students, with a particular focus on math course-taking opportunities. I use a regression-discontinuity design to identify the causal effect of attending a

more selective high school on advanced math course-taking. In some cases, internal stratification processes within these schools can create barriers to advanced course-taking, even for students with high academic achievement. Moreover, these schools may artificially create a scarcity of course-taking opportunities, even when their students' academic achievement is relatively homogeneous. This paper challenges the assumption that admission to selective schools inherently guarantees enhanced opportunities and suggests that the benefits of these institutions are more contingent than perceived at face value.

From Chance to Choice: Perceptions of Fairness, Deservingness, and Inequality Under Different School Admissions Regimes

In chapter three, I conduct a survey experiment to examine how different school admissions policies influence individuals' perceptions of fairness and their attitudes toward inequality. Using a national sample of U.S. adults, I found that exposure to meritocratic and choice-based admissions systems, provided through survey manipulation, increased perceptions of fairness and deservingness, even after keeping constant the level of underlying educational inequality. However, exposure to different regimes did not significantly alter respondents' beliefs about broader structural inequality or increase support for redistributive policies. My results suggest that meritocratic and choice-based frameworks can legitimize social hierarchies, even when they result in the same level of inequality as other admissions regimes. More broadly, I emphasize how institutional design features act as legitimatizing agents, shaping broader views toward fairness and inequality.

In sum, my dissertation illuminates critical aspects of social stratification within the context of school choice, with a particular emphasis on the often-hidden ways that these systems

increase or decrease inequality. By focusing on the heterogeneity of school choice decisions, the uneven benefits of elite schools, and the legitimating function of admissions regimes, this dissertation challenges assumptions about the universality of school choice. More broadly, the findings of each study help to underscore the importance of considering both agency and structural constraints in understanding how educational opportunities are distributed across a heterogeneous population of students and families.

I also offer several implications for public policy. Since admissions policies are crucial for determining who accesses educational opportunities, they also have the potential to reinforce and disrupt cycles of inequalities. Understanding how these policies may also affect perceptions of fairness and beliefs about social inequality can inform policymakers of the trade-offs involved in these structures. My dissertation also provides insights into potential unintended consequences resulting from the structuring of school choice processes and informs the development of school assignment procedures that consider choice-making as dynamic rather than static. Finally, as policymakers consider how to increase access to advanced coursework, they should consider how school organizational arrangements can counterintuitively shape student outcomes. In all, the findings from my dissertation can help policymakers make more informed decisions about how to promote educational opportunities and consider their unintended or otherwise concealed impacts on social inequalities.

Chapter One

Beyond Averages: A Clustering Approach to School Choice Tradeoffs and Trajectories

Abstract

This study examines how students navigate school choice systems with multiple stages, focusing on New York City's high school choice process. While prior research has examined the features that guide school choice processes, we lack insight into how different types of students make trade-offs between school characteristics and react to their assigned matches. Using administrative data on roughly 77,000 8th-grade students, I use latent profile analysis to identify distinct clusters of student applicants based on the characteristics of their preferred schools. I identify six clusters of students making different trade-offs between factors like proximity, academic performance, and safety. The findings reveal substantial variation in school choice patterns, with students making different trade-offs based on their academic performance, socioeconomic background, and geographical constraints. Students in lower-income, racial minority-dominated clusters tend to prioritize proximity and safety, while higher-performing students are more likely to secure places in selective, academically rigorous schools. When students do not enroll in their initial match, students in different clusters take on diverging post-match trajectories, with some more likely to exit the public system and others more likely to be administratively assigned to leftover options. The findings highlight how initial choices set students on paths that can amplify or mitigate existing inequalities.

Introduction

School choice policies, which allow families to more easily attend schools outside of their residential catchment areas, have become a central feature of many urban school districts in the United States. The extensive social scientific research on school choice has pointed to social inequalities within these systems, as families from different backgrounds engage with the school choice process in different ways (e..g, Hailey 2022; Lareau and Goyette 2014; Posey-Maddox et al. 2021; Sattin-Bajaj and Jennings 2022). Much of this existing research relies on social stratification along traditional demographic categories – such as race, class, and geography. While incredibly useful in characterizing how families of different backgrounds make schooling decisions and balance competing priorities such as school quality, proximity, and safety, the existing literature might obscure the heterogeneous strategies that may occur *within and across* these demographic categories.

In this paper, I expand on existing scholarship by identifying distinct patterns of student applications in a universal choice system, based on the characteristics of the schools they apply to – rather than the characteristics of the applicants themselves. Through a data-driven clustering approach, I classify applicants into distinct groups that reflect the different trade-offs they make across various school characteristics. Therefore, this paper takes an inductive approach that illuminates how different groups of applicants navigate the school choice system, not based solely on their demographic characteristics, but rather shaped by the intersection of individual priorities and the structural features of the school choice system.

Moreover, this chapter treats school choice as a multi-stage process; a sequence of decisions, with applicants navigating different rounds of applications and decisions. Much of the existing literature has focused on either initial applications or enrollment outcomes, without

paying attention to the intermediate steps. This paper fills the gap by tracing how applicants engage with the school process over multiple stages, from initial applications to post-match behaviors and eventual enrollments. In doing so, it sheds light on the temporal and institutional dynamics that shape students' trajectories within a highly bureaucratic process.

The central research questions of this study are: (1) What configurations of student applicants can be identified based on the trade-offs they make between factors like academic quality, safety, and proximity? and (2) How do these different clusters of applicants navigate the school choice process, from initial rankings to post-match outcomes? I use New York City's high school choice process as a case study, using an inductive computational approach to uncover the heterogeneity in application behaviors. I show that applicants can be clustered into distinct profiles that reflect a diversity of strategies and constraints. Applicants make different tradeoffs between competing priorities such as proximity, academic performance, safety, and peer demographics. By identifying different clusters of applicants based on their decision-making patterns, this study highlights how institutional barriers and inequities shape the available options and constraints that families encounter.

By identifying distinct latent clusters, this study offers a contribution to the literature by capturing the heterogeneity of choice-making that transcends the traditional focus on demographic categories like race, class, and geography. The findings suggest that even within homogenous groups (such as Black or Asian students, or high- versus low-income applicants), there is significant variation in how schools are ranked, largely driven by the institutional context of the school choice system itself. Furthermore, the study explores how these distinct clusters of applicants navigate the multiple rounds of the choice process—examining how initial preferences translate into post-match behaviors and enrollment decisions.

The implications of these findings extend beyond the specific context of New York City's school choice system. By illustrating how institutional structures and decision-making processes shape access to opportunities, I argue that even in systems that theoretically allow for choice or autonomy, inequality is embedded in the structural features of the process itself. Additionally, the findings from this study underscore the distributional consequences of institutional systems. While the literature on school choice often points to the behavior or outcomes of the "average" student, this study focuses on the heterogeneous experiences with the system. Finally, this research highlights the necessity for policies aimed at promoting equitable outcomes in educational choice, urging policymakers to consider the diverse needs and contexts of students as they navigate complex school choice environments.

Background

The literature on school choice is extensive and crosses multiple disciplines, but a few dominant themes emerge. Most studies have explained school choice by focusing on a small set of factors, such as families' desires to access high academic quality, geographic proximity, school safety, or peer demographics (Glazerman and Dotter 2017; Hailey 2022; Harris and Larsen 2023). Over multiple studies, scholars have demonstrated that parents consistently emphasize academic quality as a key factor (Kleitz et al. 2000; Schneider et al. 1998), but proximity and safety often play equally critical roles, particularly for families in lower-income neighborhoods (Burdick-Will, Gebo, and Williams 2024; Corcoran 2018; Hailey 2022). Thus, the question at hand isn't simply about what factors matter, but how different students balance multiple, often competing, priorities when choosing schools. This diversity in choices is shaped

by both preferences and constraints—not every student has equal access to the same information, transportation, or support systems (Lareau 2014; Sattin-Bajaj and Jennings 2022).

Understanding how families navigate school choice systems is critically important for ensuring equitable access to educational opportunities. School choice systems, particularly those that rely on centralized application processes, can reproduce existing inequalities if they favor resource-rich families who are better equipped to navigate the system (Condliffe and Balu 2019; Corcoran et al. 2018). While some families can make informed choices based on detailed information about schools, others face constraints that limit their choices, such as geographical limitations, lack of access to reliable information, or administrative burdens (Corcoran et al. 2018; Herd and Moynihan 2018; Sattin-Bajaj 2014; Sattin-Bajaj and Jennings 2022).

Students in urban high school choice systems make vastly different decisions when selecting schools, and this diversity often gets lost in aggregate analyses that treat school choice as a monolithic process. Traditional approaches in the literature focus on the *average* preferences of students or families, examining the most common patterns (e.g., the *typical* family prioritizes proximity and academic performance). Sometimes, quantitative analyses of school choice conduct stratified analyses by demographic characteristics such as race (e.g., Glazerman and Dotter 2017; Hailey 2022) or class, (e.g. Harris and Larsen 2023), but typically do not explore multiple dimensions at the same time. Moreover, we have a vast qualitative literature on the diversity of school decision-making for specific subgroups (e.g., Posey-Maddox et al. 2021; Rhodes and DeLuca 2014; Sattin-Bajaj 2014), but few studies offer comparative analyses across an array of student and family characteristics.

Factors Affecting School Choice

Families make school choices based on different factors. “School quality” is a key variable for parents when choosing schools (Billingham and Hunt 2016; Gordon, Herbst, and Tekin 2018; He and Giuliano 2018; Lareau 2014; Scott and Marshall 2019; Weininger 2014). However, school quality may take on different meanings for different parents. Parents may use standardized evaluations of school quality, average test scores, and other academic information as measures of school quality (Gordon et al. 2018; Weininger 2014). Alternatively, parents can develop ideas of school quality based on information from their social networks (Billingham and Kimelberg 2013; Lareau 2014; Weininger 2014). Some parents may choose programs based on peer groups rather than the program itself, using the school demographics as proxy measures for quality (Abdulkadiroğlu et al. 2020; Billingham and Hunt 2016; Rowe and Lubienski 2017).

Location is another important consideration for parents – just as families select schools based on their neighborhoods, prior studies have demonstrated that families also select neighborhoods based on their schools and school districts (Bischoff 2008; Lareau and Goyette 2014; Owens 2016). When parents have the option to choose schools outside of their residential catchment zones, the distance between a child’s home and a prospective school plays an important role. Proximity can outweigh other factors such as quality when making these decisions. For instance, repeated findings by Harris and Larsen (2015, 2023) suggest that parents in New Orleans would select a school that was rated a full letter grade lower if it was about .75 miles closer. Similarly, Glazerman and Dotter (2017) estimated that parents in Washington, DC would choose a school with 10 percentage points lower proficiency on state tests if it is 1.2 miles closer.

Qualitative studies of school choice find strong preferences for proximity among disadvantaged families (Bennett, Lutz, and Jayaram 2021; Pattillo, Delale-O’Connor, and Butts

2014; Rhodes and DeLuca 2014; Sattin-Bajaj 2014). However, because there is an uneven spatial distribution of high-quality schools, residents of low-income neighborhoods often have to consider tradeoffs between distance and school quality or safety (Burdick-Will 2017; Corcoran 2018). Additionally, the average commuting time to the nearest "high-quality" school tends to be higher for Black students and FRPL-eligible students (Corcoran 2018). Affluent families also show preferences for local schools (Billingham, 2015), but tend to have a greater capacity to move to neighborhoods with desired schools (Lareau 2014).

Observational data from NYC reveal that parents prefer schools that enroll higher-achieving peers, and do not show significant preferences for school effectiveness (Abdulkadiroğlu et al. 2020). Interviews with white parents reveal that they tend to prefer racially heterogeneous schools (Johnston et al. 2015; Roda and Wells 2013). However, these results may be products of social desirability bias, since experimental evidence indicates that white parents have preferences for schools with higher proportions of same-race peers (e.g., Hailey, 2022), and observational data show that children attend schools with higher levels of same-race representation (Fiel 2013; Frankenberg 2016). Furthermore, research conducted by Roda and Wells (2013) found that many advantaged parents were bothered by racial and socioeconomic segregation in schools, but were simultaneously concerned for their children's chances to excel in such a highly stratified system.

More recently, researchers have used experiments to uncover subconscious biases in choice behaviors. Experimental evidence shows that respondents were less likely to send their children to schools with a higher proportion of Black students, even after accounting for school characteristics that are often used as proxies for race, such as safety and academic performance (Billingham and Hunt 2016; Hailey 2022). Glazerman and Dotter (2017) similarly found that

respondents were more likely to rank schools as more desirable if they had a higher percentage of students from their own racial group, and this preference was more pronounced at higher levels of schooling.

Finally, parents face numerous constraints in the school choice process. As mentioned earlier, parents from low-income neighborhoods might not have realistic access to as many "high-quality" schools as those in affluent neighborhoods (Corcoran 2018). Administrative data in New Orleans revealed that indirect costs, such as after-school care and transportation costs, are important factors that constrain families' preferences for schools, especially for those from low-income neighborhoods (Harris and Larsen 2023). Qualitative research shows us that immigrant families might face cultural barriers and students in these families often navigate the choice process with limited adult supervision (Sattin-Bajaj 2014). A more recent study of families experiencing homelessness highlights how time and resource constraints can lead to confusion and frustration in a complicated school choice enrollment process (Sattin-Bajaj and Jennings 2022).

Navigating Complex Bureaucratic Systems

School choice systems can induce *administrative burdens,* or costs that families face when searching for information and complying with rules and requirements (Herd and Moynihan 2018). If programs and policies are accompanied by substantial learning costs, compliance costs, or psychological costs, individuals may lose faith in the capacity of government and other bureaucratic systems (ibid). Moreover, these administrative burdens are constructed and consequential, affecting some groups more than others. In districts where students are expected to choose schools (rather than the allocation of students to schools via residential assignment),

families are expected to search for information about schools and submit the right paperwork by specific deadlines (Archbald 2004). Such a system can induce confusion and frustration among families who face greater constraints in navigating the process.

The ways that families navigate the school choice process are partially shaped by their social networks and access to information. First, families have different levels of information about different educational options and about the school choice process itself. Lower-income families are more likely to rely on formal sources of information, compared to higher-income families, who tend to rely on their social networks and informal ties with school administrators (Schneider et al. 1997). One large-scale randomized intervention in New York City showed that providing students with information about schools led students to apply to programs where their odds of admission are higher, and were consequently more likely to get their first-choice schools (Corcoran et al. 2018). Given that information access is stratified along other axes of categorical inequality, advantaged and disadvantaged families may have different school choice sets and preferences, and interact with the process in different ways.

In addition to the acquisition of formal information (e.g., via school websites) and informal information (e.g., via social networks), families can get information and assistance through street-level bureaucrats such as school counselors. As coined by Lipsky (1980), the term *street-level bureaucracy* refers to how public service workers function as policy decisionmakers, particularly when they are faced with large caseloads, ambiguous goals, and substantial discretional authority. The result is often a "loose coupling" between policy objectives and how they are carried out by the workers who enact them (Weick 1976). Much of the research on school counselors is related to college-going, and studies show that school counselors play a more decisive role in the educational trajectories of first-generation and low-income students

(Belasco 2013). In New York City, researchers have studied how middle school counselors interact with students navigating the high school choice process. In general, counselors were reluctant to share advice with students applying for high schools, maintaining that school choice was primarily a decision to be made by the student and their family (Sattin-Bajaj et al. 2018). The same group of counselors expressed doubts about the school choice system, citing a lack of transparency about admissions practices and skepticism over procedural fairness, affecting the strategies they undertook with their students (Sattin-Bajaj and Jennings 2020).

The bureaucratic organization of the school choice system can also play an important role in how students are sorted between schools. Barriers to registration, such as bureaucratic complexity and instability, can be more of a burden for disadvantaged families, and affects who is able to participate in different stages of the application process (Condliffe and Balu 2019). Families who miss deadlines can apply late, but late applicants generally enroll in programs that are less desirable and of lower quality compared to students who engage in the first application round (Lincove, Cowen, and Imbrogno 2018). A study of a school choice system in Boston showed that nearly half of Black kindergartners miss the first registration deadline, ultimately restricting them to their least preferred schools (Fong and Faude 2018). Some centralized systems have been designed to be "strategy-proof" and result in fewer mismatches than uncoordinated school assignment mechanisms, as is the case in New York City (Abdulkadiroğlu et al. 2017).

Despite the extensive research on school choice, several important gaps remain. First, while we know that families make trade-offs between different school characteristics, we have little understanding of how these trade-offs are made. Second, the literature has yet to fully explore how constraints like transportation, lack of information, or administrative barriers

influence decision-making. While we know that low-income families are more likely to be constrained by geography or informational asymmetries, we don't know how these constraints interact with other factors to shape school choices. Finally, we have limited insight into the post-match trajectories of students—how initial choices influence later outcomes like enrollment and academic achievement.

Considering these gaps, this article aims to answer the following questions:

1. What distinct configurations of applicants can be identified based on the trade-offs they make between factors like academic quality, safety, and proximity?
2. To what extent do the different configurations of applicants map onto traditional demographic categories such as race, class, and geography?
3. How do these different clusters of applicants navigate the multi-stage high school choice process, from their initial rankings to their post-match behaviors?

This paper makes several key contributions. First, by using latent profile analysis (LPA), it moves beyond traditional approaches that rely on aggregate data or simple averages. LPA allows for the identification of distinct clusters of student applicants, each characterized by different configurations of school preferences. This approach reveals the trade-offs families make between academic performance, proximity, safety, and other factors, offering a more nuanced understanding of decision-making. Second, by analyzing the post-match trajectories of students, this study sheds light on how initial school choices set students on different educational paths. This is particularly important for understanding how choice systems might either exacerbate or mitigate inequalities. Answering these questions allows us to better understand the mechanisms

of educational inequality and design interventions that target the specific challenges faced by different subgroups navigating the school choice process.

The Case of New York City

New York City's public schooling system is a particularly interesting case for this research for several reasons. First, it is one of the largest and most diverse urban school districts in the United States – each year, about 80,000 eighth-grade students apply to over 400 schools (Hailey 2022; Nathanson, Corcoran, and Baker-Smith 2013). This allows me to explore heterogeneous patterns that might be difficult to uncover in smaller or less diverse districts. Second, NYC has a centralized and well-documented school choice process that requires universal participation (Corcoran and Baker-Smith 2018). Students are matched to schools using an algorithm that takes into account student preferences and school selection criteria (Abdulkadiroğlu, Pathak, and Roth 2005). Third, NYC has a highly stratified school system with a range of school options, from highly selective public schools to schools that utilize open enrollment policies.

Every year, tens of thousands of eighth-grade students (and some ninth-grade students) apply to high schools in New York City. The city uses a deferred acceptance algorithm to match students with high schools, taking into account students' school rankings, available space, and schools' selection criteria (Abdulkadiroğlu et al. 2005). The process is "strategy-proof", meaning that students are not penalized for ranking schools in their true order of preference. However, students can only rank up to 12 programs, so there is an incentive to rank at least one school where their odds of admission are relatively high. All students *must* apply, as there are no default schools. The majority of schools partake in the centralized choice system, though specialized

high schools (nine schools), charter schools (roughly six percent of all schools), and a few alternative high schools are not included in the main process.

Students apply to schools in December and receive their results in March or April of the following year (Nathanson et al. 2013). Approximately 92% of applicants receive one of their ranked choices, and about half receive their first-choice school (Corcoran et al. 2018). If students do not receive a first-round match or are unsatisfied with their match, they may reapply in a second round to schools with open seats. If students are not matched to a school in either round, they are administratively assigned.

Data and Methods

Data

This study uses student-level administrative records provided by the New York City Department of Education through a research partnership with the Research Alliance for New York City Schools. The dataset includes information on approximately 80,000 8th-grade students who participated in the high school application process for the 2014-15 academic year. This cohort was chosen as it allows for examination of both the choice process and subsequent enrollment outcomes. The dataset includes students' ranked school choices, demographic information, prior academic performance, and eventual high school enrollment outcomes. Additionally, the paper relies heavily on school-level information on academic performance, demographics, admissions methods, and survey results on school climate and safety.

Latent Profile Analysis

First, this study uses Latent Profile Analysis (LPA) to identify distinct configurations of student applications in New York City's high school choice process. To account for students ranking multiple schools, I consider the school-level characteristics of their top five ranked choices. For each student, I compute averages of school-level characteristics (e.g., average graduation rate, average distance to the school, average safety rating) across their top five ranked choices. In the case of binary indicators (e.g., admissions methods, special interests, extracurricular offerings), these averages represent the proportion of their top five ranked choices that have these characteristics. Then, I standardize these variables so that they all have a mean of zero and a standard deviation of one. As sensitivity analyses, I altered the number of top-ranked choices (ranging from using the first choice only to including the top five choices). The overall patterning of results is fairly robust to these different specifications, particularly as the number of choices increases.

The LPA model incorporates 25 indicators capturing various aspects of students' school choices, including:

- Location (e.g., travel time, distance, same borough/district as residence)
- School demographics (e.g., racial composition, school size)
- Academic performance (e.g., graduation rates, college enrollment rates)
- Admissions methods (e.g., academic screens, auditions)
- Curricular focus (e.g., STEM, arts, career and technical education)
- Extracurricular offerings (sports and clubs)
- School climate factors from surveys (e.g., safety, bullying, program variety)

I estimate LPA models with six latent profiles using maximum likelihood estimation via the expectation-maximization (EM) algorithm. The 6-profile model was chosen on a combination of fit statistics (AIC, BIC) and interpretability of the results. Appendix Table A provides the fit statistics for models with different numbers of clusters. To ensure the robustness of the cluster analysis, I randomly divide the sample into training (80%) and test (20%) sets, estimate the LPA model on the training set, and apply the resulting classification to the test data. Students are probabilistically assigned to one of the six clusters based on the estimated posterior probabilities of their membership in each group. The highest posterior probability determines each student's cluster.

Although LPA provides a computation approach to identifying student typologies, the resulting classifications are probabilistic and may not perfectly capture all students' choice patterns. Additionally, the analysis is limited to observable characteristics of schools and cannot account for unobserved or unmeasurable factors influencing students' choices. Despite these limitations, this approach allows us to move beyond examining average effects or a limited set of dimensions of stratification.

Validation Using Ranked-Ordered Logit Choice Models

To validate the results from the LPA, I use ranked-ordered logit choice models and test to what extent different latent profiles of applicants are more likely to favorably rank a particular school given its characteristics. First, I estimate these models for the entire student population to understand how school characteristics influence the probability that a student will give a higher rank to a specific school relative to the other schools that they rank. Then, I estimate these models separately for each cluster to see to what extent different groups of students diverge from

the overall population. All predictors are converted into binary measures for ease of interpretability, but results are robust to models that use a combination of binary and continuous measures.

Analysis of Post-Application Outcomes

Finally, after identifying and validating the latent profiles, I examine how these different clusters of students navigate subsequent stages of the high school choice process. This includes analyzing match rates (i.e., the proportion of applicants who are assigned to one of their top-ranked schools), enrollment in matched schools, participation in subsequent application rounds, and ultimate enrollment outcomes. I present descriptive results to highlight variation across the latent profiles, with a focus on how different clusters of students navigate the application and enrollment process in the multi-stage process. Although these results are unconditional, they are robust when I control for individual-level covariates, such as prior academic performance and demographic characteristics.

Results

Descriptive Results, Overall and by Cluster

Table 1 presents the average characteristics of applicants' top five ranked choices overall and stratified by cluster. The first column describes the choice characteristics of the full sample. On average, students apply to schools that are approximately 35.31 minutes away, with an average distance of 4.95 miles from their middle school. Applicants generally prefer schools in the same borough as their residence (81% of top five choices) but are relatively less likely to choose schools in the same district (27%) or zip code (9%). On average, higher-ranked schools

have graduation rates of 82 percent. The average school is demographically diverse, with an average composition of 18% Asian, 26% Black, 37% Hispanic, and 17% white students. In terms of academic and extracurricular opportunities, approximately 69 percent of schools chosen offer AP calculus, 63 percent have music clubs, and 33 percent have a football team. Many schools also offer extended day programs (46%) and career and technical education (10%). Regarding admissions, 38 percent of choices use some sort of academic screen, and 13 percent use auditions. Finally, school climate and safety vary, with relatively high average school safety ratings (86% of survey respondents agree that hallways are safe), and low perceptions of bullying (17%) and gang activity (15%).

Nonetheless, the Latent Profile Analysis (LPA) generated six distinct clusters of students, each representing unique preferences and priorities when it comes to their top school choices. These clusters vary significantly in terms of their chosen schools' location, demographic characteristics, academic rigor, and safety measures.

[Table 1 about here]

Cluster 1: Local Low-Performing Schools

Students in Cluster 1 tend to apply to geographically close schools, with an average travel time of 31 minutes and 4.03 miles. These students apply to schools that generally have lower academic performance, with average graduation rates of 66% and college career rates of 47%. Demographically, these schools have a high proportion of Black (40%) and Hispanic (48%) students, and the student body has high poverty levels (81%). These schools are predominantly male (56%), compared to every other cluster. Next, they exhibit the lowest safety ratings (80%),

and highest levels of bullying (25%) and gang activity (23%) compared to other clusters. Finally, the chosen schools are more likely to require uniforms (29%) and offer fewer extracurricular opportunities such as sports and clubs.

Cluster 2: Local Moderately-Performing Schools

Similar to Cluster 1, students in Cluster 2 choose schools close to home, with an average travel time of 34 minutes and a distance of 4.73 miles. The academic performance of these schools is moderate (but higher than Cluster 1), with average graduation rates of 78% and college career rates of 61%. Schools in this cluster have a higher proportion of Black (35%) and Hispanic (49%) students. These schools are also more likely to require uniforms (29%) but offer fewer extracurricular options like sports or clubs. Part of this may be a reflection of school size, as this cluster chooses schools with the lowest enrollments, on average (759 students). Finally, Safety ratings are about average, though this is an improvement over Cluster 1, with bullying (19%) and gang activity (17%) at lower levels.

Cluster 3: "Average" School Characteristics

Students in Cluster 3 apply to schools with average characteristics, mirroring the estimates of the full sample. The average graduation rate is 87%, and the college career rate is 74%. These schools are fairly diverse (20% Asian, 26% Black, 39% Hispanic, and 14% white). Though this group of applicants does not distinguish itself on many dimensions, they are slightly more likely to apply to schools with extended-day programs (52%) and career and technical education (16%). In all, the schools chosen by this group of students are somewhere in the

middle – slightly more academically selective and safe compared to Clusters 1 and 2, but not as much as the final few groups.

Cluster 4: Large Local Program-Rich Schools

Applicants in Cluster 4 are more likely to opt for larger local program-rich schools. These students apply to schools with an average travel time of 32.91 minutes and a distance of 4.10 miles – the lowest of all clusters. These schools have relatively average academic indicators, with an average graduation rate of 81% and an average college career rate of 69%. They are significantly larger than average (3,017 students) and serve a mix of demographics, including 28% Asian, 16% Black, 25% Hispanic, and 29% white students. These schools also stand out by offering a wide variety of programs, including AP courses (calculus: 73%), clubs (music: 83%), and sports (football: 62%). Finally, students in this cluster are less likely to apply to schools that require uniforms (2%) or offer career and technical education (3%).

Cluster 5: Elite Academic Institutions

On average, students in Cluster 5 choose the most academically selective schools with the highest safety indicators despite them being farther away from home. These choices have an average travel time of 40.31 minutes and a distance of 6.29 miles. As mentioned, the schools have high graduation rates (95%) and college career rates (86%). These schools are highly selective, with 86% of choices using academic screens as their primary admissions method. The demographic composition of these schools is skewed toward Asian (28%) and White (29%) students, and they have the lowest percentage of students in poverty (53%). Finally, these schools have the highest school safety (94%) and lowest bullying (8%) and gang activity (7%).

In all, these students select schools that are both academically selective and safe, perhaps at the expense of proximity or travel time.

Cluster 6: Art-Focused Schools

Finally, Cluster 6 tends to apply to schools that are farther from home, with an average travel time of 43.56 minutes and a distance of 7.20 miles – the highest of all the clusters. These students are particularly interested in art-focused programs (66%), and 58% of their choices use auditions to admit students. Academically, these schools perform at an above-average level (graduation rate of 86%, college career rate of 70%). The chosen schools have a fairly balanced racial composition (13% Asian, 28% Black, 36% Hispanic, 21% White), but skew heavily female (63%). Unsurprisingly, choices in this cluster are also more likely to offer arts-related extracurriculars (e.g., music clubs, 72%). This is the smallest cluster, representing only six percent of students, but in many ways, it also has the most distinct identity.

Ranked-Choice Logit Models

In addition to the descriptive analysis of the ranked school characteristics by cluster, I conducted a ranked-choice analysis to validate the findings and compare the strength of key predictors of school choice across the six clusters. Unlike the descriptive analysis, which focuses on the average characteristics of the schools selected, the ranked-choice models estimate the probability of ranking a school higher within an applicant's list of choices. This approach recognizes that the mere presence of certain characteristics, such as proximity to home, does not imply a strict ranking order. For example, while an applicant may consider proximity when

choosing schools, it does not necessarily mean that the closest school will be ranked first, and the furthest school will be ranked last. This analysis tests this empirical question.

[Table 2 about here]

Table 2 presents the estimates from the ranked-choice logit models. Consistent with the extant literature on school choice (e.g., Billingham and Hunt 2016; Corcoran 2018; Hailey 2022; Harris and Larsen 2023), several factors significantly predicted the extent to which a school was higher ranked within students' choice sets. For example, students were significantly more likely to highly rank schools with a travel time of 30 minutes or less ($b = 0.046$, $p < 0.001$). Applicants were also more likely to highly rank schools with higher graduation rates ($b = 0.196$, $p < 0.001$) and higher safety ratings ($b = 0.067$, $p < 0.001$). Other features that predicted higher rankings were larger school sizes, curricular foci in art, science, or career and technical vocation, the use of academic screens or auditions, and lower bullying. Conversely, schools with football teams and required uniforms were less likely to be higher ranked among applicants' choice sets.

These models also reveal meaningful differences across the six clusters regarding the factors that influence their ranking of school choices. In general, the descriptions of clusters derived from Table 1 were validated by the results in Cluster 2. That is, clusters with a higher propensity to choose schools with certain characteristics *on average* were also more likely to rank schools with those characteristics higher on their lists. Though there are many differences in Table 2, I will only highlight a few comparisons.

Proximity to home is a significant factor for nearly all clusters, though the degree to which it influences rankings varies. Clusters 1 and 2 show a strong positive coefficient for

proximity, with students ranking nearby schools significantly higher (b = 0.124 and 0.109 respectively). On the opposite end, Cluster 6 appears to rank nearby schools significantly lower (b = -0.086, $p < 0.001$), even accounting for other school characteristics. Next, a school's graduation rate was highly predictive of being ranked higher in the overall model, this was especially strong for Cluster 4 (b = 0.406) and *negative* for Cluster 1 (b = -0.126). Similarly, schools with higher perceived safety were ranked higher in the overall sample, but this varied by cluster, including a negative coefficient for this relationship among Cluster 1 applicants (b = -0.095).

Another way to interpret these results is through the lens of trade-offs that applicants make in ranking their choice sets. For example, in my descriptive analysis, I established that Clusters 1 and 2, choose schools that are generally lower-performing and less safe than the average applicant in New York City. These two groups choose schools that are close to home, and this pattern is validated by the ranked-choice model. However, considering the other coefficients estimated by the ranked-choice model, it appears as though Cluster 2 applicants are highly ranking schools that are close to home, have higher graduation rates, and are relatively safer, consistent with the overall patterns. On the other hand, Cluster 1 applicants may be choosing closer schools *at the expense of* academics or safety. Additionally, Cluster 4 applicants were the most likely to choose schools that were on average closer to home, but the ranked-choice model estimate for proximity was not statistically significant, suggesting that students in this cluster choose schools with high graduation rates and a variety of programs, and these schools *happen to be close to students' homes*. As I will elaborate in the discussion, these differences across clusters may reflect structural inequalities or constraints across clusters rather than reflecting any meaningful differences in *preferences*.

Mapping of Clusters to Individual Characteristics

The clusters identified through LPA were formed using only choice-level characteristics, with no inclusion of individual student characteristics. However, since the clusters represent distinct patterns of school choice behavior, it is important to examine to what extent these patterns correspond to different demographic groups. This can help show to what extent specific school choice strategies are disproportionately adopted by certain groups of students, and whether these strategies reflect structural inequalities that constrain access to certain types of schools. Additionally, this analysis helps show the heterogeneity within traditional demographic categories, such as race and socioeconomic status, by demonstrating that race and class subgroups are not restricted to a single strategy or cluster.

[Table 3 about here]

As shown in Table 3, the different clusters also intersect with a range of demographic characteristics, including race/ethnicity, geography, gender. academic achievement, special education status, and English language learner status. Unsurprisingly, there is considerable stratification by race and ethnicity, as Black and Hispanic students are disproportionately represented in Clusters 1 and 2 (lower-quality schools on average) and underrepresented in Clusters 4 and 5 (higher-quality schools on average). Relatedly, geography plays a crucial role in shaping school choice strategies, with Cluster 1 students heavily concentrated in the Bronx and Cluster 5 having more students from Manhattan (See Figure 1 for a distribution of clusters by zip

code). These patterns reflect how the distribution of schools, particularly high-quality schools, is geographically constrained and is a critical factor influencing how students apply to schools.

[Figure 1 about here]

So far, these analyses have corroborated much of the existing literature on school choice – specifically, that school choice patterns are heavily stratified by race and geography. This paper confirms those findings but also highlights that students of all racial and geographical backgrounds undertake a variety of strategies despite being overrepresented in certain clusters. Moreover, this analysis identifies other key axes of stratification that might be missed by traditional analyses that often focus on one or two demographic characteristics at a time. For example, female students are underrepresented in Cluster 1 (Local Low-Performing Schools) and overrepresented in Cluster 6 (Arts-Focused Schools), suggesting a gendered dimension in school choice strategies. There is also considerable inequality by students' academic achievement, as higher-achieving students are overrepresented in Cluster 5 (Academically Elite Schools), and lower-achieving students are overrepresented in Clusters 1 and 2. Similarly, special education and English language learner students are overrepresented in Clusters 1 and 2 and underrepresented in Cluster 5.

More broadly, the demographic patterns suggest that school choice is not a neutral process; rather, it is shaped by **structural inequalities** that limit or expand students' options based on their constraints. While strategies vary across and within demographic groups, I argue that school choices are not random – rather, they reflect **systematic disparities** in access to resources and opportunities.

Post-Application Trajectories

Figures 2 through 5 present information on students' post-application trajectories until they enroll in a school in 9th grade. First, I highlight the divergence in the likelihood of receiving a first-choice match, by cluster. Though just under 50 percent of applicants are matched to their top choice, this figure is much higher for students in Cluster 1 (71%) and lower in Cluster 5 (38%). Similarly, 90 percent of students get matched to *any* choice, and this is much higher for Cluster 1 (98%) and Cluster 2 (96%). This may suggest that the system is functioning as intended for Clusters 1 and 2—students are largely matched with their preferred schools. However, this "success" is complicated: the schools chosen by these students tend to be lower-quality in terms of academic and safety indicators.

[Figure 2 about here]

Once students receive their match after Round 1, they can opt to participate in a second round of the centralized choice system if they do not accept their match. Figure 3 illustrates participation in Round 2 by cluster. The left panel of Figure 3 shows the unconditional proportions for all students. Here, we observe that about 17 percent of applicants reapply in Round 2, but students in Clusters 1 and 2 are the least likely to reapply. Using this measure, one could assume that students in these clusters are more satisfied with their Round 1 outcomes. Nonetheless, the right panel of Figure 3 illustrates a paradox: even though students in this cluster are matched with their first-choice schools, a significant proportion of students who get their first choice—about 8%— reapply in Round 2, a rate higher than that of any other cluster. This

reapplication behavior suggests a disconnect between what students are technically getting (their first-choice match) and what they actually want or need. In contrast, students in Cluster 5, who are among the least likely to receive their first-choice match, have a much lower Round 2 participation rate (0.7%).

[Figure 2 about here]

I also show the different paths students take when they do not enroll in their Round 1 match. Among those who do not enroll in their Round 1 match (Figure 5), a clear distinction emerges between clusters regarding their likelihood to remain in the public system versus exit. Students in Cluster 5, who are more likely to seek out higher-quality options, are disproportionately likely to exit the public system if they do not enroll in their matched school (67%). This may suggest that these students have greater access to capital that allows them to leave the public school system, likely reinforcing the stratification of educational opportunities across districts or sectors. On the other hand, students in Cluster 1, are more likely to remain within the public system, often at schools that are less academically competitive, given the constraints they face.

[Figure 5 about here]

Discussion and Conclusion

This study examines the complex decision-making processes students and families engage in when navigating New York City's high school choice system. Through a data-driven

clustering approach, I identified six distinct clusters of students who make trade-offs between various school characteristics such as academic performance, proximity, safety, and peer demographics. In doing so, I show how students make decisions in a system that ostensibly offers them more autonomy, and how these decisions reflect not only *preferences* but also the institutional and structural *constraints* that shape them. Moreover, the findings challenge traditional approaches to understanding school choice, which often focus on averages or individual factors like academic performance or safety in isolation. Instead, my research shows that the interactions between multiple factors play a crucial role in shaping students' school choice behaviors and, ultimately, their educational trajectories.

These findings build on and challenge previous research in several key ways. First, while existing studies have consistently shown that parents prioritize academic quality when choosing schools (Kleitz et al., 2000; Schneider et al., 1998), my research demonstrates that this is only part of the story. Proximity, safety, and school environment are equally important factors, particularly for lower-income students and families. For many students, the need to attend a school close to home or one that offers a safer environment outweighs the importance of academic performance. This challenges the assumption that academic quality is the sole or primary driver of school choice for all students, especially in urban contexts where students are constrained by geography, transportation, and other barriers (Corcoran, 2018; Hailey, 2022).

Second, the clustering approach expands existing knowledge by highlighting the diversity within the student population. I argue that this agnostic clustering approach provides a theoretical model for analyzing school choice that incorporates the complex ways that these factors are prioritized and traded off differently by distinct groups of applicants. Prior research has often focused on *average* effects, obscuring the fact that not all students value the same school

characteristics in the same way. For example, studies have shown that students from higher-income backgrounds tend to prioritize academic performance more than students from lower-income families (Hastings & Weinstein, 2008). My findings confirm this but also show that this pattern is not universal. Some lower-income students also prioritize academic performance and manage to access high-achieving schools, suggesting that school choice is shaped by a combination of preferences and constraints that vary across different student subgroups.

Through this approach, I also challenge some prevailing assumptions – namely, that school choice is a straightforward decision-making process based on a set of universal preferences. The clustering approach, in particular, illustrates that individual decision-making cannot be fully understood without accounting for the systemic constraints that shape students' options and strategies.

The implications of these findings extend beyond New York City or school choice. They suggest that in any social process where goods or opportunities are distributed among people, there are structural dynamics, such as information asymmetry, bureaucratic complexity, and physical boundaries that often shape the decision-making processes – especially when these allocations are framed under the guise of individual choice or autonomy.

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Tables and Figures

VARIABLE	Full Sample	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6
Location/Proximity							
*Travel Time (Minutes)	35.31	*31.38*	33.70	36.86	32.91	40.31	**43.56**
*Distance (Miles)	4.95	*4.03*	4.73	5.26	4.10	6.29	**7.20**
*Choices and Residence Same Borough (Binary)	0.81	0.90	0.80	0.78	**0.98**	0.61	*0.60*
*Choices and Residence Same District (Binary)	0.27	0.32	0.23	0.22	**0.43**	0.19	*0.15*
Choices and Residence Same Zip (Binary)	0.09	0.13	0.08	0.06	**0.15**	*0.04*	*0.04*
Academic Indicators							
*Graduation Rate (Continuous, 0-1)	0.82	*0.66*	0.78	0.87	0.81	**0.95**	0.86
*Prop. On Track in Grade 9 (Continuous, 0-1)	0.87	*0.76*	0.83	0.91	0.87	**0.96**	0.89
*College Career Rate (Continuous, 0-1)	0.68	*0.47*	0.61	0.74	0.69	**0.86**	0.70
School Demographics							
*Total Enrollment (Continuous)	1446	832	*759*	1237	**3017**	1066	1385
Proportion Asian (Continuous, 0-1)	0.18	*0.06*	0.08	0.20	**0.28**	**0.28**	0.13
Proportion Black (Continuous, 0-1)	0.26	**0.40**	0.35	0.26	0.16	*0.14*	0.28
Proportion Hispanic (Continuous, 0-1)	0.37	0.48	**0.49**	0.39	*0.25*	0.26	0.36
Proportion White (Continuous, 0-1)	0.17	*0.05*	0.06	0.14	**0.29**	**0.29**	0.21
*Proportion Same Race as Applicant (Continuous, 0-1)	0.37	**0.49**	0.48	0.36	0.30	*0.26*	0.32
Proportion in Poverty (Continuous, 0-1)	0.70	**0.81**	0.80	0.70	0.63	*0.53*	0.63
*Proportion Female Students (Continuous, 0-1)	0.51	*0.44*	0.49	0.51	0.50	0.58	**0.63**
Interests							
*Interest in Art (Binary)	0.11	0.16	0.09	0.05	0.07	*0.02*	**0.66**
*Interest in Math/Science (Binary)	0.20	0.18	0.22	**0.24**	0.22	0.18	*0.05*
Method of Admission							
*Applied to an Exam-Based Specialized HS (Binary)	0.34	*0.09*	0.18	0.39	0.38	**0.76**	0.31
*Applied to an Audition-Based Specialized HS (Binary)	0.13	*0.07*	0.08	0.10	0.08	0.22	**0.62**
*Academic Screen (Binary)	0.38	*0.12*	0.21	0.49	0.39	**0.86**	0.15

*Audition (Binary)	0.06	*0.02*	*0.02*	*0.02*	0.04	*0.02*	**0.58**
Interview (Binary)	0.06	0.02	0.03	0.05	*0.01*	**0.21**	0.06
Essay (Binary)	0.09	*0.03*	0.06	0.09	*0.03*	**0.31**	0.06
Academic, Club and Sport Offerings							
*AP Calculus (Binary)	0.69	*0.46*	0.52	0.73	**0.95**	0.76	0.64
*Music Club (Binary)	0.63	0.49	*0.47*	0.55	**0.83**	0.80	0.72
Model UN Club (Binary)	0.29	*0.09*	0.13	0.27	0.42	**0.65**	0.18
Robotics Club (Binary)	0.29	0.26	0.22	0.34	**0.42**	0.21	*0.15*
*Football Team (Binary)	0.33	0.49	0.28	0.15	**0.62**	*0.13*	0.18
Features							
*Uniform Required (Binary)	0.16	**0.29**	**0.29**	0.15	*0.02*	0.08	0.08
Extended Day Program (Binary)	0.46	0.47	0.46	**0.52**	0.49	*0.30*	0.49
*Career & Technical Education (Binary)	0.10	0.14	0.12	**0.16**	0.03	*0.02*	0.13
Student Survey							
*School offers Variety of Programs (Continuous, 0-1)	0.80	*0.76*	0.78	0.80	**0.85**	0.81	0.78
*Safe Travel to School (Continuous, 0-1)	0.85	*0.78*	0.83	0.87	0.86	**0.92**	0.87
*Safe Hallways (Continuous, 0-1)	0.86	*0.80*	0.85	0.89	0.83	**0.94**	0.88
Students Bully (Continuous, 0-1)	0.17	**0.25**	0.19	0.14	0.19	*0.08*	0.15
Gang Activity (Continuous, 0-1)	0.15	**0.23**	0.17	0.12	0.16	*0.07*	0.12
Count	77654	11257	16373	16282	18904	10403	4435
Proportion of All Applicants	100%	14%	21%	21%	24%	13%	6%

Table 1 Characteristics of School Choices, by Cluster. All variables represent the average value or proportion of applicants' 5 highest-ranked choices. For each variable, the highest value is **bolded** and the lowest value is *italicized*. *Asterisks denote variables that were included in the clustering model.

Predictor	Full Sample	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6
Travel time ≤ 30 minutes	0.0464***	0.124***	0.109***	0.102***	-0.0116	-0.0105	-0.0860***
	(0.00490)	(0.0127)	(0.00931)	(0.0100)	(0.0133)	(0.0138)	(0.0217)
Graduation rate >= 80%	0.196***	-0.126***	0.194***	0.288***	0.406***	0.296***	0.157***
	(0.00504)	(0.0145)	(0.00904)	(0.0100)	(0.0148)	(0.0175)	(0.0226)
Total enrollment >=600 students	0.0488***	0.0376**	-0.0250*	0.0304**	0.313***	0.112***	0.0649**
	(0.00508)	(0.0139)	(0.00984)	(0.00989)	(0.0220)	(0.0117)	(0.0226)
Majority same race as students	0.0443***	0.0838***	0.0702***	0.0461***	0.0204	0.0147	-0.0643**
	(0.00552)	(0.0144)	(0.0103)	(0.0107)	(0.0188)	(0.0160)	(0.0233)
Interest: Art	0.0774***	0.121***	-0.0107	-0.0841***	0.137***	-0.0792	0.416***
	(0.00854)	(0.0170)	(0.0154)	(0.0209)	(0.0251)	(0.0538)	(0.0287)
Interest: Math and science	0.0750***	0.0449**	0.0737***	0.138***	0.201***	-0.0744***	0.0168
	(0.00525)	(0.0146)	(0.0105)	(0.0104)	(0.0136)	(0.0137)	(0.0347)
Admissions: Academic screen	0.139***	-0.0192	-0.103***	0.0644***	0.320***	0.539***	0.0754**
	(0.00509)	(0.0167)	(0.0109)	(0.00941)	(0.0129)	(0.0157)	(0.0257)
Admissions: Audition	0.495***	0.0125	-0.0309	0.243***	0.431***	0.640***	0.877***
	(0.0127)	(0.0382)	(0.0311)	(0.0343)	(0.0357)	(0.0618)	(0.0292)
Offers AP Calculus	0.0804***	0.0333**	0.0509***	0.131***	0.384***	0.129***	0.0977***
	(0.00485)	(0.0123)	(0.00886)	(0.00977)	(0.0217)	(0.0129)	(0.0215)

Has football team	-0.0431***	0.105***	-0.0515***	-0.171***	0.0392**	-0.0967***	-0.109***
	(0.00522)	(0.0119)	(0.00967)	(0.0119)	(0.0152)	(0.0163)	(0.0265)
Requires uniform	-0.0488***	0.00390	-0.00282	-0.0867***	-0.195***	-0.173***	-0.134***
	(0.00546)	(0.0119)	(0.00910)	(0.0113)	(0.0296)	(0.0180)	(0.0279)
Offers extended day program	-0.00832*	-0.0517***	0.0218**	0.0859***	0.137***	-0.173***	0.0214
	(0.00412)	(0.0107)	(0.00794)	(0.00844)	(0.0123)	(0.0119)	(0.0170)
Career and Technical Education	0.0832***	0.207***	0.0770***	0.177***	-0.383***	0.0132	0.0839**
	(0.00706)	(0.0164)	(0.0128)	(0.0133)	(0.0295)	(0.0309)	(0.0291)
Safety in hallways >= 85%	0.0673***	-0.0732***	0.0254*	0.160***	0.287***	0.286***	0.193***
	(0.00594)	(0.0133)	(0.0101)	(0.0130)	(0.0179)	(0.0271)	(0.0273)
Student bullying <= 15%	0.123***	-0.0948***	0.0361***	0.139***	0.0679***	0.430***	0.107***
	(0.00581)	(0.0164)	(0.0105)	(0.0113)	(0.0183)	(0.0199)	(0.0262)
Observations	421397	59759	103307	99185	71177	61278	26683
Cases	61193	8454	13424	13419	13625	8443	3827

Table 2. Results from rank-ordered logistic regression models, for the full sample and separately by cluster. Model coefficients are estimated using maximum likelihood estimation, and represent the log-odds of ranking a school higher than the alternatives in an applicant's choice set. All predictors are binary. *Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

VARIABLE	Full Sample	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6
Female	0.49	*0.39*	0.48	0.47	0.47	0.57	**0.77**
Race							
Asian	0.16	*0.04*	*0.04*	0.17	0.29	**0.31**	0.07
Hispanic	0.40	0.50	**0.54**	0.43	*0.25*	0.26	0.38
Black	0.28	**0.41**	0.37	0.29	*0.15*	0.16	0.38
White	0.14	0.04	*0.03*	0.10	**0.30**	0.25	0.15
English Language Learner	0.10	**0.18**	0.16	0.08	0.10	*0.02*	0.04
Foreign Born	0.19	0.19	**0.20**	0.19	**0.20**	0.16	*0.11*
Home Language							
English	0.57	0.63	0.57	0.56	*0.48*	0.57	**0.73**
Spanish	0.25	0.31	**0.35**	0.27	0.16	*0.13*	0.18
Chinese	0.06	*0.01*	*0.01*	0.04	**0.15**	0.12	0.02
Special Education	0.17	**0.31**	0.22	0.13	0.13	*0.04*	0.14
Free or Reduced-Price Lunch Eligible	0.75	**0.85**	**0.85**	0.76	0.68	*0.57*	0.69
Shelter or Temporary Housing	0.06	**0.11**	0.09	0.05	*0.03*	*0.03*	0.06
Borough							
Brooklyn	0.30	0.31	0.28	0.27	**0.38**	*0.22*	0.33
Manhattan	0.11	0.05	0.13	0.13	*0.00*	**0.30**	0.10
Queens	0.30	*0.11*	0.15	**0.46**	0.37	0.33	0.34
Staten Island	0.07	0.03	*0.01*	*0.01*	**0.24**	*0.01*	0.05
Bronx	0.22	**0.50**	0.43	0.13	*0.01*	0.15	0.18
Top Quartile of 8th Grade Math/English Test Scores	0.23	*0.03*	0.08	0.22	0.31	**0.55**	0.21
Bottom Quartile of 8th Grade Math/English Test Scores	0.22	**0.49**	0.35	0.14	0.14	*0.02*	0.17
From Private Middle School	0.08	*0.02*	0.03	0.09	0.09	**0.17**	0.10
From Charter Middle School	0.03	*0.01*	0.03	**0.04**	*0.01*	**0.04**	**0.04**

Table 3. Characteristics of Applicants, by Cluster. All variables are binary. For each variable, the highest value is **bolded** and the lowest value is *italicized*.

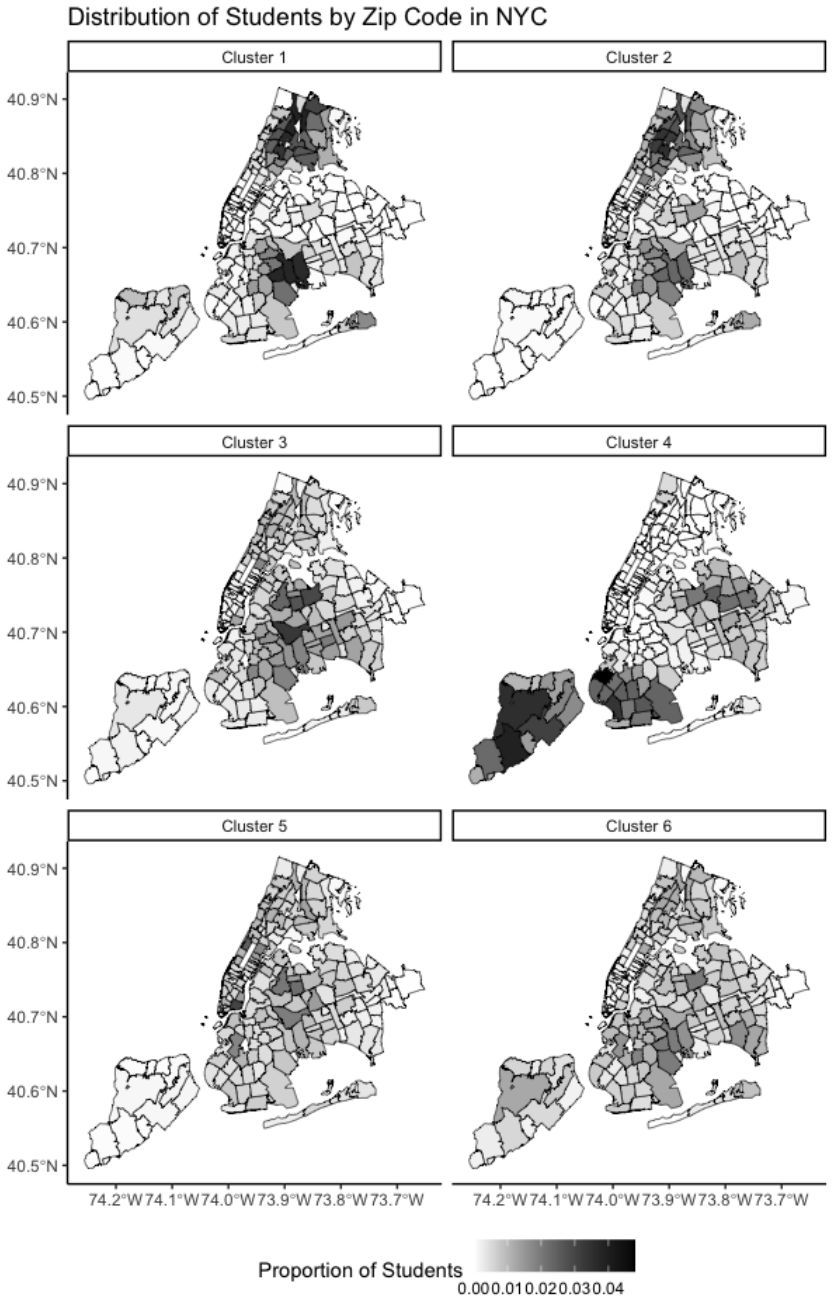


Figure 1. Geographic Distribution of Students, by Cluster. Darker areas indicate a higher concentration of students.

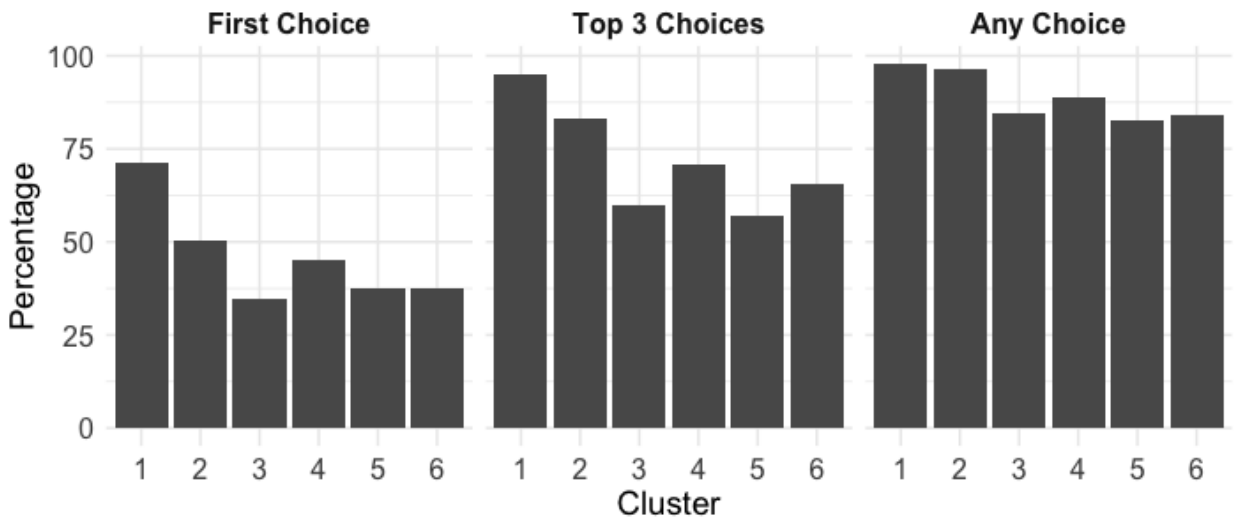


Figure 2. Match Rates by Cluster. "First Choice" refers to the first choice in the main Round 1 application, in addition to any specialized high school offer. Similarly, "Top 3 Choices" and "Any Choice" include offers from any specialized high schools.

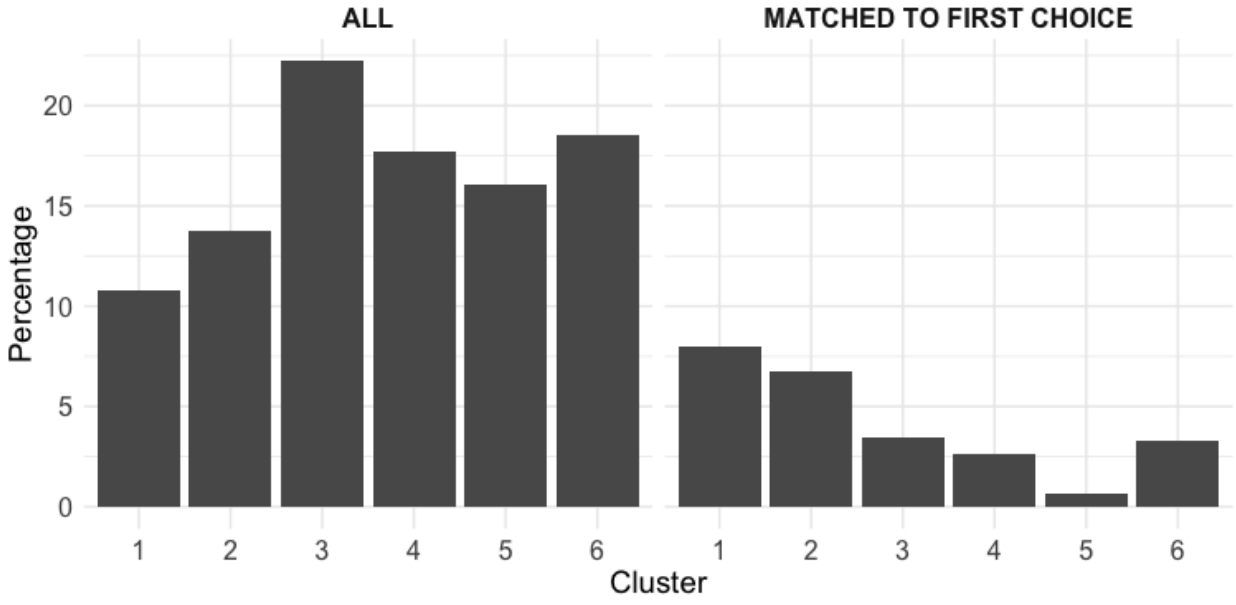


Figure 3. Round 2 Participation by Cluster, Total, and Conditional on Being Matched to First Choice in Round 1.

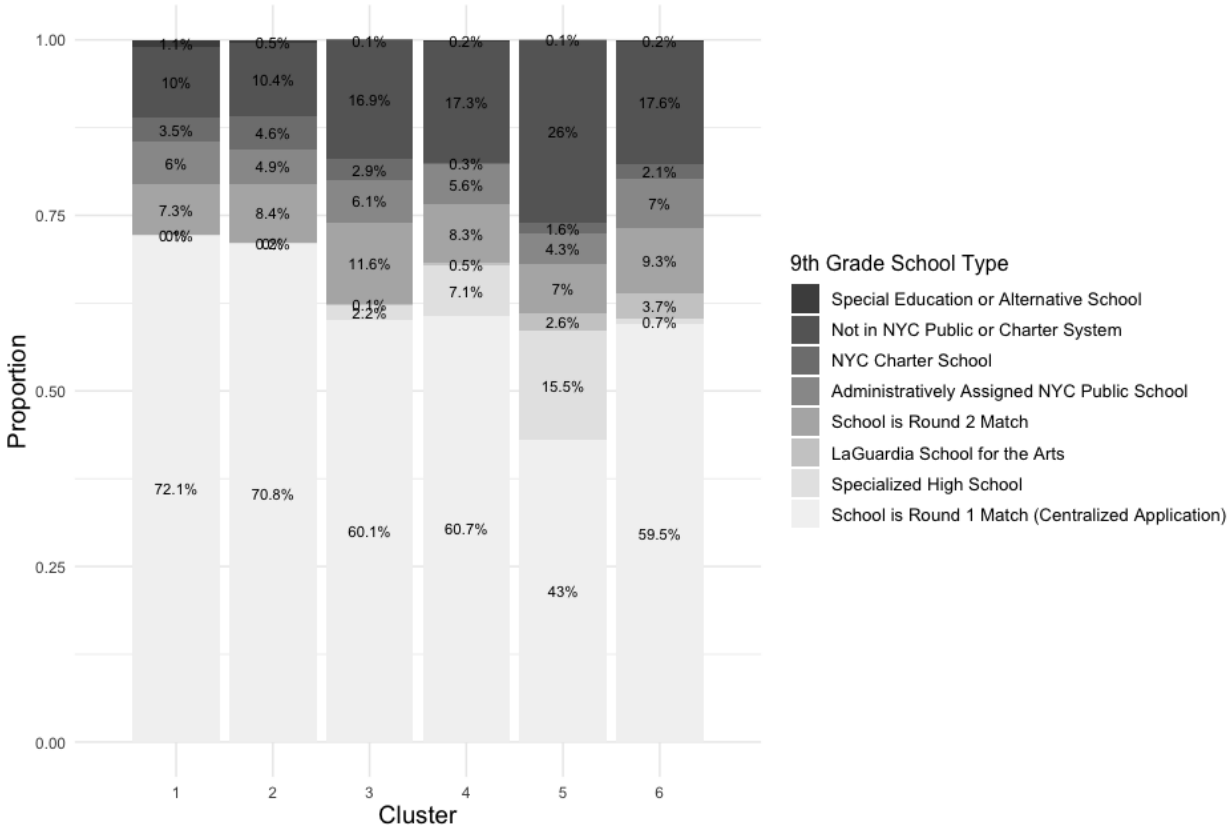


Figure 4. How Students Secured Enrollment at their Ninth Grade School, by Cluster

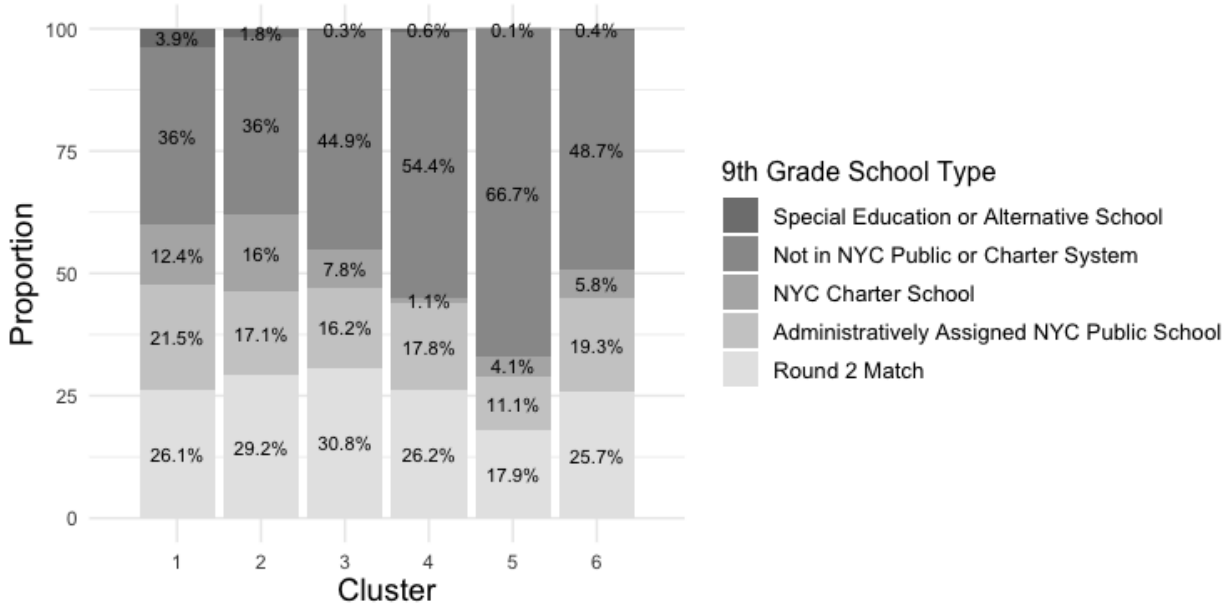
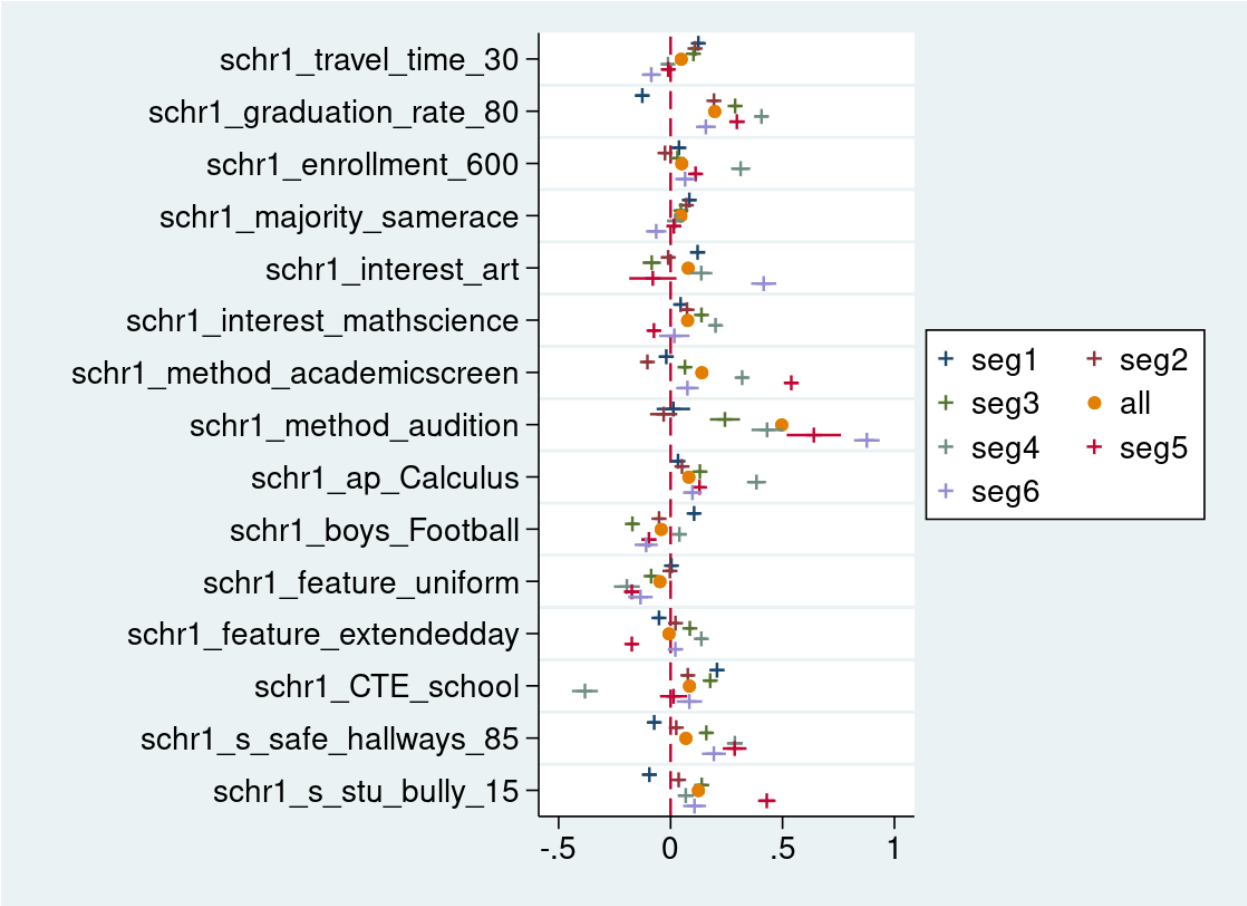


Figure 5. How Students Secured Enrollment at their Ninth Grade School, by Cluster, Conditional on *Not* Enrolling in their Round 1 Match.

Appendix Tables and Figures

Number of classes	Degrees of Freedom	Log Likelihood	AIC	BIC
4 classes	128	-486557	973369	974348
5 classes	154	-481179	962666	963844
6 classes	180	-470534	941429	942805
7 classes	206	-464940	930291	931867

Appendix Table A. Goodness-of-fit statistics for latent profile analyses with different numbers of classes.



Appendix Figure A. Coefficient plot of Ranked-Choice Logit Models (Table 2).

Chapter Two

The Paradox of Prestige: How Selective High Schools Shape Advanced Math Enrollment

Abstract

This study examines the impact of attending selective high schools on advanced mathematics course-taking opportunities, challenging the assumption that such schools uniformly benefit students, and investigating how different organizational structures shape students' course-taking opportunities. Using student-level data from New York City, the study compares students just above and below selective schools' admissions cutoffs to evaluate the local average treatment effects on advanced math course-taking. I find that the effects of selective high school enrollment on individual students' advanced math opportunities are relatively modest and highly variable across schools. Overall, this study highlights the importance of schools' organizational structures on course-taking opportunities and challenges the notion that more selective schools confer opportunities to all students.

Introduction

Elite and selective schools have long been characterized by their rigorous academic environments, prestigious reputations, and exceptional peer networks, which are believed to confer significant social and educational benefits. While attending more elite schools may confer symbolic benefits such as institutional prestige or status (Gaztambide-Fernandez, 2009; Khan, 2012), the empirical evidence on their impact on actual educational outcomes is mixed and inconclusive (Abdulkadiroğlu et al., 2014; Estrada & Gignoux, 2017). This gap in understanding raises crucial questions about the extent to which the perceived advantages of these schools extend beyond status to material skills, and whether these benefits are uniformly experienced by all students.

To address this gap, this study investigates the relationship between high school selectivity and mathematics course-taking patterns, estimating the causal effect of admission to a *more selective* high school. I focus on a subset of elite public high schools in New York City to provide insights into the sorting dynamics at play within and between highly selective educational institutions. Specifically, the study compares students just above and below selective schools' admissions cutoffs to evaluate the local average treatment effects (LATE) on advanced math course-taking. By examining the course-taking trajectories of students around admissions cutoffs, I assess the heterogeneous impacts of selective schooling on access to advanced curricular opportunities, carefully examining the interaction of between-school (e.g., selective admissions) and within-school (e.g., curricular tracking) sorting mechanisms in shaping educational opportunities.

I find that students attending specialized high schools were more likely to enroll in schools where a higher proportion of students ever took advanced math coursework. However,

when I limit my analysis to the curricular trajectories of students around admissions cutoffs, I estimate a negative effect on advanced math course-taking. Moreover, I highlight substantial variation in local average treatment effects *across* selective schools. Students were the least likely to enroll in advanced math coursework in schools whose curricular structures impose internal barriers or hierarchies, such as honors tracks or caps on Advanced Placement (AP) courses.

The findings of this study suggest that selective schools may not uniformly improve students' acquisition of human capital. Regardless of whether elite schools confer social status, the conferral of skills varies based on the organizational structure of these institutions. Even after merit-based admissions systems that produce cohorts of students that are within a narrow band of ability, schools sometimes replicate organizational structures such as tracking and internal hierarchies, which may negatively affect the academic opportunities of students who are around admissions cutoffs. In all, this study underscores the need to reevaluate the role of organizational structures within schools to better understand to what extent, and in what cases, elite schools benefit their admitted students.

Background

The Purported Benefits of Elite and Selective Schools

Elite and selective schools are often perceived in the public imagination as contexts that offer students enhanced social status, rigorous academic curricula, and access to exceptional resources. The literature on elite schools is replete with studies emphasizing the symbolic or status-based benefits for students attending these institutions (Chiang, 2022; Gaztambide-Fernandez, 2009; Khan, 2012). However, it is less understood the extent to which these schools

provide material benefits to students, particularly in terms of skill acquisition, academic performance, and course placements. While some studies suggest that attending selective schools increases learning achievement, college graduation outcomes, and earnings potential (Estrada & Gignoux, 2017), other research indicates that these schools may not significantly impact overall academic performance (Abdulkadiroğlu et al., 2014; Anderson et al., 2016; Barrow et al., 2020; Clark, 2010; Dobbie & Fryer, 2014). The inconclusive findings highlight a critical gap: we do not fully understand whether the benefits of elite schools extend beyond symbolic value and to what extent, or under what conditions, students receive material benefits and skills.

Moreover, the notion that selective schools uniformly confer advantages to all students is increasingly questioned. Evidence suggests that students from lower-SES neighborhoods or those with lower prior academic performance may experience negative effects on academic outcomes, despite attending these prestigious institutions (Barrow et al., 2020; Divényi & Sovago, 2021; Shi, 2020). This raises essential questions about how the purported advantages of selective schools are distributed among different student groups. Access to these schools does not necessarily beget benefits for all students, highlighting the need to investigate the dynamics underlying heterogeneous impacts. Moreover, the impact of attending a selective school depends significantly on organizational factors and allocation processes, including the different sorting mechanisms that take place between and within schools (Domina et al., 2023).

Sorting Between and Within Schools

In the United States, students have historically been sorted between schools and school districts based on their residential addresses. However, with the expansion of school choice options, this sorting process has become more complex. Many selective schools in large school

districts now use academic criteria for admissions, leading to peer groups that reflect differences in academic performance and socioeconomic capital rather than simply geography (Barrow & Sartain, 2017). Under these policies, students obtain access to educational experiences with different peer environments and resources.

Once students enroll in their schools, they are further sorted into different curricular pathways based on various factors. The United States has a long history of grouping students into different curricular opportunities based on ability, known as "tracking" (Domina et al., 2019; Gamoran, 1992; Hallinan, 1994). Proponents of academic tracking argue that grouping students by ability results in better learning opportunities for students in diverse settings, although there is little empirical evidence supporting these claims (Gamoran, 1992). Often, education scholars view tracking as a tool used to reinforce social inequality (Gamoran & Mare, 1989; Oakes, 1985). Students may be placed into different courses based on various factors, including teacher recommendations, prior academic performance, and the opportunity to receive college credits through Advanced Placement (AP) or International Baccalaureate (IB) courses (Klopfenstein & Lively, 2016). Teachers also play key roles in student course-taking decisions, and teacher expectations can create self-fulling prophecies that shape students' self-evaluations, motivations, and decisions (Brophy, 1983; Jussim & Harber, 2005; Kelly & Carbonaro, 2012). Despite the substantial body of research on curricular tracking within schools, the interaction between internal tracking mechanisms and admissions policies has not been fully examined, particularly in the context of selective school admissions that produce academically homogeneous student cohorts.

The frog-pond model provides a useful framework for understanding how students' academic opportunities and outcomes are influenced by their relative standing within their peer

group (Davis, 1966; Espenshade et al., 2005; Goldsmith, 2011). According to this model, students are purported to perform better when they are "big frogs" in small ponds. Moreover, some studies suggest that high-achieving peers can negatively impact students when they are in direct competition, such as in class rank or college admissions (Attewell, 2001; Espenshade et al., 2005), although other research indicates that high-achieving peers can also benefit lower-achieving students (Legewie & DiPrete, 2012; Sacerdote, 2011). To better grasp the implications of these frog-pond dynamics, it is important to consider how peer influence interacts with different organizational structures to shape students' access to coursework.

The organizational structures of elite schools introduce another layer of complexity. Even within the same school district, schools maintain different policies vis-à-vis the allocation of curricular placements. School-level policies and practices may be influenced by pedagogical frameworks, district pressures, and student demands, and are further complicated by financial constraints, as better-funded schools with more qualified teachers can offer additional courses beyond state requirements (Warner & Ready, 2019). Even when these policies are introduced at the state or district level, schools vary in the local implementation of these policies (Handsman et al., 2022; Hanselman et al., 2022; Nomi, 2012). Within the literature on academic tracking, scholars have suggested that different tracking structures lead to different student outcomes (Domina et al., 2019; Gamoran, 1992). Schools with hierarchical structures often create competitive environments for advanced coursework, which can disadvantage some students despite their high prior academic performance (Domina et al., 2016; Hanselman et al., 2022). Conversely, schools with flatter organizational structures may offer broader access to advanced classes and promote a more equitable learning environment (Bryk et al., 1993). Some of these differences may be a function of school size, as larger schools tend to have greater curricular

differentiation (Bryk et al., 1993; Hanselman et al., 2022; Warner & Ready, 2019). This variation among schools that serve relatively homogenous student bodies underscores the need to explore how different organizational features impact student course-taking opportunities.

Current Study

This study investigates the relationship between high school selectivity and individual course-taking patterns, with a particular focus on the causal effects of attending more selective specialized high schools on enrollment in advanced math classes. Existing literature underscores the significance of advanced math coursework, linking it to higher high school graduation rates (Gamoran & Mare, 1989; Long et al., 2012), greater college enrollment (Byun et al., 2015; Long et al., 2012; St. John & Chung, 2006), improved college success (Attewell & Domina, 2008; Long et al., 2012), and increased workplace earnings (Joensen & Nielsen, 2009; Rose & Betts, 2004). Moreover, students in advanced courses often benefit from better classroom instruction and have higher exposure to experienced teachers (Gamoran, 1992; Hallinan, 1994). Finally, students in these courses are more likely to put more effort into their schoolwork and have positive attitudes about their learning (Carbonaro, 2005; Gamoran, 1992; Oakes, 1985).

The study uses a regression-discontinuity design to investigate how attending a more selective high school affects students' advanced math course-taking, particularly for those on the cusp of admission. This robust methodological approach isolates the causal impact of selective school attendance by comparing students just above and below the admissions cutoff. By focusing on a specific cohort of competitive specialized high schools in New York City, the study offers insights into the dynamics of highly selective educational institutions and their effects on students' curricular trajectories.

This study contributes to the existing literature in several ways. First, it assesses the material benefits of elite schooling by examining to what extent, and under what circumstances, attending a more selective high school influences students' enrollment in advanced math courses. Second, it provides a nuanced understanding of the interplay of between-school and within-school sorting mechanisms. Specifically, it reveals how students' course-taking patterns are influenced not only by their initial sorting into schools but also by the internal processes within schools—a dynamic often overlooked in existing research. Third, it explores how variations in organizational structures affect students' access to advanced coursework, highlighting how different curricular arrangements can differentially shape educational opportunities. By elucidating the role of school selection and organizational structures in shaping student trajectories, it provides valuable insights for researchers, policymakers, and educators in understanding counterintuitive mechanisms that shape educational disparities.

Research Questions

This paper addresses three primary research questions:

1. How does admission to a more selective high school influence the share of a student's peers who take advanced math courses?
2. What is the local average treatment effect (LATE) of attending a more selective high school on the likelihood of taking advanced mathematics courses for students at the boundary of admission?
3. How do organizational policies and practices shape the advanced math course-taking opportunities of students admitted at the margin of selective high schools, and to what extent does this vary across different institutions?

The first research question examines the influence of selective high school admission on the proportion of a student's peers who take advanced math courses. This question is designed to assess whether students at selective schools are more likely to be surrounded by peers who take advanced math, which could potentially increase their own likelihood of doing so. This leads to the second research question, which focuses specifically on students near the admissions boundary. For students just above the cutoff, the effects of selective school enrollment on advanced math course-taking may not be affected solely by peer composition, but also by organizational practices that vary across schools.

On one hand, students who enroll in more selective high schools may be more likely to have access to higher-level classes due to institutional capacity and student demand (Warner & Ready, 2019). On the other hand, students who enroll in specialized high schools may find themselves as metaphorical smaller frogs in big ponds, less likely to be placed in the same classes as higher-ability peers (Crosnoe, 2009; Davis, 1966; Espenshade et al., 2005; Goldsmith, 2011). Moreover, the causal effects of selective school enrollment on advanced math course-taking may be mediated by organizational practices that vary across institutions, such as curricular tracking, prerequisites to advanced coursework, and the number of seats available in such courses.

To effectively address these questions, it is not enough to analyze descriptive data due to the differential selection of students into schools. The average student attending more selective schools may systematically differ from the average student attending less selective schools in ways that are unobservable. One way to bypass these issues and attain causal estimates is to employ a regression-discontinuity approach (Abdulkadiroğlu et al., 2005, 2014; Dobbie & Fryer,

2014). By only comparing the students who scored barely above and below the admissions cutoff, this study can draw causal inferences about enrollment at more selective high schools.

The New York City Specialized High School Application Process

Every year, tens of thousands of students apply to enter specialized high schools in New York City. These high schools have attracted students and parents for over a century, boasting access to rigorous curricula and high-achieving peers. There are currently eight specialized high schools in New York City that use the Specialized High School Admissions Test (SHSAT), displayed in Table 1. The three largest and most established schools are Stuyvesant High School (founded in 1904), Brooklyn Technical High School (1922), and The Bronx High School of Science (1938). These three schools are also commonly referred to as the "Big Three".

[Table 1 about here]

Table 1 displays selected demographic characteristics of entering cohorts at specialized high schools between 2011 and 2015. Consistent with the findings of Corcoran and Baker-Smith (2018), the NYC specialized high schools tend to have lower proportions of Black and Hispanic students and lower proportions of female students. Moreover, students in these schools score higher on 8th-grade standardized tests than the average student in a NYC public school. Finally, there is considerable variation among these institutions, particularly in test scores and school size.

The SHSAT, which includes verbal and math sections, is the only criterion for admission at the eight specialized high schools. To be eligible to take the SHSAT, students must be New

York City residents in 8th or 9th grade, although almost all seats (approximately 98 percent) are offered to current 8th graders (see Supplementary Table A for details). The test is administered once per year, and students rank their school preferences at the time of testing. Students may choose to list as few as one or as many as eight specialized high schools (New York City Department of Education, 2014). Between 2010 and 2015, 40 percent of students ranked all eight specialized high schools, while only 6.3 percent ranked only one choice (Appendix Table A).

After students take the SHSAT, their scores for each section are scaled and combined into a composite score (NYC Department of Education, 2014). New York City uses a centralized school choice process that uses a deferred acceptance algorithm to assign students to schools based on their rankings and test scores (for more details, see Abdulkadiroğlu et al., 2005). Because each school's cutoff varies from year to year and is dependent on the students who select each school, it is impossible to know what the cutoffs will be ahead of time. Cutoffs for all specialized high schools from 2010-2015 can be found in Appendix Table B. Regardless of whether a student qualifies for admission at a specialized high school, they may also receive an offer at a non-specialized high school. During the study period, 89 percent of students who received a specialized high school offer also received an offer from another NYC public school. Students receive their SHSAT results, specialized school offers, and non-specialized school offers at the same time.

Data

This study uses restricted student-level data provided by The Research Alliance for New York City Schools, containing datasets on specialized high school admissions, course-taking, and student demographics for all NYC public school students.

The analytic sample consists of students who took the SHSAT and applied to at least one specialized high school between 2010 and 2015. Additionally, students not enrolling in a NYC public high school are excluded due to missing data regarding their course-taking patterns. Then, I create a subsample for each school that includes only students who would have been matched to that school based on their SHSAT score and their ranked preferences[1]. More information on the students eligible for inclusion in each sample can be found in Supplementary Table B. Finally, I exclude private school applicants, who are significantly less likely to enroll in a New York City public school in 9th grade if they fall short of the cutoff, affecting selection[2].

Measures

I operationalize advanced math coursework in the following ways:

- **Calculus enrollment:** A binary variable indicating whether a student enrolled in at least one calculus class during high school.
- **Enrolling in a calculus course beyond Calculus I:** A stricter measure that identifies students taking two or more years of calculus or equivalent courses, including AP Calculus BC, IB Math Higher Level, Multivariate Calculus, or Differential Equations.
- **Advanced Placement (AP) or International Baccalaureate (IB) Math enrollment:** A binary indicator indicating enrollment in any Advanced Placement or International Baccalaureate class. These classes give students the potential to earn college credits and use a standardized curriculum. This binary indicator is coded 1 if a student took either AP Calculus AB, AP Calculus BC, AP Statistics, or IB Mathematics[3].

All course-taking variables were constructed using course codes and titles. All specialized high schools offered advanced math courses, and every school offered at least one AP Calculus course except for Brooklyn Latin, which followed the International Baccalaureate curriculum.

[Table 2 about here]

Table 2 shows the percentage of students entering each specialized school who ever took advanced math coursework using each of the three indicators. Column 1 shows that roughly 70 percent of students attending specialized schools in 9th grade took calculus at some point. Notably, at some high schools, such as the Bronx High School of Science (93.6%) and the High School for Math, Science, and Engineering at City College (90.1%), nearly all students took calculus. Column 2 indicates that approximately 20 percent of students attending specialized schools enrolled in a calculus course that was more advanced than a first-year calculus course, with considerable variation across schools. Column 3 reveals that over 60 percent of students took at least one Advanced Placement (AP) or International Baccalaureate (IB) math course. Finally, the proportion of students taking advanced math courses was lower among all applicants compared to those enrolled in specialized high schools. Specifically, 35.2 percent of all applicants took calculus, 8.8 percent enrolled in an advanced calculus course, and 29.3 percent took at least one AP or IB math course.

Analytic Method

To estimate the causal effect of enrollment in a specialized high school on advanced math course-taking, I use a fuzzy regression discontinuity design (RDD), exploiting the admissions cutoffs of NYC specialized high schools (Abdulkadiroğlu et al., 2014; Dobbie & Fryer, 2014). Fuzzy RDD is particularly useful when a threshold encourages participation in a program but does not force units to participate, as is the case with specialized school admissions. Students scoring above the cutoff were encouraged to attend a specialized high school, but admission is voluntary. I allow for robust estimation of treatment effects near the cutoff (Calonico et al., 2017).

Because students do not randomly enroll in specialized schools, the treatment must be instrumented by admission to that school, which is considered random around the point of discontinuity. For each school, I calculate a standardized running variable based on students' SHSAT scores and the number of students who would enroll at school *k* if admitted, as follows:

$$(1)\ r_{ik} = \frac{100}{N_k} \times (\tau_{ik} - c_{ik}),$$

where c_{ik} is a student *i*'s overall rank, τ_{ik} is the rank of the lowest-ranked student admitted to school *k*, and N_k is the number of students in each cohort that would attend school *k* if their score was above the school's threshold. The running variable helps define the instrument as 1 if a student is above the cutoff for admission and 0 if a student is below the cutoff for admission each year. The treatment variable in this study is whether a student enrolls in each school *k* in grade 9.

Key assumptions underlying the fuzzy RDD approach include the *exclusion restriction* (specialized high school offers affect course-taking patterns solely by altering the institutional

context), *monotonicity* (no student is discouraged from enrolling in a specialized high school if given an offer), *and local exogeneity* (students barely above and below the cutoff are randomly distributed. The method provides local average treatment effects (LATE) and is limited to making inferences about students close to the boundary of admission cutoffs.

The analysis involves a two-stage least squares (2SLS) approach. First, it tests the first-stage relationship between admission to a given specialized high school and enrollment in that school. Then, it estimates the effect of specialized high school enrollment on the likelihood of taking advanced coursework. The first stage equation is displayed as Equation 2 and the second stage equation as Equation 3:

$$(2)\ Enroll_i = \alpha r_i + \beta Admit_i + \theta(r_i \times Admit_i) + \phi\, \mathrm{X}_i + u_i$$

$$(3)\ Adv_i = \alpha r_i + \beta \widehat{Enroll}_i + \theta(r_i \times \widehat{Enroll}_\iota) + \delta \mathrm{X}_i + \varepsilon_i,$$

where $Admit_i$ represents admission to a given specialized high school, $Enroll_i$ represents enrollment in each specialized high school, Adv_i represents the different set of outcome variables corresponding to advanced coursework, r_i is the standardized running variable, and X_i is a vector of cohort fixed effects. Standard errors are clustered at the cohort level.

Observations are weighted using a triangular kernel function, where h is the bandwidth and r_i is the standardized running variable (see Equation 4). This ensures that observations that are closer to the cutoff are weighted more heavily than observations that are further away from the cutoff. The bandwidth is determined through a bias-corrected power analysis, ensuring robustness in the estimation process (Calonico et al., 2017).

$$(4)\ w_{ik} = \mathbf{1}\left\{\frac{|r_{ik}|}{h} \leq 1\right\} \cdot \left(1 - \frac{|r_{ik}|}{h}\right),$$

Finally, I calculate pooled estimates using robust bias-corrected inferences (Cattaneo et al., 2020). In this study, students may appear in multiple samples (e.g., below the cutoff at one school but above the cutoff at another school). To avoid duplications in the pooled estimates, I only include students in the sample where their standardized rank score, r_{ik}, is closest to zero. Pooled estimates are also computed for the "Big 3" schools to align with existing research on exam schools.

Results

Regression Discontinuity Approach

Table 3 displays the percentage of students above and below each school's cutoff who (a) enrolled at each specialized high school and (b) enrolled at *any* specialized high school. Estimates are weighted using a triangular kernel centered on each school's cutoff.

[Table 3 about here]

Enrollment in specialized high schools is probabilistic, as not all admission offers are accepted. Students who fell right above the cutoffs were substantially more likely to enroll in each school than those right below the cutoff, although this varied across schools. For example, 92.8 percent of students admitted to Stuyvesant High School enrolled, while only 34.8 percent of students admitted to Brooklyn Latin did. At some schools, such as Brooklyn Latin and Brooklyn Tech, a small percentage of students below the admissions cutoffs enrolled in those schools.

During this period, some students scoring slightly below the cutoff might have participated in the Discovery Program, which offers admission after a summer program (for more details, see NYC Department of Education, 2014). Finally, conditional on enrolling in a specialized high school in 9th grade, students are unlikely to transfer schools. Only six percent of students who enrolled in a specialized high school in 9th grade subsequently transferred schools, compared to 17 percent of all applicants.

Where did students enroll if they did not attend each of the specialized high schools? The right-most column of Table 3 reveals the proportion of students around admission cutoffs who enrolled at *any* of the eight specialized high schools. Generally, students who did not gain admission to their top-choice school tended to enroll in another specialized school. Notable exceptions are Brooklyn Latin and Brooklyn Tech, which often have the lowest cutoffs. Supplementary Table C breaks down student enrollment choices even further and highlights the most enrolled schools for students directly above and below each school's cutoff.

The fuzzy RDD approach assumes that among students around the cutoff, those who are admitted differ from those who are not admitted solely due to random chance. To test this assumption, I compare the characteristics of students above and below each cutoff. Supplementary Table D estimates covariate discontinuities for gender, race/ethnicity, free or reduced lunch eligibility, and 8th-grade math scores for all eight schools using regression discontinuity with bias-corrected standard errors. These covariates are balanced around the cutoffs, supporting the validity of the fuzzy RDD approach.

The first research question examines the influence of selective high school admission on the proportion of a student's peers who take advanced math courses. Before looking at the local average treatment effects for individual students at the boundary, I predict the proportion of a

student's 9th-grade cohort who took advanced math coursework using each of the three indicators. Cohorts are defined by year and 9th-grade school, with individual students excluded from the calculation of their own school-cohort proportions.

[Table 4 about here]

Table 4 presents the results from bias-corrected regression discontinuity analyses, predicting the proportion of a student's peers who ever took advanced math coursework. The first stage estimates are all statistically significant, meaning that at the boundary, falling above the admissions cutoff was strongly predictive of enrollment to that school. At almost all schools, students above the admissions cutoff enrolled in schools where a higher proportion of peers ever took a calculus course. The pooled result suggests that enrolling in a more selective specialized high school was associated with a 13 percent increase in the share of peers who ever took calculus. However, at one school, the High School for American Studies at Lehman College, students above the cutoff attended schools with a lower proportion of peers who took calculus.

The effects of attending a more selective high school on peer-level proportions of advanced calculus and AP or IB math classes were mixed. At some schools, students were more likely to take these advanced math courses, but at others, there was not a statistically significant difference between students above and below the admissions cutoffs. Moreover, the pooled results for advanced calculus and AP/IB math courses were not statistically significant at $p < 0.05$. Overall, students admitted to more selective high schools tended to be among peers who were either more likely or just as likely to take advanced math coursework than those not admitted. If advanced math course-taking were uniformly distributed among all students

admitted to selective high schools, we would expect students at the cutoff to be more likely to take calculus and equally likely to take advanced calculus or AP/IB math courses. However, students at the boundary might differ from the average student in terms of their access to these opportunities, warranting an examination of the course-taking patterns of students at the boundary.

[Table 5 about here]

The second research question then shifts to look at the local average treatment effects of students who are marginally admitted to selective high schools. Regardless of whether these students are more or less likely to be surrounded by peers who take advanced coursework, it is unclear whether they will have access to the same educational opportunities as the "average" students in their cohorts. Table 5 details the effects of attending more selective high schools on individual advanced math course-taking. Just as in Table 4, there is a strong positive first-stage relationship between each school's admissions offers and enrollment. However, the pooled results show that for students at the boundary, attending a more selective high school decreased the likelihood of taking a more advanced calculus class by 13 percentage points and enrolling in at least one AP or IB math course by 23 percentage points. Despite a negative point estimate, the pooled results for calculus course-taking are not statistically significant at $p < 0.05$. Nonetheless, when taken together, the results suggest a negative effect of enrolling in a more selective high school on advanced mathematics course-taking among students at the boundary of admissions cutoffs. These results are displayed graphically in Appendix Figures A, B, and C.

Table 5 also reveals significant heterogeneity among the specialized high schools. Notably, the "Big 3" schools show the largest negative effects on course-taking. Research on NYC's selective high schools often focuses on these schools (e.g., Abdulkadiroğlu et al., 2014; Dobbie & Fryer, 2014) but overlooks the other specialized high schools. Nonetheless, the remaining five schools include institutional contexts where students at the boundary may be more likely to enroll in advanced math coursework. For instance, students at the High School for Math, Science, and Engineering at City College and Brooklyn Latin were more likely to enroll in advanced math courses. To make sense of the mixed results, I collected information about each school's organizational structure, math curriculum, and policies about AP or IB coursework.

The Role of Curricular Structures

[Table 6 about here]

Table 6 provides information about the mathematics curricula of the eight specialized high schools. The upper panel summarizes organizational features collected via archived school websites and school handbooks from 2010 to 2015. The lower panel presents robust regression discontinuity results predicting (a) whether a student was more likely to take geometry (or a more advanced math class) in ninth grade, (b) the proportion of peers who ever took calculus, (c) the proportion of peers who ever took a more advanced calculus course, and (d) the proportion of peers who ever took an AP or IB math class. These characteristics can help explain the heterogeneity within the main results presented in Table 5.

Schools with consistently negative effects on advanced math course-taking, such as Stuyvesant and Brooklyn Tech, differentiated students into honors and non-honors classes as

early as ninth grade. Additionally, those schools had limited seats in AP coursework and imposed merit-based barriers. For instance, at Stuyvesant, students' eligibility for advanced math coursework was dependent on meeting minimum grades in prerequisite classes, and students were eligible to take different numbers of AP classes depending on their prior grades. At Brooklyn Tech, seats in AP courses were also limited, and students were assigned to these courses through a power index – a ranking system that compared students based on their prior course-taking, grades, and teacher recommendations. Notably, at all three of the schools with negative effects on advanced math course-taking, students at the boundary were less likely (or no more likely) to take geometry in ninth grade. Because mathematics course sequences are typically hierarchical and linear, students who take algebra in ninth grade experience a different curricular trajectory than students who take geometry.

On the other hand, the schools with consistently positive effects on advanced math course-taking did not impose barriers or hierarchies as features of their curricular structures. Students at Brooklyn Latin and the High School for Math, Science, and Engineering were not differentiated into honors and non-honors coursework, did not encounter explicit grade-based barriers in entering AP coursework, and were not capped on the number of advanced courses they could take. Both schools had policies that encouraged students to take more advanced coursework. At the High School for Math, Science, and Engineering, students were required to complete a five-year mathematics curriculum in four years. At Brooklyn Latin, all students were required to complete the International Baccalaureate Diploma Program and only offered IB courses in students' 11^{th} and 12^{th} grade years. Finally, the results from the regression discontinuity analyses show that students who enrolled in those schools were significantly more likely to take geometry by ninth grade, likely affecting their subsequent course-taking behaviors.

Discussion

This study investigated the causal effects of attending more selective high schools on advanced math course-taking using a regression-discontinuity design with student-level data from New York City. The findings reveal that although students at more selective high schools often end up in contexts where a higher proportion of peers enroll in advanced math coursework, this opportunity does not uniformly extend to individuals near schools' admissions cutoffs. When pooled together, the results indicate that students at the margin of admission exhibited a negative effect on their advanced math course-taking when compared to peers just below the cutoff. Moreover, although school selectivity can provide access to a higher-achieving peer group, internal organizational structures and curricular policies appear to play a significant role in shaping course-taking opportunities. Schools with more restrictive curricular structures or internal barriers (e.g., strict prerequisites or caps on the number of advanced courses) tend to limit access for students at the boundary, even if they are high achieving.

This study contributes to the broader understanding of the material benefits of attending elite and selective high schools. Regardless of the social status conferred by these institutions, this study provides evidence that access to elite institutions does not guarantee better educational opportunities. Even within merit-based admissions systems that produce cohorts of students with similar abilities, schools often replicate organizational barriers such as tracking and hierarchical structures. These mechanisms can adversely affect the opportunities of students who are at the margins of admissions, prompting a reassessment of the purported benefits of selective and elite schools that often boast rigorous curricula and advantageous learning environments.

The negative effects observed for students at the margins of admission are particularly striking. These findings align with the frog-pond model, where students might perform better as "big frogs" in less competitive settings, but in more competitive environments they may be less likely to access advanced coursework due to internal competition. The frog-pond effect appears to be strongest at the highest levels of math course-taking. In schools where seats in advanced coursework are scarce and demand exceeds supply, schools may impose stringent boundaries around access.

Additionally, this study highlights the complex interaction of between-school and within-school sorting processes. Often, research on between-school sorting emphasizes disparities based on school-level characteristics, such as teacher quality or advanced course offerings, but often overlooks whether all students actually benefit from these resources upon enrolling. Conversely, scholarship on curricular tracking tends to focus on the internal organizational features of schools without fully considering how students' experiences are also shaped by how they arrived at their schools in the first place. This study bridges these two areas of research, challenging the assumption that higher selectivity automatically leads to better educational opportunities, and highlighting how schools' organizational structures affect access to advanced courses (Domina et al., 2019; Gamoran, 1992). As school districts increasingly use academic criteria to assign students to different schools, it is imperative to consider how internal sorting mechanisms may impact these students upon arrival. This study suggests that such a system may inadvertently disadvantage students on the boundary of admissions thresholds. These students, who might be capable of excelling in advanced coursework, may be hindered by internal hierarchies and policies that impose additional barriers after they are enrolled.

This paper cannot fully explain many of the mechanisms behind course selection beyond what is officially listed on websites and in handbooks. Many of the courses in specialized high schools claim to use prerequisites such as prior grades and teacher endorsements. However, it might not always be the case that students are appropriately sorted into classes based on ability, particularly if a school is under-resourced, overburdened, and has limited demand for advanced courses (see Riehl et al., 1999). This potential loose coupling between stated policies and actual practices offers one direction for future investigation.

Future research should not only examine whether students take advanced courses but also how they perform in these courses. Students at the boundary may perform worse in their classes, which may restrict their ability to progress through subsequent math courses. Additionally, this study focused on mathematics coursework, but future studies should explore course-taking outcomes across a variety of disciplines. It would be valuable to investigate whether students, upon completing state graduation requirements in mathematics, choose to pursue coursework in other subjects rather than take a more advanced mathematics course. Understanding these dynamics could provide a more comprehensive view of how organizational contexts affect students' overall academic trajectories.

Conclusion

Understanding how elite and selective high schools influence advanced math course-taking is crucial for scholars and policymakers alike. These findings underscore the importance of considering not just the selectivity of high schools but also their internal organizational structures when evaluating their impact on students' academic achievement. Moreover, these insights challenge the prevailing notion that elite and selective high schools uniformly enhance

educational opportunities. Although these schools are celebrated for their rigorous academic environments and prestigious status, the human capital benefits for students depend significantly on internal organizational mechanisms.

In all, these findings prompt us to reassess the cultural narratives that shape our understanding of educational prestige. The broad focus on prestige may perpetuate educational inequalities by valuing the status associated with elite institutions over the actual acquisition of skills, potentially masking how internal structures can undermine the educational experiences of students at the margins. By examining the complex interplay between school selectivity, institutional practices, and individual opportunities, this work provides valuable insights into educational practices and policies aimed at shaping students' access to advanced mathematics education.

Endnotes

1. Students who did not rank a specialized high school as one of their choices were excluded from that school's analytic sample. Additionally, if a student's first-choice school had a lower admissions cutoff than any lower-ranked schools, they were excluded from the samples of those higher-cutoff schools. For example, a student whose first-choice school had a cutoff of 500 and whose second-choice school had a cutoff of 600 would never be matched to their second-choice school, even if they meet the minimum score of 600.

2. Approximately 12 percent of SHSAT-takers came from private middle schools.

3. During the study period, AP Computer Science was sometimes considered a science class rather than a math class and was often listed as an elective rather than as part of the core mathematics curriculum.

4. At the High School for Math, Science, and Engineering at City College, students are required to complete an academically rigorous and challenging five-year curriculum in mathematics in four years.

5. Caps on the number of AP courses depend on student grades – students with higher grades are eligible to take more AP courses.

6. Students at Brooklyn Latin take all International Baccalaureate (IB) classes in 11th and 12th grade.

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Tables

	High School Name	SHSAT Cutoff	Size of Entering Cohort	Female (%)	White (%)	Black (%)	Asian (%)	Hispanic (%)	8th Grade Math Score (Mean)	8th Grade Math Score (SD)
" The Big 3"	Stuyvesant High School	561	813	41.6	20.2	0.9	74.3	2.7	2.02	0.65
	The Bronx High School of Science	512	749	42.5	23.9	2.9	65.4	6.6	1.69	0.63
	Brooklyn Technical High School	484	1388	41.1	21.7	8.4	61.0	8.1	1.58	0.62
All Other Specialized High Schools	Queens High School for the Sciences at York College	508	103	44.6	7.0	7.5	74.8	9.5	1.69	0.64
	High School of American Studies at Lehman College	504	92	46.6	54.8	5.5	21.1	15.4	1.41	0.63
	Staten Island Technical High School	501	304	43.2	54.1	1.1	39.8	4.6	1.64	0.62
	High School for Math, Science, and Engineering at City College	498	125	33.0	26.4	11.4	38.4	22.1	1.49	0.61
	The Brooklyn Latin School	474	161	45.0	15.4	21.1	38.1	16.1	1.30	0.63
	All NYC Public Schools		80731	49.2	14.3	30.0	14.9	39.7	0.00	1.00

Table 1. Entering Cohort Demographics of Enrolled Students among Specialized High Schools in New York City. *Calculations represent averages of cohorts entering between 2010 and 2015.*

School	% Took Calculus	% Took Calculus Beyond Calculus I	% Took AP or IB Math
Stuyvesant	78.1	27.7	56.9
Bronx Sci	93.6	23.2	63.2
Brooklyn Tech	51.1	13.6	57.1
Queens Sci @ York	85.2	35.9	86.6
HSAS @ Lehman	61.3	1.3	61.2
Staten Island Tech	88.1	25.8	62.9
HSMSE @ CCNY	90.1	54.2	84.5
Brooklyn Latin	64.6	17.0	90.5
All Specialized High Schools	71.8	21.4	61.8
All NYC High Schools	35.2	8.8	29.3

Table 2. The Percentage of Students Taking Advanced Math Coursework at New York City High Schools, for Cohorts Entering 2010-2015.

School		% Enrolled at that high school	% Enrolled at any specialized high school
Stuyvesant	Below Cutoff	0.3	82.7
	Above Cutoff	92.8	94.8
Bronx Science	Below Cutoff	0.2	63.3
	Above Cutoff	82.9	86.1
Brooklyn Tech	Below Cutoff	1.8	19.8
	Above Cutoff	71.9	74.5
Queens Science @ York	Below Cutoff	0.0	48.2
	Above Cutoff	70.9	70.5
HSAS @ Lehman	Below Cutoff	0.0	37.6
	Above Cutoff	61.2	63.0
Staten Island Tech	Below Cutoff	0.0	42.6
	Above Cutoff	90.0	93.1
HSMSE @ CCNY	Below Cutoff	0.0	44.2
	Above Cutoff	60.5	64.2
Brooklyn Latin	Below Cutoff	3.6	16.8
	Above Cutoff	34.8	36.6

Table 3. Enrollment Patterns of Students Around Admission Cutoffs. Cohorts 2010-2015**.**

School Name	First Stage Estimates		Robust Estimates					
	Enrollment at that school		*(1) Prop. Peers Taking Calculus*		*(2) Prop. Peers Taking Calculus Beyond Calculus I*		*(3) Prop. Peers Taking any AP or IB Math Class*	
Stuyvesant	0.944***	[0.907, 0.972]	0.027*	[0.005, 0.068]	0.055**	[0.024, 0.097]	-0.031+	[-0.075, 0.003]
Bronx Science	0.863***	[0.846, 0.873]	0.296***	[0.251, 0.357]	0.011	[-0.029, 0.103]	0.024	[-0.039, 0.060]
Brooklyn Tech	0.747***	[0.723, 0.794]	0.035	[-0.034, 0.101]	0.005	[-0.075, 0.084]	0.078+	[-0.004, 0.152]
Queens Sci @ York	0.732***	[0.658, 0.815]	0.228***	[0.141, 0.296]	0.091*	[0.011, 0.151]	0.255***	[0.195, 0.297]
HSAS @ Lehman	0.567***	[0.500, 0.608]	-0.146***	[-0.309, 0.049]	-0.331***	[-0.417, -0.270]	-0.072	[-0.248, 0.049]
Staten Island Tech	0.947***	[0.907, 0.991]	0.413***	[0.360, 0.470]	0.141***	[0.103, 0.181]	0.181***	[0.144, 0.221]
HSMSE @ CCNY	0.644***	[0.566, 0.719]	0.418***	[0.300, 0.537]	0.406***	[0.329, 0.482]	0.354***	[0.234, 0.476]
Brooklyn Latin	0.357***	[0.311, 0.429]	0.184***	[0.079, 0.237]	0.065	[-0.144, 0.277]	0.429***	[0.312, 0.469]
Big 3 Pooled			0.110***	[0.05, 0.18]	0.030	[-0.03, 0.09]	0.034	[-0.04, 0.12]
All Schools Pooled			0.133***	[0.04, 0.22]	0.052	[-0.03, 0.12]	0.080	[-0.03, 0.19]

Table 4. Robust Regression Discontinuity Estimates for Peer Advanced Math Course-Taking at Specialized High Schools
Estimates of the effect of enrolling at each specialized high school on *peer* math course-taking outcomes among students at the boundary. 95 percent confidence intervals in brackets. Robust standard errors clustered by cohort. +significant at p=0.1 *significant at p=0.05 ** significant at p=0.01; *** significant at p=0.001.

	First Stage Estimates		Robust Estimates					
School Name	*Enrollment at that school*		*(1) Calculus*		*(2) Calculus beyond Calculus I*		*(3) Any AP or IB Math Class*	
Stuyvesant	0.943***	[0.907, 0.972]	-0.163***	[-0.184, -0.131]	-0.277***	[-0.332, -0.174]	-0.350***	[-0.397, -0.289]
Bronx Science	0.864***	[0.845, 0.871]	0.204***	[0.110, 0.302]	-0.140**	[-0.220, -0.037]	-0.196***	[-0.326, -0.097]
Brooklyn Tech	0.743***	[0.716, 0.791]	-0.283***	[-0.340, -0.235]	-0.124*	[-0.222, -0.021]	-0.221***	[-0.290, -0.156]
Queens Sci @ York	0.744***	[0.682, 0.826]	0.129	[-0.025, 0.232]	-0.096	[-0.292, 0.061]	0.099	[-0.048, 0.213]
HSAS @ Lehman	0.600***	[0.507, 0.644]	-0.169+	[-0.428, 0.266]	-0.379**	[-0.684, -0.136]	-0.060	[-0.286, 0.140]
Staten Island Tech	0.941***	[0.903, 0.992]	0.228**	[0.085, 0.374]	-0.086	[-0.177, 0.018]	-0.137*	[-0.239, -0.002]
HSMSE @ CCNY	0.622***	[0.547, 0.687]	0.483***	[0.316, 0.650]	0.536***	[0.403, 0.693]	0.421**	[0.160, 0.675]
Brooklyn Latin	0.359***	[0.309, 0.430]	0.254***	[0.174, 0.409]	0.151	[-0.033, 0.360]	0.390***	[0.264, 0.508]
Big 3 Pooled			-0.133***	[-0.23, -0.06]	-0.192***	[-0.29, -0.14]	-0.290***	[-0.39, -0.23]
All Schools Pooled			-0.077	[-0.20, 0.02]	-0.132**	[-0.25, -0.03]	-0.230***	[-0.36, -0.12]

Table 5. Robust Regression Discontinuity Estimates for Advanced Math Course-Taking at Specialized High Schools
Estimates of the effect of enrolling at each specialized high school on math course-taking outcomes among students at the boundary. 95 percent confidence intervals in brackets. Robust standard errors clustered by cohort.
+significant at p=0.1 *significant at p=0.05 ** significant at p=0.01; *** significant at p=0.001.

		Negative Effects on Course-Taking			*Mixed Effects on Course-Taking*			*Positive Effects on Course-Taking*	
	Curricular Feature / RD Outcome	**Stuyvesant**	**Brooklyn Tech**	**HSAS @ Lehman**	**Bronx Sci**	**Queens Sci @ York**	**Staten Island Tech**	**HSMSE @ CCNY**	**Brooklyn Latin**
Feature of Math Curriculum	STEM focus	X	X	.	X	X	X	X	.
	Honors and non-honors math courses	X	X	.	X	.	.	.	.
	Math placement exam	X	.	.	X	.	.	.	.
	Accelerated math curriculum	.	.	.	.	.	.	X[4]	.
	Math courses have minimum grade requirements	X	.	.	X	.	.	.	.
	Power index used for AP coursework	.	X	.	.	.	X	.	.
	Teacher recommendation for AP coursework	.	X	.	.	.	X	.	.
	Caps on the number of AP or IB courses	X[5]	.	.	.	.	X[5]	.	.[6]
RD Robust Estimates	Student took geometry+ in 9th grade	0.036	-0.094*	-0.552***	0.245***	0.017	0.005	0.237***	0.373***
	Proportion of peers ever took calculus	0.027*	0.035	-0.146***	0.296***	0.228***	0.413***	0.418***	0.184***
	Proportion of peers ever took calculus beyond calc 1	0.055**	0.005	-0.331***	0.011	0.091*	0.141***	0.406***	0.065
	Proportion of peers ever took AP or IB mathematics	-0.031+	0.078+	-0.072	0.024	0.255***	0.181***	0.354***	0.429***

Table 6. Curricular Features of Different Specialized High Schools. Data was gathered using school websites and handbooks from 2010-2015.

Appendix Tables

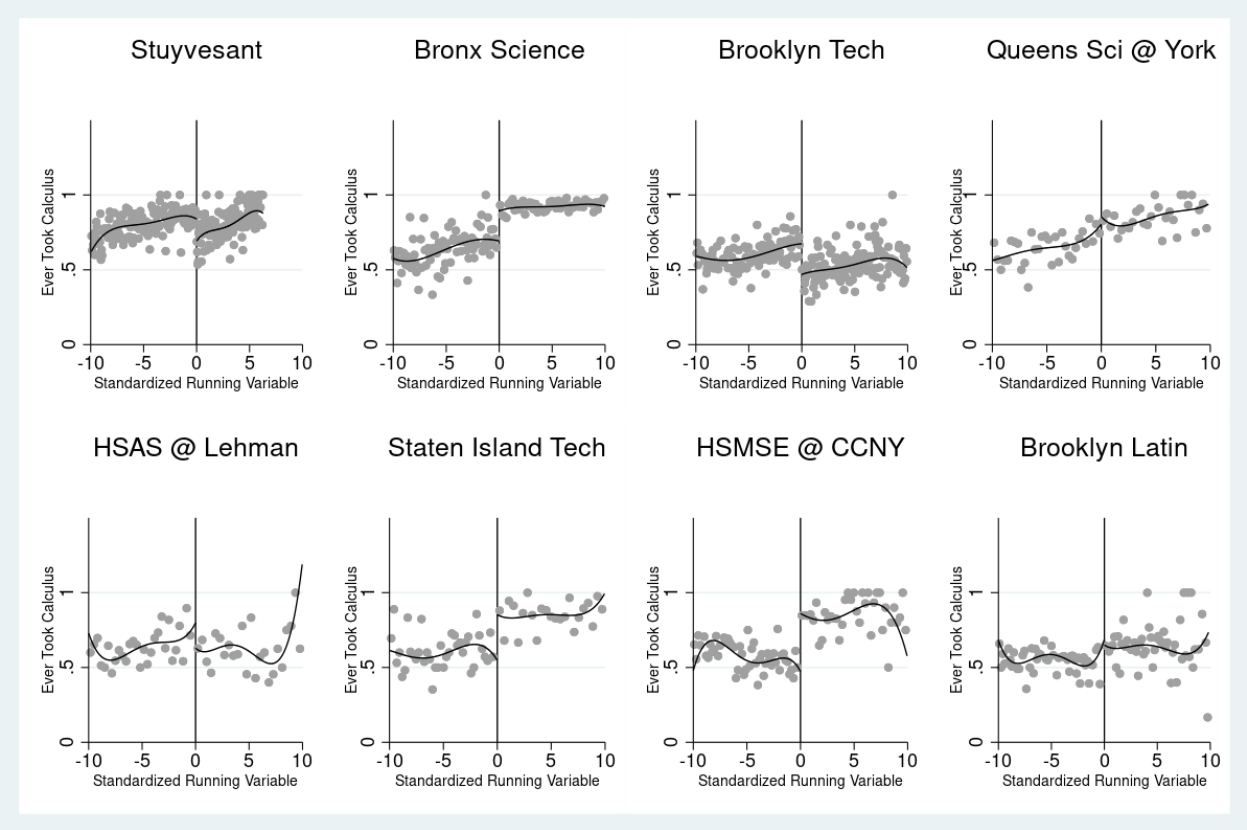
Number of Choices	n	Percent (%)
1	11,114	6.45
2	19,889	11.55
3	25,702	14.92
4	20,541	11.93
5	12,062	7.00
6	6,625	3.85
7	7,391	4.29
8	68,866	39.99

Appendix Table A. Number of Specialized Schools Ranked by SHSAT takers, 2010-2015

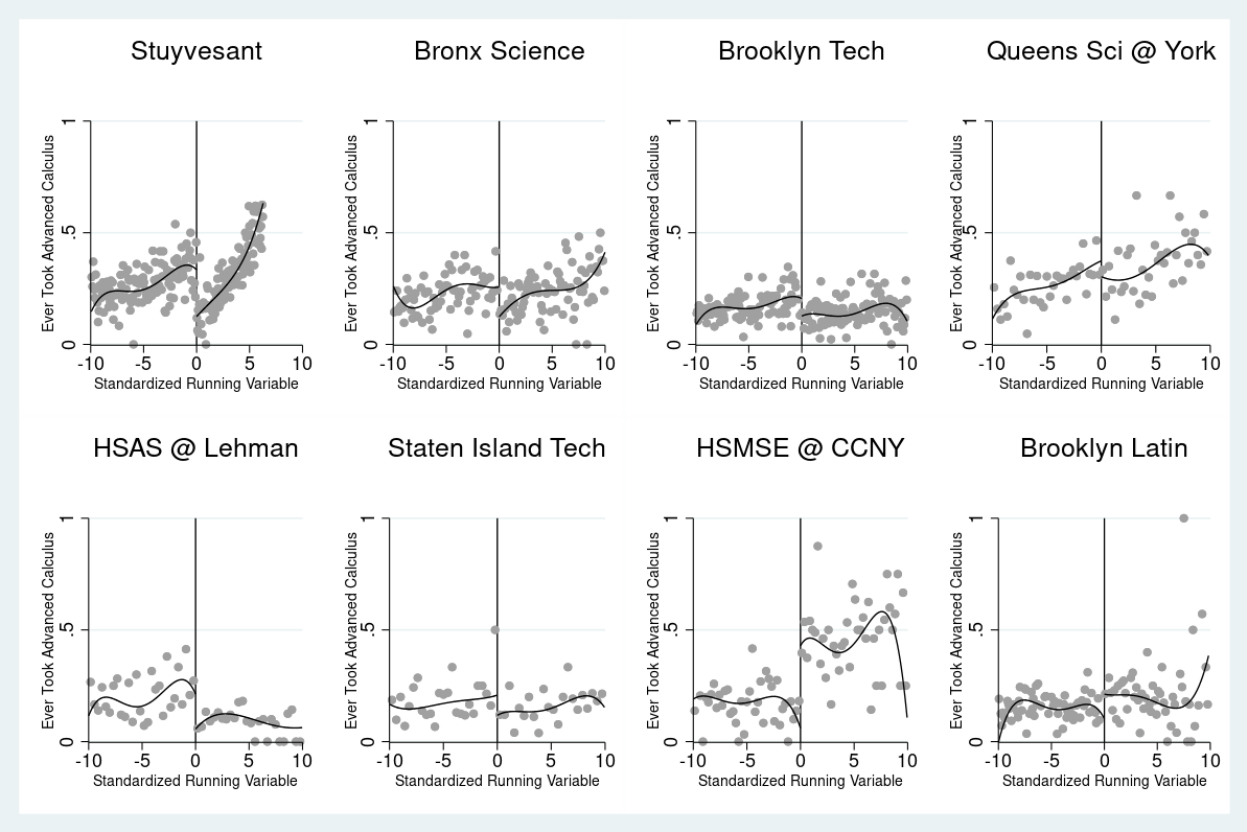
SCHOOL	2010	2011	2012	2013	2014	2015
Stuyvesant	563	566	560	561	559	556
Bronx Sci	511	515	512	513	517	510
Brooklyn Tech	484	486	482	484	486	482
Queens Sci @ York	504	508	508	512	511	504
HSAS @ Lehman	505	508	502	501	506	503
Staten Island Tech	494	498	496	505	506	508
HSMSE @ CCNY	496	498	492	497	504	499
Brooklyn Latin	470	472	472	471	479	477

Appendix Table B. SHSAT Cutoffs by Year and Specialized High School, 2010-2015
The mean SHSAT score during this period was 401 with a standard deviation of 92. Scores ranged from 40 to 714.

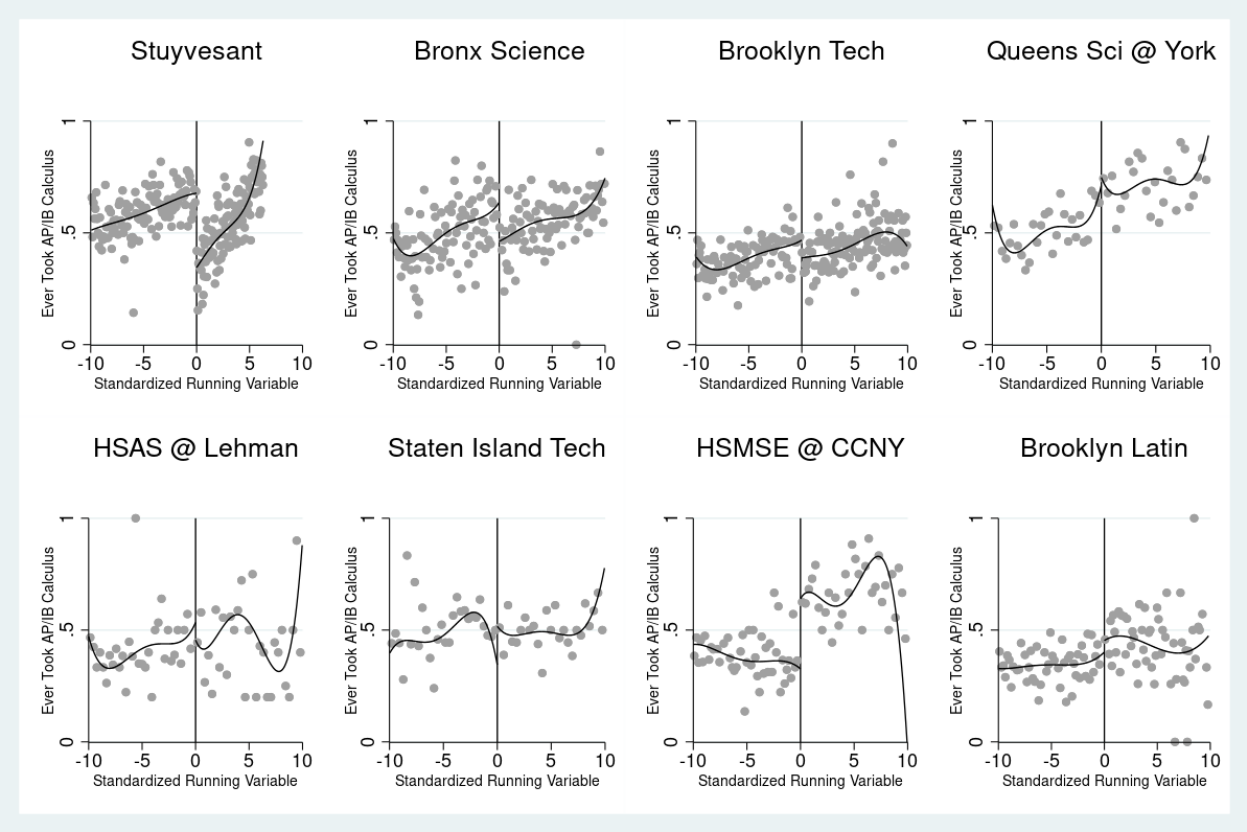
Appendix Figures



Appendix Figure A. Robust Regression Discontinuity Estimates for Calculus Course-Taking at Specialized High Schools. Estimates of the effect of enrolling at each specialized high school on math course-taking outcomes among students at the boundary.



Appendix Figure B. Robust Regression Discontinuity Estimates for Advanced Calculus Course-Taking at Specialized High Schools. Estimates of the effect of enrolling at each specialized high school on math course-taking outcomes among students at the boundary.



Appendix Figure C. Robust Regression Discontinuity Estimates for Advanced Placement or International Baccalaureate Math Course-Taking at Specialized High Schools. Estimates of the effect of enrolling at each specialized high school on math course-taking outcomes among students at the boundary.

Chapter Three

Perceptions of Fairness, Deservingness, and Inequality Under Different School Admissions Regimes

Abstract

This paper investigates how school admissions regimes shape public perceptions of fairness, deservingness, inequality, and redistributive preferences. Using a preregistered survey experiment with 1,745 U.S. adults, I test how four different *admissions regimes*—meritocratic, lottery-based, residential priority, and residential no-choice—affect perceptions of fairness and legitimacy. I find that respondents in meritocratic and choice-based conditions perceive the system as more fair and outcomes as more deserved, even when the distribution of school quality remains constant across treatment arms. Nonetheless, these different admissions systems do not seem to affect broader beliefs about structural inequality and support for redistributive policies. These findings highlight the role of institutional design in shaping symbolic evaluations of inequality and suggest that school choice operates as a mechanism of legitimation. Admissions regimes, particularly those that emphasize choice, may obscure structural inequality and increase tolerance for stratified outcomes.

Introduction

How do institutional design features shape perceptions of fairness, deservingness, and inequality? Sociologists have long emphasized the role of educational systems in structuring opportunity and reproducing social stratification, but less attention has been paid to how people evaluate the fairness of education systems, the deservingness of outcomes, and broader beliefs about inequality and redistribution under different educational regimes. I argue that admissions systems are not only gatekeeping mechanisms that determine who has access to prized educational opportunities – they are also powerful socializing agents, shaping how people evaluate the legitimacy and inequality in education systems.

Admissions systems and procedures are subjects of contemporary scholarly and political debates, raising crucial questions about the design features of admissions policies. In the United States, roughly 80 percent of public K-12 students attend their residentially assigned public school (*Digest of Education Statistics,* 2022), while approximately 20 percent attend via non-residential mechanisms. Moreover, over 40 percent of students in the United States (and over 50 percent of students in U.S. cities) have some form of school choice available (*Digest of Education Statistics,* 2022). Research on school choice has identified some potential impacts of different admissions regimes on student body composition (e.g., Abdulkadiroğlu et al., 2017; Corcoran & Baker-Smith, 2018) and individual student outcomes (e.g., Glazerman & Dotter, 2017; Hastings et al., 2006), but we know relatively little about how these different regimes affect people's values and attitudes.

In this chapter, I propose that school admissions regimes shape moral interpretations of inequality. Institutional design – whether a system uses residential assignment, meritocratic selection, or a lottery – provides powerful normative cues that influence how people judge

whether outcomes are fair and deserved. My findings support the idea that meritocratic and choice-based systems increase perceptions of fairness and deservingness, even when the distribution of school quality remains constant. In a society that views education as a legitimate source of merit, educational winners gain access to desirable resources and positions while educational losers are seen as less meritorious and less deserving (Roex et al., 2019). The premise that individual talent and hard work determine success has been deeply ingrained in societal beliefs (Mijs 2022). However, the extent to which institutional design features, such as school admissions policies, influence our acceptance of social hierarchies remains a critical area of inquiry. When educational opportunities are allocated as the product of merit-based or choice-based processes, do people rationalize those structures as legitimate?

To investigate these questions, I conducted a preregistered survey experiment with a nationally representative sample of 1,800 U.S. adults. Participants were randomly assigned to one of four *admissions regimes*. In three of these admissions regimes, participants were told that students could apply to any of the three high schools in a fictional school district, but if a school were to be oversubscribed, it would (1) prioritize students who lived closest to the school, (2) choose students with the highest grades and test scores, or (3) use a random lottery to select students. In the last admissions regime (4), students were required to attend the high school in their residential zone. Furthermore, participants were randomized across two *inequality contexts*. In the high-inequality condition, school ratings were 2, 5, and 9 (out of 10). In the low-inequality condition, school ratings were 5, 5, and 6 (out of 10). After reading about the schools and their randomly assigned admissions policies, participants were asked to evaluate the fairness and legitimacy of the system, the deservingness of outcomes, their beliefs about inequality, and their support for redistributive policies.

I find that, in general, respondents rated the meritocratic admissions regime as significantly more legitimate than random lotteries and residential assignments without choice. Respondents were also more likely to say that students were placed in the schools that they deserve under meritocratic regimes, even when some students were assigned to relatively lower-quality schools. These results underscore that meritocratic framing increases the acceptance of inequality, even when the underlying distribution of educational opportunities remains unchanged.

Importantly, the results also suggest a second way that inequality is legitimized: the framing of *choice*. All three admissions regimes that involved school choice were rated as fairer and more legitimate than the admissions regime without choice. This indicates that the framing of individual agency, no matter how superficial, shapes the way people evaluate institutions. Similar to the findings on meritocratic admissions regimes, these results are true when the underlying opportunity structures remain the same. In all, these findings suggest that choice functions as a legitimating force, even when it does little to change the level of educational inequality.

Finally, although admissions regimes appear to affect perceptions of fairness, deservingness, and legitimacy, the study did not produce evidence of these regimes affecting support for redistribution and broader beliefs about inequality. For example, respondents' beliefs about whether inequality in the U.S. is too large, or whether the government should redistribute resources, were not affected by the admissions regimes. These findings are in line with other social psychological work that suggests that light-touch interventions may change perceptions in the short-term but do little to alter (intended) behaviors.

These findings contribute to sociological work that examines how social institutions socialize individuals into normative logics, as well as how legitimation processes obscure structural disadvantage. By demonstrating that admissions systems shape the evaluation of fairness and legitimacy without changing support for redistribution, the paper offers insights into how institutional design features reinforce social stratification. As school districts and educational institutions experiment with changes to admissions policies—from merit-based selection to lotteries to open enrollment—they may shape how inequality is morally understood and legitimated.

Background

Educational institutions do more than allocate resources to students – they serve as cultural and symbolic arenas that imbue social meaning. In the sociology of education, considerable research has explored how schools structure opportunity, reproduce inequality, and reinforce social stratification (Bourdieu 1973; Bowles and Gintis 1976). School admissions processes, in particular, are gatekeeping mechanisms that determine who gains access to desirable educational opportunities (Barrow, Sartain, and de la Torre 2020). Yet, while much is known about the material and distributional consequences of different admissions systems (e.g., Abdulkadiroğlu et al. 2017; Corcoran and Baker-Smith 2018; Cullen, Long, and Reback 2013; Fiel 2022), less is understood about how these different features shape evaluations of fairness, deservingness, and legitimacy.

Education scholars have long argued that education functions as a legitimating institution (Bourdieu 1973; Bowles and Gintis 1976). These systems provide a cultural and moral framework that helps people interpret outcomes as just or unjust. When the allocation of

educational opportunities is framed as merit-based, it reinforces the belief that social stratification reflects individual deservingness. In contrast, when admissions are determined by random lottery, they emphasize the role of luck or chance in determining social and educational outcomes.

Recent research has demonstrated that institutional design features can shape people's beliefs about inequality and legitimacy. In a landmark study, Castilla and Benard (2010) describe a "paradox of meritocracy" in which organizational cultures that promote meritocracy may ironically show greater bias in favor of men over equally performing women, whereas non-meritocratic organizations do not appear to show the same biases. Similarly, in education, systems that emphasize merit may appear equitable while masking deep structural inequalities. Merit-based assignment systems often give an advantage to students from higher socioeconomic backgrounds who have greater access to cultural capital (Bourdieu 1986; Lareau 1987). For example, Corcoran and Baker-Smith (2018) show that using admissions criteria based on grades and state test scores (rather than a single high-stakes exam) would produce greater demographic diversity in elite New York City high schools. Moreover, research conducted in Belgian schools finds that lower-track students in highly-tracked environments report greater fatalism and decreased belief in fairness (Van Houtte and Stevens 2015), highlighting that sorting systems not only have distributional consequences but also shape beliefs and attitudes.

More broadly, institutional mechanisms of selection shape the narratives that people use to justify their social outcomes. Multiple studies have found that a greater emphasis on meritocratic principles in society is associated with individualistic understandings of inequality, increased justification of inequalities, and reduced support for redistributive social policies (Duru-Bellat and Tenret 2012; Lerner 1980; Linos and West 2003; Mijs 2021). Recent research

highlights heterogeneity in these associations, with one study finding that higher-level social groups show more tolerance towards inequality and lower-level social groups are more dissatisfied with inequality (Roex, Huijts, and Sieben 2019). People in the United States are more likely to believe that hard work is very important in getting ahead than other similar countries, though this belief has been steadily declining since the beginning of the 21st century (McCall et al. 2017). Other research has found that people in nations with higher inequality tend to rationalize the status quo and have ambivalent attitudes toward those in power (Durante et al. 2013).

In addition to the extensive scholarship on meritocracy and perceived inequality, there is a burgeoning literature on choice and the legitimation of inequalities. Recent work by Cuddy et al. (2025) argues that school choice mechanisms may diffuse responsibility for inequality by placing the onus of school assignments on students and their families. Moreover, the psychological research on choice and autonomy provides additional insight into how these features affect perceptions of fairness and legitimacy. Savani and Rattan (2012) find that when people are primed with the concept of choice, they are more likely to justify wealth inequality and emphasize personal agency rather than structural processes. Related studies show that even superficial perceptions of choice can shift people's attributions from structural to individual explanations, and cause people to be less likely to support policies aimed at benefiting society (Savani, Stephens, and Markus 2011). In the education context, these findings suggest that school choice systems may enhance legitimacy by promoting narratives of agency and choice, even when the underlying inequality remains unchanged as a result of such choice.

These dynamics are especially important in the U.S. education system, where meritocratic ideals are deeply embedded at almost all levels, and changes in school admissions

regimes can affect the way that people interact with educational institutions. Tyler's (2006) theory of procedural justice emphasizes that institutions are viewed as more legitimate when people experience their procedures as being fair (regardless of the actual underlying inequality). This perceived fairness can influence how individuals engage with public schooling, trust the legitimacy of the system, and make sense of educational outcomes. For example, a recent study of high school counselors in a universal school choice system expressed doubts about the system, citing a lack of transparency about admissions practices and skepticism over procedural fairness, which then affected the strategies they undertook with their students (Sattin-Bajaj & Jennings, 2020). More broadly, when individuals perceive institutional arrangements as illegitimate or unfair, they may respond by seeking alternatives (such as opting out of public education altogether) or expressing dissatisfaction. Hirschman's (1970) framework of "exit, voice, and loyalty" helps explain these responses: families who perceive low procedural fairness may either leave the public system, protest its legitimacy, or begrudgingly accept their outcomes.

Put together, these insights point to a critical gap in the literature: we know relatively little about how institutional design features in school admissions systems shape people's moral evaluations of fairness, deservingness, and inequality. Prior work has focused largely on the distributional outcomes of these different systems but has paid less attention to the sociocultural consequences of how these systems are framed. This paper seeks to fill the gap by examining how attitudes vary across different admissions regimes, even when the distribution of school quality is held constant across those admissions regimes. In doing so, the study contributes to broader sociological discussions about the socializing power of education systems and the role that institutional design plays in legitimizing social stratification.

Consequently, I ask the following research questions:

1. How do different school admissions regimes—merit-based, lottery-based, residential priority, and residential assignment without choice—influence perceptions of fairness, deservingness, and educational opportunity?
2. To what extent do admissions regimes shape broader attitudes toward social and educational inequality, beliefs about meritocracy, and support for redistributive policies?
3. How do institutional design features interact with different inequality contexts (high-inequality vs. low-inequality), and what impact does this interaction have on individuals' perceptions of fairness, deservingness, and educational opportunity?
4. To what extent are these perceptions moderated by individuals' socioeconomic and political characteristics, including ideology, income, education, gender, race, and parental status?

Data and Sample

Data from this study come from a preregistered online survey experiment administered to a nationally representative sample of U.S. adults (N=1,800) recruited through Prolific. To complete the survey, respondents needed to be U.S. residents aged 18 and older. The final analytic sample was limited to respondents who passed a straightforward attention check question and were not indicated as duplicate respondents. This resulted in a final sample size of 1,745 respondents. To account for missingness in some of the demographic variables (roughly two percent of each variable), missing data were imputed using a random forest-based algorithm that allows for robust estimation without case-wise deletion.

The sample reflects diversity in age, race/ethnicity, gender, political ideology, household income, and education. Approximately 48% of respondents identified as male and 50% as female. The racial composition includes 63% non-Hispanic White, 12% non-Hispanic Black, 11% Hispanic, and smaller proportions of Asian, Native American, and multiracial individuals. The median age of respondents was 46. Approximately one-third of respondents reported having school-aged children. Politically, 42% identified as liberal, 32% as conservative, and 26% as mixed. Household income was broadly representative of the U.S. population, with 31% reporting household income over $100,000 and 33% reporting household income below $50,000. Finally, educational attainment differed from the general population – roughly 55% of the analytic sample claimed to have a bachelor's degree or higher. Randomization was successful across conditions, with balanced distributions of demographics across the four treatment groups. See Table 1 for full demographic characteristics by condition.

[Table 1 about here]

Method

I use a preregistered[1], between-subjects survey experiment designed to isolate the causal effects of school admissions regimes on perceptions of fairness, deservingness, inequality, and policy preferences. The experimental design allows for the rigorous identification of institutional design features while holding outcome distributions constant across treatment groups. Because different admissions regimes often produce different distributional outcomes, and are not randomly distributed across different school districts, it is nearly impossible to isolate the

[1] Preregistered documents can be accessed through OSF at the following link: https://osf.io/sguxw/files/osfstorage

framing effects of these policies using observational data. In addition to quantitative responses, the study collects open-ended qualitative data to gain deeper insight into the mechanisms underlying respondent evaluations. The median survey duration was 7.7 minutes.

Experimental Design

The core of the experiment is a 4 (*admissions regime*) by 2 (*inequality context*) factorial design. Respondents were randomly assigned to one of four treatment conditions, each representing a distinct admissions regime:

1. Residential Priority (25% of sample): *"According to school district policy, if a school receives more applications than available spots, it will give priority to students who live in the same residential zone as the school."*
2. Meritocratic (30% of sample): *"According to school district policy, if a school receives more applications than available spots, it will select students with the highest grades and test scores."*
3. Random Lottery (30% of sample): *"According to school district policy, if a school receives more applications than available spots, it will select students using a random lottery."*
4. Residential Zone, No Choice (15% of sample): *"According to school district policy, students must attend the high school located in their residential zone."*

Each participant was also randomly assigned to one of two inequality contexts:

1. High-Inequality Context: The school district contains three schools with quality ratings of 2, 5, and 9 (on a 10-point scale), presented in randomized order.

2. Low-Inequality Context: The school district contains three schools with quality ratings of 5, 5, and 6 (on a 10-point scale), presented in randomized order.

Respondents were shown three high schools in a table format, including their overall score and their admissions method. See Appendix Figure A for an example of this table. After reading their assigned table, respondents were asked to evaluate the admissions regime on various dimensions, offer qualitative justifications for their evaluations, and respond to a series of attitudinal and policy preference items.

Outcome measures were designed to capture three overarching domains:

1. Perceptions of fairness and deservingness
    a. Fairness of admissions regime
    b. Deservingness of student outcomes under the admissions regime
    c. Belief that students have access to a good school
    d. Belief that students can succeed regardless of the school they attend
2. Beliefs about inequality and meritocracy
    a. Perceived inequality in the school district shown
    b. Views on income inequality in the U.S.
    c. Views on school inequality in the U.S.
    d. Perception of hard work vs. luck in getting ahead
3. Redistributive policy preferences
    a. Redistribution of school funding to poorer schools (vs. wealthier schools)
    b. Increased tax on people making over one million dollars per year (vs. decrease)

c. Increase spending on social programs for low-income populations (vs. decrease)

d. Support for the funding of school vouchers (vs. funding for public education)

All dependent variables were measured on 7-point scales, aside from the perceived inequality in the school district shown (10-point scale). For all measures using 7-point scales, the middle category represents a neutral category, such as "neither agree nor disagree" or "neither increase nor decrease." Table 2 outlines the different survey items, the minimum and maximum values, as well as each item's sample mean and standard deviation.

In addition to the quantitative responses, the survey included an open-text box inviting respondents to explain why they found the admissions regime fair or unfair. These data provide insight into the moral logics that respondents use when evaluating the admissions regime.

[Table 2 about here]

Analytic Strategy

As per the preregistered analysis plan, I use ordinary least squares (OLS) regression models predicting each outcome from the interaction between the admissions regime and inequality context, and demographic covariates. The models take the form:

$$\text{Outcome} = \beta 0 + \beta 1(\text{AdmissionsRegime}) + \beta 2(\text{InequalityContext}) + \beta 3(\text{Admissions} \times \text{Inequality}) + \text{X}'\beta 4 + \varepsilon$$

Where *X* includes demographic controls (age, gender, race/ethnicity, educational attainment, income, political ideology, parental status, nativity, and region). To help with interpretability, I present results as average marginal effects (AMEs) and pairwise contrasts across admissions regimes and inequality contexts[2].

In addition to the main analyses above, I stratify the sample by key demographic characteristics to explore the heterogeneity of average treatment effects[3]. Furthermore, I conduct robustness checks using alternative model specifications (not preregistered), including the binary coding of outcomes, ordinal logistic regression, and exploratory factor analyses. These results can be available upon request.

Results

Now, I present findings from the survey experiment, focusing on how school admissions regimes and inequality contexts shape perceptions of fairness, deservingness, inequality, and redistributive policy preferences.

Perceived Fairness, Deservingness, and Opportunity

The strongest and most consistent treatment effects appear in perceptions of institutional fairness and legitimacy. Table 3 and Figure 1 report predicted probabilities from the regression models, predicting perceived inequality, system fairness, deservingness of student outcomes,

[2] The computation of average marginal effects was not preregistered; nonetheless, these contrasts are consistent with the strategy of using OLS regression to compare the various outcomes explored.
[3] The preregistered analysis plan indicated that I would present results stratified by race, class, gender, and experiences with different school systems. I did not collect information on respondents' experiences with different school systems, so I could not conduct this analysis. Moreover, I conducted exploratory analyses stratifying the sample by political ideology, in addition to race, class, and gender.

perceived access to good schools, and the opportunity to succeed. I examine how these outcomes vary by both the admissions regime and broader inequality context. The results show that institutional design features and structural inequality jointly shape perceptions of legitimacy.

[Table 3 about here]

[Figure 1 about here]

First, respondents' perceptions of the inequality in the school district were fairly similar across all admissions regimes, ranging from 5.52 to 5.75 on a 10-point scale. While minor differences appear ($p < 0.1$), the differences between regimes are not substantial enough to warrant any conclusions. In contrast, the inequality context had a large and statistically significant effect on the perceptions of inequality in the school district: in the high-inequality context, the predicted inequality was 7.85 out of 10, compared to 3.45 in the low-inequality context. This provides reassurance that the treatment of different inequality contexts worked as intended.

Second, perceptions of system fairness varied substantially across admissions regimes. Respondents rated the Residential Priority regime as the fairest (5.46) – significantly higher than all the others. The Meritocratic (4.93) and Random Lottery (4.93) conditions were seen as moderately fair, and the Residential Assignment without Choice regime was rated as least fair (3.95). Interestingly, fairness was consistently rated higher in low-inequality contexts (4.99) compared to high-inequality contexts (4.61), regardless of the admissions regime.

Third, patterns in perceived deservingness differed slightly from the perceptions of fairness. Respondents believed that students deserved the schools they attended under the

Meritocratic regime (4.90), significantly more than under all other regimes. The Random Lottery (3.06) and Residential Assignment without Choice (2.93) conditions were rated lowest. The Residential Priority regime fell in the middle (4.05), despite being seen as the most fair. These results imply that a system can be perceived as procedurally fair but not confer deserved outcomes. Again, perceptions of deservingness were higher in the low-inequality context (3.92) compared to the high-inequality context (3.55), reinforcing the idea that macro-level inequality reduces the perceived legitimacy of the allocation system, regardless of the specific institutional design features.

Fourth, respondents believed that students had the greatest access to good schools in the Meritocratic condition (5.33), followed by Random Lottery (5.03), Residential Priority (4.53), and Residential Assignment without Choice (3.47). Regarding inequality contexts, the perceptions of educational opportunity were dampened in the high-inequality context, and participants claimed that students had greater access to good schools in the low-inequality condition (4.73 vs. 4.45).

Fifth, when asked if students were able to succeed independent of the school they attended, there were relatively small differences across admissions regimes. One notable difference is that the Residential Assignment without Choice regime was rated lower on this measure (4.31) than all other admissions regimes, suggesting that emphasizing choice may reinforce ideas of success tied to individualism. Nonetheless, it is for this measure that we observe the greatest difference between high-inequality and low-inequality contexts. A student's ability to succeed no matter what school they attend was perceived to be higher in the low-inequality context (4.93) compared to the high-inequality one (4.02). This suggests that even

when institutional rules are identical, macro-level inequality erodes beliefs in individual opportunity.

When taken together, these results show that respondents in the meritocratic admissions regime evaluated it as more legitimate and the residential no-choice regime as less legitimate. These results highlight the symbolic importance of procedural fairness, even when the actual distribution of school quality remains unchanged. Institutional design, particularly when emphasizing choice, agency, or merit-based resource allocation, shapes evaluations of educational justice. Finally, and crucially, in these systems, respondents claimed that educational outcomes are deserved, even when those outcomes reflect structurally unequal starting points.

Beliefs About Broader Inequality, Meritocracy, and Policy Proposals

Although the experimental treatments revealed significant differences in the perceived legitimacy of the different admissions regimes, views on broader school inequality, belief in hard work vs. luck, and attitudes toward redistributive policies were largely unchanged across experimental conditions. The point estimates, although small and statistically insignificant, are in line with the broader idea that meritocratic and choice-based admissions regimes reduce support for redistributive policies. See Table 4 for full results.

[Table 4 about here]

The null results suggest that while institutional design features can shift perceptions of specific educational procedures, they might not alter broader ideological frameworks. One possible interpretation is that admissions regimes produce symbolic meanings that are then used

to justify existing inequalities, rather than changing the perception of the level of inequality itself.

The Interaction of Admissions Regimes and Inequality Contexts

As shown above, respondents varied in their perceptions of fairness, deservingness, and legitimacy based on the admissions regime and inequality condition they were shown. The following section tests the interaction between these two treatments. For example, are the institutional design effects shown in Table 3 different in high- and low-inequality contexts? In Table 5 (and Appendix Figure B), I summarize key patterns by (a) showing the predicted probabilities for each intersection of admissions regime and inequality context, (b) comparing first differences (inequality context effects within each admissions regime), and (c) comparing second differences (which regimes are more or less sensitive to differences in inequality).

[Table 5 about here]

In assessing the interaction between inequality contexts and admissions regimes, the results reveal that exposure to a high-inequality context systematically increases perceptions of inequality in the fictional school district *across all admissions regimes*. That is, regardless of whether the system is meritocratic, random, or residentially based, respondents said that there was greater inequality in a structurally unequal environment. A test of second differences reveals that this effect is particularly pronounced in the Residential Assignment without Choice regime, where perceived inequality is largest across the two inequality contexts, and the effect is smallest in the Meritocratic regime.

For the outcome variables related to fairness, deservingness, and legitimacy, I observe that, in general, the differences between high-inequality and low-inequality contexts do not differ substantially across admissions regimes. Nonetheless, the point estimates suggest that the largest differences across inequality contexts are largest in the Residential Assignment without Choice regime, and smallest in the Meritocratic regime. For example, when asked if students have access to good schools, the difference among those who received the Residential Assignment without Choice condition ($\Delta = -0.72$, $p < 0.01$) was much larger than the difference for those who received the Meritocratic condition ($\Delta = -0.1$, n.s). This highlights that residentially tied admissions systems may be particularly sensitive to inequality than other institutional forms.

Taken together, these results suggest that while the effects of all school admissions regimes are moderated by the context of structural inequality, systems that rely on residential zoning (particularly without choice) may be the most sensitive to inequality cues. In contrast, admissions systems that emphasize merit-based processes appear more insulated from these effects. Ultimately, institutional design matters, but people are perhaps more likely to interpret the fairness and legitimacy of educational systems based on their perceived structural inequality.

Differences Across Key Demographic Characteristics

To further examine the heterogeneity in perceptions of school systems, I estimate models that include three-way interactions between admissions regimes, inequality contexts, and political ideology (collapsed into three categories: liberal, conservative, and mixed). The results, shown in Table 6 (and Appendix Figure D), reveal stark ideological divides in how educational systems are interpreted in terms of fairness, deservingness, and access to opportunity.

[Table 6 about here]

In general, conservatives had more favorable perceptions of the admissions policies compared to liberals, but this was especially true under meritocratic and residential conditions. For example, conservatives are significantly more likely than liberals to view meritocratic admissions systems as fair (1.07-point gap) and see student outcomes under meritocratic systems as deserved (1.27-point gap). These gaps are substantively large and statistically significant, with second differences indicating that meritocratic regimes produce the largest ideological polarization, followed by residential regimes. In general, liberal-conservative differences are smaller and not statistically significant in random lottery regimes. Notably, perceptions of inequality are relatively similar across political ideologies, implying that although conservatives and liberals recognize similar levels of inequality, they diverge substantially in how they interpret the legitimacy of this inequality under different regimes.

Discussion and Conclusion

In this chapter, I show that perceptions of educational fairness and deservingness are shaped by institutional design – specifically through the manipulation of different school admissions regimes. Using a survey experiment to randomize conditions, I found that respondents generally evaluated meritocratic and choice-based admissions systems as more legitimate than random lotteries or systems without choice. These results highlight how institutional design features shape the interpretation and legitimation of inequality, even in contexts where the level of inequality is relatively similar.

More broadly, the findings contribute to sociological discussions about meritocracy, distributive justice, and legitimacy in highly stratified social contexts. Although this study did not find that institutional design features shifted macro-level redistributive preferences, one of the central contributions of this paper is that institutions not only allocate resources but also produce social meaning. Legitimacy, then, is not just a reflection of people's structural outcomes, but also informed by the symbolic and procedural aspects of institutional arrangements.

Even when structural inequality remains constant, institutions can shift moral interpretations of that inequality, highlighting how institutional design can mask structural inequalities by providing a legitimizing frame that makes unjust or unequal distributions appear morally acceptable. These findings complement recent scholarship from Cuddy et al. (2025), who argue that school choice systems shift the burden of educational outcomes onto parents, thus legitimizing stratification even as inequalities persist.

Furthermore, ideas of fairness, deservingness, and legitimacy are not consistent across different political ideologies. For instance, conservatives were more likely to view meritocratic systems as fair and legitimate, even in different inequality contexts. So, it is possible that institutional design features might reinforce broader ideological divides above all else. This might also explain why the experimental treatments did not shift broader beliefs about inequality, meritocracy, or redistribution. Recent experimental work has shown that even when respondents are provided information about segregation or inequality in their local school districts, it does little to change support for policies (Thompson and Trejo 2024).

These findings contribute to sociological work that examines how social institutions socialize individuals into normative logics, as well as how legitimation processes obscure

structural disadvantage. By demonstrating that admissions systems shape the evaluation of fairness and legitimacy without changing support for redistribution, the paper offers insights into how institutional design features reinforce social stratification. As school districts and educational institutions experiment with changes to admissions policies—from merit-based selection to lotteries to open enrollment—they may shape how inequality is morally understood and legitimated.

While this study focused on hypothetical scenarios in an experimental setting, more work should be conducted to explore how these symbolic meanings are transmitted in real-world settings. One limitation of this study is that the experimental treatments might have been too brief to lead to shifts in attitudes or broader beliefs. Thus, we need more work on how the justification of educational inequality varies across places with different institutional logics and inequality contexts, where families are more consistently exposed to these regimes. These dynamics could be explored through ethnographic observations, longitudinal data, or field experiments. Future research could also examine how different demographic groups interpret admissions regimes differently, and then how those interpretations reinforce or refute ideas of institutional legitimacy.

In conclusion, efforts to change school admissions processes, whether toward more choice or merit-based competition, may increase the perceived fairness or legitimacy of educational systems, but might not necessarily ensure a reduction in the inequality of opportunity or outcomes. Systems that are naturalized as "fair" may still reproduce inequality, particularly when outcomes are seen as reflecting deservingness. Institutional design features might actually mask inequalities rather than mitigate them, therefore legitimizing unequal outcomes in the name of increased choice.

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Tables and Figures

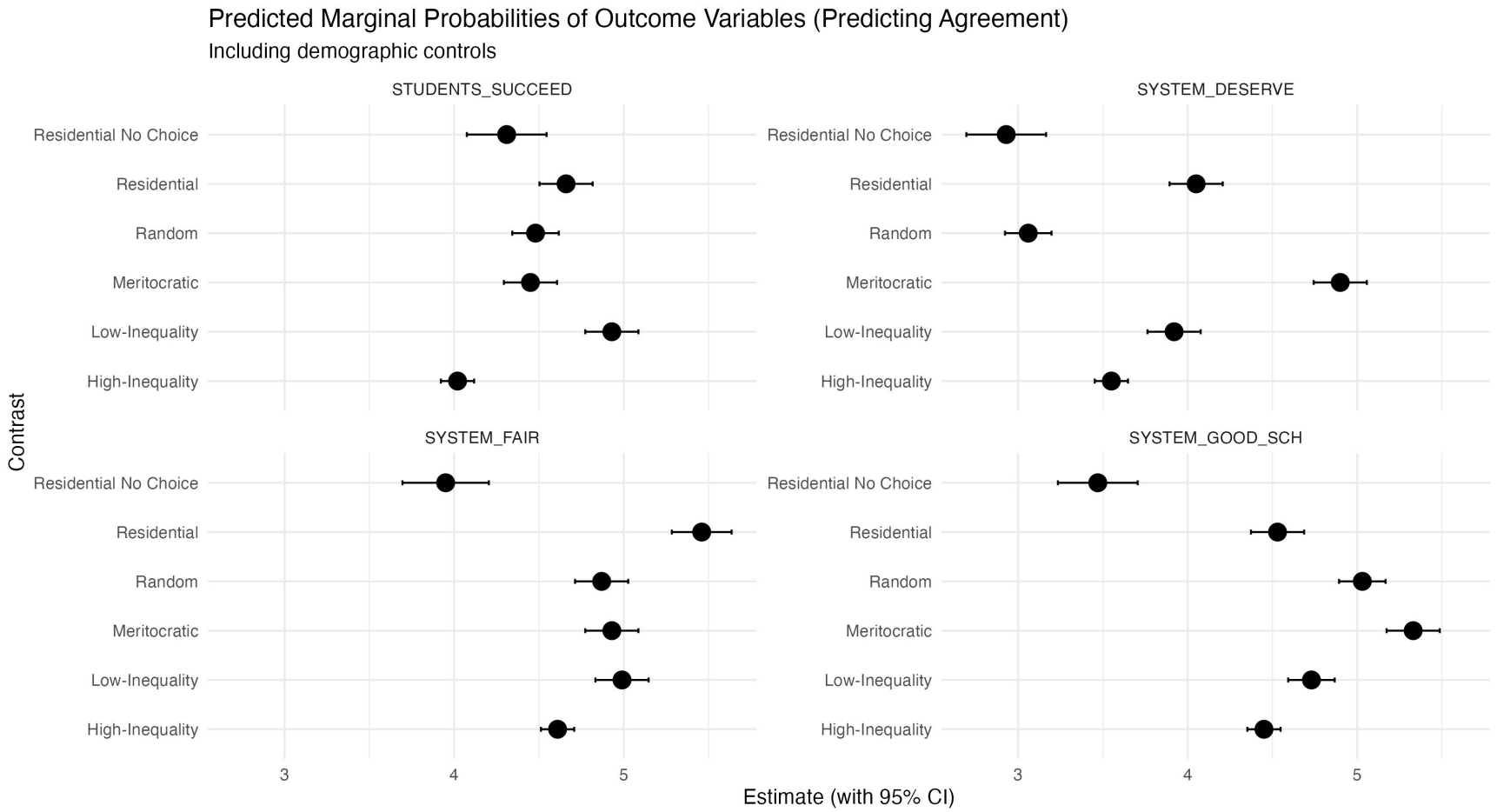


Figure 1. Predicted probabilities for inequality perceptions, and fairness and deservingness beliefs, by admissions regime and inequality context. Predicted probabilities were generated using a model that includes key demographic covariates.

Variable	Full Sample	Meritocratic	Random Lottery	Residential Priority	Residential Without Choice
Proportion of Sample	1.00	0.3	0.3	0.25	0.15
Male	0.48	0.48	0.48	0.48	0.49
Female	0.5	0.51	0.5	0.5	0.49
White	0.63	0.63	0.61	0.65	0.64
Black	0.12	0.12	0.13	0.11	0.15
Asian	0.06	0.07	0.06	0.06	0.05
Multiracial	0.04	0.05	0.03	0.05	0.03
Hispanic	0.11	0.11	0.14	0.09	0.1
Median Age	46	47	46	45.5	48.5
Politics: Liberal	0.41	0.42	0.42	0.39	0.42
Politics: Conservative	0.33	0.29	0.32	0.34	0.38
Born in the U.S.	0.93	0.92	0.94	0.94	0.93
HH Income Above 100k	0.31	0.28	0.34	0.31	0.34
HH Income Under 50k	0.33	0.34	0.32	0.34	0.31
Education: BA+	0.55	0.55	0.56	0.55	0.54
Any School Aged Children	0.34	0.33	0.33	0.32	0.38
Northeast	0.16	0.15	0.17	0.17	0.17
South	0.44	0.44	0.44	0.44	0.41
Midwest	0.19	0.18	0.17	0.18	0.24
West	0.21	0.23	0.22	0.21	0.17

Table 1. Demographic characteristics of the full analytic sample of 1,745 U.S. adults, divided by treatment arm. All values represent proportions unless otherwise specified.

Category	Text	Mean	SD	Minimum Value	Maximum Value
Perceived Inequality	On a scale from 1 to 10, **how different are the schools** in our district?	6.31	2.77	1 - Not different at all	10 - Completely different
Fairness and Deservingness	"The district policy of [school admissions policy] **is fair**."	4.84	1.87	1 - Strongly disagree	7 - Strongly agree
	"The district policy of [school admissions policy] **puts students into the schools they deserve**."	3.78	1.89	1 - Strongly disagree	7 - Strongly agree
	"The district policy of [school admissions policy] **gives students the opportunity to attend a good school**."	4.72	1.78	1 - Strongly disagree	7 - Strongly agree
	"In our school district, **students can succeed regardless of the school they attend**."	4.36	1.74	1 - Strongly disagree	7 - Strongly agree
Inequality and Meritocracy	"Some people say that **people get ahead by their own hard work; others say that lucky breaks or help from other people are more important.** Which do you think is most important?"	4.6	1.84	1 - Luck is by far the most important	7 - Hard work is by far the most important
	"**Differences in income in the United States are too large**."	5.72	1.6	1 - Strongly disagree	7 - Strongly agree
	"**Differences in school quality in the United States are too large**."	5.84	1.35	1 - Strongly disagree	7 - Strongly agree
	"Is it just or unjust—right or wrong—that **people with higher incomes can buy better education for their children** than people with lower incomes?"	3.18	1.92	1 - Completely unjust	7 - Completely just
Policy Proposals	"Imagine the federal government has a budget surplus. **How should the extra money be divided between schools in wealthier areas and schools in poorer areas?**"	5.85	1.25	1 - Significantly more to wealthier schools	7 - Significantly more to poorer schools

"The federal government has a budget surplus and is deciding whether to use the funds to **improve the existing public school system or to provide school vouchers** that allow families to use public funds to send their children to private schools or homeschool. Which option do you support more, if you had to choose between the two options?"	2.89	2.16	1 - Strongly disagree	7 - Strongly agree
"Do you think **income taxes on millionaires** should be increased, stay the same, or decreased?"	5.68	1.43	1 - Significantly decrease	7 - Significantly increase
"Should the government **increase or decrease spending on social programs for low-income people**, even if it results in a higher national deficit?"	5.13	1.67	1 - Significantly decrease spending	7 - Significantly increase spending

Table 2. Descriptions of response questions and their means, standard deviations, and range of values for the full analytic sample.

Outcome	Admissions Regime	Predicted Probability	SE	Contrasts
Perceived Inequality in School District	a. Meritocratic	5.61	0.09	
	b. Random	5.75	0.08	c*
	c. Residential Priority	5.52	0.09	b*, d*
	d. Residential No Choice	5.72	0.14	c*
System Fairness	a. Meritocratic	4.93	0.08	c, d
	b. Random	4.87	0.08	c, d
	c. Residential Priority	5.46	0.09	a, b, d
	d. Residential No Choice	3.95	0.13	a, b, c
Deservingness of Student Outcomes	a. Meritocratic	4.9	0.08	b, c, d
	b. Random	3.06	0.07	a, d
	c. Residential Priority	4.05	0.08	a, b, d
	d. Residential No Choice	2.93	0.12	a, c
Access to Good Schools	a. Meritocratic	5.33	0.08	b, c, d
	b. Random	5.03	0.07	a, c, d
	c. Residential Priority	4.53	0.08	a, b, d
	d. Residential No Choice	3.47	0.12	b, c, d
Students Can Succeed at Any School	a. Meritocratic	4.45	0.08	c*
	b. Random	4.48	0.07	c*
	c. Residential Priority	4.66	0.08	a*, b*, d
	d. Residential No Choice	4.31	0.12	c

Table 3a. Predicted probabilities for inequality perceptions, and fairness and deservingness beliefs, by admissions regime. Predicted probabilities were generated using a model that includes key demographic covariates. The "contrasts" column indicates which predicted probabilities by admissions regimes are different from each other at $p < 0.05$ (* asterisks denote a difference at $p < 0.1$).

Outcome	Inequality Context	Predicted Probability	SE	
Perceived Inequality in School District	e. High-Inequality	7.85	0.06	f
	f. Low-Inequality	3.45	0.08	e
System Fairness	e. High-Inequality	4.61	0.05	f
	f. Low-Inequality	4.99	0.08	e
Deservingness of Student Outcomes	e. High-Inequality	3.55	0.05	f
	f. Low-Inequality	3.92	0.08	e
Access to Good Schools	e. High-Inequality	4.45	0.05	f
	f. Low-Inequality	4.73	0.07	e
Students Can Succeed at Any School	e. High-Inequality	4.02	0.05	f
	f. Low-Inequality	4.93	0.08	e

Table 3b. Predicted probabilities for inequality perceptions, and fairness and deservingness beliefs, by inequality context. Predicted probabilities were generated using a model that includes key demographic covariates. The "contrasts" column indicates which predicted probabilities by inequality contexts are different from each other at $p < 0.05$ (* asterisks denote a difference at $p < 0.1$).

Outcome	Admissions Regime	Predicted Probability	SE	Contrasts
Differences in School Quality in U.S. are Too Large	a. Meritocratic	5.84	0.06	
	b. Random	5.87	0.06	
	c. Residential Priority	5.8	0.06	
	d. Residential No Choice	5.77	0.09	
Hard Work or Luck is Most Important in Getting Ahead	a. Meritocratic	4.66	0.08	
	b. Random	4.62	0.07	
	c. Residential Priority	4.45	0.08	
	d. Residential No Choice	4.6	0.12	
Redistribute School Funding	a. Meritocratic	5.84	0.06	
	b. Random	5.88	0.05	
	c. Residential Priority	5.82	0.06	
	d. Residential No Choice	5.9	0.09	
Increase Funding for School Vouchers	a. Meritocratic	2.98	0.09	
	b. Random	2.82	0.09	
	c. Residential Priority	2.82	0.1	
	d. Residential No Choice	2.88	0.14	
Increase Millionaire Tax	a. Meritocratic	5.65	0.06	
	b. Random	5.73	0.05	
	c. Residential Priority	5.6	0.06	
	d. Residential No Choice	5.72	0.09	
Fund Social Programs for Low-Income Populations	a. Meritocratic	5.15	0.07	
	b. Random	5.09	0.06	
	c. Residential Priority	5.1	0.07	
	d. Residential No Choice	5.17	0.1	

Table 4a. Predicted probabilities for inequality and meritocracy beliefs, and support for redistributive policies, by admissions regime. Predicted probabilities were generated using a model that includes key demographic covariates. The "contrasts" column indicates which predicted probabilities by admissions regimes are different from each other at $p < 0.05$.

Outcome	Inequality Context	Predicted Probability	SE
Differences in School Quality in U.S. are Too Large	e. High-Inequality	5.88	0.04
	f. Low-Inequality	5.76	0.06
Hard Work or Luck is Most Important in Getting Ahead	e. High-Inequality	4.61	0.05
	f. Low-Inequality	4.55	0.08
Redistribute School Funding	e. High-Inequality	5.86	0.04
	f. Low-Inequality	5.86	0.05
Increase Funding for School Vouchers	e. High-Inequality	2.91	0.06
	f. Low-Inequality	2.84	0.09
Increase Millionaire Tax	e. High-Inequality	5.71	0.04
	f. Low-Inequality	5.65	0.06
Fund Social Programs for Low-Income Populations	e. High-Inequality	5.16	0.04
	f. Low-Inequality	5.09	0.06

Table 4b. Predicted probabilities for inequality and meritocracy beliefs, and support for redistributive policies, by inequality context. Predicted probabilities were generated using a model that includes key demographic covariates. The "contrasts" column indicates which predicted probabilities by inequality contexts are different from each other at $p < 0.05$.

		High-Inequality Context		Low-Inequality Context				
Outcome	**Admissions Regime**	**Predicted Probability**	**SE**	**Predicted Probability**	**SE**	**First Differences**		**Second Differences**
Perceived Inequality in School District	a. Meritocratic	7.68	0.1	3.54	0.14	4.14	***	d
	b. Random	7.93	0.1	3.58	0.13	4.35	***	
	c. Residential Priority	7.7	0.11	3.34	0.14	4.36	***	
	d. Residential No Choice	8.09	0.13	3.33	0.24	4.76	***	a
System Fairness	a. Meritocratic	4.81	0.1	5.04	0.14	-0.23		
	b. Random	4.66	0.1	5.07	0.13	-0.41	**	
	c. Residential Priority	5.25	0.11	5.68	0.14	-0.43	*	
	d. Residential No Choice	3.71	0.13	4.18	0.23	-0.47	+	
Deservingness of Student Outcomes	a. Meritocratic	4.77	0.09	5.04	0.13	-0.27	+	
	b. Random	2.9	0.09	3.21	0.12	-0.31	*	
	c. Residential Priority	3.86	0.1	4.24	0.13	-0.38	*	
	d. Residential No Choice	2.68	0.12	3.19	0.21	-0.51	*	
Access to Good Schools	a. Meritocratic	5.28	0.09	5.38	0.13	-0.1		d
	b. Random	5.04	0.09	5.02	0.12	0.02		d
	c. Residential Priority	4.36	0.1	4.69	0.12	-0.33	*	
	d. Residential No Choice	3.11	0.12	3.83	0.21	-0.72	**	a, b
Students Can Succeed at Any School	a. Meritocratic	4.08	0.09	4.82	0.13	-0.74	***	
	b. Random	3.96	0.09	5	0.12	-1.04	***	
	c. Residential Priority	4.21	0.1	5.11	0.13	-0.9	***	
	d. Residential No Choice	3.84	0.12	4.77	0.21	-0.93	***	

Table 5. Predicted probabilities by the intersection of admissions regime and inequality context. "First differences" indicate the difference for each admissions regime across the high- and low-inequality contexts (+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$). "Second differences" indicate which first differences are significantly different across admissions regimes (at $p < 0.05$).

		Conservatives		Liberals				
Outcome	**Admissions Regime**	**Predicted Probability**	**SE**	**Predicted Probability**	**SE**	**Difference Across Political Ideology**		**Second Differences**
Perceived Inequality in School District	a. Meritocratic	5.58	0.16	5.54	0.13	0.04		
	b. Random	5.66	0.14	5.77	0.13	-0.11		
	c. Residential Priority	5.3	0.15	5.63	0.14	-0.33		
	d. Residential No Choice	5.73	0.24	5.82	0.19	-0.09		
System Fairness	a. Meritocratic	5.53	0.16	4.46	0.13	1.07	***	b, c, d
	b. Random	4.82	0.14	4.98	0.12	-0.16		a, c
	c. Residential Priority	5.64	0.15	5.2	0.14	0.44	*	a, b
	d. Residential No Choice	4.11	0.23	3.89	0.19	0.22		a
Deservingness of Student Outcomes	a. Meritocratic	5.7	0.15	4.43	0.12	1.27	***	b, c
	b. Random	3.26	0.13	2.97	0.12	0.29	+	a
	c. Residential Priority	4.31	0.14	3.69	0.13	0.62	**	a
	d. Residential No Choice	3.45	0.22	2.61	0.17	0.84	**	
Access to Good Schools	a. Meritocratic	5.85	0.15	5.02	0.12	0.83	***	b
	b. Random	5.1	0.13	5.02	0.11	0.08		a, c
	c. Residential Priority	4.83	0.14	4.27	0.13	0.56	**	b
	d. Residential No Choice	3.76	0.21	3.32	0.17	0.44		
Students Can Succeed at Any School	a. Meritocratic	4.77	0.15	4.16	0.12	0.61	**	
	b. Random	4.67	0.13	4.4	0.12	0.27		
	c. Residential Priority	4.81	0.14	4.59	0.13	0.22		
	d. Residential No Choice	4.56	0.22	4.1	0.18	0.46	+	

Table 6. Predicted probabilities by the intersection of admissions regime and political ideology. "First differences" indicate the difference for each admissions regime across liberals and conservatives (+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$). "Second differences" indicate which first differences are significantly different across admissions regimes (at $p < 0.05$).

Appendix Tables and Figures

	Full Sample	Analytic Sample
N	1,800	1,745
Male	0.48	0.48
Female	0.5	0.5
White	0.63	0.63
Black	0.12	0.12
Asian	0.06	0.06
Multiracial	0.04	0.04
Hispanic	0.11	0.11
Median Age	46	46
Politics: Liberal	0.41	0.41
Politics: Conservative	0.33	0.33
Born in the U.S.	0.93	0.93
HH Income Above 100k	0.34	0.34
HH Income Under 50k	0.31	0.31
Education: BA+	0.33	0.33
Any School Aged Children	0.56	0.55
Region: Northeast	0.17	0.17
Region: South	0.43	0.43
Region: Midwest	0.19	0.19
Region: West	0.21	0.21
Median Duration (Minutes)	7.75	7.73
Quick Respondent (< 3.1 Minutes)	0.01	0.01
Retook Manipulation Check	0.03	0.03
Failed Attention Check	0.02	0

Appendix Table A. Comparison of the full sample and analytic sample along selected demographic variables (upper panel) and survey metadata (lower panel). All values are proportions unless indicated otherwise.

	Proportion Missing
Age	0
Gender	0.001
Race/Ethnicity	0.002
Politics	0.026
Income	0.001
Ed. Attainment	0.001
Nativity	0.002
Parental Status	0.003
Region	0.057

Appendix Table B. Proportion missing for each demographic covariate, prior to imputation.

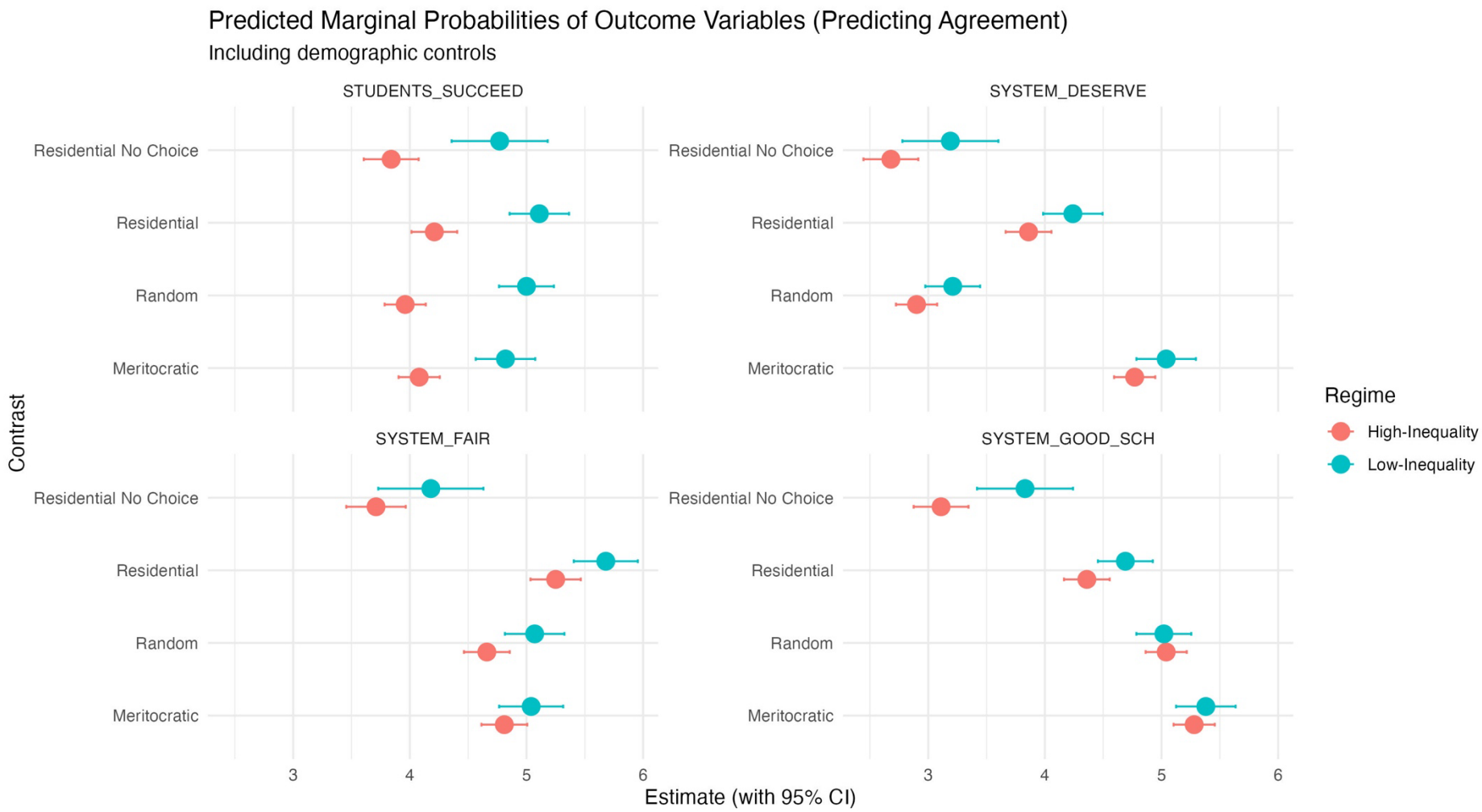
Outcome	Admissions Regime	Predicted Probability	SE	Contrasts
System Fairness	a. Meritocratic	0.65	0.02	c, d
	b. Random	0.64	0.02	c, d
	c. Residential Priority	0.77	0.02	a, b, d
	d. Residential No Choice	0.41	0.04	a, b, c
Deservingness of Student Outcomes	a. Meritocratic	0.63	0.02	b, c, d
	b. Random	0.15	0.02	a, d
	c. Residential Priority	0.36	0.02	a, b, d
	d. Residential No Choice	0.17	0.03	a, c
Access to Good Schools	a. Meritocratic	0.76	0.02	b, c, d
	b. Random	0.68	0.02	a, c, d
	c. Residential Priority	0.48	0.02	a, b, d
	d. Residential No Choice	0.26	0.04	b, c, d
Students Can Succeed at Any School	a. Meritocratic	0.51	0.02	c*
	b. Random	0.54	0.02	
	c. Residential Priority	0.57	0.02	a*, d
	d. Residential No Choice	0.47	0.04	c
Outcome	**Inequality Context**	**Predicted Probability**	**SE**	
System Fairness	e. High-Inequality	0.58	0.01	f
	f. Low-Inequality	0.66	0.02	e
Deservingness of Student Outcomes	e. High-Inequality	0.31	0.01	f*
	f. Low-Inequality	0.35	0.02	e*
Access to Good Schools	e. High-Inequality	0.52	0.01	f
	f. Low-Inequality	0.58	0.02	e
Students Can Succeed at Any School	e. High-Inequality	0.4	0.02	f
	f. Low-Inequality	0.64	0.02	e

Appendix Table C. Predicted probabilities for inequality perceptions, and fairness and deservingness beliefs, by admissions regime and inequality context using binary outcomes, predicting agreement ("Slightly Agree" or stronger). Predicted probabilities were generated using a model that includes key demographic covariates. The "contrasts" column indicates which predicted probabilities by admissions regimes or inequality contexts are different from each other at $p < 0.05$ (* asterisks denote a difference at $p < 0.1$).

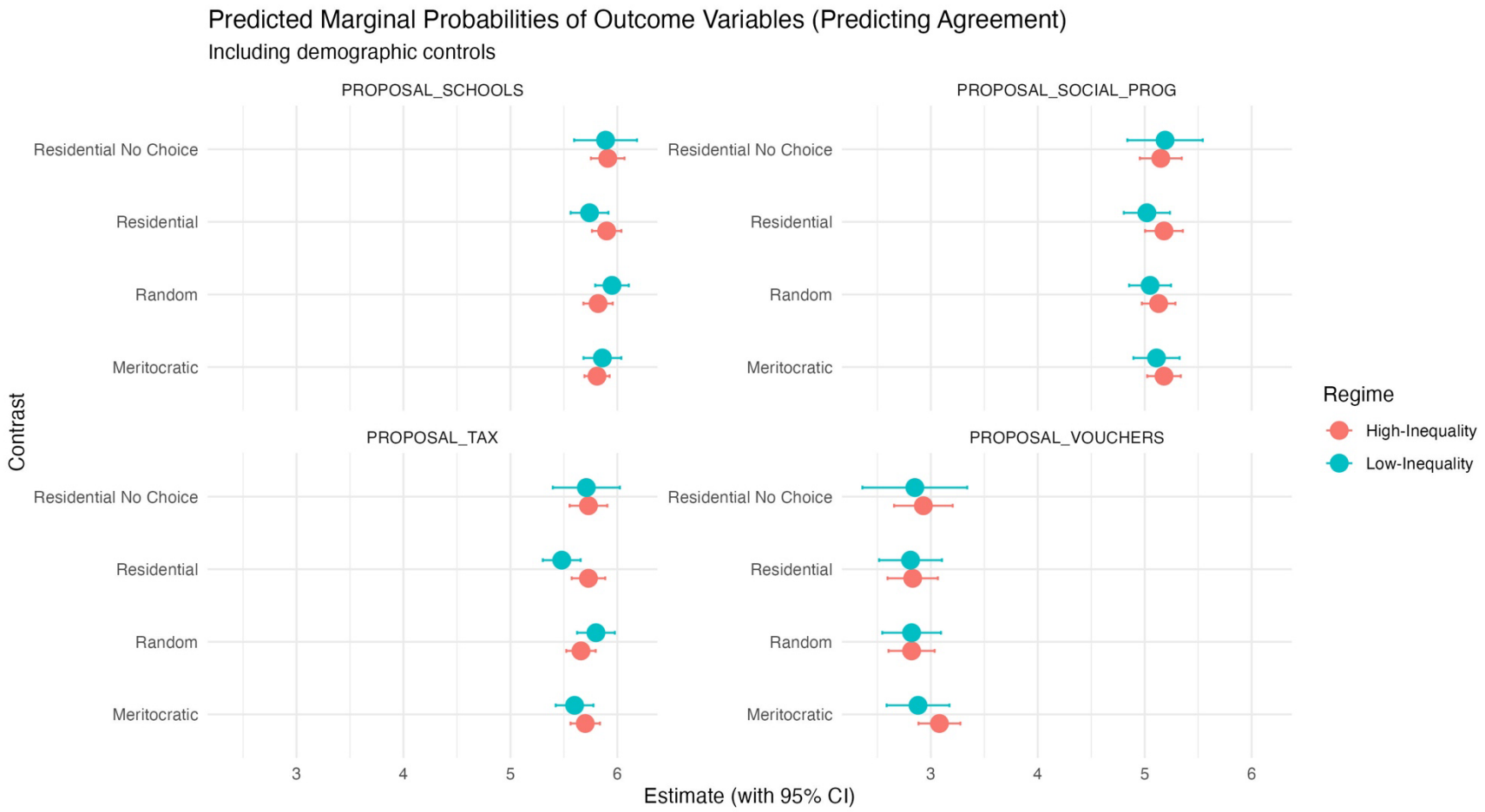
School Name	Overall Score (1-10)	Admissions Method
East High School Anytown, USA		Residential Zone[1]
West High School Anytown, USA		Residential Zone[1]
North High School Anytown, USA		Residential Zone[1]

[1] According to school district policy, students must attend the high school located in their residential zone.

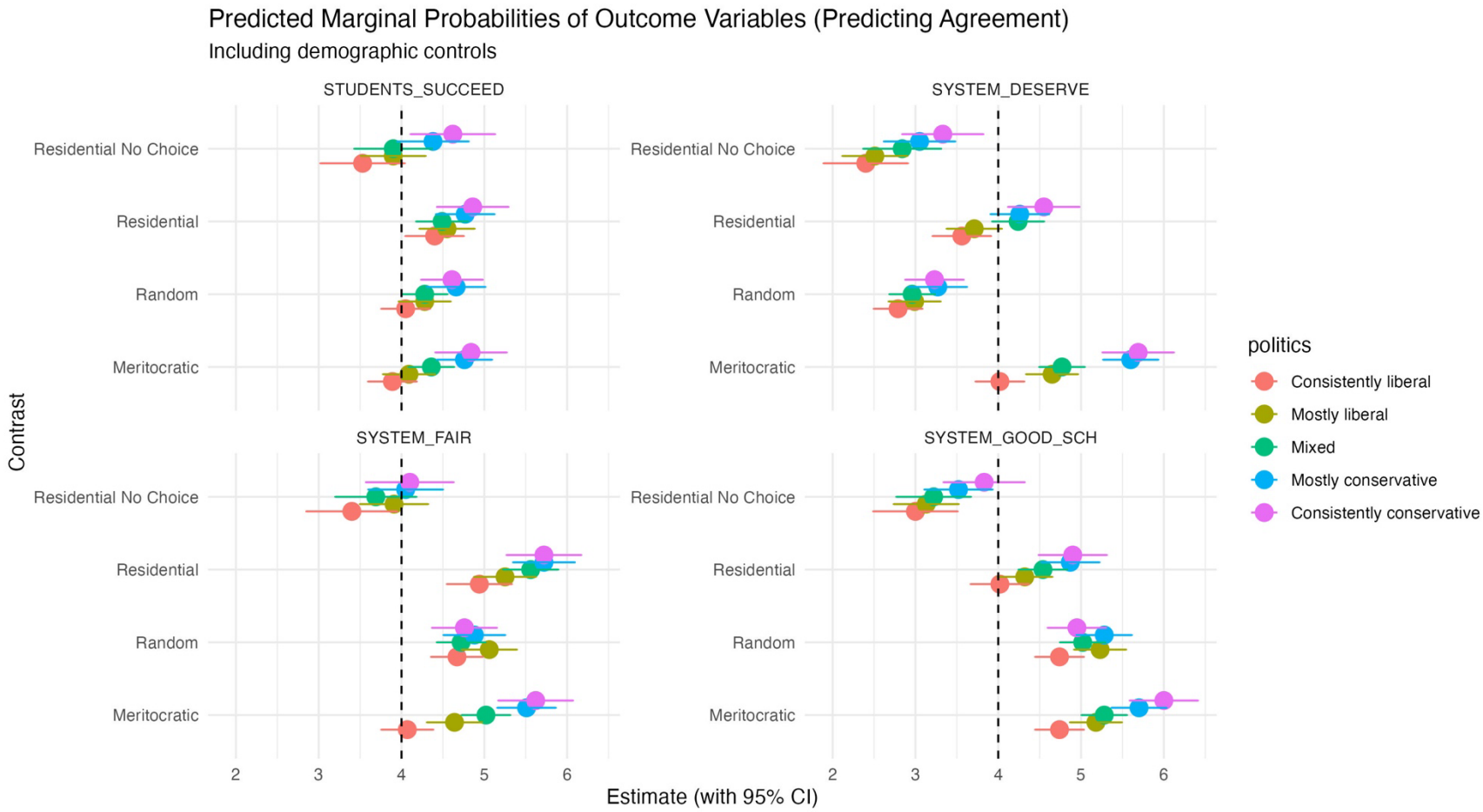
Appendix Figure A. Example of information presented to respondents in the survey experiment. School names and overall scores were randomly assigned and ordered. Regardless of the condition, all three schools had the same admissions method (Residential Zone, Residential Priority, Random Lottery, or Grades and Test Scores).



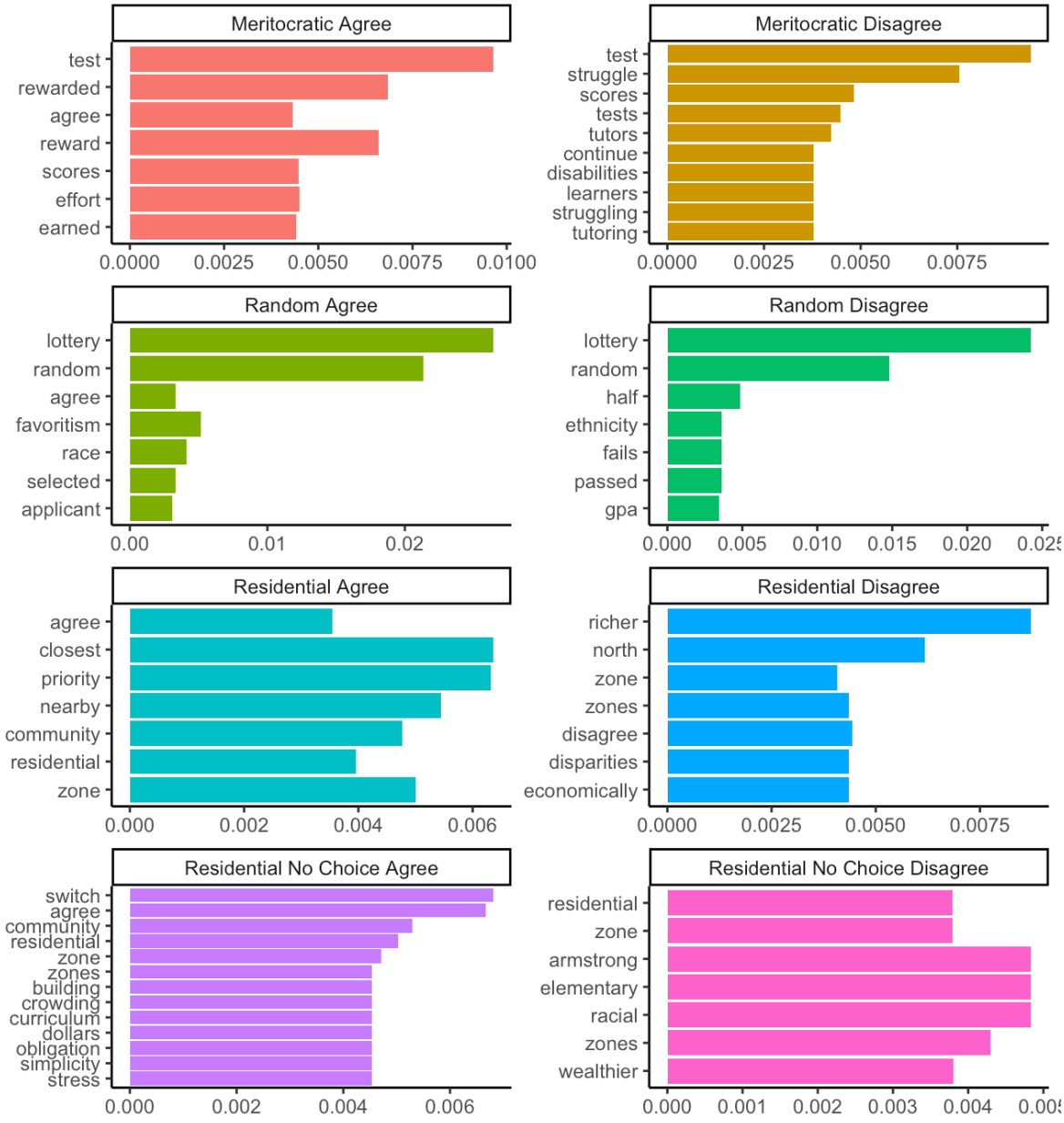
Appendix Figure B. Predicted probabilities of fairness and deservingness variables, by admissions regime and inequality context.



Appendix Figure C. Predicted probabilities of redistributive proposal outcome measures, by admissions regime and inequality context.



Appendix Figure D. Predicted probabilities of fairness and deservingness variables, by admissions regime and political ideology.



Appendix Figure E. Most significant (relative importance) word tokens in open-ended text responses about system fairness, stratified by admissions regime and whether the respondent agreed or disagreed with system fairness. Top word tokens were determined by their term frequency-inverse document frequency (TF-IDF) values. *Note: Agree and Disagree refer to whether they believe the admissions system is fair (agree) or unfair (disagree).*

Conclusion

Across three chapters, this dissertation investigated educational inequalities within different parts of school choice systems: the school application process, the purported benefits of elite schools, and the legitimizing effect of school admissions regimes. Each chapter provides evidence that school choice does not operate uniformly across all students and families, highlighting the variation rather than the experiences of the average student or family. Moreover, different chapters highlight how structural forces and organizational features play an important role in shaping students' educational trajectories.

Summary of Findings

Research Question 1: How do we characterize the heterogeneity among students in the school choice process?

In Chapter 1, I used an inductive clustering approach to identify six distinct student clusters within New York City's high school choice system. I found that students make trade-offs between academic performance, proximity, safety, and other factors. For instance, some students choose schools with high academic quality, even at the cost of longer commute times, while others prioritize local schools despite their lower performance. The application behaviors made by students and families are not only shaped by individual preferences but also by structural constraints—like race, class, geography, and available information. This focus on heterogeneity challenges the literature that treats school choice as a uniform or linear process and highlights the importance of structural constraints in determining school choice application behaviors.

Research Question 2: Do all students benefit from seemingly advantageous school environments?

Chapter 2 challenges the assumption that attending selective schools automatically benefits all students. In this chapter, I used a regression-discontinuity design to estimate the causal effect of attending a more selective high school on advanced math course-taking. My analysis found that although selective schools may provide symbolic benefits (i.e., prestige) to their students, they do not uniformly guarantee better access to advanced math opportunities. High levels of internal stratification within some of these schools create barriers to advanced coursework, even for some of the highest-achieving students in the school district. My findings challenge the assumption that elite schools provide superior educational opportunities and suggest that the benefits of attending such schools are more contingent upon organizational structures within schools, such as tracking practices and barriers to advanced coursework.

Research Question 3: How might school admissions regimes shape perceptions of fairness and legitimacy?

In Chapter 3, I explored how different school admissions policies influence perceptions of fairness, deservingness, and legitimacy using a survey experiment of a nationally representative sample of U.S. adults. I found that, in general, when respondents were randomly exposed to meritocratic and choice-based admissions regimes, it increased their perceptions of these systems as fair, even when the underlying educational inequality was constant across conditions. Respondents exposed to meritocratic and choice-based systems viewed them as more legitimate, even though respondents did not have evidence that these frameworks offered reduced inequality compared to other admissions regimes. This result suggests that institutional

design features of education systems serve as powerful legitimizing agents, potentially framing inequality as a deserved outcome of individual effort under certain regimes.

Implications for Theory and Policy

These findings have several important implications for both sociological theory and social policy. Regarding theory, this dissertation contributes to three main areas of sociological inquiry: the sociology of education, social stratification, and the sociology of organizations.

The sociology of education has long explored how educational systems perpetuate inequalities, but this dissertation makes an important contribution by analyzing how school choice systems shape access to educational opportunities. Chapter 2's focus on the benefits of elite, selective schools complicates the widely held belief that attending prestigious schools automatically benefits students in terms of academic performance or access to advanced opportunities. Additionally, Chapter 1's analysis of heterogeneous application behaviors highlights the social contextualization of school choice. Students' decisions are not simply a reflection of personal agency, but they are deeply affected by their broader social contexts. This finding contributes to the sociology of education by suggesting that school choice systems may facilitate diverse educational trajectories based on students' different access to resources at the time of application – even before they enroll in their "chosen" schools. Chapter 3 further contributes to the sociology of education by demonstrating how the design of admissions policies affects public opinion and may contribute to the legitimation of unequal educational opportunities.

Additionally, this dissertation, at its core, is an examination of social stratification. In particular, the findings in Chapter 1 on the heterogeneity of school choice application behaviors

challenge the assumption that choice systems provide an arena where students are on a level playing field. By revealing six distinct student clusters, each with its own set of preferences, priorities, and constraints, the chapter demonstrates that choice operates differently for students from different racial, socioeconomic, and geographic backgrounds. Furthermore, Chapter 3's argument regarding how meritocratic admissions systems can legitimize social inequalities demonstrates that systems that appear to be fair or equitable may lead individuals to view any inequities as legitimate or deserved.

Regarding the sociology of organizations, this dissertation examines how organizational structures—specifically, school choice systems and the internal dynamics of schools—contribute to social inequality. In Chapter 2, the findings about internal stratification within selective schools reveal that organizational practices can produce disparities – even in schools that seem to provide better resources on average. Moreover, the findings in Chapter 3 point to the power of organizational design features in shaping perceptions of fairness and legitimacy. By analyzing how different admissions regimes affect public views of social stratification, I contribute to the sociology of organizations by showing how the institutional design of educational systems can serve as a powerful legitimizing force.

The findings of this dissertation also have several implications for social policy, particularly regarding the design and implementation of school choice systems. A key implication of this dissertation is the need to interrogate the assumption that all students benefit equally from expanded school choice. Policymakers should consider how structural constraints, such as access to information, housing instability, and availability of transportation shape students' access to opportunities within school choice systems that purport to give people agency to make their own choices. Moreover, and critically, school choice systems might legitimize

inequality and shift the onus of schooling outcomes to the individual under the guise of increased agency. This suggests that admissions policies should not be evaluated solely based on whether they are perceived as "fair" but also on whether they genuinely contribute to reducing educational inequalities.

In sum, this dissertation explores how school choice systems may reflect, mitigate, or perpetuate broader processes of social stratification. By examining the heterogeneity of students' school choices, the uneven benefits of selective schools, and the legitimating function of admissions systems, my dissertation challenges the assumption that school choice systems have universal benefits – particularly along dimensions that may be unexpected. I argue that “choice” operates in unequal ways, deeply shaped by structural constraints. In each chapter, highlight the role of institutional design—whether it is the structure of application systems, the internal organizational practices of schools, or admissions processes themselves—in perpetuating or mitigating inequality. I believe these insights are crucial for sociologists and policymakers seeking to understand how education systems can contribute to broader patterns of social stratification.