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Structured Choice: School Segregation at the Intersection of Policy and Preferences

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Abstract
This paper conceptualizes segregation as a phenomenon that emerges from the intersection of public policy and individual decision-making. Contemporary scholarship on complex decision-making describes a two-step process—1) Editing and 2) Selection— and has emphasized the individual decision-maker's agency in both steps. We build on this work by exploring, both theoretically and empirically, how policy can structure the choices individuals face at each step. We conduct this exploration within the empirical context of enrollment decisions among families in the Wake County Public School System (WCPSS), which used a controlled school choice system to help achieve diversity aims. We first investigate the schooling choice sets that WCPSS constructed for families and then examine families' schooling selections. We find that families were offered choice sets containing schools varying racial compositions, but that the racial makeup of schools in families' choice set systematically varied by schooling type and student race/ethnicity. We further show that a majority of families enrolled in their district-assigned default school, with Black and Hispanic families more likely than white or Asian families to attend this option. Finally, we demonstrate that white or Asian families enroll in their default school at lower rates as the share of Black students increases.

Introduction

Racial segregation plays a well-documented role in the maintenance of racial inequality in the United States. School segregation co-occurs with inequalities in school finance and learning opportunities, contributing to racial skills gaps, as well as inequalities in educational attainment, exposure to the criminal justice system, adult health, and employment and earnings (Reardon & Owens 2014; Johnson 2011; Billings, Deming, & Rockoff 2014; Card & Rothstein 2007; Lutz 2011; Reber 2010; Ashenfelter, Collins & Yoon 2006). Neighborhood segregation, one of the primary drivers of school segregation (Monarrez, Forthcoming), underlies inequalities in exposure to crime, hostile policing, and environmental hazards as well access to employment, healthcare, transportation, nutrition, and wealth-accumulating assets (Massey & Denton 1993; Oliver & Shapiro 2006; Wilson 2012; White & Borrell 2011).

In this paper, we conceptualize segregation as a phenomenon that emerges from the intersection of public policy and individual decision-making. We empirically explore this conceptualization within the realm of contemporary public school segregation, a context long shaped by both policy and individual choice. On the policy front, meaningful action commenced with the landmark 1954 *Brown vs. Board of Education* decision, where the U.S. Supreme Court ruled *de jure* school segregation unconstitutional. A year later, the Court followed up its initial decision with *Brown vs. Board of Education II*, which articulated a more affirmative obligation to desegregate schools "with all deliberate speed." The federal government enforced these Supreme Court decisions in the 1970s and 1980s, issuing orders to municipal and regional leaders in communities across the United States that required the implementation of a range of desegregation strategies, including: district mergers, school attendance zone adjustments, busing programs and other systems designed to move students out of racially segregated schools, and

magnet schools designed to attract diverse student populations (Armor 1995; Delmont 2016; Clotfelter 2004; Wang & Herman 2017). These policy efforts were met with stiff political resistance and families employed a range of strategies for opting out of desegregating schools (Andrews 2002; Delmont 2016). Nonetheless, in the aggregate, these policy initiatives substantially reduced the degree of racial segregation in U.S. public schools (Clotfelter 2004; Logan, Zhang & Oakley 2017).

More recently, however, the courts have begun to release districts from desegregation orders (Fiel & Zhang 2019) and impose sharp legal constraints on the explicit use of race in school assignments (Orfield, Frankenberg, & Lee 2003; Clotfelter 2004). At the same time, the school choice movement has reshaped the process of matching students to public schools, replacing a system in which districts largely had the authority to assign students to schools with one where families expect to be able to choose among a range of educational options. These developments have dramatically slowed school desegregation trends across the U.S. (Reardon & Owens 2014; Stroub & Richards 2013) and contributed to resegregation in some locales (Reardon et al. 2012; Fiel 2013). Several studies indicate a link between school choice and (re)segregation (e.g., Bifulco & Ladd 2007; Bifulco, Ladd, & Ross 2009; Monarrez, Kisida, & Chingos 2022; Marcotte & Dalane 2019; Rich, Candipan, & Owens 2021), a finding that points to the central role that family school choices play in shaping contemporary school segregation patterns (Buckley & Schneider 2009; Roda and Wells 2013; Ukanwa, Jones, & Turner Jr. 2022).

A growing body of scholarship investigates the ways people approach complex decisions such as schooling choices. This research describes a two-stage choice process. In the first stage, sometimes referred to as “editing,” individuals draw upon social and informational resources to construct a manageable set of options to select among. In the second stage, individuals choose

from among this restricted choice set (Bruch & Feinberg 2017; March 1994). Both stages of the decision-making process likely contribute to school segregation. With respect the editing phase, because people occupy segregated social networks and access to schools and neighborhoods varies by race and ethnicity, individuals often develop racially segregated choice sets. In the second stage, as people choose among the schools and neighborhoods in their choice sets, they often exercise preferences for racial homophily (Krysan & Crowder 2017; Burdick Will et al. 2020; Buckley & Schneider 2009.)

The work on complex decision-making has provided significant insight into the ways that behavioral factors—social network composition, selection of informational resources, and preferences for homophily, among others—shape the choice process. However, the literature on complex choices generally, and schooling choices specifically, rarely attends to the broader environment in which individuals make decisions—in other words, the environment is taken as exogenous. Such inattention has resulted in little work examining the potential for policy to structure either the "editing" or "selection" phases of the two-stage school choice process. This lack of engagement comes in spite of the fact that school segregation levels vary across school systems (Potter 2022) and that a wide range of policy choices—including decisions about school district boundaries and school attendance zones (Erickson 2012; Frankenberg, Siegel-Hawley & Diem 2017; Houck & Murray 2019; Richards 2014; Saporito 2017), the structure of school choice policies (Bifulco & Ladd 2007; Fiel 2015), the range of available transportation options (Blagg, Rosenboom, & Chingos 2018; Edwards 2021; Pogodzinsky, et al. 2022), and the distribution of school programmatic offerings (Rossell 2003)—almost certainly help explain that variation.

Our analyses highlight the dual roles of policy and preferences in each of the "editing" and "selection" phases of the two-stage process that families use to select schools. That is, we explore how policy interacts with families' schooling preferences throughout the school enrollment process, and assess the implications of this interaction for segregation across public elementary schools in North Carolina's Wake County Public School System (WCPSS). Between 1999 and 2011, this large and diverse district operated an innovative school desegregation initiative that assigned students to default "base" schools while providing limited choice option in pursuit of diversity goals.

In partnership with WCPSS, we have constructed a dataset describing all students enrolled as kindergarteners in WCPSS schools between the 1999-00 and 2010-11 school years. A key component of this dataset is a record of each student's district-defined choice set. That is, for each student, the dataset records the set of schools that WCPSS specified as options for the family to select among. Our ability to observe this information allows for unique insights into both the ways that district policy shapes the set of schools that families choose among and the factors that shape the schooling choices within families' defined choice sets. Accordingly, our analyses proceed in two parts. In the first part, we document how WCPSS shaped the initial "editing" stage of incoming kindergarteners' school choice sets, describing variation in the racial composition of schools in students' choice sets. Our analyses indicate that the racial demographics of assigned schooling options varied significantly across students of different racial/ethnic backgrounds, with Black and Hispanic families more likely to be assigned to default, or "base," schools with higher shares of Black students, relative to Asian and white families. To potentially counter this pattern, the WCPSS-specified magnet schooling options of

white and Asian families were, on average, more racially diverse than their assigned base schools.

In the second stage, we analyze how families select a school from their district-defined choice set, placing particular emphasis on the roles of school type and race in shaping families' Kindergarten enrollment decisions. We find that most families enrolled in their assigned base school, with Black and Hispanic families more likely than white or Asian families to accept the base schooling option. However, we find that the likelihood of a white or Asian family enrolling their kindergartner in their base school declines significantly as the share of Black students increase. Taken together, our results shed light on the way that public policy and private decisions interact to produce and reproduce school segregation in the contemporary world.

School (De)Segregation in Wake County, North Carolina

School desegregation has been a slow and halting process in Wake County (Ayscue et al. 2018; Parcel & Taylor 2015; Parcel, Hendrix, & Taylor 2015). In the late 1960s and early 1970s, a series of court rulings and threats of withheld federal funding ratcheted up the pressure for meaningful desegregation (Mickelson, Smith, & Nelson 2017). After years of contentious negotiations, the county and city districts merged in 1976, creating WCPSS. The newly-merged district soon launched the ambitious "15-45" racial desegregation policy, which, for nearly 20 years, held that the student body at each school in the district would be no less than 15 percent Black and no more than 45 percent Black. However, in the 1990s, judicial rulings affecting the nearby Charlotte-Mecklenburg schools sparked fears that this race-focused assignment policy would be ruled unconstitutional, leading WCPSS to redesign the policy to achieve demographic balance across schools in terms of socioeconomic status and student achievement levels, rather than race.

The district's socioeconomic-based desegregation plan, which is among the country's most well-studied contemporary desegregation efforts (Parcel & Taylor 2015; Willams & Houck 2013; Carlson et al. 2020; Domina, et al. 2021; McMillian et al. 2018), aimed to ensure that no school had a student body with more than 40 percent of students eligible for free- or reduced-price lunch or more than 25 percent of students performing below grade level on standardized reading and math tests. As the initial step toward achieving these goals, WCPSS divided the county into roughly 1,500 geographic nodes—a node can be thought of as a micro-neighborhood—that each contained approximately 125 students. WCPSS assigned each node to a "base" or default elementary, middle, and high school. Then, to achieve the twin goals of accommodating Wake County's explosive population growth and maintaining the desired degree of socioeconomic balance, WCPSS annually reassigned approximately 5 to 10 percent of nodes each year to a new base school. Given the district's preference to minimize travel time, these reassignments drove only relatively minor changes in school demographics. Nonetheless, reassignments played an important role in maintaining diversity levels previously achieved by the district's race-focused desegregation plan and diversified some of the district's most racially isolated schools (Carlson et al. 2020).

In addition to adjusting base school assignments, the district also implemented a controlled choice program that specified sets of schools that families could choose to attend in lieu of their base school. All students had access to at least one "calendar option" allowing students whose base school operated on a traditional 9-month calendar to opt into a school with a year-round calendar, or vice versa.[1] In addition, WCPSS provided each node with at least three

[1] WCPSS began creating year-round schools in 1989 in response to rapid population growth. These schools enroll 1/3 more students than their space would allow on a traditional calendar by sorting students into four cohorts that are scheduled sequentially through the year.

magnet options, including: (1) "neighborhood" magnet options to which the district provided door-to-door transportation,[2] (2) "express" magnet options, which established regional park-and-ride locations where children could access buses to magnet schools, and (3) "no transportation" magnet options that families in the node could apply to attend.

School segregation and school choice

WCPSS is not unique in its use of school choice as one part of its school desegregation efforts. Starting in the 1970s, school districts across the United States created magnet schools and other intra-district choice options to offset well-documented patterns of white flight from desegregating school districts (Logan, Zhang, & Oakley 2017; Reber 2005), encourage students to enroll in racially diverse schools (Goldring & Swain 2020), and attenuate the relationship between students' neighborhood and school demographics (Rich & Jennings 2015; Carlson et al. 2020; Bischoff & Tach 2018; Rich, Candipan, & Owens 2021). School choice advocates have argued that, given the segregation resulting from residence-based school assignments, these types of choice policies can contribute to school desegregation by allowing youth in racially and socioeconomically segregated neighborhoods to attend schools with greater levels of demographic diversity (Archbald 2004; Kahlenberg 2001; Young & Clinchy 1992).

In practice, however, school choice programs often create opportunities for families to act on preferences for racial homophily (Denice & Gross 2016; Hailey 2022, Billingham & Hunt 2016, Buckley and Schneider 2009; Glazerman & Dotter 2017) and the expansion of educational choice contributes to deepening levels of racial segregation across schools (e.g., Fiel 2015; Monarrez, Kisida, Chingos 2022). A particularly rich body of research demonstrates a link between charter schools and school segregation (Bifulco, Ladd, & Ross 2009; Fiel 2015; Ladd,

[2] The district also provided door-to-door transportation to a node's base school and its assigned calendar option.

Clotfelter, & Holbein 2017; Marcotte & Dalane 2019; Monarrez, Kisida, Chingos 2022). The link between intra-district school choice programs (like those in WCPSS) and racial segregation has been less well established. For two reasons, though, the story is likely more nuanced. First, intra-district choice programs vary substantially in the ways they structure and regulate families' schooling decisions (Goldring & Smrekar 2000; Cobb & Glass 2009). Second, intra-district choice programs face varying levels of competition from other choice policies that operate outside of the traditional district structure, such as charter schools and private school vouchers.

Much of the existing scholarship on segregation and district-based school choice focuses on contexts employing unified enrollment systems, which allow students to apply to attend any, or nearly any, of the district schools that enroll students in their grade.[3] These intra-district school choice policies can facilitate segregation as more affluent students opt out of relatively disadvantaged schools (Bifulco, Ladd, & Ross 2009; Cullen, Jacob, & Levitt, 2005; Hastings, Kane, & Staiger, 2005; Holme & Richards 2009; Koedel et al. 2009; Welsh, Duque, & McEachin, 2016) and into schools that are closer to their homes and enroll relatively large proportions of same-race students (Denice & Gross 2016, Glazerman & Dotter 2017). Importantly, school choice decisions in unified enrollment systems appear to be somewhat responsive to interventions designed to improve students and families' access to information about school quality (Corcoran & Jennings 2019; Corcoran et al. 2018; Sattin-Bajaj et al. 2018), suggesting that the observed segregation levels are at least partly due to geographically and racially homogenous informational networks.

[3] In many district contexts, the unified enrollment systems include local charter schools. Examples of such districts include New Orleans and Newark, among others. While students and families can choose among a broad range of school options in unified enrollment districts, they are not guaranteed enrollment in the school of their choice. Indeed, in many cases, unified enrollment districts match students to schools from among their preferences using algorithms designed to maximize racial, socioeconomic, and/or geographic diversity in ultimate school enrollments (Potter & Burris 2020). Since these processes sit outside of the choice process, we consider them beyond this paper's analytic scope.

School Choice, Policy Interventions, and Families' Decision-Making

In contrast to unified enrollment systems, many districts, like WCPSS, offer a restricted range of choices to students and their families in the pursuit of school diversity (Potter & Burris 2020). These "controlled choice" programs are more modest in scope than the unified enrollment systems described above—they do not provide access to all district schools—but provide families with more schooling options than pure residence-based schooling assignments. Importantly, controlled choice programs have the potential to affect each stage of families' two-stage school choice processes, since they shape both the set of schools that families select among, as well as their ultimate schooling choice.

Controlled choice programs can influence the construction of students and family's school choice sets—the "editing" phase—by specifying a relatively short menu of within-district schooling options to which students can apply. In contrast to the decentralized unified enrollment strategy, which assigns students and families the task of sifting through dozens of district schools to identify a set of plausible educational options (see, for example, Burdick-Will et al. 2020), controlled choice systems introduce a degree of centralization into the editing process. In doing so, districts effectively define the set of schooling options that families can select among, although families retain the ability to opt out of their district-constructed choice set in favor of private schools or charter schools. As such, controlled choice programs with well-defined diversity goals have the potential to enhance diversity across schools by restricting access to educational options that can deepen patterns of segregation within the district.

Along with shaping families' choice sets, many controlled choice programs use a variety of strategies to intervene in the second, "selection", phase of the two-stage decision process. First, like WCPSS, many controlled choice programs specify a "base" school for each child that

serves as the default school of attendance. Given the empirical evidence from a wide range of contexts demonstrating that individuals disproportionately select default options (Benartzi & Thaler 2007; Thaler & Benartzi 2004; Thorndike et al. 2012), districts can strongly influence the demographic composition of schools via the specification of base schools. Second, districts may use transportation as a lever to increase or decrease the likelihood of a family attending a non-base school in their choice set. For example, a district may work to achieve diversity aims by using door-to-door transportation as a means of enticing families to attend schools with a particular demographic profile. On the flip side, districts could withhold transportation in cases where families' attendance would contribute to school segregation. Third, districts may strategically direct magnet programs and other desirable educational resources, which disproportionately attract socioeconomically advantaged students, toward schools where the attendance of relatively affluent students would diversify the student body.

The progression of our empirical analyses, which we describe below, reflects the potential for policy and preferences to operate at each step of the two-stage process that families use to select schools. Thus, the first set of analyses document how WCPSS contributed to families' "editing" process through its specification of school choice sets. Upon describing the contents and characteristics of families' choice sets, the second set of analyses examine how families select a school from their district-defined choice set, with a specific emphasis on the roles of school type and race in shaping families' enrollment decisions.

Data and Analytic Sample

In partnership with WCPSS, we constructed a unique dataset that contains annual information from 1999-2000 to 2010-11 on the district-defined schooling options that each incoming WCPSS kindergartener could choose among, as well as a variety of information on the

students themselves. While we have access to data on students at all other grade levels, we specify our analytic sample as all students enrolled in kindergarten throughout the period the socioeconomic-based school assignment policy was in place. This choice is driven by the reality that, for many families, kindergarten represents the first, and most consequential, opportunity to select among the educational options specified by WCPSS.

Our dataset was derived from two main sources. First, we drew upon annual records maintained by WCPSS that detail the district-defined set of schools that families in each node could select among. These data include annual information on the assigned base school, the calendar option, and all magnet options for kindergarteners in each node. As the first step in constructing our dataset, we assembled these records into a node-by-year-by-schooling option structure. In this structure, each row specifies, for a given node in a given year, a school that families in the node could elect to attend. In addition to the school identifier, each row contains a series of indicators denoting whether the school was the assigned base school, the calendar option, or a neighborhood, express, or no transportation magnet option.

Second, we drew upon the rich set of student-level records that WCPSS has long maintained. These contain annual information on students' demographic and academic characteristics, as well as an identifier for the school the student attended. Beyond that, though, these records contain an identifier for the node in which the student resides. We use this node identifier as the basis for merging the annual student records with the records detailing the annual district-defined choice sets. This merge produced our final dataset, which is structured in a student-by-schooling option format. That is, each row of the dataset corresponds to a school in the district-defined choice set that a specific kindergartener could elect to attend.[4]

[4] A small number of kindergarteners—approximately 5 percent—attended a school outside of their district-defined choice set. These cases are possible because of WCPSS' sibling grandfathering preference—the district allowed

These data allow us to describe the schooling options made available by WCPSS for kindergartners each year and to examine how the characteristics of available school options—e.g., a school's racial demographics—are related to families' ultimate choice of schools. Analyses of these data will yield insights important both for our understanding of the controlled choice program itself (e.g., How different were the schooling options presented to families of matriculating kindergartners?) and for considering potential limitations of district diversity plans that rely on school choice (e.g., How likely were families to pick the segregation maximizing choice?).

Table 1 summarizes selected characteristics of the kindergarten students in our final analytic sample at the beginning, middle, and end of the time period our data span. The data show that about a quarter of kindergartners in our sample are Black while about half are white. The percentage of Hispanic kindergartners grew from 6 to 17 percent from 2000 to 2010. Throughout most of the time period, students had an average of about 14 schools in their choice set and around three-quarters of students attended their assigned base school.

[Insert Table 1 about here]

In what follows, we first summarize the methods and results for our first set of analyses, documenting how WCPSS contributed to families' "editing" process. We then present a discussion of our methods and results for the second set of analyses, which address how a school's type (i.e. base, calendar, or magnet) and racial composition shape families' schooling selections.

WCPSS Policy, Families' Editing Process, and Choice Set Composition

students to attend the same school as their older siblings. We exclude the small number of students who do not attend a school in their district-defined choice set from the analytic sample.

The first stage of our analysis focuses on describing the choice sets that WCPSS's controlled choice policy constructed for entering kindergarteners, with particular attention to the ways these choice sets varied across students of different races or ethnicities. In describing the choice sets we focus primarily on demographic variation—specifically schools' racial/ethnic makeup—across the different schooling options in families' district-defined choice sets. These analyses, like all analyses in this manuscript, consider school demographics primarily in terms of the percent of Black students present in each school. We retain this focus for two reasons. First, although policymakers identified socioeconomic diversity as a pillar of WCPSS's student assignment policy in place from 2000-2010, that diversity initiative evolved out the district's long history of Black/white racial desegregation efforts. Indeed, the district only pivoted toward socioeconomic diversity when it became clear that its race-based desegregation efforts were becoming increasingly susceptible to legal and political challenges. Many observers considered socioeconomic diversity a more legally robust and politically palatable, albeit less effective, approach to achieving racial desegregation goals (Carlson et al. 2020; Kahlenberg 2012). Second, we intend for this paper to engage with the existing research literature largely concerned with the phenomenon of racial segregation and its consequences for persistent Black-white inequalities in American life.

Our inquiry into the demographic composition of families' district-defined choice sets consists of several analyses, each designed to contribute to a cumulative portrait of WCPSS's controlled choice program. These analyses describe the variation in Black student enrollment share *within* families' choice sets to characterize the extent to which the WCPSS policy allowed families to make segregating and desegregating school choices. Further, we compare the variation in Black student enrollment share *across* the choice sets presented to families from

different racial/ethnic backgrounds to shed light on how race shaped how families experienced the school choice policy.

[Insert Figure 1 about here]

We begin by mapping WCPSS residential nodes—the unit level at which the district specified families' choice sets—and the racial/ethnic composition of students living in those nodes. Specifically, Figure 1 presents the share of Black students living in each WCPSS node in 2010. The figure makes clear that WCPSS's controlled choice program and socioeconomic diversity initiative was implemented in a context characterized by high levels of residential racial segregation. Nodes with a majority of Black students are located primarily in the district's urban center, although several majority-Black nodes are scattered through the district's suburban periphery. This checkerboard pattern of residential segregation made it theoretically possible for the district to include schools with a variety of racial compositions in families' choice sets while also prioritizing geographic proximity.

We build on this map by analyzing how choice sets differ for students living in majority-white nodes relative to students in majority-Black or Hispanic nodes. Specifically, our next analysis compares the racial demographics of students' assigned base school to the demographics in both their calendar option and two magnet options—the magnets with the lowest and highest Black enrollment shares. Further, we examine how this comparison differs in majority-white versus majority-Black or Hispanic nodes.

[Insert Figure 2 about here]

Figure 2 presents the results of this analysis. It illustrates that families' district-constructed Kindergarten school choice sets varied systematically with the racial composition of their residential nodes. Figure 2(a) plots, for students residing in majority-white nodes, the share

of Black students in their assigned base school against the share of Black students in the specified calendar option. Figure 2(b) replicates this plot for students residing in nodes where the majority of students are Black or Hispanic. Figure 2(c) and 2(d) plot—for students in majority-white and majority Black or Hispanic nodes, respectively—the share of Black students in base schools against the share of Black students in magnet schools with the largest (purple dot) and smallest (green dot) Black enrollment share.

Figure 2 documents the link between node demographics and the schools families choose among. We highlight three important facts about the schooling options WCPSS presented to families. First, Figures 2a and 2b show that the racial composition of students' base school (specifically, the share of Black students enrolled) varies significantly by node demographics. For students in majority-white nodes, assigned base schools tend to enroll noticeably lower shares of Black students, relative to the base schools assigned to students residing in majority-Black or Hispanic nodes. Second, the cluster of blue dots above the diagonal in Figure 2a and 2b highlights that calendar options typically enroll lower shares of Black students than families' assigned base schools. In 53 percent of majority white-nodes and 63 percent of majority-Black and Hispanic nodes, the assigned base school has a larger Black student share than the assigned calendar school. Third, Figure 2 makes clear that the racial demographics of magnet options vary substantially. In nearly every case, the magnet option with the largest share of Black students exceeds the share of Black students in students' assigned base school. This means that nearly all families have a magnet option that enrolls more Black students than their base school. There is more variability, however, in terms of how the demographics of students' assigned base school compares to the demographics of their magnet option that enrolls the smallest share of Black students. Substantively, this implies that magnet options for white or Asian families almost

always contain larger shares of Black students than their base school, but that this is only sometimes the case for Black of Hispanic families.

We provide a more formal characterization of the degree of demographic variation in families' choice sets by estimating a basic model of the form:

$$Y_{sit} = \gamma_{it} + \varepsilon_{sit} \quad (1)$$

where the share of Black students (Y) in school *s* in student *i*'s choice set in year *t* is modeled as a function of choice set fixed effects (γ_{it}). We estimate this model (and subsequent derivations) via OLS with standard errors clustered at the student level. After estimating the model, we use estimated variance components—specifically, the standard deviations of the fixed effects and the residuals—to calculate interclass correlation (ICC) statistics summarizing the share of variation in schools' Black enrollment share that occurs across students' choice sets, versus within their choice sets.[5] ICC values approach zero when all students' choice sets include schools that span the full range of Black enrollment share in district schools; ICC values approach one when students' choice sets contain schools with little variation on this measure of demographic composition. We estimate this model over the full sample of kindergartners. In addition, we estimate it separately for each of the four largest racial/ethnic groups in the district—Asian, Black, Hispanic, and White—to more systematically examine variation by families' racial/ethnic background.

[Insert Table 2 about here]

Our analyses, presented in Table 2, conceptualize families' choice sets in three ways. The first conceptualization, presented in the top panel of Table 2, encompasses all schools in a

[5] The ICC is calculated as $\frac{\sigma_\gamma^2}{\sigma_\gamma^2+\sigma_\varepsilon^2}$ where σ_γ^2 is the variance of the choice set fixed effects from equation (1) and σ_ε^2 is the variance of the residuals. We present the standard deviation, rather than the variance, of the fixed effects and the residuals in Table 2 for ease of interpretation, but the variance is readily calculable from the standard deviation.

family's district-defined choice set, including the base school, calendar option, and all magnet options, both with and without district-provided transportation. The second conceptualization, presented in the middle panel of Table 2, includes all schools for which the district provided families with transportation options. We term this conceptualization the "feasible" choice set. Finally, given the relatively low share of families attending a magnet option, the third panel excludes magnet schools altogether, therefore conceptualizing the family choice set as just the base and calendar options. Within each panel, the top row presents the standard deviation of the fixed effects for students' choice sets while the second row presents the standard deviation of the residuals. The third row presents the ICC—the proportion of the total variation in the school-level Black enrollment share that occurs within, as opposed to between, students' choice sets.

The full choice set results make clear that, for each racial/ethnic group, the vast majority of the variation—more than 90 percent—in the racial/ethnic makeup of schools occurs within students' choice sets, leaving less than 10 percent of the total variation in Black student share occurring across choice sets. Functionally, this implies that almost all students have at least one magnet option enrolling a large share of Black students and at least one other option—either base, calendar, or magnet—with a very small share of Black students. Put differently, these results show that families across the district, regardless of their race/ethnicity, are presented with choice sets that include both segregating and desegregating options.

As the results presented in the second panel indicate, though, a nontrivial portion of the variation in the demographic composition of families' schooling choices comes from magnet options without district-provided transportation. Indeed, the ICCs increase from less than 0.1 to greater than 0.2 after excluding magnet options without district-provided transportation from the choice set. After excluding no-transportation magnet options, schools in the choice sets of white

and Asian students exhibit more variability in the share of Black students enrolled, relative to the schools in the choice sets of Black or Hispanic students. Nonetheless, we find that for all racial and ethnic groups, even after no-transportation magnet schools from the analysis, less than 25 percent of the total variation in Black student share occurs across choice sets—a large majority of variation continues to reside within families' choice sets.

The bottom panel of Table 2 indicates that, even when just analyzing families' assigned base school and their calendar option, only about half of the variation in the share of Black students is across choice sets—the remaining variation is within the choice set. Notably, there is meaningful variation in the ICCs across different racial/ethnic groups. For Black students, the ICC is just 0.43, meaning that 43 percent of the variation in the share of Black students in students base and calendar options is across choice sets. The ICC for Asian students, by contrast, is 0.52, indicating that more than half of the variation in the share of Black students is across choice sets. The ICCs for Hispanic and white students fall in between. Substantively, this implies that Black students experience more variation in the share of Black students enrolled in their base school and calendar option than students in other racial/ethnic groups, particularly Asian students.

We expand on these variance decompositions by examining the potential for systematic differences in the racial makeup of different school types—base, calendar, and the three different magnet options. To do so, we start with equation (1) and add a series of indicators for the type of school option in a student's choice set, resulting in a model of the form:

$$Y_{sit} = S_s\lambda + \gamma_{it} + \varepsilon_{sit} \quad (2)$$

where S_s represents a vector of indicators for the five types of schooling options available in each students' choice set. In estimating this model, we specify students' base school as the

omitted category, meaning that the estimated coefficients are interpreted relative to the Black enrollment share at students' assigned base school. As with our prior analysis, we estimate this model for the full sample as well as separately for Asian, Hispanic, Black, and white students.

[Insert Table 3 about here]

We present the results from estimating equation (2) in Table 3. In this table, the constant term is the mean Black enrollment share in students' base school, while the coefficients for each school type indicator can be interpreted as the mean difference in the share of Black students relative to the base school. The full-sample results show that the average family's base school enrolls a student body that is 28.5 percent Black. They also show that, on average, magnet options enroll significantly higher shares of Black students than the base school (about 42 percent for magnets with door-to-door transportation and 47 percent for magnets with express transportation). By contrast, the mean students' calendar option enrolls about six percentage points fewer Black students than their base school.

Table 3 also illustrates substantial variation in the composition of different school types for students of different racial/ethnic backgrounds. For example, the average Black student is assigned to a base school where 36 percent of the students are Black while the corresponding numbers for Asian and white students are just 22 and 25 percent, respectively. Perhaps unsurprisingly, then, the difference between the percentage of Black students in students' base and magnet options is much larger for white and Asian students than it is for Black students. For the average white student, the Black enrollment share in their magnet options with door-to-door transportation is 16 percentage points larger than it is in their base school. By contrast, this difference is only 9 percentage points for the average Black student. All students' calendar options enroll a smaller share of Black students than their assigned base school, but this

difference is in the range of 4 to 5 percentage points for Asian, Hispanic, and white students while it is more than twice that for Black students. Together, the results in Table 3 illustrate variation along two dimensions. First, they show how school demographics vary across the different types of schools that WCPSS allows families to choose among. Second, they underscore how the demographics of different school types varies with families' racial/ethnic backgrounds.

Considered as a whole, the analyses in this section paint a nuanced picture of the choice sets that WCPSS constructed for entering kindergartners. First, our analyses made clear that a large portion of the variation in the racial composition of schools comprising families' educational options lies within, as opposed to between, students' choice sets. Functionally, this means that WCPSS' controlled choice program did relatively little to constrain families' schooling options, at least in terms of the racial composition of the schools they could select among. Most families could elect to attend a school with a relatively small share of Black students, one with a relatively large share, or one in between. Second, our analyses demonstrate substantial variation in school racial demographics by schooling type. In particular, we show that most magnet options contain larger shares of Black students than students' base schools while calendar options typically contain smaller Black enrollment shares. Together, this creates an environment where, relative to universal base school attendance, magnet schools provide an avenue to more integration, but specified calendar options provide an opportunity for families, particularly white families, to further segregate themselves.

Families' Schooling Selections

The analyses above detail how WCPSS' controlled choice program shaped families' choice sets. However, within their district-defined choice set, families made the final decision on

which school their child would ultimately attend. Accordingly, our next set of analyses focus on the second step of the choice process, exploring factors relating to families' choice of school. In conducting these analyses, we place particular focus on examining the roles of school type (i.e., base school, calendar option, magnet options) and school racial composition in shaping families' schooling decisions.

We begin our analysis of the relationships between schooling selection, and school type with a model of the form:

$$E_{sit} = S_s\lambda + \gamma_{it} + \varepsilon_{sit} \quad (3)$$

where E_{sit} is a variable indicating that student *i* enrolled in school *s* during year *t*; E_{sit} takes on a value of zero for schools in the choice set that the student does not attend. We model this enrollment decision as a function of a vector of indicators S_s denoting whether school *s* was the assigned base school, the calendar option, or a neighborhood, express, or no-transportation magnet option and a choice set fixed effect (γ_{it}); ε represents an idiosyncratic error term. This model effectively calculates average attendance rates at each type of schooling option in families' choice sets.

We then extend this model to consider the role that school racial composition plays in family school choices:

$$E_{sit} = \beta R_{st} + S_s\lambda + \gamma_{it} + \varepsilon_{sit} \quad (4)$$

The coefficient on *R*—represented by β—speaks to the relationship between a school's racial composition and family enrollment decisions. The value of this coefficient represents the average change in the probability of enrolling in a school in a student's choice set as the share of Black students goes from 0 to 1, conditional on the form of schooling option. We estimate the models specified in equations (3) and (4) via ordinary least squares (OLS) with standard errors clustered

by student. Consistent with the analyses in the prior section, we estimate both equations separately for four different racial/ethnic groups: Asian, Black, Hispanic, and white students.

[Insert Table 4 about here]

Table 4 presents the results of estimating equations (3) and (4), with the results reported separately for Asian, Hispanic, Black, and white students. For each racial/ethnic group, the first column of results corresponds to the specification in equation (3). As such, these results present average attendance rates at each of the five types of schools in families' choice sets. Because we specified students' assigned base school as the omitted category when estimating equation (3), the constant term conveys the proportion of students attending their assigned base school and the coefficients for the other school types represents the average difference in the enrollment rate for that school type.

We highlight three takeaways from the results presented in the first column for each racial/ethnic group. First, our results show that strong majorities of families in each racial/ethnic group attend their assigned base school, but they also demonstrate significant variability in base school enrollment rates. Specifically, base school enrollment rates range from about 70 percent for Asian and white students to 74 percent for Black students to 79 percent for Hispanic students. Second, the results make clear that, after the assigned base school, students' calendar option is the next most frequently attended school type, but we again see substantial variation by families' race/ethnicity. Summing the race-specific constant and the coefficient for the calendar option indicates that almost 16 percent of white students and 12 percent of Asian students attend their calendar option, but the corresponding numbers for Hispanic and Black students are just 7 and 6 percent, respectively. Third, the results make clear that relatively few students attend available magnet options. Asian students are most likely to do so, but only five percent attend any magnet

option. The analogous numbers for Hispanic, Black, and white students are even lower, at just 1 to 3 percent.

The second column of results reported for each racial/ethnic group in Table 4 presents an estimate of the relationship between schools' Black enrollment share and the likelihood of enrollment. This relationship is negative and significant for Hispanic, Asian, and white students, but positive and significant for Black students. These coefficients average the relationship between racial composition and enrollment decisions across all of the schools in a students' choice set, implicitly assuming that families respond similarly to the racial composition of all schools in their choice set. This assumption is implausible. The role that a school's racial composition plays in families' schooling calculus almost certainly varies by the type of schooling option under consideration. For example, the racial composition of students' assigned base school almost certainly factors into families' decision-making differently than the composition of a magnet schooling option with no district-provided transportation. To empirically assess the potential for heterogeneity in the relationships between enrollment decisions, school type, and school racial composition, we interact the measure of the share of Black enrollment, *R*, with the set of indicators denoting school type in a model of the form:

$$E_{sit} = (R_{st} * S_s)\delta + \gamma_{it} + \varepsilon_{sit} \quad (5)$$

The vector of coefficients resulting from this interaction, represented by δ in equation (5), provides estimates of the relationship between school racial/ethnic composition and families' enrollment decisions separately for each of the five types of schooling options in the district-defined choice set. We present these coefficients—separately for each of the four racial/ethnic groups we analyze—in the first columns of Table 5. We complement the tabular presentation of the results with Figure 3's graphical depiction. Separately for students' base school, calendar

option, and magnet options, Figure 3 presents a binned scatterplot of the relationship between the probability of attendance at a given school and the share of Black students comprising the school's enrollment. We constructed the binned scatterplots by binning, separately for each school type, the measure of schools' Black enrollment share into 20 bins of equal size. Then, for each bin, we plot the mean probability of student attendance at schools within the bin.[6]

[Insert Table 5 and Figure 3 about here]

The results represented in Table 5 and Figure 3 demonstrate substantial heterogeneity across the three schooling types in the relationship between families' enrollment decisions and a school's Black enrollment share. We highlight four features of this heterogeneity. First, the results make clear that the likelihood of Asian and, especially, white students enrolling in their base school declines markedly as the share of Black students increases. The binned scatterplot in Figure 3 shows that the probability of white students attending base schools with very low shares of Black students exceeds 0.8. By contrast, the probability of base school enrollment for white students assigned to base schools in which the majority of students are Black is only about 0.5, a decline of about 0.3. Asian students exhibit a similar pattern, albeit more muted in magnitude, with respect to base school enrollment.

Second, the base school enrollment decisions of Hispanic and Black students are relatively insensitive to the share of Black students. The results illustrate that Hispanic students become slightly less likely to enroll in a school as the share of Black students increases while Black students become slightly more likely to enroll. In each case, though, the magnitude of the relationship is modest.

[6] Prior to binning schools' Black enrollment share, we first residualize this measure, as well as the enrollment measure, on the choice set fixed effects.

Third, the results in Table 5 and Figure 3 indicate that, across all groups, the relationship between families' likelihood of enrolling in their calendar option and the school's racial composition exhibits patterns similar to those observed for their base school. Asian and white families become less likely to enroll in their calendar option as the share of Black students increases while Hispanic and Black families exhibit relatively little sensitivity. This pattern of findings, taken together with the pattern of findings around white and Asian families' sensitivity to Black enrollment share in base school enrollments, suggest calendar options often attract white and Asian parents who are avoiding base schools with large Black enrollments. Supplemental analyses lend further support to this conclusion, indicating that, for white students, increases in the share of Black students in their assigned base school, relative to their calendar option, are related to a significant increase in the probability of enrolling in the calendar option.[7]

Fourth, the results suggest that families' decisions to enroll in a magnet option is relatively insensitive to the share of Black students enrolled. Across all three types of magnet options, estimates for each of the four racial/ethnic groups are, even if occasionally statistically significant, uniformly small in magnitude.

Considered as a whole, the results summarized in the first columns of Table 5 and visualized in Figure 3 suggest that white families use school choice to avoid schools with large concentrations of Black students and that these enrollment decisions undermine the school diversity goals that historically motivated assignment policy in Wake County and elsewhere. These findings are consistent with the claim that school racial composition motivates the choices that many white and Asian families make among their policy-delimited school choice sets (Buckley & Schneider 2009; Glazerman and Dotter 2017).

[7] Results not presented in tables for reasons of space, but are available from authors upon request.

It is possible, however, that the relationship between schools' racial ethnic composition and families' schooling choices is confounded by other observable school characteristics. For example, characteristics such as school average achievement level, the distance between a school and a family's home, school conditions such as overcrowding, and school calendar format (traditional 9-month or year-round) are all correlated with a school's racial/ethnic composition. These school characteristics could each inform families' decision-making. In such a case, the portion of families' schooling decision driven by these factors would be reflected in the coefficient estimate for schools' racial/ethnic composition.

Our final analysis considers the extent to which observable school characteristics—specifically mean school achievement, distance from home, and school calendar type—account for the relationship between schools' racial composition and families' schooling choices. Controlling for these observable factors provides a sense of the extent to which families' racial homophily reflects preferences for school characteristics that correlate with racial composition. Of course, these factors may be mechanisms by which the effects of school racial composition operate. In that case, including them in the model will condition away part of the true relationship between student enrollment and school racial composition, thus understating the full magnitude of that relationship. With this in mind we estimate:

$$E_{sit} = (R_{st} * S_s)\delta + X_{st}\varphi + \gamma_{it} + \varepsilon_{sit} \quad (6)$$

which retains the interactions between school racial/ethnic composition and the set of indicators denoting school type, and adds the aforementioned observable characteristics, represented by the X_{st} term in equation (6) above. Results from this model will provide insight into whether the estimates of δ resulting from equation (5) are sensitive to conditioning on measures of distance, average school achievement levels, or the format of schools' academic calendar.

The results reported in the second columns of Table 5 speak to this possibility. The results illustrate that, for white and, particularly, Asian students, conditioning on this set of observable school characteristics does mute the relationship between schools' Black enrollment shares and families' enrollment decisions. However, for white students' base school and calendar option, the negative relationship between the probability of enrollment and the share of Black students remains statistically and substantively significant. With one exception, conditioning on observable school characteristics has little effect on any of the coefficient estimates for Black or Hispanic students. The exception is that the coefficient for the relationship between Hispanic students' base school enrollment and schools' share of Black students becomes large and positive after conditioning on school observable characteristics. That is, after accounting for distance, mean school achievement level, and calendar format, Hispanic students are significantly more likely to enroll in their base school as the share of Black students increases.

Together, the analyses in this section assemble a clear portrait of how school type and school racial composition enter into families' schooling decisions. They demonstrate that most students attend their assigned base school, but also illustrate substantial variation in base school attendance rates across students from different racial/ethnic backgrounds—Hispanic students attend their base school at the highest rates while white and Asian students are relatively less likely to enroll in their assigned base school. Further, our results show that for Asian and, especially, white students, the probability of base school attendance declines in the share of Black student enrollment. Indeed, as the share of Black students in white students' assigned base school rises, the probability of white students enrolling in their calendar option increases. By contrast, Black and Hispanic students' decisions to enroll in their base school or calendar option exhibit little sensitivity to school racial composition. And across all four racial/ethnic groups, the

probability of enrolling in a magnet option is unrelated to the share of Black students in those schools.

Discussion and Conclusion

School segregation is an important and well-studied process that upholds persistent racial inequalities in American life. Long lines of literature document how school segregation is perpetuated through both public policy and individual decision-making. Too often, however, scholarship examines these factors in isolation, exploring either the role of policy or individual decision-making without examining the links between the two. Recent work documents how individuals use a two-stage process—editing and selection—to make complex decisions such as schooling choices. Individuals' social networks and biases clearly influence both stages of this process, but our analyses demonstrate that policy decisions can also shape each stage of the complex decision-making process. Within the context of WCPSS' desegregation efforts, we first document how district administrators used a controlled choice program to shape the choice sets of incoming WCPSS kindergartners. Then, within the district-defined choice set, we explore how school type, school racial composition, and, perhaps most importantly, the interaction of the two, are related to families' ultimate school enrollment decisions. These findings illustrate the ways collective policy decisions can structure individual decisions, highlighting the role that public policy can and does play in the production of school segregation.

Our analysis of the editing phase shows that, across the four racial/ethnic groups we analyze, WCPSS families were offered choice sets containing schools with a wide range of racial compositions. The district presented families with options that included a base school, a calendar option, and several types of magnet schools. Rather than curating families' choice sets, the district gave families across racial and ethnic groups access to predominantly white as well as

predominantly Black schools, in effect allowing families to make either segregating or desegregating school choices. That said, the racial composition of families' assigned base school meaningfully varies across students of different racial/ethnic backgrounds. We demonstrate that Black and Hispanic families are assigned to base schools enrolling large shares of Black students, relative to the share of Black students in the base schools assigned to white and Asian families. Such a pattern is consistent with the district's emphasis on providing families with a geographically proximate base school, coupled with the high levels of residential segregation that characterize Wake County.

Given the relatively tight relationship between families' race/ethnicity and the composition of their assigned base school, it is perhaps unsurprising that the other schooling options WCPSS included in families' choice sets differ from the assigned base school in terms of racial composition. For example, for families residing in majority-white nodes, WCPSS-specified magnet options almost always served higher shares of Black students than the assigned base school. Families in majority-Black or Hispanic nodes, by contrast, typically saw compositional differences between base and magnet options that were much smaller, although magnets typically did serve higher shares of Black students.

Upon describing how WCPSS policy influenced families' editing process, our analyses turned to examining how school type and school racial composition played into families' ultimate enrollment decision. Our results show that, across the four racial/ethnic groups we analyze, a clear majority of students attend their assigned base school. Base school attendance rates ranged from 70 percent for white and Asian families to 74 percent for Black families to nearly 80 percent for Hispanic families. When families did not attend their base school, most chose to enroll their kindergartners in the calendar option provided. This was particularly true of

white and Asian families, for whom the calendar option typically enrolled lower shares of Black students than their assigned base school. Relatively few students of any racial/ethnic group enrolled in available magnet options, which typically served the largest share of Black students among the schools in families' choice sets. When we explicitly examined how a schools' racial composition relates to families' enrollment decisions, we find that Black and Hispanic families are relatively insensitive to schools' racial makeup, but that Asian and, especially, white families' likelihood of attending their base school declines significantly as the share of Black students in their base school increases. We observe similar patterns in Asian and white families' likelihood of enrolling in their calendar options.

From a policy perspective, our results highlight multiple levers available to policymakers interested in pursuing school desegregation goals, even in the contemporary legal and ideological environment that privileges individual choice and is hostile to policy-making intended to remedy racial inequality. First, our results demonstrate that the design and structure of school choice programs has the potential to influence school segregation levels. Unlike school choice programs that allow families to choose among a wide range of schools, such as some cities' unified enrollment systems, WCPSS's controlled choice program constrained the set of schools could select among. The manner in which districts impose these constraints has the potential to shape school segregation levels. Second, our results make clear that, even in environments with a meaningful degree of school choice, most students ultimately attend their assigned base school. Indeed, WCPSS was able to nudge students toward particular schools through base school assignments and, more generally, our results illustrate that the choices districts make around base school assignments have profound implications for school diversity.

Of course, school diversity is not the only factor entering a district's calculus when designing a controlled choice program or making base school assignments. In most cases, districts balance diversity aims against considerations such as minimizing the distance between families' home and school, the cost of district-provided transportation, as well as against political realities. In WCPSS, district diversity goals were typically in tension with prioritizing proximity because of Wake County's pervasive residential segregation. Indeed, to one degree or another, all controlled choice systems are designed and implemented against a backdrop of residential segregation, which undoubtedly affects the degree of diversity districts deem feasible to achieve. Wake County's residential segregation almost certainly shaped the design and operation of WCPSS' desegregation initiative and, although empirical engagement with this issue is outside the scope of the present paper, examining the interplay between residential segregation, controlled choice programs, and school segregation levels is a natural topic for future research.

Along with balancing diversity and distance, WCPSS was also acutely aware of political realities as it designed its controlled choice system, and its desegregation initiative more broadly. This awareness almost certainly contributed to WCPSS' decision to specify families' choice sets in a manner that provided students access to schools spanning the full range of racial/ethnic compositions. This strategy allowed families to make educational choices that reduced segregation among WCPSS, but it also made it easy for families to further segregate themselves. An alternative design might have constructed choice sets in a manner that minimized segregating options. While WCPSS' design decisions were likely important for maintaining some degree of political support for the district's diversity efforts, they also limited the degree of desegregation the district could achieve. Of course, even WCPSS' relatively light-touch shaping of families' choice sets ultimately proved politically untenable, with Wake County voters electing a slate of

school board candidates in 2009 who followed through on their pledge to implement a system of neighborhood-based schooling assignments. These political realities illustrate the difficulties facing districts looking to achieve a degree of diversity across their schools.

Our research is unique in its focus on the role of policy in structuring families' educational choices. Indeed, the bulk of prior research on school choice analyzes individuals' decisions within an implicitly unconstrainted choice environment (Denice and Gross 2016; Glazerman and Dotter 2017; Lincove, Cowen, & Imbrogno 2018; Harris & Larsen 2022), or at least where the structure of the choice environment is an afterthought. Our work demonstrates that brushing structural factors aside and only examining atomistic choice behaviors will result in, at best, an incomplete understanding of the educational choice process. At worst, it will result in a wholly distorted picture of the process. Going forward, research would do well to explicitly assess the structure of the environments in which individuals make schooling choices, and analyze how policy was used to create that structure and uphold segregated school systems. Such research could take several forms. For example, it could build on this study and further explore how policymakers use different school types, including default school assignments, to shape families' choices. Alternatively, work in this vein could explore how the geographic siting of different schooling options shape families' educational decisions. These sorts of analyses, and myriad others, would contribute to our understanding of how policy interacts with individual decision making to produce, and reproduce, school segregation, or any number of other outcomes of societal interest.

Regardless of the way policy-makers design choice policies, they must inevitably confront racial homophily and anti-Black racism as major drivers of school segregation. Our findings highlight a particular form of these behaviors: white and Asian families' tendency to

avoid schools with large Black student shares. Our study is by no means the first to document this general phenomenon. Indeed, our findings resonate with historical evidence regarding massive resistance and white flight in the post-*Brown* era, as well as more contemporary evidence documenting parental information gathering on school websites (Schneider & Buckley 2009), survey experiment evidence (Billingham & Hunt 2016; Hailey 2022), and evidence from school application rankings in open choice school systems (Denise & Gross 2016). Nonetheless, our study moves this line of inquiry forward by demonstrating white and Asian families' avoidance of Black students in a contemporary context. While WCPSS explicitly structured its controlled choice system around diversity goals, the school choice sets that it constructed for families provided opportunities to exercise this racial homophily. And our findings indicate that white and Asian families often took advantage of the opportunity to make segregating choices, undermining the district's desegregation efforts.

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Table 1. Descriptive statistics for incoming WCPSS kindergarteners, by year

Characteristic	2000	2005	2010	All years	Δ 2000-2010	Ratio 2010:2000
Proportion Asian	0.04	0.05	0.07	0.05	0.03	1.73
	(0.20)	(0.22)	(0.25)	(0.23)		
Proportion Hispanic	0.06	0.13	0.17	0.13	0.10	2.56
	(0.25)	(0.33)	(0.37)	(0.34)		
Proportion Black	0.26	0.24	0.21	0.23	-0.05	0.8
	(0.44)	(0.43)	(0.41)	(0.42)		
Proportion White	0.60	0.54	0.50	0.54	-0.09	0.84
	(0.49)	(0.50)	(0.50)	(0.50)		
Proportion multiple races	0.03	0.05	0.05	0.04	0.02	1.52
	(0.18)	(0.21)	(0.22)	(0.20)		
Mean number of schools in choice set	4.02	13.85	13.87	11.86	9.86	3.45
	(0.98)	(0.60)	(0.35)	(3.05)		
Mean across choice sets- School median proportion Black	0.33	0.37	0.28	0.35	-0.05	0.86
	(0.09)	(0.03)	(0.04)	(0.06)		
Mean across choice sets- School minimum proportion Black	0.17	0.18	0.10	0.16	-0.07	0.60
	(0.09)	(0.05)	(0.02)	(0.06)		
Mean across choice sets- School maximum proportion Black	0.45	0.69	0.66	0.66	0.20	1.45
	(0.07)	(0.01)	(0.11)	(0.10)		
Mean proportion Black-Base school	0.31	0.30	0.22	0.28	-0.09	0.71
	(0.13)	(0.15)	(0.14)	(0.15)		
Mean proportion Black- School of attendance	0.29	0.30	0.22	0.28	-0.06	0.78
	(0.14)	(0.15)	(0.14)	(0.15)		
Proportion attending base school	0.66	0.72	0.75	0.72	0.09	1.13
	(0.47)	(0.45)	(0.43)	(0.45)		
N	6,626	9,128	10,414	99,674	3,788	1.57

Note: Table presents descriptive statistics for 1999-2000, 2004-05, 2009-10 school year, as well as descriptive statistics averaged across all school years. Standard deviation in parentheses below the statistic.

Figure 1: Percent of incoming Kindergarteners in WCPSS residential nodes who are Black and WCPSS elementary school locations, 2009-10

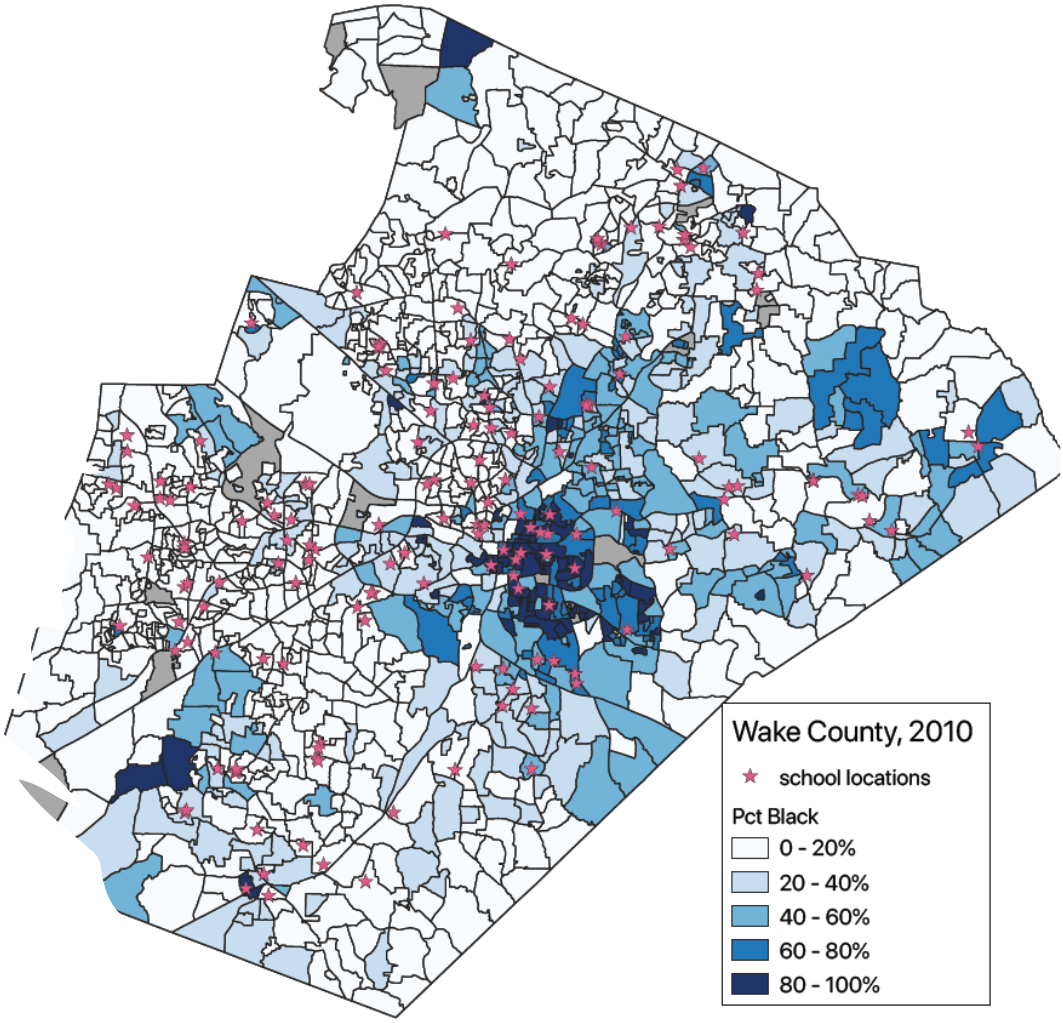

Figure 2: Black student share at base, calendar, and magnet schools with smallest and largest Black student share for incoming WCPSS kindergarteners, 1999-2000 to 2009-10

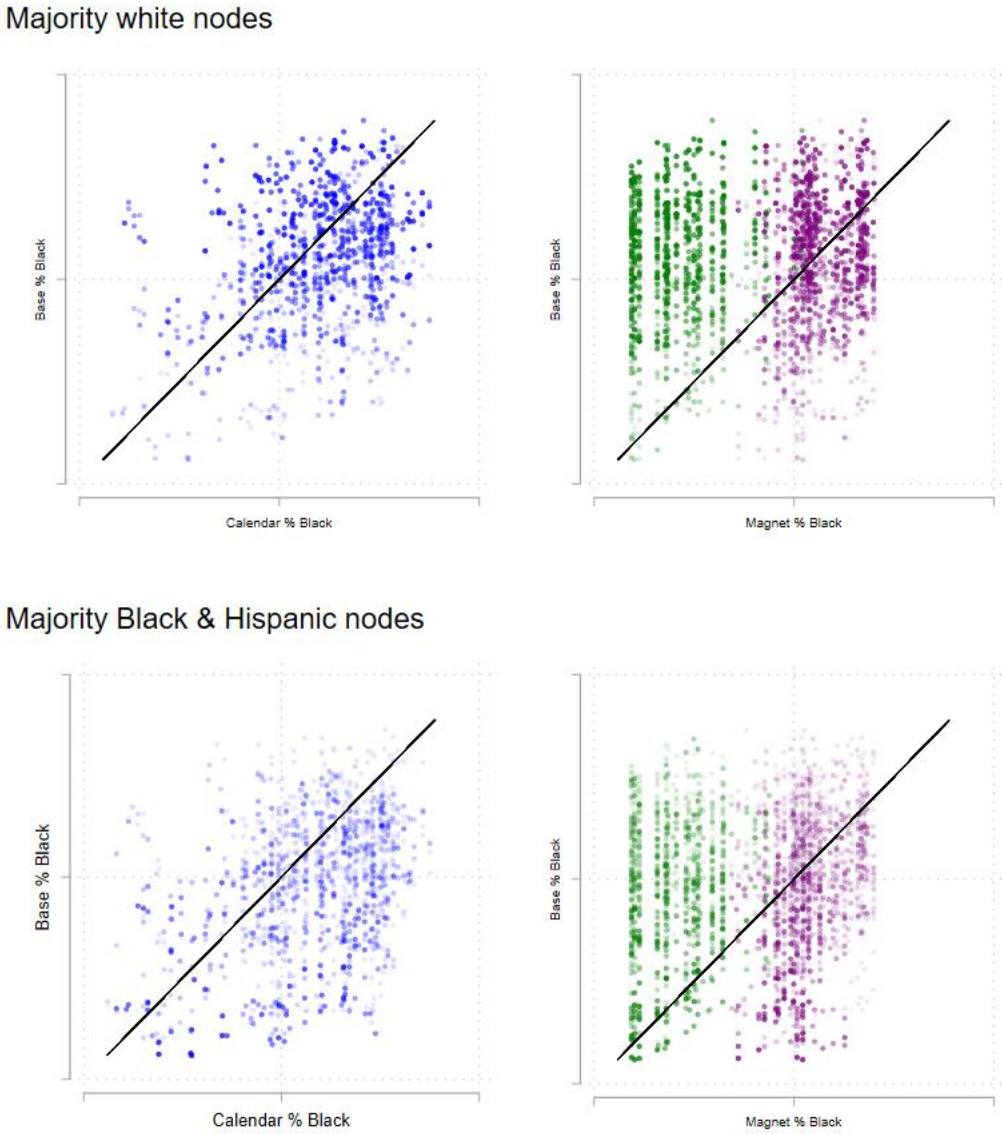

Table 2: Decomposition of variance in Black student share among the schools in WCPSS incoming kindergarteners' choice sets, 1999-2000—2009-10

	All Students	Asian	Hispanic	Black	White
All schools in choice set					
SD of Choice Set FEs	0.052	0.048	0.049	0.052	0.050
SD of residuals	0.159	0.165	0.159	0.158	0.160
ICC	0.095	0.079	0.088	0.098	0.089
N (Observations)	1,235,290	67,340	181,446	286,171	641,729
N (Students)	104,187	5,509	14,617	24,729	54,514
Schools with transportation only					
SD of Choice Set FEs	0.086	0.080	0.089	0.087	0.077
SD of residuals	0.150	0.148	0.148	0.151	0.150
ICC	0.247	0.226	0.264	0.247	0.210
N (Observations)	444,154	23,267	63,688	104,728	231,782
N (Students)	104,187	5,509	14,617	24,729	54,514
Base and calendar only					
SD of Choice Set FEs	0.116	0.104	0.120	0.119	0.103
SD of residuals	0.117	0.098	0.118	0.137	0.108
ICC	0.496	0.528	0.506	0.431	0.476
N (Observations)	198,652	10,739	27,374	46,428	104,894
N (Students)	104,187	5,509	14,617	24,729	54,514

Table 3. Coefficients and standard errors for indicators of school type from regression predicting Black student share among schools in WCPSS incoming kindergarteners' choice set, 1999-2000 to 2009-10

School Type	All Students	Asian	Hispanic	Black	White
Base	Omitted	Omitted	Omitted	Omitted	Omitted
Magnet-neighborhood	0.138***	0.173***	0.130***	0.092***	0.159***
	(0.0004)	(0.0016)	(0.0011)	(0.0009)	(0.0005)
Calendar	-0.063***	-0.041***	-0.052***	-0.112***	-0.046***
	(0.0005)	(0.0018)	(0.0014)	(0.0011)	(0.0006)
Magnet-express	0.181***	0.225***	0.167***	0.128***	0.205***
	(0.0004)	(0.0018)	(0.0012)	(0.0009)	(0.0006)
Magnet-None	-0.005***	0.059***	-0.029***	-0.080***	0.031***
	(0.0005)	(0.0019)	(0.0013)	(0.0010)	(0.0006)
Constant	0.285***	0.221***	0.305***	0.360***	0.252***
	(0.0040)	(0.0015)	(0.0010)	(0.0008)	(0.0005)
N	1,235,290	67,340	181,446	286,171	641,729
N Students	104,187	5,509	14,617	24,729	54,514

Note: *$p<0.10$, **$p<0.05$, ***$p<0.01$. Each column presents results from a separate regression predicting Black student share as a function of indicators for each school type and a choice set fixed effect. Standard errors in parentheses below coefficients from regression estimated via OLS. Results presented separately for all students, Asian students, Hispanic students, Black students, and white students.

Table 4. Coefficients and standard errors for indicators of school type and school racial composition from regression predicting student enrollment in schools in WCPSS incoming kindergarteners' choice set, 1999-2000 to 2009-10

	Asian		Hispanic		Black		White	
Variable	**(1)**	**(2)**	**(1)**	**(2)**	**(1)**	**(2)**	**(1)**	**(2)**
School proportion Black		-0.066***		-0.024***		0.026***		-0.110***
		(0.004)		(0.003)		(0.003)		(0.002)
Base (Constant)	0.705***	0.696***	0.790***	0.788***	0.741***	0.742***	0.701***	0.689***
	(0.006)	(0.006)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
Magnet-neighborhood	-0.670***	-0.659***	-0.786***	-0.782***	-0.728***	-0.730***	-0.685***	-0.668***
	(0.007)	(0.007)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
Calendar	-0.587***	-0.590***	-0.721***	-0.722***	-0.686***	-0.683***	-0.546***	-0.551***
	(0.009)	(0.009)	(0.005)	(0.005)	(0.004)	-0.004	(0.003)	(0.003)
Magnet-express	-0.699***	-0.684***	-0.786***	-0.782***	-0.733***	-0.736***	-0.695***	-0.672***
	(0.006)	(0.007)	(0.003)	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)
Magnet-None	-0.701***	-0.698***	-0.788***	-0.789***	-0.737***	-0.735***	-0.698***	-0.694***
	(0.006)	(0.006)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
N	67,395	67,340	181,514	181,446	286,372	286,171	642,550	641,729
N students	5,509	5,509	14,617	14,617	24,729	24,729	54,514	54,514

Note: *p<0.10, **p<0.05, ***p<0.01. Each column presents results from a separate regression predicting student enrollment in a school in their choice set as a function of indicators for each school type and a choice set fixed effect. The model presented in right-hand column for each racial/ethnic group also contains a measure of schools' Black student share, which is mean-centered. Standard errors in parentheses below coefficients from regression estimated via OLS. Results presented separately for Asian students, Hispanic students, Black students, and white students.

Figure 3. Binned scatterplot of probability of attendance by schools' Black student share, WCPSS incoming kindergarteners, 1999-2000—2009-2010. Derived from results presented in Table 5, Model 1.

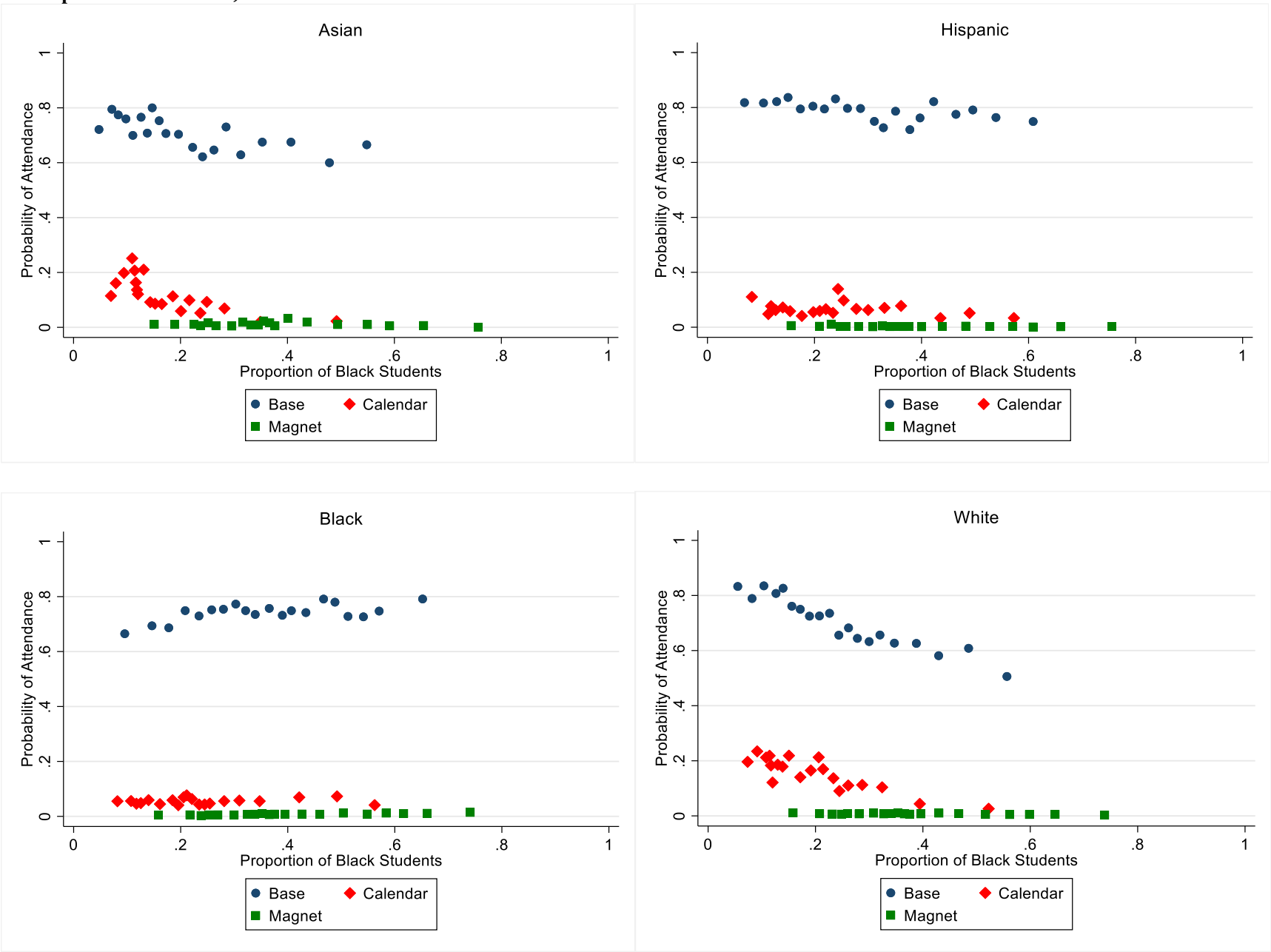

Table 5. Coefficients and standard errors for interactions between schools' Black student share and school type indicators from regression predicting student enrollment in schools in WCPSS incoming kindergarteners' choice set, 1999-2000 to 2009-10

	Asian		Hispanic		Black		White	
Interaction	**(1)**	**(2)**	**(1)**	**(2)**	**(1)**	**(2)**	**(1)**	**(2)**
School proportion Black X	-0.317***	-0.097***	-0.124***	-0.490***	0.145***	0.119***	-0.711***	-0.409***
Base school	(0.049)	(0.092)	(0.023)	(0.037)	(0.020)	(0.029)	(0.016)	(0.026)
School proportion Black X	-0.032**	-0.011	-0.014***	-0.020***	0.022***	0.014**	-0.050***	-0.029***
Magnet school with transportation	(0.013)	(0.016)	(0.003)	(0.004)	(0.004)	(0.005)	(0.003)	(0.004)
School proportion Black X	-0.490***	-0.117	-0.106***	-0.126***	0.034**	-0.081***	-0.518***	-0.316***
Calendar option	(0.037)	(0.079)	(0.017)	(0.035)	(0.013)	(0.026)	(0.013)	(0.027)
School proportion Black X	-0.030***	-0.019***	-0.007***	-0.005***	0.007***	0.014***	-0.031***	-0.007***
Magnet with park-and-ride	(0.003)	(0.004)	(0.002)	(0.002)	(0.002)	(0.003)	(0.001)	(0.001)
School proportion Black X	-0.018***	0.002	0.001	-0.016***	0.003	0.000	-0.018***	-0.022***
Magnet with no transportation	(0.005)	(0.001)	(0.004)	(0.005)	(0.003)	(0.004)	(0.002)	(0.002)
Choice set fixed effect	X	X	X	X	X	X	X	X
School observables		X		X		X		X
N	67,340	64,191	181,446	177,623	286,171	275,288	641,729	607,965
N students	5,509	5,088	14,617	14,038	24,729	22,674	54,514	49,229

Note: *p<0.10, **p<0.05, ***p<0.01. Each column presents results from a separate regression. In each cell, standard error is in parentheses below coefficient for an interaction between school Black enrollment share and an indicator for each school type. Each regression also contains school type indicators and a choice set fixed effect. The model presented in the right-hand column (i.e. column 2) for each racial/ethnic group also contains measures of calendar type, distance between node and school, and average school achievement level. All regressions estimated via OLS. Results presented separately for Asian students, Hispanic students, Black students, and white students.