Linked Fates:
How the Policy Link Between Schools and Neighborhoods Shapes Racial Segregation Dynamics

by

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[1] Carlile, Brandi. "The Mother." *By the Way, I Forgive You,* RCA Studio, 2018.

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Abstract

Neighborhoods and schools both play a powerful role in shaping the life trajectories and opportunities of children. In the United States, these contexts are not only important determinants of social and racial inequality, but schools and neighborhoods are also closely linked together by residential-based school assignment policies. Most school districts in the U.S. assign students to schools based on where they live, which builds segregated schools from the basis of segregated neighborhoods. In this dissertation, I trace the impacts of this link between neighborhoods and schools at the individual-, neighborhood-, and school district-levels to understand how these policies shape dynamics of school and neighborhood segregation. Together, these investigations situate the relationship between neighborhoods and schools within a complex system where individual decisions and aggregate racial composition exist within a feedback loop with each other and across different domains of social life.

For parents, residence-based school assignment policies mean that neighborhood and school choices are explicitly linked, and a choice in one domain will constrain the options available in the other. Therefore, I first consider the impacts of the relationship between neighborhoods and schools from the individual level in the first empirical chapter (Chapter 2). Using an original stated choice experiment, I examine how parents consider schools and neighborhoods simultaneously and how the characteristics of one context shape their preferences for the other. I show that parents' preferences for schools and neighborhoods are intertwined,

such that the characteristics of a school shape parents' preferences for the neighborhood, and neighborhood characteristics shape parents' preferences for the school.

In Chapter Three, I move to the neighborhood- and school-levels to consider how school choice influences demographic change in both schools and neighborhoods. Using original longitudinal data that captures the racial composition of nearly 3,000 schools and their attendant neighborhoods, I examine how the availability of nearby charter and private schools shapes White flight in schools and neighborhoods between 2000 and 2010. I find that greater availability of school alternatives weakens the relationship between neighborhood and school change, such that neighborhood change is less predictive of school change in neighborhoods with many charter or private schools. I also find that greater access to charter schools is negatively associated with White flight, such that neighborhoods with more charter schools lose fewer White students in the school and White children in the neighborhood. However, I also find that private schools are associated with a greater loss of White students from public schools.

Finally, in Chapter Four, I consider how the racial composition of the metropolitan area is associated with processes of racial turnover in local schools and neighborhoods. Using longitudinal data on nearly 3,000 schools and neighborhoods within 22 urban school districts, I show that racially diverse school districts experienced lower rates of White flight, even after accounting for socioeconomic, school choice policy, and geographic differences between the districts. I also provide preliminary evidence suggesting that greater representation of Latinos in these districts may be associated with lower rates of White flight from urban neighborhoods. Together, these chapters illustrate that the complex system generated by the feedback loops between schools and neighborhoods must be considered in both research and policymaking around these influential contexts.

Chapter 1 Introduction

Neighborhoods and schools are crucial contexts for children's development; both domains shape children's experiences and opportunities in ways that can either reduce or enhance inequality in their circumstances. Even with efforts to equalize school funding, public schools in the U.S. vary widely in their ability to provide support and resources to their students, and these differences mean that the opportunities children have in schools are marked by persistent inequality (Baker and Corcoran 2012; Weathers and Sosina 2022a). The quality of education that students receive and their eventual educational attainment (i.e., whether they graduate high school or college) influence children's eventual adult earnings, as well as their health and well-being (Chetty and Hendren 2018; Day and Newburger 2002; Heckman, Humphries, and Veramendi 2018). As for neighborhoods, children living in advantaged neighborhoods have higher academic achievement than children in disadvantaged neighborhoods (Wodtke and Parbst 2017) and earn higher incomes as adults (Chetty and Hendren 2018). Neighborhoods with more resources improve children's chances of earning a college degree (Owens 2010), whereas high poverty neighborhoods increase children's chances of dropping out of high school and experiencing a teen pregnancy (Harding 2003). In addition, the effects of disadvantaged neighborhoods can linger to shape the life outcomes of the next generation (Sharkey and Elwert 2011). Unsurprisingly, neighborhoods and schools both loom large for parents seeking opportunities and advantages for their children.

The importance of schools and neighborhoods is further magnified by school district policies that link these contexts together. Most school districts in the U.S. use some form of

residence-based school assignment policies, which essentially spatially divide districts into mutually exclusive school attendance zones and assign students to schools based on where they live. For parents, these policies mean that neighborhood and school choices are explicitly linked, and a choice in one domain will constrain the options available in the other (Field, Swait, and Bruch 2024; Swait and Bruch 2024). In addition, this link between schools and neighborhoods also effectively builds racially and socioeconomically segregated schools from segregated neighborhoods (Saporito and Sohoni 2006, 2007); therefore, this relationship between schools and neighborhoods has important implications for inequality in the U.S. In this dissertation, I explore how residence-based school assignment policies shape dynamic processes of demographic change within both schools and neighborhoods. Using original survey and longitudinal data, I trace the impacts of the link between neighborhoods and schools at the individual-, neighborhood-, and school district-levels to understand how these policies shape dynamics of school and neighborhood segregation. Next, I describe how these chapters fit together in the theoretical framework for this dissertation.

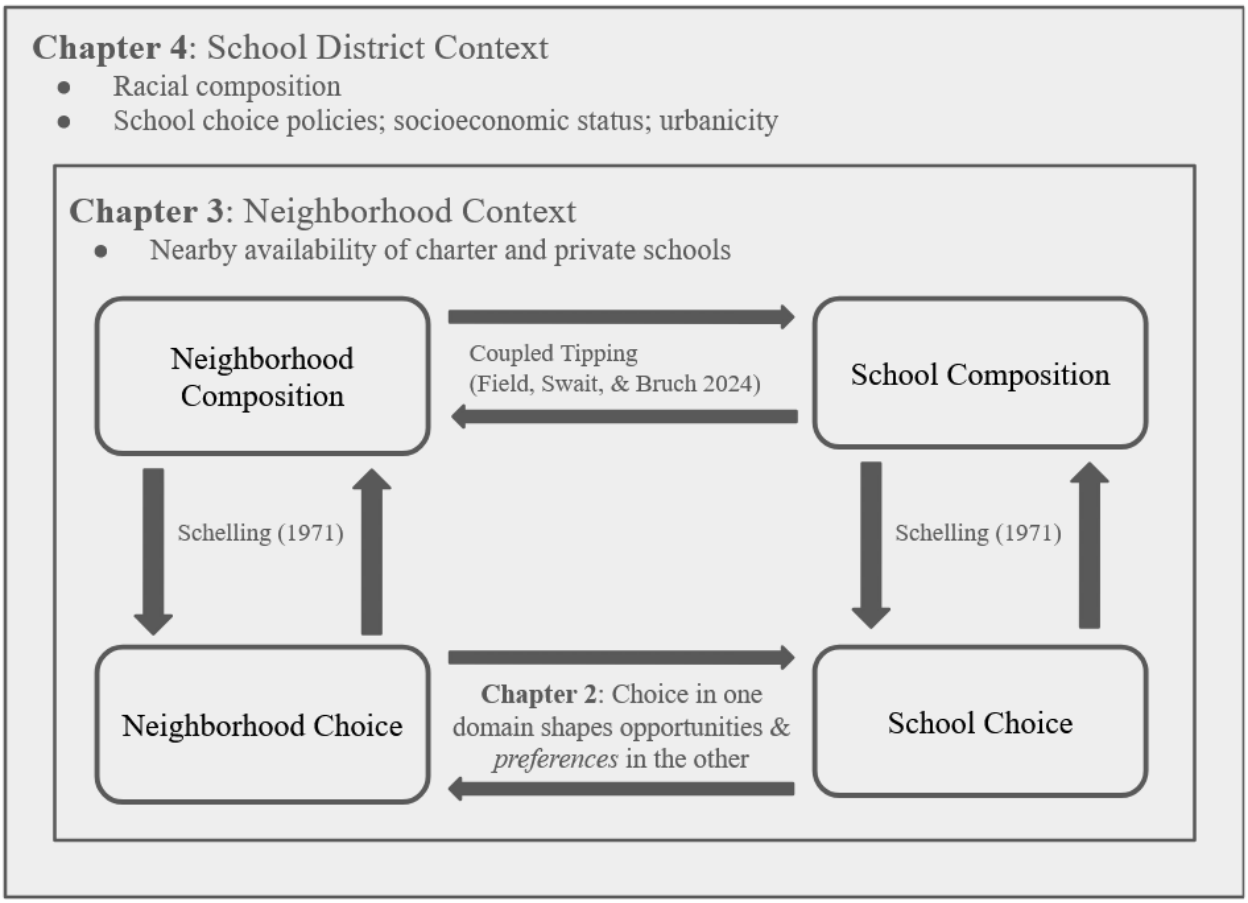
1.1 Theoretical Framework

As a project, my dissertation considers the cascading implications that the policy-based link between schools and neighborhoods has across multiple levels of social life. Scholars have, of course, examined different aspects of the school-neighborhood link, but in my dissertation, I consider the implications of this link within a broader theoretical framework that illustrates how two domains, linked both by individuals and by institutions (in this case school districts), create a complex system in which feedback loops occur both between individual decisions and aggregate contexts, and across different domains.

I present this theoretical framework in Figure 1.1. In this framework, I draw on Schelling's (1971) tipping point theory. Schelling's key insight was that individuals make choices about where to live based on the compositions of their neighborhood options, but when they move, they also influence the composition of both the neighborhoods they leave and the neighborhoods they enter. Schelling showed how individual choices can lead to high levels of racial segregation, even when those individuals have only mild preferences for living among their own group, because of this feedback loop between individual choices and neighborhood compositions. In figure 1.1., I illustrate this dynamic feedback loop with the arrows between the boxes for neighborhood choice and neighborhood composition. These feedback loops have most commonly been considered and researched in the context of neighborhoods, but this process can be extended to parents' choices about schools for their children and the compositions of those schools, as I show in the figure (Caetano and Maheshri 2017; Stinchcombe, McDill, and Walker 1969).

However, as indicated by the arrows between neighborhood choice and school choice, residence-based school assignments also induce a feedback loop between individuals' choices in each of these domains. In other words, if a parent chooses a particular neighborhood, their child will be assigned to that local school, or if a parent prefers a specific school, they must live within that school's neighborhood attendance boundaries (Swait and Bruch 2024). Parents, of course, can choose to send their children to alternative charter, magnet, or private schools, but parents' school choices remain constrained by their residential choices because parents tend to prefer closer schools and many parents do not have the flexibility or resources to send their children to distant school options (Bell 2009; Burdick-Will et al. 2020; Denice and Gross 2016; Rhodes and DeLuca 2014).

Figure 1.1 Overarching Theoretical Framework, adapted from Field, Swait, & Bruch (2024)



In other work, I argue that because these neighborhood and school choices are linked, a decision in one domain will not just affect the racial composition of that domain itself, but that decision will also impact the racial composition of the other domain (Field, Swait, and Bruch 2024). For example, if a parent chooses a particular neighborhood and, by extension, chooses that neighborhood school, their residential choice not only shapes the racial composition of the neighborhood, but their choice also changes the racial composition of the local school. Therefore, in addition to feedback between micro- and macro-levels of analysis, there is also a dynamic relationship between neighborhood and school composition, which we term coupled tipping (Field et al. 2024). In this dissertation, I expand upon this framework by situating this process within the larger political, institutional, and population contexts that shape these

dynamics at the school district and neighborhood levels. A central goal of my dissertation is to reveal the contextual factors at the individual-, neighborhood- and school district-levels that influence how racial composition changes unfold in schools and neighborhoods together.

First, I examine the implications of this link between parents' school and neighborhood choices in the first empirical chapter of the dissertation (Chapter 2). Given that choices in one domain will constrain parents' opportunities in the other, I investigate how this link between schools and neighborhoods affects parents' preferences for where they want to live and send their children to school. Next, in Chapter 3, I situate these choices within neighborhood contexts and examine how neighborhood-level variation in school choice availability affects the relationship between school and neighborhood demographic change. Finally, in Chapter 4, I leverage cross-district heterogeneity to reveal how contextual racial dynamics at the school district (i.e., metropolitan area) level affect patterns of White flight in the schools and neighborhoods nested within those districts. Going beyond existing studies of policy spillover effects, in this dissertation, I advance a structural framework to understand how residence-based school assignment policies create a link between schools and neighborhoods that shapes individual behaviors, neighborhood contexts, and population change. In the following sections, I elaborate on each of these levels of analysis depicted in Figure 1.1 and illustrate how each dissertation chapter fits into this overarching theoretical framework.

1.1.1 Parents' Preferences for Neighborhoods and Schools

The stakes of neighborhood and school decisions are high in the U.S. context, where schools provide uneven educational quality and where the divide between advantaged and disadvantaged neighborhoods is stark and enduring. Parents universally prefer to send their children to high quality schools and live in safe neighborhoods, but their ability to achieve these

goals varies widely (Cuddy, Krysan, and Lewis 2020; Darrah and DeLuca 2014; Rhodes and DeLuca 2014). Within these constraints, parents use their preferences for schools and neighborhoods to guide their decisions and achieve the best options possible for themselves and their children (DeLuca and Jang-Trettien 2020; Harvey et al. 2020). However, we know from a wealth of research that Americans' preferences for both schools and neighborhoods are highly influenced by racism and racial inequality (Billingham and Hunt 2016; Emerson, Chai, and Yancey 2001; Farley et al. 1978; Hailey 2021; Lewis, Emerson, and Klineberg 2011). These racially biased preferences are then translated into residential and school decisions that entrench racial segregation within American schools and neighborhoods.

Parents cite a desire for the "package deal" of a good neighborhood with a good local school (Holme 2002; Rhodes and Warkentien 2017). Yet, in studying how race shapes parents' preferences, scholars typically examine these contexts in isolation (Billingham and Hunt 2016; Charles 2003; Hailey 2021; Lewis et al. 2011). In Chapter 2, I use an original stated choice experiment fielded in a survey of parents with children under 18 living in the Chicago metropolitan area that experimentally manipulated both neighborhood and school characteristics simultaneously to examine how preferences for these two contexts together inform parents' decisions about where to live and where to send their children to schools. I find that parents' school and neighborhood preferences are interactive, meaning that neighborhood characteristics affect parents' preferences for schools and school characteristics shape parents' neighborhood preferences, and the nature of this interaction varies by parents' racial identities. White parents' preferences for Whiter schools and neighborhoods are magnified across contexts, such that White parents prefer total isolation in both their schools and neighborhoods. Latino parents also prefer greater Latino representation in both neighborhoods and schools, but these preferences are

only activated in majority Latino contexts. In contrast, Black parents prefer to avoid being a racial minority in both schools and neighborhoods but are satisfied when just one context is majority Black. By investigating the individual-level relationship between parents' school and neighborhood preferences, this chapter reveals that these decisions are deeply intertwined, and illustrates how this individual-level link may endure and shape school and neighborhood racial dynamics even in the absence of residence-based school assignments.

1.1.2 Neighborhood-Level Access to School Choice

Parents' decisions about neighborhoods and schools are also made within the context of the neighborhoods and school districts within which they live. School choice policies and availability will have a large impact on the options parents have and the decisions they are likely to make. In a district without magnet or charter schools, parents will be constrained to their neighborhood public schools, or the more time- and resource-intensive options of private schools and homeschooling. However, school choice is both a policy regime established by a school district and a neighborhood-level opportunity. That is, even in districts with school choice policies, schools of choice are not evenly spread throughout cities, which means that the local supply of school choice options likely varies within districts (Henig and MacDonald 2002; Koller and Welsch 2017; Saultz and Yaluma 2017). In districts or neighborhoods with limited school options, parents' decisions about schools and neighborhoods will be quite tightly linked. In contrast, for parents who live in neighborhoods with expansive school choice options, choices within one domain will be far less restrictive on their options within the other domain.

In my previous work on coupled tipping, we show that schools and neighborhoods follow similar patterns of demographic change, but these contexts do not experience change in perfect lockstep (Field et al. 2024). School choice is the key mechanism that allows school and

neighborhood change to occur independently, but in this previous research, we do not investigate the role of school choice in weakening this relationship between neighborhoods and schools. In Chapter 3, I use neighborhood-level data on charter and private school availability to show how the link between school and neighborhood demographic change weakens in neighborhoods with greater access to alternative school options. I find that in neighborhoods with many charter or private school options, school change is less likely to follow neighborhood change, indicating that school choice enables school and neighborhoods to undergo separate processes of demographic change, rather than being perfectly linked together.

I also investigate how the availability of school alternatives affects the rate at which both neighborhoods and schools experience White flight. School choice options will allow parents who are unsatisfied with their local assigned school to access alternatives that may better suit their needs and desires. Therefore, if school preferences motivate some parents' residential moves, then the availability of school choice may reduce residential mobility and, by extension, slow racial turnover. I confirm that, indeed, neighborhoods with more charter and private school options tended to lose fewer White residents. In addition, I find that schools with more nearby school choice options also experienced slower rates of change while schools without nearby school choice options experienced rapid loss of White students, as an indirect effect through neighborhood change. These findings suggest that, because this effect of school choice on school change operates primarily through neighborhood change, the lack of school choice options may make White parents more likely to move away from urban neighborhoods and by extension leave those neighborhood schools. Taken together, the findings in this chapter reveal how school choice availability shapes the racial dynamics of both schools and neighborhoods, as well as the link between change in these contexts.

1.1.3 School District Racial Composition

In my final empirical chapter, I move to the school district-level to investigate how contextual factors at the metropolitan level will shape the mezzo-level processes of racial turnover in schools and neighborhoods. Parents are making decisions about where to live and where to send their children to school based on both their preferences for these contexts, as well as the options they have in their cities and school districts. In this chapter, I argue that the broader context of the metro area racial composition affects how the schools and neighborhoods within it experience demographic change. In other words, I show that neighborhood and school changes unfold differently in school districts that are majority White or majority Black, compared to those that are more racially diverse.

In this chapter, I show that, after accounting for neighborhood- and school district-level school choice availability, as well as socioeconomic and urbanicity characteristics, neighborhoods and schools in racially diverse school districts experience slower rates of White flight. I also present preliminary evidence suggesting that greater representations of Latinos at the metro-level reduces White flight from neighborhoods, but, notably, not from schools. This chapter reveals that, contrary to what we might expect, predominantly White and racially diverse neighborhoods in Whiter school districts are less demographically stable than predominantly White and racially diverse neighborhoods within racially diverse school districts (Hall, Tach, and Lee 2016). This chapter contributes to literatures on macro-level segregation patterns as well as the hypothesis that Latinos may serve as a buffer group to allow for greater integration and demographic stability for Black and White populations (Lichter, Parisi, and Taquino 2015; Logan and Zhang 2010; Parisi, Lichter, and Taquino 2015).

1.1.4 A Complex System Generated by the Link Between Neighborhoods and Schools

Returning to Figure 1.1, the structural link between neighborhoods and schools occurs only at the individual level: between parents' decisions about where to live and their options for their children's schools. In the U.S., this link is formalized by education policy through most school districts' reliance on residence-based school assignments. However, as I show in Chapter 2, this relationship would likely endure in the absence of these school assignment policies, because parents, especially White parents, see these contexts as a package deal and their preferences for them are interdependent (Holme 2002; Rhodes and Warkentien 2017). Yet, even if this link only exists explicitly at the individual level of parents' decisions, the relationship between these choices and aggregate racial compositions means that this link has cascading effects across all the levels of analysis that I investigate in this dissertation. Together, these investigations situate the relationship between neighborhoods and schools within a complex system where individual decisions and aggregate racial composition exist within a feedback loop with each other and across different domains of social life. The complex system created by the school-neighborhood link means that, not only must these contexts be considered together in social science research and policymaking on schools and neighborhoods, but we must account for these spillover effects and feedback loops when researching the many other domains of social life that have generally been assumed to affect just one of these contexts.

Chapter 2 Understanding the "Package Deal:" Disentangling Parents' Intertwined Preferences for Schools and Neighborhoods

2.1 Introduction

Decisions about where to live and where to send their children to school weigh heavily on many American parents, who are faced with a landscape of neighborhoods and schools marked by stark inequality and severe racial segregation (Owens 2020; Reardon and Owens 2014). Not only are school and neighborhood decisions each important, but they are also linked together through widespread school district policies that assign students to schools based on their residential address. Even with the expansion of school choice, over 80% of public school students attend their assigned, local schools (de Brey et al. 2021); therefore, for many parents, schools and neighborhoods come together as a "package deal," that is, parents choose a neighborhood to live and send their children to that local neighborhood school (Holme 2002; Rhodes and Warkentien 2017). This policy-based link between schools and neighborhoods essentially builds racially segregated schools out of what are already racially segregated neighborhoods (Saporito and Sohoni 2006).

Parents, understanding this link, articulate that schools and neighborhoods are deeply intertwined; a good school is a necessary quality of a good neighborhood, and a good neighborhood must come with a good local school (Johnson and Shapiro 2003). As a result, parents often consider both school and neighborhood characteristics when deciding where to live, including racial diversity (Denice and Gross 2016; Holme 2002; Posey-Maddox, Kimelberg, and Cucchiara 2014). This link between schools and neighborhoods can increase

school segregation, because White parents are more likely to opt out of their neighborhood schools when they live in more racially diverse and more Black neighborhoods (Saporito 2009; Saporito and Sohoni 2006) and when they live in socioeconomically diverse and gentrifying neighborhoods (Bischoff and Tach 2018; Candipan 2019). Experimental survey research shows that racial composition plays an influential role in people's preferences for neighborhoods (Charles 2000; Farley et al. 1978; Lewis et al. 2011) and parents' preferences for schools (Billingham and Hunt 2016; Hailey 2021), though this research has only looked at schools and neighborhoods separately. Given that parents often pursue schools and neighborhoods together, examining these preferences in isolation limits our ability to understand how school and neighborhood preferences affect each other and jointly shape parents' decisions. For example, White parents prefer Whiter schools (Billingham and Hunt 2016; Hailey 2021), but without examining how parents' preferences for schools are shaped by the neighborhood environment, research has not identified whether predominantly White schools remain attractive when those schools are located in racially diverse areas, or whether a racially diverse school could lower the appeal of a predominantly White neighborhood. In other words, parents' preferences for schools and neighborhoods may also be intertwined; that is, characteristics of the school will shape parents' perceptions of a neighborhood and the character of a neighborhood will affect parents' perceptions of its local school (Bell 2020).

In this article, I propose and test two theoretical frameworks to investigate how parents jointly evaluate schools and neighborhoods, as a package deal. Testing these frameworks on an original survey of Black, White, and Latino parents in the Chicago metropolitan area, I provide conceptual clarity to the widespread idea that parents consider school and neighborhood characteristics together. I focus on parents' preferences for the racial compositions of schools

and neighborhoods, which are key predictors of parents' neighborhood and school decisions. To explore parents' joint school and neighborhood preferences, I examine two research questions. First, to understand how parents weigh school and neighborhood considerations at once, I ask: How do parents' preferences for schools and neighborhoods compare to each other? Do parents prefer more or less of their own racial group in their schools as compared to their neighborhoods? I then turn to examining whether and how these preferences are intertwined. My second research question is, Do parents' evaluations of neighborhoods depend on or interact with school characteristics, and vice versa, or do parents evaluate these contexts independently? And, if these preferences do interact, how does this interaction affect how parents make decisions about schools and neighborhoods together? I also investigate these questions with respect to race to examine how the relationship between school and neighborhood preferences varies by parents' racial/ethnic identities.

2.2 Neighborhoods and Schools as a Package Deal

Parents cite a desire to find the ideal package deal of an appealing neighborhood and a good local school, satisfying their needs and desires for schools and neighborhoods with a single residential decision (Lareau and Goyette 2014; Rhodes and Warkentien 2017). The desire for a satisfactory package deal can be found among parents across race and class, but when making actual decisions, many parents face a set of options that fails to live up to these hopes (Darrah and DeLuca 2014; Rhodes and DeLuca 2014). Parents with greater constraints on resources and time are more likely to focus on home and neighborhood characteristics, leaving school decisions as a secondary consideration (DeLuca and Jang-Trettien 2020; Harvey et al. 2020; Wood 2014). Black families and working-class families may pursue the package deal of a good neighborhood and good local school, but they more often end up in places that fail to live up to their

aspirations, compared to affluent, White families (Rhodes and Warkentien 2017). The expansion of public school choice makes it easier to disconnect school and neighborhood decisions (Cuddy et al. 2020; Ely and Teske 2015). However, school choice is often easier to exercise in theory than in practice: the best charter and magnet options are often over-enrolled (DeSena 2006; Pattillo, Delale-O'Connor, and Butts 2014), and school choice can involve navigating a complex bureaucracy of applications and waitlists (Makris 2018; Pattillo 2015).

Therefore, although the ideal package deal is a more straightforward choice for White and affluent parents, schools and neighborhoods remain linked together for most parents. In addition, schools can affect neighborhood perceptions even among families without children, as reflected in the relationship between school quality and home prices (Bell 2020; Nguyen-Hoang and Yinger 2011). Decades of experimental research has examined how people respond to characteristics like racial composition, student test scores, and crime rates when making school and neighborhood decisions (e.g., Farley et al. 1978; Hailey 2021; Lewis et al. 2011); yet these studies have not examined how school and neighborhood preferences may reinforce or counterbalance each other when parents are making joint decisions about schools and neighborhoods. To understand why this is important for understanding parents' preferences, I next outline two potential frameworks to describe how parents may evaluate their school and neighborhood options when pursuing the package deal.

2.2.1 How Parents Pursue the Package Deal

A straightforward understanding of how the package deal affects parents' decisions is that parents evaluate the school, evaluate the neighborhood, and then consider this pair against other options. In other words, one might expect that parents' preferences for schools and neighborhoods are *independent*: parents' preferences for a school remain constant no matter the

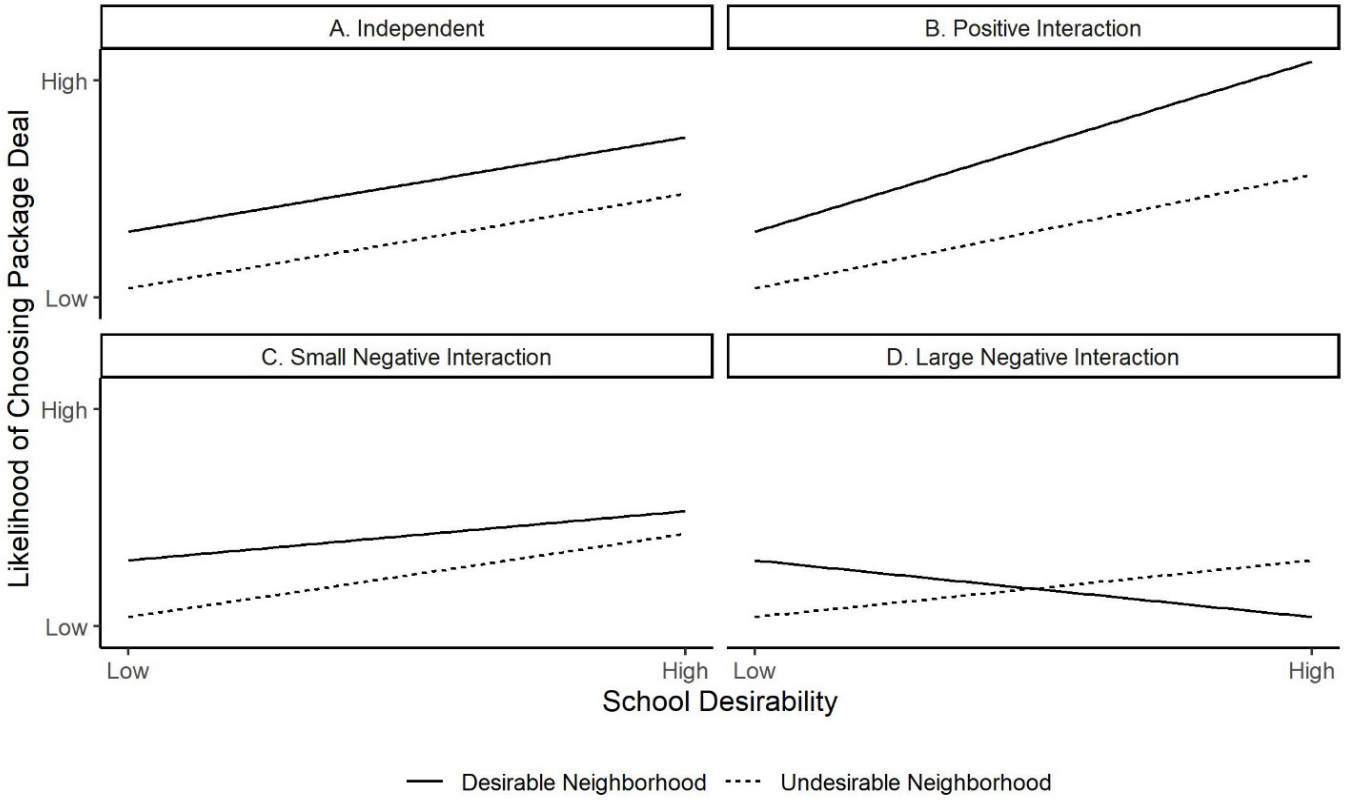
neighborhood in which it is located, and their preferences for a neighborhood are the same no matter the characteristics of the local school. Therefore, perhaps when parents describe seeking their ideal package deal, parents are making distinct judgements about the desirability of each context and looking for the best combination they can achieve.

However, in qualitative studies, parents describe the quality of schools and neighborhoods as going "hand-in-hand," or in the words of one parent from Rhodes and Warkentien's (2017) study, "The schools are pretty much the same as the neighborhood" (176S). Therefore, perhaps these evaluations are not independent, but rather co-constitutive: a good school is a necessary characteristic of a good neighborhood, and a school is unlikely to be considered good if it's located in an undesirable neighborhood (Bell 2007; Holme 2002; Johnson and Shapiro 2003). In other words, parents' evaluations of a school option are influenced by the neighborhood in which it is located, and their opinions of a neighborhood are affected by the characteristics of its local school. This package deal framework would be better described as *interactive*.

In Figure 2.1, I illustrate how these two frameworks affect parents' preferences and their likelihood of choosing a given school and neighborhood together as a package deal, based on school and neighborhood desirability. There are many factors that contribute to school and neighborhood desirability, some of which are shared by many parents, such as test scores or crime rates, and some of which vary across parents. I use "desirability" in Figure 1 as a stand-in for school and neighborhood characteristics that parents find desirable to create a general framework for how school and neighborhood preferences might affect each other. This framework could be applied to a variety of specific school and neighborhood characteristics, based on how parents themselves define desirability.

Within the independent framework in panel A, I show that, in a desirable neighborhood (solid line), as the school desirability increases along the x-axis, the likelihood of choosing the package deal increases.[2] Similarly, within the undesirable neighborhood (dashed line), as school desirability increases, so does the likelihood of choosing the package deal. Because the parents' evaluations of the school and the neighborhood are independent, the slopes of these two lines are identical: the neighborhood context does not change how a parent responds to school desirability. But because the neighborhood is preferred in the desirable neighborhood scenario, overall, the solid line has a higher intercept and is always more appealing.

Figure 2.1 Proposed Theoretical Frameworks for How Parents Evaluate the Package Deal of Neighborhoods and Schools



[2] I focus on a school in different neighborhoods, but the converse graph would show similar patterns.

In contrast, an interactive effect between the neighborhood and school changes parents' preferences based on the desirability of the other context, but this interaction effect must be either positive or negative. A positive interaction between neighborhood and school preferences, shown in panel B, magnifies the likelihood of choosing the package deal because each context makes the other more desirable. Unlike in the independent framework, the solid line for the desirable neighborhood is not parallel to the dashed line. Rather, in a desirable neighborhood, the likelihood of choosing the package deal increases even more as the school becomes more desirable. As an example, a parent might prefer a walkable school and a safe neighborhood, and a positive interaction would mean that their preference for school walkability is even stronger in a safer neighborhood (Burdick-Will, Gebo, and Williams 2023). Therefore, for parents operating under a positive interactive framework, the package deal is greater than the sum of its parts: when one context is desirable, desirable characteristics in the other context are even more appealing.

Turning to the other possible direction, I show two negative interactive frameworks in panels C and D of Figure 2.1, a small and a large negative interaction, because the size of the negative interaction is quite influential on the pattern of parents' evaluations of the package deal. In panel C, the slope of school desirability in the desirable neighborhood is decreased by the small negative interaction, making the slope flatter in the desirable neighborhood scenario. In other words, increasing school desirability only results in a small increase in the likelihood of choosing the scenario with the desirable neighborhood. In contrast, in the undesirable neighborhood, as the school becomes more desirable, there is a larger payoff in the likelihood of choosing the package deal.

Now, at first this negative interaction may seem less intuitive—why would a parent care *less* about having a desirable school when it is in a desirable neighborhood? For a characteristic like safety, it is hard to imagine why a parent would value school safety less because the neighborhood is safe or vice versa. However, there are school and neighborhood characteristics where more is not always better or where there are trade-offs between advantages and disadvantages of having more of that characteristic. Consider racial composition: White parents consistently prefer Whiter neighborhoods and Whiter schools, but research has found a mix of preferences for own-race and racially diverse schools and neighborhoods among parents of color (Billingham and Hunt 2016; Charles 2000; Hailey 2021; Krysan et al. 2009). Black and Latino parents are more likely to seek a balance between the advantages of same-race peers and neighbors with the advantages of racially diverse environments (Dow 2019; Lacy 2007; Posey-Maddox et al. 2021). Returning to panel C, we can imagine that parents of color may broadly prefer greater representations of their own race in their schools and neighborhoods but that increasing this representation might be less important in the school if the neighborhood already exhibits a desirable level of their own group. Therefore, for this small negative interaction, there is a small penalty for having too much of a good thing in both contexts.

In panel D, the large negative interaction represents a more extreme pattern where, in the desirable neighborhood, increases in school desirability actually reduce the likelihood of choosing the package deal. When the negative interaction is large, parents prefer having the desirable characteristic in only one context at a time—a tradeoff. Consider again racial composition: prior research has shown that parents of color prefer to avoid racially isolated neighborhoods and schools, which are often disinvested and under-resourced (Logan, Minca, and Adar 2012; Matheny et al. 2023; Posey-Maddox et al. 2021). However, parents of color also

avoid being in a small minority where they are more likely to face discrimination and difficulties building community (Krysan and Farley 2002; Lacy 2007). Therefore, perhaps parents of color are more likely to see the desirability of living among their own racial group as a tradeoff between neighborhood and schools. Overall, Figure 1 illustrates that this interaction effect would mean that parents' preferences for the package deal may be much more complex than one would expect based on school and neighborhood preferences in isolation.

In Figure 2.1, I illustrate parents' evaluation of the package deal as the average of their school and neighborhood evaluations, assuming that parents place equal weight on each context. However, this figure could be redrawn for a parent with stronger school preferences, such that the likelihood of choosing the package deal is weighted toward school desirability, or vice versa. Therefore, before examining whether parents' preferences are independent or interactive, I will answer my first research question to establish whether school and neighborhood preferences are similar or different. In addition, Figure 2.1 illustrates a general framework for how school and neighborhood characteristics might interact, but I will now return to my focus on racial composition as a specific characteristic that influences how parents evaluate the desirability of different schools and neighborhoods.

2.3 Parents' Preferences for Neighborhoods and Schools

In the racialized social system of the U.S. (Bonilla-Silva 1997), school and neighborhood racial compositions are not only closely correlated with each other but they also correlate with neighborhood and school advantage or disadvantage (Bischoff and Owens 2019; Owens 2020). Parents, therefore, select from a set of neighborhood and school options where race is closely tied to other characteristics that shape their decisions, like crime rates, poverty, or test scores (Bruch and Swait 2019; Burdick-Will et al. 2020; Krysan and Crowder 2017). Consequently, our

ability to understand how parents act on preferences for neighborhoods and schools is quite limited when examining actual decisions. A long history of experimental survey designs, called vignette or stated choice experiments, have addressed this weakness of observational studies by using experimental randomization to isolate the effects of racial composition from other characteristics (Auspurg and Hinz 2014; Louviere, Hensher, and Swait 2000). The following sections summarize the extensive experimental literature on neighborhood and school racial composition preferences, and I consider how these preferences may vary across contexts.

2.3.1 Neighborhood Preferences

Most research on neighborhood racial composition preferences has focused on White Americans and to a lesser extent Black Americans, but limited recent work has examined the preferences of Latino and Asian Americans. Although White Americans have become more accepting of racial diversity over time, stated choice experiments show that they remain resistant to more than token representation of Black neighbors (Emerson et al. 2001) and find neighborhoods less desirable as the representation of Black or Hispanic neighbors increases (Krysan et al. 2009; Lewis et al. 2011). In contrast, one stated choice experiment finds that the proportion White and Latino does not affect Black respondents' neighborhood preferences, although Black respondents avoided neighborhoods with larger Asian presences (Lewis et al. 2011). Black Americans also express the importance of having more than a minority representation of Black neighbors to protect themselves from discrimination (Charles 2000; Krysan 2002a; Krysan and Farley 2002; Lacy 2007). Research on the preferences held by Latinos has been more limited with mixed findings. Some research has found that Latinos prefer neighborhoods with more White neighbors, fewer Black and Asian neighbors, and a large

proportion of Latinos (Charles 2000), but a stated choice experiment found that Latino's preferences for neighborhoods were not influenced by racial composition (Lewis et al. 2011).

2.3.2 School Preferences

Comparatively less research investigates parents' preferences for the racial compositions of schools. White parents avoid sending their children to schools with large Black student populations (Lankford and Wyckoff 2006), even when White schools have greater student poverty and lower test scores (Saporito and Lareau 1999). Families zoned to more racially and economically diverse schools are more likely to use school choice and intradistrict transfers (Bischoff and Tach 2018; Phillips, Larsen, and Hausman 2015). In stated choice experiments, White parents prefer Whiter schools and avoid schools with more Black and Latino students, even after accounting for school quality (Billingham and Hunt 2016; Hailey 2021). Only one study examines Black and Latino parents' school preferences, finding that Black parents prefer predominantly Black and racially diverse schools over White schools, and Latino parents prefer predominantly Latino and racially mixed schools over Black schools and over White schools (Hailey 2021).

2.3.3 Comparing Parents' School and Neighborhood Preferences

Schools and neighborhoods both matter immensely to parents who seek safe and nurturing environments in which to raise their children (Lareau and Goyette 2014). However, schools and neighborhoods also play distinct roles in the lives of children, and, therefore, parents may be prioritizing distinct characteristics when deciding where to live and where to send their children to school. Thus, parents may have different preferences for schools and for neighborhoods, including their preferences for the racial compositions of these contexts.

First, parents may have stronger preferences for school racial compositions, because parents understand schools to play a central role in the long-term outcomes of their children (Calarco 2018; Lareau 2011). The immense importance that parents place on schools can lead to considerable anxiety and distress when parents feel that their schools do not meet their expectations (Posey-Maddox et al. 2021; Roda and Wells 2013), and parents will often go to great lengths to find schools they deem acceptable (Rhodes and DeLuca 2014; Sattin-Bajaj and Roda 2018). These standards for acceptable schools are often linked to socioeconomic and racial makeups; parents rate schools serving affluent and White families as higher quality than those with more students living in poverty or more students of color (Calarco 2018; Lankford and Wyckoff 2006; Saporito 2009; Saporito and Lareau 1999). The combination of intensive parenting expectations and the perceived importance of school quality means that schools loom large for parents who are seeking to do the best for their children. Therefore, racial composition preferences may be stronger for schools compared to neighborhoods.

On the other hand, neighborhoods also shape children's academic and developmental trajectories. Neighborhood poverty rates and concentrated disadvantage are consistently linked to children's outcomes such as lower test scores and high school graduation rates (Sastry 2012; Wodtke and Parbst 2017). Neighborhoods are also where children spend time without close supervision from parents or teachers, and among older peers. These influences weigh heavily on parents concerned about shielding their children from undesirable aspects of their neighborhoods (Underhill 2021). Therefore, parents could have stronger racial composition preferences for their neighborhood compared to their schools, as neighborhoods are environments with less structure and supervision. On the other hand, it is also possible that these countervailing effects equalize such that parents have similar preferences for neighborhoods and schools.

Whether school and neighborhood preferences are similar or different will shape the decisions that parents make. If preferences for schools are stronger, neighborhood segregation might be higher than one would expect, because parents dismiss integrated neighborhoods with diverse schools that don't satisfy their stronger school preference for own-group representation. Or perhaps these parents would seek out private or charter schools to satisfy their school preferences, leaving public schools more segregated than their neighborhoods (Saporito 2009; Saporito and Sohoni 2006). Alternatively, if parents have stronger neighborhood preferences, school segregation would be driven primarily by neighborhood desires and unlinking school and neighborhood decisions could reduce racial segregation (Krysan, Cuddy, and Lewis 2022; Rich, Candipan, and Owens 2021). In sum, parents' ultimate school and neighborhood decisions will be shaped by both their preferences for these contexts and how these preferences affect each other.

2.4 Data & Methods

I designed and implemented an original stated choice experiment (Auspurg and Hinz 2014; Louviere et al. 2000) in a survey conducted in October 2021 on 1,210 adults living in the Chicago metropolitan area with at least one child under 18. I modeled my experiment after prior stated choice research examining schools and neighborhoods separately (Billingham and Hunt 2016; Emerson et al. 2001; Lewis et al. 2011), but I asked respondents to consider school and neighborhood characteristics simultaneously. A stated choice experiment is uniquely suited to answer my research questions because by generating random characteristic profiles for neighborhoods and schools, I can estimate the independent effects of school and neighborhood racial compositions on parents' choices.

I fielded the survey using Qualtrics research panels of respondents compensated with direct material incentives, including cash payments or rewards. Although online, nonfull probability sampling remains new in sociology, online panels are well-suited to a stated choice experiment, which requires a large sample to test hypotheses. Online surveys are often not fully representative, particularly for people of color and low-income populations. However, I used respondent quotas such that Black and Latino respondents were each at least 25% of the sample, to reflect the racial diversity of the Chicago region.

2.4.1 Stated Choice Experiment

Parents were first presented with a set of terms to understand the experimental scenarios (Appendix Figure A.1). Parents were then presented the following prompt, which indicates to the parent that they have found a home that meets all their desires:

> Imagine that you are moving to a new city and that you have a five-year-old child entering elementary school. You find a house that you like much better than any other house—it has everything that you are looking for, it is easy to get to places you need to go, and it is within your price range. It is zoned to a local public school and this is the only public school option available to you. Checking on the neighborhood and school, you find …

The question displayed six neighborhood and school characteristics, listed in Table 1. These characteristics were presented in a random order for each respondent, but this order was fixed within respondents across scenarios. In each scenario, the characteristics were assigned random values from the ranges in Table 1. The randomized racial compositions always summed to 100%. I fixed the percentage Asian at 5%, to represent a small presence of Asian Americans.

Table 2.1 Stated Choice Experiment Randomized Characteristics

School/Neighborhood Characteristic:	**Randomizations:**
Neighborhood composition:	[0-95%] Black, [0-95%] Latino, [0-95%] White, and 5% Asian
Neighborhood property values:	[below average, average, above average]
Neighborhood crime rate:	[low, average, high]
School composition:	[0-95%] Black, [0-95%] Latino, [0-95%] White, and 5% Asian
Percent of students proficient in reading and math:	[35%, 45%, 60%, 80%, 95%]
Student poverty rate:	[10%, 40%, 80%]

Figure 2.2 illustrates an example scenario. Respondents were asked whether they would (A) move to this neighborhood and send your child to this public school, (B) move to this neighborhood and send your child to a private school, (C) move to this neighborhood and homeschool your child, or (D) continue searching for a place to move. Option A is the central outcome of interest: whether parents chose both the neighborhood and school, as a package deal. Respondents were shown five of these randomized scenarios. The first response is treated as a learning task and excluded from the data analysis (Louviere et al. 2000). Therefore, my total sample size is 4,840 responses (1,210 respondents across four scenarios).

Figure 2.2 Example Scenario as Presented to Survey Respondents

Imagine that you are moving to a new city and that you have a five-year-old child entering elementary school. You find a house that you like much better than any other house – it has everything that you are looking for, it is easy to get to places you need to go, and it is within your price range. It is zoned to a local public school and this is the only public school option available.

Checking on the neighborhood and school, you find:

Neighborhood:	
Property values:	above average
Crime rate:	average
Demographics:	16% Black, 21% Latino, 58% White, and 5% Asian
School:	
Percent proficient in reading and math:	60%
Low income:	40%
Demographics:	28% Black, 13% Latino, 54% White, and 5% Asian

What would you do?

- ○ Move to this neighborhood and enroll your child in this public school
- ○ Move to this neighborhood and send your child to a private school
- ○ Move to this neighborhood and homeschool your child
- ○ Continue searching for a place to move

2.4.2 Methods

Following prior research (Auspurg and Hinz 2014; Louviere et al. 2000), I use a multinomial logit (MNL) model. The model estimates the effects of the experimental characteristics and individual-level controls on (1) parents' likelihood of choosing both the neighborhood and school, and on (2) parents' likelihood of choosing to move to the neighborhood and either homeschool their child or send them to a private school (options B and C combined), compared to (3) continue searching. I use a model-building approach, beginning with a model without interactions. I then present an intermediate model that adds an interaction between school and neighborhood racial composition. Finally, I present my final model which includes a three way-interaction between parents' racial identity, school racial composition, and neighborhood composition. To answer my first research question, I compare the effects of school and neighborhood racial composition on parents' likelihood of choosing the school and neighborhood. To answer my second research question, I use a likelihood ratio test to determine whether there is a significant interaction effect between school and neighborhood racial composition in the final model.

The MNL is specified as follows:

Equation 2.1

$$P_{in} = \frac{exp(V_{in})}{\sum_{j=1}^{J} exp(V_{jn})}, i = 1, \ldots, J ,$$

where P_{in} is the probability of choosing alternative i = 1, …, *J* and *J* is the number of alternatives, *n* is the individual, and V_{in} is the systematic utility (or attractiveness) of alternative *i*. In my final model, I specify the systematic utility as follows:

Equation 2.2

$$
\begin{aligned}
V_{in} = \alpha_{in} &+ \beta_1 \mathbf{Neighborhood\%OwnRace_i} \\
&+ \beta_2 \mathbf{Neighborhood\%OwnRace_i} * \text{ParentRace}_n \\
&+ \beta_3 \mathbf{School\%OwnRace_i} \\
&+ \beta_4 \mathbf{School\%OwnRace_i} * \text{ParentRace}_n \\
&+ \beta_5 \mathbf{Neighborhood\%OwnRace}_i * \mathbf{School\%OwnRace}_i \\
&+ \beta_6 \mathbf{Neighborhood\%OwnRace}_i * \mathbf{School\%OwnRace}_i * \text{ParentRace}_n \\
&+ \beta_7 \text{ParentRace}_n \\
&+ \beta_8 \mathbf{NeighborhoodPropertyValues}_i \\
&+ \beta_9 \mathbf{NeighborhoodCrimeRate_i} \\
&+ \beta_{10} \mathbf{SchoolProficiencyRate}_i \\
&+ \beta_{11} \mathbf{SchoolPovertyRate}_i \\
&+ \beta_{12} \text{BachelorsDegree}_n \\
&+ \beta_{13} \text{Homeowner}_n \\
&+ \beta_{14} \text{OldestChildUnder6}_n \\
&+ \beta_{15} \text{ExperimentNumber}_i \\
&+ \beta_{16} \text{PreviouslyAlwaysChoseContinue}_i
\end{aligned}
$$

I use person-specific random intercepts (α_{in}), and $\beta's$ are assumed homogenous across respondents. The random intercepts are alternative-specific and assumed to be independently normally distributed with mean zero and variance σ_i^2, $i = 1, \ldots, J$. The bolded variables are the experimentally assigned characteristics of the school and neighborhood.

I represent the racial compositions of schools and neighborhoods as percentage own race.[3] I ran a series of models with each combination of racial groups to examine their respective effects on preferences. For Whites, these models showed that although the effects of percentage Black and percentage Latino are similar and significant in an out-group model, neither are significant when percentage White is included. I find the same pattern for Black parents.[4] This is not intended as evidence that in-group preferences are stronger than out-group preferences,

[3] I found that a quadratic effect does not improve model fit and only include linear terms for racial composition, aligning with previous research (Emerson et al. 2001; Lewis et al. 2011).

[4] The results for Latino parents indicated similar coefficients for school percentage White and Black. However, for neighborhoods, percentage Black had a negative effect, while percentage White was positive but nearly zero. Therefore, Latino parents' preferences may be more complex than I represent here, but this simplification is necessary to examine the interaction between school and neighborhood preferences.

because racial bias is relational and hierarchical: a preference for one's own group necessarily indicates aversion to the out-group (Blumer 1958; Bobo and Hutchings 1996). Therefore, I use percentage own race, because this approach allows me to compare parents' neighborhood and school preferences and estimate an interaction between school and neighborhood compositions.

I also include three individual-level controls: education level (bachelor's degree or more), homeownership status, and whether the parents' oldest child is under age six. I include two controls based on the experimental design that vary within parent—a variable indicating the experiment number and a variable indicating whether the parent had previously always chosen the response option of "Continue Searching" to control for bias toward selecting the scenario when the parent has rejected all previous scenarios.

I use a likelihood ratio test to examine whether adding each subsequent set of interactions offers a significant improvement of model fit over a simpler model. If parents' evaluations of schools and neighborhoods are interactive, the interaction term between school and neighborhood racial composition will be a statistically significant improvement to the model. But, if parents' evaluations of schools and neighborhoods are independent, this interaction term will not be statistically significant. Finally, I use marginal effects and predicted probabilities to compare parents' school and neighborhood preferences in answering my first research question and to investigate how the interaction effect shapes parents' overall preferences for schools and neighborhoods.

2.5 Results

2.5.1 Sample Characteristics

Table 2.2 presents descriptive statistics of survey respondents compared to the Chicago metropolitan area using the American Community Survey. The sample closely reflects the racial

composition of the Chicago metropolitan area, with around 48% non-Hispanic White respondents and Chicago metro-area residents, as well as 24% Latino respondents compared to 23% Latino residents. The sample over-represents Black parents (27% compared to 19%).[5] The survey sample is representative of lower-income Chicago residents (annual incomes under $45,000) but underrepresents the highest earners. The sample also underrepresents the population without a high school degree (3% vs. 11%) but more closely reflects the Chicago population with a high school degree and with a bachelor's degree. The survey overrepresents women compared to the general population (65% vs. 51%), but mothers also tend to be more involved in school decisions (Bader, Lareau, and Evans 2019; DeSena 2006). In addition, a greater proportion of the sample are employed compared to the general population in the metro area (75% vs. 67%) and a greater proportion are married (59% vs. 45%), however these differences likely arise from sampling only parents with a child under 18. Finally, the survey closely represents the proportion of people who own a home.

[5] Only 63 parents (5%) selected multiple racial/ethnic groups. This sample was too small to conduct a separate analysis; I coded parents who selected both Black and Latino as Black, parents who selected Black and White as Black, and parents who selected Latino and another group as Latino.

Table 2.2 Sample Descriptive Statistics (n=1,210) and American Community Survey (ACS) 1-Year Estimates 2019

	N or mean (sd)	%	ACS 2019
Racial Identity			
Non-Hispanic White Parents	586	48.4%	48.9%
Black Parents	332	27.4%	18.5%
Latino Parents	292	24.1%	22.6%
Income			
Under $30,000	251	20.7%	20.1%
$30,000-$44,999	149	12.3%	11.1%
$45,000-$74,999	136	11.2%	18.7%
$75,000-$99,000	211	17.4%	12.6%
Over $100,000	297	24.5%	37.6%
Prefer not to say	47	3.9%	
Education			
Less than High School	36	3.0%	10.7%
HS Degree	266	22.0%	22.9%
Some college	292	24.1%	18.3%
Associate degree	171	14.1%	7.1%
Bachelor's or more	445	36.8%	40.9%
Demographic Characteristics			
Woman	791	65.4%	51.2%
Employed	912	75.4%	66.8%
Married	709	58.6%	45.3%
Homeowner	727	60.1%	62.0%
Number of Children	1.8 (1.2)		

Notes: 42 parents identified as both Black and Latino, 7 parents identified as both Black and White, 16 parents identified as Latino and American Indian/Alaskan Native or Asian/Pacific Islander/Native Hawaiian. Only 63 parents selected multiple races. Therefore, 95% of respondents selected just one of these groups.
Data Sources: Author's Stated Choice Experiment, 2021; American Community Survey 1-Year estimates for 2019, Chicago-Naperville-Elgin Metropolitan Division

2.5.2 Multinomial Logit Model Results

Next, I turn to the results from the MNL models to examine how school and neighborhood racial composition affect parents' likelihood of choosing the package deal. Table 2.3 presents the results of three MNL models, predicting whether the parent chooses to move to

the neighborhood and send their child to the public school (i.e., selects the package deal), compared to the reference category of choosing to continue searching for a place to live.[6]

Model 1, which does not include interaction effects, shows how school and neighborhood characteristics shape the average parents' likelihood of choosing to live in the neighborhood and send their child to the local public school. Focusing first on racial composition, I find that on average parents have 10% greater odds of choosing the neighborhood and school when the neighborhood percentage own group increases by 10 percentage points ($e^{(.095)}$=1.10) and parents have 9% greater odds of choosing the scenario when the school percentage own group increases by 10 percentage points ($e^{(.082)}$=1.09).

Briefly reviewing the other neighborhood and school characteristics, I find that on average parents prefer scenarios with low neighborhood crime over average crime rates and strongly avoid high crime rates. Parents avoid scenarios with low neighborhood property values, compared to average property values. Parents also prefer scenarios with greater school proficiency rates, such that parents have 33% greater odds of choosing a scenario when the school proficiency rate increases by 10 percentage points ($e^{(.287)}$=1.33). On average, school poverty rate does not have a significant effect on parents' likelihood of choosing the scenario.

In model 2, I add an interaction between school and neighborhood percentage own group, but I do not find a significant interaction effect and a likelihood ratio test indicates that this model is not a significant improvement over model 1. However, after accounting for differences by parents' racial identity by adding a three-way interaction between school composition, neighborhood composition, and parent race, model 3 shows that the results in model 2 conceal important heterogeneity by parents' racial identity.

[6] Appendix Table A1 presents results from the third category of choosing to move to the neighborhood and homeschool/private school.

Table 2.3 Results from Multinomial Logit Stated Choice Model on School and Neighborhood Characteristics

	Discrete Choice Selection: Move to this neighborhood and send your child to this public school (reference: Continue Searching)[1]								
	Model 1			Model 2			Model 3		
	Coef.		(SE)	Coef.		(SE)	Coef.		(SE)
Neighborhood Racial Composition									
Neighborhood % Own Group[2]	.095	***	(.017)	.064	*	(.028)	.032		(.041)
Neighborhood % Own Group x Race (ref: White)									
Black Parents							.184	**	(.067)
Latino Parents							-.090		(.071)
School Racial Composition									
School % Own Group[2]	.082	***	(.017)	.051	+	(.028)	.019		(.041)
School % Own Group x Race (ref: White)									
Black Parents							.168	*	(.068)
Latino Parents							-.067		(.070)
Neighborhood x School Racial Composition Interaction									
Neighborhood x School % Own Group				.009		(.006)	.019	*	(.009)
Neighborhood x School % Own Group x Race (ref: White)									
Black Parents							-.044	**	(.015)
Latino Parents							.009		(.016)
Other Neighborhood Characteristics									
Crime Rate (ref: Average)									
Low	.795	***	(.104)	.796	***	(.104)	-.244	***	(.110)
High	-1.85	***	(.120)	-1.86	***	(.120)	.108	***	(.108)
Property Values (ref: Average)									
Below Average	-.245	*	(.110)	-.243	*	(.110)	.807	*	(.105)
Above Average	.106		(.107)	.106		(.107)	-1.88		(.121)
Other School Characteristics									
Proficiency Rate[2]	.287	***	(.022)	.288	***	(.022)	.292	***	(.022)

Poverty Rate[2]	-.024		(.015)	-.025		(.015)	-.026	+	(.015)
Parent's Racial Identity (ref: White Parents)									
Black Parents	.481	***	(.143)	.477	***	(.143)	-.138		(.278)
Latino Parents	.342	*	(.147)	.341	*	(.147)	.732	*	(.287)
Controls									
BA or more	-.261	*	(.131)	-.263	*	(.131)	-.272	*	(.132)
Homeowner	-.206		(.129)	-.208		(.129)	-.216	+	(.130)
Oldest child under 6	-.370	**	(.133)	-.368	**	(.134)	-.375	**	(.135)
Experiment Number	-.167	***	(.040)	-.166	***	(.040)	-.160	***	(.040)
Previously Always Chose "Continue"	-1.00	***	(.123)	-.998	***	(.123)	-.991	***	(.124)
Constant	-1.55	***	(.282)	-1.46	***	(.289)	-1.42	***	(.307)
Variance of REs	1.75		(.237)	1.77		(.239)	1.82		(.244)

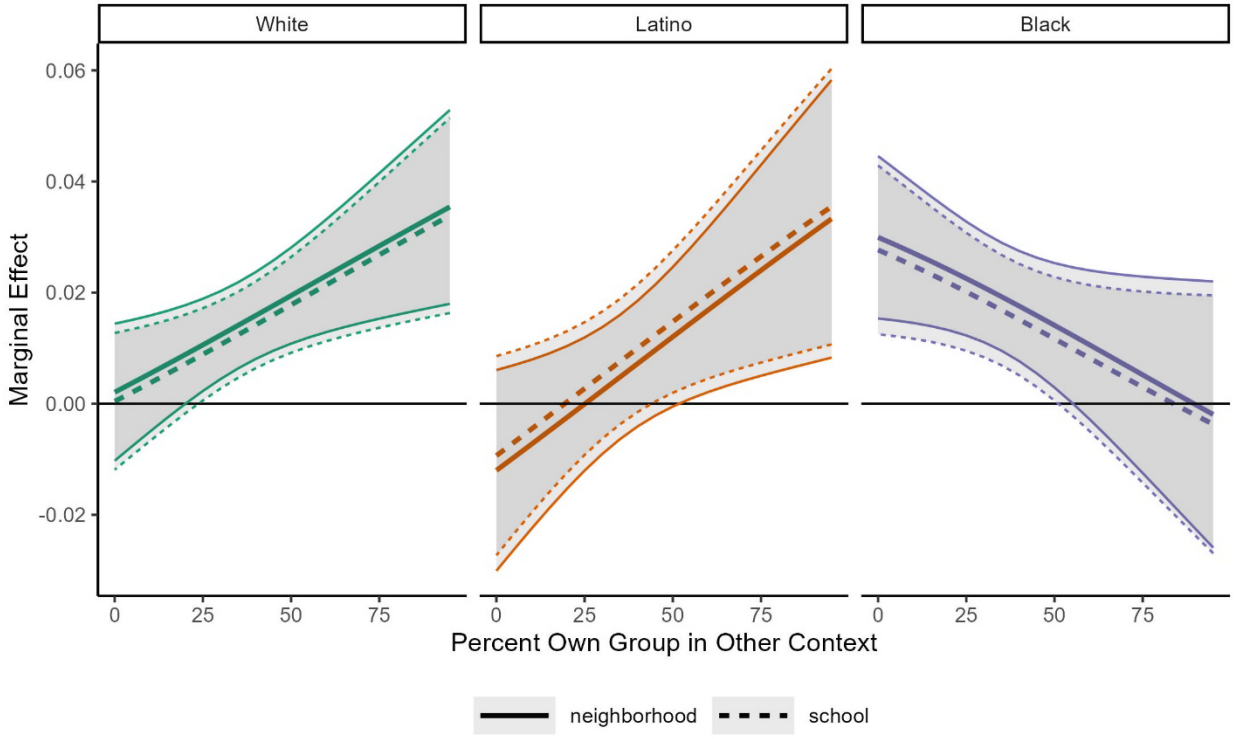
Notes: [1] - Results for other response options (Move to neighborhood and private/homeschool child) in Appendix Table A.1.
[2] -Percent own race in school & neighborhood, Proficiency Rate, and Poverty rate variables all shown as 10 percentage point changes.
*** - p<.001, ** - p<.01, * - p<.05, + - p <.1; n = 1,210 respondents; 4,840 observations
Data Source: Author's Stated Choice Experiment, 2021

In model 3, I find that there is a significant interaction effect between school and neighborhood percentage own group, and that this interaction effect is significantly different between White parents and Black parents. I use a likelihood ratio test to confirm that Model 3 offers a better fit of the data, compared to the other models. The interaction effect for White parents is represented in the interaction main effect (.019), which is positive and statistically significantly different from zero. The interaction effects for Black and Latino parents are the interaction main effect plus the group-specific effect (–.044 and .009, respectively). Testing each of these group-specific interaction effects shows that the interaction term is also statistically significantly different from zero for Black and Latino parents (not shown). Because this three-way interaction term is negative for Black parents and positive for White and Latino parents, the significant interaction effect is masked in model 2, where the model is not accounting for both the interaction between school and neighborhood racial composition and differences by race. Therefore, I find that there is a significant interaction effect between school and neighborhood racial composition. In the next two sections, I use marginal effects and predicted probabilities from model 3 to further explore these interactions.

Comparing Parents' Preferences for Neighborhoods and Schools. I use marginal effects to answer my first research question: How do parents' preferences for schools and neighborhoods compare to each other? Marginal effects facilitate the comparison of the impact of school and neighborhood racial composition on parents' preferences for neighborhoods and schools while accounting for the interaction effect between these contexts. In Figure 2.3, I present school and neighborhood marginal effects based on model 3 from Table 2.3. [7]

[7] To estimate marginal effects and predicted probabilities, I hold the other variables at substantively meaningful values: a school with 50% proficiency and 50% poverty and a neighborhood with average crime and average property values. I set the individual-level controls as a homeowner without a bachelor's degree and with a child older than six, reflecting the modal parent.

Figure 2.3 Marginal Effects of Neighborhood and School Racial Composition, by Parent Race



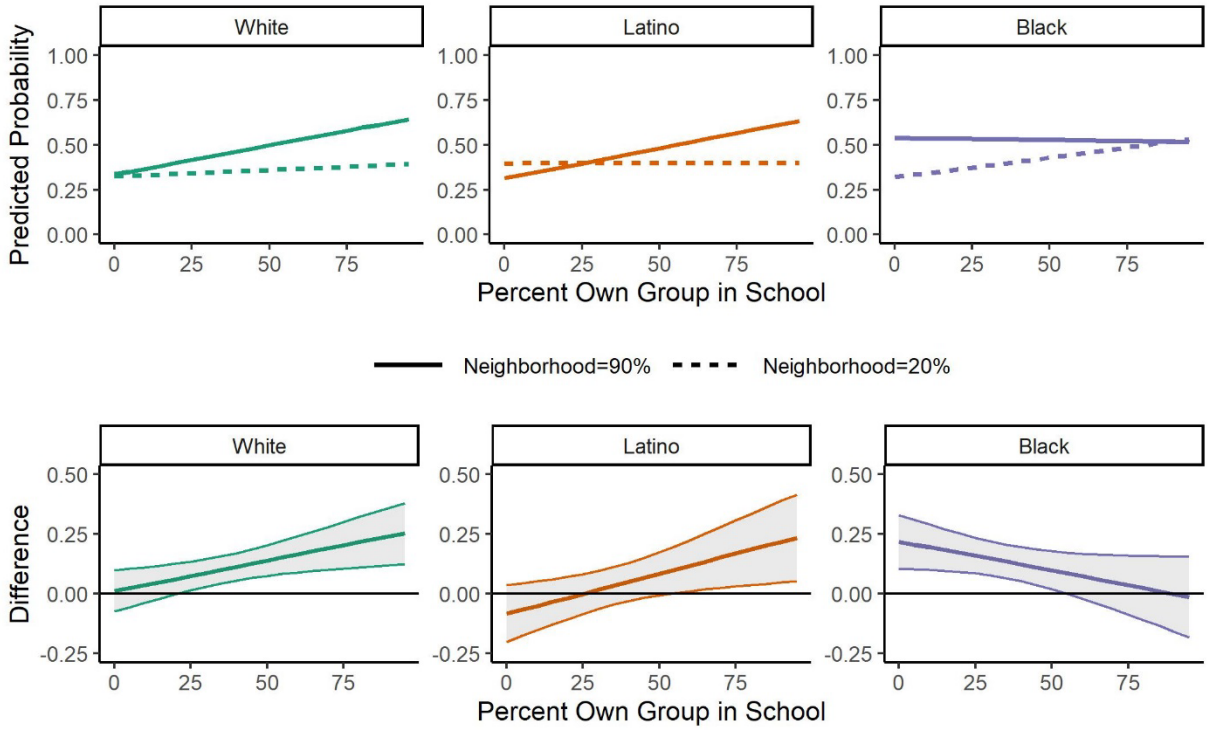
Focusing first on the solid green line, for White parents, the marginal effect of a given increase in percentage White in the neighborhood is positive (i.e., always above zero) and increasing (i.e., the solid line has a positive slope). However, I will return to the discussion of the size and direction of these effects in the next section. To answer my first research question, I focus here on the relationship between the neighborhood and the school marginal effects. For White parents, the first panel of Figure 2.3 shows that the solid and dashed lines for neighborhoods and schools are quite similar and their confidence intervals are nearly completely overlapping. Therefore, White parents prefer Whiter neighborhoods and to a similar degree prefer Whiter schools. For Black and Latino parents, I find that preferences for schools and neighborhoods are also quite similar. I test the statistical significance of the difference between these marginal effects using *Z*-tests and confirm that there is no statistically significant difference between the effects of school and neighborhood racial composition among any racial group.

Therefore, answering my first research question, I find that parents have similar preferences for racial composition in their schools and neighborhoods.

2.5.3 Implications of the Interactive Package Deal

Having established that parents have similar preferences for school and neighborhood racial compositions, I next plot predicted probabilities from model 3 to examine *how* the interaction between school and neighborhood racial composition shapes parents' decisions. Figure 2.4 shows how Black, White, and Latino parents respond to school racial composition when the school is in a predominantly own-race neighborhood compared to when the school is in a neighborhood that is minority own-race. Because parents' school and neighborhood racial composition preferences are similar across contexts, the analogous graph for neighborhood racial composition (Appendix Figure A.2) shows an equivalent pattern to what is described here. The top panels of these graphs show the predicted probability of choosing the school-neighborhood pair within these two neighborhood scenarios, while the bottom panels illustrate the difference between the predicted probabilities between the two neighborhood scenarios and 95% confidence intervals to assess the statistical significance of this difference (Long and Freese 2014).

Figure 2.4 Parents' Predicted Probability of Choosing the Scenario at Varying Levels of School Racial Composition in Two Neighborhood Contexts, by Parent Race



Focusing first on the top panel for White parents, when the neighborhood is 90% White (solid green line), White parents are more likely to select the school-neighborhood pair when offered a Whiter school. When the school has no White students, White parents have about a 33% predicted probability of choosing the scenario, but this increases significantly when offered Whiter schools, such that White parents have a 67% predicted probability of choosing the scenario when the school is 95% White. However, when the school is in a neighborhood that is only 20% White (dashed green line), White parents are much less responsive to changes in the school racial composition, as shown by the nearly flat dashed green line. Even when the school is 95% White, they have only about a 38% predicted probability of choosing the scenario in a minority White neighborhood. The bottom panel of Figure 2.3 shows that the difference between these neighborhood scenarios is statistically significantly different from zero for all school racial

compositions above around 25% White. White parents, therefore, more highly value Whiter schools when those schools are in White neighborhoods. But, when White parents are evaluating scenarios in minority White neighborhoods, the school-neighborhood pair remains largely unappealing even when the school is predominantly White.

Next, turning to Latino parents, I find a similar pattern. When the neighborhood is 90% Latino (solid orange line), Latino parents are more likely to select the scenario when offered a school with more Latino students. In contrast, if the neighborhood has only 20% Latino residents (dashed orange line), Latino parents' likelihood of choosing the scenario is unaffected by school percentage Latino. The bottom panel for Latinos shows that these scenarios are statistically significantly different from each other only when the school is at least 50% Latino. In other words, Latino parents are unaffected by racial composition when their schools and neighborhoods are minority Latino. But, if offered a scenario where they are in the majority in one context, Latino parents prefer to have more Latinos in both their schools and their neighborhoods.

Finally, the results for Black parents reveal a distinctly different pattern. In a neighborhood that is 90% Black (solid purple line), Black parents are slightly less likely to select the scenario when offered a school with more Black students, but this decline is small. In contrast, when the neighborhood is only 20% Black, Black parents are more likely to select the scenario when offered schools with more Black students. The bottom panel for Black parents shows that the difference between these predicted probabilities is statistically significant when the school percentage Black is less than around 50% Black. That is, if the school has few Black students, Black parents are more likely to select the scenario with a 90% Black neighborhood, compared to the scenario with a 20% Black neighborhood. However, this effect shrinks as the

school has more Black students, such that if the school is at least 50% Black, then Black parents are about equally likely to select the scenario when the neighborhood is predominantly Black compared to when the neighborhood is minority Black.

Briefly contrasting these patterns, I find that White and Latino parents have a positive interaction between school and neighborhood racial composition, as illustrated in panel A of Figure 2.1. For White parents, this positive interaction means that when one context is Whiter, increasing the proportion White in the other context magnifies the likelihood of choosing the package deal; that is, the combination of the two contexts are more appealing together than one might expect them to be separately. However, for Black parents, I find a small negative interaction effect between school and neighborhood racial compositions. This negative interaction suggests that Black parents have a preference against being a minority in both domains. When Black parents are a majority in either the school or the neighborhood, the racial composition of the other context matters little to their decision, but if they are a minority in one context, Black parents prefer greater representation in the other.

2.6 Discussion

In the U.S., where schools vary widely in quality both within and across school districts (Owens 2020; Reardon and Owens 2014), the policy-based link between schools and neighborhoods prompts parents to consider schools when making residential decisions. This link leads advantaged parents to seek out the package deal by purchasing homes in neighborhoods in high quality school districts (Denice and Gross 2016; Holme 2002; Lareau 2014; Lawrence and Mollborn 2017; Posey-Maddox et al. 2014), and as a result, demand for these districts drives up home prices, shutting out less advantaged parents from accessing desirable schools (Nguyen-Hoang and Yinger 2011). However, despite how closely schools and neighborhoods are linked

both structurally and in parents' minds, research on school and neighborhood preferences has only considered these preferences separately. In this study, I use a stated choice experiment with parents living in the Chicago metropolitan area to offer the first examination of parents' *joint* school and neighborhood preferences. Overall, my findings support an interactive perspective on the package deal of neighborhoods and schools, revealing how parents' evaluations of these contexts are complexly intertwined; neighborhoods shape how parents evaluate schools, and schools shape how parents evaluate neighborhoods. I also show that this interaction between schools and neighborhoods operates differently across racial identity, such that the pursuit of the package deal looks different for White, Black, and Latino parents.

Examining school and neighborhood preferences jointly reveals that White parents' preferences for Whiter contexts are magnified across schools and neighborhoods, as illustrated in the positive interactive framework in Figure 1. White parents prefer majority White schools in majority White neighborhoods, not just one or the other, and are unlikely to consider schools and neighborhoods where one context is minority White. White parents' preference for this dual isolation sheds additional light on the extreme racial segregation of White children. White children are even more racially segregated than White adults (Owens 2017), and my findings suggest that this may be at least partially due to White parents' stronger preferences for racially isolated schools in racially isolated neighborhoods. The opportunity hoarding perspective suggests that White parents seek out racially segregated contexts to secure advantages for their children (Fiel 2015; Lewis and Diamond 2015; Lewis-McCoy 2014; Tilly 1999); this study of parents' joint preferences reveals that opportunity hoarding may be magnified across contexts. That is, White parents may place an even higher value on securing advantages in both their

neighborhoods and their schools, rather than just one or the other. White parents' preferences for total isolation, therefore, exacerbate racial segregation and resource inequality.

Latino parents also prefer more of their own group in both schools and neighborhoods simultaneously. However, Latinos' preferences for greater Latino representation are only activated in majority Latino contexts. When offered racially diverse schools or neighborhoods, Latino parents' preferences are unaffected by racial composition. Yet, when offered majority Latino schools or neighborhoods, Latino parents would prefer to have more Latinos in both contexts simultaneously. This distinction helps shed light on the contradictory findings from prior research, which has found no effect of racial composition on residential choices (Lewis et al. 2011), preferences for racial diversity (Charles 2000), and preferences for own-race or diverse schools (Hailey 2021). My findings for Latino parents suggest that these seemingly contradictory results could all reflect true preferences among Latino parents but that these preferences may be activated in different contexts. That is, Latinos' racial composition preferences may be stronger in majority Latino contexts and weaker in places with smaller Latino populations.

These findings also highlight the advantages and disadvantages of constraining the sample to the Chicago metropolitan area. Although the geographic focus has potential limits to generalizability, sampling respondents from a diverse metropolitan area with a large Latino population ensures that parents have similar frames of reference for understanding varying levels of racial diversity in the experiment (Farley and Frey 1994). Future experimental and observational research on Latinos should consider how the size of the Latino population shapes what is possible for Latinos and, as a result, how they choose neighborhoods and schools.

In contrast, Black parents exemplify the negative interactive package deal framework. Black parents prefer to avoid being a small minority in both contexts at once, such that if there

are few Black students in their children's schools, they will more strongly prefer living among Black neighbors. But if Black parents are offered a scenario where the school is predominantly Black, they will not have strong preferences for the neighborhood's racial composition. This suggests that schools and neighborhoods may operate as complementary contexts for Black families. Black parents may seek out a package deal where they can be among co-ethnics in at least one context, but they avoid being racially isolated in both contexts. Lacy's (2007) concept of strategic assimilation helps to contextualize this finding. Lacy shows that middle-class Black families intentionally engage with predominantly White spaces while maintaining other connections to the Black community. Black parents value having their children grow up among Black peers, but they can be flexible about whether Black communities are found in their neighborhoods or their schools (Clerge 2023; Dow 2019; Lewis-McCoy 2014). In this study, I find additional evidence that Black parents are flexible in attaining their desires for own-race community spaces.

Although I can observe this flexibility within an experiment, Black parents in the United States have few opportunities to select a school and neighborhood where only one of these contexts is majority Black. Most Black parents face a set of options where both their schools and neighborhoods are racially isolated (Owens 2017, 2020). At the same time, this racialized structure facilitates White parents' ability to achieve their package deal preferences for greater racial isolation. Research has already established that White families are better able to satisfy their neighborhood and school preferences based on social networks (Bell 2007; Goyette 2008; Holme 2002; Krysan and Crowder 2017) and greater access to wealth and mortgage lending (Brown 2021; Johnson 2014; Oliver and Shapiro 2006). By examining parents' joint preferences for schools and neighborhoods, I reveal an additional dimension to Black-White inequality.

Black parents are not only less able to achieve their preferences in schools and neighborhoods separately, but they are less able to achieve their preferences for the package deal. Not only can the pursuit of White parents' preferences worsen racial segregation and inequality for everyone, but there is also inequality in who even gets the chance to realize their preferences.

The survey experiment used for this study offers novel insights into how parents simultaneously evaluate neighborhoods and schools, but there are limitations. First, respondents, particularly Whites, may try to suppress their racial biases. Though the experiment was designed to mitigate social desirability bias by using an online, anonymous survey and by randomizing across six dimensions, allowing parents to use any of these characteristics to internally justify their choices (Quillian 2006). In addition, critics of stated choice methods question the degree to which these experiments can capture real choices, termed hypothetical bias (Haghani et al. 2021). If hypothetical bias impacts this experiment, my estimates of racial composition preferences would be biased downward, because parents would be indicating that they would consider schools or neighborhoods that in reality they would reject. Therefore, considering both social desirability and hypothetical bias, my estimates of racial preferences could be lower than parents' true preferences. However, there is no reason to expect these biases would more strongly affect parents' responses to schools compared to neighborhoods or vice versa. Therefore, although these biases may dampen estimates of parents' racial composition preferences, I do not expect this to substantively affect my findings on parents' intertwined preferences for the package deal, in fact White parents' preferences for racial isolation in schools and neighborhoods together may be even more powerful than I am able to show.

Overall, the findings from this study reveal that parents consider school and neighborhood characteristics in tandem as a package deal, and these intertwined preferences play

out differently for White, Latino, and Black parents. When preferences are interactive across domains, investigating these preferences in isolation will offer misleading predictions for how individuals will make decisions. Although this study focuses on the individual-level preferences that drive parents' decisions, these preferences also offer insights into how parents' decisions may shape persistently high racial segregation in schools and neighborhoods. The structural causes of school and neighborhood racial segregation, in particular residence-based school assignments, have been the focus of much research on the nexus of these two crucial contexts (Bischoff and Tach 2018; Owens 2017; Rich et al. 2021; Saporito and Sohoni 2006). Yet this study shows that this link between school and neighborhood segregation may endure even in the absence of residence-based school assignments, because characteristics of schools help shape parents' preferences for neighborhoods and vice versa. In addition, these joint preferences reveal challenges to desegregating schools and neighborhoods, because White parents prefer total isolation in both contexts simultaneously. White parents are not only more likely to have the necessary resources to achieve their preferences for the package deal (Johnson and Shapiro 2003; Oliver and Shapiro 2006), but the very structure of school assignment policies ensures that White parents have a large set of White schools and neighborhoods from which to choose. Addressing deep and enduring racial inequality, therefore, requires research and policies that interrogate and account for these important links between schools and neighborhoods.

Chapter 3 How the Availability of School Choice Shapes School and Neighborhood Demographic Change

3.1 Introduction

Although racial segregation remains an enduring fact for most Americans, it is children who experience the most extreme levels of segregation in their daily lives. Over 75% of American children attend schools and live in neighborhoods where their own racial or ethnic group is overrepresented (Owens 2020). The high levels of segregation in children's schools and neighborhoods are not coincidental but rather the product of widespread school district policies that assign students to schools based on their residential addresses. Residence-based school assignment not only links schools and neighborhoods at a single point in time, but this link also ties the *fates* of schools and neighborhoods together. Recent research has begun to explore how the link between schools and neighborhoods shapes how these contexts experience racial composition change over time (Field et al. 2024; Rich et al. 2021). This burgeoning literature reveals that schools and neighborhoods experience similar patterns of demographic change, but these two contexts do not change in perfect lock step (Field et al. 2024). That is, neighborhood demographic changes are not always perfectly reflected in their schools, and vice versa.

School choice is the key mechanism that can unlink this relationship between schools and neighborhoods, because when parents choose to opt out of their neighborhood schools, they alter the racial composition of schools, without changing the contexts of their neighborhoods (Rich et

al. 2021; Saporito 2003, 2009).[8] In recent work, I, along with coauthors, suggest that neighborhood demographic change lags behind school change because parents who are unsatisfied with their school options can make an alternative school choice without having to move neighborhoods (Coughlan 2018; Roda and Wells 2013; Schachner 2021). This escape valve offered by school choice, therefore, may slow neighborhood demographic change, even as schools undergo racial turnover (Field et al. 2024). Rich and colleagues (2021) investigate the role of charter schools in segregation patterns over time, finding that school racial segregation increased in districts with greater charter school enrollment, while neighborhood racial segregation slightly decreased. These district-level results suggest that charter schools can weaken the relationship between neighborhood and school demographic change. However, due to data constraints, prior research has been unable to examine how the relationship between demographic changes in schools and their attendant neighborhoods is shaped by the local availability of school choice.

In this chapter, I contribute to this growing literature using neighborhood-school level data to examine the relationship between school choice and demographic change in neighborhoods and their local schools. I ask two research questions: first, does the availability of school choice weaken the relationship between neighborhood and school demographic change? Second, how does the availability of school choice affect the rates at which schools and neighborhoods each experience racial composition change? To answer these research questions, I use an originally collected dataset that captures the racial composition of nearly 3,000 elementary schools and the elementary school-aged children living in those schools'

[8] Differences in the age structure of the population by race could also induce this variation between school and neighborhood racial composition, but in this paper, I examine the racial composition of the children aged 5 to 9 living in the neighborhood (rather than the total population of the neighborhood) to narrow the focus to the neighborhood residents "at-risk" of attending the local public school.

neighborhoods in 2000 and 2010, as well as geocoded, neighborhood-level data on nearby charter and private schools. I find that, overall, neighborhood and school change are closely linked. However, the availability of nearby charter and private schools moderates this relationship, such that neighborhoods with more nearby school alternatives have a weaker link between neighborhood and school change. I then show that the availability of nearby charter and private schools also shapes demographic change such that neighborhoods with more nearby alternative schools lose fewer White elementary school-aged residents compared to neighborhoods without school choice options. Finally, I show how the availability of nearby private and charter schools affects the rate of school change through both a direct effect which increases the loss of White students and an indirect effect operating through neighborhood change that stems the loss of White students. These results reveal complexities in the link between school and neighborhood change, and how demographic patterns in these linked contexts will be altered by the presence of nearby private and charter schools.

3.2 Demographic Change in Schools & Neighborhoods

Schools and neighborhoods are structurally linked together by residence-based school assignment policies, but, as illustrated in Chapter 2, this link can endure even in the absence of these policies because parents consider schools and neighborhoods together as a package deal (Rhodes and Warkentien 2017). As "located institutions" (Bell 2020), schools are a powerful signal to parents and residents that shapes how people understand neighborhoods and how they decide where to live (Burdick–Will 2018), even in the absence of residential school assignment. The quality of schools not only shapes where parents choose to live but can also drive real estate prices (Brunner, Cho, and Reback 2012; Dhar and Ross 2012; Nguyen-Hoang and Yinger 2011), steering and constraining the residential choices of parents and non-parents alike.

Scholars have examined how schools and neighborhoods separately experience demographic change (Caetano and Maheshri 2017; Card, Mas, and Rothstein 2011; Spaiser et al. 2018), but despite the established connection between these contexts, research has only recently considered joint change in schools and neighborhoods. Building on Schelling's (1971) tipping point model of racial segregation, Field, Swait, and Bruch (2024) propose a model of joint school and neighborhood change, termed coupled tipping. In coupled tipping, schools and neighborhoods both experience demographic change along classic logistic curves (Bruch 2014; Hatna and Benenson 2012; Schelling 1998; Stoica and Flache 2014; Zhang 2011), but these curves are closely, though imperfectly linked. Rather than experiencing identical demographic changes, White flight seems to occur in schools before their neighborhoods, introducing a widening racial composition gap between schools and neighborhoods. In racially diverse places, both neighborhoods and schools undergo rapid demographic turnover as this composition gap remains quite wide. Neighborhoods eventually catch up to the changes that have already unfolded in their schools as the populations in both contexts approach zero percent White (Field et al. 2024).

Other related research has tracked changes in racial segregation in schools and neighborhoods over time, finding that these trends have largely followed each other, with schools and neighborhoods both showing modest declines in racial segregation since the 1970s (Owens 2020). Families with children, particularly White families with children, are more racially and socioeconomically segregated in their neighborhoods, compared to households without children (Iceland et al. 2010), which can be at least partially attributed to school district boundaries (Owens 2017). In addition, school and neighborhood racial segregation indices are quite highly correlated, and this correlation increased between 2000 and 2010, such that by 2010,

levels of residential segregation explained the vast majority of variation in school segregation (Frankenberg 2013).

It is important to note that, although all parents are making important choices about where to live and where to send their children to school, it is primarily White parents' decisions that drive high levels of racial segregation (Iceland et al. 2010; Kye 2018; Owens 2017). White parents capitalize on Whiteness to enhance the opportunities of their children, generally at the expense of children of color (Baker and Corcoran 2012; Bischoff and Owens 2019; Freidus 2022; Owens 2017, 2020; Sattin-Bajaj and Roda 2018). White parents also tend to equate the racial composition of schools with the quality of education, assuming that schools with Black and Latino students are inferior to those serving predominantly White students (Freidus 2022; Goyette, Farrie, and Freely 2012; Sattin-Bajaj and Roda 2018). Therefore, in this paper, I focus on how the proportion of White students and children in schools and neighborhoods change over time, though future research should consider how the link between schools and neighborhoods may vary when we consider Black, Latino, or other racial identity groups.

Most research on White compositional changes in U.S. neighborhoods and metropolitan areas has focused on White flight, or the phenomenon that Whites will rapidly exit a neighborhood or area as Black, Hispanic, or Asian residents begin to move in (Crowder 2000; Kye and Halpern-Manners 2022; Logan, Zhang, and Oakley 2017).[9] Research on Americans' residential (and school) preferences suggests that White flight is motivated by racial factors, rather than socioeconomic or so-called racial proxies (see chapter 2; Charles 2000; Emerson, Chai, and Yancey 2001; Lewis, Emerson, and Klineberg 2011). White flight has been linked

[9] Gentrification and the influx of White residents into urban neighborhoods also garner considerable attention in the school and neighborhood segregation literatures (Candipan 2020; Keels, Burdick-Will, and Keene 2013; Pearman 2020), but here I focus on the more common pattern of White population losses.

directly to schools, and to school desegregation policies, which some argue prompted White families to move away from school districts where their children would have attended mixed-race schools after the Supreme Court decision in *Brown v. Board of Education* (Baum-Snow and Lutz 2011; Giles 1975; Rossell 1987; Rossell and Armor 1996). White families are also more likely to move away from a school district as the Latino population within the district grows, particularly in regions with fewer Latinos at the outset (Hall and Hibel 2017). In addition, White flight occurs within schools themselves: districts with greater interracial contact in schools lose more White students, particularly in districts where families can access Whiter school districts nearby (Clotfelter 2001; Logan et al. 2017; Reber 2005). As desegregation orders have expired or been lifted, racial segregation in schools slowly increased (Reardon et al. 2012).

3.2.1 School Choice and the Relationship between Neighborhoods and Schools

Together, these literatures suggest that school and neighborhood demographic change (and racial segregation patterns) are quite closely linked. However, schools do not perfectly reflect the racial compositions of their neighborhoods at a single point in time or longitudinally (Field et al. 2024). White children are comparatively underrepresented in their local schools, particularly when they live in racially diverse neighborhoods (Bischoff and Tach 2018; Saporito and Sohoni 2006). This composition gap between schools and their neighborhoods is greater in neighborhoods experiencing demographic turnover, neighborhoods with greater socioeconomic inequality, and neighborhoods with more school choice options (Bischoff and Tach 2018, 2020; Candipan 2019). School choice offers parents the ability to opt out of their local schools, and White parents disproportionately do so when those schools are more racially and socioeconomically diverse, and when those schools have larger Black student populations (Denice 2022; Lankford and Wyckoff 2006; Phillips et al. 2015). School choice, therefore, is a

key mechanism in the relationship between school and neighborhood demographic change, because parents' ability to choose alternative schools is the primary way in which school change can occur independently from neighborhood change.

In other words, if parents were only able to send their children to local, assigned public schools, any parent who was unsatisfied by their local school would have to move neighborhoods to send their child to a satisfactory school. In that case, neighborhood change would be at least partially motivated by parents' desires for schools, and school change would occur only through neighborhood change (Holme 2002; Rhodes and Warkentien 2017). Alternative school options, therefore, offer an escape valve to those parents whose preferences are not met by their local schools without having to move neighborhoods. As such, school choice may allow demographic change to occur in schools while neighborhoods remain stable. In previous work, I show that neighborhood change in percent White lags behind school change (Field et al. 2024), but this research does not identify the role of school choice in moderating this relationship between neighborhood and school change.

Although school choice is usually used to refer to the growth of charter schools since the 1990s and 2000s, parents have long had alternative school options in the form of private schools, homeschooling, open-enrollment policies, and magnet programs. These alternative school options allow parents to find schools that meet their preferences when their local schools do not. For some parents, these preferences may be for a language immersion or performing arts program, while other parents seek out religious education through private and parochial schools. However, White parents' preferences for schools are significantly shaped by the racial compositions of their school options. White parents prefer to send their children to schools with Whiter student bodies, and these racial preferences are stronger for Whites compared to parents

of other racial identities (Billingham and Hunt 2016; Hailey 2021). School choice options allow White parents to exercise these preferences for Whiter schools, and cross-sectional research has shown how this process leaves schools more segregated than their neighborhoods (Bifulco, Ladd, and Ross 2009; Renzulli and Evans 2005; Rich et al. 2021). However, this research has not yet been extended to longitudinal processes of neighborhood and school change, nor has past research examined whether school choice weakens the link between school and neighborhood demographic change.

Now, school choice may provide the opportunity for school change to unfold independently from neighborhood change, but previous research suggests that this effect of school choice on demographic change could be small. Growth in the charter sector has primarily occurred in large, urban school districts with large Black and/or Latino student populations (Riel et al. 2018). As such, Black and Latino public students are much more likely to attend charter schools (relative to their population size), compared to White students and other racial groups (de Brey et al. 2021). Therefore, the expansion of school choice opportunities created by the boom in charter schools may have minimal impact on patterns of White flight in schools and neighborhoods. Second, school choice will only weaken the relationship between school and neighborhood demographic change if parents' likelihoods of using school choice options are related to both their own racial identities and the racial compositions of their neighborhood schools. In other words, greater school choice availability will only affect White flight in schools and neighborhoods if White parents opt to leave their local schools while choosing to remain in their neighborhoods. Given that White parents prefer *both* Whiter schools and Whiter neighborhoods (see Chapter 2), it is possible that school choice will not weaken the relationship

between school and neighborhood change because White parents are more likely to move away from diversifying areas rather than opting for school alternatives and staying put.

In this chapter, I offer two important innovations on past research on the effects of school choice on demographic change in schools and neighborhoods. First, past research has largely focused only on parents' selection into public school choice options, particularly charter schools, or into private school options, rather than both together (Reardon and Yun 2006; Rich et al. 2021; Saporito 2003, 2009). Nationally, White students have historically been most likely to attend private schools, making up a total of around 64% of the private school population (de Brey et al. 2021). The expense and barriers to entry for private schools make this type of education much more accessible to White parents (Reardon and Yun 2006). Private schools also disproportionately draw White students out of their local neighborhood schools, contributing to greater school racial segregation in both sectors, while charter schools tend to disproportionately attract Black and Latino students (Bischoff and Tach 2018, 2020; Reardon and Owens 2014; Saporito 2009). Therefore, it is possible that the availability of private schools will be more closely related to White flight from schools and neighborhoods, compared to charter schools which may have a greater impact on non-White families.

On the other hand, the large expansion in charter schools over the past two decades has made school choice options much more accessible to parents. Over a third of charter school students are White, and some charter schools have targeted Whiter students populations, particularly in order to attract and retain White families in urban neighborhoods (Billingham and Kimelberg 2013; Candipan 2020; Hankins 2007; Pearman and Swain 2017). Therefore, it is possible that charter schools, in addition to private schools, serve as an escape valve for White parents looking to opt out of their local schools in urban districts, and therefore, charter school

availability may also shape patterns of White flight from schools and neighborhoods. However, as noted, past evidence suggests charter and private schools draw students away from their local schools differentially by race (Bischoff and Tach 2020); therefore, it is possible that the effects of nearby private and charter availability on school and neighborhood change would cancel each other out, meaning that school choice options have little net effect on school and neighborhood racial composition. As such, I consider both private and charter school options together to understand how each of these school choice options contribute to White flight.

Second, a small body of research shows that schools of choice, particularly charter schools, are not evenly distributed across school districts; charters have been found to avoid locating in high poverty areas, in favor of middle income areas, and charters tend to locate in places with higher proportions of Black and Latino households (Henig and MacDonald 2002; Koller and Welsch 2017; Saultz and Yaluma 2017). Even within the same district, some neighborhoods may have many public choice options, whereas others will have few or none. This means that although parents may live within the same school choice policy regime, their access to opportunities for school choice may be limited depending on where they live. Therefore, while past research has focused on district-level school choice (Rich et al. 2021), the availability of school choice at the neighborhood-level likely shapes how schools and their attendant neighborhoods experience racial composition changes. In this study, I investigate how neighborhood-level access to alternative school options, namely charters and private schools, moderates the relationship between school and neighborhood racial composition changes.[10]

[10] I also investigated the role of magnet schools but found little evidence of a significant impact of magnet schools across my models. Magnet schools have a distinctly different history, with a link to desegregation policies in many districts (Riel et al. 2018). Some districts also use magnets to offer specialized academic programs, which often involve different admissions processes. Therefore, magnet schools may not be as straightforward as an alternative school option compared to charter and private schools, and I focus here only on charters and private schools.

3.2.2 School Choice and Rates of Demographic Change

In addition to shaping the relationship between school and neighborhood demographic change, I investigate how school choice alternatives affect the *speed* of racial turnover in schools and neighborhoods. As discussed in the preceding section, if school choice offers parents an alternative to unsatisfactory schools, neighborhoods with greater school choice options may experience slower rates of demographic change, specifically White flight, because parents are less motivated to move in order to meet their school preferences (Goyette, Iceland, and Weininger 2014). Therefore, greater school choice availability may be associated with slower neighborhood demographic change.

In addition, school choice shapes the racial composition and demographic changes of the local schools themselves. A large body of research has linked the growth of charter schools to increasing racial segregation, particularly the increasing racial isolation of Black and Latino students (Kotok et al. 2017; Monarrez, Kisida, and Chingos 2022; Renzulli and Evans 2005; Stein 2015). White students are also more likely to enroll in private schools as the proportion Black in their communities and schools increases (Bischoff and Tach 2020; Fairlie 2002; Saporito 2009). Therefore, when White parents are choosing to opt out of their local public schools, they are turning to these alternative school options in ways that increase aggregate racial segregation and inequality (Owens 2020; Saporito and Sohoni 2006). Greater availability of school choice may lead to more rapid racial turnover in local public schools, particularly a greater loss of White students.

However, if neighborhoods with fewer school alternatives experience greater neighborhood racial turnover, parents will be leaving both neighborhoods and local public schools at once. Therefore, for neighborhoods without nearby private or charter schools, greater

neighborhood change would also *indirectly* lead to greater school change. Given these countervailing forces, I have two competing hypotheses for the effects of school choice on school change. In my analyses, I disentangle these direct and indirect effects of school choice on school change to investigate these competing hypotheses:

In summary, based upon these literatures, I hypothesize the following:

Hypothesis 1: The relationship between neighborhood change and school change is moderated by the availability of other nearby school options. I expect that neighborhoods with more alternative school options will have a weaker relationship between neighborhood and school change, compared with neighborhoods with few alternatives to the local public school where school and neighborhood change will more closely follow each other in lock step.

Hypothesis 2: Neighborhoods with more charter and private school choice options will change less rapidly than neighborhoods with fewer school alternatives.

Hypothesis 3a: Schools with more nearby alternative school options will change more rapidly than schools with fewer alternatives to the local public school, as a direct effect of the availability of nearby alternative school options.

Hypothesis 3b: School without nearby alternative school options will change more rapidly than schools with more alternatives to the local public school, as an indirect consequence of neighborhood change.

3.3 Data and Methods

To examine how schools and neighborhoods experience change over time as linked contexts, I use an original dataset that captures the racial composition of 2,903 public elementary

schools and their attendant neighborhoods in 2000 and 2010 (Field et al. 2024).[11] These elementary schools are located within the 22 largest school districts in the U.S. in 2000, and although these districts are no longer the 22 largest districts, they all remained in the top 50 largest school districts in the country in 2010 (see Chapter 4 for descriptive statistics on these school districts). Together, these school districts served 10.5% of all U.S. public school students in 2010. I use the National Center of Education Statistics (NCES) Common Core of Data to collect racial composition data for each of the schools in my sample. I also use the NCES to gather address and latitude/longitude data on all charter and private schools within each county included in my sample of school districts.

I use school attendance zones to define neighborhoods and estimate measures of neighborhood racial composition. School attendance zones are administrative boundaries produced and distributed by school districts that divide the geographic area of the school district into mutually exclusive zones to assign students to schools based on their residential addresses. These attendance zone maps are used to inform parents where their child will be sent to elementary, middle, and high school, and these zones can shape parents' (and non-parents') decisions about where to look for homes based on the schools available to them (Burdick-Will et al. 2020; Ely and Teske 2015; Goldstein and Hastings 2019; Holme 2002). Therefore, using school attendance zones as my definition of neighborhoods offers two important advantages for this study. First, unlike geographic units such as census tracts or block groups, elementary school attendance zones are relatively small and socially meaningful divisions of a city or town that influence where people live and the affordability of their housing options (Dhar and Ross 2012;

[11] This dataset also includes school and neighborhood data from 1990, but charter schools did not begin opening until the 1990s and the NCES did not begin collecting data on private school locations until 1999. Therefore, I constrain my time period to 2000-2010 in order to examine the role of these choice options in school/neighborhood change.

Nguyen-Hoang and Yinger 2011). The elementary school attendance zones in my data are an average of about 4.8 square miles. Second, by using school attendance zones as my definition of neighborhoods, I am able to create a dataset that matches each school to a single neighborhood, allowing me to analyze how a school and the particular neighborhood it serves each experience change over time (Field et al. 2024). I use school zone data originally collected by Saporito and Sohoni (2006) for the 2000-2001 school year, and I use data from the School Attendance Boundary Information Systems (SABINS) project and the School Attendance Boundary Survey (SABS) data to capture school attendance zone boundaries for the 2010-2011 school year. I use spatial interpolation on U.S. Census data (2000 and 2010) and American Community Survey data (5 year estimates, 2008-2012) to measure the racial composition of children aged 5 to 9 living within each schools' attendance boundaries (Sohoni and Saporito 2009). I define neighborhood racial composition using this age group of children because it most closely maps onto the elementary grades in the United States. Therefore, my sample size is 2,903 schools and the 2,903 neighborhoods served by those schools.

Models: To answer my research questions, I investigate how racial composition changes in neighborhoods and their schools are shaped by the availability of local school choice options. I use difference (or change score) models, a special case of a fixed effects model (Allison 1990; Firebaugh and Beck 1994). In the difference model framework, the relationship between a variable, X, is estimated on the outcome variable, Y, by regressing a change in X (i.e., $X_{i2} - X_{i1}$) on a change in Y (i.e., $Y_{i2} - Y_{i1}$). This framework of estimating how change in independent variables predict change in the outcome variables makes difference models an appropriate modeling choice for my research questions. Difference and fixed effects models are also commonly used in sociology, particularly with greater availability of panel data, though these

methods are sometimes less favored as they offer conservative estimates and often fail to find significant effects (Allison 2009; Hill et al. 2020).

Difference models using panel data capitalize on repeated measurements to provide causal estimates on observational data by differencing out all unmeasured, stable variables that affect the outcome of interest, under the assumption that all time-varying idiosyncratic errors are exogenous (Gangl 2010; Wooldridge 2010). However, this is an important, and controversial, assumption (Hill et al. 2020). I use four time-varying control variables to control for theoretically informed, dynamic predictors of school and neighborhood change, including measures of neighborhood socioeconomic status and population density. However, there likely remain other, omitted time-varying predictors, for example neighborhood revitalization investments or school reputation. In addition, examining school and neighborhood change together presents the possibility of reverse causality. Therefore, I offer these difference models as conservative estimates to test my hypotheses, but I do not claim causality.

In this study, I use difference models to estimate (1) how the relationship between neighborhood change on school change is moderated by school choice availability, (2) the relationship between nearby charter and private schools on neighborhood change, and (3) the relationship between nearby charter and private schools on school change. The independent variables for these models are (1 and 3) the change in the percent of White students in the school between 2000 and 2010 and (2) the change in the percent of White children aged 5 to 9 living in the neighborhood between 2000 and 2010.[12] I estimate models examining hypotheses 1 and 2 using *mixed* in Stata, which allows me to estimate difference models with random effects for

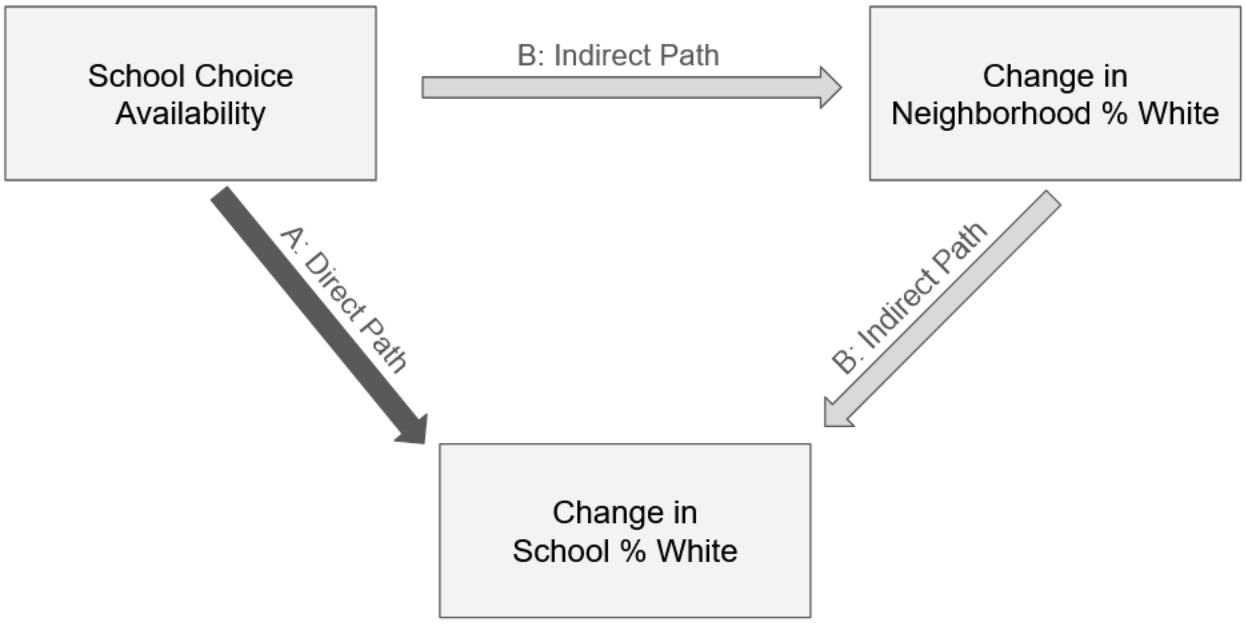
[12] I use the raw change scores in my analyses, rather than a transformation of the percentage variables. Models using a logistic transformation offered similar substantive results, but the logistic transformation is an imperfect representation of percentage variables, because these data have a considerable number of schools and neighborhoods with zero Whites.

school districts, to account for the clustering of schools and neighborhoods within the 22 school districts in my sample. To examine hypothesis 1, I use interaction terms between variables capturing school choice availability (i.e., nearby charter and private schools) and neighborhood change to investigate whether nearby charter and private schools moderate the impact of neighborhood change on school change. I compare AIC/BIC values to examine whether these interaction terms offer a significant improvement over simpler models, and the results are noted in each table.

To estimate models for hypotheses 3a and 3b, I use difference models within a structural equation model framework.[13] Figure 3.1 illustrates the structural equation model used to test hypotheses 3a and 3b; I examine how nearby school alternatives have both a direct effect on school change (labeled A) and how nearby school alternatives have an indirect effect on school change through neighborhood change (labeled B). In the structural equation model, I use a linear regression model to estimate the direct effect of nearby school alternatives on school change (A). Then, to estimate the indirect effects (B), I use two linear regressions to estimate the direct effect of nearby school alternatives on neighborhood change and the direct effect of neighborhood change on school change. The indirect effect of nearby school alternatives on school change is the product of these two direct effects. Finally, the total effect of nearby school alternatives on school change is the sum of the direct and indirect effects. I use the command *gsem,* with bootstrapped standard errors, and post-estimation command *nlcom* in Stata to estimate the path model and disaggregate the effects into direct, indirect, and total effects of school choice on school change. These models also include a random effect for school districts.

[13] Unlike traditional SEM, models used here only use observed variables and do not estimate any latent variables.

Figure 3.1 Structural Equation Model of School Choice on School Change



Dependent & Independent Variables: In my first set of models examining the effects of neighborhood change on school change, I use the change score for neighborhood percent White as my key independent variable (i.e., percent White children aged 5-9 living in the neighborhood in 2010 minus percent of White children in the neighborhood in 2000). To measure the availability of alternative school options, I geocode charter and private schools and measure the number of charter schools and the number of private schools within two miles of each school zone for both 2000 and 2010.[14] I then create a variable that captures the number of nearby charter schools in 2000 and a variable that captures the change in the number of nearby charter schools between 2000 and 2010. I also create a variable that captures the number of nearby private schools in 2000 and a variable that captures the change in the number of nearby private schools between 2000 and 2010. In addition, given that the effect of change in nearby charter or private schools likely varies based on the starting number of charters and private schools, I also

[14] I calculate the 2 mile radius from each school zone using the buffer functions in QGIS. I also examined results from measures with smaller and larger buffers (ranging from 1 to 10 miles).

include interaction terms between the starting level of these school alternatives and the variables for change. I compare AIC/BIC values to confirm that this additional interaction term improves model fit and provide these results for each model are presented in the results section.

I also use three neighborhood-level and one school district-level control variables to capture neighborhood-level socioeconomic status and the population trends of the school district as a whole. First, I measure the neighborhood poverty rate and the percent of neighborhood residents with a bachelor's degree or more in 2000 and 2010 using Census and ACS data. In addition, to account for the range of neighborhood contexts in the data, I also measure the (logged) population density of each neighborhood using Census data in 2000 and 2010. Finally, I measure the proportion of White children aged 5 to 9 living in the school district (i.e., the city or county served by the school district) using Census data for 2000 and 2010 to account for the population trends at the district-level that may affect neighborhood- and school-level racial composition change.

3.4 Results

3.4.1 Descriptive Statistics

Table 3.1 presents descriptive statistics on demographic change between 2000 and 2010 within the nearly 3,000 schools and neighborhoods in my sample, as well as the change in nearby charter and private schools. First, the average school in my sample is only 24% White in 2000, though the standard deviation on this average is quite large, and these schools range from 0% to 98% White. On average, schools experienced a 6 percentage point decline in percent White between 2000 and 2010, with the majority of schools experiencing the loss of White students (68%) and less than a third of schools (28%) gaining White students. Similarly, the elementary school-aged population in the average neighborhood was only 29% White in 2000, though the

range for neighborhood percent White was 0-97%. Neighborhoods also experienced an average decline of 6 percentage points, with 72% of neighborhoods experiencing declines in elementary school-aged White population.

Table 3.1. School and Neighborhood Change Descriptive Statistics (N=2,903)

	Mean	(sd)
School Composition and Change		
Percent White in 2000	.24	(.28)
Change in Percent White	-.06	(.11)
Neighborhood Composition and Change		
Percent White in 2000 (aged 5-9)	.29	(.29)
Change in Percent White (aged 5-9)	-.06	(.10)
Charter School Availability		
Nearby Charters in 2000	.58	(1.24)
Change in Nearby Charters	2.35	(4.04)
Private School Availability		
Nearby Private Schools in 2000	13.60	(12.06)
Change in Nearby Private Schools	-1.71	(6.39)
Control Variables		
Neighborhood % College Graduate in 2000	.22	(.17)
Change in Neighborhood % College Graduate	.04	(.06)
Neighborhood Poverty Rate in 2000	.19	(.13)
Change in Neighborhood Poverty Rate	.02	(.07)
Neighborhood Population Density in 2000 (logged)	8.52	(1.18)
Change in (logged) Neighborhood Population Density	.01	(.38)
District Population of White Children in 2000	.29	(.17)
Change in District Population of White Children	-.04	(.06)

Data Sources: NCES Common Core of Data 1990-91, 2000-01, 2010-11; US Census 1990, 2000, 2010; ACS 2008-2012

The average neighborhood had fewer than one charter school in 2000 within a two-mile radius of the school zone. Many neighborhoods had no charters because several of these states or districts had not yet passed laws or policies to allow for charter schools. Most neighborhoods experienced growth in the number of nearby charter schools, with the average neighborhood having more than two additional charter schools within a two-mile radius of the school zone by 2010. In contrast, neighborhoods had far greater access to nearby private schools, with the

average neighborhood having more than 13 nearby private schools in 2000. However, on average, neighborhoods lost about 2 private schools over the next ten years.

For the controls, the average neighborhood in my sample had a 19% poverty rate in 2000, which increased slightly by 2010. The percentage of residents with a college degree in the average neighborhood was 22% in 2000, which increased by an average of 4 percentage points by 2010. The average population density was about 5,000 people per square mile ($e^{8.82}$) in 2000, which remained stable over the ten year period. Finally, the average neighborhood was in a school district that was 29% White in 2000, which declined by 2 percentage points by 2010.

3.4.2 Effects of School Choice on Relationship between School and Neighborhood Change

To answer my first research question, I use difference models to investigate how the relationship between neighborhood and school change is moderated by the availability of nearby charter and magnet schools. Table 3.2 presents results from models estimating the effect of neighborhood change in percentage White on school change in percentage White from two models. First, Model 1 shows that, on average, neighborhood change is significantly and positively associated with school change. A coefficient of one on neighborhood change would indicate that neighborhood change is perfectly related to school change (i.e., a given percentage change in neighborhood is associated with the same change in the school). In Model 1, I find that the coefficient on neighborhood change is less than one: a one percentage point change in the neighborhood is only associated with a .70 percentage point change in the school.[15] I also find no evidence of a relationship between charter school availability and school change, given that none

[15] A coefficient greater than one would imply that a given percentage change in the neighborhood was magnified in the school. Because the student body is drawn directly from the neighborhood, a given change in the neighborhood would likely only be magnified in the school if the underlying N for the school was much smaller than the N for the neighborhood, and this would have to be a frequent occurrence across schools.

of these coefficients are significant. I do find that the number of nearby private schools is negatively associated with school change, such that a neighborhood with 10 nearby private school in 2000 would be expected to lose five percentage points more White students, compared to a school without any private schools nearby. However, to understand the implications of these school choice effects on school change, I return to these results using path models to investigate hypotheses 3a and 3b in the final section of the results.

In Model 2, I include an interaction term between neighborhood change and each of the school choice variables, which based on the AIC and BIC offers an improved model fit. In Model 2, I find that, after accounting for the moderating effect that school choice availability has on neighborhood change, the main effect of neighborhood change on school change is now closer to one compared to Model 1. I find that, in a neighborhood without any charters or private schools in either 2000 or 2010, a one-percentage point increase in neighborhood percent White is associated with an .87 percentage point increase in school percent White. In other words, neighborhoods without school choice options have a closer association between neighborhood and school change.[16] Next, to interpret the magnitude and direction of these interactions with school choice options, I plot predicted probabilities from Model 2 in Figures 3.2 and 3.3.

[16] The variables for school and neighborhood change (as well as proportional control variables) are both multiplied by 10 in these models, which does impact interpretation of the control variables. Change in neighborhood percent college graduate has a significant and negative association with school change, such that neighborhoods with a one percent increase in college graduate rate lost 1.7 percentage points more White students. The change in the district population of White children is significant and positively associated with school change, such that districts that gained (or lost fewer) White children lost fewer White students in their schools.

Table 3.2. Difference Models of Neighborhood Change on School Change

	Change in School % White (2000-2010)					
	M1			M2 ‡		
Change in Neighborhood % White (2000-2010)	.70	***	(.01)	.87	***	(.02)
Nearby Availability of Charter Schools						
Number of Nearby Charter Schools in 2000	.02		(.01)	.01		(.01)
Change in Neighborhood % White **x** Number of Nearby Charters in 2000				-.03	*	(.01)
Change in Nearby Charter Schools w/in 2 miles (2000-2010)	.005		(.00)	.01		(.00)
Change in Neighborhood % White **x** Change in Nearby Charters (2000-2010)				-.01		(.01)
Number of Nearby Charters in 2000 **x** Change in Nearby Charters (2000-2010)	-.002		(.00)	-.002		(.00)
Change in Neighborhood % White **x** Nearby Charters in 2000 **x** Change in Nearby Charters				-.01	*	(.00)
Nearby Availability of Private Schools						
Number of Nearby Private Schools in 2000	-.005	**	(.00)	-.004	**	(.00)
Change in Neighborhood % White **x** Number of Nearby Private Schools in 2000				-.01	***	(.00)
Change in Nearby Private Schools w/in 2 miles (2000-2010)	-.004		(.00)	-.003		(.00)
Change in Neighborhood % White **x** Change in Nearby Private Schools				-.01	*	(.00)
Number of Nearby Privates in 2000 **x** Change in Nearby Privates	-.0001	*	(.00)	-.0001	*	(.00)
Change in Neighborhood % White **x** Nearby Privates in 2000 **x** Change in Nearby Privates				.00001		(.00)
Controls						
Change in Neighborhood % College Graduate	-.17	***	(.02)	-.13	***	(.02)
Change in Neighborhood Poverty Rate	.01		(.02)	.02		(.02)
Change in Logged Neighborhood Population Density	-.004		(.03)	.03		(.03)
Change in District Population of White Children	.44	***	(.08)	.37	***	(.08)
Constant	.10		(.08)	.09		(.07)
Random-effects Parameters						
Standard Deviation of School District Random Effect	.04		(.01)	.03		(.01)
Standard Deviation of Residual	.43		(.01)	.41		(.01)
AIC	5838.0			5704.6		
BIC	5921.6			5824.0		

Notes: Percentage and percentage change variables in units of 10 percentage points; *** - p<.001, ** - p<.01, * - p<.05, + - p <.1; n = 2,993 schools; Author's Original Longitudinal Dataset

Figure 3.2 shows how the predicted school change (in percentage points) on the *Y*-axis varies across levels of neighborhood change (in percentage points) on the *X*-axis in different school choice contexts.[17] If neighborhood change were perfectly related to school change, this relationship would fall along the black, solid line indicating that school and neighborhood change occur in lockstep (*Y*=*X*). The solid, green line shows the relationship between school and neighborhood change for a neighborhood with no charters in 2000 or 2010. (Note that I only include confidence intervals on the most extreme types of neighborhoods to ease in interpreting the plot.) In this neighborhood, without any charter options, the relationship between school and neighborhood change is close to lockstep (though even without any charter options, there remains an imperfect association between school and neighborhood change). For neighborhoods without any charters in 2000 that experienced a growth of eight additional charters (dashed green line), this relationship moves further away from the lockstep line, as does the solid orange line for a neighborhood with four charter schools in 2000 and 2010.[18] These neighborhoods with greater charter access have a weaker relationship between school and neighborhood change compared to neighborhoods without any charters. This weakening association between school and neighborhood change based on school choice availability is most clearly illustrated for neighborhoods that had many charters in 2000 and experienced a large growth in nearby charters (dashed orange line), which has a slope closer to zero, indicating that there is only a small association between neighborhood and school change when there are many charter options.

[17] These predicted probabilities are calculated with all other variables held at their means.
[18] I set the number of charters in 2000 to 4 charters and set the large growth of charters to reflect 8 additional charters between 2000 and 2010, because these each of these figures are around the 95th percentile of the distribution of these variables, respectively. Therefore, these figures capture realistic change on the high end of what was observed.

Figure 3.2 Moderating Effects of Charter School Availability on the Relationship between Neighborhood and School Change

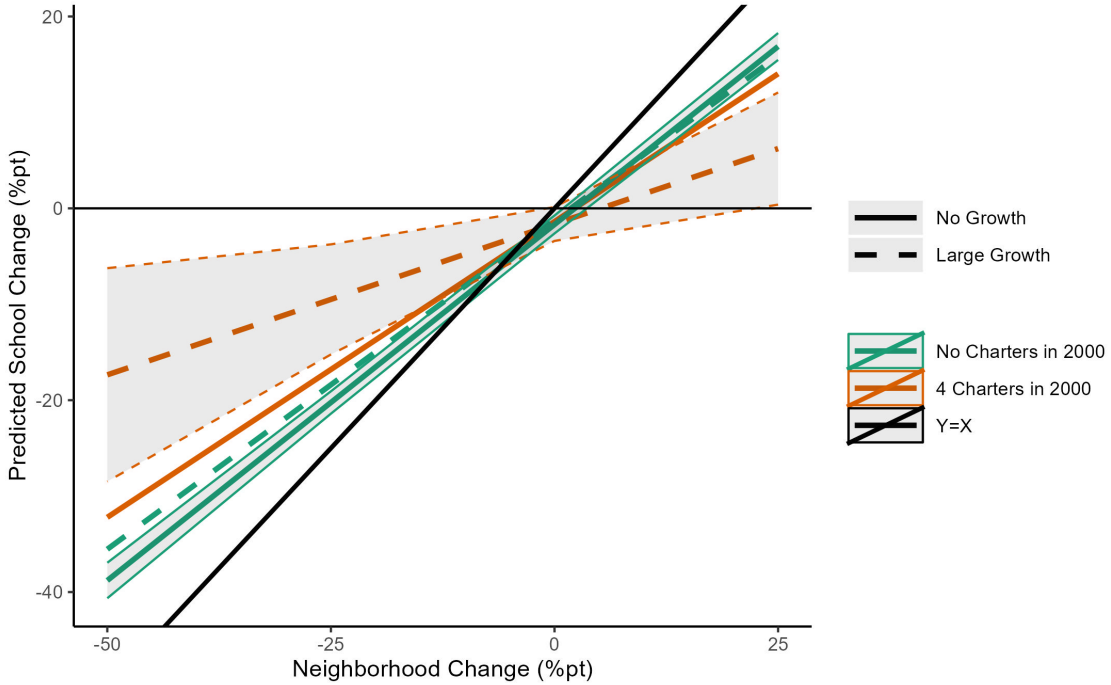
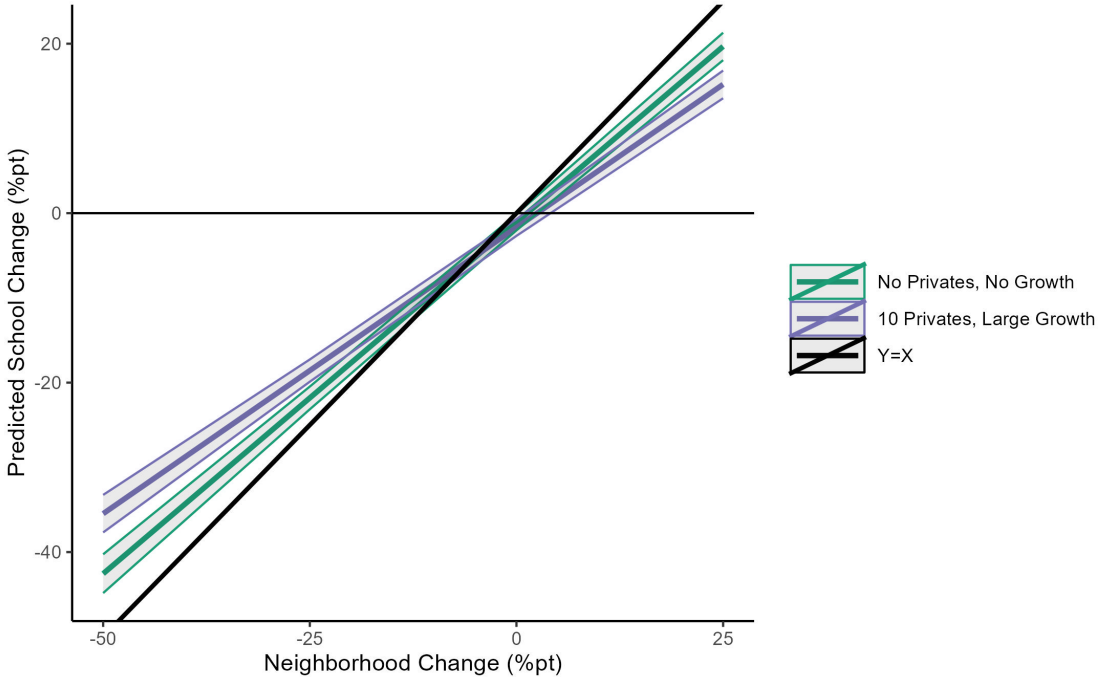


Figure 3.3 presents a similar graph for the moderating effects of private schools on the relationship between neighborhood and school change. Like charters, I find that school change most closely reflects neighborhood change (i.e., is closest to the lockstep line) in neighborhoods without any nearby private schools in 2000 or 2010 (green line). In contrast, neighborhoods with 10 private schools in 2000 and that experienced growth in the private sector have a weaker association between school and neighborhood change (purple line).[19] However, compared to the effects of nearby charter schools, even neighborhoods with many private schools and a large growth in private schools are fairly close to the lock-step line, indicating that, overall, the availability of private schools only slightly weakens the relationship between neighborhood and school change.

[19] For private schools, I use 10 private schools as the value for the baseline, because neighborhoods generally had far more private than charter schools in 2000 and 10 private schools reflects the 50th percentile of the distribution. I then examine a loss of 5 charter schools and a gain of 5 charter schools, because these values represent around the 15th and 95th percentiles of the distribution of change in private schools, respectively.

Figure 3.3 Moderating Effects of Private School Availability on the Relationship between Neighborhood and School Change



Overall, based on these findings, I confirm my first hypothesis, finding that neighborhoods with more alternative schools have a weaker link between neighborhood and school change, but I find that charter schools have a larger effect on this relationship compared to private schools.

3.4.3 Effects of School Choice on Rate of Neighborhood Change

Next, I test my second hypothesis by examining how the availability of alternative schools affects the speed of neighborhood demographic change. I present results from models on the change in neighborhood percent White between 2000 and 2010 in Table 3.3. In Model 1, I find a significant positive relationship between neighborhood change and nearby charters in 2000 and change in nearby charters, indicating that neighborhoods with greater charter availability lost fewer White elementary school-aged residents than neighborhoods without charters in 2000 or without charter growth. A neighborhood with one charter school is expected to lose .9 percentage

point fewer White elementary school-aged residents compared to a neighborhood without any charters in 2000, while a growth of one additional charter school is associated with losing two percentage point fewer White elementary school-aged residents.[20] I also find a significant, positive association between the number of nearby private schools and neighborhood change, though only a marginally significant and positive coefficient on change in private schools, indicating that neighborhoods with more private schools or with growth in nearby private schools also lost fewer Whites compared to neighborhoods without private schools. A neighborhood with 10 private schools in 2000 would be expected to lose one percentage point fewer White elementary school-aged residents compared to a neighborhood without any private schools. [21]

[20] In these models, neighborhood change is multiplied by 10 to make clearer the effects of the independent variables.
[21] The results for the control variables are consistent across Model 1 and Model 2. Neighborhood percent college graduate is positively associated with neighborhood change: a one percentage point increase in the rate of college graduates was associated losing .33 percentage points fewer Whites. Neighborhoods with increases in neighborhood poverty rate or increases in population density lost more Whites, while neighborhoods in districts with increasing proportions of White children lost fewer Whites, such that a one percentage point increase in district percent White was associated with losing .71 percentage point fewer Whites.

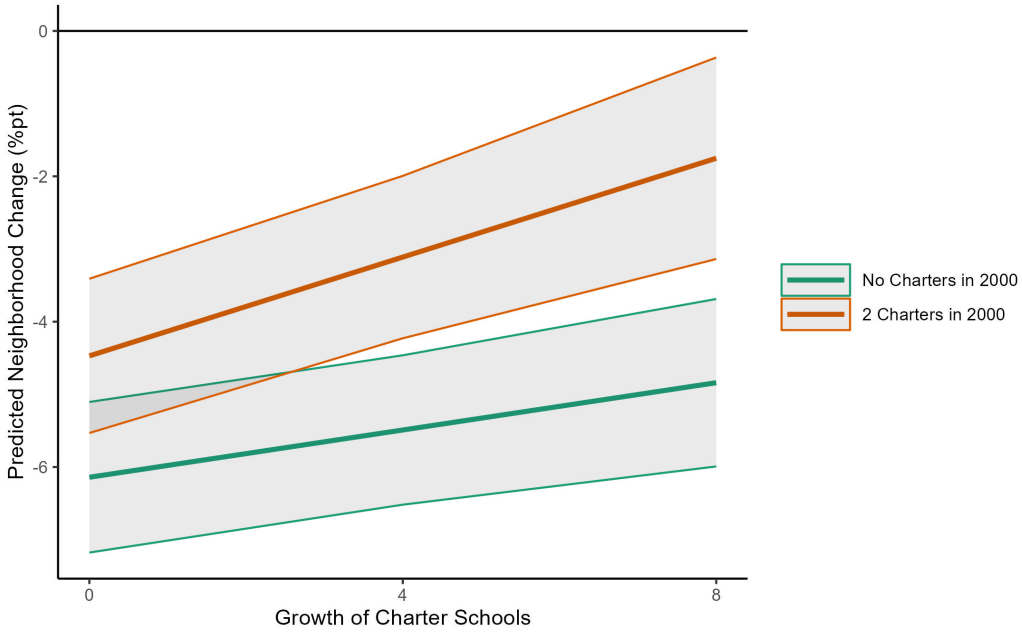
Table 3.3 Difference Model of School Choice Availability on Rate of Neighborhood Change

	Change in Neighborhood % White (2000-2010)					
	M1			M2		
Nearby Availability of Charter Schools						
Number of Nearby Charter Schools in 2000	.09	***	(.01)	.08	***	(.01)
Change in Nearby Charter Schools w/in 2 miles (2000-2010)	.02	***	(.00)	.02	***	(.00)
Number of Nearby Charters in 2000 **x** Change in Nearby Charters (2000-2010)				.01	**	(.00)
Nearby Availability of Private Schools						
Number of Nearby Private Schools in 2000	.01	***	(.00)	.01	***	(.00)
Change in Nearby Private Schools w/in 2 miles (2000-2010)	.01	+	(.00)	.003		(.00)
Number of Nearby Privates in 2000 **x** Change in Nearby Privates (2000-2010)				.00		(.00)
Controls						
Change in Neighborhood % College Graduate	.33	***	(.03)	.33	***	(.03)
Change in Neighborhood Poverty Rate	-.18	***	(.03)	-.19	***	(.03)
Change in Logged Neighborhood Population Density	-.33	***	(.04)	-.33	***	(.04)
Change in District Population of White Children	.71	***	(.08)	.70	***	(.08)
Constant	-.54	***	(.08)	-.55	***	(.08)
Random-effects Parameters						
Standard Deviation of School District Random Effect	.04		(.01)	.04		(.01)
Standard Deviation of Residual	.70		(.02)	.70		(.02)
AIC	7260.5			7255.5		
BIC	7326.2			7333.1		

Notes: Percentage and percentage change variables in units of 10 percentage points; model 2 is an improvement over model 1 for AIC but not BIC
*** - p<.001, ** - p<.01, * - p<.05, + - p <.1; n = 2,993 neighborhoods
Data Source: Author's Original Longitudinal Dataset, 2024

In Model 2, I include the interaction terms between the number of charters/privates in 2000 and the change in nearby charters/privates, to account for the variation in the effect of change based on starting levels. This interaction term is significant for charter schools, but not significant and very close to zero for private schools. To aid in interpretation of these interaction effects, I plot predicted probabilities calculated from Model 3 in Figure 3.4. Figure 3.4 shows the predicted change in neighborhood percent White at different levels of growth in nearby charters for two neighborhoods: a neighborhood without any charters in 2000 (blue line) and a neighborhood with two charters in 2000 (orange line). As suggested by the significant coefficient on the baseline number of charters, the neighborhood without any charters in 2000 is expected to experience a greater loss of White elementary school-aged residents, compared to a neighborhood with two charters in 2000. For both neighborhoods, adding additional nearby charters is associated with losing fewer and fewer White elementary school-aged residents. In addition, due to the significant interaction between the baseline number of charters and the growth in charters, adding additional nearby charters has a larger impact in neighborhoods with more charter schools at the outset, such that the expected change in the neighborhood with more charters approaches zero. For the neighborhood with two charters in 2000, a growth of eight additional charters is associated with losing only two percentage points of White elementary school-aged residents, compared to an expected loss of about five percentage points of White elementary school-aged residents in the neighborhood without any charters in 2000. This interaction term suggests that the growth of charter schools may have the largest impact on neighborhood population change when there are already many nearby charter schools. Given that schools have enrollment limits, this could suggest that charter schools will be most impactful when there are enough charter schools to fully satisfy the demand for charter enrollment.

Figure 3.4 Relationship between Charter School Availability and Neighborhood Change



I show the analogous graph for private schools in Appendix Figure B.1, given that the interaction and growth terms are non-significant in my models. The figure illustrates the association between greater numbers of nearby private schools at baseline and a decreased loss of White elementary school-aged residents in neighborhoods. However, it is only at a high level of nearby private schools (20 or more private schools) that I find a significant difference in the rates of neighborhood change from neighborhoods with no privates, whereas there is no significant difference between neighborhood change in a neighborhood with no private school compared to a neighborhood with 10 or 15 private schools. Overall, I find support for my second hypothesis; neighborhoods with greater access to and growth in charters and neighborhoods with much greater access to nearby private schools experience a less rapid loss of White elementary school-aged residents.

3.4.4 Effects of School Choice on Rate of School Change

Finally, I test hypotheses 3a and 3b to investigate how school choice availability shapes school change both directly and indirectly. Table 3.4 presents the path models predicting the effects of nearby charter and private schools on the rate of school change both as a direct effect and as an indirect effect through neighborhood change. The first column of Table 3.4 presents the direct effects of neighborhood change, nearby alternative schools, and the control variables on the change in school percent White between 2000 and 2010. As expected, these results are similar to those presented in model 1 of Table 3.2 (though without the interaction term between baseline and change in school choice options). The second column of Table 3.4 shows the indirect effect of nearby school alternatives and the control variables that operates through the effect of neighborhood change on school change, and the third column shows the total effect of these variables on school change (the direct and indirect effects together).

In the first column for the direct effects, I find that the number of and change in nearby private schools are significant and negatively associated with change in percent White in the local elementary school, while charter availability has no significant associations. Schools with 10 nearby private schools in 2000 lost four percentage points more White students compared to schools without any nearby private schools, while a growth of 10 additional private schools was associated with losing one percentage point more White students. In other words, schools with more nearby private school options tended to lose more White students, as expected in my hypothesis 3a. However, I do not find any significant, direct effect of charter schools on school change, therefore, although private schools are associated with a greater loss of White students, charter schools may have little direct relationship with school demographic changes.

Table 3.4 Path Model for School Change on School Choice Availability

	Change in School % White (2000-2010)								
	Direct Effects			Indirect Effects			Total Effects		
Neighborhood Change in Percent White	.71	***	(.02)				.71	***	(.02)
Nearby Alternative Schools									
Number of Nearby Charter Schools in 2000	.01		(.01)	.06	***	(.01)	.07	***	(.01)
Change in Nearby Charter Schools w/in 2 miles (2000-2010)	.004		(.00)	.01	***	(.00)	.02	***	(.00)
Number of Nearby Private Schools in 2000	-.004	*	(.00)	.01	***	(.00)	.002		(.00)
Change in Nearby Private Schools w/in 2 miles (2000-2010)	-.01	***	(.00)	.004		(.00)	-.006	*	(.00)
Controls									
Change in Neighborhood College Graduate Rate	-.17	***	(.02)	.24	***	(.02)	.06	*	(.03)
Change in Neighborhood Poverty Rate	.01		(.02)	-.13	***	(.02)	-.12	***	(.03)
Change in Neighborhood Population Density (logged)	-.01		(.05)	-.23	***	(.04)	-.24	***	(.06)
Change in District Population of White Children	.43	***	(.04)	.50	***	(.02)	.93	***	(.04)

Notes: Percentage and percentage change variables in units of 10 percentage points. Models include random effects for school districts.
*** - p<.001, ** - p<.01, * - p<.05, + - p <.1; n = 2,993 schools; AIC – 96824.4, BIC – 96949.9
Data Source: Author's Original Longitudinal Dataset, 2024

In contrast, I find significant, positive indirect effects of charter schools and the number of nearby private schools on school change, as expected in my hypothesis 3b. These indirect effects mean that the association between greater availability of alternative schools and school change partially operates through neighborhood change to stem the loss of White students in schools. In other words, school choice availability has a positive association with neighborhood change, meaning that neighborhoods with more charter options lost fewer White residents (as found for hypothesis 2). But, because neighborhood change also shapes school change, the loss of fewer White residents also means fewer White students leave schools with many nearby charter options. I consider the implications of these findings in the conclusion section.

These indirect and direct effects combine in the third column capturing the total effects of these variables on school change. Together, the indirect and direct effects of baseline availability of private schools cancel each other out, such that the availability of nearby private schools has no net association with school change. However, the positive, indirect effect of charter schools remains, such that schools with more charters or more charter growth lose fewer White students. In addition, the negative effect of change in private schools remains, such that schools with growth in nearby private schools lost more White students. Therefore, I find supportive evidence for both of competing hypotheses 3a and 3b: schools with more nearby private schools lost more Whites through a *direct* association with school choice availability, and charter schools reduces school change as an *indirect* association operating through neighborhood change.

3.5 Discussion

Residence-based school assignment policies have historically tied together the fates of neighborhoods and schools, which has exacerbated the racial segregation of both contexts (Owens 2017, 2020). White parents are able to capitalize on racial economic inequality to

improve their children's access to education by buying homes in desirable school districts (Holme 2002; Johnson and Shapiro 2003). Yet, the expansion of school choice through charter schools has disrupted this close tie between parents' neighborhood and school choices. Advocates of charter schools argue that market-based approaches to public education will enhance the educational opportunities afforded to all students, but the growth of charter schools has also revealed how school choice can increase racial segregation in schools (Bifulco et al. 2009; Monarrez et al. 2022; Rich et al. 2021). In this chapter, I contribute to these literatures on schools, neighborhoods, choice, and segregation to show how the availability of alternative school options shapes how racial turnover unfolds in both neighborhoods and schools.

First, I show how the availability of nearby school alternatives, particularly charter schools, weakens the link between school and neighborhood demographic change. Using neighborhood-school level data, I find that school change most closely reflects neighborhood change in neighborhoods without any nearby charter or private school alternatives, and I find that as the availability of these alternative options grows, school change is increasingly unlinked from neighborhood change. This strong association between neighborhood and school change in contexts without alternative school options suggests that neighborhood change in these places may be driven, in part, by parents' desires for their children's schools (Holme 2002; Rhodes and Warkentien 2017). I find that charter schools weaken this relationship between school and neighborhood change, while private schools have a relatively smaller effect. While both private and charter schools have both been shown to increase school racial segregation, and particularly the racial isolation of White children (Frankenberg, Siegel-Hawley, and Wang 2011; Reardon and Yun 2006; Riel et al. 2018; Saporito 2009), my findings suggest that charter schools likely have a bigger impact on the link between schools and neighborhoods. This smaller effect of

private schools may arise from the relative exclusivity and barriers to entry for private schools, compared to public school choice options, or from the decline in the private school sector that was occurring over this period.

In addition to this moderating effect on the relationship between school and neighborhood change, I also find that private and charter school options affect the rates of racial turnover in both neighborhoods and their local schools. First, I find that neighborhoods with more nearby private and charter schools and growth in these alternatives over the 2000s lost fewer White residents compared to neighborhoods without these other school options. These findings support my hypothesis that school choice alternatives help parents unlink their school and neighborhood choices, allowing them to remain in neighborhoods when they might be unsatisfied by their school options, thereby slowing the rate of neighborhood change. Therefore, school choice alternatives not only shape the racial composition of children in schools, but the lack of school alternatives can induce greater neighborhood change as parents who want alternative schools must leave their neighborhoods to satisfy their preferences (Clotfelter 2001; Ely and Teske 2015).

Finally, I find that private and charter schools both affect rates of White student flight from schools, but the directions of these effects were different between these alternative school types. First, I find that when parents have greater access to private options, schools lose more White students. This finding aligns with prior research showing that White parents tend to use private schools to opt out of their local public schools (Bischoff and Tach 2020; Fairlie 2002; Reardon and Yun 2006; Saporito 2009). Second, for charters, I find that the availability of nearby charter schools has an indirect, positive association with school change that operates through neighborhood change: neighborhoods with few charter alternatives lose more White

students in their schools compared to neighborhoods with many nearby charter alternatives. If parents lack school choice options other than their assigned local schools, they may choose to move to satisfy their school preferences, which affects neighborhood change and, by extension, school change. This finding implies that White families may be more likely to move neighborhoods when they do not have school alternatives, increasing White flight from both schools and neighborhoods together (Goyette et al. 2014; Holme 2002).

However, these findings also imply that greater school choice availability encourages White families to remain in their neighborhoods and their local schools; in other words, school choice seems to decrease White flight even when parents are not using these alternatives. Although this neighborhood- and school-level data does not allow me to examine individual-level decisions, prior qualitative literature offers a few additional ideas that might explain these results about the indirect effects of school choice on school change. In a Boston-based study, middle-class gentrifiers were committed to staying in the city despite their hesitations about the Boston Public School system (Billingham and Kimelberg 2013). These parents chose to enroll their children in the neighborhood school for elementary school, but continually revisited this decision and indicated that they were unlikely to continue in neighborhood public schools for the later grades, a strategy also documented in other qualitative studies on urban parents (Bader et al. 2019; Cooper 2005; DeSena 2006; Roda and Wells 2013). Therefore, perhaps school choice options allow White parents in urban districts to take the risk of enrolling their child in their neighborhood elementary school because they know they have other school alternatives close at hand if needed (Kimelberg 2014). School choice options are a safety net that reduces parents' incentive to move for better schools. In this study, I focus only on elementary schools and their neighborhoods, and therefore, I may be capturing White parents who choose local elementary

schools, even if they will move away or opt for school choice alternatives for middle and high school. Future research should investigate whether school choice alternatives only stem White flight in elementary schools while increasing White flight in the upper grades.

Overall, the findings from this study illuminate the ways in which school choice availability will shape racial turnover in both neighborhoods and schools. School choice allows parents to unlink their schools and neighborhoods in a context where those decisions had been quite closely tied and can slow White flight (Holme 2002; Rhodes and Warkentien 2017). However, a large body of research has linked the growth of charter schools to increasing school segregation, particularly the increasing racial isolation of Black and Latino students (Kotok et al. 2017; Monarrez et al. 2022; Renzulli and Evans 2005; Stein 2015). The growth of charter enrollment can also worsen educational inequality: districts with greater charter enrollment have larger Black-White test score disparities and these disparities are partially ascribed to Black-White school segregation (Blatt and Votruba-Drzal 2021). School choice, therefore, may reduce White parents' likelihood of leaving urban neighborhoods, but when White parents will choose racially isolated White schools, even when racially diverse schools offer as good or even better quality educational opportunities, greater choice may stem White flight while failing to improve racial segregation or racial equity (Billingham and Hunt 2016; Saporito and Lareau 1999; Schneider and Buckley 2002; Sikkink and Emerson 2008).

Chapter 4 The Impact of School District Context on School and Neighborhood Racial Composition Dynamics

4.1 Introduction

Parents make decisions about where to live and where to send their children to school based on their preferences for these contexts, but these decisions are also shaped by the options that parents have available to them (Krysan and Crowder 2017; Swait and Bruch 2024). As established in Chapter 3, school choice plays an important role in expanding or constraining these options and, by extension, the lack of available school options can increase White flight from both neighborhoods and schools. However, parents' choice sets of neighborhoods and schools are also shaped by the racial compositions of the cities and school districts in which those options are located. For example, cities with fewer residents of color will have fewer neighborhoods with substantial numbers of Black, Latino, or Asian residents for families to choose from, and racial segregation and isolation indices tend to be higher in metro-areas with large representations of both Blacks and Latinos (Charles 2003; Iceland and Sharp 2013; Lee et al. 2019). Therefore, depending on the contextual factors of the metropolitan area in which a parent lives, they may have few or many neighborhood and school options that fit their preferences. As such, parents' choices about schools and neighborhoods shape the racial composition of those contexts (Schelling 1971), but these choices are also conditioned by the broader racial composition of the contexts in which they are made. In this final empirical chapter, I investigate how the racial composition of a metropolitan area affects the patterns of demographic change of the schools and neighborhoods within it.

As noted, the racial composition of metropolitan areas creates some fairly straightforward constraints on parents' choices for neighborhoods and schools: cities with fewer residents from marginalized racial groups will have fewer opportunities for racially diverse or majority-minority neighborhoods or schools (Crowder, Pais, and South 2012). But consider a predominantly White neighborhood located in a predominantly White city, compared to in a racially diverse city or a majority Black city. How might these different metropolitan contexts influence a parent's decision about moving and, by extension, what effect do these contexts have on neighborhood stability and change? Perhaps White neighborhoods in majority White cities experience less racial composition change, because there are enough White families moving in and out of neighborhoods to maintain stable proportions of White residents (Charles 2003; Lee et al. 2019; Lichter, Parisi, and Taquino 2017; Reibel and Regelson 2011). Or, perhaps a White neighborhood in a predominantly Black or racially diverse city has greater residential stability, because White residents have fewer White neighborhoods to choose from (Crowder et al. 2012; Ellis et al. 2018; Zhang and Logan 2016). Alternatively, White neighborhoods in predominantly White cities could be vulnerable to White flight, because even a small entry of non-White residents can prompt White families to move away (Bruch and Mare 2006; Crowder 2000; Farrell and Lee 2011; Hall et al. 2016; Krysan 2002b; Schelling 1971).

In my previous work (see Chapter 3 and Field, Bruch, and Swait 2024), I have examined how schools and neighborhoods experience racial turnover as linked domains. In this chapter, I put these schools and neighborhoods into the contexts of the school districts in which they are located and examine how the racial, socioeconomic, and geographic characteristics of the district as a whole (which generally represent either cities or counties) affect school and neighborhood demographic change. I focus on two research questions: first, how does demographic change in

schools and neighborhoods vary across school districts? Second, how does the racial composition of the district shape how schools and neighborhoods experience demographic change, after accounting for district-level differences in socioeconomic, school choice, and urbanicity? To answer these research questions, I use an original dataset of the racial compositions of nearly 3,000 schools and their neighborhoods nested within 22 large, U.S. school districts in 1990, 2000, and 2010, as well as data collected on the policy and demographic contexts of these districts.

I find that districts characterized by racial diversity with substantial representation of Black, Latino, and White residents experienced slower rates of White flight in both their schools and their neighborhoods. I find that racially diverse districts experienced less White flight even after accounting for the availability of school choice options, differences in poverty and education levels between neighborhoods, and the population density and urbanicity of school districts. I also find preliminary evidence that greater representation of Latinos at the district-level is associated with lower rates of White flight in neighborhoods, though this relationship does not extend to White flight from public schools. These results suggest that the racial compositions of metropolitan and school districts contexts influence how their schools and neighborhoods experience racial turnover.

4.2 Background

In previous work, I elaborate on Schelling's tipping point theory to provide a theoretical model for how demographic change unfolds in schools and neighborhoods as linked domains, termed coupled tipping (Field et al. 2024). In this research, we show how the close but imperfect link between schools and neighborhoods generates a unique pattern of demographic change in which school change initiates before neighborhood change, producing a large gap between

school and neighborhood racial composition in the most diverse places. In this paper, we use data on elementary schools and their neighborhoods in 22 large U.S. school districts to provide empirical evidence to support our theoretical model. However, in this paper, we estimate a latent trajectory model across all districts, without accounting for the multi-level nature of the data.

These school districts are 22 of the largest school districts in the United States and, in 2010, these districts together served 10.5% of all public school students. The school districts represented in the data vary across a number of characteristics, including metro-level racial composition, school choice policies, and urbanicity. These school districts include racially diverse districts with nearly even distributions of White, Latino, and Black residents, such as Chicago, as well as majority Black districts, like Detroit and Baltimore City, and majority White districts, like Baltimore County. The school districts also range from very dense urban areas like New York City, to larger county-based districts in the southern U.S. such as Duval County, Florida, where Jacksonville is located. Within these county-based districts are both neighborhoods in densely populated urban centers as well as less dense, more suburban neighborhoods on the outskirts of the county. These districts also represent a range of school choice policies, from districts without any charter schools such as Montgomery County, Maryland or Fairfax County, Virginia, to districts like Los Angeles Unified or Miami-Dade County where charter schools expanded rapidly in the 2000s, making up one-fifth of schools in 2010. Given this heterogeneity across school districts, these data offer the opportunity to examine whether the racial composition at the district-level shapes neighborhood and school change, after accounting for these other characteristics that vary across districts.

4.2.1 Metro-Level Racial Composition and Demographic Change

Much of the research on residential racial segregation has focused on neighborhood-level racial compositions, using census tracts and other geographic boundaries to approximate the small scale contexts where people live, work, and send their children to school (Iceland et al. 2010; Lichter et al. 2024; Massey and Denton 1993). However, other recent scholarship has suggested the importance of broadening the lens of segregation studies to the macro-level, particularly cities and suburban municipalities (Fowler, Lee, and Matthews 2016; Massey, Rothwell, and Domina 2009; Owens and Rich 2023). This research has found that although neighborhood racial segregation has decreased in the past few decades, the racial segregation between macro-level places has actually increased, meaning that racial groups are segregated not just within cities, but across city and county lines (Lichter et al. 2015).

In this area of research, scholars have drawn upon political economy of place theories to argue that places or municipalities (i.e., cities and towns) are important geographic aggregations to study because the economic and political power represented by municipalities shapes the wellbeing of their residents (Lichter et al. 2015; Logan and Molotch 2007). In other words, although neighborhoods are characterized by stark racial segregation, if segregated Black, White, and Latino neighborhoods are located within the same municipality, these Black, White, and Latino residents will experience similar overall access to public goods and investments. However, as racial groups have become increasingly segregated across city or county lines, racially marginalized groups are more likely to live in places with smaller municipal budgets, weaker labor markets, and lower-ranked school systems (Lichter et al. 2024, 2015; Logan and Molotch 2007; Weathers and Sosina 2022b). White families with children are especially likely to be segregated at this macro-level, particularly across school district lines (Iceland et al. 2010;

Owens 2017), and school district budgets and school quality vary considerably between municipalities (Ayscue and Orfield 2015). Therefore, it is important to consider not just neighborhood- and school-level segregation or demographic patterns, but also how the macro-level contexts in which schools and neighborhoods are located affect dynamics of change.

The racial compositions of cities and metropolitan areas shape the opportunities that residents have for neighborhoods and schools within these macro-level contexts. Unsurprisingly, individual-level studies have shown that the likelihood of moving to a neighborhood with large representations of Black, Latino, or Asian residents depends upon whether each of these groups make up a substantial proportion of the metro-area (Crowder et al. 2012). In the past few decades, Whites have generally become more exposed to racial diversity in their neighborhoods, but Whites are only integrated with marginalized racial groups in cities and suburbs that have substantial shares of these racial minorities (Lichter et al. 2017). However, Whites remain notably racially isolated even when they live in racially diverse metropolitan areas, and the segregation of Whites is only minimally diminished by the growth of Latino and Asian metro-level populations (Iceland and Sharp 2013; Lee et al. 2019).

Based on these prior literatures, demographic change in neighborhoods and schools may be slowest in Majority White metropolitan areas (or school districts in the context of this study). As suggested by the political economy of place perspective, majority White municipalities will have greater resources and higher quality schools, which may encourage White parents to remain in their neighborhoods and local schools (Lichter, Parisi, and Taquino 2012; Marsh, Parnell, and Joyner 2010; Owens and Rich 2023; Rury and Saatcioglu 2011). Majority White metropolitan areas are also likely to have many majority White neighborhoods that White families can choose to move to when changing neighborhoods, meaning that White parents can remain in cities rather

than moving out to the suburbs to find satisfactory neighborhoods (Charles 2003; Crowder et al. 2012). In addition, majority White metropolitan areas may have Whiter student bodies in their public schools and White parents are often to motivated to move away from cities based on their public school options (Holme 2002; Rhodes and Warkentien 2017). Therefore, having Whiter schools may make White neighborhoods more stable (Ellen 2001; Orfield 2002).

On the other hand, there is a different set of literatures on neighborhood stability and racial diversity that suggests that racially diverse metropolitan areas actually have a clearer path towards demographic stability. Research on the dynamics of neighborhood change suggests that racial integration was more stable in neighborhoods with substantial representation of Latino, Black, and Asian residents together, while integration was highly unstable in neighborhoods characterized by a predominantly White population and the entry of just a single minority group (Reibel and Regelson 2011). Logan and Zhang (2016) term this process "global neighborhoods," where they argue stable diversity can be found where Latinos and Asians enter White neighborhoods first and are later followed by Black movers. As so-called "buffer groups," Latino and Asian neighbors buffer the presence of Blacks in White neighborhoods, increasing diversity and reducing the White flight that generally occurs in diversifying neighborhoods (Parisi et al. 2015). Therefore, it is also possible that racially diverse metropolitan areas may experience slower racial turnover in their neighborhoods, compared to metropolitan areas with a single majority group.

However, evidence on White parents' preferences for their children's schools suggests that White parents may be unlikely to consider racially diverse schools, even when that diversity arises from a mix of Black, Latino, and Asian students. There is a wealth of historical evidence that White parents tend to avoid schools with larger Black populations (Billingham and Hunt

2016; Goyette et al. 2012; Lankford and Wyckoff 2000). More recent research shows that White parents also prefer to avoid schools with more Latino and more Asian students, partly due to concerns around their children's "fit" and "belonging" (Hailey 2021, 2022; Mellon and Siegler 2023). Therefore, although Latinos and Asians may provide a buffering function in neighborhoods, it is less clear if this buffering could also stem White flight from schools. Overall, past research suggests that metropolitan-level racial composition plays an important role in neighborhood and school segregation, but it is unclear how this metro context will affect how schools and neighborhoods together experience demographic change over time.

Together, these literatures suggest two competing hypotheses for how metropolitan- or school district-level racial compositions may affect patterns of demographic change and stability in neighborhoods and schools. I evaluate the evidence for the following competing hypotheses:

Hypothesis 1: Neighborhoods and schools within predominantly White school districts will experience slower White flight and greater demographic stability.

Hypothesis 2: Neighborhoods and schools within racially diverse school districts will experience slower White flight and greater demographic stability.

In addition, if I find support for hypothesis 2, that racially diverse school districts have greater neighborhood and school stability, this finding could suggest that either, school districts with a balance between White, Black, and other racial groups experience slower demographic change, or that it is the greater presence of non-White, non-Black racial groups that increases neighborhood stability. In the literature, research on the buffering effects of non-White, non-Black racial groups has generally focused on both Latino and Asian populations. But, within my set of school districts, I have greater representation of Latinos and relatively small Asian

populations at the district-level, therefore I focus on the presence of Latinos as the third racial group. As such, I also investigate a secondary set of competing hypotheses:

Hypothesis 3a: Districts with more even representation of multiple racial groups (i.e., Whites, Blacks, and Latinos) have slower White flight and greater neighborhood and school demographic stability.

Hypothesis 3b: Districts with a greater presence of Latinos, compared to Blacks and Whites, experience greater neighborhood and school demographic stability.

4.3 Data & Methods

To explore how metro-level racial composition shapes neighborhood and school change, I use an original dataset of 2,903 public elementary schools and their neighborhoods, defined as school attendance zones (Field et al. 2024). This is the same dataset as used in Chapter 3, but I use these data for 1990, 2000, and 2010 to capture a longer period of change.[22] These elementary schools were located within the 22 largest school districts in 2000. In addition to the school- and neighborhood-level data described in Chapter 3, I collected additional school district-level data to capture the racial and socioeconomic characteristics of children and adults living within the school district boundaries, as well as urbanicity and school choice policy data on the public school district.

I use Census data from 1990, 2000, and 2010 as well as American Community Survey data (5 year estimates, 2008-2012) to measure the racial composition of children aged 5 to 9 living within the geographic boundaries of the school district. In most cases the geographic

[22] I do not use 1990 data in Chapter 3 because charter schools did not start opening until the 1990s and because the NCES did not collect data on private schools before 1999. Therefore, while I use these earlier racial composition data for this chapter, I cannot measure school choice availability in 1990 and I use 2010 data as a proxy for school choice options across this entire period.

boundaries of the school district correspond to city limits, for example the city of Chicago, or county lines, for example Clark County, Nevada where Las Vegas is located. However, in a few cases, namely Dallas, Houston, and Los Angeles, the school district boundaries extend beyond the city but do not include the entire county. Therefore, I use the term school district throughout to refer to this macro-level context in which these schools and neighborhoods are located, but these school districts do vary in the type of municipality that they represent (Lichter et al. 2015). I refer to these measures in my analyses as the percent of White, percent of Latino, or percent of Black elementary school-aged children living in the school district, which is distinct from the racial composition of the students enrolled in the school district (i.e., the students who attend the public schools in the district). Therefore, these measures of school district racial composition should be thought of as the residential populations (aged 5 to 9) of these cities and counties.

I also use Census and ACS data to create several measures of neighborhood- and district-level socioeconomic status and population density. First, I measure the percent of adults in the neighborhood that have a college degree in 1990, 2000, and 2010. Second, I measure the percent of residents in the neighborhood living in poverty across all years. Finally, I measure neighborhood population density and calculate the population density of the school district as a whole. I use spatial interpolation to estimate all neighborhood-level characteristics based on census blocks into school attendance zones (Sohoni and Saporito 2009). I also use a binary variable capturing whether a school district was countywide (reference group = 0, not countywide), because these countywide districts include both denser city centers, like Miami, as well as the suburban outskirts of the county. These countywide districts may be distinct from the more urban districts, like New York City, Chicago, or Los Angeles, in that they offer both urban and suburban neighborhood and school experiences.

In addition to the school choice availability measures described in Chapter 3, I also gathered information on district-level school choice policies and enrollment. I use NCES Common Core of Data to measure the ratio of the number of students enrolled in charter schools to the number of public school students in the district in 2010 to capture a broad measure of school choice uptake in the district. I also measure the ratio of the number of students enrolled in private schools to the number of public students in the district in 2010. I calculate these measures just for 2010 because, by and large, charter schools did not exist in 1990 and this private school data was not collected in 1990. For both ratio measures, I then create a binary variable capturing whether the district had an above or below average (reference group) ratio across all 22 districts. I also collected information on whether the district had an open enrollment policy as a binary variable (reference group = 0, did not have open enrollment). Open enrollment policies vary considerably across districts, but broadly these policies offer parents the option to apply for a seat at any public school of their choosing, rather than students only being eligible for enrollment at their local, assigned school. Open enrollment policies mean that children can go to a given local, neighborhood public school even if they do not live in that neighborhood, so parents may choose to apply to send their child to the neighborhood school near their work or near a grandparents' house if their assigned school is unsatisfactory or inconvenient. These policies offer an additional way to access school choice beyond charters, magnets, and private schools.

Models. I use group-based multi-trajectory models to describe how the joint trajectories of neighborhoods and schools differ across school districts. Group-based multi-trajectory models (GBTM) are a variant of group-based trajectory models that allow for the modeling of multiple outcomes within the same unit, to capture school and neighborhood changes simultaneously, which makes GBTM uniquely well-suited to these data and research questions. Group-based

multi-trajectory models identify clusters of school-neighborhood pairs within which schools and their neighborhoods experience similar trajectories of change over time (Nagin et al. 2018). In previous research, GBTM was used to show the overall pattern of school and neighborhood change across the 22 school districts represented in this data (Field et al. 2024).

However, rather than general patterns across districts, in this chapter, I am investigating heterogeneity of these trajectories across districts. A noted challenge with group-based trajectory models is a limited approach to within-trajectory group heterogeneity (Saunders 2010). GBTM allows for multiple groups represented within the distribution of outcomes, but it assumes that, within groups, all members follow identical trajectories (Kreuter and Muthén 2008). Therefore, to descriptively capture differences across districts, I first separate the 22 school districts based on the racial composition of the children living within the district in 1990 into three categories: Racially Diverse (at least 20% Black, Latino, and White), Majority White (at least 50% White), and Majority Black (at least 50% Black).[23] I then run three separate group-based trajectory models to explore whether these categories of school districts experience distinct patterns of school and neighborhood change.

For each category of school districts, I must determine the appropriate number of groups for fitting the group-based multi-trajectory models. Following recommendations and past research (Field et al. 2024; Masyn 2013; Nagin et al. 2018), I compare the BIC and sample-size adjusted BIC for each model with an additional trajectory group. For all three categories of school districts, I selected a five-group model after plotting the improvement in the BIC over a model with one fewer group. Although 4- or 6- trajectory groups also fit well for some district

[23] Milwaukee, Philadelphia, and San Diego do not fit perfectly into these categories. Milwaukee and Philadelphia were 45% and 47% Black in 1990, respectively, and are categorized as Majority Black. San Diego was 43% White, 13% Black, and 31% Latino in 1990 and is categorized as Racially Diverse.

categories, the patterns captured were similar and choosing 5 trajectory groups for all three models offers a simpler comparison between the categories of school districts. I also examined the BIC differences between models with and without quadratic terms, and I include the quadratic term for the trajectories. I graph the trajectory model results from each of these three models on the categories of school districts, generating three plots depicting how change unfolds in neighborhoods and schools within racially diverse, majority White, and majority Black school districts, respectively.

Having established cross-district heterogeneity based on racial composition, I then turn to examining whether the racial composition of districts continues to shape neighborhood and school change after accounting for other cross-district variations. However, another key limitation of the GBTM framework is the inability to include time-varying predictors of the change trajectory.[24] Therefore, to further investigate the predictors of cross-district variation in school and neighborhood change, I move to a growth-curve modeling framework. Growth-curve modeling offers the ability to measure how schools and neighborhoods change over time, nested within school districts, while including both time-varying neighborhood/school-level predictors as well as time-varying district-level predictors (Curran et al. 2012; Lee and Hong 2021). This ability to investigate additional independent variables comes at the expense of the multi-trajectories estimated in the GBTM framework. Rather than being able to estimate simultaneous trajectories of neighborhoods and their schools together, I must estimate a separate model for neighborhoods and a separate model for schools. I also restrict my sample in these models to neighborhoods with at least 10% White residents in 1990, because there are many neighborhoods

[24] Time-varying and -invariant predictors can be included to predict group membership (i.e., which trajectory group a unit fits into best), but variables cannot be included predict the shape of the trajectories over time.

with very few White residents that experience little change in racial composition and including these neighborhoods would skew my estimates of change towards zero.

Equation 4.1 shows the basic growth curve model for neighborhood change in percent White (the analogous model for schools has School Percent White as the outcome).[25] These models predict the percent White in a given neighborhood or school at 1990, 2000, and 2010, based on a time trajectory, how the racial composition of the district interacts with that time trajectory, and a set of neighborhood- and school district-level control variables. I use these models to examine how neighborhood and school percent White changes over time, as a function of the racial composition of the school district. I include random intercepts and random slopes on time for neighborhoods and for school districts, and I also allow the random intercepts and random slopes for neighborhoods to covary, because I expect the degree of change in a neighborhood varies based on its starting point.

Equation 4.1. Simple Growth Curve Model

$$\begin{aligned} Neighborhood\ \%\ White_{ijk} = {} & \beta_{0jk} \\ & + \beta_{1jk} * Time_{ijk} * District\ Composition \\ & + \beta_{2jk} * Time^2_{ijk} * District\ Composition \\ & + \beta_3 * Controls_{ijk} \\ & + e_{ijk} \end{aligned}$$

Where *i* is a time point within neighborhood *j,* nested within school district *k,* and:

$$\beta_{0jk} = \beta_0 + \mu_{0jk} + \gamma_{0k}\ ;$$
$$\beta_{1jk} = \beta_1 + \mu_{1jk} + \gamma_{1k}\ ;$$
$$\beta_{2jk} = \beta_2 + \mu_{2jk} + \gamma_{2k}\ ;$$

Where μ is a random slope for neighborhood, and γ is a random slope for school district.

[25] I use time and time-squared in the presented results, but results using dummy variables for year showed similar substantive results.

I interact the time variables (coded as 0, 1, and 2 for 1990, 2000, and 2010, respectively) with a categorical variable capturing the racial composition category of the school district (Racially Diverse, Majority White, and Majority Black) to examine whether there are differences in neighborhood- and school-level trajectories across these three district compositions. I then include the socioeconomic status, school choice and population density variables as controls to examine whether any of these measures account for this cross-district variation. Using these models, I test my competing hypotheses 1 and 2.

Although these models capture differences in neighborhood and school change in racially diverse districts compared to majority White and majority Black school districts, this modeling framework limits my ability to identify whether it is the balance between racial groups or the greater presence of Latinos that drives differences across these three categories of districts. Therefore, in a final, exploratory set of models, I examine how school district racial composition directly shapes neighborhood and school trajectories to test competing hypotheses 3a and 3b. I describe these models in Equation 4.2. I examine two sets of models for schools and neighborhoods: one that includes district percent Black and district percent Latino, as well as one that includes district percent White and district percent Latino. Rather than examining a holistic, categorical measure of school district racial composition, these models allow me to examine, for example, the relationship between the proportion Latino in a district on school and neighborhood demographic change (and the relationships between proportion Black and proportion White on demographic change). Due to the collinearity between these variables, I cannot include all three in the same model, but I show the results from both sets of models to illustrate the impacts of each racial group on neighborhood- and school-level change. Including all three groups in two separate models illustrates some important differences in the impact of these racial groups at the

district-level. I present these results using predicted probabilities and average marginal effects on time to explore the results from these models in plots. In all results using predicted values and average marginal effects, I hold all other variables at their means.

Equation 4.2. Growth Curve Model with District-Level Racial Composition

$$\begin{aligned} Neighborhood\ \%\ White_{ijk} = \ & \beta_{0jk} \\ & + \beta_{1jk} * Time_{ijk} * District\ \%\ Latino \\ & + \beta_{2jk} * Time^2_{ijk} * District\ \%\ Latino \\ & + \beta_{1jk} * Time_{ijk} * District\ \%\ Black \\ & + \beta_{2jk} * Time^2_{ijk} * District\ \%\ Black \\ & + \beta_3 * Controls_{ijk} \\ & + e_{ijk} \end{aligned}$$

Where *i* is a time point within neighborhood, *j,* nested within school district, *k,* and:

$$\beta_{0jk} = \beta_0 + \mu_{0jk} + \gamma_{0k}\ ;$$
$$\beta_{1jk} = \beta_1 + \mu_{1jk} + \gamma_{1k}\ ;$$
$$\beta_{2jk} = \beta_2 + \mu_{2jk} + \gamma_{2k}\ ;$$

Where μ is a random slope for neighborhood, and γ is a random slope for school district.

4.4 Results

4.4.1 Descriptive Statistics

Table 4.1 presents descriptive statistics of the 22 districts overall and for the three categories of school districts based on their racial composition in 1990 (Racially Diverse, Majority White, and Majority Black). Overall, the districts in this data were an average of 47% White, 32% Black, and 18% Latino in 1990 (children aged 5 to 9). These districts generally lost White elementary school-aged residents and gained elementary school-aged Latino residents, such that by 2010, the elementary school-aged populations of these districts were an average of 28% White, 32% Black, and 31% Latino. The baseline compositions were, of course, quite different when the districts are separated into the composition categories, but even within these categories, districts tended to lose White children residents and gain Latinos. Majority White

districts had an average of nearly 70% White elementary school-aged residents, but this declined to minority White (43%) in 2010. The Racially Diverse school districts became more Latino, while losing both White and Black elementary school-aged residents between 1990 and 2010. In contrast, Majority Black school districts increased from 60% to 65% Black by 2010, losing a substantial proportion of White elementary school-aged residents.

These categories of school districts also varied on the control variables. Racially Diverse school districts had about the average ratio of charter students to public school students (10% compared to 9% overall), while Majority White had a smaller than average ratio of charter to public school students and Majority Black students had the highest ratio of charter students. Majority Black districts also had the largest ratio of private to public school students, though these ratios were more similar across the categories. All but one Racially Diverse school district has open-enrollment policies and Racially Diverse districts had significantly higher population densities compared to Majority White school districts (though comparable to Majority Black districts). Finally, Majority White school districts had the highest rates of college graduates and lowest poverty rates, while Majority Black districts had the lowest college graduation rates and highest poverty rates. Overall, these school district categories based on racial composition capture additional variation in measures of school choice, socioeconomic status, and urbanicity.

Table 4.1 Descriptive Statistics on School Districts

	All Districts (n=22 districts; 2,993 schools/neighborhoods)		**Racially Diverse** (n=7 districts; 1,596 schools/neighborhoods)		**Majority White** (n=10 districts; 812 schools/neighborhoods)		**Majority Black** (n=5 districts; 495 schools/neighborhoods)	
	1990	2010	1990	2010	1990	2010	1990	2010
Average Total Pop	1,462,429	1,709,562	2,757,449	3,036,762	816,439	1,203,399	941,384	863,807
Avg % White (children aged 5-9)	47%	28%	27%	18%	69%	43%	32%	13%
Avg % Black (children aged 5-9)	32%	32%	30%	22%	19%	23%	60%	65%
Avg % Hispanic (children aged 5-9)	18%	31%	39%	53%	8%	23%	6%	17%
Average # of Students in District	205,882	235,087	388,692	412,034	113,916	176,614	133,882	104,306
Avg Ratio of Charter Students		9%		10%		4%		20%
Avg Ratio of Private Students		15%		13%		15%		17%
Districts with Open Enrollment	16 of 22		6 of 7		7 of 10		3 of 5	
Avg District Population Density (logged)	4,607.8	4,836.1	7,617.2	8,401.4	1,176.3	1,540.8	7,257.8	6,435.4
Avg Percent College Graduate	23%	31%	23%	31%	26%	35%	16%	23%
Avg Poverty Rate	15%	18%	19%	21%	9%	12%	21%	25%
Districts			Chicago, Dallas, Houston, Los Angeles, Miami-Dade, NYC, San Diego		Baltimore County, Broward, Clark County, Duval, Fairfax, Hillsborough, Montgomery County, Orange County, Palm Beach, Pinellas County		Baltimore, Detroit, Milwaukee, Philadelphia, Prince George's County	

Data Source: Author's Original Longitudinal Dataset, 2024

4.4.2 Group-Based Multi-Trajectory Models

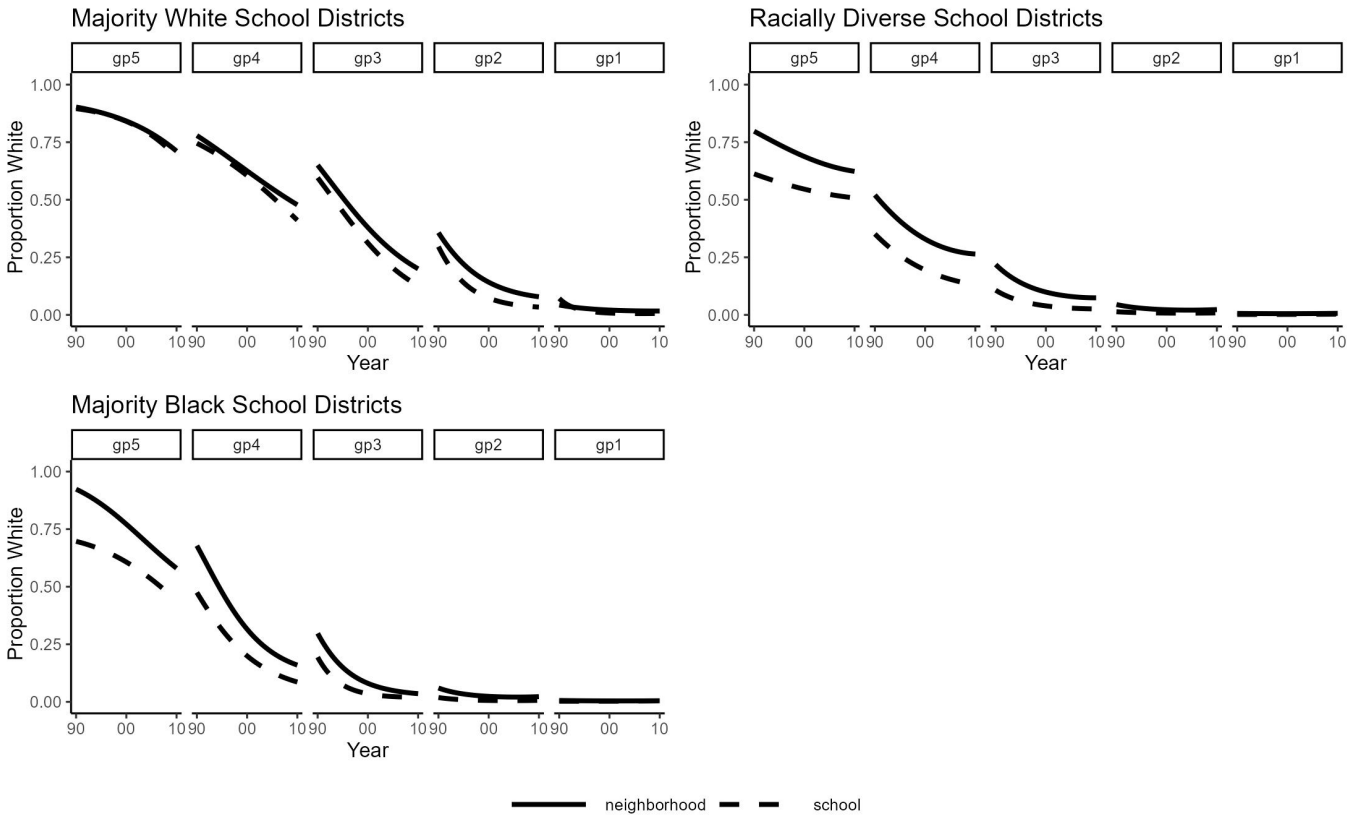
Next, I present results from the group-based multi-trajectory models that examine how schools and neighborhoods together experience change in percent White between 1990 and 2010, within the three categories of school district racial composition.[26] For each school district category, Figure 4.1 shows the predicted trajectory models for the five trajectory groups side-by-side, such that the Whitest trajectory group is furthest to the left and the least White trajectory group is furthest to the right. Within each trajectory group, the plot shows the predicted changes in the neighborhood and school percent White between 1990 and 2010. For example, in the Majority White District category, trajectory group five represents a predominantly White set of schools and neighborhoods where both the schools and neighborhoods were about 90% White in 1990 and together dropped down to about 70% White by 1990. In contrast, the Whitest neighborhoods (trajectory group five) in the Racially Diverse District category were about 76% White in 1990 and declined to about 60% White in 2010.

Looking at the patterns across the three categories of districts, a few descriptive differences are apparent. First, schools and neighborhoods in Racially Diverse districts have larger composition gaps compared to schools in neighborhoods in Majority White school districts (that is, there is a wider gap between the solid and dashed lines in the Racially Diverse trajectory groups compared to the minimal gap between the solid and dashed lines in the Majority White school district). Second, schools and neighborhoods in Racially Diverse districts seem to experience less change between 1990 and 2010 compared to schools and neighborhoods in either the Majority White or the Majority Black Districts. This pattern is best illustrated by

[26] Appendix Table C.1 shows the results from all three group-based trajectory models, but due to the difficulty of interpreting trajectory models in table-form, I rely on trajectory plots to describe these results.

comparing trajectory group five in the Racially Diverse districts to trajectory group four in the Majority White districts and trajectory group four in the Majority Black districts. All three of these trajectory groups start out around 75% White in the neighborhood. But, while these neighborhoods in the Racially Diverse districts decline to about 60% White, these neighborhoods drop to less than 50% White in the Majority White districts and plummet to less than 25% White in the Majority Black districts.

Figure 4.1 GBTM Results by School District Racial Composition Categories



Therefore, despite similar starting points, these 75% White neighborhoods undergo very different rates of change within these three different categories of school districts. These descriptive results suggest that the racial diversity of a school district may shape how schools and neighborhoods within it experience racial turnover, but, again, I cannot control for other factors, like socioeconomic status, school choice, or population density, which vary across these

districts and that may explain these different rates of change. Therefore, I next move to a growth-curve modeling framework.

4.4.3 Growth-Curve Models

Having established descriptive differences in neighborhood and school change between districts with varying racial compositions in 1990, I use growth-curve models to examine whether the differences in school and neighborhood change trajectories between these categories of school district racial composition arise from socioeconomic, school choice availability, or urbanicity variation across these districts. In Table 4.2, I present results from two sets of growth curve models, one for neighborhood change and one for school change. In both sets of models, I first present models where time and time-squared are interacted with the school district racial composition category, to explore how the effects of time vary across these categories, and in the second set of models I add several control variables.

For changes in neighborhood percent White in Model 1, the main effect of time indicates that neighborhoods tended to lose White residents between 1990 and 2010, however, the squared effect of time is positive which means that these losses in percent White attenuated over time. I use the Racially Diverse districts as the reference group, and I find a significant interaction effect between the time trajectories and the district composition category, showing that neighborhoods in racially diverse school districts experience different trajectories of change over time compared to neighborhoods in majority White or majority Black districts.

Table 4.2 Growth Curve Model Results for Neighborhood & School Percent White

	Neighborhood Percent White (1990, 2000, 2010)						School Percent White (1990, 2000, 2010)					
	M1			M2			M3			M4		
	Coef.		(SE)	Coef.		(SE)	Coef.		(SE)	Coef.		(SE)
Time	-.19	***	(.01)	-.16	***	(.01)	-.15	***	(.01)	-.14	***	(.01)
Time squared	.05	***	(.00)	.03	***	(.00)	.04	***	(.00)	.03	***	(.00)
District Composition in 1990 (ref: Racially Diverse)												
Majority White	.27	***	(.04)	.28	**	(.09)	.35	***	(.04)	.36	***	(.07)
Majority Black	.10	+	(.05)	.15	*	(.07)	.06		(.04)	.10	*	(.05)
Time x District Composition in 1990 (ref: Racially Diverse)												
Majority White x Time	.01		(.01)	-.03	*	(.01)	.00		(.02)	-.025		(.02)
Majority Black x Time	-.10	***	(.02)	-.13	***	(.02)	-.05	*	(.02)	-.05	**	(.02)
Majority White x Time sqd	-.03	***	(.00)	-.01	**	(.00)	-.04	***	(.00)	-.02	***	(.00)
Majority Black x Time sqd	.01	**	(.00)	.03	***	(.01)	.00		(.01)	.01	+	(.01)
Demographic Controls												
Neighborhood Poverty Rate				-.59	***	(.03)				-.53	***	(.03)
Neighborhood % College Graduate				.57	***	(.02)				.38	***	(.02)
School Choice Availability												
Charters within 2 miles in 2010				-.04	***	(.01)				-.04	***	(.01)
Any Magnets within 2 miles in 2010				.05	***	(.02)				.01		(.02)
Private Schools within 2 miles in 2010				-.03	***	(.01)				-.05	***	(.01)
District Open Enrollment (ref=none)				.18	***	(.05)				.10	*	(.04)
High District Ratio of Charter to Public Students in 2010 (ref=low)				-.06		(.06)				-.02		(.04)

High District Ratio of Private to Public Students in 2010 (ref=low)				.13	*	(.05)				.05		(.04)
District Urbanicity												
Logged Neighborhood Population Density				-.0004	***	(.00)				-.0005	***	(.00)
Countywide School District (ref=0)				-.22	*	(.09)				-.10		(.07)
Logged District Population Density				-.01	**	(.00)				.00		(.00)
Constant	.45	***	(.03)	.49	***	(.08)	.33	***	(.03)	.37	***	(.06)
Random-effects parameters†												
School District random slope on time	.0003		(.0001)	.001		(.0002)	.001		(.0001)	.0001		(.00)
School District random intercept	.01		(.0001)	.002		(.0001)	.00		(.00)	.01		(.00)
Neighborhood/School random slope on time	.01		(.0002)	.004		(.0001)	.01		(.00)	.00		(.00)
Neighborhood/School random intercept	.05		(.002)	.03		(.001)	.05		(.00)	.03		(.00)
Covariance of random slopes and intercepts	-.01		(.0001)	-.01		(.0004)	-.01		(.00)	.01		(.00)
Variance of Residual	.003		(.0001)	.0003		(.0001)	.00		(.00)	.00		(.00)
AIC	-6873			-8425			-6503			-7437		
BIC	-6772			-8251			-6402			-7263		

*** - p<.001, ** - p<.01, * - p<.05, + - p <.1; n = 2,993 schools-neighborhoods; 8,979 observations

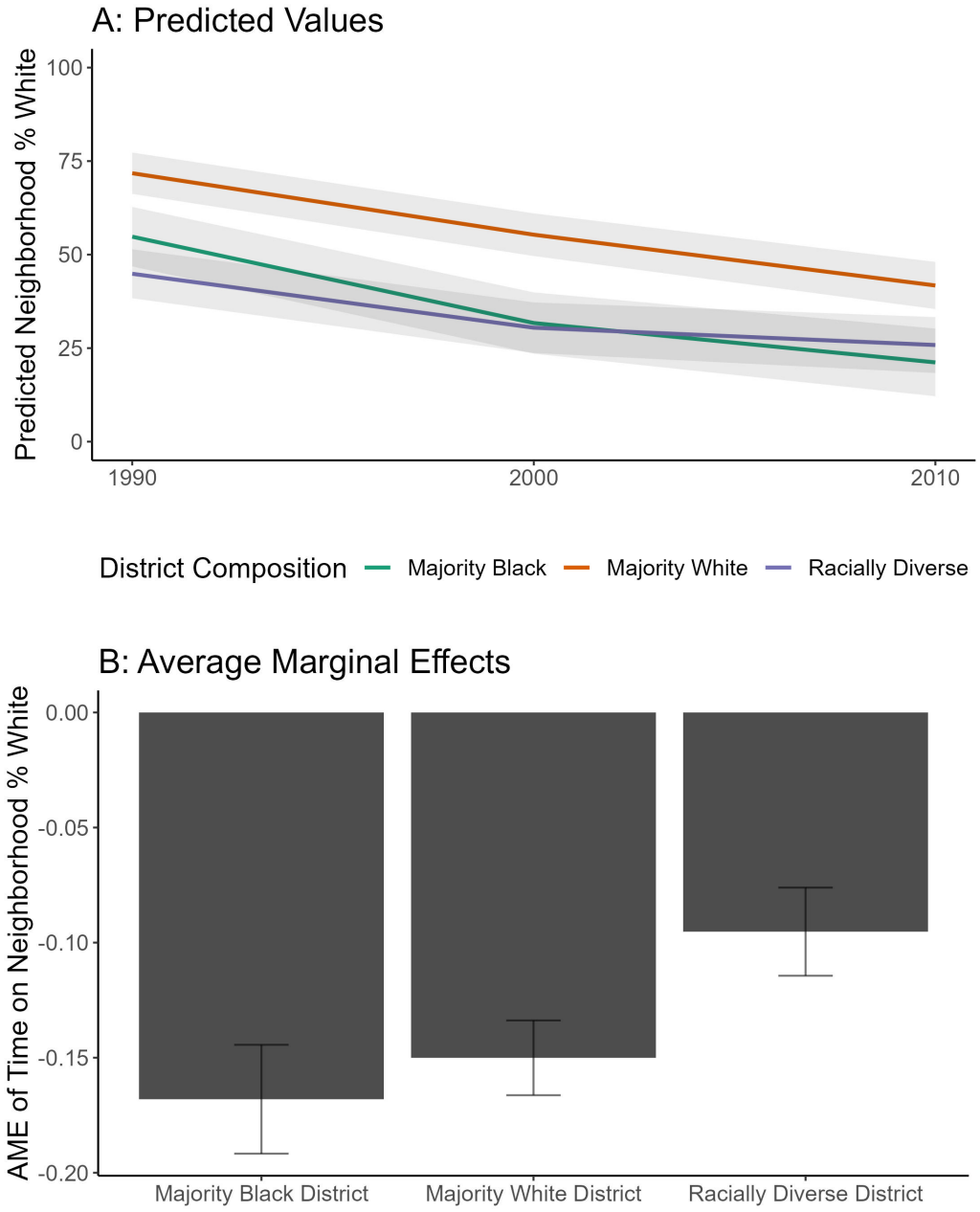
† Models with each set of random effects parameters all offer an improvement in AIC/BIC over models without

Data Source: Author's Original Longitudinal Dataset, 2024

I plot these results from Model 1 in two different ways in Figure 4.2. Panel A of Figure 4.2 presents predicted values of percent White for neighborhoods within each of these three district categories in 1990, 2000, and 2010. In panel A, the average predicted neighborhood in the Majority White District (orange line) is expected to be just over 70% White in 1990 and decline to about 42% White by 2010. The average neighborhood in the Majority Black District is expected to drop from around 55% White in 1990 to just 21% White in 2010. In other words, neighborhoods in both Majority White and Majority Black districts are expected to lose more than 30 percentage points of White residents over these 20 years. In contrast, neighborhoods in Racially Diverse districts are expected to decline from about 45% White to 26% White, only losing 19 percentage points. Although these differences are statistically significant, the different starting points of these trajectories make these results difficult to compare across districts.

Panel B of Figure 4.2 presents the average marginal effect of time within each of the three district categories. The average marginal effect of time captures the average effect of increasing time by one unit (i.e. from 1990 to 2000 and from 2000 to 2010). Although the average marginal effect averages across the quadratic term for time, this approach offers the simplest comparison across district categories (these results are also consistent with results from models using a non-parametric approach to time using dummy variables). I find that Racially Diverse districts have the smallest average marginal effect of time: a one-unit change in time is associated with an under 10 percentage point decline in neighborhood percent White, compared to about a 15 percentage point decline in Majority White districts and a 17 percentage point decline in Majority Black districts. Overall, these plots show that neighborhoods in the Racially Diverse school districts lose fewer White elementary school-aged residents, while the Majority White and Majority Black districts experience more rapid White flight from neighborhoods.

Figure 4.2 Predicted Value and Average Marginal Effects of District Racial Composition Category on Neighborhood Change

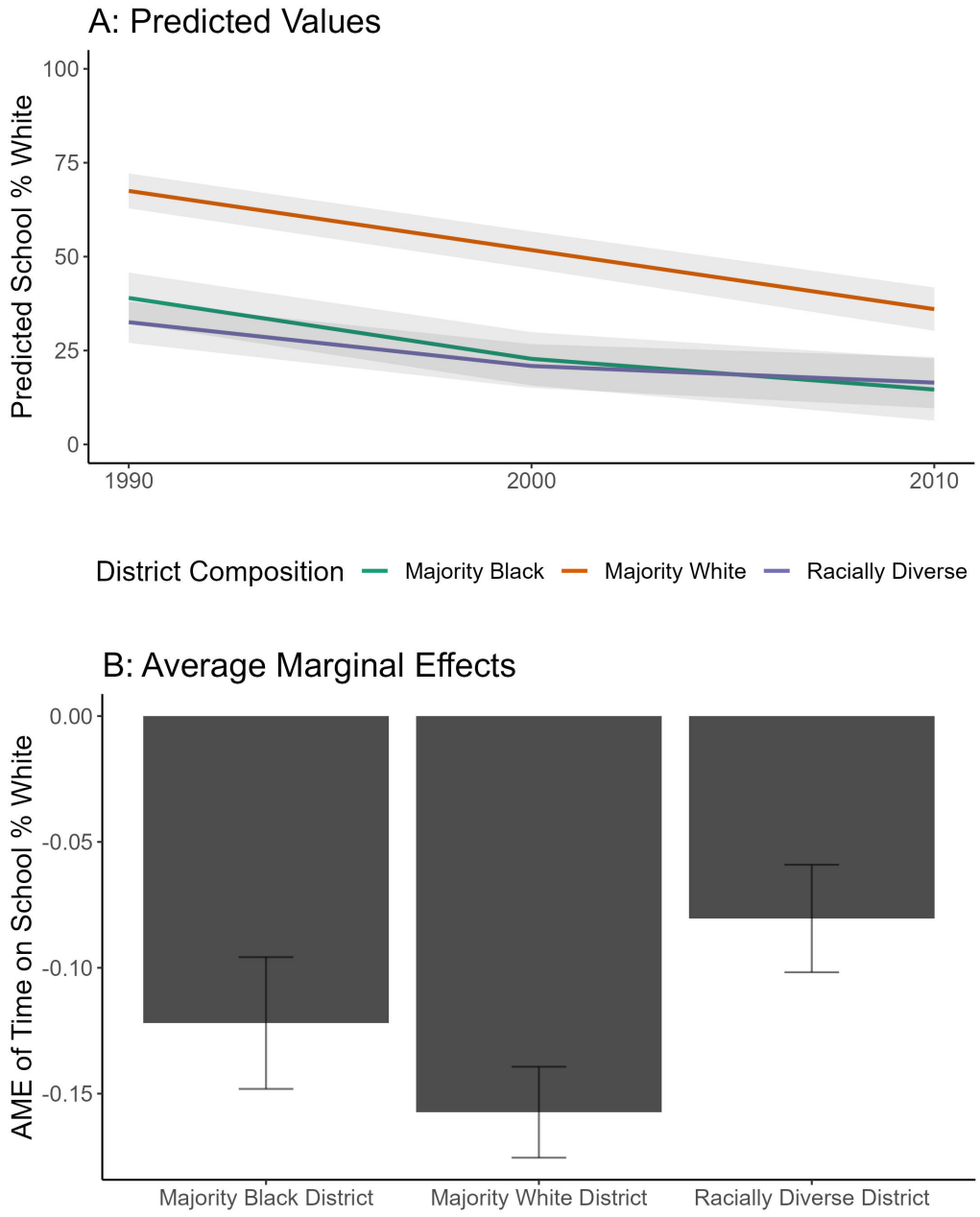


Turning to the school change results in Model 3 in Table 4.2, I similarly find an overall negative effect of time on school percent White, indicating that schools tended to lose White students over time, as well as a positive effect on time squared, indicating that this loss attenuates over time. In addition, I also find a significant interaction between the time trajectory and the district composition category,

which means that the trajectories of percent White are significantly different between the Racially Diverse districts compared to the Majority White and Majority Black districts. In Figure 4.3, I present the predicted values of school percent White over time within each of these three district categories in Panel A, as well as the marginal effect of time on school change in panel B. Panel A reveals that schools in Majority White districts are expected to decline from 67% White in 1990 to just 36% White in 2010, a drop of 30 percentage points. Schools in Majority Black Districts are also expected to lose almost 25 percentage points of White students (declining from about 39% White in 1990 to 15% White in 2010). In contrast, neighborhoods in Racially Diverse districts are expected to lose about 16 percentage points of White students (from 33% in 1990 to 16% White in 2010).

Panel B shows that the average marginal effect of time is also smallest in Racially Diverse districts, where a one unit change in time is associated with about an eight percentage point decline in White students. Majority Black schools are expected to have a decline of 12 percentage points, while Majority White districts are expected to lose the greatest proportion of White students in schools, a nearly 16 percentage point decline in percent White students for a one unit change in time. Together, these results confirm the patterns observed in the descriptive group-based trajectory models, Racially Diverse districts experienced the smallest decline in percent White in their schools and neighborhoods, compared to schools and neighborhoods in Majority White or Majority Black school districts.

Figure 4.3 Predicted Value and Average Marginal Effect Results from Model 3

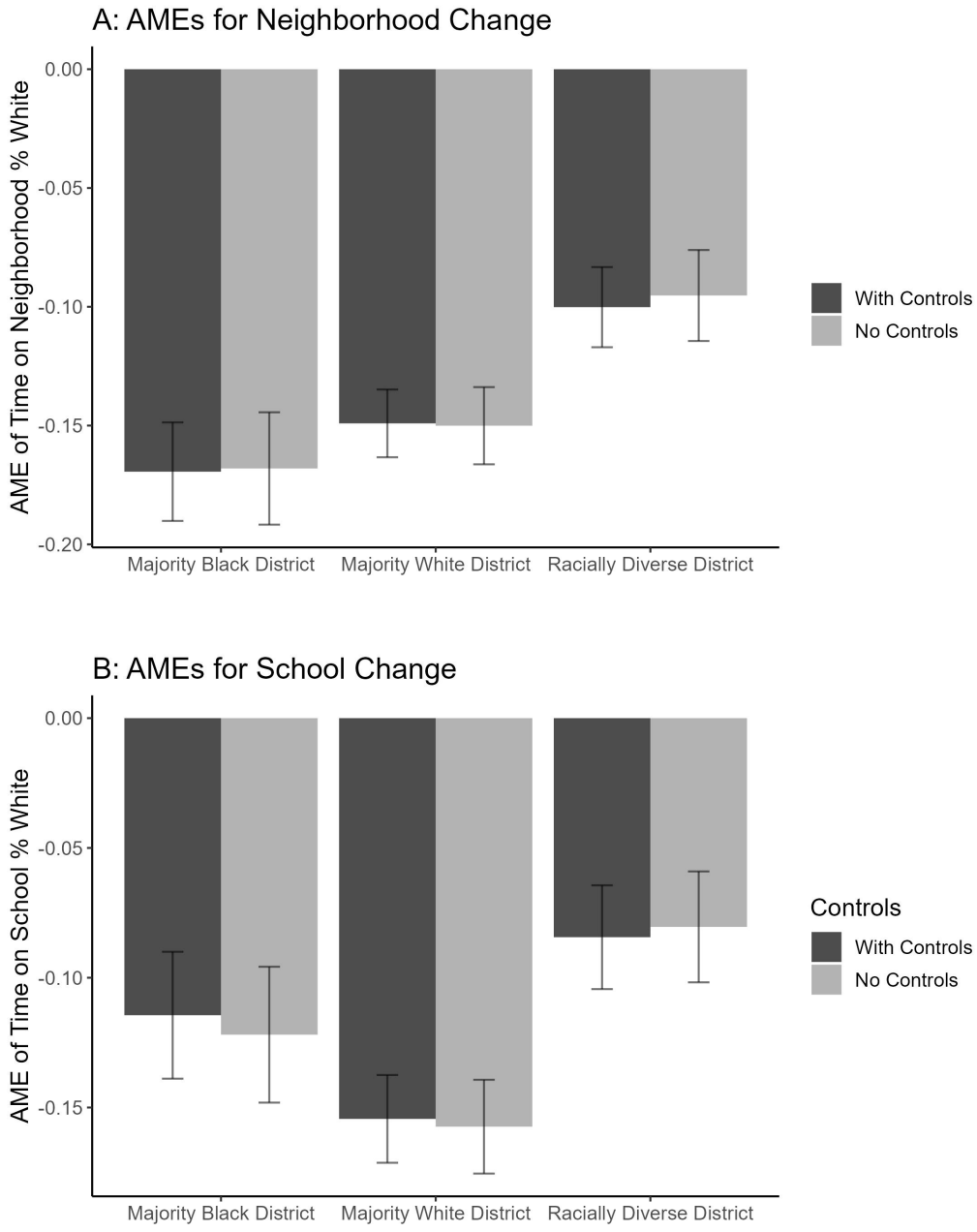


Note: Confidence intervals for the AMEs for the Racially Diverse school districts and the Majority Black districts overlap, but testing the difference between these AMEs shows that these two groups are statistically significantly different.

Having established these cross-district differences in Models 1 and 3, I next examine whether these differences across districts remain once I account for other variables that vary across school districts. I describe the results from Models 2 and 4 in depth in Appendix C.

Overall, many of these neighborhood- and district-level factors significantly predict neighborhood and school percent White. However, comparing the coefficients for the interaction between the time trajectory and the school district composition, it appears that these significant controls do not substantially change the differences between time trajectories across districts. In Figure 4.4, I show how the average marginal effects of time for models 1 compared to model 2 for neighborhood change, and for models 3 compared to model 4 for school change. Focusing first on Panel A for neighborhood change, I find that adding in these controls increases the average marginal effect of time only slightly for Racially Diverse and Majority Black school districts, while slightly reducing the average marginal effect of time for Majority White school districts. However, these small differences have little overall effect on the significant differences in the average marginal effects between the categories of school districts. Even after accounting for a large set of socioeconomic, school choice, and population density control variables, I continue to find that neighborhoods in Racially Diverse school districts change the slowest over time, compared to Majority White and Majority Black districts.

Figure 4.4 Comparing Average Marginal Effects of Time Before and After Adding Controls



Similarly for school change, I find that, overall, these control variables have little net effect on the differences in time trajectories across the three categories of school districts. As shown in Panel B of Figure 4.4, Racially Diverse school districts have the smallest average marginal effects of time, compared to Majority Black and Majority White districts, even after

controlling for socioeconomic, school choice, and density variables. Therefore, overall, I find support for hypothesis 2 and show that neighborhoods and schools in Racially Diverse school districts experience smaller declines in percent White while schools and neighborhoods in Majority White and Majority Black school districts lose more Whites.

4.4.4 Exploratory Growth Curve Models of School and Neighborhood Change on District Racial Composition

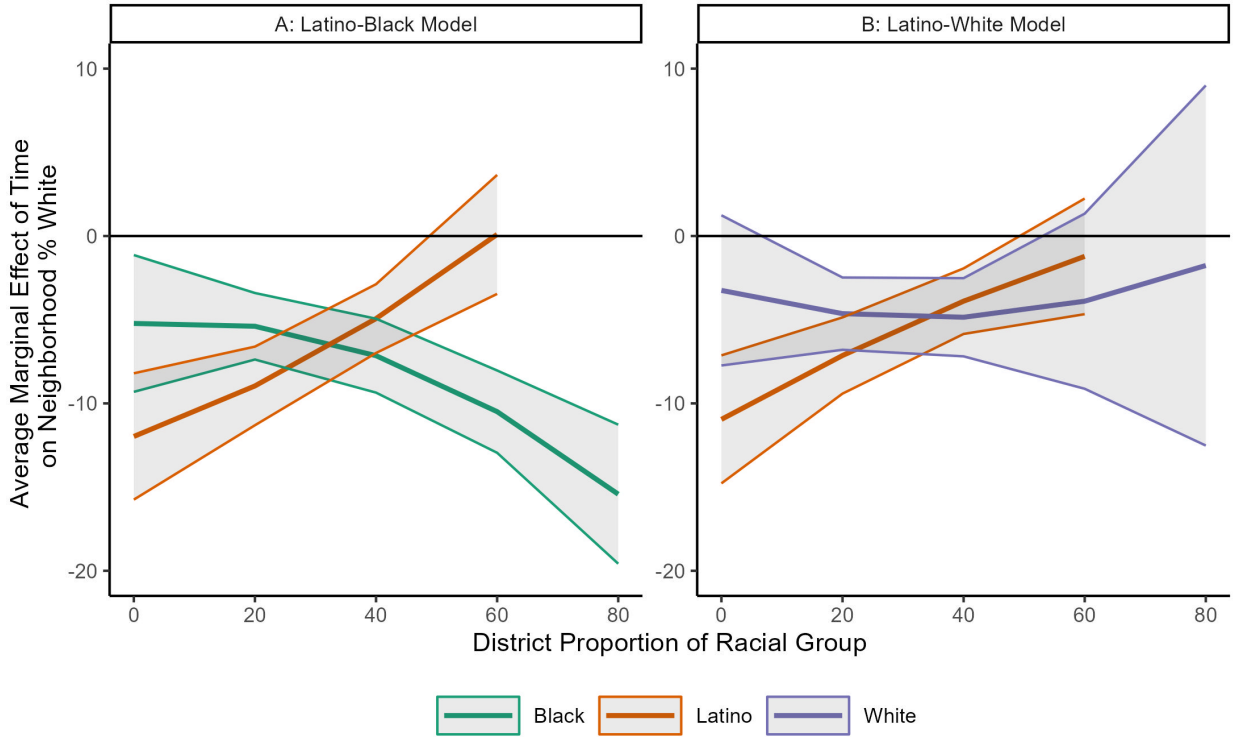
Thus far, I have established that Racially Diverse school districts experience slower rates of White flight in both neighborhoods and schools compared to neighborhoods and schools in Majority White or Majority Black districts, even after accounting for variation in socioeconomic, school choice, and urbanicity measures across these neighborhoods and districts. However, these results do not explain whether the differences across these three categories arise from greater numbers of Latino residents or a balance between the three major racial groups in the racially diverse districts. Therefore, as a final set of analyses, I present preliminary results from growth-curve models exploring how the district percent Black, Latino, and White each affect how schools and neighborhoods experience racial turnover over time.

The previous analyses explored how the racial composition of districts in 1990 shaped future change in schools and neighborhoods, but these analyses model the composition of the district as a time-varying predictor of neighborhood and school change. However, these models are more complex than the previous models and I only have a small number of school districts (22). Thus, these analyses are low power, and I only expect to find clear results if the effects are fairly large. Even so, these analyses are still useful in that they provide an indication of how the racial composition of districts drives differences between the three categories of districts and suggest which racial groups may have the biggest impact on school and neighborhood change.

I present the results from these models in Appendix Table C.1, but given the complexity of the models, I use the average marginal effects from these models in Figure 4.5 to describe the results. In Figure 4.5, I plot the average marginal effects of time on neighborhood change in percent White at varying levels of District percent Black, White, and Latino. Panel A of Figure 4.5 shows the results for the model with District percent Black and District percent Latino.

Focusing first on the green line, as the percent Black in the district increases along the X-axis, the average marginal effect of time decreases, becoming more and more negative. A neighborhood in a district without any Black children is expected to lose five percentage point of Whites for each one unit change in time, but a neighborhood in a district that is 80% Black is expected to lose over 15 percentage points of White elementary school-aged residents. Therefore, this decreasing average marginal effect suggests that neighborhoods in districts with more Black children lose more White elementary school-aged residents. In contrast, the orange line illustrating the impact of the district percent Latino suggests that in a more Latino district, neighborhoods are expected to lose fewer Whites. A neighborhood in a district without any Latinos is expected to lose nearly 12 percentage points of White elementary school-aged residents for a one unit change in time, while the percent White of a neighborhood in a district that is 60% Latino is expected to remain stable over time.

Figure 4.5 Average Marginal Effects of District Composition on Neighborhood Change



Panel B of Figure 4.5 shows the average marginal effects of time on neighborhood change from the model with District percent Latino and District percent White. The average marginal effects at varying levels of District percent Latino are nearly identical across panels A and B; therefore, in a model with percent White, increasing District percent Latino is still associated with losing fewer White elementary school-aged residents in neighborhoods. In contrast, the effects of District percent White are largely flat, though with a slight curve. Neighborhoods in districts with the fewest and the most White children are expected to change the least, while neighborhoods in Districts around 40% White are expected to lose the greatest proportion of their White elementary school-aged residents.

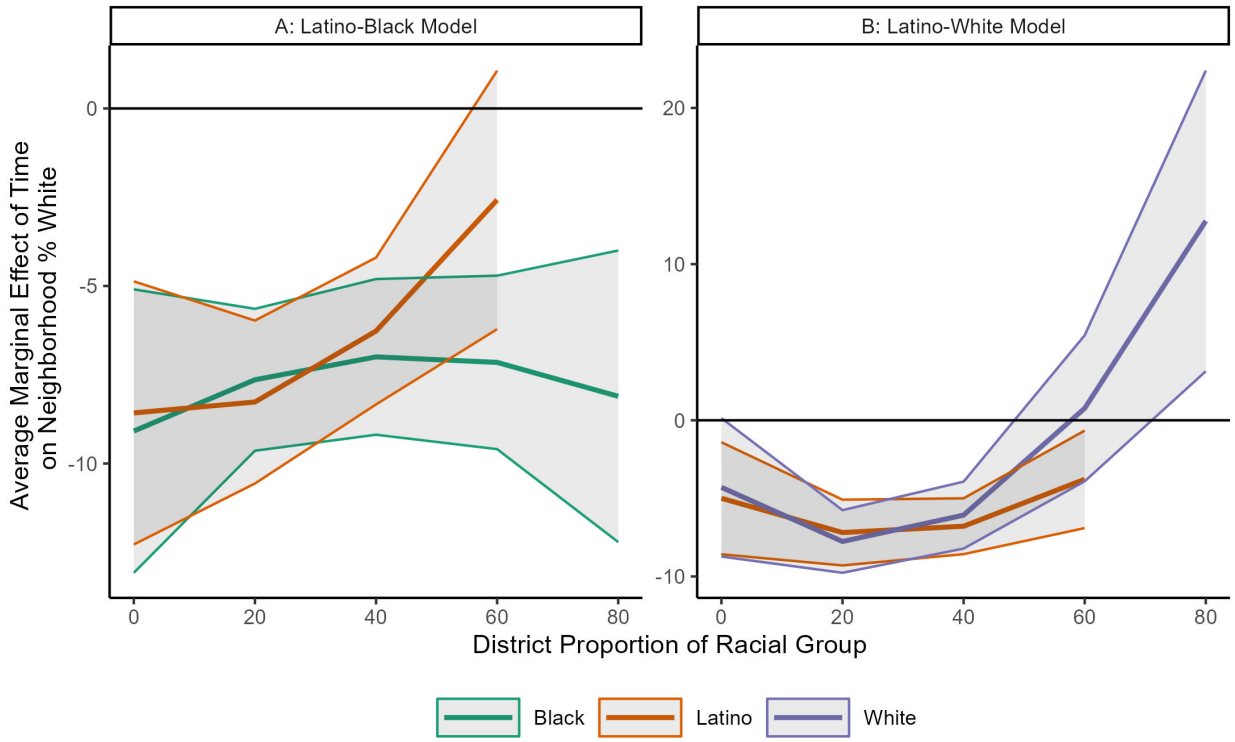
However, across all these average marginal effects, the confidence intervals are quite wide, particularly at the extremes of district racial composition. Due to my limited sample size of only 22 school districts, there are limits to the conclusions I can draw from these analyses. These

results offer suggestive evidence that neighborhoods in districts with greater Latino representation change more slowly while neighborhoods in districts with more Black residents change more rapidly. This would suggest that my results from the group-based trajectory models could be driven by the greater representation of Latinos in the Racially Diverse Districts, supporting hypotheses 3b. However, given that I have no school districts with more than 60% Latinos, it is not clear whether overwhelmingly Latino districts would still exhibit this pattern of slower White flight. In addition, the largely flat relationship between neighborhood change and district percent White is surprising, but the very large confidence intervals for predominantly White districts (above 60%) make it difficult to draw any conclusion about neighborhood change in the Whitest districts. Therefore, although these results suggest an important role of Latino composition is affecting rates of neighborhood change, these analyses should be considered preliminary.

Turning to the results for school change, I plot the average marginal effects of time on school change in percent White in Figure 4.6. Notably, the patterns of these marginal effects are distinct from those for neighborhood change. In panel A, I find a positive relationship between District percent Latino and school change, such that schools in districts without any Latinos are expected to lose nearly 9 percentage points of White students, while schools in 60% Latino districts are expected to lose just 3 percentage points of White students. However, unlike the negative average marginal effect of district percent Black on neighborhood change, I find little overall effect of percent Black on school change. Turning to the results from the Latino-White model in panel B, when district percent White is included in the model with percent Latino, I find little net effect of District percent Latino on school change in percent White. In contrast, I find that schools in Districts with less than 60% White children have a negative average marginal

effect of time, indicating that these schools tended to lose White students across time points. But schools in Districts with 60% or more White children are expected to gain White students.

Figure 4.6 Average Marginal Effects of District Composition on Neighborhood Change



These results suggest that District percent White may have the greatest impact on school changes, while District percent Black and Latino each have a weak or non-significant relationship with school change. But, similar to the limitations on my results for neighborhood change, these results have rather large confidence intervals. Interestingly, although schools and neighborhoods have similar patterns of change in the group-based multi-trajectory results, these results together suggest that District percent Latino has a stronger association with neighborhood change while District percent White has a stronger association with school change. Overall, the results from these exploratory growth-curve models on district percent Black, Latino, and White offer important nuances to the results examining the patterns of change across the categories of

school districts. The results from the analyses on district categories suggest that change unfolds more slowly in schools and neighborhoods in Racially Diverse school districts, and these exploratory models suggest that greater Latino representation may reduce White flight in neighborhoods, but not in schools. Therefore, while I find some supportive evidence for hypothesis 3b, there remain open questions about how exactly racial diversity and composition may operate to shape neighborhood and school change.

4.5 Discussion

As Farley and Frey (1994) argue, segregation is shaped within local contexts. The racial histories, suburbanization patterns, housing stock, and economic structures of metropolitan areas all have a hand in shaping the segregation of racialized minorities and Whites at the neighborhood-level. In a separate literature, studies of macro-level segregation patterns have noted that racial segregation is increasingly occurring across larger areas of geography, in particular across city and county lines, rather than within cities (Lichter et al. 2024, 2015). Together, these literatures illustrate that neighborhoods (and schools) are shaped by the metropolitan areas in which they are located. Parents are making decisions about where to live and where to send their children to schools based on the options available to them in these broader contexts (Bruch and Swait 2019; Crowder 2000; Krysan and Crowder 2017). In this chapter, I build upon these literatures with two main contributions to show how the presence and proportions of different racial groups at the metropolitan level shapes how the schools and neighborhoods within them experience racial turnover.

First, I find that neighborhoods and schools located in racially diverse school districts experience lower rates of White flight, compared to neighborhoods and schools in either majority White or majority Black school districts. Majority White and majority Black districts see more

rapid racial turnover even after accounting for differences in neighborhood-level socioeconomic status, school choice availability, and urbanicity of school districts. These findings align with past research suggesting that multiethnic metro areas tend to have larger declines in Black-White segregation and more stably integrated neighborhoods (Charles 2003; Ellis et al. 2018; Reibel and Regelson 2011). However, other research suggests that measures of White racial isolation are higher in metro areas with greater racial diversity, particularly larger Black populations, (Iceland and Sharp 2013), so it is possible that lower rates of White flight in racially diverse school districts does not necessarily translate to greater residential racial integration of Whites with other groups.

My second contribution is the preliminary evidence I offer showing that greater proportions of Latinos at the school district level may contribute to greater neighborhood stability in racially diverse school districts. I show that in districts with higher proportions of Latinos, neighborhoods are expected to lose fewer White elementary school-aged residents. These findings offer further support for the theory that Latino residents in neighborhoods can serve as a buffer group between White and Black residents (Parisi et al. 2015; Zhang and Logan 2016). As a greater presence at the school district-level, Latinos seem to reduce the motivations for White families to leave their neighborhoods over the 1990s and 2000s. Notably, in 1990, the primary racial divide in both majority White and majority Black school districts was between Black and White residents (that is, in majority White districts, the next largest racial group was Black children and in majority Black districts, the next largest racial group was White children). However, in both these categories of districts, Latinos grew considerably over the subsequent 20 years, and by 2010, the majority White districts looked more like the Racially Diverse districts in

1990. Therefore, it is possible that the presence of Latinos only has this impact of reducing White flight at relatively high levels of percent Latino (Hall and Hibel 2017).

There are of course several limitations to this study; most importantly, my data only includes 22 school districts from which to draw inferences about the impacts of district percent Latino, White, and Black on school and neighborhood change. Therefore, while I show that districts that were racially diverse in 1990 tended to experience less school and neighborhood White flight over the subsequent 20 years, compared to majority Black and majority White districts, I am limited in my ability to pinpoint what exactly about the racial composition of these racially diverse districts provides this stabilizing effect. In addition, in focusing on the neighborhoods and schools within these 22 school districts, I am not accounting for nearby, suburban districts that may provide alternative school options for parents. Although some of my school districts are county-wide and include both city centers and more suburban areas, many of these districts are city-based, such as Chicago, New York City, and Milwaukee. Many parents, especially White parents, choose their children's schools by moving out of the city limits and into nearby suburban districts (Lareau and Goyette 2014; Rhodes and Warkentien 2017). Therefore, in looking only at schools and neighborhoods within these school districts, I am missing the population dynamics that arise from moves away from the city.

Finally, although these patterns of change arise out of the decisions that parents are making about where to live and where to send their children to school, I only observe the impact of those aggregate decisions on the racial composition of these contexts. Overall, this research points to the potential impact that the presence of Latinos may have on changing racial turnover dynamics in schools and neighborhoods. These findings offer suggestive evidence that greater numbers of Latinos may affect how parents understand their neighborhoods and their likelihood

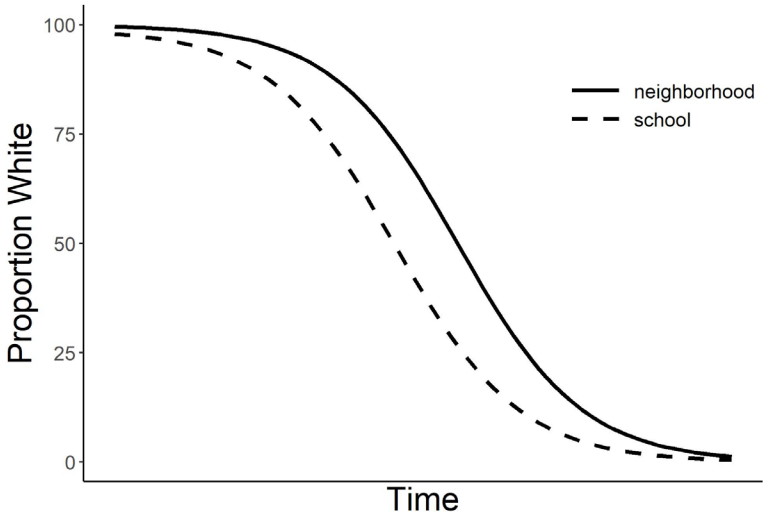
of moving away from diversifying metro areas, but I cannot identify these individual-level processes. Future research should build upon this research to consider how metro-level contexts shape how parents understand their options for schools and neighborhoods, their preferences for these contexts, and the decisions that parents ultimately make.

Chapter 5 Conclusion

In this dissertation, I advance a theoretical framework to understand how the link between schools and neighborhoods generates cascading effects on demographic change. My empirical chapters each examine this relationship between neighborhoods and schools from a different level of analysis: building up from individual parents' decisions in Chapter 2 to neighborhood- and school-level demographic change in Chapter 3 to an investigation of metro-level contexts in Chapter 4. Together, these studies offer important insights into the relationship between neighborhoods and schools—how this relationship is maintained by parents' choices (particularly White parents' choices), how this relationship is weakened by school choice, and how this relationship is shaped by macro-level contexts. To conclude, I offer some unanswered questions, outline directions for future research, and consider policy implications.

In our model of coupled tipping, I, along with my coauthors, suggest that schools and neighborhoods are linked, but imperfectly so (Field et al. 2024). We find that schools tend to be less White than their neighborhoods, and we suggest that these composition gaps arise partly due to the process of change within these contexts. Figure 5.1 depicts our theoretical model of coupled tipping, and although we are unable to observe the very beginning of this process in our empirical data, we hypothesize that school change initiates before neighborhood change, as parents opt out of their local public schools as these contexts start becoming racially diverse. We suggest that this initial opting out of White parents from predominantly White schools introduces this composition gap and foretells future neighborhood turnover.

Figure 5.1 Theoretical Model of Coupled Tipping from Field, Swait, and Bruch (2024)



However, this composition gap can exist only in contexts where parents have alternative school options available to them. In neighborhoods with more school choice options, this gap between school and neighborhood compositions is larger (Bischoff and Tach 2018; Saporito and Sohoni 2006) and, as I show in Chapter 3, these neighborhoods experience slower rates of White flight. Conversely, in neighborhoods without alternative school options, the racial compositions of schools and neighborhoods are more closely tied, and Whites leave schools and neighborhoods together at higher rates. Together, these findings from this dissertation and past research suggest that the composition gap between schools and neighborhoods and the rates at which schools and neighborhoods experience demographic change are inversely related. Using my data from Chapters 2 and 3, I can confirm that the composition gap between these contexts is inversely correlated with neighborhood change (correlation = -.19). This would suggest that neighborhoods and schools that more closely reflect each other may be more vulnerable to rapid racial turnover. However, I am limited in my ability to examine the causal relationship between these composition gaps and rates of racial turnover in this data, and future research should investigate whether school-neighborhood composition gaps predict neighborhood change. If so,

these findings would provide important, actionable information that cities and school districts could use to understand demographic changes in their neighborhoods and schools.

In addition, this relationship between wider composition gaps and slower neighborhood change also suggests that White parents' decisions play a uniquely important role in racial turnover. As I show in Chapter 2, White parents prefer Whiter schools and neighborhoods together, and when one of these contexts is Whiter, they prefer even more racial isolation in the other. However, families are not always able to move when their children are school-aged and many parents only make school decisions after they have moved (Cuddy et al. 2020). Therefore, my results from Chapter 3 would suggest that school choice availability offers an escape valve for parents that may allow them to meet their school preferences when they cannot do so in their local public schools, which in turn slows neighborhood White flight.

Proponents of school choice may see these findings as supportive of the idea that allowing parents to meet their school preferences can stem the loss of White families from urban school districts and, as shown in other research, decrease neighborhood segregation (Rich et al. 2021). However, I would urge an alternative interpretation of the findings from this dissertation, which together suggest that White parents pursue Whiter contexts in whatever ways are available to them, whether through school choice or through residential moves. Therefore, rather than an optimistic picture of the potential of school choice to decrease White flight, these findings suggest that we are between a rock and a hard place: either White parents can use school choice to opt out of racially diverse schools or they can move away from racially diverse neighborhoods altogether. When White parents will pursue White schools and neighborhoods as a package deal, even if racially diverse options offer equal school and neighborhood quality, school choice may stem White flight even as it increases segregation and racial isolation in schools (Frankenberg et

al. 2011; Garcia 2008; Kotok et al. 2017; Logan and Burdick-Will 2016; Monarrez et al. 2022). In other words, school choice as a policy prescription does not solve educational inequality when White parents are actively enabled and encouraged to use their privileges to secure advantages for their own children at the expense of others (Diamond and Lewis 2022; Hanselman and Fiel 2017; Underhill, Brunsma, and Byrd 2018; Zelizer 1994).

It would be hard to overstate the importance of racial and ethnic segregation in American schools and neighborhoods. The schools and neighborhoods where American children grow up shape their life trajectories and help determine whether the inequalities among their parents' and grandparents' generations are reproduced in their own lives. Racial segregation in schools increases educational inequality, harms students' ability to form relationships between peers of other races, and concentrates disadvantage in under-resourced schools (Lleras 2008; Logan et al. 2012; Owens 2020; Reardon 2015). As the country continues to diversify, cities and communities have both integrated and adapted to new forms of racial-ethnic segregation (Logan and Zhang 2010). Understanding how schools intersect with these population changes is especially important because the population of school-aged children is more racially and ethnically diverse than the population as a whole (Alba 2020; Frey 2018). In a recent *Annual Review of Sociology* article, Peter Rich and Ann Owens (2023) call for a reorientation of research that has largely considered schools and neighborhoods separately to incorporate an understanding of how these contexts operate together as what they term "local neighborhood-school structures." In this dissertation, I offer a multi-level examination of how these two contexts are linked and how these linkages have cascading effects on parents, neighborhoods, schools, and school districts. I join the call for further research considering these contexts jointly and welcome the opportunity to be part of this ongoing conversation.

Appendices

Appendix A: Chapter 2 Supplemental Results

Appendix Figure A.1 Stated Choice Characteristic Definitions Provided to Survey Respondents

We will describe each neighborhood and its assigned school using the terms below. Please take a moment to read the descriptions so you can understand the terms used in the following questions.

Neighborhood property values	Property values in this neighborhood are **below**, **at**, or **above** average for the city
Neighborhood crime rate	Crime rate in the neighborhood is assessed as **low**, **average**, or **high** for the city
Neighborhood demographics	Racial and ethnic composition of **residents**
Percent proficient in reading and math	The **percent of students** at this school performing at or above grade level, based on state standardized tests
Low income	The **percent of students** at this school receiving free or reduced-price lunch based on family income
School demographics	Racial and ethnic composition of the **students** in the school

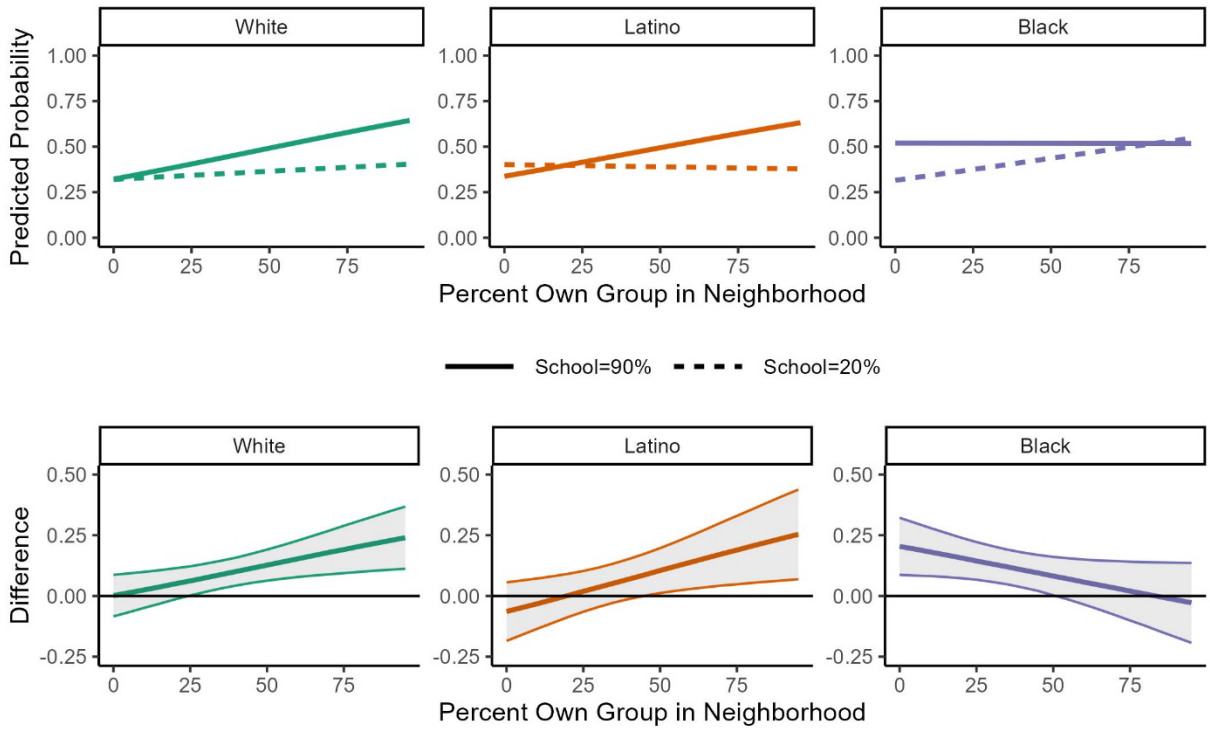
Appendix Table A.1 Results from Multinomial Logit Stated Choice Model on School and Neighborhood Characteristics

	Discrete Choice Selection (Ref: Continue searching)					
	Move to this neighborhood and send your child to this public school			Move to this neighborhood and homeschool/private		
	Coef.		(SE)	Coef.		(SE)
Neighborhood Composition						
Neighborhood % Own Group[1]	.032		(.041)	.086		(.052)
Neighborhood % Own Group x Race (ref:White)						
Black Parents	.184	**	(.067)	-.010		(.084)
Latino Parents	-.090		(.071)	-.036		(.092)
School Racial Composition						
School % Own Group[1]	.019		(.041)	.076		(.053)
School % Own Group x Race (ref: White)						
Black Parents	.168	*	(.068)	-.040		(.085)
Latino Parents	-.067		(.070)	-.049		(.090)
Neighborhood x School Composition Interaction						
Neighborhood x School % Own Group	.019	*	(.009)	-.008		(.012)
Neighborhood x School % Own Group x Race (ref: White)						
Black Parents	-.044	**	(.015)	-.003		(.019)
Latino Parents	.009		(.016)	.007		(.021)
Other Neighborhood Characteristics						
Crime Rate (ref: Average)						
Low	-.244	***	(.110)	.610	***	(.135)
High	.108	***	(.108)	-1.427	***	(.143)
Property Values (ref: Average)						
Below Average	.807	*	(.105)	-.302	*	(.140)
Above Average	-1.876		(.121)	.047		(.137)
Other School Characteristics						

Proficiency Rate[1]	.292	***	(.022)	-.028		(.027)
Poverty Rate[1]	-.026	+	(.015)	.020		(.020)
Parent's Racial Identity (ref: White Parents)						
Black Parents	-.138		(.278)	.989	**	(.356)
Latino Parents	.732	*	(.287)	.549		(.388)
Controls						
BA or more	-.272	*	(.132)	-.120		(.193)
Homeowner	-.216	+	(.130)	-.212		(.190)
Oldest child under 6	-.375	**	(.135)	.413	*	(.190)
Experiment Number	-.160	***	(.040)	-.041		(.050)
Previously Always Chose "Continue"	-.991	***	(.124)	-1.253	***	(.174)
Constant	-1.417	***	(.307)	-1.616	***	(.408)
Variance of REs	1.817		(.244)	4.417		(.561)

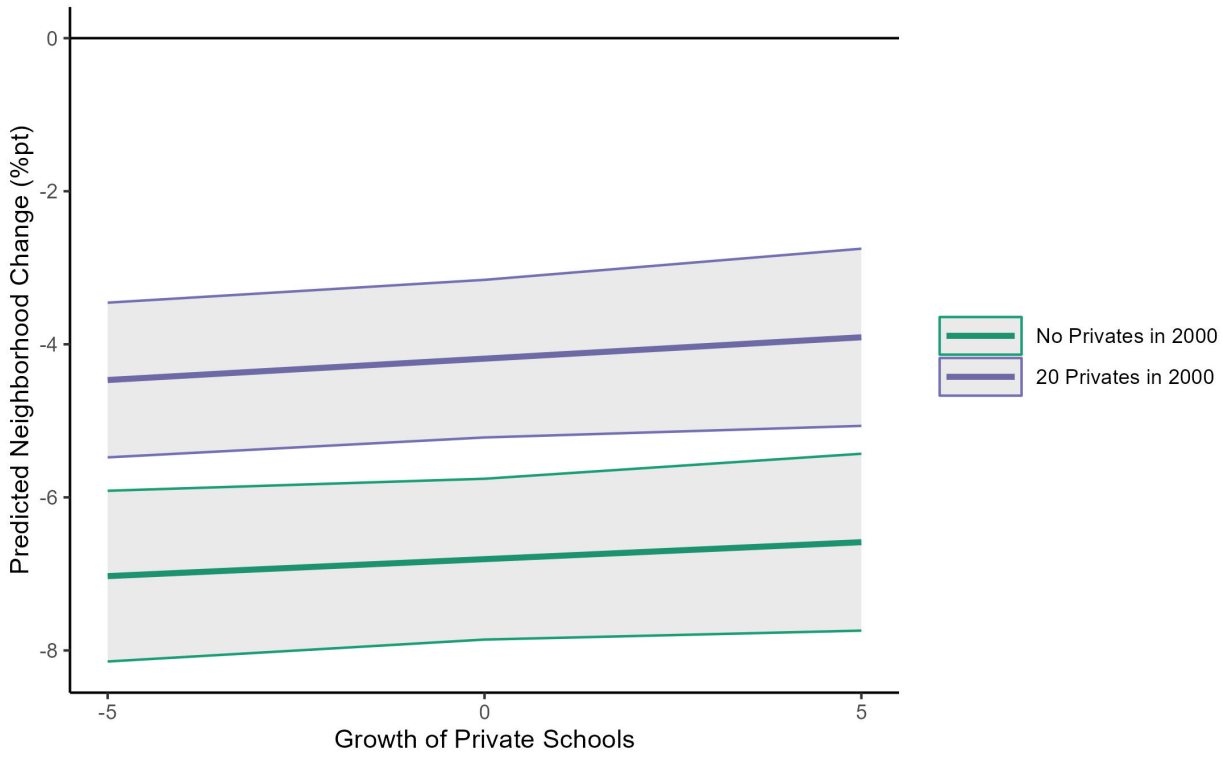
Notes: 1 - Percent own race in school & neighborhood, Proficiency Rate, and Poverty rate variables shown as 10 percentage point changes.
*** - p<.001, ** - p<.01, * - p<.05, + - p <.1; n = 1,210 respondents; 4,840 observations
Data Source: Author's Stated Choice Experiment, 2021

Appendix Figure A.2 Parents' Predicted Probability of Choosing the Neighborhood and School at Varying Levels of Neighborhood Racial Composition in Two School Contexts, by Parent Race



Appendix B: Chapter 3 Supplemental Results

Appendix Figure B.1 Relationship between Private School Availability and Neighborhood Change



Appendix C: Chapter 4 Supplemental Results

Appendix Table C.1 GBTM Results for Racially Diverse, School Districts

Outcome: Logit School Proportion White					Outcome: Logit Neighborhood Proportion White				
Group	Parameter	Estimate	se		Group	Parameter	Estimate	se	
1	Intercept	-6.28	0.05	***	1	Intercept	-5.05	0.05	***
	Linear	-0.01	0.12			Linear	-0.38	0.11	***
	Quadratic	0.14	0.06	**		Quadratic	0.20	0.05	***
2	Intercept	-4.29	0.07	***	2	Intercept	-3.06	0.07	***
	Linear	-0.86	0.13	***		Linear	-1.10	0.12	***
	Quadratic	0.32	0.06	***		Quadratic	0.38	0.06	***
3	Intercept	-2.12	0.07	***	3	Intercept	-1.27	0.05	***
	Linear	-1.41	0.12	***		Linear	-1.24	0.11	***
	Quadratic	0.33	0.06	***		Quadratic	0.31	0.05	***
4	Intercept	-0.61	0.07	***	4	Intercept	0.08	0.06	
	Linear	-0.97	0.14	***		Linear	-1.04	0.13	***
	Quadratic	0.16	0.07	*		Quadratic	0.24	0.06	***
5	Intercept	0.46	0.06	***	5	Intercept	1.37	0.06	***
	Linear	-0.33	0.14	*		Linear	-0.73	0.13	***
	Quadratic	0.06	0.07			Quadratic	0.15	0.06	*
	Sigma	0.88	0.01	***		Sigma	0.81	0.01	***

Group membership

1	24.3%
2	19.7%
3	22.5%
4	17.7%
5	15.8%

BIC=-14476.74 (N=9576); BIC=-14444.49 (N=1596)
AIC=-14347.74; ll= -14311.74

Notes: *p<.05; **p<.01; ***p<.001

Appendix Table C.2 GBTM Results for Majority White School Districts

Outcome: Logit School Proportion White					Outcome: Logit Neighborhood Proportion White				
Group	Parameter	Estimate	se		Group	Parameter	Estimate	se	
1	Intercept	-2.56	0.12	***	1	-3.10312	0.11	-27.51	***
	Linear	-3.28	0.30	***		-0.99806	0.26	-3.84	***
	Quadratic	1.03	0.14	***		0.25749	0.13	2.05	*
2	Intercept	-0.86	0.09	***	2	-0.58759	0.07	-8.39	***
	Linear	-2.12	0.18	***		-1.4867	0.16	-9.51	***
	Quadratic	0.44	0.09	***		0.27521	0.08	3.66	***
3	Intercept	0.39	0.05	***	3	0.62144	0.05	12.97	***
	Linear	-1.20	0.12	***		-1.22285	0.10	-11.97	***
	Quadratic	0.02	0.06			0.10945	0.05	2.25	*
4	Intercept	1.07	0.05	***	4	1.25914	0.05	27.40	***
	Linear	-0.58	0.10	***		-0.81993	0.08	-9.66	***
	Quadratic	-0.07	0.05			0.07313	0.04	1.82	
5	Intercept	2.15	0.07	***	5	2.22616	0.06	39.40	***
	Linear	-0.29	0.13	*		-0.44352	0.11	-4.00	***
	Quadratic	-0.20	0.06	**		-0.10957	0.05	-2.06	*
	Sigma	0.65	0.01	***		0.56683	0.01	63.31	***

Group membership

1	3.9%
2	10.8%
3	25.6%
4	38.1%
5	21.6%

BIC= -5681.36 (N=4872); BIC= -5649.11 (N=812);
AIC= -5564.52 ; ll= -5528.52

Notes: *p<.05; **p<.01; ***p<.001

Appendix Table C.3 GBTM Results for Majority Black Districts

Outcome: Logit School Proportion White					Outcome: Logit Neighborhood Proportion White				
Group	Parameter	Estimate	se		Group	Parameter	Estimate	se	
1	Intercept	-5.89	0.09	***	1	Intercept	-5.12	0.09	***
	Linear	-0.24	0.21			Linear	-0.65	0.20	**
	Quadratic	0.23	0.10	*		Quadratic	0.27	0.10	**
2	Intercept	-3.96	0.15	***	2	Intercept	-2.75	0.15	***
	Linear	-1.75	0.27	***		Linear	-1.42	0.26	***
	Quadratic	0.61	0.13	***		Quadratic	0.45	0.12	***
3	Intercept	-1.42	0.12	***	3	Intercept	-0.86	0.10	***
	Linear	-2.57	0.24	***		Linear	-1.94	0.23	***
	Quadratic	0.67	0.12	***		Quadratic	0.36	0.11	**
4	Intercept	-0.10	0.11		4	Intercept	0.75	0.11	***
	Linear	-1.45	0.24	***		Linear	-1.84	0.23	***
	Quadratic	0.16	0.11			Quadratic	0.32	0.11	***
5	Intercept	0.83	0.11	***	5	Intercept	2.49	0.11	***
	Linear	-0.26	0.27			Linear	-1.46	0.27	***
	Quadratic	-0.14	0.13			Quadratic	0.19	0.13	
	Sigma	0.92	0.02	***		Sigma	0.90	0.02	***

Group membership

1	26.6%
2	16.9%
3	20.7%
4	20.6%
5	15.1%

BIC= -4806.82 (N=2970)
BIC= -4774.57 (N=495)
AIC= -4698.89
ll= -4662.89

Notes: *p<.05; **p<.01; ***p<.001

Description of Results from Table 4.2. Focusing first on neighborhood change in Model 2, I include a set of neighborhood-level demographic control variables. I find that neighborhood poverty rate is negatively associated with neighborhood percent White, such that a one percentage point increase in neighborhood poverty rate is associated with .59 percentage point fewer Whites in the neighborhood. Neighborhood college graduates are positively associated with neighborhood percent White, such that a one percentage point increase in the rate of college graduates is associated with neighborhoods being .57 percentage points Whiter. I also include several measures of school choice availability: greater nearby availability to charter and private schools are negatively associated with neighborhood percent White, such that 10 additional charters and 10 additional private schools are associated with .4 percentage point and .3 percentage point fewer Whites, respectively. Districts with open-enrollment policies are associated with a .18 percentage points more Whites in their neighborhoods, compared to districts without open enrollment. Finally, districts with a greater than average enrollment in Private schools are expected to have neighborhoods that are .13 percentage points Whiter compared to districts with below average Private school enrollment. As my final set of predictors, I control for the population density and urban/suburban character of the school districts. I find that neighborhood-level population density is negatively associated with neighborhood percent White, indicating that denser neighborhoods are expected to have fewer Whites. Countywide school districts were also expected to have fewer Whites than non-county based school districts. Given that these countywide school districts include both central city and more suburban outskirts, this negative effect of countywide districts is the opposite of the expected direction of this effect. However, countywide school districts are also more common in Southern states, which may explain part of this negative effect.

Turning to the results for school percent White after adding controls, in Model 4 of Table 4.2, I find that neighborhood poverty is negatively associated with school percent White, while neighborhood percent college graduate is positively associated with school percent White, such that a one percentage point increase in neighborhood poverty is associated with a .53 decline in school percent White and a one percentage point increase in neighborhood percent college graduate is associated with .38 percentage points Whiter schools. Similar to the effects on neighborhoods, greater availability of charters and private schools are negatively associated with school percent White, while districts with open enrollment policies are expected to have .1 percentage point Whiter schools. For the urbanicity variables, I find a significant effect only for neighborhood population density, indicating that denser neighborhoods have less White schools.

Description of Exploratory Results on District percent Black, White, and Latino: Table C.1 presents these models for both neighborhood and school change, and I use two sets of models for each context: one model with district percent Black and district percent Latino, compared to a model with district percent Latino and district percent White. I also include the full set of controls from the previous analyses. For neighborhoods, model 1 shows significant interactions between time and district percent Latino, as well as district percent Black. When I include district percent White in model 2, I also find significant interaction between time and district percent White and Latino. Turning to the relationship between district composition and school change in Models 3 and 4 in Table 4.5, I find some significant interactions between time and district percent Latino and district percent Black in Model 3. However, when I model the relationship of District percent White and percent Latino on school change, I do not find any significant interactions between time and percent Latino, though district percent White has a significant interaction with the time trajectory.

Appendix Table C.4 Growth-Curve Models of School and Neighborhood Change on District Percent Black, Latino, and White

	Neighborhood Percent White (1990, 2000, 2010)						School Percent White (1990, 2000, 2010)					
	M1			M2			M3			M4		
	Coef.		(SE)	Coef.		(SE)	Coef.		(SE)	Coef.		(SE)
Time	-.12	***	(.02)	-.35	***	(.06)	-.07	**	(.02)	-.25	***	(.06)
Time squared	-.01		(.01)	.10	***	(.02)	-.04	***	(.01)	.08	***	(.02)
District Percent Latino												
District Percent Latino	-.48	+	(.25)	-.50	*	(.25)	-.59	*	(.26)	-.12		(.23)
Time x District Percent Latino	-.31	*	(.14)	.19		(.13)	-.25		(.16)	-.01		(.14)
Time sqd x District % Latino	.20	***	(.06)	.05		(.05)	.12	*	(.06)	.02		(.06)
District Percent Latino sqd	-.87	*	(.40)	-.23		(.41)	-.18		(.41)	-.34		(.37)
Time x District Percent Latino sqd	.79	**	(.27)	.27		(.25)	.48	+	(.29)	.36		(.25)
Time sqd x District Percent Latino sqd	-.30	***	(.09)	-.19	*	(.08)	-.11		(.09)	-.09		(.09)
District Percent Black												
District Percent Black	-.36		(.24)				-.32		(.25)			
Time x District Percent Black	.23		(.15)				-.03		(.16)			
Time sq x District % Black	-.03		(.05)				.12	*	(.05)			
District Percent Black sqd	-.07		(.30)				-.04		(.31)			
Time x District Percent Black sqd	-.51	**	(.19)				-.08		(.21)			
Time sqd x District Percent Black sqd	.13	*	(.07)				-.04		(.07)			
District Percent White												
District Percent White				.18		(.30)				-.46		(.28)
Time x District Percent White				.80	***	(.22)				.45	*	(.23)
Time sq x District % White				-.40	***	(.08)				-.32	***	(.09)
District Percent White sqd				.24		(.31)				.96	***	(.29)
Time x District Percent White sqd				-.69	**	(.21)				-.21		(.23)
Time sqd x District Percent White sqd				.43	***	(.11)				.40	***	(.12)

Demographic Controls												
Neighborhood Poverty Rate	-.61	***	(.03)	-.61	***	(.03)	-.56	***	(.03)	-.54	***	(.03)
Neighborhood % College Graduate	.55	***	(.02)	.55	***	(.02)	0.367	***	(.02)	.37	***	(.02)
School Choice Availability												
Charters within 2 miles in 2010	-.04	***	(.01)	-.04	***	(.01)	-.04	***	(.01)	-.04	***	(.01)
Any Magnets within 2 miles in 2010	.05	***	(.02)	.05	***	(.02)	.01		(.02)	.01		(.02)
Private Schools within 2 miles in 2010	-.03	***	(.01)	-.03	***	(.01)	-.05	***	(.01)	-.05	***	(.01)
District Open Enrollment (ref=0)	.18	***	(.04)	.17	***	(.03)	.13	***	(.04)	.14	***	(.03)
High District Ratio of Charter to Public Students in 2010	.06		(.04)	.06	+	(.04)	.02		(.04)	.02		(.03)
High District Ratio of Private to Public Students in 2010	.06		(.04)	.02		(.03)	.04		(.04)	.05		(.03)
District Urbanicity												
Logged Neighborhood Population Density	-.0004	***	(.00)	-.0004	***	(.00)	-.0004	***	(.00)	-.0004	***	(.00)
Countywide School District (ref=0)	-.13	*	(.05)	-.09	*	(.04)	.04		(.05)	.004		(.04)
Logged District Population Density	.00		(.00)	.01		(.00)	.00		(.00)	.004		(.00)
Constant	.80	***	(.07)	.45	***	(.09)	.67	***	(.07)	0.45	***	0.08

*** - p<.001, ** - p<.01, * - p<.05, + - p <.1; n = 2,993 schools-neighborhoods; 8,979 observations
Data Source: Author's Original Longitudinal Dataset, 2024

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