

# School Choice, Neighborhood Change, and Racial Imbalance Between Public Elementary Schools and Surrounding Neighborhoods

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**Abstract:** The expansion of school choice in recent years has potentially generated demographic imbalances between traditional public schools and their residential attendance zones. Demographic imbalances emerge from selective opting out, when families of certain racial and/or ethnic backgrounds disproportionately choose not to enroll in their neighborhood-based public schools. In this article, we use a unique data set of school attendance zones in 21 large U.S. school districts to show how changes in neighborhood conditions and school choice options influence race-specific enrollments in locally zoned public elementary schools from 2000 to 2010. We find that the presence of more school-choice options generates racial imbalances between public elementary schools and their surrounding neighborhoods, but this association differs by type of choice-based alternative. Private schools, on average, reduce the presence of non-Hispanic white students in locally zoned schools, whereas charter schools may reduce the presence of nonwhite students in locally zoned schools. Increases in neighborhood-school racial imbalances from 2000 to 2010 were concentrated in neighborhoods undergoing increases in socioeconomic status, suggesting that parents' residential and school decisions are dynamic and sensitive to changing neighborhood conditions. Selective opting out has implications for racial integration in schools and the distribution of familial resources across educational contexts.

**Keywords:** neighborhoods; school choice; socioeconomic change; educational inequality; sociology of education

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
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NEIGHBORHOODS and schools are two of the primary social contexts influencing child development and wellbeing, and they are often thought to operate in tandem. As branches of local communities, schools have long been considered a key mediator of neighborhood effects on individual outcomes (Jencks and Mayer 1990). However, a school's mediating role between the neighborhood and the individual may be weaker, or operate differently, in places where school and neighborhood populations diverge. The expansion of alternatives to traditional neighborhood public schools has potentially generated such population divergence between schools and their surrounding neighborhoods. Divergence between school and neighborhood populations—which we refer to as demographic imbalance—emerges from selective opting out, when families of certain racial and/or ethnic or socioeconomic backgrounds disproportionately choose not to enroll in their neighborhood-based public schools.

Selective opting out has implications for inequality through its effect on racial and/or ethnic and socioeconomic integration in schools and through the distribution of familial resources across educational contexts. Recent scholarly attention to

the link between neighborhood and school composition has focused on places that are experiencing rapid socioeconomic change, especially those that are gentrifying. In case studies of neighborhoods and single school districts, scholars have noted two competing concerns about schools in rapidly changing communities (Cucchiara and Horvat 2010). Although gentrification has the potential to improve school contexts through the infusion of resources from higher-income families, those families may not use local public schools (DeSena 2006; Kimelberg and Billingham 2013), resulting in few discernable benefits for children enrolled in these schools (Keels, Burdick-Will, and Keene 2013). In contrast, higher-income newcomers in gentrifying neighborhoods may enroll their children in local neighborhood schools but also exert control over local public schools in ways that disempower existing residents (Cucchiara 2008; Posey-Maddox 2014). Despite competing concerns surrounding the use of local public schools in rapidly changing communities, there is little large-scale quantitative evidence about how children's enrollments in local schools vary as a function of school choice options and changing socioeconomic conditions.

In this study, we examine changing patterns of racial imbalance between public elementary schools and their surrounding neighborhoods from 2000 to 2010. We define neighborhoods as the residential attendance zone from which each school draws students. More specifically, we measure the similarity between the racial composition of children living in residential school attendance zones and the racial composition of students in the associated traditional public elementary schools. Places where the neighborhood and school compositions diverge more have greater racial imbalance. We test whether changes in neighborhood-school racial imbalance between 2000 and 2010 are explained by changes in the availability of public and private school options. We provide parallel results for poverty imbalance in the online supplement. In the second part of the analysis, we examine changes in racial imbalance across neighborhoods that have experienced different forms of socioeconomic change. We test whether school choice has differentially affected gentrifying neighborhoods, as prior literature might suggest.

This research builds on a small number of existing studies that use school attendance zones as the unit of analysis. School attendance zones are socially meaningful but understudied geographic areas that represent the neighborhoods from which specific schools draw students (Bischoff and Tach 2018; Candipan 2019; Saporito and Sohoni 2006, 2007). The attendance zone links residents through a shared local institution and defines the potential pool of students and families who will interact in the school. School attendance zones are the ideal unit for examining processes at the nexus of residential and school choice in large school districts. In contrast to existing quantitative studies on compositional imbalances between entire cities or metropolitan areas and their corresponding school *districts*, such as in the literature on “white flight” (Clotfelter 2004), here the focus is on *subdistrict* school selection processes. This level of analysis highlights how neighborhood conditions influence public school enrollments within large and diverse school districts.

## Schools as Neighborhood Institutions?

In a residentially bounded education system, schools are local institutions that reflect the social composition of their surrounding communities and thus reinforce advantages and disadvantages conferred by the financial and social resources in that community. As local institutions, schools bring students into contact with their neighborhood peers, who influence one another via socialization, role modeling, and friendship networks (see, for example, Harding 2007, 2009). For neighborhoods that are racially and/or ethnically or socioeconomically diverse, a theory that proposes a strong neighborhood-school link would also suggest that residential diversity is reflected in the local public schools. However, little is known about sorting between institutional sectors within a place. Just as within-school ability tracking creates parallel but socially differentiated contexts within schools (Lucas 1999; Oakes 1985), it is also possible for demographic processes and institutional structures to create parallel but socially differentiated contexts within neighborhoods. By not explicitly considering school and neighborhood contexts separately, neighborhood-effects research often implies that schools are a direct mediator of neighborhood context (Ellen and Turner 1997; Jencks and Mayer 1990).

## School Choice and Selective Opting Out

The association between school and neighborhood compositions may weaken because of changes in the organization of schooling. In particular, changes in the availability of schools that do not draw from geographically defined areas, including private, magnet, and charter schools, may enable parents to opt out of local public schools in selective ways that create demographic imbalances between local schools and their surrounding neighborhood attendance zones. In addition to potential reductions in racial and/or ethnic integration in local schools caused by selective opting out, imbalances in the racial composition of neighborhood attendance zones and local schools can also create inequalities in access to resources. Those whose children do not attend traditional public schools may be less likely to contribute their time, nonpecuniary resources, political influence, or philanthropic efforts to the local public schools. In places where the public school population represents a more disadvantaged subset of the neighborhood population, the family-based resources dedicated to the schools may be diminished.

Although parochial and nonreligious private schooling have always existed in the United States in tandem with public education, other forms of school choice have expanded over the past two decades. The number of private schools serving kindergarten through eighth grade declined slightly from 2000 to 2010, comprising approximately 13 percent of all schools in 2000 and 12 percent of all schools in 2010,<sup>1</sup> whereas the number of, and enrollment in, charter schools grew considerably during this period. By 2009 to 2010, 42 states had passed charter school legislation (National Center for Education Statistics 2015), and charter schools enrolled 2.6 percent of all elementary school students (up from 0.81 percent in 2000 to 2001), a 230 percent increase over this 10-year period.<sup>2</sup> Charter schools are publicly funded institutions that operate with fewer restrictions than traditional public schools but

do so under a contract with the state or local political jurisdiction. Magnet schools are also publicly funded and predominantly located in urban areas, though they have existed for far longer than charter schools. Historically, magnet schools served as a voluntary mechanism to desegregate urban schools by creating educational options that would be attractive to a variety of families. Today, magnet schools are defined by the National Center for Education Statistics as schools that have specific social or academic themes and/or are designed to reduce racial isolation. In general, magnet schools provide families with alternatives to their neighborhood public schools, and some magnet schools use selective admissions policies based on test scores or performing arts auditions (Goldring 2009). The share of elementary school children nationally who attend magnet schools increased slightly from the 2000–2001 school year to the 2009–2010 school year, increasing from 2.3 percent to 2.5 percent.

It is possible that the freedom to choose schools yields greater racial and/or ethnic and socioeconomic integration by allowing parents to select educational options beyond the confines of their often-segregated neighborhoods. A good deal of research has found the opposite, however, that school choice leads to even more segregated educational contexts than traditional neighborhood assignment strategies. Schools that draw students from their local neighborhoods have higher percentages of minority and poor children than they would in the absence of some forms of school choice (Saporito and Sohoni 2006, 2007). In addition, charter schools are more racially segregated than traditional public schools in almost every state (Bifulco and Ladd 2006; Frankenberg, Siegel-Hawley, and Wang 2011), and recent evidence shows that they tend to disproportionately enroll students of color from surrounding communities (Whitehurst et al. 2017). Research from the early 2000s found that middle-class families were more likely to take advantage of school-choice options than were poorer families (Teske and Schneider 2001) and that students who lived in disadvantaged neighborhoods were less likely to exercise educational choice (Lauen 2007). At the same time, Lauen (2007) found that prior to the advent of charter schools, race and/or ethnicity was an inconsistent predictor of school choice in Chicago, with the exception being private schools, which disproportionately enrolled white students.

Although more educational options generally facilitate the segmentation of children by race and class into different school sectors, school-choice options differ in their purpose and affordability. Private schools charge tuition, ranging from very modest amounts to amounts equal to the most expensive private universities. In addition, parents sometimes choose private schooling for religious or other reasons related to personal beliefs. Magnet and charter schools are public institutions that vary widely in mission, theme, and admission criteria. In addition, there have been substantial changes in the school-choice landscape since the 1990s. For example, charter schools are increasingly bolstered by a belief in providing alternatives for children in so-called “failing” schools. As such, charter schools nationally tend to serve a more disadvantaged and urban population than traditional public schools do.<sup>3</sup> Our analyses account for how the varied forms of school choice influence the compositional link between public schools and their surrounding neighborhoods during a period of rapid changes in educational choices in large U.S. school districts.

## Neighborhood Socioeconomic Change

Neighborhoods undergoing socioeconomic change may be especially prone to selective opting out. The definition of gentrification has been contested in academic literature, but it is broadly understood as the transformation of disadvantaged neighborhoods due to the influx of highly educated and upper-income individuals (Owens 2012). Gentrifying neighborhoods in urban areas have received the most empirical attention to date. Although some definitions of gentrification rely on changes in the racial composition of neighborhoods, namely increases in white non-Hispanics, here we use the term to refer only to the economic upgrading of a disadvantaged neighborhood. Classic studies of gentrification identified the first wave of gentrifiers as those more willing to move into previously disadvantaged communities if they have no children—such as artists, young professionals, empty nesters, and gay and lesbian householders (Lees, Slater, and Wyly 2008; Ley 1996; Smith 1996; Zukin 1987). More recent literature has considered how the presence of higher-income parents in gentrifying neighborhoods affects the local public schools (Cucchiara and Horvat 2010; Joseph and Feldman 2009; Posey-Maddox 2014; Posey-Maddox, Kimelberg, and Cucchiara 2014).

Researchers and policymakers alike are eager to understand whether and how the transformation of urban neighborhoods reshapes community institutions, especially schools. Others have asked the related question: Might school choice contribute to gentrification (Pearman and Swain 2017)? Much of the research on schools in gentrifying neighborhoods consists of qualitative case studies of a single urban neighborhood or school in which researchers investigate the decisions of middle-class parents. Although gentrification has the potential to improve school conditions through the influx of middle-class resources, there is also concern that it can lead to processes of exclusion, marginalization, and potential displacement of the original student population (Cucchiara and Horvat 2010; Posey-Maddox 2014; Posey-Maddox et al. 2014). One such study of Chicago Public Schools finds that gentrifying neighborhoods experience only small reductions in school poverty rates and that these schools confer no academic advantage for children (Keels et al. 2013). This suggests that, on average, schools either do not change with their surrounding neighborhoods or lag behind in the pace of change.

## Study Aims

This study connects literature in the sociology of education to literature in community and urban sociology. We extend prior research on the association between local residential conditions and parents' schooling decisions by creating a data set that integrates information on the racial and/or ethnic composition of children living in school attendance zones and students in the corresponding public elementary schools in 21 of the largest U.S. school districts from 2000 to 2010. We focus on elementary schools because they generally have smaller attendance zones than secondary schools and therefore are better defined as local neighborhoods. Prior studies that have examined entire districts do not capture the fine-grained local conditions that may influence parents' schooling decisions in large districts.

We hypothesize that the racial and/or ethnic imbalance between neighborhood and school populations depends on the prevalence of exit options from the traditional, residentially zoned public education system. Because private schools tend to enroll more white students, we expect that the availability of more private school options will be associated with larger racial imbalances between school and neighborhood populations. It is less clear how magnet and charter options will influence selective opting out of zoned public schools. We also expect that the racial imbalance between neighborhoods and schools will be most acute in neighborhoods that have experienced upward socioeconomic change because gentrifiers may be more likely to take advantage of school-choice options. We present parallel results for poverty composition imbalance in the online supplement.

## Data and Method

### *Data*

Our analyses require demographic data for schools and their corresponding school attendance zones in 2000 and 2010. We obtain data on the racial and/or ethnic and socioeconomic composition of public schools from the Common Core of Data (CCD) (National Center for Education Statistics) for the 1999–2000 and 2009–2010 school years. We obtain data on the racial and/or ethnic and socioeconomic composition of school attendance zones from the 2000 and 2010 decennial censuses (Manson et al. 2017) and from the 2008–2012 American Community Survey (ACS), which has a midpoint of 2010 to match the CCD and census data. School-choice measures in both time points are derived from the CCD, the Office for Civil Rights Data Collection (U.S. Department of Education), and the Private School Universe Survey (National Center for Education Statistics).

### *Unit of Analysis*

We use school attendance zone boundaries to define the geographic area from which a school draws its students. We obtain 2009–2010 boundary information from the School Attendance Boundary Information System (The College of William and Mary and the Minnesota Population Center 2011), a data product that maps school attendance boundaries from a wide range of districts in the United States in a small set of recent school years. To measure 1999–2000 boundaries, we rely on historical school attendance boundary maps for 21 of the 22 largest districts in the United States, which were previously collected and georeferenced (Saporito and Sahoni 2006, 2007).<sup>4</sup> These 21 districts comprise the analytic subset of districts used in the analysis, and they contained approximately 12 percent of all elementary-aged public school children enrolled in regular school districts in the United States in 2000.<sup>5</sup> Compared to all U.S. school districts in 2000, these 21 large districts have greater percentages of black, Hispanic, Asian, and low-income students and lower percentages of non-Hispanic white students. In addition, these large districts had a great deal more school choice than was average in 2000. The basic contours of these differences were also true in 2010.<sup>6</sup> The districts in our sample include large urban



districts as well as large county-based districts that, in some cases, span urban and suburban communities. Seventy percent of the schools in the attendance zones in the sample are coded as urban in the CCD. Although these large districts are not nationally representative, they are ideal cases for our research questions from a theoretical standpoint because they contain racially and economically diverse student populations and they experienced substantial school choice expansion in the 2000s.

We limit our sample to residentially zoned, public elementary schools and their relevant attendance zones. We include schools that offer third grade to capture most elementary schools. To construct our longitudinal sample, we drop schools that do not exist in both time points because of school openings or closings. Although schools that open or close are not included in our analytic sample because they do not have data at one time point and therefore cannot change between the time points, we control for proximate school openings and closings in our analysis, as we describe below. With these restrictions, and a loss of 21 cases due to missing school-based demographic information, our final sample consists of 3,057 elementary school attendance zones.

Following Saporito et al. (2007), we use Geographic Information System software to reapportion ACS and census data into school attendance zones. Virtually all census blocks (95 percent) nest perfectly within school attendance zones, making the reapportionment process for block-level data straightforward; we simply sum the data from the blocks that fall within an attendance zone. We use block-level data on racial and/or ethnic composition by age in both time points; however, socioeconomic information (such as educational attainment, poverty status, or median income) is only available at the block group level. Block groups, which consist of several census blocks, do not nest neatly within attendance zones: 45 percent of block groups in the largest 25 school districts span multiple zones. When a block group spans multiple attendance zones, we produce a measure for the attendance zone that is a population-weighted average of the constituent block groups (Saporito et al. 2007). We first identify the blocks within the block group that fall into each attendance zone. We then construct population weights: the share of elementary-school-age children in the attendance zone who live in those blocks (the number of children ages five to nine in the blocks divided by the number of children ages five to nine in the attendance zone). Finally, we multiply the relevant block group measure (e.g., percent with a bachelor's degree) by the population weight and sum across all block groups that have a population in the attendance zone:

$$P_r = \frac{\sum_{rg=1}^n (N_{rg})(P_{rg})}{\sum_{rg=1}^n (P_{rg})}$$

where  $P_r$  is the share of residents with a bachelor's degree in school attendance zone  $r$ ,  $N_{rg}$  is the total population aged five to nine living within the area of overlap of school attendance zone  $r$  and block group  $g$ , and  $P_{rg}$  is the percent with a bachelor's degree within that intersect.

## Measures

*Dependent variable.* Our dependent variable captures the difference between the racial composition of elementary school-aged children living in attendance zones and the racial composition of students enrolled in corresponding elementary schools. It is a measure of social imbalance. We measure the racial composition of schools and attendance zones by the proportion of children who are non-Hispanic white (ages five to nine in neighborhoods and in kindergarten to fourth grade in schools). Racial differences are measured by the proportion of non-Hispanic white children in the attendance zone minus the proportion of non-Hispanic white children in the school. Larger positive values indicate greater shares of white children in neighborhoods relative to their local schools.

*Independent variables.* School-choice options are defined as counts of private, charter, or magnet schools that are reasonable alternatives to the local public school based on geographic proximity.<sup>7</sup> We geocode each charter, magnet, and private school that enrolls third graders in each time point using address information from the CCD for charter and magnet schools and from the Private School Universe Survey for private schools. We augment the count of magnet schools from the CCD with school-level information from the 2000 and 2009 U.S. Department of Education Office for Civil Rights data because the magnet school information in the CCD is incomplete.<sup>8</sup>

Districts vary widely in population density and local commuting distances, and choice enrollment is not necessarily determined by district or attendance zone of residence. We therefore construct a “school-choice radius” for each attendance zone using a radius of half of the average work commute distance in the district as a locally normed proxy for a reasonable distance to travel to school. We use data from the Census Transportation Planning Package for 2006 to 2010 to measure tract-to-tract flows of residents between their census tract of residence and their workplace census tract. We combine these data with information about the geographic distance between each census tract in the United States to calculate the population-weighted average distance traveled to work within each district. We then count the number of private, magnet, and charter schools within half of this average-distance radius around the centroid of each school attendance zone. In the average district in our sample, half of the average commute distance is 4.55 miles, ranging from a minimum of 3.2 miles in New York City to a maximum of 5.45 miles in Palm Beach County, Florida. Because there is no standard metric for defining the relevant choice set, we also compute choice sets based on the average work commute distance radius and finite 1-mile and 5-mile radii to assess the robustness of our results to alternative definitions of proximity (Table A1 in the online supplement).

Finally, we include several school attendance zone characteristics in our models, including the total population size, the percentage of children ages five to nine who are non-Hispanic white, and the land area in square miles, which captures school attendance zone boundary changes due to administrative decisions. In addition, we control for the number of zoned public elementary schools that have opened or closed within a 1-mile radius of the school attendance zone. When new schools open or established schools close, other schools in close proximity may be affected as they absorb displaced children or lose students to new school options.



*Neighborhood socioeconomic change.* To create neighborhood types based on socioeconomic change between 2000 and 2010, we first computed a school attendance zone socioeconomic advantage factor score in each year, consisting of the percentage of adults ages 25 and older with a bachelor's degree or higher and median household income adjusted to 2009 dollars. The score is standardized within each year and school district to have a mean of zero and standard deviation of one. We construct neighborhood categories that represent large decreases in socioeconomic status (SES), large increases in SES, and average change in SES, all relative to the parent school district. School attendance zones with large decreases (or increases) in SES are defined as those in which the SES scale declined (or increased) by greater than the mean change in the focal district minus (or plus) one standard deviation from 2000 to 2010. All other school attendance zones are classified as experiencing SES change within one standard deviation of the mean in the focal district. We disaggregate the group of neighborhoods that experienced a large socioeconomic increase into gentrifying and ascending neighborhoods (Owens 2012). Gentrifying neighborhoods had median household incomes below their district's median in 2000, and ascending neighborhoods had median incomes above their district's median in 2000. Based on these definitions, 335 school attendance boundaries are classified as socioeconomically declining, 371 are classified as socioeconomically improving, and 2,351 are classified as experiencing average change. Within the socioeconomically improving group, 225 gentrified, whereas 146 ascended from an initially advantaged position.

## Methods

To measure changing imbalance in the composition of neighborhoods relative to their public elementary schools, we use pooled school attendance–level data from 2000 and 2010 to estimate linear regression models, in which we regress racial imbalance on our measures of school choice. We estimated the following equation:

$$(\%W_n - \%W_s)_t = \alpha + \beta_1(\#Private_{nt}) + \beta_2(\#Magnet_{nt}) + \beta_3(\#Charter_{nt}) + \theta(X)_{nt} + \mu + \varepsilon$$

where our dependent variable is the difference in the share of non-Hispanic white children in neighborhood (school attendance zone)  $n$  and school  $s$  at time  $t$  (2000 or 2010), and *Charter*, *Magnet*, and *Private* represent the counts of each type of school choice within half the district's average work commute distance for neighborhood  $n$  at time  $t$ . We also include  $X$ , a vector of time-varying neighborhood characteristics, including the racial composition of children, total population size, the land area of the attendance zone, the number of school openings and closings, and an indicator for the year 2010 (relative to 2000) as well as  $\mu$ , a vector of school district fixed effects. We control for the percentage of white children in the neighborhood because neighborhoods have vastly different racial compositions, yet our outcome measure (a difference score) does not distinguish between neighborhoods with different demographic profiles. The vector of school district fixed effects controls for the many ways in which school districts differ from one another and results in estimates that can be interpreted as the average within-district association between neighborhood-school imbalance and the explanatory variables over time. Our sample of 21 large

school districts is comprised of 3,057 school attendance zones that serve third grade, ranging from a low of 52 zones in Duval County (Florida) to a high of 641 zones in New York City.

In a final model, we include school attendance zone fixed effects, which test whether changes in school-choice options for an attendance zone between 2000 and 2010 resulted in changes in the racial imbalance between attendance zones and schools. These models control for all of the time-constant, unobserved ways in which attendance zones, and their corresponding schools, differ from one another. To test whether the changing imbalance between zone and school composition varies by neighborhood socioeconomic change, we include indicator variables for the types of socioeconomic neighborhood change described above and interaction terms between neighborhood type and school choice. Standard errors are clustered at the school district level in all models. Because the analyses in this article are based on a nonrandom sample of school districts, we mainly focus on the magnitude of the coefficients; however, we choose to include standard errors and notation of statistical significance to allow for the possibility of inferential interpretation to a superpopulation of large and diverse school districts.

## Results

Table 1 reports descriptive statistics for the variables in our analyses. Beginning with the racial imbalance outcome measure, the percentage of non-Hispanic white children in the average attendance zone neighborhood was approximately four percentage points higher than in the corresponding elementary school in 2000. However, there is considerable variation around this mean imbalance. One-quarter of zones had race gaps of at least seven percentage points, and 10 percent of zones had gaps of more than 16 percentage points, indicating zones that have substantially higher shares of white children than their corresponding schools. Twenty-five percent of zones had schools with a greater white population share than their corresponding neighborhoods, though most differences are quite small. The racial imbalance between zones and schools remained relatively stable in about one-third of zones between 2000 and 2010; however, in approximately 10 percent of zones, the gap widened by more than eight percentage points, and in 10 percent of zones, the race gap narrowed by more than eight percentage points.

The key explanatory variables in our models are counts of school-choice options in reasonable commuting proximity to each school attendance zone, measured as private, magnet, and charter schools located within half the average commute distance for each district. The number of private elementary schools within this locally defined commute radius is large but declined in our sample from 2000 to 2010, whereas public school-choice options were fewer but grew substantially. In 2000, the average zone had approximately 37 private elementary schools located within half the average commute distance in the district (our measure of close proximity), and this declined to 33 in 2010. These averages are driven by the high numbers of private schools in large urban districts, such as New York, Chicago, and Los Angeles. In general, private school counts are higher than magnet and charter counts because private school enrollments nationally are approximately twice as

**Table 1:** Descriptive characteristics of attendance zones: 2000 and 2010

	2000	2010	Change 2000- 2010
<b>Dependent Variables</b>			
Attendance Zone–School % Non-Hispanic White Imbalance	4.29 (10.07)	4.33 (10.43)	0.047 (8.49)
<b>School Choice Options<sup>a</sup></b>			
Number of Private Schools	36.50 (28.99)	33.15 (26.44)	−3.35 (9.12)
Number of Magnet Schools	5.14 (12.25)	5.68 (12.28)	0.54 (0.23)
Number of Charter Schools	1.43 (2.69)	6.69 (7.20)	5.26 (5.90)
<b>School Attendance Zone Characteristics</b>			
Total Population	9,866 (6518)	9,658 (7371)	−208 (5482)
% Non-Hispanic White Children (Ages 5-9)	30.31 (29.63)	24.35 (26.10)	−5.97 (11.16)
Land Area (Square Miles)	2.83 (11.09)	3.09 (20.34)	0.26 (16.94)
Number of School Closures (1 Mile)		0.24 (0.92)	0.24 (0.92)
Number of School Openings (1 Mile)		0.00 (0.06)	0.00 (0.06)

*Notes:* Means are reported with standard deviations in parentheses (N = 3,057). <sup>a</sup> School choice radius is defined as half the average commute distance for each district.

large as charter and magnet enrollments and because private schools tend to have smaller enrollments than other school types, resulting in a greater density of private schools for a given number of students. In addition, the relatively high counts of private schools in our sample also represent the fact that private schools are prevalent in urban communities (Broughman, Swaim, and Hryczaniuk, 2011). The average zone in our sample had many fewer magnet schools within close proximity in 2000 and experienced only a small uptick in the 2000s, increasing from 5.14 to 5.68 within half of the district's average commute distance. Charter schools were relatively new in 2000; the average school zone had just 1.43 charter schools within its choice set. This quadrupled to an average of 6.69 charters by 2010 in this sample of large districts.<sup>9</sup>

## School Choice, Socioeconomic Change, and Neighborhood-School Racial Imbalance

In our multivariate analyses, we regress neighborhood-school imbalances on prevalence of nearby school-choice options and a small set of school attendance zone

control variables. We report results for the attendance zone–school racial imbalance in Table 2. We include school district fixed effects in models 1 and 2 and school attendance zone fixed effects in model 3. Model 3 tests whether changes in school-choice options in proximity to the attendance zone are associated with changes in neighborhood-school imbalance in that same zone. The model estimates provide support for the hypothesis that the number of private schools, in particular, is associated with a growing imbalance in the percentage of white children in residential attendance zones relative to schools. This finding corroborates research documenting the overrepresentation of white students in private schools relative to their residential school districts, though Table 2 shows, for the first time, that the proximity of private schools generates imbalances between attendance zones and their local public elementary schools.

In contrast, the charter school results show that growth in the number of proximate charter schools is associated with less attendance zone–school racial imbalance, although the magnitude of this effect becomes quite small in model 3 once we include school attendance zone fixed effects. This suggests that nonwhite children may enroll in charter schools to a slightly greater extent than white children in this sample of large districts (Whitehurst et al. 2017). A school attendance zone that experienced an average increase in charter schools (approximately five) within half the average commute distance would experience a decrease in racial imbalance of about 0.25 percentage points (or a five percent decrease from 2000 levels). The substantial reduction in the magnitude of the charter school coefficient across the models also suggests that new charter schools may emerge in places with relatively smaller existing racial imbalances. The growth of magnet schools has no substantive association with the racial imbalance of schools and neighborhoods in the models that include school attendance zone fixed effects; however, they are associated with significantly larger imbalance in model 2 (with district fixed effects), suggesting that magnet schools are located in areas within districts that have larger racial imbalances to begin with.

Contrary to the somewhat dated narrative that school choice, in general, draws white families out of local public schools, these findings show that different types of school choice generate different amounts and forms of imbalance between neighborhoods and their local schools. Taken together, the availability of private schools is associated with residentially zoned schools becoming disproportionately more nonwhite than their surrounding neighborhoods, whereas charter schools may draw more nonwhite children out of locally zoned public schools, thereby reducing the racial imbalance between neighborhood and school populations.<sup>10</sup> The magnitude of association for private schools is about three times larger than the magnitude of association for charter schools, however. The null results for magnet schools may imply that magnet schools enroll students from diverse racial and/or ethnic backgrounds, which has historically been a primary mission of magnet schools.

We conduct several robustness checks to assess the stability of these results. First, we estimated our models on school-choice sets using alternative definitions of geographic proximity. Results for model 3 using school-choice sets within the average commute distance, five miles, and one mile of the center of each school attendance zone are presented in Table A2 in the online supplement. Although

**Table 2:** Regression estimates of attendance zone–school racial imbalance on school choice and school attendance zone characteristics

	(1)	(2)	(3)
School Choice Options <sup>a</sup>			
Number of Private Schools	0.09 <sup>†</sup> (0.02)	0.11 <sup>†</sup> (0.01)	0.14 <sup>†</sup> (0.05)
Number of Magnet Schools	−0.04 (0.06)	0.11 <sup>*</sup> (0.04)	−0.01 (0.12)
Number of Charter Schools	−0.26 <sup>†</sup> (0.05)	−0.12 <sup>†</sup> (0.04)	−0.05 (0.06)
School Attendance Zone Characteristics			
Total Population (Thousands)		0.12 <sup>†</sup> (0.04)	0.01 (0.08)
% Non-Hispanic White Children (Ages 5-9)		0.17 <sup>†</sup> (0.04)	0.31 <sup>*</sup> (0.13)
Land Area (Square Miles)		−0.02 <sup>*</sup> (0.01)	−0.01 (0.01)
Number of School Openings (1 Mile)		−2.48 (1.58)	−0.60 (1.12)
Number of School Closings (1 Mile)		0.00 (0.16)	−0.09 (0.13)
2010 (Reference = 2000)	1.74 <sup>†</sup> (0.55)	2.05 <sup>†</sup> (0.41)	2.69 <sup>†</sup> (0.72)
Constant	3.44 <sup>†</sup> (0.28)	3.29 <sup>†</sup> (0.21)	2.97 <sup>†</sup> (0.36)
District Fixed Effects	X	X	
School Attendance Zone Fixed Effects			X
R-Squared	0.099	0.250	0.857

All continuous variables are centered at their sample means. Standard errors clustered at the school district level are in parentheses (N = 6,114). <sup>a</sup> School choice radius is defined as half the average commute distance for each district.

<sup>\*</sup> $p < 0.05$ , <sup>†</sup> $p < 0.01$

the number of schools that falls within the choice set is predictably sensitive to the radius we use, as shown in Table A1 in the online supplement, results for all analyses remain substantively similar. In general, though, the influence of school-choice options on racial imbalance weakens as the distance radius increases. This finding is consistent with an interpretation that students are more likely to enroll in choice schools that are closer to where they live. The coefficients for private and charter schools for the one-mile school-choice set radius, the smallest geographic range we measure, are 3.5 and four times larger than the coefficients for the choice set within half the average commute distance, respectively. Second, as noted above, the average number of private schools in the school-choice sets is much larger than the average number of charter and magnet schools in part because some private schools have very small enrollments. We estimated model 3 of Table 2 by omitting private schools that enroll fewer than 10 students in the third grade.<sup>11</sup> Results with

enrollment restrictions at four alternative school-choice radii are presented in Table A3 in the online supplement. The omission of these very small schools slightly increases the magnitude of the private school coefficients at small radii, suggesting that larger private schools influence the racial imbalance more. Finally, this sample of large school districts contains attendance zones that vary in geographic size, which is one reason we control for land area in all models.<sup>12</sup> However, we also estimated the models from Table 2 by omitting the largest (geographically) one percent of school attendance zones from the sample. The results (available on request) remain virtually unchanged when we discard school attendance zones that are very large.

We next investigated whether the compositional link between neighborhoods and schools varied across school attendance zone neighborhoods undergoing different types of socioeconomic change. Table 3 presents a description of the socioeconomic and racial and/or ethnic composition of the neighborhoods in our typology as well as summary statistics of school-choice options by neighborhood type. In a residentially based school system, school composition should change in response to changes in neighborhood composition, but this association may weaken in the presence of school-choice alternatives. Prior literature posits that schools in neighborhoods experiencing socioeconomic upgrading may not change in concert with their surrounding residential areas (Keels et al. 2013) either because the influx of residents does not include children or because new-resident parents choose not to use the local public schools. By focusing only on children in this study, we examine the latter process to understand how the educational decisions of families with children may vary across neighborhood types.

Figure 1 presents the average neighborhood-school racial imbalances for each type of school attendance zone neighborhood in 2000 and 2010. On average, neighborhoods with declining socioeconomic conditions experienced reductions in their neighborhood-school racial imbalance, suggesting that the white populations who resided in these neighborhoods were more likely to use the local public schools over time, perhaps because of selective outmigration or in response to other economic or institutional changes in the community. The racial imbalance in neighborhoods that experienced average socioeconomic change remained stable, whereas neighborhoods that underwent significant socioeconomic improvement experienced large increases in their neighborhood-school racial imbalance: from 4.33 to 7.93 percentage points. This shows that the share of white neighborhood children increased substantially more than the share of white children in the associated public schools in places with growing median incomes and growing shares of the population with a four-year college degree. Growing neighborhood-school racial imbalances were concentrated almost exclusively in neighborhoods experiencing socioeconomic gains. If we further divide socioeconomically improving neighborhoods into those that gentrified (below the median income in 2000) and those that ascended (above the median income in 2000), both types of neighborhoods experienced increases in racial imbalance of approximately 3.5 percentage points, though the level of racial imbalance is quite a bit higher in ascending neighborhoods, reaching nearly 10 percentage points in 2010.

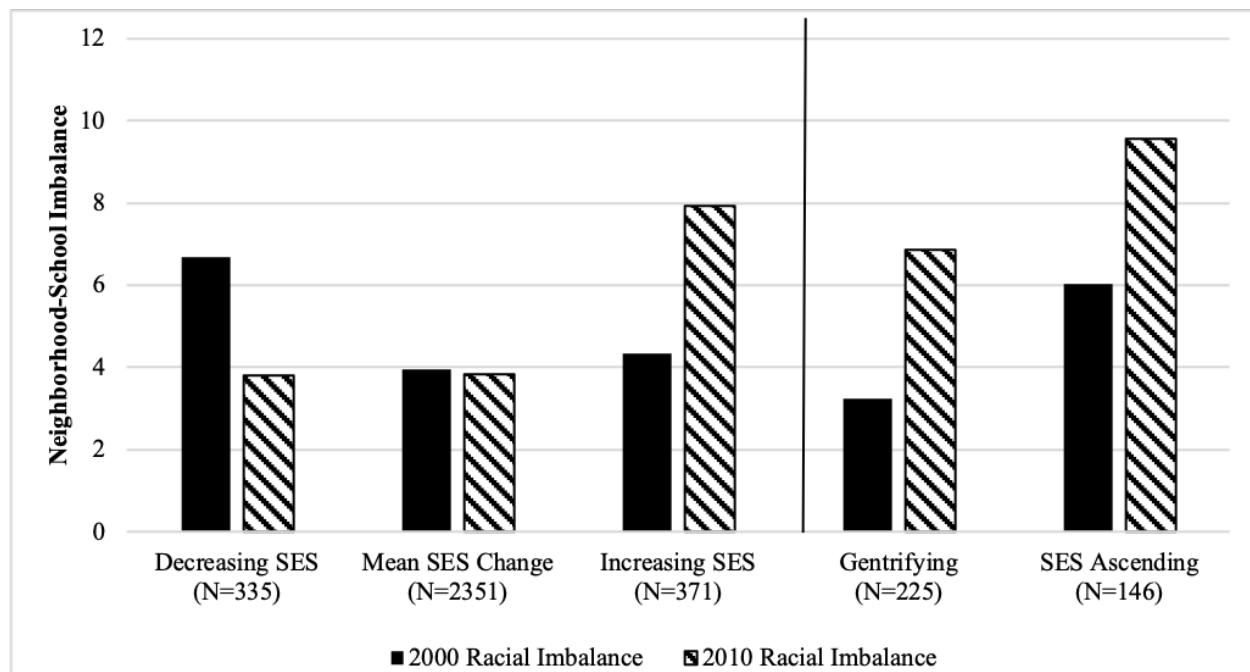


**Table 3:** Description of school attendance zone neighborhoods by type of socioeconomic change.

	N	Percentage of Neighborhoods	2000	2010	Change 2000– 2010	Percent Change 2000– 2010
<b>Socioeconomic Decline</b>	335	10.96				
Median Household Income (2009 Dollars, in Thousands)			71.73	58.75	–12.98	–18.10
Percent of Adults with a Bachelor’s Degree or Higher			31.94	29.61	–2.33	–7.29
Percent White Non-Hispanic Children			40.26	28.81	–11.45	–28.44
Number of Private Schools <sup>a</sup>			31.01	28.56	–2.45	–7.90
Number of Magnet Schools <sup>a</sup>			4.71	5.11	0.40	8.49
Number of Charter Schools <sup>a</sup>			1.24	4.44	3.20	258.06
<b>Socioeconomic Mean Change</b>	2351	76.91				
Median Household Income (2009 Dollars, in Thousands)			52.05	51.32	–0.73	–1.40
Percent of Adults with a Bachelor’s Degree or Higher			19.84	23.67	3.83	19.30
Percent White Non-Hispanic Children			28.39	22.39	–6.00	–21.13
Number of Private Schools <sup>a</sup>			36.84	33.16	–3.68	–9.99
Number of Magnet Schools <sup>a</sup>			5.12	5.72	0.60	11.72
Number of Charter Schools <sup>a</sup>			1.47	6.91	5.44	370.07
<b>Socioeconomic Increase</b>	371	12.14				
Median Household Income (2009 Dollars, in Thousands)			51.1	63.77	12.67	24.79
Percent of Adults with a Bachelor’s Degree or Higher			24.07	38.58	14.51	60.28
Percent White Non-Hispanic Children			33.52	32.71	–0.81	–2.42
Number of Private Schools <sup>a</sup>			39.28	37.21	–2.07	–5.27
Number of Magnet Schools <sup>a</sup>			5.66	5.87	0.21	3.71
Number of Charter Schools <sup>a</sup>			1.30	7.32	6.02	463.08
<b>Gentrifying</b>	225	7.36				
Median Household Income (2009 Dollars, in Thousands)			38.47	50.25	11.78	30.62
Percent of Adults with a Bachelor’s Degree or Higher			16.52	31.94	15.42	93.34
Percent White Non-Hispanic Children			21.82	21.71	–0.11	–0.50
Number of Private Schools <sup>a</sup>			44.47	41.88	–2.59	–5.82
Number of Magnet Schools <sup>a</sup>			7.04	7.22	0.18	2.56
Number of Charter Schools <sup>a</sup>			1.48	9.00	7.52	508.11
<b>Socioeconomic Ascent</b>	146	4.78				
Median Household Income (2009 Dollars, in Thousands)			70.58	84.61	14.03	19.88
Percent of Adults with a Bachelor’s Degree or Higher			35.69	48.82	13.13	36.79
Percent White Non-Hispanic Children			51.55	49.66	–1.89	–3.67
Number of Private Schools <sup>a</sup>			31.29	30.01	–1.28	–4.09
Number of Magnet Schools <sup>a</sup>			3.55	3.79	0.24	6.76
Number of Charter Schools <sup>a</sup>			1.03	4.72	3.69	358.25

Note: Neighborhood characteristics are based on school attendance zone boundaries. Means are reported (N = 3,057). <sup>a</sup> School choice radius is defined as half the average commute distance for each district.

As shown in Table 3, gentrifying neighborhoods have the smallest percentage of white children of all the neighborhood types, and they are not, on average, experiencing influxes of white children. In fact, these neighborhoods experienced a small decline in the share of white children between 2000 and 2010, on average. This suggests that neighborhood-school imbalances may be associated more with income in the average gentrifying neighborhood than they are with race if, like here, the concept of gentrification is not predicated on racial composition. Socioeconomically ascending neighborhoods, in contrast, have the highest percentage of children who are white of all neighborhood types, though these neighborhoods also



**Figure 1:** Average attendance zone–school racial imbalance by school attendance zone neighborhood type: 2000 and 2010.

experienced declines in this population between 2000 and 2010. Notably, even in socioeconomically ascending neighborhoods, where nearly half of all adults hold a bachelor's degree and the median income is well above the district average, white parents continue to opt out of local public schools and do so at the highest rates.

The statistics in Table 3 show fairly consistent changes in school-choice availability between 2000 and 2010 across neighborhood types. All neighborhood types experienced declines in the number of private school options in proximity, though communities with large increases in SES have access to the largest number of private schools. The availability of magnet and charter schools increased across all neighborhood types over this decade, but magnet schools were less likely to be located near socioeconomically ascending neighborhoods, and charter school availability increased most in proximity to gentrifying neighborhoods.

Table 4 presents results for models that regress neighborhood-school racial imbalance on school choice and neighborhood socioeconomic change. Model 1 includes indicators for neighborhood socioeconomic change as well as the control variables and school attendance zone fixed effects. Neighborhoods that experienced average socioeconomic change are the reference group. Model 1 shows that net of control variables, including changes in the racial composition of the neighborhood, the basic patterns highlighted in Figure 1 hold; racial imbalance declined in socioeconomically declining neighborhoods and increased in gentrifying and ascending neighborhoods. The results in model 2 indicate that proximate school-choice alternatives do not fully explain the relationship between neighborhood socioeconomic change and racial imbalance.

**Table 4:** Regression estimates of attendance zone–school racial imbalance on neighborhood socioeconomic change and school choice.

	(1)	(2)	(3)
School Choice Options <sup>a</sup>			
Number of Private Schools		0.14*	0.14*
		(0.05)	(0.05)
Number of Magnet Schools		–0.00	–0.01
		(0.12)	(0.12)
Number of Charter Schools		–0.06	–0.06
		(0.07)	(0.06)
School Attendance Zone Characteristics			
Total Population (Thousands)	0.01	–0.00	–0.03
	(0.08)	(0.08)	(0.08)
% Non-Hispanic White Children (Ages 5-9)	0.27	0.29*	0.30*
	(0.13)	(0.13)	(0.13)
Land Area (Square Miles)	–0.01	–0.01	–0.01
	(0.01)	(0.01)	(0.01)
Number of School Openings (1 Mile)	–1.36*	–0.35	–0.70
	(0.58)	(1.17)	(1.07)
Number of School Closings (1 Mile)	–0.36*	–0.09	–0.09
	(0.16)	(0.13)	(0.12)
Neighborhood <sup>b</sup> Change Types (Reference = Mean Socioeconomic Change)			
Socioeconomic Decline	–1.37	–1.51	–2.22 <sup>†</sup>
	(0.77)	(0.74)	(0.71)
Socioeconomic Decline* No. Private Schools			–0.11 <sup>†</sup>
			(0.03)
Socioeconomic Decline* No. Magnet Schools			0.07*
			(0.03)
Socioeconomic Decline* No. Charter Schools			0.06
			(0.11)
Gentrification	2.15*	1.98*	2.26
	(0.83)	(0.72)	(1.22)
Gentrification* No. Private Schools			0.01
			(0.03)
Gentrification* No. Magnet Schools			–0.00
			(0.02)
Gentrification* No. Charter Schools			–0.06
			(0.11)
Socioeconomic Ascent	2.45 <sup>†</sup>	1.97	1.61
	(1.60)	(1.65)	(1.43)
Socioeconomic Ascent* No. Private Schools			–0.03
			(0.05)
Socioeconomic Ascent* No. Magnet Schools			0.01
			(0.08)
Socioeconomic Ascent* No. Charter Schools			0.32
			(0.32)
2010 (Reference = 2000)	1.63*	2.53 <sup>†</sup>	2.53 <sup>†</sup>
	(0.65)	(0.82)	(0.78)
Constant	3.43 <sup>†</sup>	3.01 <sup>†</sup>	3.01 <sup>†</sup>
	(0.30)	(0.38)	(0.38)
School Attendance Zone Fixed Effects	X	X	X
R-Squared	0.854	0.859	0.860

All continuous variables are centered at their sample means. Standard errors clustered at the school district level are in parentheses (N = 6,114). <sup>a</sup> School choice radius defined as half the average commute distance for each district. <sup>b</sup> Neighborhood defined as school attendance zone.

\* $p < 0.05$ , <sup>†</sup> $p < 0.01$

In model 3, we add interaction terms between the counts of private, magnet, and charter schools and neighborhood types to test whether the number of proxi-

mate school choice options differentially affected the neighborhood-school racial imbalance in places that experienced socioeconomic increases and declines. The results indicate that changes in the availability of school choice generally did not increase racial imbalance in gentrifying or ascending neighborhoods relative to neighborhoods in the same district that experienced average socioeconomic change. The negative coefficient on the interaction between socioeconomically declining neighborhoods and private schools suggests that private schools are associated with almost no change in racial imbalance relative to those in which average socioeconomic change took place. Magnet schools seem to be associated with slightly larger gains in racial imbalance in declining neighborhoods relative to those with average change, though the magnitude of the association is small. Taken together, these results suggest that private schools in proximity to declining neighborhoods may not serve very advantaged populations and therefore do not disproportionately draw white students out of local public schools, whereas magnet schools within reach of declining neighborhoods are more likely to enroll a disproportionate share of white students from that neighborhood. In addition, the results suggest that charter schools may increase the racial imbalance in socioeconomically ascending neighborhoods relative to those with average socioeconomic change; however, the association is imprecisely estimated in this sample. Although it is plausible that charter schools in socioeconomically advantaged areas draw white students out of locally zoned public schools, more research is warranted on the potential effect of new charter schools in affluent neighborhoods.

The coefficient on the decadal change indicator remains substantively important in all models, indicating that the explanatory variables in our models do not fully account for changes in neighborhood-school imbalance. The remaining gap may be explained by exit options from local elementary schools that are not captured in our data, such as open enrollment or intradistrict choice programs,<sup>13</sup> homeschooling, or other special programs, such as Gifted and Talented and Language Immersion, or those for students with special needs. Upper-income and highly educated parents, and those who move to gentrifying neighborhoods, may be more likely to engage with admissions into these programs, as Stillman (2012) showed in her study of gentrifier parents in New York City. These less-visible exit options should be the focus of future research using district-specific administrative data to uncover processes that cannot be captured using aggregate and federal-level data. The unexplained portion of the imbalances may also be attributable to some differences in the accounting of neighborhood and school populations because the population counts come from different data sources (CCD and the census and/or ACS) or from the fact that measuring school choice as a number of schools, like we do in our analyses, does not fully capture the capacity for student enrollment (for example, if a school expands enrollment over time).

We have also conducted two additional robustness checks. First, because gentrification is typically considered an urban phenomenon, we estimated the models in Table 4 on the subset of school attendance zones that contain schools coded as urban in the CCD. In our data, 78 percent of the schools in gentrifying attendance zones are coded as urban in the CCD. The results, presented in Table A4 in the online supplement, are substantively similar to the results for the full sample; how-

ever, the average racial imbalance between residential school attendance zones and their corresponding public elementary schools is larger in urban areas, and magnet schools may play a somewhat larger role in reducing racial imbalance in urban areas. Second, we have estimated our models by eliminating one city at a time to ensure that no one city is driving our results. We did this because of the large numbers of schools in the choice sets in the largest urban districts.

## Discussion

Residents of large school districts in the United States have experienced precipitous increases in school choice over the past several decades, which is defined as the option to attend a school outside of one's residentially zoned school. This increase in school choice has potentially weakened the link between neighborhood and school populations if enrollment in choice schools occurs selectively based on students' race and/or ethnicity. At the same time, pockets of neighborhoods in some cities have experienced fairly steep upward socioeconomic change (Frey 2015; Owens 2012). This study examines how these educational and neighborhood transformations relate to racial imbalance between neighborhoods and their local schools.

We created a data set that integrates information on the racial composition of public elementary schools at two time points with information on the composition of the residential child population in more than 3,000 school attendance zones within 21 large U.S. school districts. Using these data, we build upon existing case studies and cross-sectional accounts to examine substantive changes in neighborhoods and schools over time. We grappled with the dilemma of defining an appropriate school-choice set for each neighborhood by constructing counts of school-choice options based on locally meaningful distance rather than relying on school district boundaries. In addition, the use of two time points allowed us to exploit temporal variation, thereby controlling for time-constant, unobserved differences among school attendance zones.

Our results show that school choice plays a role in creating demographically imbalanced neighborhood-school contexts, but not all forms of school choice operate in the same fashion. Although private schools draw white families out of residentially zoned public schools, as we would expect based on prior literature (Murnane and Reardon 2018), charter and magnet schools, on average, do not. Our results show that the availability of charter schools may have a small but negative association with neighborhood-school racial imbalance, suggesting that charter schools disproportionately draw nonwhite students out of traditional public schools. These findings do not contradict prior research that shows that charter schools facilitate segregation in schools (Bifulco and Ladd 2006; Frankenberg et al. 2011) because although we find that charter schools are associated with a higher representation of white students in locally zoned elementary schools, they can still lead to segmented sorting into different types of schools.

In the early 1990s, magnet schools were used by white and wealthy parents to avoid out-group contact in Philadelphia's public schools (Saporito 2003), and cross-sectional evidence from 2010 suggests that magnet schools are associated with

fewer white students in proximate urban public schools (Bischoff and Tach 2018). However, we do not find a relationship in our school fixed-effects models between increases in the number of magnet schools and increasing opt-out behavior among white children over time except in socioeconomically declining neighborhoods, where there is a small association between increases in the number of magnet schools and racial imbalance. Overall, our models show that private schools have the most robust association with racial imbalance in the sense that the results change little when we include school attendance zone fixed effects. Charter and magnet school associations are explained, in part, by the preexisting racial imbalances in the neighborhoods where they are located (the magnitude of the coefficients decline with the addition of school attendance zone fixed effects).

Descriptively, racial imbalance grew the most and reached the highest levels by 2010 in neighborhoods experiencing socioeconomic increases. Within this category, gentrifying and ascending neighborhoods both experienced large increases in neighborhood-school racial imbalance, though ascending neighborhoods, which were relatively advantaged in 2000 and also experienced large increases in SES, had the largest mean racial imbalance (10 percentage points) of all neighborhood types. Despite much larger growth in racial imbalances in socioeconomically improving neighborhoods, we do not find strong evidence that increases in private, magnet, and charter schools are the cause. In most cases, the association between school choice and racial imbalance does not differ substantially in gentrifying or ascending neighborhoods relative to those that experienced mean change, though the results suggest that more research is warranted on the effect of charter schools in affluent neighborhoods.

Our study offers insights about the role of schools as local institutions. We identified significant heterogeneity in the extent to which schools are racially distinct from their surrounding neighborhoods. In some places, schools may function as neighborhood institutions, with youth coming into contact with neighborhood peers in school settings and families investing in the school as a local public good. In other places, however, there is significant racial difference between schools and their surrounding neighborhoods, and this trend is most pronounced—and accelerating the fastest—within neighborhoods experiencing socioeconomic growth. Understanding the consequences of neighborhood-school imbalances for local education advocacy, the quantity and quality of resources available to local public schools, the achievement of students, and the role of schools as community anchors that support the formation of social networks and civic capacity (Allard and Small 2013; Billingham and Kimelberg 2013) are important directions for future research.

This research underscores the need to better integrate theories of school context and theories of neighborhood effects. Although researchers have developed increasingly sophisticated methods for examining the effects of school context or neighborhood context, it is rare for researchers to jointly consider the two contexts (e.g., Carlson and Cowen 2015; Owens 2010; Wodtke and Parbst 2017 for important exceptions). Especially in certain types of neighborhoods, one cannot assume that neighborhood youth are an adequate proxy for school peer groups or vice versa. This has substantive implications for the strength of neighborhood effects. If school and neighborhood compositions are tightly coupled, schools may serve



as reinforcing contexts, magnifying any potential benefits or harms of a particular neighborhood context. But when school and neighborhood composition are only loosely coupled, schools may serve as countervailing contexts, mitigating the positive or negative influence of neighborhood context on youth.

The strength of the link between neighborhoods and schools has important implications for housing and education policy. One of the promises of neighborhood revitalization is an improvement in the quality of public resources, with schools arguably being among the most important. However, it is unclear whether neighborhood revitalization efforts and the monetary and nonmonetary resources of more advantaged community residents will reach educational contexts. In large school districts where school-choice options proliferate and neighborhood change can be swift, our results suggest that policies that target neighborhood integration and revitalization will not necessarily trickle down to public school context.

## Notes

- 1 See [https://nces.ed.gov/programs/digest/d12/tables/dt12\\_003.asp](https://nces.ed.gov/programs/digest/d12/tables/dt12_003.asp).
- 2 See [https://nces.ed.gov/programs/digest/d14/tables/dt14\\_216.20.asp](https://nces.ed.gov/programs/digest/d14/tables/dt14_216.20.asp).
- 3 In the 2012–2013 school year, 57 percent of all charter schools were located in cities compared to 25 percent of traditional public schools. In addition, 35 percent of charter school students identified as white (compared to 52 percent of those in traditional public schools), and 35 percent of charter schools had more than three-quarters of their students qualify for free or reduced-price lunch (compared to 23 percent of traditional public schools; [https://nces.ed.gov/programs/digest/d14/tables/dt14\\_216.30.asp](https://nces.ed.gov/programs/digest/d14/tables/dt14_216.30.asp)).
- 4 We follow Saporito and Sahoni (2007) and exclude Milwaukee because Milwaukee did not report free or reduced-priced lunch status in the same way as other districts in these years.
- 5 The 21 districts are Baltimore, Maryland; Baltimore County, Maryland; Broward County, Florida (Ft. Lauderdale); Chicago, Illinois; Clark County, Nevada (Las Vegas); Dallas, Texas; Detroit, Michigan; Duval County, Florida (Jacksonville), Fairfax County, Virginia; Hillsborough County, Florida (Tampa); Houston, Texas; Los Angeles, California; Dade County, Florida (Miami); Montgomery County, Maryland; New York, New York; Orange County, Florida (Orlando); Prince George’s County, Maryland; Palm Beach County, Florida; Philadelphia, Pennsylvania; Pinellas County, Florida (St. Petersburg); and San Diego, California.
- 6 In 2000, the average composition of regular school districts in the United States (21-district sample) was approximately 78 percent (33 percent) non-Hispanic white, 8 percent (38 percent) black, 9 percent (24 percent) Hispanic, 2 percent (5 percent) Asian, 3 percent (<1 percent) American Indian, and 21 percent (44 percent) eligible for the federal free lunch program. There was an average of 5 charter schools in our large district sample compared to <1 in the average school district (authors’ calculations from the CCD).
- 7 Another form of school choice is intradistrict public school choice, in which students can enroll in traditional public schools outside of their assigned school attendance zone. Although this form of choice seems to be growing in popularity because some of the largest urban districts, such as New York City and Chicago, offer this option, we do not analyze this type of school choice because there is no high-quality longitudinal indicator of the presence of, or student-level participation in, open-enrollment plans.

- 8 Several states have a great deal of missing magnet school data in the 2009–2010 CCD, including California and New York, and in other cases, states apply a very narrow definition of magnet schools. We use counts of both whole-school magnet schools and schools that contain magnet programs because it is the only consistent way to measure magnet schools in both time periods.
- 9 In 2000 and 2010, respectively, the median number of private schools within half the average commute distance was 27 and 26, the median number of charter schools was zero and four, and the median number of magnet schools was one in both years.
- 10 An alternative explanation is that nonwhite children disproportionately attend the types of private schools that have closed, namely parochial schools, and therefore the declining percentage of white students in local public schools is a function of increasing numbers of nonwhite students instead of white exit. School enrollment counts do not support this explanation, on average. There were declines in residentially zoned kindergarten–to–fourth-grade enrollments in our sample for all racial and/or ethnic groups from 2000 to 2010 except for a tiny increase among Asian students. Declining enrollments were proportionately larger for white students.
- 11 Omitting these small schools reduces the number of private schools in half the average commute distance to 30 in 2000 and 24 in 2010, on average.
- 12 In 2000, the average school attendance zone in our sample had an average land area of 2.83 square miles. The median zone was approximately one square mile, the minimum was 0.02 square miles, and the maximum was 364 square miles.
- 13 No data are available on the proportion of children who participated in intradistrict choice programs in the years of this study. It was likely less prevalent among elementary-age students than it was for older students, who can independently travel farther. Nevertheless, as intradistrict choice programs grow, it will be important to gather better information on the availability and uptake of intradistrict choice to assess potential effects on enrollment patterns and student outcomes.

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