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# Balancing Act: Schools, Neighborhoods and Racial Imbalance

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## SUMMARY

1. As outlined in our previous report on the subject, school segregation by race has declined since the 1960s, largely because of the increase in the Hispanic school population. That said, white segregation has been more or less flat since the 1990s.
2. The segregation of schools by race remains high, however. Noteworthy is the continued separation of white and black students. This could have various negative consequences, from social isolation to academic outcomes.
3. In this paper, and accompanying online interactive, we investigate the racial composition of schools, compared to the neighborhoods in which they are located. School segregation inevitably reflects, to a greater or lesser extent, neighborhood segregation - especially when enrollment criteria are based on geography. We construct a “racial imbalance measure” for every non-private (including traditional public schools, charter schools and magnet schools) school in the U.S., comparing the racial composition of each school to that of its surrounding neighborhood. (We use a 2-mile radius to match schools to nearby Census blocks within the school’s district; but the findings are largely the same for other distances and approaches).

### Result 1: Most schools look like their neighborhoods

Our headline finding is that schools look a lot like the communities they are located in, at least within school districts. The average public school is about 3 percent less white, 2 percent more black, 1 percent more Hispanic, and 0.3 percent more Asian than its surrounding neighborhood. To a very large extent, school segregation is a mechanical result of residential segregation. America’s schools, by and large, look like America’s neighborhoods.

### Result 2: Outliers in terms of racial imbalance: more black, less white

To look more closely at schools with high racial imbalance scores, we identify outliers relative to within-state distributions of racial imbalance for public schools. We find two main groups of outlier schools: those with *lower* white representation than in their neighborhoods, and those with *higher* black representation. Of all the schools in the U.S., 33 percent (28,705 schools) are defined as outliers, with significant *state-level* over- or underrepresentation of at least one race.

## Result 3: Charters show more racial imbalance

Charter schools, on average, have higher racial imbalance scores than traditional public schools, especially in terms of black student imbalance. The proportion of outliers among charter schools in terms of white, black and Hispanic overrepresentation are about 11, 19, and 2 percentage points higher, respectively, than for traditional public schools.

## Result 4: Why do charters exhibit higher levels of imbalance: it's complicated

Few easily discernable factors seem to predict the degree to which some charters exhibit higher racial imbalances than others. Correlations exist, but *causal* relationships are not clear. That said, the charter sector in large metropolitan areas where charters are more likely to be nearby (within a mile of) equivalent-grade-level traditional public schools and other charter schools exhibits more substantial imbalances.

## Result 5: Some states show more racial imbalances than others

There are big differences among states, in part because of big differences in their overall racial composition. There are two common patterns for schools across the nation:

1. The white share of the school population is often less than what the surrounding neighborhood would indicate, potentially because of white student enrollment in private schools (which are not represented in our data).
2. The share of blacks in the school tends to be more than what the surrounding neighborhood benchmark would indicate.

However, states exhibit different distributions of these types of marginal underrepresentation or overrepresentation of different races. Take the first metric, white underrepresentation: in New York, Ohio, Kentucky, and Iowa more than 8 percent of schools can be classified as having substantially fewer white students in their schools than the surrounding neighborhood, given their state's demographic composition. On the latter metric, black overrepresentation, different states stand out. In Arkansas, Indiana, and Ohio more than 15 percent of schools have substantially higher shares of black students compared to what the surrounding neighborhood would indicate.

## Result 6: School district boundaries divide some communities along racial lines

District boundaries influence the racial imbalance of schools, in some cases significantly. Our main racial imbalance measure compares schools to their surrounding neighborhood *within* a school district. The intuition here is that in general, students can only attend schools in their own school district. But district boundaries themselves may divide neighborhoods along racial lines, in which case our measure will understate racial imbalance in schools. As we showed in our previous paper, while racial segregation of schools *within* school districts has declined in recent decades, segregation *between* districts has increased. This is a topical question, given the growing frequency of schools attempting to secede from their larger existing districts.

We test the influence of district boundaries on the racial imbalance of schools by relaxing the within-district condition in two areas: Long Island, New York and Camden, New Jersey. We find that in these areas, district boundaries can make a big difference. For example, the schools in Floral Park-Bellrose Union Free School District, NY have an overall racial imbalance score of around -1 percent for whites and just under 1 percent for blacks when we retain the within-district condition for neighborhoods: in other words, the schools appear to mirror their neighborhoods almost perfectly. But when the within-district condition is removed, the racial imbalance score for whites is +42 percent, and for blacks is -23 percent. It is the district itself that is segregated here. Long Island is unusual in having a very large number (125) of very small school districts. But the point holds more generally. Our overall results suggest that while schools mostly look like the neighborhoods they serve that are contained within their district, in some places, this is in part because of the way district boundaries divide geographically proximate neighborhoods along lines that separate families by race and income.

## Conclusion

Much of the action in terms of out of balance racial concentration in America's schools tends to be the result of residential segregation patterns, and, in some cases, district-level boundaries. Part of the promise of charter schools lies in freeing children from these constraints. How much of this promise do they fulfill? According to our data, charter schools seem to play a heterogeneous role. The average charter school is approximately 34 percent white, 28 percent black and 29 percent Hispanic. This is approximately 22 percent less white, 14 percent more black, and 8 percent more Hispanic than non-charter public schools.<sup>1</sup> On average, they do this by being about 2 percent less white, 6 percent more black, and 3 percent less Hispanic than the surrounding neighborhood. However, as figures 2-7 in our Appendix demonstrate, the variance

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<sup>1</sup> The average non-charter public school is 56 percent white, 14 percent black, and 21 percent Hispanic.

around these averages can be substantial and is a striking feature of charter schools. Any responsible reading of the data suggests that charter schools are neither uniformly integrative nor segregative. While we can draw some minor conclusions about where and when charters are associated with a more pronounced imbalance measure, the picture that emerges is a highly granular one that depends on both the goals policymakers are aiming for and the localities in which they aim to affect that change. In providing a rich dataset that captures all public schools across the nation, we aim to give local policymakers the tools necessary to accomplish their goals.

## CHAPTER 1: School segregation background

The racial mix of students in U.S. schools is, for obvious reasons, a source of great interest and concern. In the decades since *Brown v Board*, attempts to desegregate schools, through both busing and court orders, and the controversy that surrounds them have continued.

In a previous paper, “Segregation, race, and charter schools: What do we know?”, we examined long-term trends in the racial composition of schools, as well as different approaches to measuring segregation, with a particular focus on the role of charter schools. In this paper, we make a contribution to the empirical literature by calculating the racial balance of the 86,109 publicly-funded schools in the U.S., compared to the neighborhoods within which they are located. In the following chapters we describe our approach and main results. First, we provide some background, including a recap of our earlier paper.

### History and context

School segregation and efforts to reverse it have been a topic of persistent tension in the United States. One source of controversy: busing and transportation. From the South Boston riots in 1974, in which hundreds of whites failed to show up at school or threw rocks and stones at 20 school buses carrying students from predominantly black Roxbury to South Boston, to modern day complaints in Jefferson County, Alabama that such policies inhibit local “control over the geographic composition of the student body,” efforts to integrate schools remain fraught.

The Supreme Court has upheld the constitutionality of busing and some voluntary integration policies in the service of school integration, but the legal force driving desegregation has weakened. In *Milliken v. Bradley*, the court ruled that integration across district lines can only be enforced if evidence of deliberate discrimination by multiple districts can be supplied. In a landmark 2007 case involving the Seattle and Louisville school districts, the Court ruled that the use of an individual’s race in school assignment decisions was unconstitutional. Since then many localities, like Wake County (which includes the city of Raleigh), Boston, Charlotte, and Seattle have ended or substantially curtailed their efforts at K-12 school racial integration.<sup>2</sup> As things stand, it seems highly unlikely that there will be renewed efforts to further integrate schools from the federal government or courts. So: how far have we got?

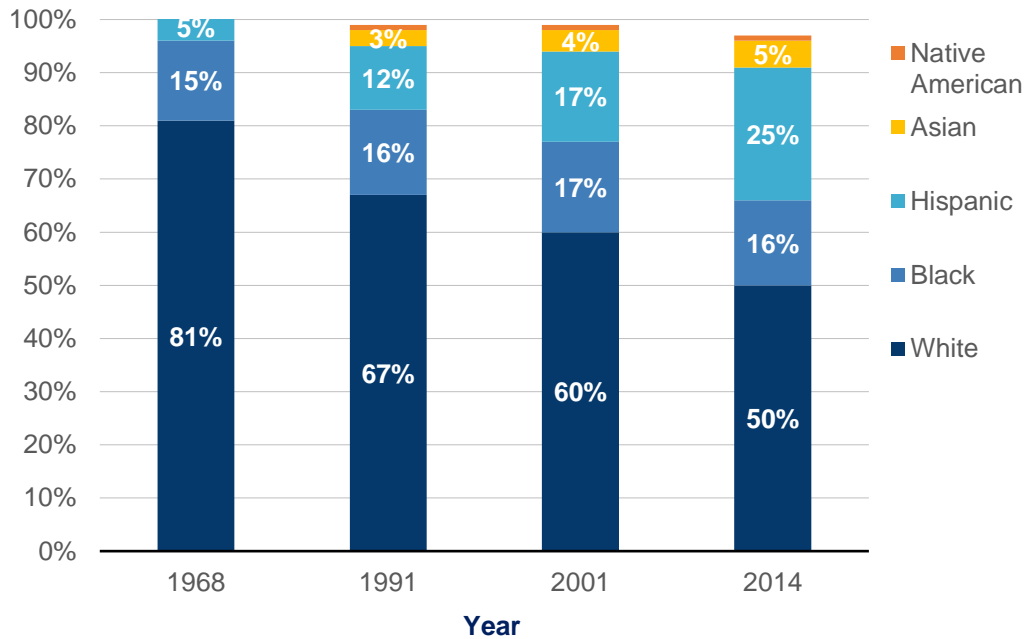
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<sup>2</sup> More information on the history of the rollback of racial school integration: <http://www.thestranger.com/feature/2016/04/13/23945368/how-seattle-gave-up-on-busing-and-allowed-its-public-schools-to-become-alarmingly-resegregated>  
<https://www.newyorker.com/news/news-desk/the-desegregation-and-resegregation-of-charlottes-schools>

## Trends in racial segregation

U.S. schools, taken as a whole, are much more racially diverse than a few decades ago, largely because of big increases in the number of Hispanic and Asian American students:

**Figure 1: Public school enrollment by race, 1968-2014**



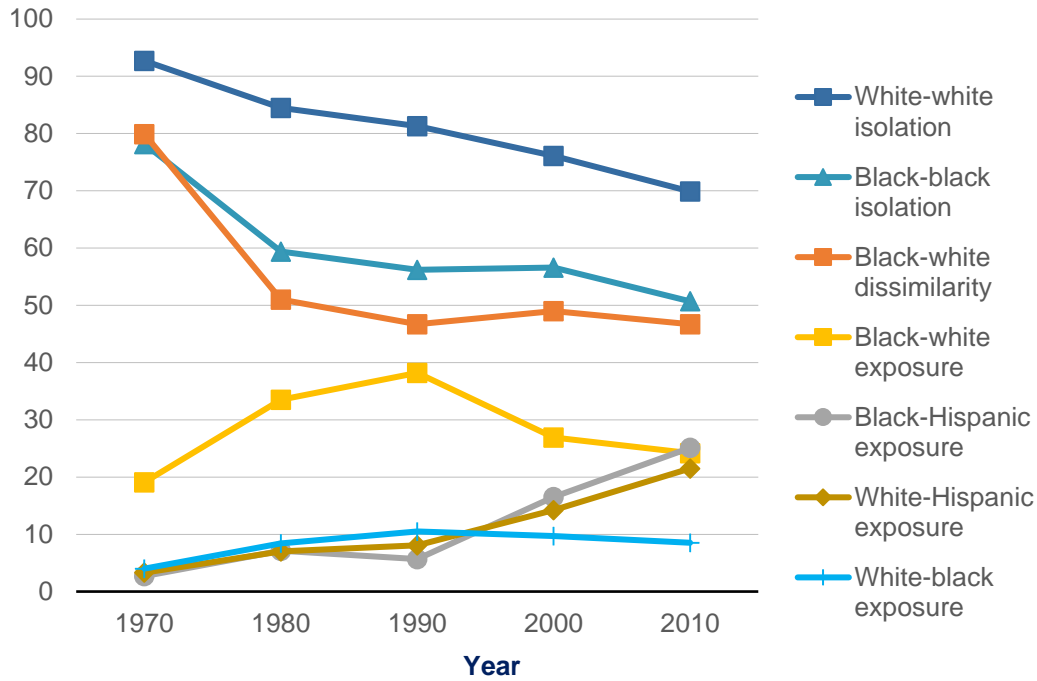
Source: 1969, 1991, and 2001 data from: Gary Orfield and Erica Frankenberg, with Jongyeon Ee and John Kuscera, "Brown at 60: Great Progress, a Long Retreat and an Uncertain Future" (Los Angeles: The Civil Rights Project at UCLA, 2014).  
 Fall 2014 data from: National Center for Education Statistics, "Racial/Ethnic Enrollment in Public Schools," May 2017

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While schools have become more diverse, white and black students remain very separate. While black and white students have become much more likely to share classrooms with Hispanics, blacks and whites are not more likely to share classrooms with each other than they were decades ago (Logan et al., 2017), as we highlighted in our last paper:



**Figure 2: School racial segregation measures (within-district)**



Source: John R. Logan, Weiwei Zhang, and Deirdre Oakley. (2017). "Court Orders, White Flight, and School District Segregation, 1970-2010."

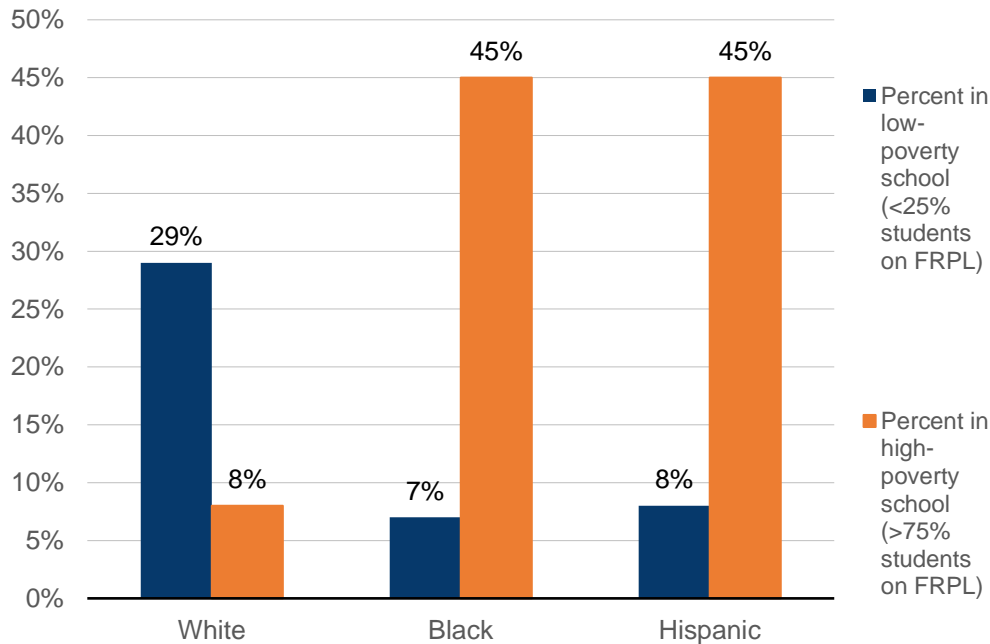
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While many school districts are less racially segregated, largely for the reasons described above, school segregation by family income has increased since 1990 - both within and between school districts.

## Why does school segregation matter?

In our previous paper, "Segregation, race, and charter schools: What do we know?" we examined in some detail the literature on school segregation and its potential impacts. There is strong evidence that the average outcomes for students in schools with high rates of poverty are worse than those in more economically integrated schools. Black and Hispanic students are much more likely to be poor themselves, and to attend schools with a high proportion of poor students. Race and economic status are highly correlated: black students are four times as likely to be in a high-poverty school as a low-poverty one; for whites the ratio is the other way around:

**Figure 3: Exposure to low- and high-poverty schools by race, 2012-13**



Source: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "Public Elementary/Secondary School Universe Survey," 2012-13 (This table was prepared December 2014)

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The relationship between racial segregation and educational outcomes is explained by economic segregation, and the overlap of race and poverty (in essence: black kids are not scoring worse because they are black, but because they tend to be poor). As we concluded then:

The weight of evidence suggests that, at least in the context of the education system, the worse educational outcomes for minority students are the result not of the racial composition of their schools, but the economic backgrounds of their fellow students, and the quality of the school itself—both of which are strongly correlated with race.

There is then a complex and shifting interaction between race, place, poverty and schooling. The goals of more racial integration, more mixed neighborhoods, more economic integration, and better schools are all important, but will not always run easily together. There may of course be many reasons to be troubled by the racial segregation of schools, above and beyond narrow educational outcomes. Those are questions that lie beyond the scope of this paper. Rather our goal in what follows is simply to set out as clearly as possible the facts on the ground.

## CHAPTER 2: Measures of racial segregation and concentration in schools

School segregation is notoriously difficult to measure well. The reason is threefold. First, racial categories can be difficult to pin down, especially where ethnicity and race overlap.<sup>3</sup> Second, the growing number of multiracial youth makes assigning simple racial identifiers to individual students more dubious. Third, measuring segregation among a set of several groups as opposed to just black versus white (what has historically been most relevant) is, as a statistical matter, mechanically more challenging.

We reviewed the primary indices to measure segregation in our previous paper: (a) the exposure index, (b) the isolation index, (c) the dissimilarity index, (d) the divergence index, and (e) the Theil index.

Each of these measures suffers from one or more disadvantages with respect to the goal of providing a practical and easily understood way of identifying schools that are racially out of balance. These include disregard of the demographics of the neighborhoods surrounding a school, insensitivity to the full range of racial categories with respect to which a school can be out of balance, a focus on the diversity of a school's population rather than its overrepresentation or underrepresentation of racial groups, and the use of indexes that have no intuitive meaning (see Appendix for more detail).

The intent and purpose of this paper is to provide local policymakers and citizens with accurate and granular information that they can understand and use. Thus, we offer a new measure that represents racial imbalances of schools versus neighborhoods, as determined by the percentage point difference for each racial category between its share of the school population and its share of the population under 18 years old in the surrounding neighborhood.

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<sup>3</sup> Note that the definition of Hispanic in this paper includes all persons of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race.

## CHAPTER 3: Data and methodology

School segregation inevitably reflects, to a greater or lesser extent, neighborhood segregation, especially when enrollment criteria are based on geography. Segregated cities plus neighborhood-based admissions make for segregated schools. The question we focus on here is the balance between schools and neighborhoods in terms of racial composition, within school districts. Specifically, we construct a “racial imbalance measure” for every non-private (includes traditional public, charter, and magnet schools) school in the U.S. The methodology required us to:

- a. Collect data on the racial composition of each school
- b. Match schools to school districts
- c. Define the neighborhood around the school for comparison
- d. Collect data on the racial composition of these neighborhoods
- e. Calculate the racial balance of the school *versus* neighborhood

The steps for this procedure are outlined in more detail, and with one specific example, in the Appendix. What follows is a quick review of data sources and the matching method so that readers are aware of how imbalance scores were constructed.

### Data

#### *i. School Data*

To identify school enrollment and demographics, we used the National Center for Education Statistics (NCES) Common Core Data (CCD) for the School Year 2013-2014. Our sample excludes those schools with fewer than 25 students<sup>4</sup>; non-regular schools (vocational, alternative, and special education schools); virtual schools; schools without charters; Head Start schools; and schools whose highest grade of enrollment was pre-kindergarten. The total number of schools in our resulting sample is 86,109.

#### *ii. Neighborhood Data*

To generate demographic data, and specifically racial composition, for surrounding neighborhoods, we used the National Historical Geographic Information System (NHGIS) Census data on block geographic boundaries and demographics in 2010. To align with NCES definitions of race, we use the designations of Hispanic, White non-Hispanic, Black non-

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<sup>4</sup> Using the variable “Total Students All Grades, Excludes Adult Education Learners”

Hispanic, Asian non-Hispanic, and other non-Hispanic.<sup>5</sup> For each identified neighborhood the sum of each of these populations under 18 years of age is divided by the total population under 18 years of age in all relevant Census blocks to generate neighborhood shares by race.

## Methodology

### *iii. Defining Neighborhoods*

To compare schools to their surrounding neighborhoods, we first define the appropriate geographical area. We tested two approaches: one based on distance and another based on matching according to a school's population size.<sup>6</sup> In both cases, we use Census blocks to construct the neighborhood and calculate its racial composition. And in both cases, only Census blocks within the school's district were included in the surrounding neighborhood. (See Chapter 10 for results without the within-district rule in selected areas).

**Radius approach.** Here, the surrounding neighborhood is defined as the areas within a certain radius of the school. Specifically, when the geographic center of a census block fell within the particular radius, this block was included in the surrounding neighborhood for the purposes of our calculation. We calculated racial imbalance measures for all schools using a radius of half a mile, two miles and five miles. We highlight the results for two-mile neighborhoods, but the results for the other radii, which are similar, are reported in the Appendix.

**Fill approach.** As an alternative to imposing a radius, we also created surrounding neighborhoods by expanding out from the school until the youth population (under age 18) of the census blocks matched the enrollment level of the school (or some multiple of that level). The results for a "fill ratio" of 1, 2, and 5 are reported in the Appendix.

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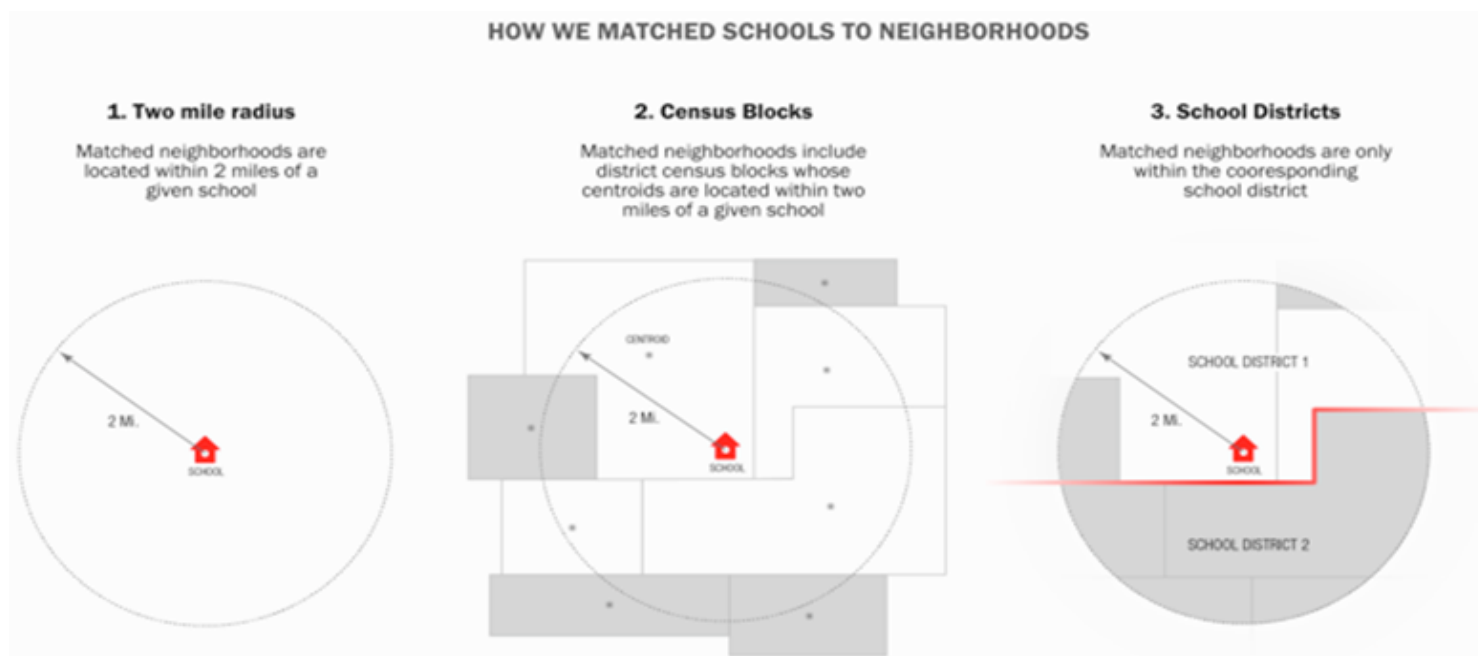
<sup>5</sup> NCES statistical standards state that "Aggregated data reported by education institutions about students, faculty, or staff will follow the Department of Education October 2007 final guidance on ethnicity and race data... Per the Department guidance, the institutions will report aggregate data on ethnicity and race of their students, faculty, or staff to the Department of Education using the following categories: Hispanic or Latino, of any race; American Indian or Alaska Native, not Hispanic or Latino; Asian, not Hispanic or Latino; Black, not Hispanic or Latino; Native Hawaiian or Other Pacific Islander, not Hispanic or Latino; White, not Hispanic or Latino; Two or more races, not Hispanic or Latino." For more information see-  
[https://nces.ed.gov/statprog/2002/std1\\_5.asp](https://nces.ed.gov/statprog/2002/std1_5.asp).

<sup>6</sup> Population size calculations for neighborhoods based on the population under age 18 in each Census block.

The radius approach is simple and easy to understand, but is insensitive to population density: a two-mile radius will have a much bigger population in a city than in a rural area. The fill method takes account of density. But in some cities, the school can be “filled” within a block or two, while the actual school population is drawn from a much wider area.

We generated results for both methods. These are reported in the data supplement file of the Appendix. The overall findings are similar under either approach: the matrix of correlations between all approaches is in the Appendix. For the remainder of this analysis we use results generated using a 2-mile radius. The graphic below demonstrates how that matching process was performed for all statistics reported in this paper (with the exception of chapter 10 where we intentionally drop step 3 for a set of specific localities):

**Figure A:**



#### *iv. Comparing schools to neighborhoods*

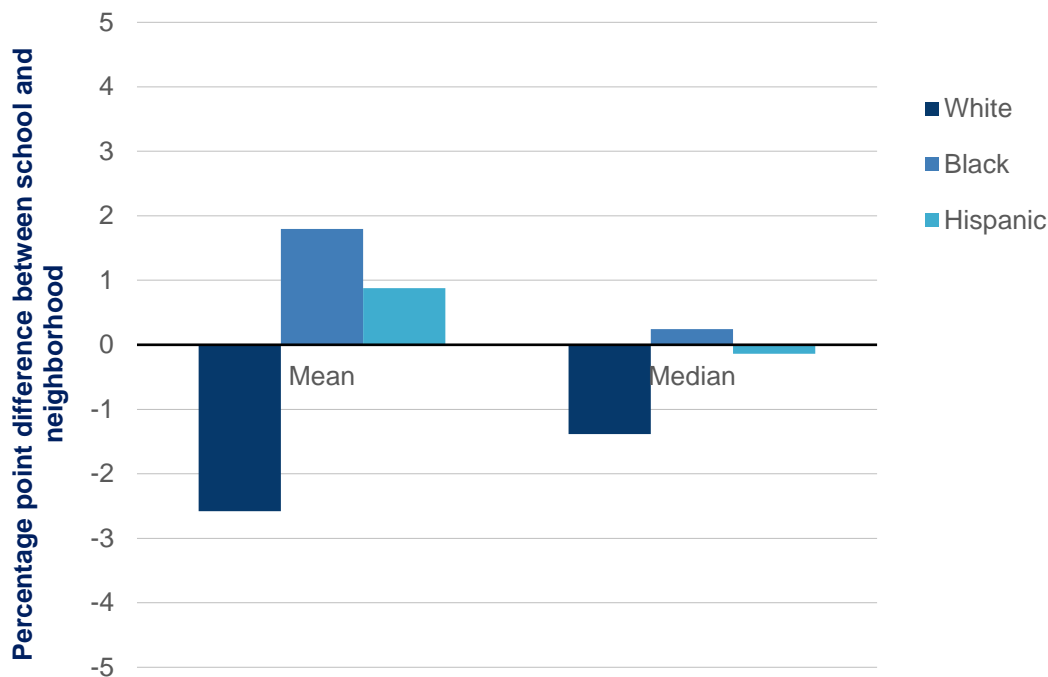
The last step is to compare the racial composition of each school with the racial composition of the school’s surrounding neighborhood. Here we simply compare the representation of each racial group in the school and the neighborhood to generate a “racial imbalance” score, i.e., the difference between the two in percentage point terms. If 60 percent of the students in a school are white, and 50 percent of the under 18 population living in the surrounding neighborhood is white, the white racial imbalance score is +10

percent. If just 40 percent of the students in the school are white, the white racial imbalance score is -10 percent. We show scores for five racial groups: white, black, Hispanic, Asian and other (there is insufficient data to show scores for smaller racial groups).

## CHAPTER 4: Result 1 – Most schools look like their neighborhoods

Our main finding is that schools are similar, in terms of racial composition, to the neighborhoods in which they are located within school districts. The average U.S. public school (including charter and magnet schools) is 2.6 percent less white, 1.8 percent more black, and 0.9 percent more Hispanic than its surrounding neighborhood (using the two-mile radius). The median U.S. school mirrors the local neighborhood even more closely, as Figure 4 shows. (Note that throughout the paper, results for Asians and Other race categories are not shown in Figures, because of the small sample size, but are reported in our tables).

**Figure 4: School racial imbalances across all US public schools, mean and median**



Source: Authors' analysis of National Center for Education Statistics (NCES) Common Core Data (CCD) for the School Year 2013-2014

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To a very large extent, then, school segregation is the near-automatic result of residential segregation. America's schools look like America's neighborhoods. But as the difference between the mean and median results suggests, there are exceptions to this rule; we turn to these outliers next.



## CHAPTER 5: Results 2 – Outliers in terms of racial imbalance – more black, less white

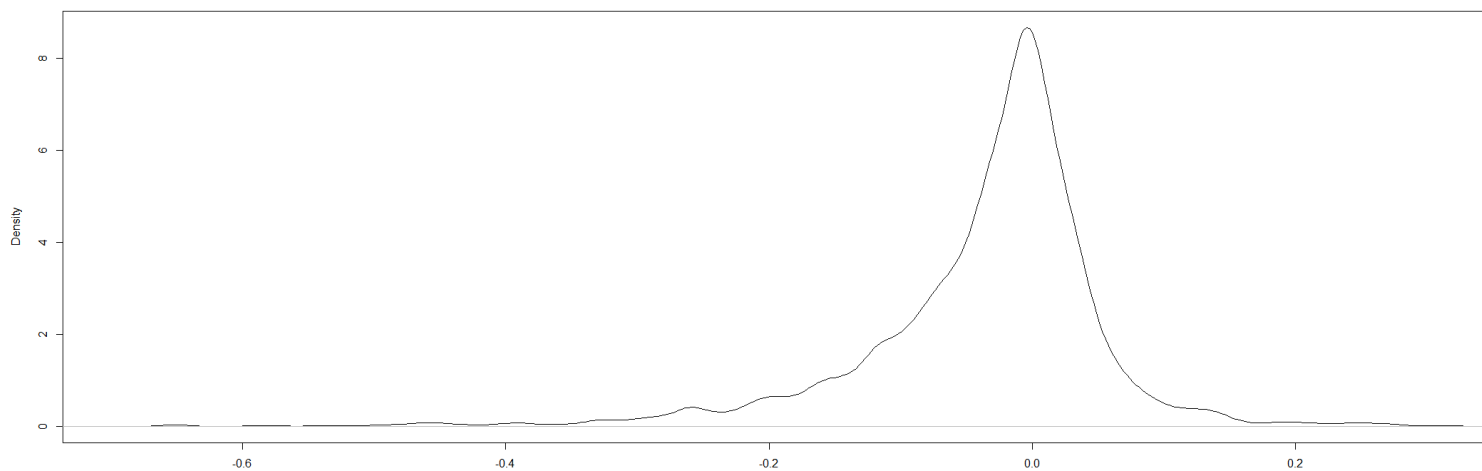
While most schools have low racial imbalances compared to their surrounding neighborhoods, there are some striking exceptions. We therefore defined and examined the schools who were outliers in terms of racial imbalance. Of all the schools in the U.S., 33.33 percent are defined as an outlier, with significant over- or underrepresentation of at least one race. The two most prevalent groups of outlier schools: those with *lower* white representation than in their neighborhoods, and/or with *higher* black representation.

- i. Defining outlier schools
- ii. More black, less white: results
- iii. Caveats and warnings

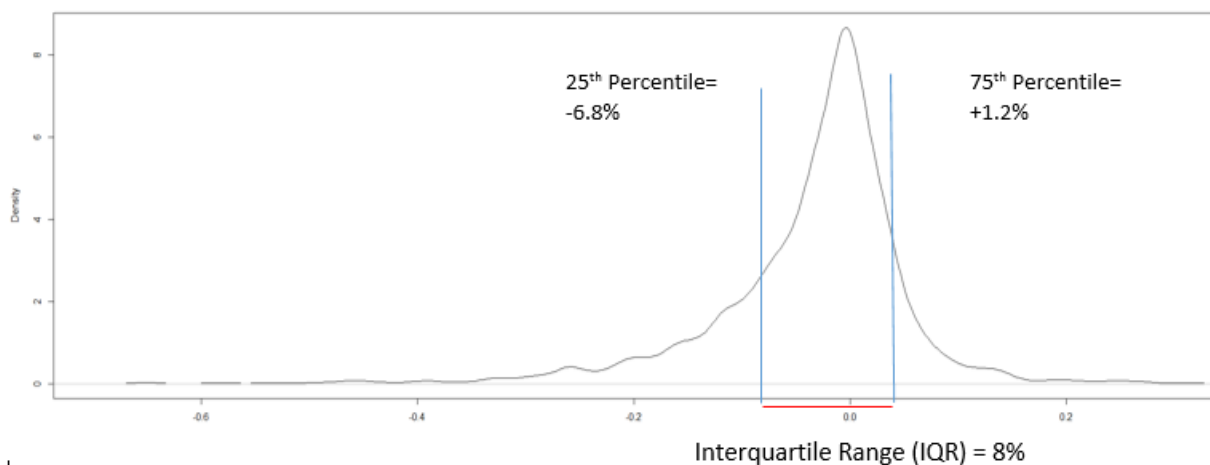
### *i. Defining outlier schools*

We define outliers using interquartile ranges (IQR) of the distribution of school racial imbalance scores for each racial category. The IQR is a standard statistical technique for defining outliers in a distribution. Importantly, we use the distribution *within each state* to generate the outliers. The reason for taking within-state imbalance distributions is twofold. The first is that many states remain under court-ordered desegregation orders that may intentionally alter the degree of resemblance between schools and neighborhoods in a non-voluntary manner. The second is that states' racial compositions differ, leading to either wider or narrow ranges of imbalance scores. This means, importantly, that the threshold for outliers is different in each state (see Tables 2, 3, and 4).

To illustrate the approach, take whites in Illinois. First, we calculate the white racial imbalance score for each school in the state, producing this distribution:

**Figure B.1**

Second, we calculate the IQR for this distribution. This is simply the percentage point gap between the thresholds for the top and bottom quartiles (in other words, the 25<sup>th</sup> and 75<sup>th</sup> percentiles). In Illinois, for whites, the IQR is around 8%:

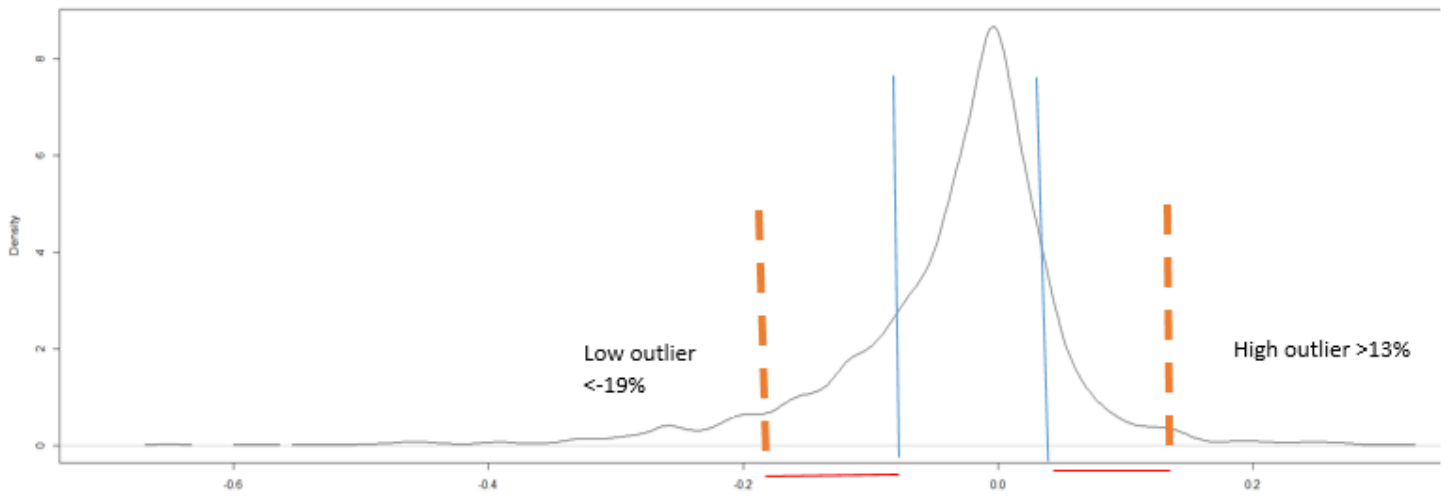
**Figure B.2**

Third, we multiply the IQR by 1.5: this is done so that, assuming a normal distribution, a reasonable level of exclusivity is met. In this case,  $8 \times 1.5 = 12$ .

Fourth, we add 12 (i.e. the IQR  $\times$  1.5) to the 75<sup>th</sup> percentile, and subtract it from the 25<sup>th</sup> percentile, to generate the high and low outliers. Any Illinois school with a white

overrepresentation number above 13% is a high outlier. Any school with a white underrepresentation below -19% is a low outlier:

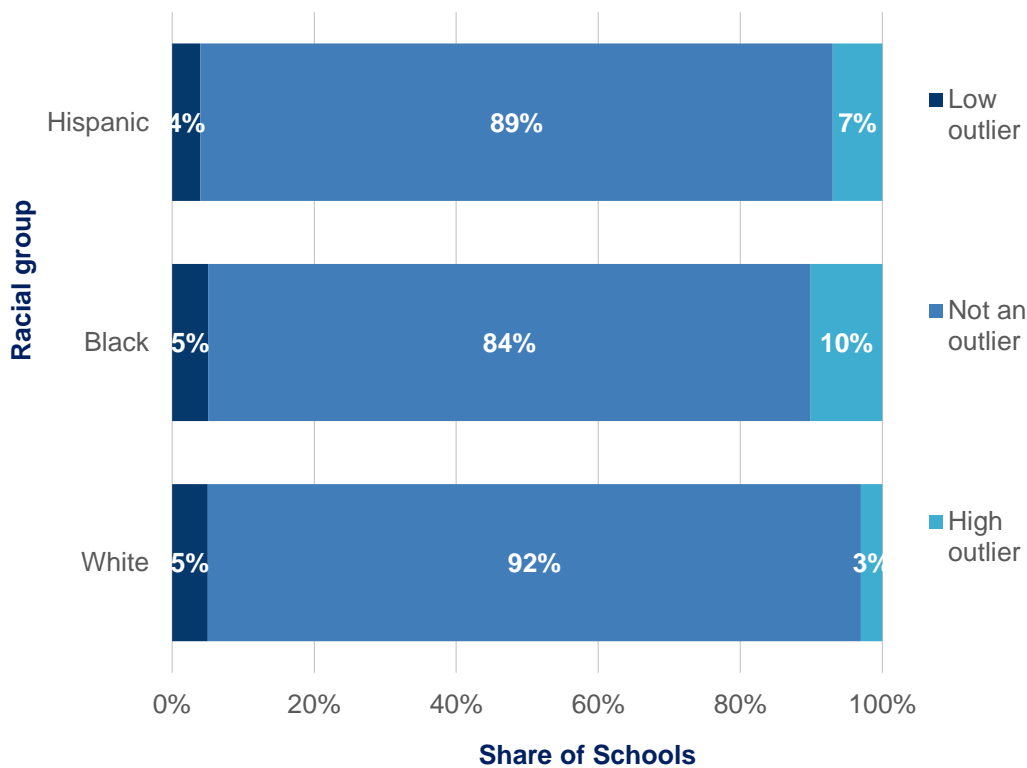
**Figure B.3**



ii. *More black, less white: results*

The minority of schools who qualify as outliers tend to demonstrate either overrepresentation of black and Hispanic students, or underrepresentation of white students (see also Table 5):

**Figure 5: Outlier status by racial group of US public schools**



Source: Authors' analysis of National Center for Education Statistics (NCES) Common Core Data (CCD) for the School Year 2013-2014

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So, while 10 percent of schools are outliers in terms of black overrepresentation, and 7 percent for Hispanic overrepresentation, 5 percent are defined as outliers in terms of white underrepresentation. To the extent that schools have relatively high racial imbalance scores, this is because there are more black or Hispanic students and/or fewer whites than in the surrounding neighborhood. These results could be driven by any number of factors, including private schooling. A racially mixed neighborhood may contain a public school that is disproportionately black, for example, if more local white families opt to send their children to a private school.

### iii. *Caveats and warnings*

Some caveats and warning are required when considering our results for outlier schools:

First, as already noted, outliers are defined using *state level* distributions. For example, to count as a high outlier in terms of white representation in the South Carolina requires a gap of +30 percentage points; in Vermont, the threshold is +7. (For the outlier thresholds for each state by race, see Tables 2, 3, and 4).

Second, our outlier measures are insensitive to the absolute share of any racial group in a particular neighborhood. A school with a student population that is 30 percent black in a neighborhood that is 10 percent black will show up as having black overrepresentation of +20. A school that has a student population that is 80 percent black in a neighborhood that is 60 percent black will show up identically; but may be interpreted differently by some observers.

Third, intentional strategies to integrate schools (for example, busing or court-ordered desegregation) may lead to over- or underrepresentation of particular racial groups compared to their surrounding neighborhoods.

Fourth, greater school choice, through charter schools and open enrollment in traditional public schools, could also make schools look less like their immediate neighborhoods, as students can travel outside their neighborhoods to attend their school of choice.

Fifth, a school may be categorized as an outlier because it offers specific and specialized curriculum. This may attract students from much wider geographical area. For example, Spanish-language schools may have a high representation of Hispanic students by comparison to the immediate surrounding area.

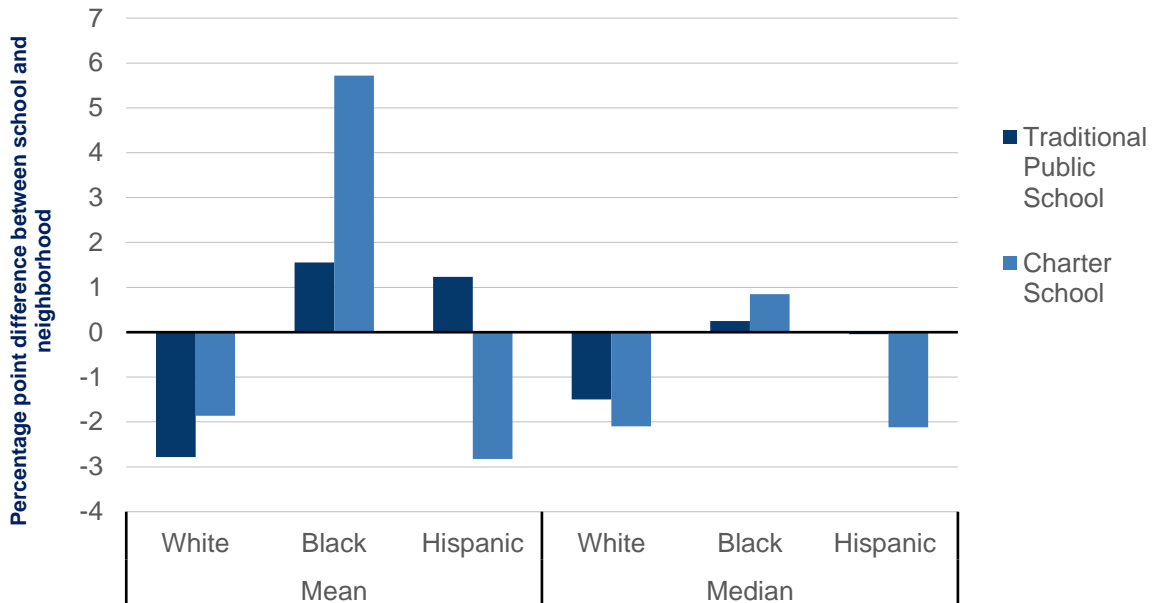
## CHAPTER 6: Result 3 – Charters show more racial imbalance

One of our research questions is whether charter schools differ from traditional public schools in terms of racial imbalance. We compare charters and traditional public schools in terms of overall racial imbalance and in terms of outlier status. In short, we find that charter schools, on average, have higher racial imbalance scores, especially in terms of black imbalance.

### Racial imbalance by school type

Charter schools tend to have higher levels of black racial concentration than their surrounding neighborhoods, as Figure 6 and Table 1 show. The mean racial imbalance score in traditional public schools for black students is +1.6 percent; in charters the mean score is +5.7 percent. Hispanics by contrast are underrepresented in charter schools, compared to the surrounding neighborhood.

#### Racial imbalance: TPS vs Charter schools



Source: Authors' analysis of National Center for Education Statistics (NCES) Common Core Data (CCD) for the School Year 2013-2014

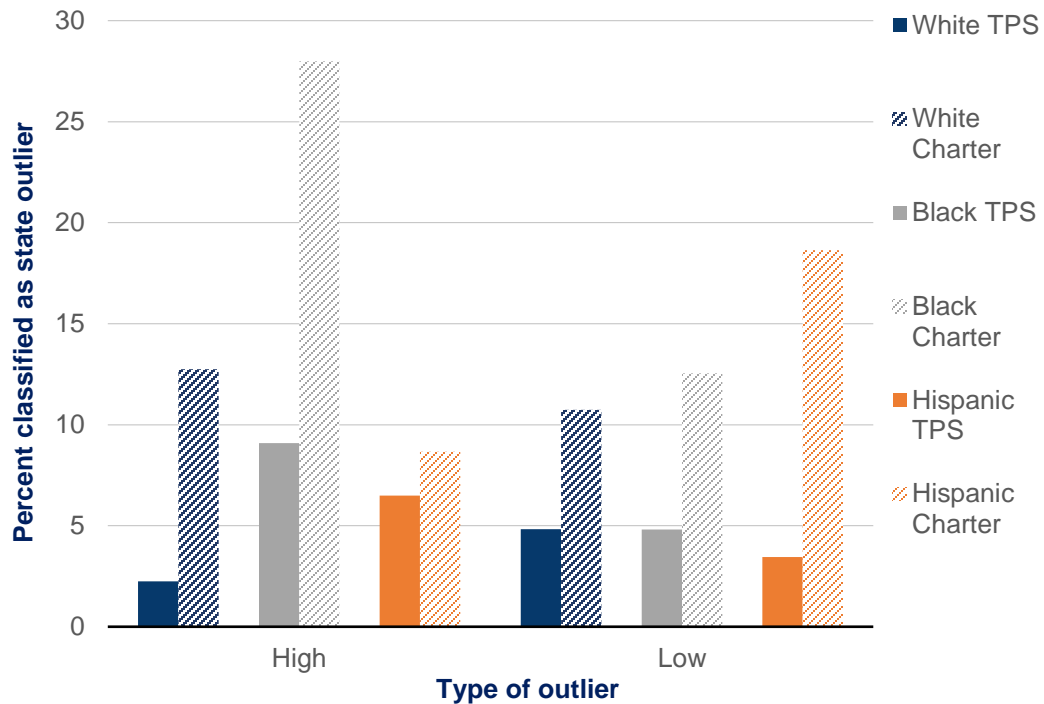


## Outlier status for racial imbalance and school type

Given these overall trends, we would expect higher rates of outliers in terms of racial imbalance among charters. This is indeed what we find, especially for black imbalance. The proportion of charter schools that are high outliers in terms of black racial imbalance relative to neighborhood is three times that of traditional public schools (28 percent compared to 9 percent).

The proportions of high outliers among charter schools in terms of white and Hispanic imbalances are about 11 and 2 percentage points higher, respectively, than for traditional public schools. The proportions of charter schools that are low outliers (i.e., with underrepresentation) in terms of white, black and Hispanic racial imbalances are about 6, 8, and 15 percentage points higher than in traditional public schools:

**Figure 7: Outlier rates, TPS vs. Charter schools**



Source: Authors' analysis of National Center for Education Statistics (NCES) Common Core Data (CCD) for the School Year 2013-2014

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## CHAPTER 8: Result 4 – Why do charters exhibit higher levels of imbalance? It’s complicated

While more questions than answers remain about the channels through which charters end up with higher levels and variances of racial imbalance than traditional public schools, we can say a few things, the most obvious of which is that charters are schools of choice whereas most traditional public schools enroll students in the school to which their place of residence is closest. Thus, whereas a traditional public school that is not part of an open enrollment system will necessarily mirror the demographics of its neighborhood to a high degree, this need not be the case for a charter school that can recruit students from out of its neighborhood.

That said, we do not know which particular characteristics or conditions *causally* exacerbate racial imbalances among charter schools. The best we can do with the data at our disposal is examine correlations between the conditions a specific charter school operates in and its racial imbalances (see Appendix for a full set of correlations). For example, we find no substantial correlation between the quality of statewide charter school laws and racial imbalances. At the same time, large metropolitan areas with a greater share of charter schools and equivalent-grade-level traditional public schools that are geographically close to each other, exhibit moderately larger imbalance scores in their charter sector than metro areas in which schools are more geographically dispersed (see Appendix for more detail).

In short, there is much more to understand about the factors in play that lead charter schools to differ among themselves in their racial imbalance. And explanations for why charter schools have a large range of imbalance scores are likely to require granular and local information.

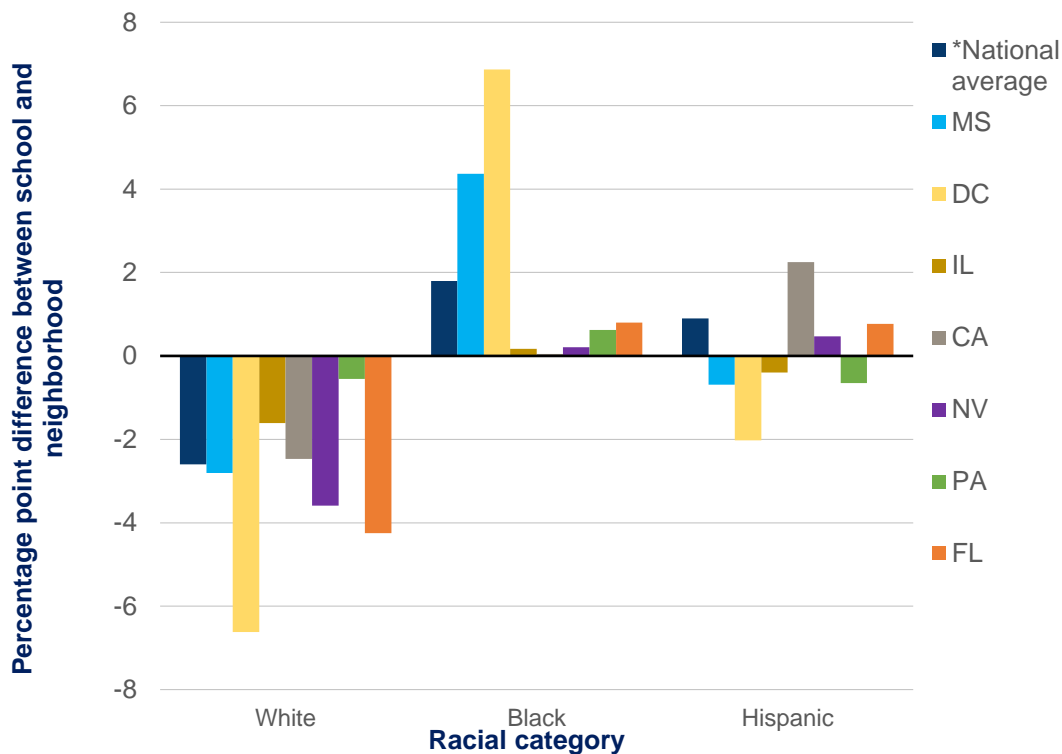


## CHAPTER 9: Result 5 – Racially imbalanced schools are concentrated in a handful of states

So far, we have presented results for all schools in the U.S. (though recall that we generate outliers using state-level distributions). There are of course huge differences among states, not least in terms of overall population size, racial composition, and the balance between urban and rural populations. This translates into significant state-level variation in the racial imbalance of schools.

Recall that the average U.S. public school is about 3 percent less white, 2 percent more black, and 1 percent more Hispanic than its surrounding neighborhood. But the picture is very different in certain states, as Figure 8 shows (the results for each state are listed in Table 6):

**Figure 8: Median racial imbalance scores by state**



Source: Authors' analysis of National Center for Education Statistics (NCES) Common Core Data (CCD) for the School Year 2013-2014

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In the regions with higher minority concentration, the South (for black Americans) and the West and Florida (for Hispanic Americans) the chances of seeing larger racial imbalances in public

schools increases. Whether this is because more minority density translates into more opportunity for minority populations to freely form more homogenous schools by choice or because it translates into increased propensity for white-flight from the school system, we cannot answer in this paper.

A similar pattern can be seen in the distribution of schools that are outliers in terms of racial imbalance (noting again that our outliers are defined using state-level distributions, which in turn are influenced by state demographics). More than 15 percent of the schools in Arkansas, Indiana, and Ohio are outliers with respect to their neighborhoods in terms of black overrepresentation, relative to all public schools in each state. In New York, Ohio, Kentucky, and Iowa more than 8 percent of schools are classified as outliers with respect to their neighborhoods in terms of white underrepresentation, relative to all public schools in each state (see Table 7 for results on all states).

## CHAPTER 10: School district boundaries divide some communities along racial lines

For all the results presented thus far, the racial composition of schools has been compared to their surrounding neighborhood (i.e., census blocks with a centroid inside the two-mile radius) *within* a school district. The intuition here is that, in general, students can only attend schools in their own school district.

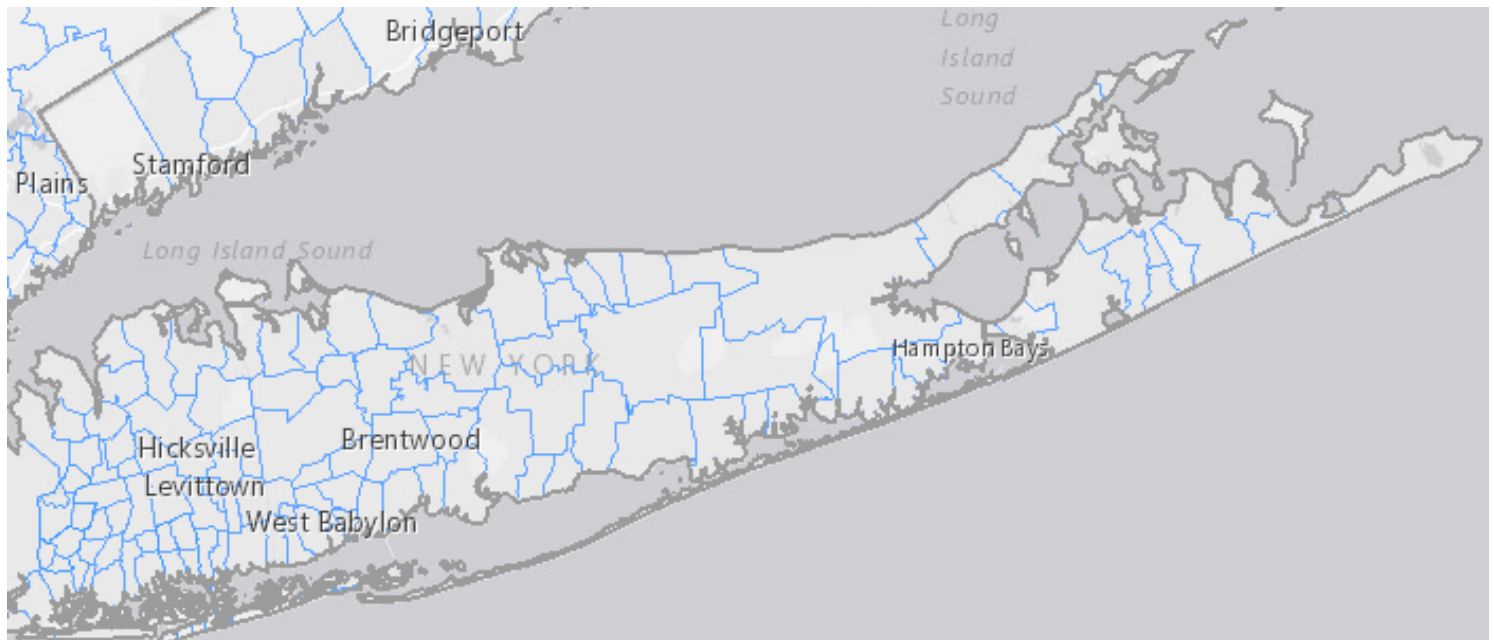
But as we showed in our previous paper, trends in the racial segregation of schools *within* school districts and the degree of segregation *between* districts do not always go in the same direction. If district boundaries themselves divide neighborhoods along racial lines, our main measure may understate racial imbalance in schools. If a district boundary is near a school, and has the effect of excluding nearby students of a particular race, the school may *look* more racially balanced than it would be in the absence of the district boundary. Obviously, this risk is greater in geographically smaller school districts because schools are more likely to be close to the geographical boundaries of these districts than they are in geographically large districts. This is a topical issue, given the growing movement towards secession of school districts, which some commentators fear will lead to greater racial segregation, but which is not visible using within-district measures. Since 2000, at least 71 communities across the country have attempted to create new, smaller school districts (47 of which have been successful), according to research by EdBuild.

Some studies suggest that that a proliferation of smaller school districts (say, with fewer than 1,000 students) leads to higher costs through lost economies of scale; perhaps as much as \$1 billion a year nationally. But our focus here is on segregation rather than efficiency

We test the influence of district boundaries on the racial imbalance of schools by relaxing our within-district condition for creating the neighborhoods around schools in two areas with particularly small or unusually-constructed districts: Long Island, New York and Camden, New Jersey. We find that in these places, and especially in certain districts, the boundaries can make a big difference to our measures of racial imbalance. (The results for each district in Long Island and Camden are in the Appendix in Tables A and B).

## Long Island, New York

**Map 1: School district boundaries in Long Island**



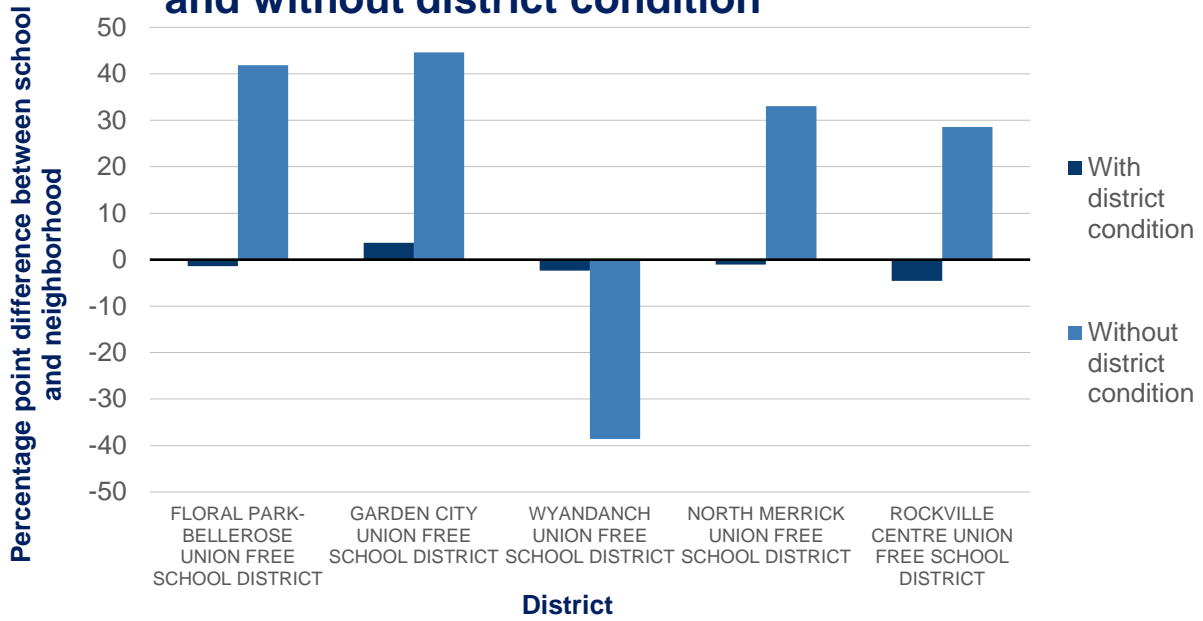
Source: NCES MapED Interactive

The school districts on Long Island are quite small (125 districts have been carved out of an island of just 1,400 square miles, with the typical district having only one high school). In some of these districts, the boundaries have a big impact on racial imbalance scores.

For example, the schools in Floral Park-Bellrose Union Free School District, NY have an overall racial imbalance score of around -1 percent for whites and just under 1 percent for blacks when we retain the within-district condition for neighborhood definition: in other words, the schools appear to mirror their neighborhoods almost perfectly. But when the within-district condition is removed, the racial imbalance score for whites is +42 percent, and for blacks is -23 percent. It is the district itself that is segregated.

Figure 9 shows the white racial imbalance score for the average school in the five districts where relaxing the within-district condition has the biggest effect:

**Figure 9: White imbalance, Long Island, by with and without district condition**

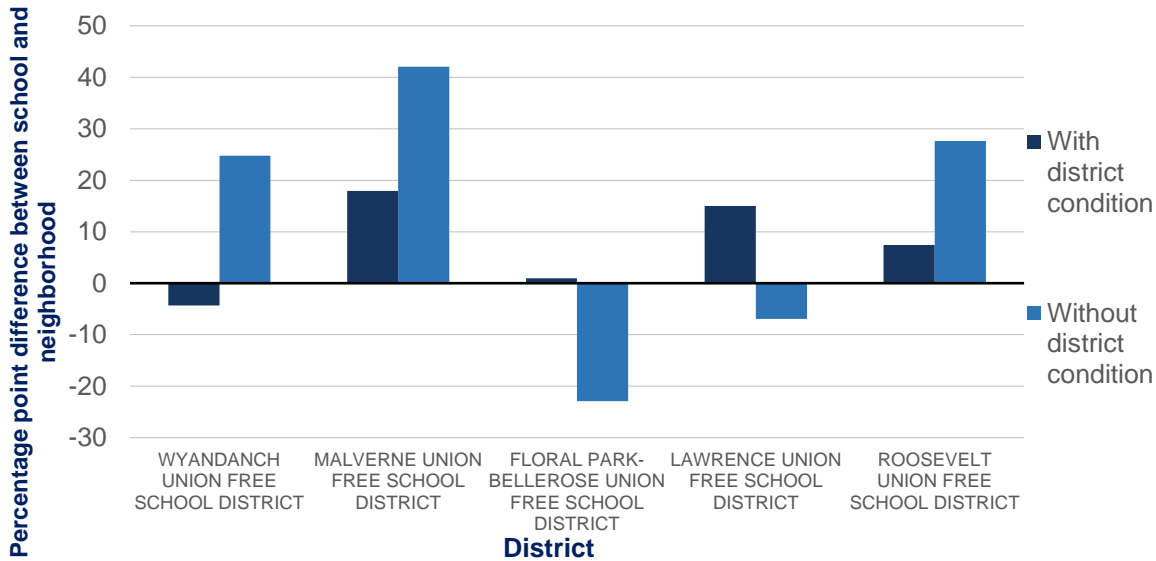


Source: Authors' analysis of National Center for Education Statistics (NCES) Common Core Data (CCD) for the School Year 2013-2014

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Figure 10 shows the five districts showing the biggest impact of district boundaries on the racial imbalance score for blacks:

**Figure 10: Black imbalance, Long Island, by with and without district condition**

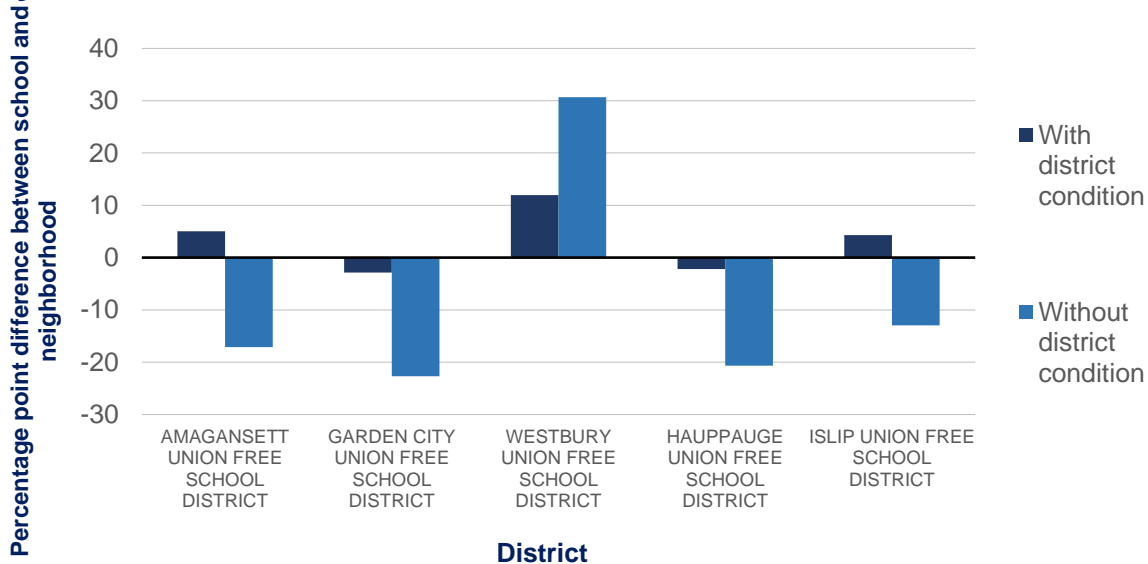


Source: Authors' analysis of National Center for Education Statistics (NCES) Common Core Data (CCD) for the School Year 2013-2014

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Figure 11 shows the five districts showing the biggest impact of district boundaries on the racial imbalance score for Hispanics:

**Figure 11: Hispanic imbalance, Long Island, by with and without district condition**

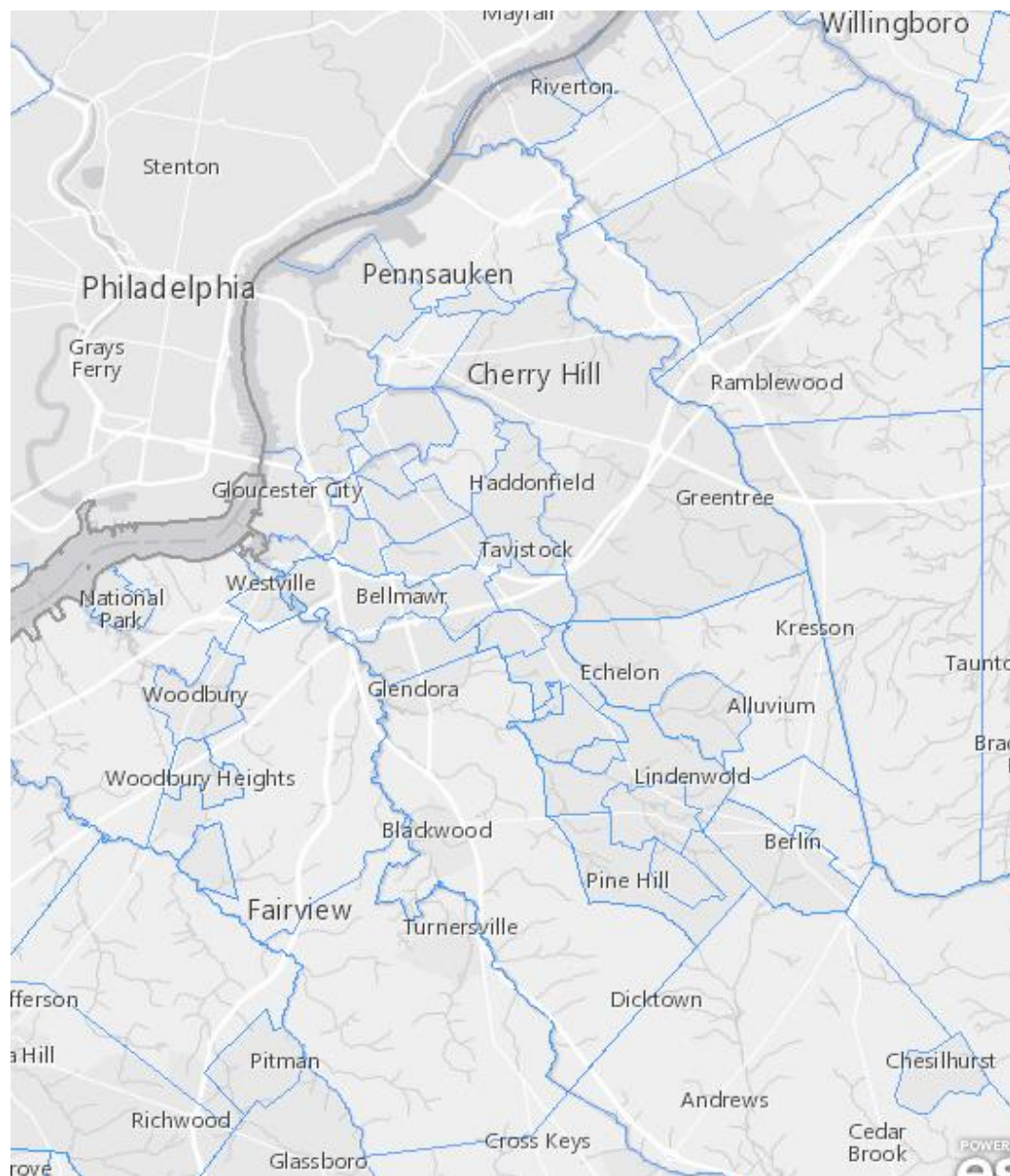


Source: Authors' analysis of National Center for Education Statistics (NCES) Common Core Data (CCD) for the School Year 2013-2014

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## Camden, New Jersey

**Map 2: School district boundaries in Camden and Burlington counties, NJ:**



Source: NCES MapED Interactive

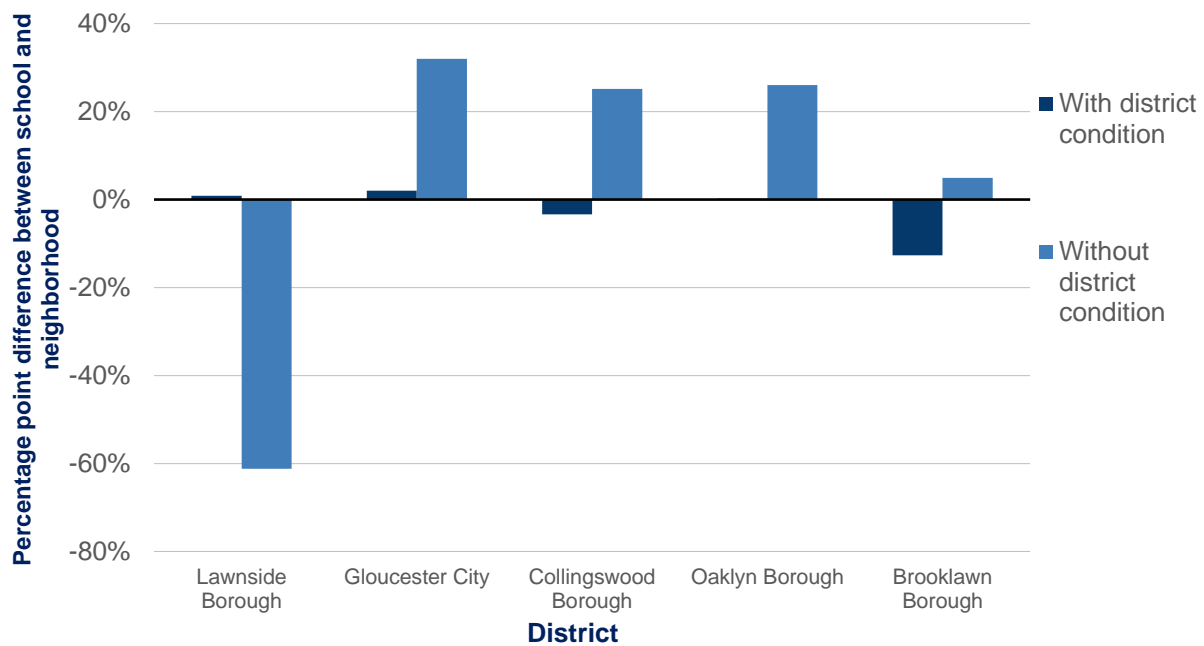
The Camden City School District, in Camden County, NJ, to the east of Philadelphia, serves a student population that is overwhelming poor and minority. The child poverty rate is 45 percent, 90 percent of students are eligible for free- or reduced- price lunches, and 48 percent are black

and 50 percent are Hispanic (with just 0.5 percent white). Around Camden City there is an archipelago of smaller school districts: in fact, there are about 32 within a five-mile radius, mostly with more affluent, whiter populations.

The racial imbalance scores for Camden City are much higher when the within-district condition is relaxed. The white score shifts from -1 percent to -9 percent, while the black score changes from 7 percent to 12 percent. However, Camden City is hardly the worst in the area in terms of its imbalance score.

Figures 12, 13, and 14 respectively show the white, black, and Hispanic scores for the average school in the set of districts that show the biggest consistent effects from loosening the within-district condition in the larger area of Camden and Burlington counties: Lawnside Borough, Gloucester City, Collingswood Borough, Oaklyn Borough, and Brooklawn Borough.

**Figure 12: White imbalance, Camden and Burlington Counties, NJ, by with and without district condition**

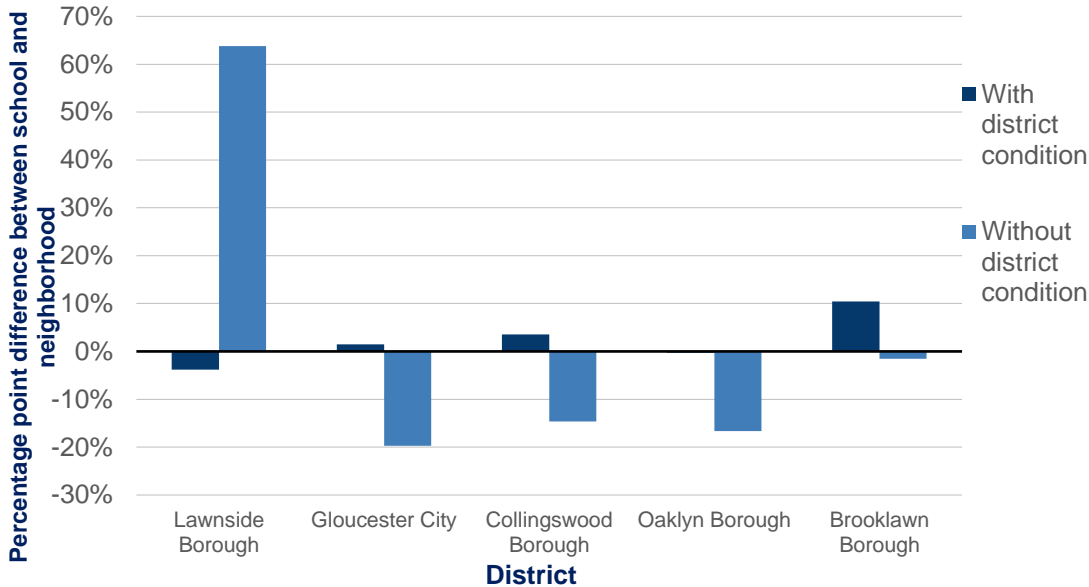


Source: Authors' analysis of National Center for Education Statistics (NCES) Common Core Data (CCD) for the School Year 2013-2014

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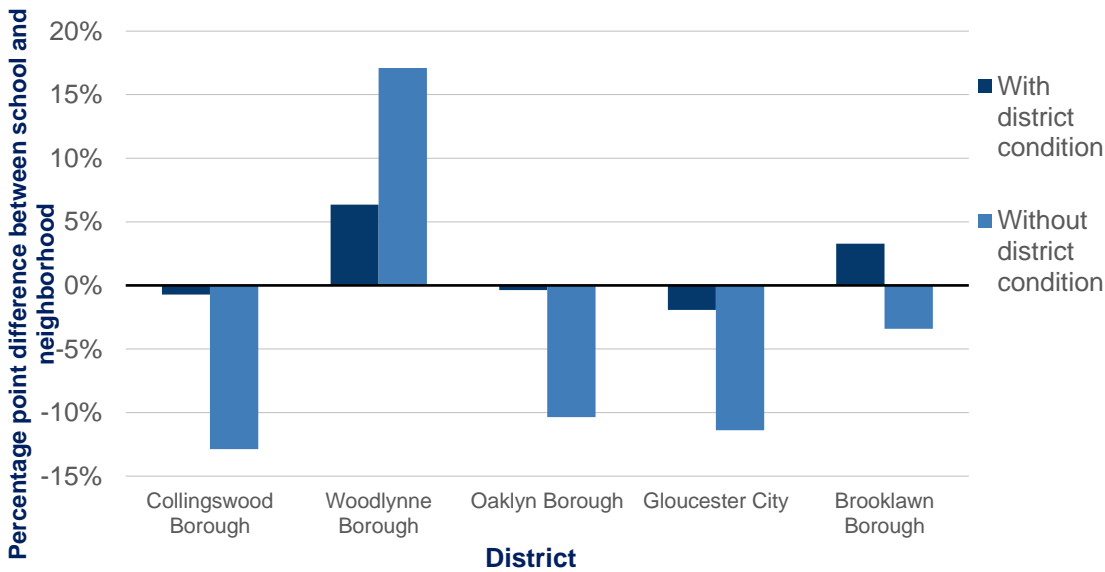
**Figure 13: Black imbalance, Camden and Burlington Counties, NJ, by with and without district condition**



Source: Authors' analysis of National Center for Education Statistics (NCES) Common Core Data (CCD) for the School Year 2013-2014

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**Figure 14: Hispanic imbalance, Camden and Burlington Counties, NJ, by with and without district condition**



Source: Authors' analysis of National Center for Education Statistics (NCES) Common Core Data (CCD) for the School Year 2013-2014

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Our overall results suggest that schools mostly look like the neighborhoods contained within their district. But it is clear that in certain areas, with very small or even “gerrymandered” school district boundaries, this is in part because segregation is taking place between school districts rather than within them. Here we have highlighted some of the more extreme cases in order to demonstrate the point. Long Island as an example of some of the most locally constrained districts, and Camden as an example of a notable urban-suburban divide. It is important to note that these are the exceptions rather than the rule. In most places, with geographically larger school districts and boundaries that were formed long ago when population demographics were different, the district boundaries will not materially influence degrees of racial imbalance in individual schools.

## CHAPTER 10: Conclusion

One of the main messages of this report is that there is significant variation in the racial balance of schools in different places and for different school types. It is hard then to draw general conclusions: we would urge readers of this papers, and users of the accompanying interactive, to look closely at particular places and individual schools. A number of key themes do however emerge:

1. Schools tend to look like their neighborhoods. This means that attempts to integrate schools are likely to require active efforts to buck trends of neighborhood and residential racial segregation.
2. Patterns of school imbalance can be highly granular and are often a matter of local conditions, history, policy legacies, and underlying characteristics.
3. Charter schools tend to have a wider distribution of imbalance scores than traditional public schools; this may serve to reverse segregate trends in some cases and reinforce them in others.
4. Choices of school district boundaries can matter. The way in which school districts are drawn can substantially influence the racial imbalances between schools and surrounding neighborhoods.

A charter school being more black than its surrounding neighborhood may be the result of intentional policy. The school's organizers may have a priority of serving poor black families, and families that choose the school may prefer it because of that priority and because children with their own child's racial and cultural background dominate the enrollment. People can have different views about the desirability of this. If good education outcomes for the most disadvantaged kids is the goal, integration may be a means to that end. But the success of many highly segregated urban charter schools suggests that it is not the only one.

There are two simple stories that can be told about charter schools and racial segregation. One is that charters will deepen segregation, in part by allowing for blacks and whites to choose schools in which students of their race dominate enrollment. Another is that charters will lessen segregation by loosening the connection between neighborhood and school. Our research suggests that there is some truth to each of these stories, differing across place and time, but when taken alone, each is too simplistic.

None of this is to say that successful efforts to desegregate schools should necessarily be abandoned – it can be done, but it is uphill work. As two of the authors has argued in “Convenience plus a conscience: Lessons for school integration,” “school integration is not only a byproduct of residential segregation, but also a reflection of policy choices.”

The variation in the racial composition of schools across different districts shows that it is possible to increase integration. But it is important to be aware that this will be challenging given

such high levels (still) of residential racial segregation, area based attendance policies, and a natural preference of many parents to send their children to a nearby school. Schools make the degree of residential segregation highly visible. School segregation is a symptom of residential segregation; which lies outside the scope of this paper.

There are many normative goals that are relevant here: reducing gaps in school quality; reducing racial and economic segregation of schools; reducing racial and economic segregation of neighborhoods; enhancing parental power and choice over their children's education; allowing local communities a say in the provision of education; and so on. These goals may be complementary; but just as often, they can be in tension. Our goal here has been to provide a solid empirical base upon which not only policymakers, but parents and other stakeholders, can base their work.

## Tables and Figures

**Table 1. Mean and median imbalance measure by school type**

	Race	Traditional Public School	Charter School
Mean	White	-2.78	-1.859
	Black	1.556	5.721
	Hispanic	1.23	-2.825
Median	White	-1.501	-2.099
	Black	0.2468	0.8449
	Hispanic	-0.0433	-2.118

**Table 2. Different thresholds for low and high outlier classification by state, white imbalance**

State	Low	High
AK	-17.97%	14.90%
L	-28.61%	24.43%
AR	-17.95%	19.54%
AZ	-23.54%	19.25%
CA	-19.50%	12.98%
CO	-25.16%	20.25%
CT	-18.07%	15.16%
DC	-29.82%	16.82%
DE	-42.75%	34.39%
FL	-29.46%	20.97%
GA	-28.38%	23.40%
HI	-13.88%	16.00%

IA	-10.60%	9.21%
ID	-13.19%	16.03%
IL	-18.86%	13.29%
IN	-17.74%	12.79%
KS	-16.91%	14.20%
KY	-13.40%	14.12%
LA	-36.04%	25.78%
MA	-20.37%	15.64%
MD	-24.39%	15.45%
ME	-6.91%	10.35%
MI	-18.72%	16.39%
MN	-20.41%	16.92%
MO	-13.85%	13.59%
MS	-30.82%	23.87%
MT	-14.12%	14.79%
NC	-29.98%	23.65%
ND	-13.07%	12.87%
NE	-16.29%	14.76%
NH	-7.88%	9.70%
NJ	-18.05%	14.96%
NM	-22.64%	19.15%
NV	-23.44%	17.15%
NY	-26.14%	18.88%
OH	-15.90%	12.58%
OK	-24.08%	16.86%
OR	-21.05%	18.33%

PA	-14.86%	12.38%
RI	-18.50%	15.41%
SC	-32.38%	27.99%
SD	-12.42%	14.29%
TN	-19.77%	17.59%
TX	-19.56%	13.01%
UT	-15.29%	17.28%
VA	-27.91%	21.53%
VT	-7.39%	10.55%
WA	-21.01%	16.35%
WI	-13.96%	12.60%
WV	-5.57%	9.11%
WY	-12.49%	14.44%

**Table 3. Different thresholds for low and high outlier classification by state, black imbalance**

<b>State</b>	<b>Low</b>	<b>High</b>
AK	-1.49%	2.15%
AL	-17.57%	24.37%
AR	-4.73%	5.60%
AZ	-3.91%	5.32%
CA	-3.57%	4.10%
CO	-2.23%	2.57%
CT	-5.52%	7.95%
DC	-27.25%	46.62%
DE	-25.05%	35.65%
FL	-17.44%	21.16%
GA	-18.98%	23.15%
HI	-1.80%	2.43%
IA	-2.77%	3.59%
ID	-1.18%	1.47%
IL	-5.35%	6.86%
IN	-3.75%	4.89%
KS	-3.21%	4.07%
KY	-4.91%	5.19%
LA	-24.38%	35.30%
MA	-4.52%	6.15%
MD	-16.71%	21.48%
ME	-2.29%	2.99%



MI	-6.93%	10.55%
MN	-4.08%	5.68%
MO	-5.61%	8.84%
MS	-21.39%	31.92%
MT	-0.83%	1.38%
NC	-17.03%	19.17%
ND	-2.47%	4.11%
NE	-2.49%	3.46%
NH	-1.82%	2.27%
NJ	-6.89%	9.75%
NM	-1.83%	2.16%
NV	-5.17%	6.76%
NY	-10.21%	14.98%
OH	-5.65%	7.86%
OK	-4.04%	5.19%
OR	-1.81%	2.06%
PA	-5.08%	7.55%
RI	-3.95%	5.44%
SC	-24.84%	29.19%
SD	-1.23%	2.00%
TN	-8.94%	12.53%
TX	-6.72%	7.02%
UT	-1.33%	1.49%
VA	-11.85%	14.14%
VT	-2.80%	2.78%
WA	-2.41%	2.77%

WI	-3.10%	4.49%
WV	-2.71%	3.22%
WY	-1.21%	1.66%

**Table 4. Different thresholds for low and high outlier classification by state, Hispanic imbalance**

State	Low	High
AK	-8.53%	5.12%
AL	-5.86%	4.38%
AR	-7.45%	6.54%
AZ	-21.21%	21.99%
CA	-21.47%	26.60%
CO	-19.60%	23.38%
CT	-9.92%	11.44%
DC	-15.59%	11.35%
DE	-14.02%	13.34%
FL	-16.20%	20.01%
GA	-8.73%	8.99%
HI	-18.41%	9.96%
IA	-5.88%	5.97%
ID	-12.66%	10.24%
IL	-10.20%	10.68%
IN	-7.20%	7.26%
KS	-9.85%	10.15%
KY	-5.31%	4.79%

LA	-4.99%	4.42%
MA	-8.12%	10.25%
MD	-7.83%	10.00%
ME	-4.23%	3.03%
MI	-6.28%	4.63%
MN	-7.65%	6.61%
MO	-5.41%	3.74%
MS	-4.28%	2.70%
MT	-8.18%	6.32%
NC	-11.99%	14.23%
ND	-6.14%	5.65%
NE	-9.83%	10.51%
NH	-4.77%	3.07%
NJ	-12.46%	13.57%
NM	-22.93%	22.81%
NV	-18.53%	20.13%
NY	-14.10%	15.77%
OH	-4.89%	3.85%
OK	-10.39%	9.35%
OR	-14.98%	14.74%
PA	-4.97%	3.78%
RI	-9.52%	12.55%
SC	-6.87%	6.48%
SD	-5.84%	4.74%
TN	-6.99%	6.38%
TX	-15.75%	20.12%

UT	-13.00%	11.31%
VA	-7.81%	9.18%
VT	-4.59%	3.06%
WA	-11.24%	13.63%
WI	-7.51%	6.85%
WV	-3.12%	1.87%
WY	-11.65%	9.08%

**Table 5. Share of all schools that classified as outliers, by race, all schools**

Race	Low outlier	Not an outlier	High outlier
White	5%	92%	3%
Black	5%	84%	10%
Hispanic	4%	89%	7%
Asian	1%	98%	2%
Other	2%	95%	4%

**Table 6. Median under/overrepresentation of racial groups in America's schools by state**

State	White	Black	Hispanic	Asian	Other
AK	-0.61%	0.00%	-1.09%	0.00%	1.33%
AL	-1.37%	1.25%	-0.75%	0.00%	-0.99%
AR	1.14%	0.24%	-0.63%	0.00%	-1.32%
AZ	-1.89%	0.30%	0.56%	-0.13%	-0.50%
CA	-2.47%	0.05%	2.25%	-0.11%	-0.96%

CO	-2.04%	0.00%	1.24%	0.00%	-0.28%
CT	-1.11%	0.67%	0.16%	0.25%	-1.33%
DC	-6.62%	6.87%	-2.02%	-0.37%	-2.17%
DE	-2.58%	3.35%	-0.43%	0.10%	-2.46%
FL	-4.25%	0.80%	0.77%	-0.10%	-0.42%
GA	-2.33%	1.16%	-0.25%	-0.08%	-0.23%
HI	0.60%	0.16%	-3.92%	2.23%	-1.53%
IA	-0.53%	0.18%	0.03%	0.00%	-0.11%
ID	1.54%	0.05%	-1.43%	0.03%	-0.78%
IL	-1.61%	0.17%	-0.39%	0.00%	-0.03%
IN	-1.42%	0.06%	-0.14%	0.00%	0.60%
KS	-0.97%	0.13%	-0.02%	0.00%	-0.16%
KY	0.85%	0.00%	-0.33%	0.00%	-0.91%
LA	-4.11%	3.99%	-0.44%	0.00%	-1.04%
MA	-1.78%	0.39%	0.37%	0.04%	-1.16%
MD	-3.50%	1.10%	0.50%	0.00%	-0.84%
ME	1.61%	0.21%	-0.71%	0.00%	-1.61%
MI	-0.29%	0.60%	-0.91%	0.00%	-1.27%
MN	-0.54%	0.31%	-0.59%	0.00%	-0.89%
MO	0.51%	0.61%	-0.79%	0.00%	-1.38%
MS	-2.81%	4.37%	-0.69%	0.00%	-0.81%
MT	0.54%	0.00%	-1.15%	0.00%	-0.24%
NC	-2.88%	0.21%	0.69%	0.00%	0.02%
ND	0.16%	0.27%	-0.06%	0.00%	-0.79%
NE	-0.08%	0.04%	-0.03%	0.00%	-0.33%
NH	1.13%	0.04%	-0.86%	0.11%	-0.85%

NJ	-1.44%	0.60%	-0.15%	0.12%	-1.97%
NM	-1.65%	0.00%	0.58%	0.00%	-0.78%
NV	-3.59%	0.21%	0.47%	-0.16%	0.75%
NY	-2.10%	0.64%	-0.32%	0.08%	-1.69%
OH	-0.60%	0.26%	-0.57%	0.00%	0.00%
OK	-3.27%	0.23%	-0.79%	0.00%	1.49%
OR	-0.72%	0.01%	-0.53%	0.00%	0.05%
PA	-0.55%	0.62%	-0.65%	0.00%	-0.92%
RI	-0.62%	0.49%	0.76%	-0.25%	-1.75%
SC	-2.22%	1.19%	-0.32%	0.00%	-0.35%
SD	0.67%	0.00%	-0.38%	0.00%	-1.12%
TN	-0.10%	0.48%	-0.36%	0.00%	-1.69%
TX	-2.40%	-0.02%	1.90%	0.00%	-0.23%
UT	1.13%	0.04%	-1.09%	0.00%	-0.77%
VA	-1.91%	0.21%	0.22%	0.00%	-0.49%
VT	2.04%	0.00%	-0.57%	0.00%	-1.14%
WA	-1.94%	0.02%	1.00%	0.00%	-0.54%
WI	-0.23%	0.42%	-0.42%	0.00%	-0.69%
WV	1.63%	0.13%	-0.57%	0.00%	-1.29%
WY	1.15%	0.00%	-1.44%	0.00%	-0.43%

**Table 7: Outlier rates by state, percent of all schools**

State	White		Black		Hispanic		Asian		Other	
	Low	High	Low	High	Low	High	Low	High	Low	High
AK	4.9	5.9	8.6	9.4	3	2.2	5.4	11.1	4.6	3.8
AL	4.5	1.3	2.7	6.1	6.7	8	0.1	7.4	1.8	5.2
AR	4.7	2.6	12.3	16.5	6.2	6.2	0.3	8.3	1.8	3.1
AZ	3.4	4.5	3.1	7.8	4.9	3.6	4.6	6.5	1.7	7.5
CA	5.9	5.4	6.8	10.8	3.8	4.4	7.4	8.4	2.7	5.8
CO	3.9	2.9	6.4	10	2.7	4.5	0.1	7.5	1.8	2.8
CT	5	4.9	7.8	9.5	7.7	9.8	1.6	5.7	0.3	1
DC	2.6	5.6	5.1	1.5	10.8	13.8	0	9.7	0.5	8.7
DE	0	2.2	1.1	3.8	8.6	8.6	0	7	0.5	0
FL	1.9	3.7	5.1	7.1	3	4.4	1	6.3	0.9	2.5
GA	3.5	3.5	5.6	4.3	4.5	8.1	3.2	8	0.6	1.8
HI	2.5	7.7	1.8	8.4	2.1	0	17.2	1.1	0.7	5.3
IA	8.1	3.1	4.2	8.2	4.2	7.3	0.7	7.4	1.2	1.5
ID	3.2	1.8	2.8	5.3	3.2	5.5	0	7.2	2.2	5.3
IL	6.2	1.7	7.7	13.7	7.1	11.4	3.3	10.5	0.9	3.7
IN	6.5	1.5	6.1	15.7	4.2	7.8	0.6	7.6	1.3	2.7
KS	4.5	1.8	3.7	10.1	3.4	6.7	0.9	9.5	2	3.3
KY	8.7	4.2	8	14.3	4	7.7	0.2	7.1	2.3	3
LA	2.8	2.5	2.9	3.5	2	7.8	0.2	8.3	1.8	3.1
MA	3.5	2.3	4.9	9.5	4.5	11	3.5	8.6	5.2	1.6
MD	3.5	3.4	4.2	4.5	2.3	9.8	2.3	8.7	0.3	1.7
ME	3	2.8	3	5.3	1.9	2.1	1.9	5.3	1.1	2.8
MI	7.2	1.6	2.8	14.3	4.8	6.8	1.3	7.4	1.6	2.5
MN	6.4	2.7	6	13.8	7.3	7.2	5.6	10.3	3.3	4.5
MO	7.3	1.4	2.9	12	5.1	5.5	1.4	8.3	0.9	1.9
MS	3.1	2.1	2.2	3	4.9	5.6	0	6.5	3.9	3.4
MT	4	1.1	6.8	11.4	1.1	1.3	0.2	9.5	1.4	5.3
NC	2.6	2.9	4.8	5.7	4	5.4	1.3	8.9	1.3	3.2
ND	6.1	3.4	0.2	7.9	4.3	4.5	0.9	15.5	3.6	4.7
NE	7.3	1.7	4.1	9.2	2.8	7.8	1.3	8.6	2.6	3.1
NH	3.9	2.8	3.4	4.1	4.7	3.9	0.6	4.3	1.1	1.7
NJ	5	2.1	6.2	10.8	4.1	7.8	5.4	9.7	1.9	2.9
NM	1.9	6.4	2.9	5.9	5.8	2.2	0.2	9	4.1	11.9
NV	1.7	6.2	4.2	8	6.9	2.6	0.9	5	1.2	2.1
NY	8.7	1.7	6	14	5.1	11.1	5.9	10.3	3.9	2.6
OH	8.2	1.8	4.4	16	5.6	5.6	0.4	7.8	1.9	2.7
OK	3	1.4	4.8	10.4	2.7	5.7	0.2	8.3	1	3.5
OR	4.1	2.7	4.1	6.9	4	6.5	0.9	8.3	1.2	4.8

PA	7.7	2.6	4.3	13.4	6.6	9	0.1	10.2	1.7	4.3
RI	3.6	1.1	3.6	9.7	2.9	7.9	0.4	4.7	2.2	1.1
SC	1.8	2.2	2.7	3.2	3.6	6.7	0.1	4.5	1	1.7
SD	5.6	3.5	6.1	9.8	5.1	3.2	0	16.3	5.1	6.3
TN	6.4	2.9	5.1	12.1	4.3	8.5	0.5	7.4	0.8	1.5
TX	4.8	3.6	7.8	10.9	4.4	5	2.3	10.2	1.9	3.9
UT	5	2.5	2.2	6.5	3.7	6.4	0	7.6	2.1	3.8
VA	2	0.8	4.2	7.4	2.1	8.9	1.5	8	0.7	1.4
VT	4.1	1.4	1.7	4.1	2.7	2	0	8.4	2	2.7
WA	3	1.6	3.8	9.5	2.3	5.5	2.8	10.4	3.6	4.2
WI	6.8	3	4	13.1	5	7.2	3.7	8.8	1	3.9
WV	5.3	5	7.8	8.7	2.2	2.6	0.3	6.2	2.1	2.9
WY	2	3	2.7	8.1	2	3.4	0.3	4.4	1	3.4



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