SEGREGATION AND SCHOOL FUNDING:

HOW HOUSING DISCRIMINATION REPRODUCES UNEQUAL OPPORTUNITY

ALBERT SHANKER INSTITUTE

BRUCE D. BAKER, MATTHEW DI CARLO, PRESTON C. GREEN III

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EXECUTIVE SUMMARY

It is difficult to overstate the importance of segregation for race- and ethnicity-based school funding disparities in the United States. In many respects, unequal educational opportunity depends existentially on segregation.

Yet racial and ethnic segregation—and thus its impact on school funding—is most certainly not a recent phenomenon. Throughout most of the 20th century, white people decided where other races were allowed to live. An evolving array of strategies, from municipal laws to private contracts to federal aid programs, established and reinforced the systematic separation of households by race and ethnicity in the nation's burgeoning metropolitan areas. And they have been incredibly effective.

These efforts, several of which persist today, laid the foundation for the modern segregation regime in the United States. Nonwhite families were confined to urban centers or isolated "inner ring" suburbs, while white families dispersed into all-white outer suburbs (that were often established as autonomous entities with their own school systems). The central purpose was to segregate people based on race, but this inevitably segregated resources as well. Even if nonwhite families overcame the discriminatory barriers to buying a home, the neighborhoods in which they were allowed to live—due precisely to their being allowed to live there—were artificially assessed as lower value and higher risk than white areas. Racial and ethnic disparities in wealth accumulation were therefore perpetuated over generations, ensuring persistent segregation even after explicitly racist housing discrimination was outlawed.

This process has had serious and lasting implications for many important outcomes, including modern school funding equity. In the United States, school districts rely heavily on local property tax revenue, which means where one lives—particularly in which district—in no small part determines how well one's neighborhood's schools are funded. The mutually dependent relationship between economic and racial/ethnic segregation simultaneously depresses revenue and increases costs in racially isolated districts, creating a self-sustaining cycle of unequal opportunity and unequal outcomes.

The descriptive analysis presented in this report examines this process, both nationally and with a focus on seven metropolitan areas: Baltimore (Maryland), the Bay Area (California), Birmingham (Alabama), Hartford (Connecticut), Kansas City (Kansas/Missouri), San Antonio (Texas), and the Twin Cities (Minnesota/Wisconsin).

SUMMARY OF RESULTS

We unpack the segregation/school funding relationship in stages. After a review of the major institutional "tools" used to segregate U.S. metropolitan areas throughout the 20th century, we show that—thanks in no small part to the ongoing legacy of generations of segregation—Black and Hispanic homeowners in all seven metro areas have less income, have lower housing values, and pay higher effective property tax rates than do their white counterparts.[i]

These "first order" effects of segregation on wealth and income inevitably play out in "second order" effects on local property tax revenue for K-12 schools. Most notably, within most of our metro areas, the typical Black or Hispanic student's district receives less local property tax revenue than does the typical white student's district.

i Throughout this report, we will be using the terms "Black" and "Hispanic" instead of "African American" and "Latinx/Latino," as the former terms are those used by the U.S. Census Bureau and National Center for Education Statistics, the sources of all our race and ethnicity data.

State general aid in most areas closes at least part of the gaps, but, in any case, these resource disparities must be evaluated with an eye on a "third order" effect of segregation on funding: The concentration of poverty in racially isolated areas not only depresses revenue, but also increases educational costs. That is, districts serving larger shares of high-needs students must invest more to achieve the same outcomes. This creates (and sustains) unequal educational opportunity—i.e., large gaps in the adequacy of school funding between students of different races and ethnicities living in the same metro area.

We measure these opportunity gaps using a national cost model that estimates the per-pupil funding levels required (i.e., adequate) to achieve the "benchmark" common goal of national average math and reading scores for over 12,000 public school districts; these adequate spending levels are compared with actual spending in each district (and metro area).

At the aggregate level, we find substantial racial/ethnic educational opportunity gaps within all of our "case study" metro areas. To give a rough sense of the magnitudes, if our data are pooled across all seven areas, spending for the typical white student is about $3,000 per pupil above estimated adequate levels, whereas spending is roughly $3,000 below adequate for the average Black student and just over $2,000 below adequate for the typical Hispanic student.

Such race-/ethnicity-based adequacy gaps across entire metro areas, however, are a symptom of the segregation of students *between districts within those metro areas.* In other words, the typical Black or Hispanic student's district is less adequately funded than the typical white student's because these groups are concentrated in certain districts. Accordingly, nationally, we find that **metro areas with greater between-district segregation tend to have larger adequate funding gaps between white and Black/Hispanic students.** In general, where opportunity is most unequal, segregation is extensive.

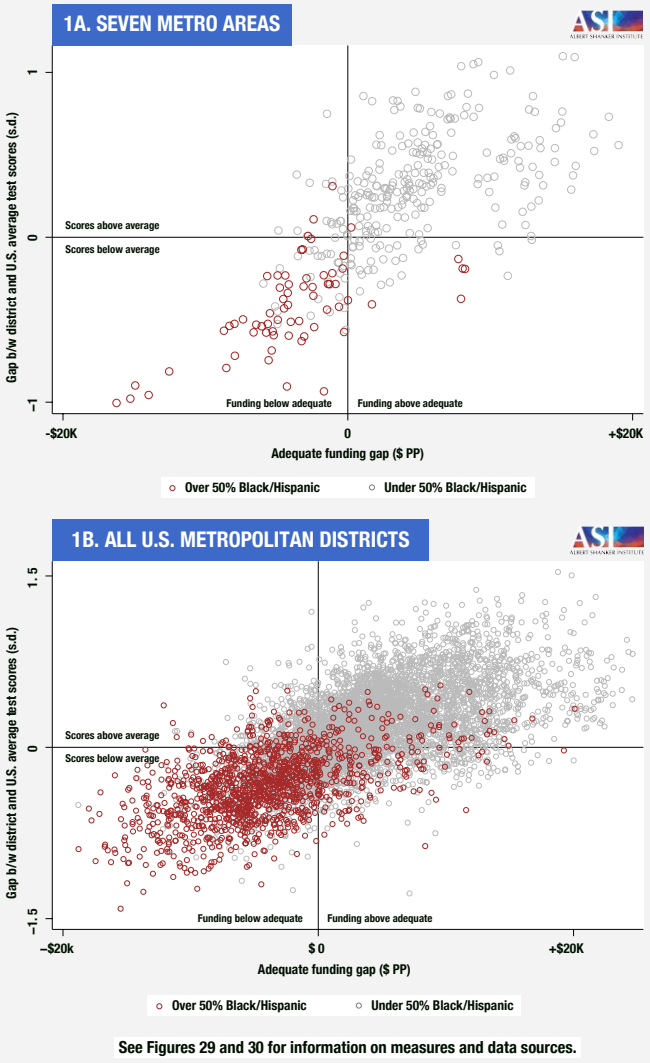
This relationship is no less clear at the district level. In both our seven case study metro areas as well as nationally, we find that **districts serving majority-Black/Hispanic student populations are overwhelmingly likely to be funded inadequately (and to have relatively poor student outcomes to match).**

- Across all seven metro areas, 90 percent of majority-Black/Hispanic districts spend below estimated adequate levels, compared with 12 percent of majority-white districts.

- And this matters for student outcomes: 85 percent of majority-Black/Hispanic districts are both inadequately funded and score below the U.S. average on math and reading tests, compared with 6 percent of majority-white districts. (See Figure Exec1A.)

FIGURE EXEC1

DISTRICT STUDENT OUTCOMES BY ADEQUATE FUNDING GAPS (MAJORITY-BLACK/HISPANIC DISTRICTS IN RED)



See Figures 29 and 30 for information on measures and data sources.

- Conversely, out of the roughly 200 districts throughout all seven metro areas with funding above adequate levels and testing outcomes above the U.S. average, precisely one serves a majority-Black/Hispanic student population.

- The same basic conclusions apply nationally: For instance, of the over 1,300 majority-Black/Hispanic regular public school districts located in U.S. metropolitan areas, roughly 82 percent receive inadequate funding, compared with about 22 percent of majority-white districts. Among the roughly 3,200 metropolitan districts in which funding is adequate and scores are above the U.S. average, only 80 (2 percent) are majority Black/Hispanic. (See Figure Exec1B.)

In order to address the fact that the "majority-Black/Hispanic" threshold depends in part on metro area racial/ethnic composition (e.g., in metro areas with smaller Black/Hispanic populations, students may be segregated even if districts don't reach the majority threshold), as well as the fact that some states' finance systems are less generous than others, we also examine the association between districts' racial/ethnic composition and funding adequacy with both outcomes defined relative to each district's metro area overall. For example, we measure racial/ethnic composition as the difference (in percentage points) between each district's percentage of Black/Hispanic students and its overall metro area's percentage of Black/Hispanic students.

And we again find a very strong relationship: **Districts that serve disproportionately large shares of their metro areas' Black and Hispanic students also have less adequate funding compared with their metro areas overall.**

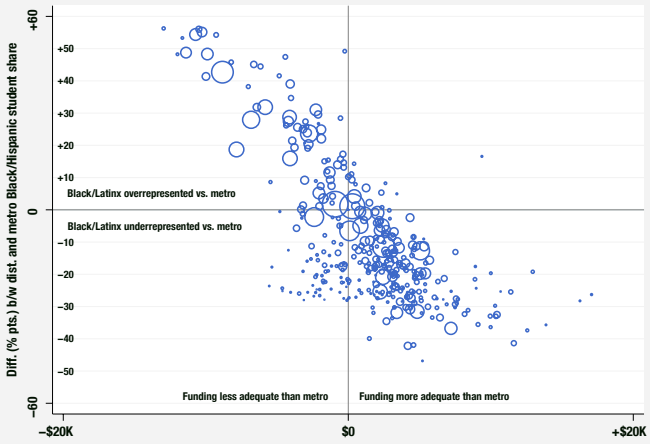
- For example, across our seven metro areas, there are 41 districts in which the percent of Black/Hispanic students is at least 20 percentage points higher than their metro areas overall. Every single one is funded less adequately than its metro area. (See Figure Exec2.)

- Similarly, among the 60 districts in which the Black/Hispanic share is at least 10 percentage points higher, 55 (92 percent) are funded less adequately than their metro areas.

- And this too holds across all U.S. metropolitan districts: 89 percent of districts with Black/Hispanic student percentages at least 10 points higher than their host metro areas (994 out of 1,116) receive less adequate funding than does their metro area overall. Nationally, a 10 percentage point increase in a district's Black/Hispanic student population above its metro area's overall Black/Hispanic percentage is associated with a decrease in relative funding adequacy of over $1,500 per pupil.

FIGURE EXEC2

DISTRICT PERCENT BLACK/HISPANIC STUDENTS RELATIVE TO METRO AREA OVERALL BY RELATIVE ADEQUATE FUNDING GAPS (SEVEN METRO AREAS)



See Figure 31 for information on measures and data sources.

All of our results are descriptive and do not necessarily represent evidence of causality. That said, they do indicate a consistent relationship between racial/ethnic segregation and school funding adequacy both nationally and in our seven focus metro areas. Yet our case studies also show how this unequal opportunity can be traced back to segregative efforts that began over 100 years ago.

Segregation by race and ethnicity—and thus its impact on school finance—didn't happen by accident.

As a part of our discussion of the segregation/funding relationship in each metro area, we also include an examination of the association between modern school funding adequacy (and demographics) and the "redlining" maps drawn up during the late 1930s. These maps, which were commissioned by the Home Owners' Loan Corporation (HOLC), assigned A-D grades to neighborhoods across the United States.

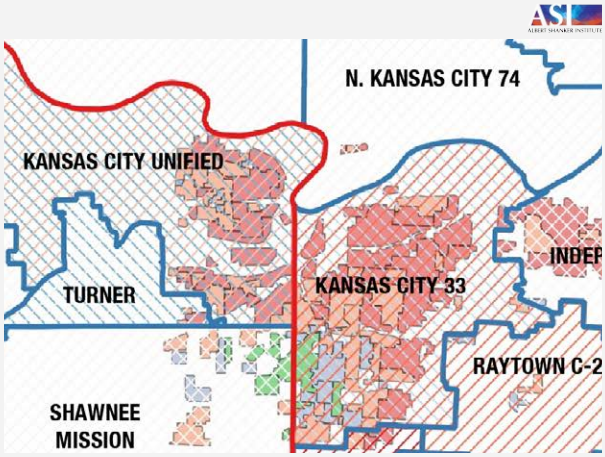
The grades ostensibly assessed home lending risk, but they were based in no small part on the race of neighborhoods' residents. The distribution of

grades, therefore, roughly reflects both the segregation situation at the time and general (racialized) risk assessments that directly or indirectly influenced not only HOLC aid but also other federal (e.g., Federal Housing Administration, Veterans Administration) loan insurance decisions going forward (a practice known today as redlining, as the highest-risk areas in the HOLC maps were shaded in red). These programs dramatically increased access to homeownership in the United States, but, due to redlining, the beneficiaries were almost exclusively white.

Within our metro areas, **the HOLC redlining maps from 80 years ago consistently correspond with district racial/ethnic composition, school neighborhood poverty, and K-12 funding adequacy today. For example:**

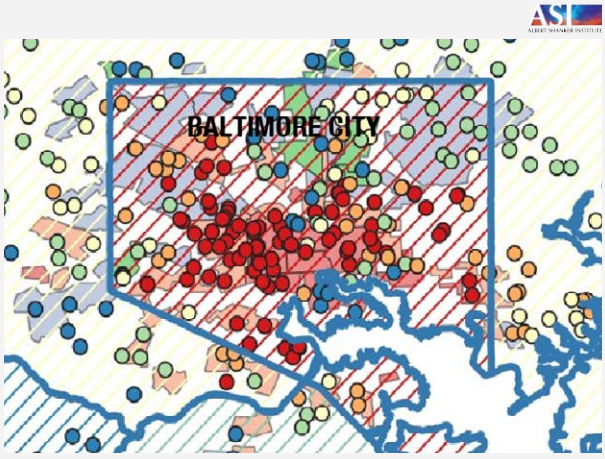
- The vast majority of neighborhoods that received lower (C or D) HOLC grades between 1935-40 are today located in school districts serving larger shares of Black and Hispanic students. (See Figure Exec3.)
- Schools located in previously C-/D-graded zones are also typically those serving lower-income neighborhoods today. In most of our case study areas, even within districts, a huge proportion of the lowest-income schools are found in C-/D-graded zones. (See Figure Exec4.)
- Virtually all districts that contain a large area of C-/D-graded HOLC zones are today funded below estimated adequate levels. In a few areas, they are among the only districts in which funding is not adequate.
- The districts with large C-/D-graded spaces and inadequate funding are often located right near heavily A-/B-graded districts with adequate funding. (See Figure Exec5.)
- Funding is usually adequate—or, in a couple of widely underfunded metros, at least less inadequate—in ungraded suburban districts that were in the vicinity of heavily redlined districts but developed later (again, often fueled by federally backed home loans that excluded nonwhite applicants, coupled with private legal agreements never to sell to nonwhite buyers in the future). (See Figure Exec6.)

FIGURE EXEC3



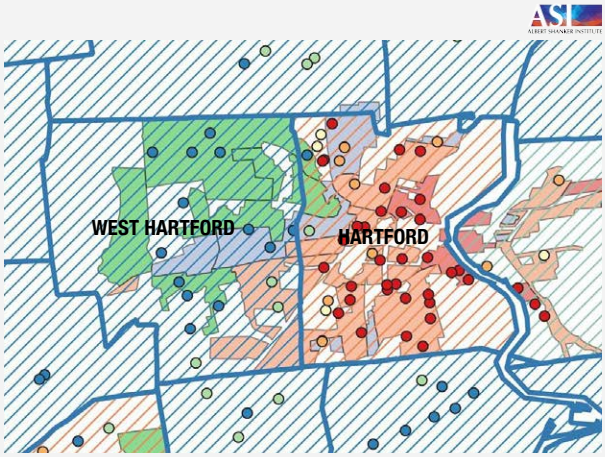
The legacy of Kansas City developer J. C. Nichols' all-white developments in the early 20th century: The mostly white Shawnee Mission district directly borders heavily redlined, mostly Black/Hispanic districts in two states, Kansas City 33 (Missouri) and Kansas City Unified (Kansas). See Figure 17 in the report for full map and legend.

FIGURE EXEC4



The distribution of school-area poverty within the Baltimore City Public Schools district was set in motion generations ago: The vast majority of the highest-poverty school neighborhoods (red dots) today are located in areas given C/D grades in 1935-40. See Figure 5 in the report for full map and legend.

FIGURE EXEC5



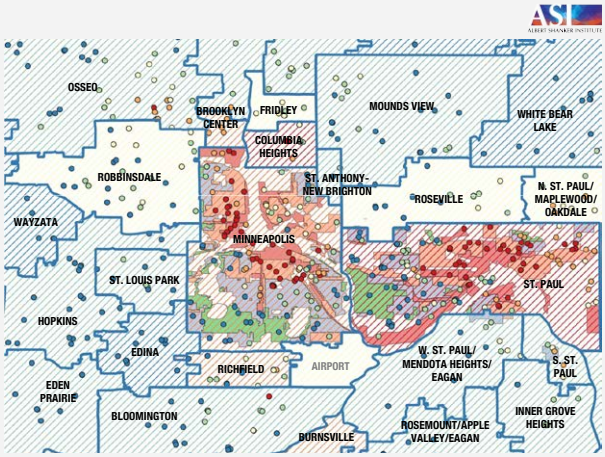
Mostly white, adequately funded West Hartford received largely A/B grades in 1935-40, while mostly Black/Hispanic, inadequately funded Hartford received C/D grades.
See Figure 15 in the report for full map and legend.

The case studies in this report also present a great deal of discussion of area-specific features and history. This includes prior evidence of the use of other segregation "strategies" common throughout the 20th century, such as racial covenants, zoning, and blockbusting, which often helps to provide context for—and explain exceptions to—the observations discussed above. For instance, segregation in the Birmingham metro area has been exacerbated by the secession of several mostly white, relatively affluent districts from their parent Jefferson County district since 1970 (See Figure Exec7.) These secessions, in Alabama and elsewhere, continue even today.

Overall, our seven metro areas vary quite a bit in terms of where they are located, the students they serve, the finance systems of their parent states, and many other aspects. Yet they are all rather consistent in how well they illustrate the relationship between racial/ethnic segregation and school funding disparities. And the national estimates discussed above suggest that they are far from unique in this regard.

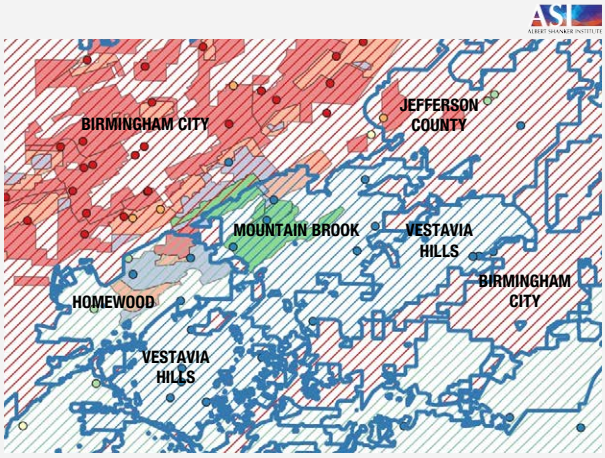
This is because racial/ethnic segregation did not occur due to a random confluence of local events and factors. Many of the same basic "tools" were widely employed throughout the United States for over 100 years. The legacy of these efforts for K-12 funding today are clear, and portraying racial/ethnic disparities in funding adequacy and outcomes merely as a side effect of income and wealth segregation requires one to ignore this history. Economic segregation, while interdependent with racial/ethnic segregation today, has its roots in generations of institutional policies and practices to keep people separate based solely on their race or ethnicity. Racial discrimination built the machine, even if economic inequality helps keep it running now.

FIGURE EXEC6



Heavily redlined Minneapolis and St. Paul are among the only districts in the Twin Cities metro area with funding substantially below adequate levels today. See Figure 26 in the report for full map and legend.

FIGURE EXEC7



Since 1970, several mostly white districts in Alabama, including Homewood, Mountain Brook, and Vestavia Hills, have seceded from the mostly Black Jefferson County district. Today, these "carved out" districts are among the most adequately funded in the state, whereas the Jefferson County district is funded well below adequate levels. See Figure 12 in the report for full map and legend.

INTRODUCTION

Any discussion of race- and ethnicity-based school funding disparities in the United States is necessarily a discussion about segregation. The systematic sorting of families by race and ethnicity into neighborhoods (and thus into school districts), combined with the reliance in the Unites States on local property taxes to fund public schools, means that racial and ethnic differences in wealth and income—which are themselves due in part to segregation—generate accompanying disparities in the levels and adequacy of school resources. In many respects, unequal educational opportunity depends existentially on segregation.

Yet segregation by race and ethnicity—and thus its impact on school finance—didn't happen quickly, nor by accident. Throughout the 20th century, an array of formal and informal institutions and tactics, on the part of both private and public actors, were used to ensure, often quite deliberately and explicitly, the systematic separation of families by race and ethnicity. This segregation "toolkit" has evolved over time, in response to legislation and court decisions, as well as to general social and economic conditions. Various stakeholders created new segregative strategies and adapted old strategies to new circumstances (sometimes in the form of blatant noncompliance). Each new or refashioned tool exacerbated or reinforced existing segregation. By the time each strategy was rendered obsolete or illegal, the damage had been done, and new tools were crafted to keep the proverbial ball rolling.

Segregation in the United States has been a cumulative, long-term process. The legacy of even the oldest strategies is evident today, while less explicit modern tactics build on and reinforce this foundation. And these efforts, past and present, have been extraordinarily effective. The United States is extensively segregated by race and ethnicity (Charles 2003; Elbers 2021; Logan and Stults 2021; Massey and Tannen 2015).

Although the central purpose of segregative strategies is and has always been establishing and reinforcing the separation of white people from Black, Hispanic, and other people, [1] its practical impact on public school funding relies fundamentally on race- and ethnicity-based disparities in income and wealth.

Residential segregation is inevitably accompanied by school segregation, which in recent decades is driven more by the separation of races/ethnicities between districts within metro areas than it is between schools within districts (Lichter, Parisi, and Taquino 2015; Reardon and Owens 2014; Reardon, Yun, and Eitle 2000; Stroub and Richards 2013). The racially isolated areas/districts that are home to Black and Hispanic residents,[2] due in no small part to the short- and long-term legacy of segregation, tend to have substantially lower housing and property values than do largely white neighborhoods (Perry, Rothwell, and Harshbarger 2018). This generates less local revenue for schools serving Black and Hispanic families (local revenue, on average, constitutes almost half of all K-12 school funding). Although state revenue is supposed to fill the gap between local revenue and costs, in most states it is insufficient to do so and/or poorly targeted (Baker, Di Carlo, Reist, et al. 2021). The end result is large disparities in K-12 funding by race and ethnicity, fueled by residential/school segregation.

This might suggest that racial and ethnic inequality in educational resources (and outcomes) can be

1 Throughout this report, we will be using the terms "Black" and "Hispanic" instead of "African American" and "Latinx/Latino," as the former terms are those used by the U.S. Census Bureau and the National Center for Education Statistics, the sources of all our race and ethnicity data.

2 Segregation affects—and historical and contemporary segregation efforts targeted—many other groups, including (but not limited to) Asians, Jews, immigrants, and Native Americans. In this report, however, we will be focusing mostly on the separation of white from Black and Hispanic residents and students, as they are the predominant racial and ethnic groups both nationally and in all but one of the seven metro areas we examine in depth. We will also be combining Black and Hispanic students into a single category for some of our analyses, despite the fact that the extent, causes, and effects of segregation often differ between these groups, as well as the fact that there is increasingly segregation not just of Black and Hispanic from white residents and students, but also of Black and Hispanic residents/students from each other (Elbers 2021; Reardon et al. 2000).

"explained away" by economic inequality and/or segregation. That is misguided. For one thing, racial disparities in schooling resources persist above and beyond poverty- and wealth-related disparities (Baker et al. 2020; Bifulco 2005; Sosina and Weathers 2019; Weathers and Sosina 2022). More importantly, segregation today is the product of many decades of efforts, the vast majority of which were designed to separate people based strictly on race and ethnicity. In this sense, it is not merely the case that economic disparities fall disparately by race and ethnicity. Rather, racism—and discrimination on the basis of race and ethnicity—were and are the root cause of racial economic disparities.

It is also important to note that the impact of segregation on school funding, like segregation itself, is self-reinforcing. The concentration of poverty in heavily Black and Hispanic areas not only constrains the ability to raise revenue, it increases educational costs as well (Duncombe and Yinger 2007). This creates a feedback loop, in which the districts that need the most resources tend to receive the fewest. Such deprivation depresses the economic outcomes of these districts' students (Baker 2017; Candelaria and Shores 2019; Jackson 2020; Jackson, Johnson, and Persico 2016; Lafortune, Rothstein, and Schanzenbach 2018), which in turn perpetuates the geographic isolation and concentrated poverty that generates lower revenue and higher costs. Without direct and intentional efforts to integrate, which have been sporadic within districts and almost nonexistent between them, both segregation and unequal educational opportunity will remain persistent.

In this report, we present an overview and descriptive analysis of the historical and contemporary connection between racial/ethnic segregation and school funding inequity. We first lay out the changing set of major strategies by which residential and therefore school segregation was (and is) deliberately created and maintained in the evolving economic, social, legislative, and legal environment of the 20th and early 21st centuries.

After a brief discussion of how segregation affects school funding outcomes, we move on to part one of our descriptive analysis, in which we provide results showing racial and ethnic disparities in property wealth, revenue, and K-12 funding adequacy in a group of seven metropolitan areas: Baltimore, Maryland; the Bay Area/Oakland, California; Birmingham, Alabama; Hartford, Connecticut; Kansas City, Missouri/Kansas; Minneapolis-St. Paul, Minnesota/Wisconsin; and San Antonio, Texas.

Our part one results provide a foundation for part two (the "case studies"), which constitutes the bulk of our analysis and discussion. For each area, we present data from several sources, including district-by-district estimates of many of the measures from part one, but also historical redlining maps from the late 1930s and additional contemporary data. Our results suggest that, despite substantial differences between these metro areas in terms of development timelines, school district structures, and state policy environments, they share striking similarities in how well they illustrate the connection between segregation and unequal educational opportunity today, as well as how this connection can be traced directly to segregative policies and practices that were in use as far back as 120 years ago and as recently as the present day. Finally, we present national data to show that our case studies are not exceptional in terms of the contemporary connection between segregation and unequal educational opportunity in U.S. metropolitan areas.

THE EVOLUTION OF THE SEGREGATION "TOOLKIT": 1900-PRESENT

In this section, we provide a (necessarily incomplete) overview of the evolving, overlapping set of strategies used to foster and enforce residential segregation by race and ethnicity throughout the 20th century and continuing today.

The discussion in this section takes the form of a narrative of sorts, one that unfolds over 120 years, in which individuals and institutions, public and private, display remarkable (albeit destructive and inhumane) agility and creativity in crafting new segregative strategies and adapting old approaches to rapidly changing circumstances. These efforts were so effective that, as we'll show in our analysis, the impact of policies and practices from a century ago are still evident today.

PUBLICLY AND PRIVATELY RESTRICTED SPACES (RACIAL ORDINANCES AND COVENANTS): 1900-1960s

The structure and character of residential segregation by race and ethnicity underwent rapid change throughout the 20th century. At the end of the 19th century, the vast majority of Black Americans still lived in the south. Both during and after slavery, these southern Black families often lived in relatively close proximity to white families (including as slaves and later as servants or sharecroppers). After the Civil War, this form of "backyard segregation" (Grigoryeva and Ruef 2015) was enforced largely by Jim Crow-style laws as well as incarceration, violence, or the threat of violence, a situation that persisted to some degree for more than a century. Although there is some evidence that Black/white segregation began well before 1900 (Logan et al. 2015), several changes during the early part of the 20th century, including the continuing mass migration of Black families to the north, ongoing industrialization, the birth of the modern civil rights movement, and eventually the Great Depression and Second World War, provided an opening—at least in theory—for the integration of neighborhoods throughout much of the United States.

Partially in response, the most important formal tools used to generate and enforce segregation during the first decades of the 20th century were anything but subtle: public laws and legally binding private agreements preventing nonwhite families from buying or renting homes in white neighborhoods. Put simply, where nonwhite families could and could not live was laid out and enforced by laws and courts.

Laws (city ordinances) specifying which homes could be bought or rented by whom were not new, but they saw a period of proliferation during the early 20th century. In one of the more (in)famous examples, during the 1910s the city of Baltimore adopted and then modified ordinances to establish racially segregated neighborhoods. With stated purposes that were explicitly racial (e.g., "preventing conflict and ill feeling between the white and colored races"), these ordinances specified the blocks in which nonwhite residences, schools, and churches were permitted to exist, effectively creating segregation by legislation (Power 1983). Several, mostly southern cities, including Atlanta, Georgia; Greenville, South Carolina; and Louisville, Kentucky, followed suit with similar laws (Rice 1968).

In these cities, racially isolated neighborhoods were ensured, and in many cases created, by direct (and unconstitutional) legislative action on the part of city governments. Such policies were overruled by the U.S. Supreme Court's *Buchanan v. Warley* decision (*Buchanan v. Warley* 1917), but where enacted they laid a foundation of segregation upon which future efforts could build. Moreover, the time during which these laws were in force (not coincidentally) partially overlapped with a period of movement of southern Black families from rural areas into cities, which likely amplified the laws' impact despite their relatively short lifespans.

Yet *Buchanan* did not stop city governments' participation in segregation. For one thing, some cities explicitly or implicitly ignored the ruling, defending racial ordinances as necessary for goals such as

preventing "racial conflict," or effectively maintaining them via other racial policies such as bans on interracial marriage or sales of homes to buyers of other races. In addition, and more importantly, beginning in the 1910s, cities throughout the United States did their part by adopting ostensibly "race-neutral" exclusionary zoning ordinances (Rothstein 2018).

In many cities, the original intent of these zoning policies was not exclusively—or, in some cases, even primarily—racial in nature (Rothstein 2018), but their effect was to enforce racial discrimination and segregation under the guise of efficiency, community, and aesthetics (Whittemore 2018). Exclusionary zoning essentially served to price nonwhite families out of living in selected areas by specifying how land could be used (e.g., prohibiting multifamily dwellings, requiring minimum lot sizes). Since the policies did not explicitly mention race, they circumvented the *Buchanan* decision while maintaining its core purpose. Zoning created and reinforced segregation for decades, and it still does today (Kahlenberg 2017; Trounstine 2018; Whittemore 2018).

Furthermore, complementing the explicitly racial ordinances such as Baltimore's—and largely replacing them after the 1917 *Buchanan* decision—were similar *private* approaches on the part of real estate developers and operators to establish and/or maintain all-white neighborhoods (Jackson 1985; Jones-Correa 2000). This "tool," which we'll refer to generally as "racial covenants" or just "covenants," did not take the form of laws per se, but they were widely enforced and promoted by governments and courts at all levels. The covenants were, basically, agreements between private actors (typically homebuyers and neighborhood associations, which made the agreements easier to enforce) preventing owners from selling their houses or properties to members of specified groups, including but not limited to immigrants, Jewish people, and, of course, Black Americans (Rothstein 2018).

Often, as in the case of the dozens of suburban neighborhoods built by Kansas City developer J. C. Nichols, who was a pioneer in the segregative use of covenants, the agreements were crafted and signed before the sale of new houses; their execution was a condition of the sale. And, unlike the public ordinances, these private covenants were not concentrated in the south (Gotham 2000b).

Violation of the agreements could result in litigation and financial penalties for the seller (including forfeiture), which, along with informal pressure and monitoring by neighborhood associations, helped ensure their effectiveness. The U.S. Supreme Court in 1926 (*Corrigan v. Buckley* 1926) ruled that the Fourteenth Amendment did not prohibit these covenants because they were agreements by private actors and, thus, did not constitute state action. Although concrete numbers are elusive, in part because covenants must be identified manually in public records, the available evidence suggests widespread use of these agreements throughout much of the 20th century (Rothstein 2018); one study, for instance, estimates that they were in place in at least half of all new subdivisions built in the United States before 1948 (Massey and Denton 1993).

In 1948, two decades after Corrigan, the Supreme Court ruled in *Shelley v. Kraemer* that the judicial enforcement of racially restrictive covenants actually did, in fact, constitute state action, and thus violated the Fourteenth Amendment. However, they remained a very important segregative tool throughout the 1950s and 1960s. Although courts could not enforce these covenants, private parties complied voluntarily and engaged in informal enforcement. Covenants also signaled to homeowners, insurers, and realtors who was welcome in a particular neighborhood. Finally, as discussed below, governmental agencies continued to honor and even require these restrictive covenants. Indeed, even though the Fair Housing Act of 1968 outlawed racially restrictive covenants, they can still be found in deeds in nearly every state (see, for example, Thompson et al. [2021]).

The persistence of racial covenants despite court decisions and legislation nominally precluding their enforcement illustrates how some segregative tools were adapted to changing environments, sometimes via simple noncompliance. And, while there is relatively little rigorous evidence regarding the magnitude of the national effect of covenants on segregation (Gotham 2000b), there can be no doubt that they were a major factor in creating and maintaining all-white neighborhoods for well over 50 years (Acemoglu, Johnson, and Robinson 2001).

FEDERAL LOAN INSURANCE PROGRAMS ("REDLINING"): 1930s-1960s

During the 1930s, after a half century of significant but somewhat limited efforts, the federal government joined the segregation project in full force. The first salvo was the establishment in 1933 of the Home Owners' Loan Corporation (HOLC). The HOLC's purpose was to help reduce foreclosures during the Great Depression by purchasing mortgages in default and offering borrowers better terms. This was the initial step toward our current system of government-backed mortgages, but it was also the beginning of the federal government's mass scale sponsorship of segregation in the 20th century.

The following year saw the creation of the Federal Housing Administration (FHA), which, among other things, insured home loans, thus increasing the share of a home's value that could be taken on as a mortgage and the term over which a mortgage could be paid. This dramatically increased access to homeownership. Then, after World War II, the U.S. Veterans Administration (VA) joined the FHA and began guaranteeing loans for returning service members (the "G.I. Bill"). By 1950, the VA and FHA were insuring half of all new mortgages in the United States (Rothstein 2018).

These programs helped create and sustain a housing boom and rapid postwar suburbanization between the late 1940s and into the 1970s. This expansion of homeownership and development represented—at least in theory—another opportunity for racial integration. In reality, however, due to both explicit and implicit criteria for accessing these loans, the beneficiaries of these programs were almost exclusively white (Lipsitz 2018).

There is a great deal of scholarly work, including Richard Rothstein's seminal book *The Color of Law* (2017), detailing the history and legacy of discriminatory federal loan programs. Among the most evocative (and useful) surviving evidence of these types of practices are criteria developed and used by the aforementioned HOLC. The agency deployed and hired appraisers to grade neighborhoods in about 240 U.S. cities between 1935 and 1940, creating (in) famous color-coded maps that survive today. The A-D grades were designed to help assess the risk of lending to recipients (appraisal of the property was required). The criteria underlying the grades included factors such as the price, age, and condition of houses (Fishback et al. 2021), but racial composition of the neighborhood was a major determinant in the grades and, therefore, in whether loans were approved (Nelson et al. 2022). The HOLC generally classified homes in nonimmigrant white neighborhoods as the lowest risk and homes in Black neighborhoods (or even those close to Black neighborhoods) as higher risk. The lowest-graded/highest-risk areas (D grades, or "Hazardous") appeared on the maps shaded in red, eventually leading to the use of these grades (or similar racial/ethnic criteria) in loan decisions being called "redlining."

The extent of the *direct* use or impact of the surviving HOLC maps in FHA/VA lending is not entirely clear. It was for some time assumed or implied that the FHA used the maps directly, but there is some disagreement about this (Fishback et al. 2021; Hillier 2003a, 2003b). That said, the general consensus today is that the FHA's maps/ratings, which were mostly destroyed or lost, were at least influenced by those drawn up by the HOLC (Light 2010). We shall return to this issue below. In the meantime, two things are clear about these loan insurance programs. First, the FHA and VA, like the HOLC, used racial/ethnic composition as part of their risk assessment criteria, as is evident in underwriting manuals and the narratives accompanying HOLC grades (Gotham 2000a). For instance, the FHA's *Underwriting Manual* warned its appraisers that the "infiltration of inharmonious racial or nationality groups" was a threat to stability, and advised them to downgrade properties in Black or mixed areas. After the 1950s, this explicitly racial language was replaced with barely concealed discriminatory euphemisms about "homogeneity" and "dissimilarity" (Gotham 2002b).

And, second, it is clear and incontrovertible that these loans were overwhelmingly reserved for white families at the exclusion of everyone else, regardless of their credit histories (Aaronson, Faber, et al. 2021; Aaronson, Hartley, and Mazumder 2021). According to one estimate, out of the $120 billion in FHA loans distributed between 1934 and 1962, approximately 2 percent went to nonwhite applicants (Lipsitz 2018). In many cases, these programs also

required racially restrictive covenants as a condition of the loans, an excellent example of new segregative tools complementing and enhancing existing tools (Rothstein 2018).

As the pace of this suburbanization increased in the late 1940s and 1950s, federal housing projects also played a complementary segregative role. Starting in the Great Depression and through the postwar years, federal (and federally subsidized) housing was often built and allocated to create and enforce segregation, with some projects built for white families (usually in white neighborhoods in the more "residential" peripheries of central cities), and others built for Black families in all-Black neighborhoods within city centers. There was a housing shortage, and the all-white federal units were often highly prized. As home construction picked up during the 1950s, and federally insured loans (with racially restrictive covenants) were fueling the migration of white families into the suburbs, the previously white housing projects, facing vacancies, were opened to nonwhite families. Black families, excluded from suburbanization, replaced their white predecessors, and investment in and upkeep of the projects declined (Abramovitz and Smith 2020; Rothstein 2018).

Furthermore, since much of the suburban development, thanks to redlining and covenants, was limited to white applicants and generally not allowed in minority areas or even near them, Black (and Hispanic) families were again deprived of the primary path to wealth-building and essentially relegated to racially isolated areas within cities (including housing projects). White families, in contrast, moved to new homes outside of city centers in the adjoining suburbs (FHA guidelines prioritized new development), building equity and fostering intergenerational mobility. As a result, suburbanization ended up being a massive segregative process. And all this was thanks in large part to overtly discriminatory policies of the federal government.

The impact of these policies is evident today, with studies showing that the HOLC grades, with the racialized risk assessment they reflect, are associated with contemporary segregation, home values, economic inequality, and various other outcomes (Lukes and Cleveland 2021; Mitchell, Franco, and Richardson 2018; Perry and Harshbarger 2019); there is even some recent evidence that this effect was causal (Aaronson, Faber, et al. 2021; Aaronson, Hartley, et al. 2021).

But it's also important to emphasize that the racial/ethnic criteria in the FHA/VA and similar federal programs (including housing) were just one tool—albeit a very important tool—used in a segregation project that had been going for decades. The federal government, through the FHA and similar entities, served to build on the racial ordinances, zoning, and racially restrictive covenants that had been proliferating since the beginning of the 20th century (e.g., requiring covenants in force as a condition of FHA loan approval).

Even more generally, the HOLC and FHA did not invent the idea of using race to assess lending risk. They were operating in an institutional environment where the (false) idea that racial/ethnic minorities—and Black families in particular—were a threat to property values was taken as given. In order to minimize their (perceived) risk, as well as to secure lender participation (the FHA/VA only insured the loans; banks had to cooperate), covenants and federal loan insurance programs adopted and built on the race-based home valuation/risk framework that was already in place (Brooks and Rose 2013; Tillotson 2016).

BLOCKBUSTING: 1950s-1970s

Following the 1948 U.S. Supreme Court ruling in *Shelley v. Kraemer,* private racial restrictions on homeownership (e.g., covenants) were deemed judicially unenforceable (though their existence was still legal, and they continued to be used for many years after *Shelley*). The covenants (and covenant-conditional FHA loans prioritizing new developments) were instrumental in building out the all-white "inner rings" of suburbs throughout the first half of the 20th century. The *Shelley* decision most certainly did not end the use/effect of covenants, but it may have modestly increased the prospects for homeownership among nonwhite families in many metro areas, so long as they remained within the cities.

At roughly the same time, the prospects of even more expansive suburbanization were further improved by

increasing access to automobiles and the development of highways. White families had greater opportunity to upgrade to larger properties and single-family homes farther out from the city. There was rapid development of suburbs throughout the 1950s and into the 1970s. Developers and realtors needed a model for moving white families out to the new, more expensive properties (with federally backed loans) while also keeping nonwhite families, some with greater access to housing markets in the post-*Shelley* era, isolated. Blockbusting helped accomplish this transition.

Before discussing blockbusting, a couple of contextual points bear brief mention. First, the *Shelley* decision and the 1956 Federal-Aid Highway Act coincided roughly with the 1954 *Brown v. Board of Education* decision. The *Brown* decision meant white families could no longer live in the vicinity of Black families and maintain separate public schools. This, no doubt, was an additional factor leading many families, especially southern families, to flee cities and adjacent suburbs and move farther out (or, as discussed below, have their school districts secede from their parent counties). Other white families moved their children to private schools (Clotfelter 2004, 2006).

Second, it is important to reiterate that, throughout the 1950s and 1960s, as during the prior two decades, nonwhite families were still effectively barred from federally insured loans. But for this limitation, many more would have moved to the suburbs between the late 1930s and 1970s just as white families did.

That said, blockbusting took advantage of this exclusion and the new suburban housing markets by steering white buyers with cars to those neighborhoods, while unethically flipping formerly white neighborhoods (most often to Black families). Blockbusting entails many sub-strategies, but the central premise is to invoke racism-based fear among white homeowners that their current neighborhoods are beginning to deteriorate and lose value. This was accomplished either by, for example, buying a small number of properties and selling them to Black families, or simply by suggesting, by various deceptive means, that Black families were about to start moving in. Speculators would then convince white homeowners to sell at below-market value and relocate. The realtor would subsequently sell the home to a Black (or Hispanic) family at a substantial profit, which in turn would spur further sales by white residents ("busting the block").

This practice was successful at converting even neighborhoods that had been originally developed as exclusively white to being majority Black within a relatively short period of time. One illustrative example is Willingboro, New Jersey. William Levitt (of Levittown fame) developed Willingboro as a postwar suburb of Camden and Philadelphia. His intent was to create a new community that would be as exclusively white as other Levitt communities around the country (Gans 1982). After a 1960 New Jersey Supreme Court decision that the state's anti-discrimination law applied to the project (*Levitt & Sons, Inc. v. Division Against Discrim. in the State Dep't of Educ.* 1960), realtors quickly responded by blockbusting—moving white families out of Willingboro to nearby suburbs along the newly completed highway (295). Many of those new subdivisions had adopted exclusionary policies that didn't specifically mention race but effectively excluded nonwhite families (e.g., by not allowing multifamily units and thus constraining affordability). Soon after, Willingboro's demographics shifted, eventually becoming the majority-Black community it is today (Guliano 1977).

In general, although blockbusting was a somewhat covert, decentralized, and profoundly unethical strategy, it was common throughout the 1950s and 1960s, and even into the 1970s, likely having a substantial segregative effect in many areas during its 2-3 decades of prominence (Massey and Denton 1993; Rothstein 2018). And, while its time was short-lived relative to redlining and covenants, the damage was done. Many white neighborhoods within cities were "busted," with their residents fleeing to the outer suburbs, replaced by Black (and Hispanic) families.

MODERN SEGREGATION STRATEGIES (LENDING DISCRIMINATION, STEERING, AND DISTRICT GERRYMANDERING/SECESSION): 1970s-PRESENT

The eventual decline during the 1970s and 1980s of most of the "tools" discussed above was due in no small part to legislation such as the Fair Housing Act of 1968, which made it illegal to discriminate

in the sale, rental, or financing of housing, as well as amendments to the law in 1988, which provided crucial enforcement mechanisms. These and other measures, such as the civil rights laws passed in the 1960s and several state and Supreme Court decisions, outlawed other forms of explicit discrimination. Thus began the (slow) demise of redlining, covenants, blockbusting, and other tools that had dominated the 20th century to that point.

This less permissive environment did lead to some improvement in racial segregation after its peak in the 1960s and 1970s, though the extent and duration of this improvement depends on how (and where) segregation is measured, and in any case the change paled in comparison to the baseline (Charles 2003; Elbers 2021; Logan and Oakley 2004; Logan and Stults 2021; Massey and Tannen 2015; Orfield et al. 2014; Rugh and Massey 2014).

This is because various public and private actors and institutions had spent decades systematically fostering separation and preventing integration, leading to vast differences between races in wealth accumulation and an extremely persistent modern segregation regime. But the segregation project nevertheless continued, with yet another revamping of strategies.

The foundation for this retooling was already firmly in place. Most of the practices laid out above persisted well into the 1970s and even beyond, and helped to establish not only extensive, persistent segregation, but also the current economic system that continues to assess value and risk based on race and ethnicity. The more recent segregating tools would take advantage of this framework by adapting old strategies to the new circumstances. As a result, several explicitly racial strategies persist to this day, which still curtail opportunities for Black and Hispanic families to gain access to housing and/or housing in white neighborhoods (Pager and Shepherd 2008).

Lending discrimination

Prior to the legislative actions during the 1960s and beyond that outlawed *explicit* race- and ethnicity-based discrimination in housing lending, segregation was driven in part by widespread and outright denial of loans to minority applicants. During this time, upwardly mobile, nonwhite potential homeowners shut out of federally backed loans were forced into exploitative "rent to own" arrangements, with high interest rates, little or no consumer protection, and no real equity-building (Baradaran 2019). This type of discrimination continues today in predatory lending targeting people of color (Rugh and Massey 2010; Williams, Nesiba, and McConnell 2005), unfavorable loan terms such as higher interest rates (Bartlett et al. 2022), and other, more subtle forms of exclusion, such as locating lending branches outside of heavily minority areas (Swarns 2015).

These lending discrimination strategies, past and present, work from multiple angles. On the one hand, they affect who can get a loan (buyer's own race or ethnicity) and the terms of that loan (Munnell et al. 1996; Turner and Skidmore 1999; Yinger 1995). On the other hand, they also affect where home purchases are more likely to be financed at reasonable interest rates (racial/ethnic composition of the neighborhood of the home for purchase) (Phillips-Patrick and Clifford 1996; Siskin and Cupingood 1996). They are, in these aspects, more than a little similar to redlining.

The nature of this discrimination has changed over the past 20 or so years. During the 1970s through much of the 1990s, housing loans were made in face-to-face transactions with some "subjective" assessment of risk, whereas today decisions are overwhelmingly made by computer algorithms. The former type of transactions (face-to-face), no doubt, often entailed more explicit, albeit often unspoken racial and ethnic discrimination against applicants and/or neighborhoods. One analysis, for example, found that financial algorithms discriminated 40 percent less than face-to-face lending (Bartlett et al. 2022). Yet even the more "objective" algorithms discriminate, costing Black and Hispanic borrowers hundreds of millions of dollars every year while preventing many from getting loans in the first place (Connecticut Fair Housing Center 2017; Fuster et al. 2022). There is also evidence that white applicants are more likely to be turned down for housing loans in minority neighborhoods, especially Black neighborhoods (Kuebler 2012).

Present-day lending discrimination, and its contribution to and maintenance of segregation, may be in part a product of computer algorithms, but it is discrimination all the same. Even ostensibly "race-neutral" algorithms rely on data with racial/ethnic disparities (e.g., Black/Hispanic applicants tend to have fewer assets, and housing values tend to be lower in heavily Black/

Hispanic areas). And these disparities can, in some respects, be tracked back to the practical legacy of 20th-century segregation, as well as conceptually to programs such as redlining, in which race and ethnicity were explicitly tied to housing values and risk assessment.

Steering and other renter/seller bias

The practice of "steering," put simply, entails real estate agents directing minority buyers (and renters) to properties in minority neighborhoods, while suppressing potential options in white neighborhoods. A 2013 Housing and Urban Development study, for example, found that Black homebuyers, compared with their equally qualified white counterparts, were shown fewer properties overall, were shown properties in more heavily minority neighborhoods, and were even slightly more likely to be denied an appointment (Turner et al. 2013).

And such obstacles are not limited to homebuyers; they are also a problem for minority renters. For example, a 1999 study found widespread discrimination of landlords against potential minority renters, and its results support the hypothesis that this discrimination among landlords occurs both out of prejudice and in response to perceived prejudice among their white clients (Choi and Yinger 2005).

Steering and similar discriminatory practices are, of course, difficult to monitor, and prohibitions against them difficult to enforce. Yet the available evidence (mostly audit studies) suggests that these practices are widespread (Christensen and Timmins 2018; Ondrich, Ross, and Yinger 2003; Pager and Shepherd 2008; Rosen, Garboden, and Cossyleon 2021; Turner et al. 2013; Yinger 1995). And they most certainly help to at least maintain, and in some cases exacerbate, residential segregation. Their covert, informal nature makes them all the more malicious.

District secession and gerrymandering (past and present)

One final form of race-/ethnicity-based contemporary discrimination that contributes to segregation and that we will discuss is particularly relevant to the present study's focus on schools and school funding: the explicit drawing—and "carving out"—of school district boundaries according to racial/ethnic composition.

Unsurprisingly, given the discussion above, this type of racial "gerrymandering" was common throughout the 20th century (Green and Baker 2006). Black and Hispanic residents in many metro areas were relegated to certain neighborhoods based on existing neighborhood school boundaries, while in other cases, school district boundaries were drawn (and redrawn) around Black or white neighborhoods to reinforce segregation (Diem et al. 2015; EdBuild 2019; Frankenberg and Taylor 2017). FHA guidelines were especially focused on preventing school integration, identifying (again, incorrectly) the possibility of white children having to mix with nonwhite children as a major risk to home values and neighborhood stability (Rothstein 2018). And, as discussed below, after the *Brown* decision in 1954, many southern jurisdictions simply seceded from their parent districts (often counties), forming new, all-white districts.

More surprising, perhaps, is the fact that this type of approach has occurred more recently and continues to occur. In 30 states, in fact, there are laws outlining procedures for jurisdictions to secede from their parent districts, but they vary in terms of difficulty. For instance, some states allow secession simply by local referendum, while others require consent from both "leaver" and parent districts and/or approval from a state governing entity (Reeves and Joo 2018).

Gerrymandering (i.e., altering boundaries) can of course have an integrative impact in some cases (e.g., when done under desegregation orders), but its impact, as well as that of the more extreme secession, is more commonly segregative (Richards 2014). In 1974, the Supreme Court in *Milliken v. Bradley* further encouraged the phenomenon of school district gerrymandering (*Milliken v. Bradley* 1974), ruling that suburban school districts could not be compelled to participate in metropolitan desegregation remedies. Put simply, even though racial/ethnic school segregation was increasingly driven by the separation of students between districts, desegregation between those districts could not be compelled. According to professor Sheryll Cashin, *Milliken* helped to maintain segregated school districts by insulating suburban school districts from the requirements of *Brown* and giving incentives to suburbanites to create their own school districts (Cashin 2004).

Secessions can also serve as a government-enabled escape hatch for white, affluent areas in "danger" of integration. For instance, in 2010, Memphis (Tennessee) City Schools, a largely Black district, was dissolved and put under control of the Shelby County School District, which was home to many white communities. It may have seemed at the time that this dissolution would create opportunities for greater integration as well as revenue sharing across the unified district. But, in 2013, the Tennessee Legislature created an easy path to secession for those white neighborhoods. [3] In 2014-15, several municipalities opted to secede (EdBuild 2019).

Across the United States, at least 73 school districts have successfully seceded from their parent districts just over the past 15-20 years, and several dozen more either have failed or are still trying. Most of the seceding districts serve larger shares of white students than their former parents (EdBuild 2019).

These efforts are somewhat more common in southern states, which operate mostly county-based school systems, where counties in the aggregate tend to be more racially diverse than the cities and towns within them (much like districts in a metro area). To reiterate, this organizational feature could theoretically mitigate racial disparities, as countywide school districts are able to desegregate, voluntarily or by court order, over large groups of diverse students, whereas areas constituted by multiple districts would have to proceed district by district and would not be able to integrate between those districts (thanks to Milliken); there is evidence suggesting that greater fragmentation of districts in metro areas is associated with more segregation (Ayscue and Orfield 2014; Bischoff 2008). However, countywide (or other larger unit) structures also allow segregation to simply be hidden within counties (e.g., in the form of intra-district, between-school segregation), while also making it more likely that independent, racially isolated city districts will carve themselves out of their county hosts.

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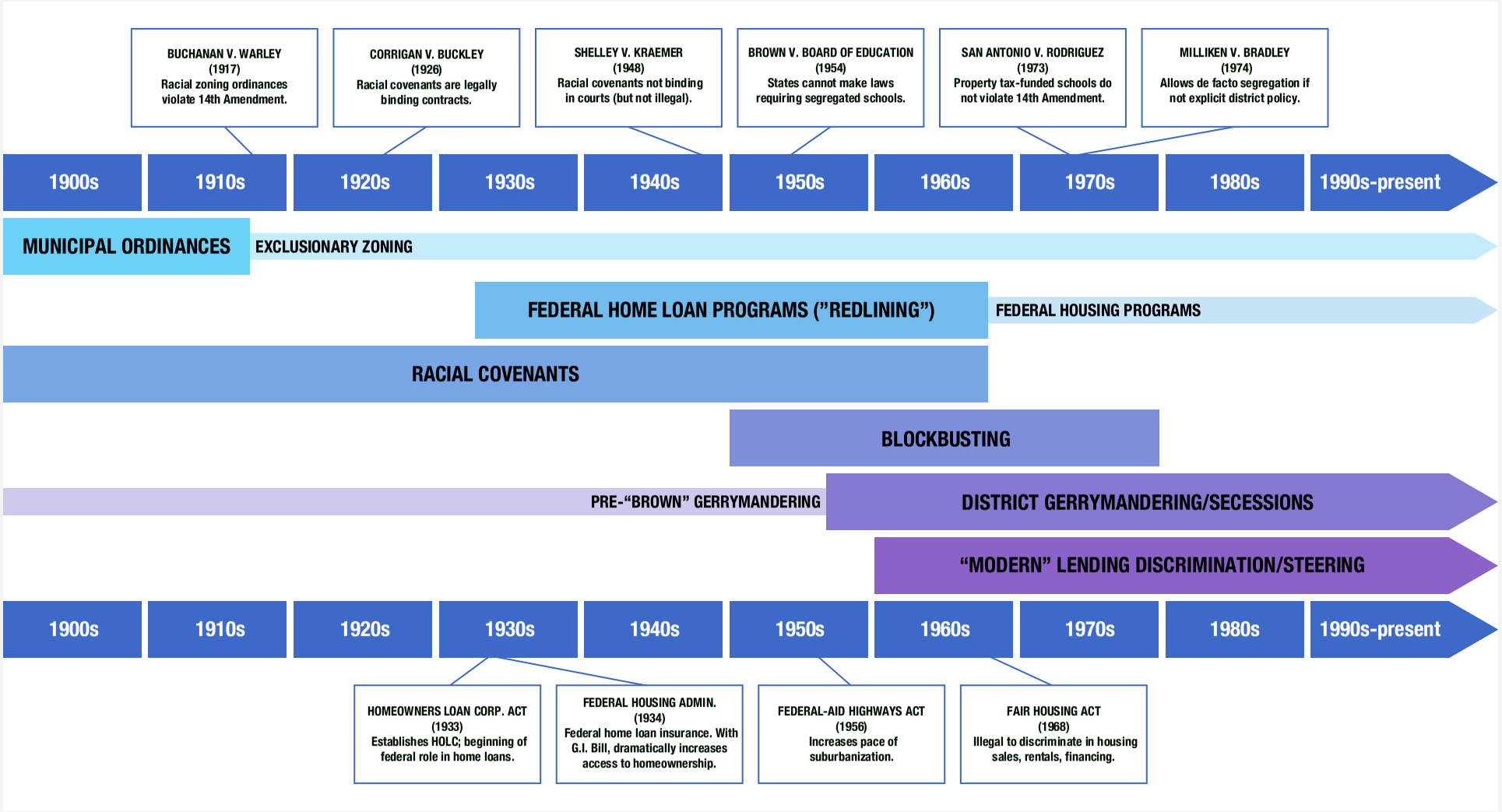
Since the turn of the 20th century, residential racial segregation in the United States has been created, enforced, and perpetuated by a set of interconnected, overlapping tools that have evolved from laws dictating where people of certain races could live to private agreements forbidding the sale of houses to minority families to federal loan policies that deliberately excluded Black and Hispanic families to modern lending discrimination and steering by the real estate and finance industries. We present a summary of this chronology in Figure 1.

This diverse set of strategies has adapted to the social, political, and legal environment of the United States. But all of them have had the express purpose of keeping white families and Black and Hispanic families living in different places. And they have been incredibly effective in doing so.

3 An act to amend Tennessee Code, Tn. ALS 256 (LexisNexis 2013).

Figure 1

THE CHRONOLOGY OF MAJOR RACIAL/ETHNIC SEGREGATION STRATEGIES, LAWS, AND SUPREME COURT DECISIONS, 1900-2022



ALBERT SHANKER INSTITUTE

HOW SEGREGATION CREATES UNEQUAL EDUCATIONAL OPPORTUNITY

To reiterate, the driving motivation behind the creation, enforcement, and perpetuation of residential segregation was concentrating nonwhite families in certain areas and white families in others. The consequences of this racial/ethnic segregation for school funding, on the other hand, are driven largely by wealth and income inequality combined with how the United States funds its public schools.

Approximately 45 percent of all K-12 funding comes from local revenue sources (mostly property taxes), which depend heavily on home and property values. State revenue, which is designed to mitigate disparities between districts in their capacity to raise local revenue, helps level the playing field but in most states is insufficient and/or allocated non-progressively (Baker, Di Carlo, Reist, et al. 2021). As a result, where one lives is a major factor in how well one's schools are funded.

Residential and school segregation are tightly linked. This is particularly true of segregation *between* school districts, which, because districts are the primary governing unit in school finance, is the most relevant component for our purposes. Several factors can attenuate the strength of the between-district residential/school segregation connection, such as variation in family structure (i.e., the share of residents with school-age children) and differences in private school enrollment (Clotfelter 2004, 2006). But, in general, the racial/ethnic separation of *residents* between school districts in a given area will track reasonably closely with the separation of *students* between those districts.

Generations of deliberate efforts to foster and enforce residential/school segregation by race/ethnicity have helped to create both racial/ethnic disparities in wealth and residential segregation by wealth/income (and the two are mutually reinforcing). As a result, relative to mostly white areas, Black and Hispanic districts tend to have less wealth (e.g., lower property values) from which to raise K-12 revenue, and their residents must pay higher tax rates to raise the same amount of (or less) revenue as must their counterparts in more affluent areas. This, in turn, means less revenue for districts serving disproportionate shares of Black/Hispanic students, as well as higher costs (due to concentrated poverty) and less capacity to pay those costs (i.e., unequal opportunity). In this sense, racial/ethnic segregation is the root cause of race- and ethnicity-based school funding inequity, not merely an incidental correlate of income and wealth segregation.

WEALTH ACCUMULATION AND RESIDENTIAL VALUES

Residential segregation by race and ethnicity feeds and is fed by striking and well-documented disparities in wealth between racial and ethnic groups (Perry et al. 2018). A recent analysis, for instance, found that the net worth of the typical white family in 2016 was nearly 10 times greater than that of the average Black family (McIntosh et al. 2020). And this estimate reflects the fact that a disproportionate share of Black (and Hispanic) families have no net worth at all, in many cases because they have for generations been denied or priced out of the most important opportunity to build equity: homeownership.

Several academic articles and reports explain that the so-called Great Recession of 2007-09, which was uniquely driven by the collapse of housing markets, exacerbated the racial wealth gap (Thompson and Suarez 2015; Weller and Hanks 2018). This was in no small part due to the targeting of minority families with predatory lending practices (Rugh and Massey 2010). Others have estimated the intergenerational effects of depressed income and lack of access to credit and housing markets, which are interconnected (Toney and Robertson 2021). That is, wealth inequality can exacerbate income inequality, and so on, from one generation to the next.

Yet what's most crucial for our purposes here is that these racial wealth disparities are not geographically dispersed; quite the contrary. Segregation by race and

ethnicity creates and is created by wealth and income segregation (Intrator, Tannen, and Massey 2016; Reardon, Fox, and Townsend 2015). When Black and Hispanic families are concentrated in higher-poverty, lower-wealth areas with fewer opportunities and resources and barriers to homeownership, this severely curtails opportunities for building human capital, earning income, accumulating wealth, and passing that along through generations (Chetty et al. 2014; Chetty, Hendren, and Katz 2016; Chetty and Hendren 2018; Reardon et al. 2015; Zonta 2019).

As a result, Black and Hispanic communities are not only saddled by large cumulative differences in wealth, but many of these deficits continue to accumulate and are self-reinforcing. Between 1980 and 2015, neighborhood racial composition actually became a stronger determinant of appraised home values (Howell and Korver-Glenn 2021).

RACIAL/ETHNIC DIFFERENCES IN EFFECTIVE PROPERTY TAX RATES

One corollary effect of systematically depressed housing values for Black and Hispanic homeowners in isolated neighborhoods is that they tend to face higher effective property taxes in their communities to support equal- or even lesser-quality public services. That is, Black and Hispanic communities pay a "race and ethnicity tax" and still reap fewer benefits.

One study, for instance, found that Black and Hispanic residents, all else being equal, shoulder a 10-13 percent higher tax burden than do white residents to purchase the same public services (Avenancio-Leon and Howard 2020). The surface-level, mechanical cause of over half of this disparate impact, according to the paper, is the fact that assessments of Black and Hispanic residents' homes (which are the basis for property tax) are systematically higher relative to market value compared with assessments of white homeowners' homes, even within the same taxing jurisdiction (i.e., independent of [intended] tax rates). But the root cause is that property assessments are more insensitive than market values to neighborhood characteristics, such as median income and unemployment, that are correlated with racial/ethnic composition—that is, the root cause is segregation.

Similarly, a 2021 analysis found significantly higher property tax rates paid by Black homeowners in states such as Connecticut and Maryland, but these higher rates still yielded significantly lower local revenue for public schools (Green, Baker, and Oluwole 2021). We expand on that analysis in this report.

REVENUE DISPARITIES AND FUNDING INEQUITY

The above-mentioned "first order" effects of racial segregation—wealth disparities by race and ethnicity—play out predictably in "second order" effects on school funding. That is, disparities in housing values lead cumulatively to disparities in the taxable wealth of racially and ethnically segregated public school districts. Less taxable wealth, combined with the reliance in the United States on that wealth to fund K-12 education (e.g., via property taxation), means less property tax revenue for schools in Black and Hispanic communities.

These race- and ethnicity-based disparities in K-12 resources are well established. Green, Baker, and Oluwole, for instance, find large differences in local property tax revenue-raising capacity between predominantly Black and predominantly white local public school districts, even where effective tax rates are higher in Black districts (Green et al. 2021). Another study details the systematic school funding deprivation of predominantly Hispanic school districts (Baker et al. 2020). Finally, two important and particularly relevant analyses by Ericka Weathers and Victoria Sosina find that, controlling for racial differences in poverty, changes in between-district racial/ethnic segregation within states between 1999 and 2013 were associated with racial disparities in school spending (Sosina and Weathers 2019) and revenue (Weathers and Sosina 2022).

Crucially, a compounding problem creates a "third order" effect: the economic segregation created by racial/ethnic segregation does not just depress education resources; it also drives up education costs. That is, racially isolated public school districts, which lack local fiscal capacity (e.g., less school revenue) due to segregation, also face higher per-pupil costs to provide their students opportunities equal to those of their white, more affluent peers in districts across the state or even in the next town over (Duncombe and Yinger 2007).

And these additional costs are not just due to poverty, although it is absolutely critical to note that poverty and race/ethnicity are not mutually exclusive effects that can be parsed from each other. For instance, empirical studies estimating the costs of achieving common outcome goals across local public school districts have found that school district racial/ethnic composition—specifically the share of student enrollments that are Black—affects the costs of providing equal educational opportunity, even controlling for potentially confounding factors such as poverty (Baker 2011). The implication here is not that racial/ethnic composition has some effect that is distinct from and independent of poverty. It is, rather, that where racial/ethnic isolation has been imposed on specific communities, yielding the wealth and income deprivation described above, conditions are uniquely costly to overcome, and this is not captured fully by measures of family income or child poverty. Yet resources available in these communities are more scarce, and the gap between actual resources and the costs of equal opportunity is therefore exacerbated.

To reiterate, state revenue in theory is supposed to account for variation in local revenue-raising capacity by filling the gaps between some "fair share" of local revenue on the part of districts and minimum "foundation" levels of required funding. Almost all states use some form of this approach (Verstegen 2011). As we'll see, however, their results differ in practice.

Two additional points bear directly on this report and the analysis presented below. First, and most obviously, the relationship between segregation and school funding today has been shaped by the residential segregation efforts of the past. A very recent working paper presents a national spatial analysis of the connection between the above-mentioned HOLC redlining grades and K-12 revenue, racial/ethnic composition, and testing outcomes in almost 150 metro areas today (Lukes and Cleveland 2021). This is to our knowledge the first large-scale analysis of HOLC grades and education funding, including district-level revenue (by source). It is of particular relevance to our study, which, as discussed below, also looks at the connection between HOLC zones and funding, albeit in seven metro areas rather than nationally. For their district revenue models, Lukes and Cleveland calculate weighted HOLC grade averages for each district that contains any area of an HOLC zone. And they find, put simply, that D-rated districts receive less local revenue than A-C districts but higher state and federal revenue; the latter revenue, however, does not fully close the local gap, on average. This, to reiterate, is due to the fact that local revenue is derived mostly from property taxes, upon which segregation exerts the most influence, while state revenue often fails to compensate.

Second, the impact of racial segregation on race-based inequities in school funding, like the association between racial and economic segregation, is self-reinforcing. Districts and neighborhoods serving students with higher needs (e.g., higher-poverty students) must invest more resources than their counterparts serving lower-need student populations to achieve the same level of educational outcomes. Residential segregation increases educational costs by concentrating poverty in areas that, due to the "first order" effects of current and historical segregation on wealth, combined with local revenue-dependent school finance systems in the United States, are least able to pay those costs ("second order" effects). This inadequate funding, in turn, results in poor educational outcomes and lower economic mobility within and between generations ("third order" effects), reinforcing both the higher costs and the inability to meet those needs.

DATA

We examine the relationship between historical and contemporary racial segregation and current-day school funding inequity both nationally and with particular focus on a set of seven U.S. Census-defined metropolitan statistical areas:

1. Baltimore-Columbia-Towson, Maryland (henceforth **"Baltimore"**);
2. San Francisco-Oakland-Hayward, California (henceforth **"Bay Area"** or, at points, **"East Bay Area,"** as some of our analysis will focus on Oakland and its surrounding districts);
3. Birmingham-Hoover, Alabama (henceforth **"Birmingham"**);
4. Hartford-East Hartford-Middletown, Connecticut (henceforth **"Hartford"**);
5. Kansas City, Missouri-Kansas (henceforth **"Kansas City"**);
6. San Antonio-New Braunfels, Texas (henceforth **"San Antonio"**); and
7. Minneapolis-St. Paul-Bloomington, Minnesota-Wisconsin (henceforth **"Twin Cities"**).

These metro areas were chosen based on (1) geographical diversity (different parts of the United States); (2) demographic diversity (different "configurations" of student racial/ethnic composition); (3) variation in school funding policies and outcomes (e.g., areas with more or less adequate funding); (4) availability of more finely grained HOLC zone data; and (5) availability of some prior literature on historical segregation in the area.

In **part one** of our analysis, we lay out the current overall situation in these seven metro areas. First, using data from the U.S. Census Bureau's American Community Survey (ACS) between 2000 and 2019 (Ruggles et al. 2021), we compare the average income levels, housing values, property taxes paid, and effective property tax rates between white, Black, and Hispanic homeowners in each of the areas (and in national and area-specific regression models that control for the number of bedrooms and state and district fixed effects). These are the "first order" effects of segregation on school funding discussed above.

Second, using data from the U.S. Census Bureau's education fiscal survey (2019), we evaluate the "second order" effects: differences in 2017-19 revenue per pupil generated from local property taxes (or municipal pass-through) and state general aid for the average Black, white, and Hispanic student in each metro area. Here we address two questions: (1) what are the local tax revenue consequences (i.e., racial/ethnic revenue disparities) of segregation; and (2) to what extent do state general aid formulas compensate for and mitigate the disparities?[4]

Third, we present, by race and ethnicity in each metro area, estimates of 2016-18 K-12 spending adequacy ("third order" effects). We measure adequacy in terms of the difference between actual spending levels and cost model estimates of spending levels required to achieve a specific common outcome goal (i.e., national average test scores). Comparing the average adequacy gaps between Black, white, and Hispanic students allows us to assess the race-/ethnicity-based equality of opportunity in each metro area. These adequacy estimates, which in part one are averaged across entire metro areas (weighted by enrollment), are from the National Education Cost Model (NECM). The NECM is part of the School Finance Indicators

4 Note that our school finance outcomes, specifically the Census revenue and spending adequacy estimates discussed below, are generally limited to government-run school districts, as these are typically the only entities that report finance data to the U.S. Census Bureau. This means, for example, that we don't have estimates for most fiscally independent charter school districts, and the regular public school district estimates do not include independent charter schools that operate within their geographical boundaries. In three of our metro areas (Bay Area, San Antonio, Twin Cities), this excludes from our sample districts serving roughly 7-8 percent of the area's students. In the other four metro areas upon which we focus in this report, virtually no students are excluded. We are, however, confident this does not appreciably affect our results in any of our case studies.

Database (SFID) (Baker et al. 2022).[5] Districts with enrollment of fewer than 100 students are excluded from most of our adequacy analyses.

In **part two** of our analysis, we present our seven case studies, each of which reviews the relationship between historical and contemporary segregation and present-day school funding in a given area. We do not—and could not—provide a comprehensive history of segregation in each area, but we try to use prior research focused on each area to highlight both its unique and common patterns, as well as to provide context for our results examining and visualizing the connections between (1) historical racial/ethnic segregation throughout the 20th century, as captured by HOLC redlining zones assigned in the late 1930s (Nelson et al. 2022); (2) 2018 district-level racial/ethnic composition (National Center for Education Statistics 2019); (3) 2018 school neighborhood poverty ratios (National Center for Education Statistics 2018); and (4) 2018 district-level spending adequacy (again from the SFID).

As mentioned above, the specific role of the HOLC maps/grades in FHA/VA lending decisions remainS an issue of some contention. What the maps almost certainly represent, however imperfectly, are general assessments of the risk of lending in graded neighborhoods among local lenders and realtors at the time (the late 1930s). These assessments, in turn, likely influenced loan and loan insurance decisions, public and private, over the subsequent period. In addition, since these risk assessments were based in no small part on the racial/ethnic composition of neighborhoods, the HOLC maps are also a snapshot of the segregation situation at the time, a kind of "measurement checkpoint" between the segregative tools used during the earlier part of the 20th century and those used throughout the postwar era and beyond. To the degree the HOLC grades correspond with present-day outcomes (e.g., racial composition of schools, school funding inequity, etc.), this represents compelling circumstantial evidence of the legacy of historical segregation on modern-day school funding disparities by race and ethnicity.

One final note: Throughout this report, when discussing school data (i.e., revenue, student characteristics, and adequacy estimates), years refer to the spring semester of the school year (e.g., 2018 is the 2017-18 school year).

5 More details about the NECM and the various data sources it uses are discussed in Baker et al. (2021), but the model relies heavily on three datasets that we acknowledge here. The first is the Comparable Wage Index for Teachers (Cornman et al. 2019), an index of regional wage and salary variation developed by researchers at the National Center for Education Statistics (NCES) in collaboration with professor Lori Taylor of Texas A&M, who worked with NCES to develop the original version of the index in 2006. The second is the EDGE School Neighborhood Poverty Estimates, also published by the NCES, which is specifically designed to measure poverty surrounding schools and districts (Geverdt 2018). The third and perhaps most important NECM data source is the Stanford Education Data Archive (SEDA), a groundbreaking database of nationally normed test scores going back to 2009 (Reardon et al. 2021), which we also use directly in this report. The SEDA allows for a better comparison of test results from individual districts across all states, a crucial tool for producing cost model estimates that are comparable across the United States.

RESULTS, PART ONE:
UNPACKING THE SEGREGATION/ FUNDING RELATIONSHIP

In this section, we present aggregate (i.e., metro-level) race- and ethnicity-based gaps in income/wealth, K-12 revenue, and school spending adequacy. The purpose is to lay out briefly the current situation in each area, as well as to generate *prima facie* (descriptive) evidence of racial/ethnic segregation's "first order" effects on income and wealth, "second order" effects on K-12 revenue (particularly local revenue), and "third order" effects on spending adequacy.

INCOME, HOUSING, AND PROPERTY TAXES

Table 1 summarizes average income, housing values, and property taxes paid, by race/ethnicity and metro area, across 20 years of ACS data (2000-19). The table also contains columns that calculate the ratio of Black and Hispanic average income and housing value to those of white households. The "effective rate" column is simply property taxes divided by house value. The estimates in the table are for homeowners only, and they are not adjusted for inflation.

Table 1

AVERAGE HOUSEHOLD INCOME, HOME VALUE, AND PROPERTY TAXES, BY RACE AND ETHNICITY AND METRO AREA, 2000-19

		Household Income		Home Value		Property Taxes	
Metro Area	Race/Ethnicity	Average Income	Pct. of White	Average Value	Pct. of White	Taxes Paid	Effective Rate
Baltimore	White	$132,351		$395,655		$3,628	0.92%
	Hispanic	$119,620	90%	$333,011	84%	$3,395	1.02%
	Black	$93,304	70%	$237,308	60%	$2,546	1.07%
Bay Area	White	$173,608		$899,466		$5,859	0.65%
	Hispanic	$118,160	68%	$596,589	66%	$4,466	0.75%
	Black	$114,346	66%	$554,188	62%	$4,073	0.74%
Birmingham	White	$104,953		$243,030		$1,317	0.54%
	Hispanic	$74,781	71%	$164,153	68%	$906	0.55%
	Black	$70,681	67%	$133,653	55%	$785	0.59%
Hartford	White	$126,953		$310,526		$5,440	1.75%
	Hispanic	$104,942	83%	$242,340	78%	$4,749	1.96%
	Black	$95,712	75%	$223,434	72%	$4,204	1.88%
Kansas City (Kansas)	White	$123,748		$268,955		$3,202	1.19%
	Hispanic	$78,574	63%	$150,218	56%	$2,020	1.34%
	Black	$86,982	70%	$166,160	62%	$2,260	1.36%
Kansas City (Missouri)	White	$95,515		$196,102		$2,261	1.15%
	Hispanic	$74,363	78%	$142,008	72%	$1,675	1.18%
	Black	$71,534	75%	$125,388	64%	$1,514	1.21%
San Antonio	White	$108,578		$231,835		$3,881	1.67%
	Hispanic	$74,435	69%	$137,380	59%	$2,555	1.86%
	Black	$88,263	81%	$167,699	72%	$3,144	1.87%
Twin Cities (Minnesota)	White	$119,321		$304,164		$3,216	1.06%
	Hispanic	$94,197	79%	$225,577	74%	$2,427	1.08%
	Black	$88,386	74%	$236,212	78%	$2,609	1.10%

Data source: American Community Survey

Note: Estimates are for homeowners with non-missing home value and property tax, averaged across 20 years of data (2000-19). Results for Wisconsin portion of Twin Cities metro area not reported due to very low representation of Black and Hispanic residents.

As will be the case throughout this section, separate estimates are provided for the Kansas and Missouri parts of the Kansas City metro area, and for the Minnesota portion of the Twin Cities area. This is necessary due to substantial differences, most notably in tax and school funding policy, across state lines within these metro areas, particularly in the Kansas City area. The section of the Twin Cities area located in Wisconsin, however, is home to a small proportion of the area's residents, and an extremely small population of Black and Hispanic residents/students; it is therefore excluded from most of the results in this section.

In every metro area presented in the table, incomes and housing values are substantially lower for the average Black or Hispanic homeowner than for the average white homeowner. The largest proportional deficits in average housing value are found among Black homeowners in the Birmingham area (55 percent of that of their white counterparts) and Hispanic homeowners in the Kansas portion of Kansas City (56 percent). In other words, in Birmingham, the average white homeowner's home is almost twice the value of the typical Black homeowner's. The deficits are smaller but still quite large in all areas.

While average property tax bills paid tend to be lower for Black and Hispanic homeowners than for white homeowners—as would be anticipated from the lower property values among the former—their effective rates (tax bill divided by value, the "Effective rate" column in Table 1) are higher in all areas. That is, Black and Hispanic homeowners pay less in absolute terms, but they pay more as a percentage of their home values (i.e., their tax burden is greater). This is effectively a Black/Hispanic tax required to try to raise additional revenue for local public services, including schooling, to offset the lower values of their taxable properties.

The estimates in Table 1 summarize the 20-year averages of the housing values and tax rates without regard to home structure or size. As discussed above, discriminatory zoning policies used housing structure parameters to price Black and Hispanic homeowners out of markets for larger houses, and so controlling for home characteristics reflects this discrimination. That said, Table 2 presents the results from regression models of housing value and effective property tax rates on race/ethnicity with a control variable measuring number of bedrooms (the national model also includes fixed effects for states and metro areas, the Kansas City and Twin

Table 2

OLS REGRESSION MODELS OF HOUSING VALUE AND EFFECTIVE PROPERTY TAX RATE ON HOMEOWNER RACE AND ETHNICITY, BY METRO AREA, 2000-19 (POOLED)

		Housing Value		Effective prop. tax rate	
Metro Area	Race/Ethnicity	Coefficient (ref cat.=white)	Std. Error	Coefficient (ref cat.=white)	Std. Error
National	Black	-109,610***	200	0.002***	0.000
	Hispanic	-119,043***	177	0.001***	0.000
Baltimore	Black	-134,209***	1,275	0.004***	0.000
	Hispanic	-57,636 ***	2,695	0.002**	0.001
Bay Area	Black	-380,354***	5,418	-0.000	0.001
	Hispanic	-343,536***	3,331	0.001	0.001
Birmingham	Black	-90,959***	1,640	0.002***	0.001
	Hispanic	-60,335***	4,560	0.012***	0.002
Hartford	Black	-79,684***	2,336	0.003***	0.001
	Hispanic	-60,029***	2,366	0.004***	0.001
Kansas City	Black	-69,818***	1,566	0.003***	0.001
	Hispanic	-76,218***	1,674	0.00	0.001
San Antonio	Black	-70,121***	1,890	0.003***	0.001
	Hispanic	-89,790***	806	0.002***	0.000
Twin Cities	Black	-74,683***	2,499	0.005***	0.001
	Hispanic	-76,708***	2,342	0.001	0.001

* p<.10 **p<.05 ***p<.01

Data source: American Community Survey (2000-19)

Note: Effective tax rate is total property tax paid divided by home value. Model samples include homeowners with non-missing home value and property tax. All models include control variable measuring number of bedrooms and dummies for each year (2000-19). National model includes state and CBSA fixed effects, and Kansas City and Twin Cities models include state fixed effects.

Cities models fit state fixed effects, and all models include year dummies). The coefficients represent differences (in housing value and effective tax rates) between Black and white and Hispanic and white homeowners with the same number of bedrooms and living in the same state and metro area.

Nationally, all else being equal, housing values for Black homeowners are roughly $110,000 less than for white homeowners. For Hispanic homeowners, the difference is even larger (around $120,000). In addition, Black homeowners nationally are paying, all else being equal, an additional 0.2 percent in property tax on that home. So, for example, if the typical Black homeowner's house is valued at $200,000, they are paying $400 more per year in property taxes than would the average white homeowner in a home of the same value in the same area. This may not seem like a massive difference, but it could represent a meaningful proportion of disposable and even net earnings for lower-income households.

We also find large, statistically discernible differences in housing values between Black/white and Hispanic/white homeowners in all seven of our metro areas, and at least moderate differences in effective tax rates in most of our metro areas, with the Bay Area the only one in which both coefficients are not statistically significant at any conventional significance level.

These results are consistent with the decades of prior research discussed above, and they indicate rather vast race- and ethnicity-based differences in housing values both nationally and in our seven metro areas, as well as modest but meaningful discrepancies in effective property tax rates in most of these areas. Such gaps in no small part reflect the fact that even those Black and Hispanic families that have managed to overcome the barriers to buying homes often live in neighborhoods that have been artificially devalued for generations, impeding mobility and creating self-sustaining wealth inequality today. Moreover, they shoulder a larger tax burden in order to mitigate the negative impact of the areas' smaller tax bases on the quality of local services such as public schools.

STATE AND LOCAL K-12 REVENUE

The "first order" effects of segregation on school funding presented in Tables 1 and 2—i.e., racial and ethnic disparities in housing values that reflect the legacy of segregation—have predictable and serious "second order" effects on school funding. In short, racial segregation, in combination with the reliance of school finance on local tax revenue, means that the racial/ethnic differences in wealth shown above translate into racial/ethnic gaps in school resources.

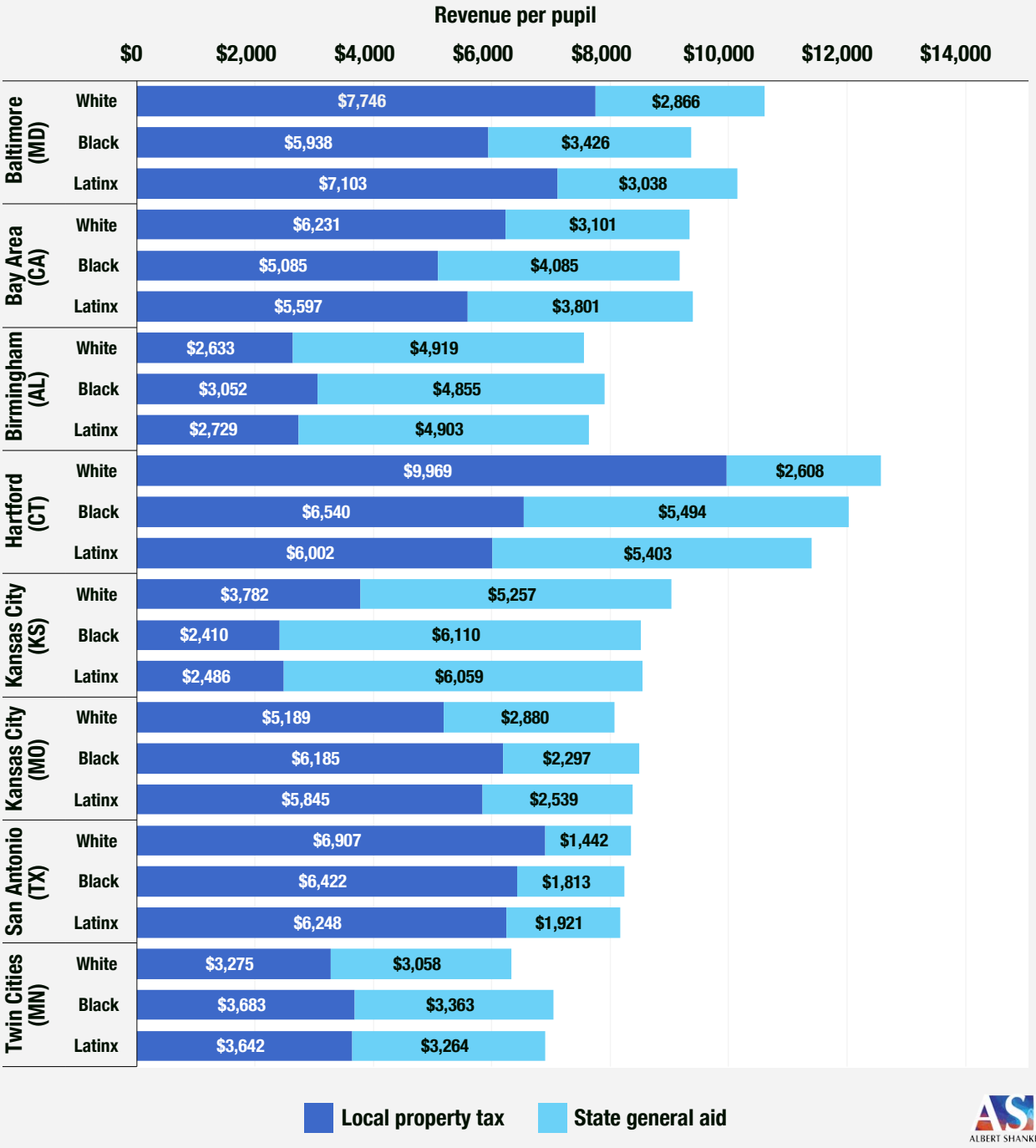
This is evident in Figure 2, which presents average local property tax revenue per pupil (dark blue portions of the bars) and state general aid per pupil (light blue portions of the bars), by race and ethnicity, for our seven metro areas, averaged across 2017-19. All averages are weighted by student enrollment. Our measure of property tax revenue includes (1) local property tax revenues; (2) parent government transfers; and (3) city/county government transfers. This is necessary because property tax revenue in some states is allocated via intergovernmental transfers. Our measure of state revenue focuses specifically on state general formula aid, the primary state revenue source intended to provide for equalization of revenues across taxing jurisdictions with varying local revenue-raising capacity.

In other words, in theory, state aid is supposed to make up the difference between what each district requires to meet its students' needs (i.e., educational costs) and its ability to raise its own revenue (Baker 2018). We'll address this issue of costs versus actual resources below, but for now, what Figure 2 gauges is whether state aid is sufficient even to equalize total revenue from local property taxes plus state general aid between the typical white, Black, and Hispanic student within each metro area, regardless of needs. Note, of course, that Figure 2 does not include K-12 revenue from all sources (e.g., it excludes federal revenue and other types of state/local revenue).

In five of the eight areas in Figure 2, the average Black and Hispanic student receives local property tax revenue that is lower than that of the average

Figure 2

AVERAGE LOCAL PROPERTY TAX REVENUE AND STATE GENERAL AID BY METRO AREA AND STUDENT RACE/ETHNICITY, 2017-19 (POOLED)



Data source: U.S. Census Bureau Annual Survey of School System Finances

Note: To account for differences in how states allocate/distribute local revenue, local property tax revenue also includes parent government transfers and city/county government transfers. State aid is general state aid. Data are pooled across 2017-19. Estimates are school-level aggregated to district- and metro-level. The Wisconsin portion of the Twin Cities metro area is excluded due to extremely low shares of Black and Hispanic students.

white student (the dark blue bars are longer for white students versus Black/Hispanic students). Note, though, that these local revenue gaps would likely be even larger but for the larger tax burden paid by Black and Hispanic residents in these areas, as shown in Tables 1 and 2.

In contrast, state aid per pupil is at least modestly higher for Black/Hispanic versus white students in every area except the Twin Cities and Birmingham. This reflects the fact that, again, state aid is explicitly designed to compensate for differences in local revenue-raising capacity. In most places, it does serve this purpose to some extent. On the other hand, it is often insufficient. In several of our metro areas, namely the Bay Area, Hartford, Kansas City (Kansas), and San Antonio, state aid is insufficient to close the local gaps completely, and in some cases (e.g., the Black/white gap in Baltimore and the Hispanic/white gap in Hartford), the differences in total revenue (property tax plus state aid)—the combined length of the dark and light blue bars—are substantial. In general, however, the bars are relatively similar in length between groups in most metro areas. Racial/ethnic wealth inequality, fueled by segregation, puts Black and Hispanic families at a disadvantage right out of the gate, and state aid barely helps them catch up.

These simple revenue comparisons, however, ignore a crucial, well-established fact: Districts serving larger proportions of high-need students (e.g., higher-poverty districts) have higher costs (Duncombe and Yinger 2007). We must therefore take these comparisons one huge step further by looking at race- and ethnicity-based differences not just in resources, but in whether resources are *adequate*.

K-12 FUNDING ADEQUACY

Adequacy is important in our context because the concentration of poverty that accompanies (and is partially due to) racial segregation generates disparities not only in resources (e.g., the racial/ethnic revenue gaps in Figure 2), but also in the costs that those resources must pay. In other words, districts serving larger shares of high-need students must pay more than districts serving fewer high-need students to achieve the same level of educational outcomes. From this perspective, the fact that resources, however measured, are roughly equal between racial/ethnic groups isn't telling us much about equal educational opportunity if those resources are being applied to highly unequal costs.

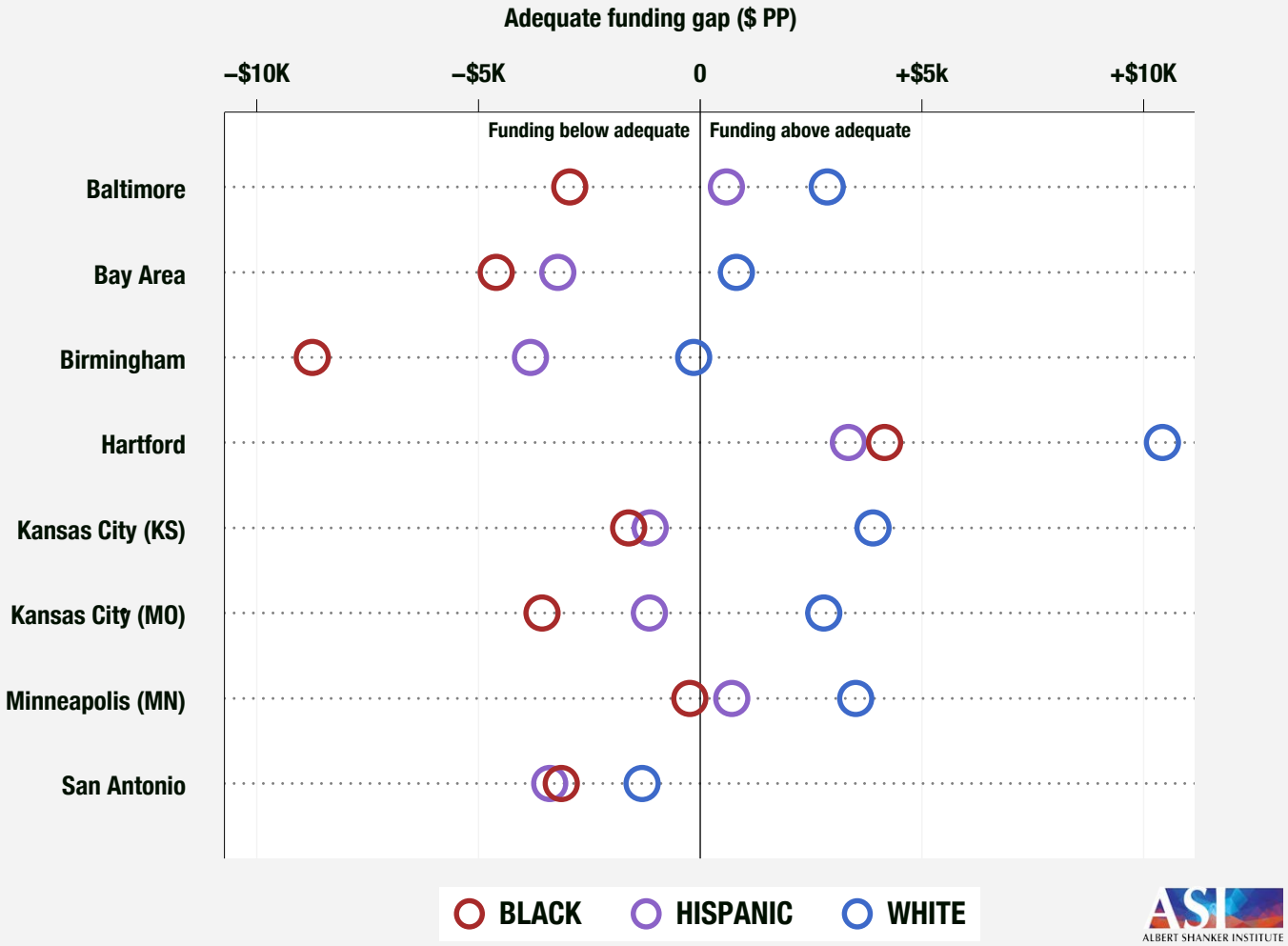
As discussed above, our SFID data allow us to compare current per-pupil expenditures in each district with cost model estimates of spending levels required to achieve the common goal of national average math and reading scores in over 12,000 districts across the United States (Baker, Di Carlo, and Weber 2021). The difference between actual and required/adequate spending is a measure of adequacy. Throughout this report, we express this difference in dollars per pupil, but different comparisons (e.g., percentage difference) do not change our conclusions.

The dot plot in Figure 3 presents, by metro area, the average difference (weighted by enrollment) between actual and adequate spending for the typical student of each race and ethnicity (again, with two sets of estimates for the Kansas City area and with the Wisconsin part of the Twin Cities area excluded). Positive gaps (markers to the right of the vertical zero difference line) indicate spending above estimated adequate levels, while negative values (to the left of the line) denote inadequate spending.

Before discussing the figure, we would emphasize that this common goal or "benchmark"—i.e., national average testing outcomes—is a rather modest target. We could specify in our models a more ambitious target, which would increase the size of all the negative gaps in Figure 3 and decrease the size of all the positive gaps, essentially pushing all the dots to the left. And, for any given racial/ethnic group, whether or not actual spending exceeds estimated costs is, of course, heavily influenced by the state in which the metro area is located (some states spend more generously than others). These issues of interpretation, however, are less salient in the context of our analysis. Most important for our purposes, rather, is the comparison of gaps between white and Black and Hispanic students within each metro area. That is, we are primarily interested in whether educational opportunity is unequal between these groups. Even if, hypothetically, funding is generally adequate for all racial/ethnic groups (as in Hartford), what's most important is whether it is more adequate for some groups versus others (i.e., whether educational opportunity is equal).

Figure 3

ADEQUATE FUNDING GAPS BY STUDENT RACE AND ETHNICITY AND METRO AREA, 2016-18 (POOLED)



Data source: School Finance Indicators Database

Note: Funding gaps are the difference between actual spending per pupil and estimated spending required to achieve national average test scores for the typical student of each race/ethnicity within each metro area (district-level estimates are averaged across metro areas, weighted by race-/ethnicity-specific enrollment). Data are pooled between 2016-18. The Wisconsin portion of the Twin Cities metro area is excluded due to extremely low shares of Black and Hispanic students.

That said, in general, we find that the average white student (blue circles) in nearly every metro area has sufficient current spending in their school district to achieve national average outcomes. The two exceptions are Birmingham, where the negative gap (-$147) is essentially zero, and San Antonio, where the gap for white students (-$1,314) is larger. In both cases, these inadequate funding gaps are quite modest compared with the typical student in these states (Baker, Di Carlo, Reist, et al. 2021).

The average Black student's district (red circles), in contrast, has insufficient funding for national average outcomes in every location except Hartford. Even in Hartford, though, while spending in the average Black student's district is over $4,000 per pupil above

the estimated cost of national average outcomes, the typical white student's district spends nearly $10,500 per pupil above these cost targets (i.e., educational opportunity is severely unequal). Gaps for Hispanic students (purple circles) are of generally similar magnitudes to those for Black students in most areas, with a couple of exceptions (i.e., Birmingham and Baltimore), where the negative gaps for Black students are far larger). In order to very roughly summarize the degree of unequal opportunity across all seven metro areas, on average, spending for the typical white student is $3,066 per pupil above estimated adequate levels, whereas spending is $3,058 below adequate for the average Black student and $2,100 below adequate for the average Hispanic student—that is, "opportunity gaps" of roughly $6,000 and $5,000 per pupil for Black and Hispanic students, respectively.

This general pattern across metro areas—with white students enjoying funding far more adequate than that of their Black and Hispanic peers in the same area—is, once again, both symptom and cause of racial segregation. The unequal educational opportunity reflected in these results is self-reinforcing: Racially isolated districts cannot raise the revenue to meet their costs, attenuating the quality of education these students receive. This results in poor postsecondary outcomes, which in turn perpetuates both the higher costs and the decreased ability to pay them with local revenue.

• • •

The descriptive results presented in this section paint a clear picture: Relative to their white counterparts, the typical Black/Hispanic family owns a home with a lower value, pays a higher effective property tax rate, and lives in a school district that receives less local revenue and spends less adequately relative to costs. Discrimination and segregation set this process in motion and reinforce it today, from wealth inequality to K-12 resource disparities to unequal educational opportunity.

This situation, however, did not arise spontaneously or by accident. It is, rather, in no small part the end product of deliberate efforts to segregate U.S. cities and surrounding suburbs that, in many places, including our seven metro areas, have been ongoing for over 100 years. In the next section, we illustrate the historical roots of residential segregation in these seven areas, how these efforts evolved over the decades in consistent ways across very different locations, and how, ultimately, they generated and fed off racial and ethnic educational opportunity gaps.

RESULTS, PART TWO:
CASE STUDIES OF SEVEN METRO AREAS

In this section, we present our seven case studies: Baltimore (MD), the Bay Area (CA), Birmingham (AL), Hartford (CT), Kansas City (MO/KS), San Antonio (TX), and the Twin Cities (MN/WI).

Before doing so, however, it may be useful to review some additional contextual data for these metro areas. In Table 3, we present descriptive statistics on student enrollment and segregation by metro area in 2019. All measures in the table use school-level enrollment data from the National Center for Education Statistics (National Center for Education Statistics 2019).

All seven of our metro areas are at least moderately diverse in terms of the race and ethnicity of their students, but to varying degrees and with different group "configurations." Birmingham, Hartford, Kansas City, and the Twin Cities all serve majority-white student populations with significant though smaller shares of Black and Hispanic students. In contrast, Black and Hispanic students are predominant in the Baltimore, Bay Area, and San Antonio areas, and in the latter, Hispanic students alone are a large majority (67 percent). In the Bay Area, of course, students of Asian descent (not shown in the table) represent a large share of all students (about one-quarter), though much of our discussion of the area will focus on the East Bay (Oakland), where Asian representation is a bit lower. We'll discuss this issue further in the Bay Area case study.

In order to get a general sense of the extent of areawide school segregation in each of our case study locations, the table presents dissimilarity index values for three different racial/ethnic combinations (white/Black, white/Hispanic, and white/Black+Hispanic). The dissimilarity index is a simple and very common means of gauging the separation of two groups in a manner that is independent of composition, which is important given the differences between our seven areas in the racial/ethnic makeup of their students. [6]

Separate dissimilarity index values are presented for two types of comparisons: between-school segregation and between-district segregation. The former comparison is by far the more common one, though it is usually calculated within districts rather than across metro areas. In our case, it essentially treats each metro area like one big school district with many schools—that is, metro areas are the "large unit" and schools are the "small unit," and school district boundaries are basically ignored. The latter (between-district segregation) does the same thing, except the small units are districts instead of schools (in a way, each district is a single school).

The index values can be interpreted as the percentage of students who would have to switch between small units in order to achieve perfect integration of the large unit in which they are located, with perfect integration defined as a situation in which every single one of the small units has the same percentage of each group as its large unit. [7] For example, in the case of the white/Black dissimilarity index, the percentage of both Black and white students in each small unit (schools or districts) would be the same as the overall metro area percentage. As a rough rule of thumb,

6 In addition to the dissimilarity index, the other most common segregation measure is the exposure/isolation index, which measures the percentage of the typical student's peers who are of a different (exposure) or the same (isolation) race/ethnicity, by the race/ethnicity of that typical student. We do not present exposure/isolation indices in this report, as they are primarily a measure of the potential for interaction between groups, which is not quite appropriate for our purposes. We do, however, examine the relationship between funding adequacy and student outcomes in each metro area and nationally while classifying districts by whether or not they serve majority-Black/Hispanic students.

7 More accurately, it is the proportion of, for instance, Black or white students who would have to switch schools in order to be distributed the same way as the other group, or the number of Black/white students who would have to move as a proportion of the number of required Black/white movers in a situation of perfect segregation.

Table 3

K-12 ENROLLMENT BY RACE AND ETHNICITY, SEGREGATION (DISSIMILARITY), AND SEGREGATION (ENTROPY INDEX) DECOMPOSITIONS, BY METRO AREA, 2018-19

	Baltimore (MD)	Bay Area (CA)	Birmingham (AL)	Hartford (CT)	Kansas City (KS/MO)	San Antonio (TX)	Twin Cities(MN/WI)
Total enrollment	404,282	585,619	168,236	165,402	341,989	423,129	529,216
Percent white	41.4	25.2	53.5	56.3	62.3	22.2	63.3
Percent Black	36.5	7.6	35.1	11.9	14.3	6.1	12.6
Percent Hispanic	10.5	34.3	8.0	21.8	14.3	67.2	9.6
Segregation (dissimilarity index)							
White/Black							
b/w schools	0.642	0.649	0.670	0.629	0.568	0.503	0.566
b/w districts	0.429	0.597	0.601	0.623	0.528	0.379	0.501
White/Hispanic							
b/w schools	0.490	0.558	0.486	0.549	0.498	0.471	0.457
b/w districts	0.196	0.445	0.343	0.532	0.427	0.380	0.398
White/Bl+Hisp							
b/w schools	0.590	0.560	0.594	0.570	0.518	0.466	0.504
b/w districts	0.365	0.453	0.522	0.556	0.460	0.377	0.451
Segregation (Theil entropy index) decompositions							
White/Black							
b/w schools	0.456	0.420	0.492	0.392	0.369	0.271	0.322
b/w districts	0.238	0.327	0.400	0.364	0.331	0.190	0.233
% b/w district	52.2	77.8	81.4	92.8	89.6	70.2	72.5
White/Hispanic							
b/w schools	0.246	0.318	0.242	0.326	0.274	0.223	0.209
b/w districts	0.074	0.216	0.151	0.300	0.226	0.177	0.136
% b/w district	30.3	67.7	62.6	91.9	82.7	79.3	65.3
White/Blk+Hisp							
b/w schools	0.380	0.318	0.407	0.339	0.305	0.216	0.265
b/w districts	0.186	0.224	0.319	0.318	0.267	0.171	0.193
% b/w district	48.8	70.5	78.3	93.9	87.6	78.9	72.9
Multiracial							
b/w schools	0.336	0.277	0.364	0.285	0.276	0.199	0.234
b/w districts	0.151	0.190	0.281	0.257	0.229	0.148	0.164
% b/w district	44.8	68.5	77.1	90.0	82.9	74.7	70.0

Data source: NCES Common Core of Data, Public Elementary/Secondary School Universe Survey (2018-19 school year)

Note: Sample includes only regular local school districts with total enrollments of at least 20 students. Entropy index decompositions from Reardon et al. (2000). Multiracial comparison is segregation between white, Black, and Hispanic students separately (HWIBIH). Between-district percentages may differ slightly from manual calculations of estimates in the table due to rounding.

dissimilarity index values over 0.6 (or 60 percent) are generally considered very high levels of segregation.

The reason why we calculate the dissimilarity index between districts in addition to the more common between-school version is that school districts are the primary governing authority when it comes to K-12 funding, and so the important variation in equal educational opportunity is found between districts.

According to the dissimilarity index, between-school segregation of Black and white students is quite high in all of our metro areas, and at least moderate-to-high in the case of Hispanic and white students. In other words, the student populations in these metro areas are quite diverse, but their schools are not. Between-district segregation of Black and white students is also quite high, and is actually comparable to between-school segregation in most of our metro areas. The separation of Hispanic and white students across district boundaries, like that between schools, is lower than the Black/white comparisons, but generally moderate-to-high in all areas except Baltimore.

We also perform this same exercise using an alternative segregation measure: Theil's entropy index. One advantage of this measure is that it allows us to calculate not only between-school and between-district segregation, but also how much of the former is due to the latter (Reardon et al. 2000). Put differently, total between-school segregation across a metro area is due to a combination of two sources: (1) students are segregated between schools within each district in the area; and (2) students are segregated between districts. A quick decomposition of total segregation into these two components is worthwhile for our purposes because it can help give a sense of how the long history of segregation in

each area has played out today. In addition, school funding disparities, while primarily a between-district affair, can also occur between schools within districts (Condron and Roscigno 2003).

In the bottom portion of Table 3, the percentages represent the degree to which total segregation between all schools in a metro area (essentially treating each metro area like one big district) is due to the racial/ethnic compositional differences between districts (e.g., white students concentrated largely in certain districts and Black students in others), rather than compositional differences between schools within each district (e.g., white and Black students attend different schools within the same districts). As discussed above, total school segregation in U.S. metro areas today, on average, is driven primarily by between- rather than within-district segregation.

Table 3 suggests that our metro areas are no exception. If, for example, we magically desegregated Black and white students within every single one of the roughly 60 government-run districts in the Hartford metro area, moving students between schools in each district so that every school had the same percentage of Black and white students as its home district overall, this would leave 92.8 percent of total (between-school) Hartford areawide segregation intact. This is because the primary reason why the Hartford area's Black and white students attend different schools, put simply, is that they attend different districts. As a result, shuffling them around between schools within districts, while obviously an important and extremely worthwhile policy goal, would have far less impact on total segregation than would moving them between districts.

ABOUT THE CASE STUDY MAPS

Among the results presented in each case study are maps that depict each area's school districts overlayed on the 1935-40 HOLC redlining zones discussed above. In order to improve visibility of these A- to D-graded zones, which are often quite small and concentrated in specific areas, the maps do not present the entirety of each metro area, but rather show the general area surrounding the central cities in which most of the HOLC-graded zones are located (in the Bay Area, there are HOLC zones concentrated around two central cities—Oakland and San Francisco—that are far apart, but we focus on the East Bay).

There are two maps included in each case study; both types include the color-coded HOLC zones. First, there is a district "**composition map**" showing the racial/ethnic composition (percent Black and Hispanic) of each district. Second, there is a district "**funding map**" showing district-level K-12 funding adequacy (along with school neighborhood poverty).

A guide to the specific measures and features of the maps, including the definitions of HOLC zones, is presented in Box 1 (sources for all the measures described in the box are specified in the "Data" section).

To reiterate, we interpret the HOLC grades as indicative of both the segregation "situation" in our metro areas in the late 1930s and local assessments of racialized risk that may have affected segregation going forward (e.g., via redlining). Our primary outcome of interest, in both the maps and the other results presented in the case studies, is the adequate funding gaps in the funding maps. However, examining district-level racial/ethnic composition in the composition maps provides insight into how the HOLC zones may also have had a persistent influence on school segregation, specifically the between-district segregation that drives the racial/ethnic funding inequity portrayed in the funding maps.

Incorporating school neighborhood poverty (income-to-poverty ratios) into the funding maps allows for a quick look at the association between HOLC grades and economic segregation. This relationship is sometimes most visible within (rather than between) districts because, again, the HOLC zones in our metro areas are generally concentrated in a small number of (typically) central city districts (in some cases just one or two). In any case, to the degree high-poverty schools are concentrated in low-graded HOLC areas, it may reflect, at least in part, the legacy of historical racial segregation for modern economic segregation, which in turn influences equal educational opportunity by geographically maldistributing the poverty that suppresses revenue capacity and drives up education costs across districts in the same metro area.

BOX 1

HOW TO READ THE MAPS IN THIS SECTION

Each case study (i.e., each metro area) includes two maps: a "composition map" and "funding map." In both of these maps:

- School districts are delineated by blue boundaries
- HOLC grades from 1935-40 are indicated with shaded areas (unshaded areas were not graded), with the grades as follows:

A "BEST" — Areas deemed the lowest-risk, in-demand, racially homogeneous, and likely to increase in value.

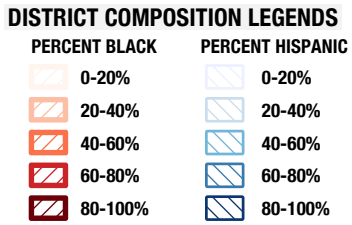
B "STILL DESIRABLE" — Areas rated not very likely to increase in value but still potentially stable due to the lack of threat of "infiltration."

C "DEFINITELY DECLINING" — Areas assessed as high risk, often due to the perceived threat of "infiltration" by "lower grade populations."

D "HAZARDOUS" — Areas with the highest assessed risk, commonly known as "redlined" areas, generally ineligible for any federally-insured loans.

COMPOSITION MAPS

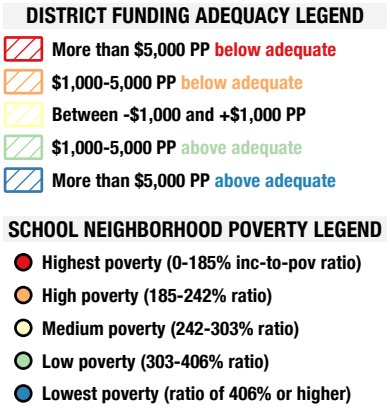
The composition maps depict the 2018 racial/ethnic composition of districts' students (overlayed on HOLC zones). Composition is represented by hashed (zig-zagging) striped line patterns, with forwarding-leaning lines denoting the Black share of students, and backward-leaning lines the Hispanic share (see the legend to the right). Darker red and blue shades mean larger Black and Hispanic shares, respectively.



FUNDING MAPS

The funding maps, again overlaid on the HOLC zones, visualize 2018 district funding adequacy (see text for details on measure), represented by striped line patterns denoting the difference between actual and adequate spending per pupil (see legend to the right).

The funding maps also present 2018 school neighborhood poverty levels, with each dot representing an individual school, and the color of the dot indicating the surrounding neighborhood's poverty level (see legend to the right). Poverty is measured by ratios of average income to the federal poverty line.



Note, finally, that the composition and funding maps do not include the entirety of each metro area; they "zoom in" a bit on the central city area to improve visibility of the HOLC "redlining" zones.

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BALTIMORE METRO AREA

State: Maryland
Census Designation: Baltimore-Columbia-Towson, MD

The Baltimore area is a somewhat unusual case for us to begin with, as most of its school districts, like those in several southern states, are organized by county. Since districts are the primary units of analysis for school finance in the United States, much of our discussion of the Baltimore area will be focusing on variation in funding adequacy and other outcomes between a relatively small number of relatively large districts.

That said, as discussed earlier in this report, housing segregation within the city of Baltimore was crafted through municipal ordinances between 1910 and 1917—that is, racial segregation was the law. But the stage for today's sharp racial dividing lines between Baltimore City and its six surrounding counties was actually set long before those ordinances. They date back to when the city was established as an independent-governing entity in 1851, not included under any other county governance structure. This original decision does not appear to have been based on race, although the dynamics changed somewhat as the city grew by annexing adjacent land. In any case, the separation of Baltimore City from Baltimore County laid out a geographical structure that would shape segregation—and its impact on school funding—in the metro area from that point forward.

The story of the 1910s ordinances in Baltimore City serves as an intriguing precursor to the later use of blockbusting. The original law, when adopted, attempted to freeze racial differences in neighborhoods where they stood at that moment; Black families could not move to white neighborhoods, and vice versa. The problem was this didn't address the situation in already-mixed neighborhoods. The real estate industry in Baltimore adapted by seeking opportunities akin to what later became the widely popular strategy of blockbusting (discussed above). Yet the original ordinance seemed to prohibit the practice. As a result—and certainly not coincidentally—amendments to the law dropped the restrictions on mixed blocks, setting the stage for early, more micro-level forms of blockbusting activity (Boger 2009).

When the racial ordinances were outlawed by the Supreme Court's Buchanan decision in 1917, city officials responded quickly. Baltimore's mayor formed a "Committee on Segregation" to coordinate the efforts of city departments (e.g., building, health) with those of realtors and private homeowner associations to keep the city segregated. In 1925, a group of roughly 20 neighborhood associations formed an alliance and urged, among other things, the incorporation of racial covenants into all existing and future deeds in white neighborhoods (Rothstein 2018). These covenants would shape segregation in the city and the surrounding Baltimore County for decades (Pietila 2010).

Baltimore's borders were effectively finalized by a 1948 referendum that stopped the city from any further annexations of outlying suburban neighborhoods in Baltimore County (Duffy 2018). This solidified school district and other governance boundaries, creating opportunities (and demand) for the real estate industry, enabled by federally insured loans and covenants forbidding future sale to Black (and, later, Jewish) buyers, to relocate white families to safe havens in outlying areas in Baltimore County and nearby Howard and Anne Arundel counties without fear of "urban" encroachment or envelopment (Pietila 2010).

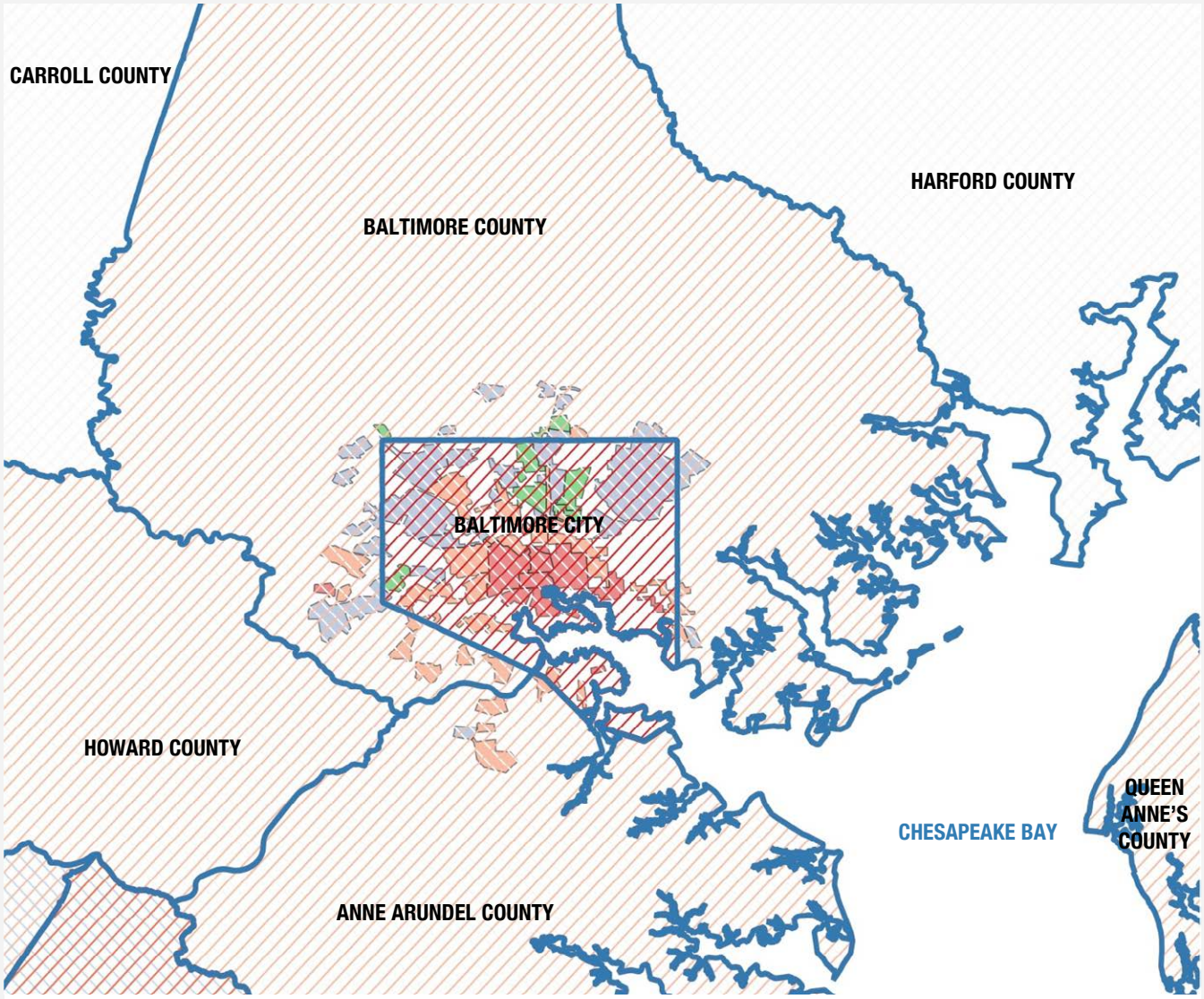
In addition, between 1930 and 1970, Baltimore's Black population more than doubled but availability of housing (in which they were allowed to live) was insufficient to meet this demand (thanks in part to the city's refusal, amid white protests, to build public housing units for nonwhite families). Making things worse, many Black families were displaced during this time by slum clearance, urban renewal, and transportation construction, further widening the gap between supply and demand. Blockbusting helped to fill it (Power 1983).

As mentioned above, blockbusting in Baltimore began early, but it would become an increasingly popular strategy in the 1950s and 1960s (Orser 1997). Realtors willing to violate the long-standing

practice of not selling homes in white neighborhoods to Black families were able to turn healthy profits by purchasing homes at below-market rates from white people nervous about racial "infiltration" and the recent *Brown v. Board* decision. These homes were then marked up and sold to Black buyers who, excluded from federal loan programs, were forced into "rent-to-buy" and similar high-risk, predatory arrangements. Tens of thousands of homes were "flipped," changing all-white neighborhoods into mostly-Black neighborhoods over relatively short periods of time (Power 1983). Moreover, as in so

Figure 4

SCHOOL DISTRICT STUDENT RACIAL/ETHNIC COMPOSITION MAP, BALTIMORE METRO AREA, 2018



To improve visibility of HOLC zones, map does not include entire metro area. See Box 1 for information on measures.

many other cities and areas across the nation, when public housing was finally built to help fill the demand, it was heavily segregated (Weld 1976).

The legacy of these decades of efforts can be seen in the composition map presented in Figure 4 (see Box 1, above). To reiterate, to improve visibility of the HOLC zones, the map does not include the entirety of the metro area, but in this case all seven of the area's school districts are at least partially visible in the map. Note, first, the position of the Baltimore City district, the land borders of which are almost entirely encompassed by Baltimore County.

Predictably, most of the HOLC zones are located within the Baltimore City district's borders, and the rest are relatively close to them. Neighborhoods in the northern sections of the city and surrounding county were given high (A/B) grades and the central city largely C and D grades. Still, across the entire metro area, all but one of the neighborhoods assessed as highest risk (D grades) and most of those that received C grades are found in the Baltimore City district, which today serves the most heavily Black/Hispanic student population (around 90 percent). Even within the city, though, there is evidence of a connection between the racial/ethnic composition of neighborhoods today and the HOLC grades (Evans et al. 2012).

Yet a few of the large counties in the area also serve substantial Black student populations: Anne Arundel (21 percent Black), Baltimore County (39 percent), and Howard County (24 percent). And all three also serve students that are roughly 10-15 percent Hispanic. As a result, the Baltimore area is somewhat unusual among our case studies in that between-district segregation, while substantial (specifically the concentration of Black/Hispanic students in the city), is not the primary driver of total area segregation (see Table 3). This is not only because the counties are somewhat racially/ethnically diverse, but also because, like the city, they are highly segregated internally (due in no small part to their large geographical size).

The distribution of HOLC zones reflects the fact that there were already pockets of Black residents in Baltimore County and Anne Arundel County in the late 1930s, but postwar suburbanization, fueled by redlining, covenants, and blockbusting, saw many white residents move further out into the suburbs (Pietila 2010). The *Brown* decision in 1954 may also have exacerbated this "flight"; prior to this decision, school segregation statewide was required by law.

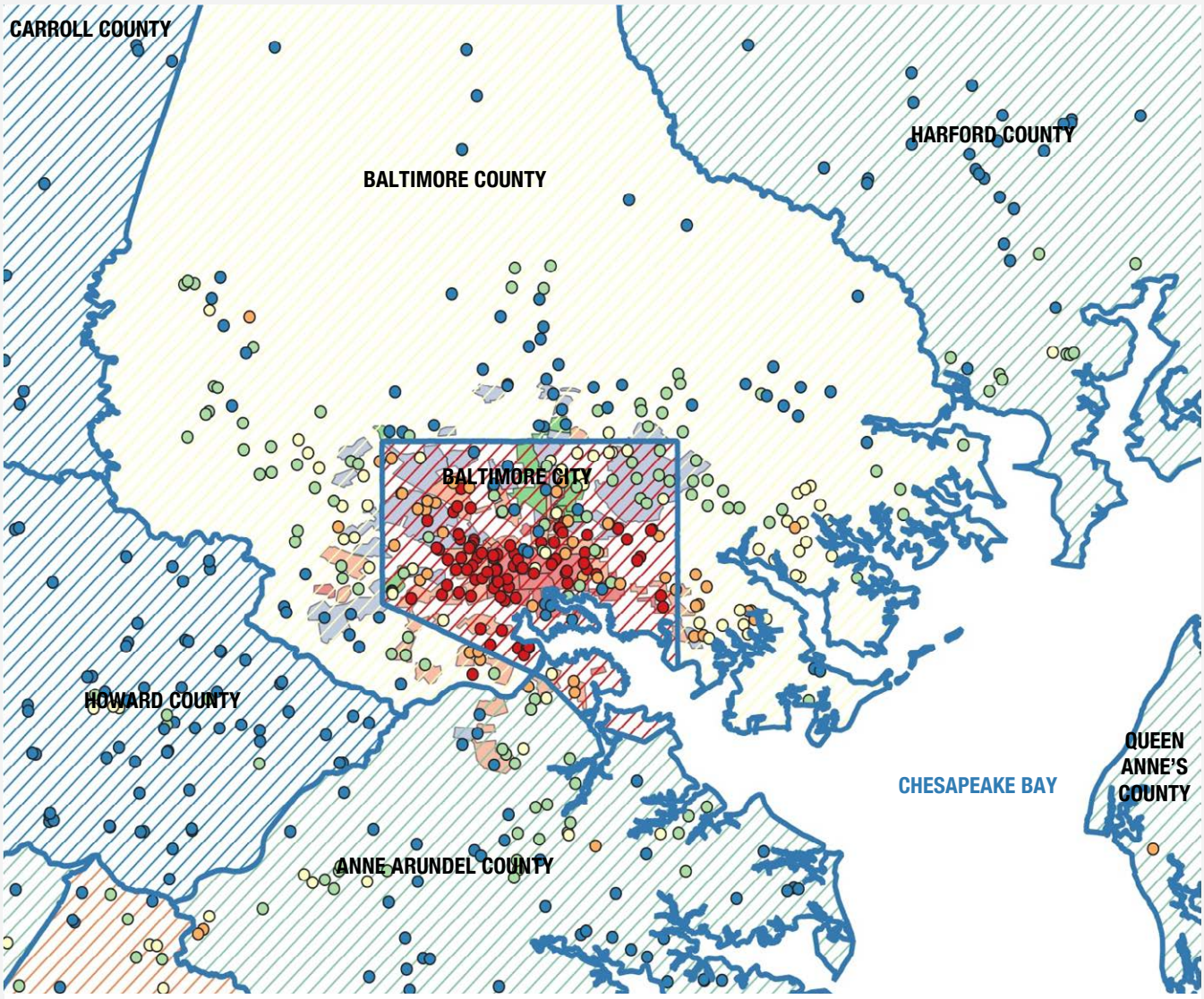
However, much of the counties' Black/Hispanic student populations are a result of shifts in more recent decades, during which time there were large decreases in the share of white students in Anne Arundel, Baltimore, Harford, and Howard Counties. Baltimore County schools, for instance, went from almost 80 percent white in 1989 to about 45 percent white in 2010 (Ayscue 2013). Yet much of the increase in the counties' nonwhite (particularly Black) population occurred in or near areas where the minority population was larger historically, including the city-adjacent areas of Baltimore County (Baltimore Metropolitan Council 2014). Fears of this racial transition stalled efforts to expand the availability of affordable housing in the city's inner suburbs (Vicino 2008).

Figure 5 presents the area's funding map. The relationship of the HOLC grades with school neighborhood poverty is clear even within Baltimore City borders: pretty much every single high-poverty school neighborhood (i.e., those with very low income-to-poverty ratios, represented by the red dots) is not only located within the city, but specifically located within or very near those spaces that were C- or D-graded over 80 years prior. The A- and B-graded areas within the city are largely populated by lower- and medium-poverty schools (blue, green, and yellow dots), although there are some higher-poverty schools (orange dots) in the city's westernmost A/B zones.

Across the rest of the area (i.e., the counties), the schools are mostly surrounded by lower-poverty areas (blue and green dots), including virtually all the schools in the counties directly bordering Baltimore County (Howard, Anne Arundel, and Harford). Within Baltimore County, there is economic segregation between the inner and outer suburbs, spurred in part by racial segregation (Hanlon and Vicino 2007; Vicino 2008). In the map, schools around the city border are somewhat mixed in terms of poverty, but the vast majority of Baltimore County's higher- and medium-poverty schools are found near

Figure 5

SCHOOL DISTRICT FUNDING ADEQUACY MAP, BALTIMORE METRO AREA, 2018



To improve visibility of HOLC zones, map does not include entire metro area. See Box 1 for information on measures.

the city, whereas the schools located further out are generally in lower-poverty areas. Interestingly, many of the "inner ring" exceptions—e.g., the clusters of blue dots on the northern and southwestern borders of the city—are found in or near A-/B-graded HOLC zones.

Regarding the adequacy of K-12 funding in the area, due in no small part to the (segregation-fueled) concentration of poverty within its borders, Baltimore City is a large peninsula of severely inadequate funding jutting out into a bay of modestly inadequate funding (Baltimore County, with a funding gap of

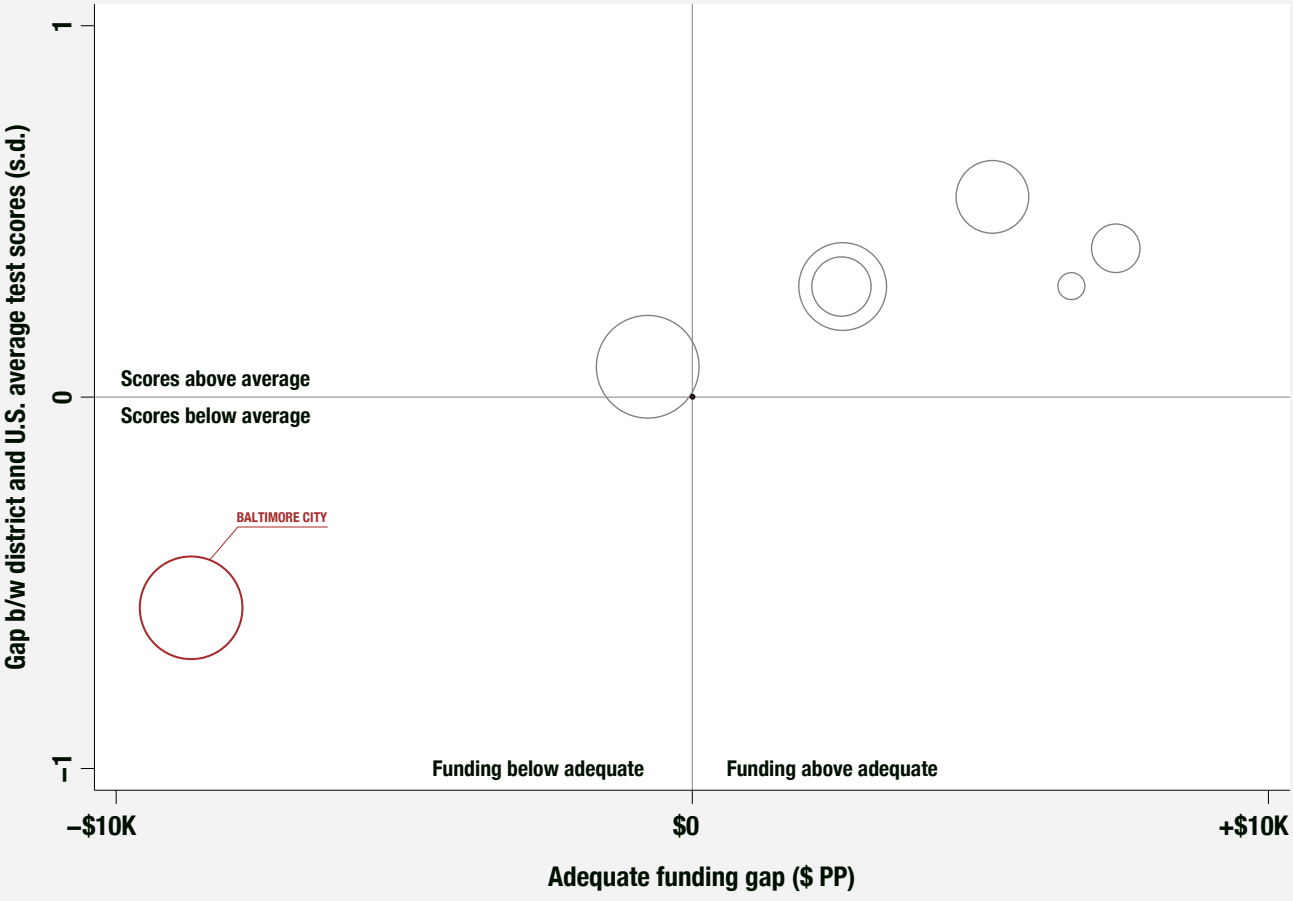
-$775 per pupil), which leads out to a sea of above-adequate funding (the other surrounding counties).

The seeds of this situation were planted generations ago. The area's C- and D-rated areas are largely located within the one present-day school district in the area that is overwhelmingly Black/Hispanic and where spending falls substantially below estimated adequate levels, while the remainder of C-graded zones (and one D zone) are mostly found in Baltimore County, which is roughly half-Black/Hispanic and funded slightly below adequate levels. Conversely, districts with adequate funding today tend to be those in which there are smaller Black/Hispanic student populations (and which were ungraded by the HOLC and subsequently developed as suburbs).

Finally, Figure 6 shows the relationship between adequate funding gaps (horizontal axis) and student testing outcome gaps (vertical axis) for Baltimore City

Figure 6

STUDENT OUTCOME GAPS BY ADEQUATE FUNDING GAPS, BALTIMORE METRO AREA DISTRICTS, 2018



Red markers with labels are majority–Black/Hispanic districts

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Data source: School Finance Indicators Database; Stanford Education Data Archive

Note: Markers weighted by student enrollment. Outcome gaps (y-axis) are the difference in average math and reading scores (in standard deviations) between each district and the U.S. average. Funding gaps (x-axis) are the difference between actual spending per pupil and estimated spending required to achieve national average test scores.

and the six (of 24 statewide) other government-run districts/counties in the entire Baltimore metropolitan area. This figure will be replicated for all of our case studies.

The outcome gaps, again, are from the Stanford Education Data Archive, and they are the difference, in standard deviations, between each district's average math and reading test scores and the U.S. average in 2018 (Reardon et al. 2021).[8] The adequate funding gaps are from the SFID, expressed in dollars per pupil. Each circle in the plot represents a district, with larger circles indicating larger total enrollments. Districts with Black and Hispanic enrollment greater than 50 percent (i.e., districts in which Black and Hispanic students together constitute more than half the student population) are indicated with red circles and district name labels. This is a simple way to visualize segregation between districts (in other metro areas, where appropriate, we will also present alternative plots).

Districts in the lower left quadrant of the plot are those with less funding than necessary to achieve national average outcomes, as well as those in which testing outcomes are lower than the national average. Conversely, districts in the upper right corner are those with more than enough funding to achieve national average outcomes and that are also achieving above-average outcomes.

This scatterplot is unusually sparse (due, of course, to the county structure of school districts in Maryland), but it paints a stark picture of unequal opportunity. The one district that serves a majority-Black and/or -Hispanic population (in this case, Baltimore City) not only is the only one in the lower left quadrant, but also is located toward the corner of that quadrant, far from its whiter counterparts. Baltimore County, which is almost but not quite half Black/Hispanic, is the circle in the middle of the plot, with funding just below estimated adequate levels and testing outcomes just above the U.S. average. Finally, the remainder of the area's counties, which serve lower shares of Black/Hispanic students—all but Howard County serve majority-white students—populate the upper right quadrant (funding above adequate levels and test scores above the U.S. average).

8 For all plots in this report presenting 2018 outcome gap estimates from the Stanford Education Data Archive (SEDA), including the national plots, missing estimates are imputed where possible based on data from prior years. This includes imputation for only 10 of the 357 districts in our seven metro areas; 7 of those 10 districts are in the Baltimore area. The SEDA estimates are aggregated to the district level (weighted by enrollment).

BAY AREA METRO AREA

State: California
Census Designation: San Francisco-Oakland-Hayward, CA

We turn our attention from the east coast to the west coast, looking at the San Francisco Bay Area, with a particular focus on Oakland and the East Bay. Although this report focuses on the separation of white from Black and Hispanic students, the Bay Area, like many others across the United States, has a long, well-documented history of discrimination against people of Asian descent, including the brutal treatment of Chinese railroad workers in the late 19th century (Lew-Wiliams 2018). It is also the exception among our case studies in that Asian people constitute a very large share of the areawide student population (about one-quarter).

Between 1900 and 1970, Asians represented only 3-8 percent of the Bay Area's residential population, with that share increasing rapidly since then. Segregation between white and Asian residents in the Bay Area, while substantially lower than Black/white segregation, is only slightly lower than that between Hispanic and white residents (Frey 2021).

Yet the impact of this segregation on outcomes, including school funding, may be somewhat different. For instance, the available evidence suggests that, today, Asian people experience greater rates of intra- and especially intergenerational mobility than their Black and Hispanic counterparts, thus attenuating the negative effects and persistence of segregation (Massey 2020; Sakamoto, Goyette, and Kim 2009). In addition, nationally, the adequacy of K-12 funding (from the SFID) in the typical Asian student's district is less adequate than, but roughly similar to, that of the typical white student (Baker, Di Carlo, Reist et al. 2021), though this varies by district and metro area (in the Bay Area, actual spending is a few hundred dollars per pupil below estimated adequate levels in the typical Asian student's district, and about $1,000 above for white students). None of this at all diminishes the significance of over 150 years of discrimination and racism against Asian immigrants and Asian Americans, in the Bay Area and elsewhere, but, in order to maintain consistency between case studies, we will focus mostly on white, Black, and Hispanic residents and students.

In fact, the Bay Area's population overall was at least 90 percent white for much of the 20th century. This started to change quickly during the 1970s, and by 2010, the white share of the population had declined to 42 percent, with large concurrent increases in the share of Asian and Hispanic residents. The area's Black population share, in contrast, grew rapidly from the 1940s all the way through the 1970s, maxing out at around 9 percent in 1980 and 1990 (Menendian and Gambhir 2018).

In the East Bay, upon which we will focus here, the area's Black population share is a bit higher, and it has its roots in the early 20th-century migration of Black workers to West Oakland, seeking jobs with the railroad (e.g., as porters) and at the ports, among the only jobs open to them (McBroome 1993). Further movement of southern Black workers to the area, spurred by jobs created during World War I (e.g., shipbuilding), was met with intense white opposition (Rhomberg 2007). Segregation in the area, as in every other metro area discussed above, was created and maintained first by racial ordinances/zoning in the earliest years of the 20th century, and then by racial discrimination in FHA and other federally insured loan programs (and federal housing) throughout the middle part of the 20th century, as well as the widespread use of racially restrictive covenants during this same time (HoSang 2010; McBroome 1993; Montojo, Moore, and Mauri 2019). Segregation within the city was also pronounced: by 1950, 90 percent of Oakland's Black population lived in just 22 percent of Census tracts (Self 2003). And suburbanization in the area, as elsewhere, was a mostly white, highly segregative process.

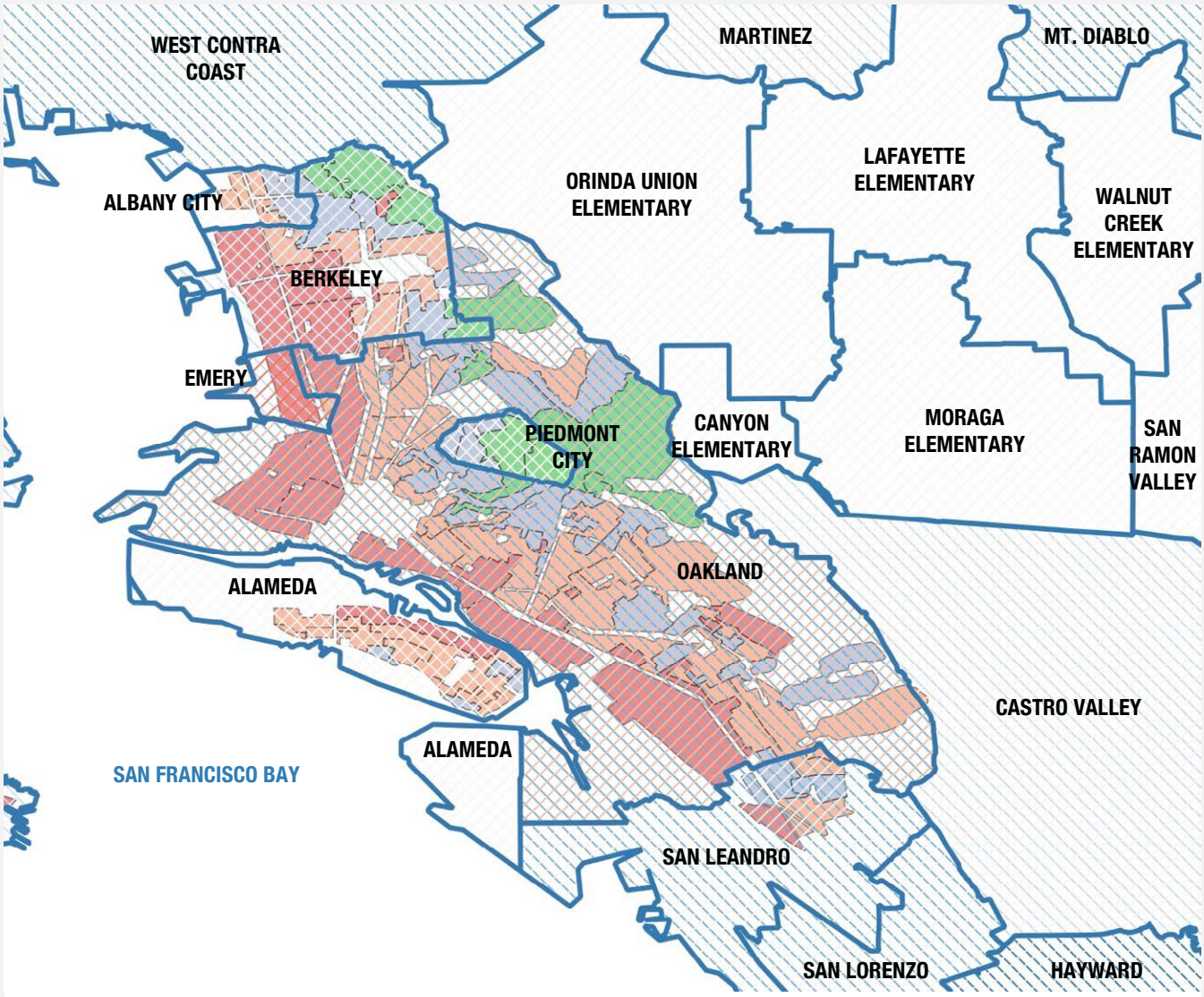
In fact, as late as 1963, the Oakland Tribune published "white only" real estate listings (Self 2003). These listings were eventually put to a stop by adoption of the state's own Rumford Fair Housing Act, named for William Byron Rumford, the first African American from Northern California to serve in the Legislature. But, the following year, real estate interests backed a constitutional amendment, Proposition 14, which banned anti-discrimination laws altogether

(McBroome 1993; Self 2003). The proposition passed but was eventually overturned by the U.S. Supreme Court in 1967 (*Reitman v. Mulkey* 1967).

As in most of the other metro areas discussed in this report, one additional element driving residential housing segregation in the East Bay area was the development of regional transportation policies, which favored the mobility needs of white suburbanites over the Black and Hispanic families living in the city (Golub, Marcantonio, and Sanchez 2013). Making things worse, urban renewal and highway and rail construction displaced thousands of minority families, including as many as 10,000

Figure 7

SCHOOL DISTRICT STUDENT RACIAL/ETHNIC COMPOSITION MAP, BAY AREA METRO AREA, 2018



To improve visibility of HOLC zones, map does not include entire metro area. See Box 1 for information on measures.

people in West Oakland between 1960 and 1966 alone (Rhomberg 2007; Self 2003).

The Bay Area, to be fair, put forth some comparatively bold early efforts to achieve integration. Even federally funded housing projects were being integrated through what was described as a "checkerboarded" pattern of alternating racial/ethnic assignments, though this occurred primarily in Black areas. Such efforts, however, were far less successful at bringing Black residents to majority-white areas (Golub et al. 2013).

Figure 7 presents the composition map for the eastern part of the Bay area surrounding Oakland. Since Black and especially Hispanic students constitute approximately half of the student population of the districts in the map, many of them have darker stripes. All of the D-graded HOLC zones in the map are located within five districts—Alameda, Berkeley, Emery, Oakland, and San Leandro—which together serve around one-third of the students in the map's districts, but around 60 percent of their Black students (the share of Hispanic students across these districts is roughly consistent with that of the mapped districts overall).

All of these districts also contain at least some area that was A- or B-graded by the HOLC. This includes Oakland Unified, in which C/D zones are clearly concentrated on the western side of the district, and A/B zones on the eastern side. This may be due in part to the fact that, throughout the first half the 20th century, Black families moved into the city seeking jobs in the ports and shipyards, and thus lived closer to the coast (a similar pattern is found in Alameda, directly to the west of Oakland, where the one D-graded zone spans much of the coastline of the harbor).

Perhaps most blatantly, Piedmont City Unified's borders are encompassed entirely by the heavily-Black/Hispanic Oakland Unified. As Oakland expanded throughout the late 19th and early 20th century, Piedmont refused to be folded into the larger city (Hambrick 2019). The district consists entirely of neighborhoods that received HOLC grades of A or B, and, due to its having resisted multiple attempts at incorporation into and integration with Oakland Unified over the years, as well as (not coincidentally) its high property values, today it serves a mostly white student population (Dearing 2020).

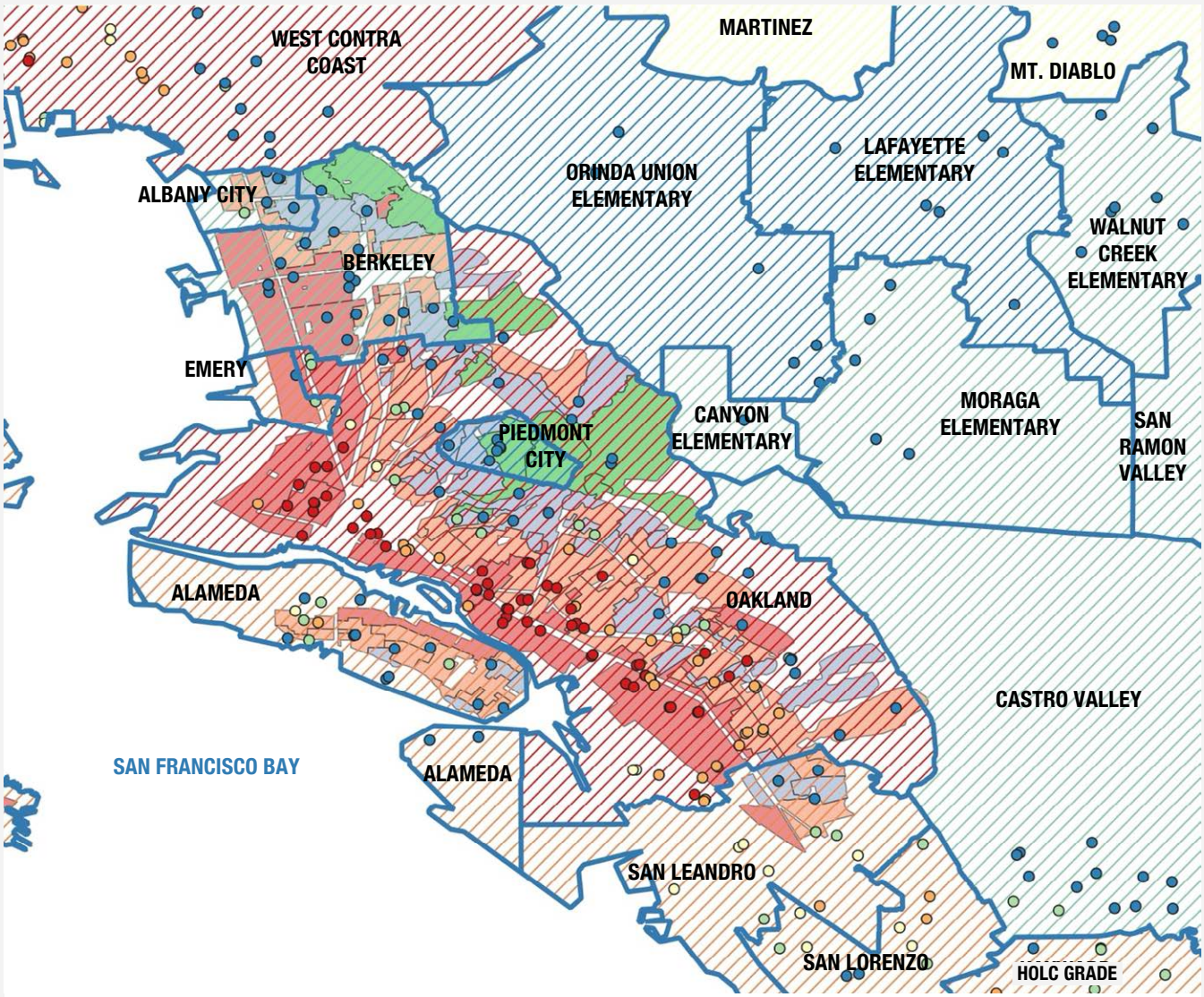
Outside of the five heavily HOLC-graded areas, there are several, mostly geographically large districts that are a mixed bag in terms of the racial/ethnic composition of their students. Steering, blockbusting, and other tactics helped to keep many of these districts, such as the elementary-only districts of Walnut Creek and Lafayette to the east of Oakland, almost exclusively white throughout the 1970s, and mostly white today (Link 1971).

San Lorenzo, to the south of Oakland, was incorporated and began development in 1944 under a covenant barring nonwhite residents from all new housing built (Stiles 2015). In San Leandro, also to Oakland's south, segregation was strictly enforced not only with covenants, but also by the vigilance of private neighborhood associations that reportedly kept nonwhite families from even viewing available properties (i.e., steering), keeping the area all-white for decades after the *Shelley* decision (National Committee Against Discrimination in Housing Inc. 1971). Through the early 1970s, the Black share of the resident population in San Leandro and San Lorenzo was under 1 percent (Montojo et al. 2019). Today, both districts' students are majority-Black/Hispanic, due largely to the in-migration of Hispanic residents in recent decades (though both San Leandro and San Lorenzo also serve substantial Black populations—13 and 10 percent, respectively).

The funding map presented in Figure 8 shows the variation in funding adequacy and the dispersion of school neighborhood income-to-poverty ratios (dots), both within districts as well as between adjacent communities. First, as in the Baltimore metro, virtually every single school with a high-poverty surrounding area (the red dots) is located in the C- and D-graded areas within one central city district (Oakland Unified), whereas the areas with lower-risk HOLC ratings (blue and green shading), in Oakland and elsewhere, are populated almost exclusively by schools in higher-income neighborhoods (blue and green dots).

Figure 8

SCHOOL DISTRICT FUNDING ADEQUACY MAP, BAY AREA METRO AREA, 2018



To improve visibility of HOLC zones, map does not include entire metro area. See Box 1 for information on measures.

Interestingly, though, a few districts in the area, such as Alameda City Unified and Berkeley Unified (and even parts of the central and eastern sections of Oakland Unified) are home to relatively large portions of land that received C/D HOLC grades in 1935-40 but also to schools serving higher-income neighborhoods today. In this sense, the zones in these districts are a bit exceptional among their counterparts in our other six metro areas, though Berkeley, in which covenants and redlining were extensive (Wollenberg 2008), was also home to a comparable portion of land that received A or

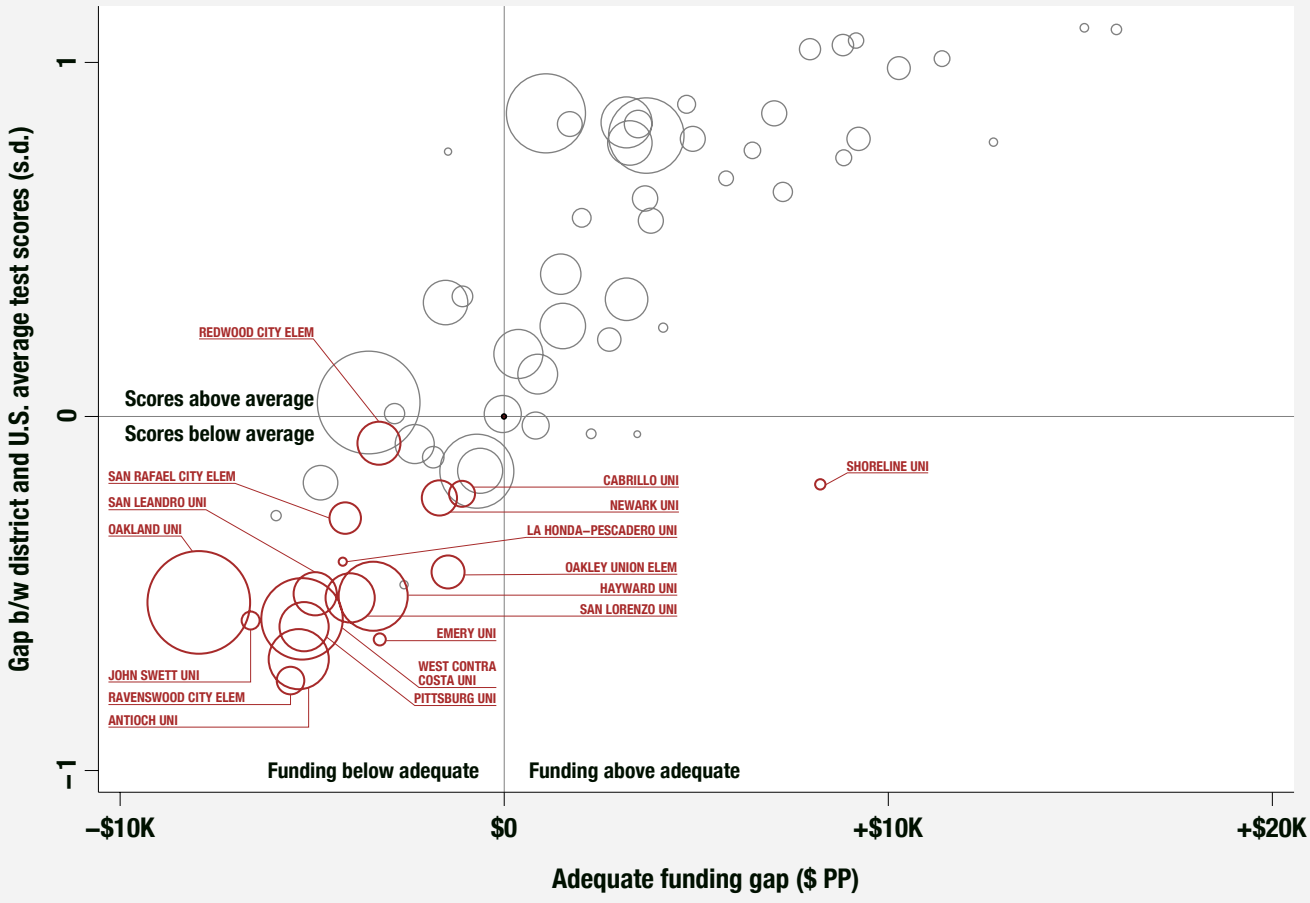
B HOLC ratings (as well as to a major research university). Today Berkeley is segregated internally (Daniels 2013; Montojo et al. 2019).

The distribution of funding adequacy across districts corresponds quite well with the HOLC grades. Again, with the exception of Berkeley, every district containing a D-graded zone spends below our estimated adequate levels today, while the vast majority of districts in which there were no graded zones (e.g., the large area of districts to the east of Oakland) spend above adequate levels. In addition, every district that serves a substantial Black/Hispanic population (Figure 7) is funded below adequate levels.

Figure 9 visualizes the relationship between funding gaps and outcome gaps for all districts in the Bay Area (including the West Bay as well as a few East Bay

Figure 9

STUDENT OUTCOME GAPS BY ADEQUATE FUNDING GAPS, BAY AREA METRO AREA DISTRICTS, 2018



Red markers with labels are majority–Black/Hispanic districts

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Data source: School Finance Indicators Database; Stanford Education Data Archive

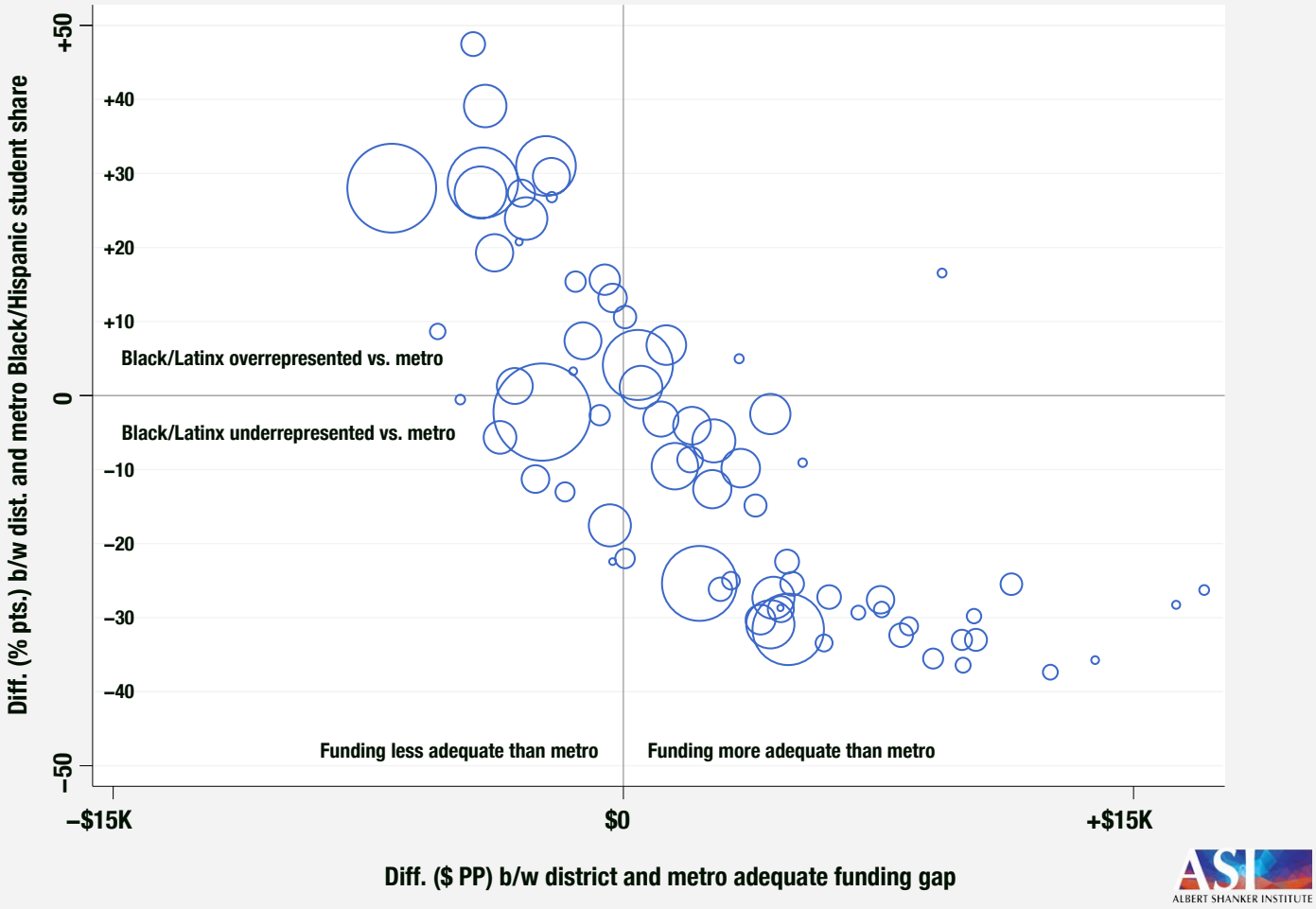
Note: Markers weighted by student enrollment. Outcome gaps (y-axis) are the difference in average math and reading scores (in standard deviations) between each district and the U.S. average. Funding gaps (x-axis) are the difference between actual spending per pupil and estimated spending required to achieve national average test scores.

districts not depicted in the maps). Due to the area's relatively large Hispanic population, almost one in four districts serves a majority-Black/Hispanic student population (and that's despite a substantial Asian population areawide). All but one of these districts is located in the lower left quadrant of the plot, with below-adequate funding and scores below the U.S. average. The sole exception—Shoreline Unified—is a tiny district (about 500 students) that is a severe outlier.

Conversely, the districts in the upper right quadrant (above-adequate funding, above-average scores) are exclusively those serving student populations that are not majority Black/Hispanic (though about half of the latter are not majority white, due mostly to large Asian student populations). There are 20 districts in Figure 9 that serve a majority-white student population, and 18 of those districts are in the upper right quadrant. None is in the bottom left quadrant.

Figure 10

RELATIVE BLACK/HISPANIC STUDENT SHARE BY RELATIVE ADEQUATE FUNDING GAP, BAY AREA METRO AREA, 2018



Data source: School Finance Indicators Database

Note: Markers weighted by student enrollment. Relative Black/Hispanic share (y-axis) is the difference (percentage points) between each district's Black/Hispanic student share and that of its metro area overall. Funding gaps (x-axis) are the difference between districts and their metro areas in the gap between actual spending per pupil and estimated spending required to achieve national average test scores. Plot includes districts with non-missing adequacy estimates in the metro area.

Given the area's large Black and especially Hispanic student population, as well as its representation of Asian students, we present one additional scatterplot in Figure 10. Instead of defining racial/ethnic composition in absolute terms (majority or percent Black/Hispanic), on the vertical axis of this plot we present composition relative to the metro area (i.e., the difference, in percentage points, between each district's Black/Hispanic percentage and that of the Bay Area metro overall). Districts with either higher positive or lower negative values on the vertical axis (markers toward the top or bottom of the plot) are those in which Black/Hispanic and white students, respectively, are disproportionately concentrated. For instance, the topmost circle in the plot is the Ravenswood City Elementary district, which serves a student population that is just over 89 percent Black and Hispanic (83 percent the latter). Since the Bay Area overall is about 41 percent Black/Hispanic, Ravenswood's relative Black/Hispanic share is roughly +48, or 48 percentage points above the metro area overall.

Similarly, on the horizontal axis, funding gaps are also presented relative to the metro, with adequacy defined as the difference (in dollars per pupil) between each district's funding gap and the overall metro area gap. The plot, therefore, examines whether districts serving a disproportionate share of the area's Black/Hispanic students also have less adequate funding than does the typical district in that same metro area. This visualizes the relationship between segregation and equal opportunity in a manner that partially accounts for the fact that metro areas vary in their racial/ethnic composition as well as their overall funding adequacy.

The pattern of the circles in the plot suggests a fairly consistent negative correlation (the enrollment-weighted correlation coefficient is -0.84). In other words, relative adequacy decreases as the relative Black/Hispanic share increases. As is clear in the top left portion of the plot, with one exception (again, the tiny Shoreline district all the way to the right), every single one of the 17 districts in which Black and Hispanic students are overrepresented by at least 10 percentage points is funded less adequately than the metro area on the whole (or, in one case, within $50 per pupil).

Among the 11 districts in which the gap is at least +20 percentage points, all are funded worse than the metro, with negative gaps ranging from roughly $2,000 per pupil in Emery United to nearly $8,000 per pupil in Oakland Unified. Conversely, there are 30 (mostly small) districts in which Black/Hispanic students are underrepresented by at least 20 percentage points (the bottom right of the plot), 29 of which spend more adequately than the typical Bay Area district (and the sole exception, Sunol Glen Unified, serves 293 students in total).

BIRMINGHAM METRO AREA

State: Alabama
Census Designation: Birmingham-Hoover, AL

The history of segregation in the Birmingham metro area is, perhaps, the ugliest among our case studies, and it started long before the civil rights era of the 1950s and 1960s. The city of Birmingham was founded shortly after the Civil War, but its iron and coal deposits fueled rapid growth. By the turn of the century, Black residents accounted for almost half the city's population (U.S. Census Bureau 1913). Segregation was a fact of life, enforced by violence and incarceration.

Within the city, the south's longest-standing racial zoning law (1926-51) required segregation by law, flouting the 1917 Buchanan decision. When the areas zoned for Black families were no longer sufficient for the city's growing Black population, the laws were defied. This prompted white backlash by various legal and extralegal strategies even after the ordinances were struck down in 1951. This included, tragically, dozens of bombings and murders throughout the 1940s and up until the mid-1960s, culminating in the most well-known bombing, which killed four young Black girls (Connerly 2005).

Residential spaces throughout the Birmingham metropolitan area were also subjected to many of the same discriminatory and segregative forces as were our other metro areas, including but not limited to extensive redlining (The Jefferson County PLACE MATTERS Team 2013). In addition, Retzlaff and others describe how, during and after the heyday of redlining, interstate highway development throughout the Birmingham metropolitan area served to exacerbate and reinforce segregation (e.g., by physically dividing Black and white neighborhoods along previously zoned borders), while urban renewal funds were used to build new neighborhoods and schools to reinforce segregation (Connerly 2005; Retzlaff 2020).

Yet the Birmingham metro area—and Alabama in general—is somewhat unique in the extent of its historical and especially contemporary reliance on the segregating tool, described above, of district secessions. That is, the "carving out" of (often mostly white) new districts from their (often mostly Black) parent districts.

The only other (Census-defined) southern metro area upon which we focus in this report is Baltimore, where one of the major elements of the framework that facilitated decades of segregation and discrimination was the separation of Baltimore City from the otherwise county-based structure of governance for public school systems. Alabama also operates a public schooling system in which the county is the default unit of governance. Yet Alabama, unlike Maryland, also contains a large share of "city" school districts carved separately from county districts.

Specifically, about 70 districts among the 140 regular local school districts statewide—roughly half of all school districts—were at some point separated from their parent counties. And many of these separated districts (or "city districts"), while geographically small compared with the counties, are quite large in terms of enrollment: statewide, they serve about 278,000 students, whereas total enrollment in county districts is about 462,000 students.[9] This practice is of course not unique to Alabama, but the state does make it particularly easy (or at least less difficult) to accomplish (Reeves and Joo 2018); any city with more than 5,000 residents can secede. Moreover, these "carved out" district boundaries are not static; they often change over time, with districts annexing additional neighborhoods.

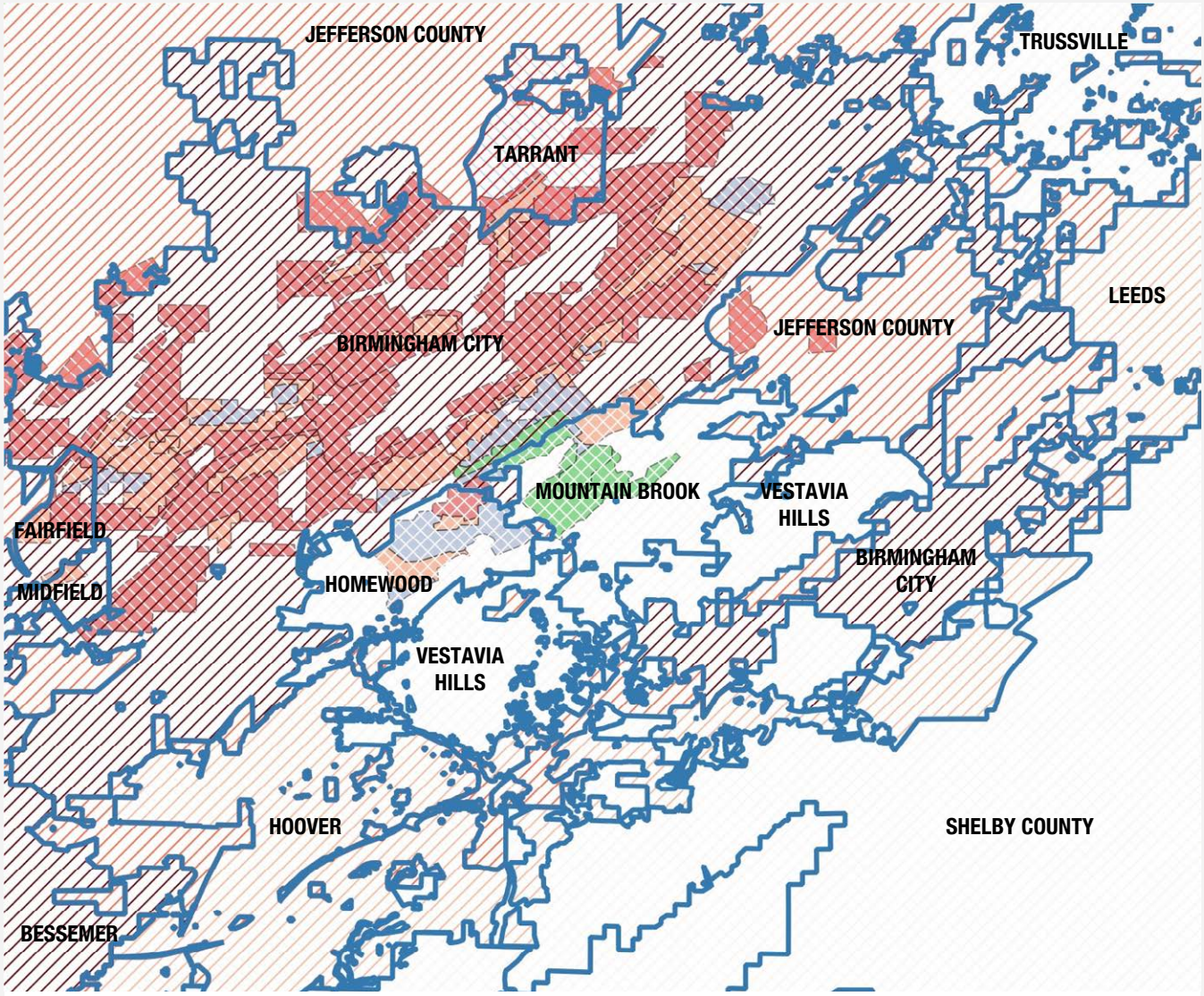
This constant process of carving out and gerrymandering has had a substantial impact on segregation in the Birmingham area, much of it starting in the latter half of the 20th century (Frankenberg and Taylor 2017). Although a few (mostly white) districts left their parent Jefferson

9 Authors' calculations using data from the Common Core of Data, Local Education Agency Universe Survey (National Center for Education Statistics 2019).

County district (the city and school district of Birmingham is located in Jefferson County) at the beginning of the 20th century, since 1950 an additional seven districts have "seceded" from the county, four in the wake of the *Brown* decision, and another three after court desegregation orders in the early 1970s. These seven districts, predictably, were disproportionately white and more affluent than the county as a whole, leaving Jefferson County both poorer (less able to raise K-12 revenue) and less diverse than it was prior to the separations (EdBuild 2019; Frankenberg and Taylor 2017). The district boundary changes affected total segregation in the area, but key for our purposes is that they especially

Figure 11

SCHOOL DISTRICT STUDENT RACIAL/ETHNIC COMPOSITION MAP, BIRMINGHAM METRO AREA, 2018



LEGEND Grayed out categories do not appear in map

DISTRICT BORDERS

DISTRICT COMPOSITION - PERCENT BLACK	DISTRICT COMPOSITION - PERCENT HISPANIC	HOLC GRADE
0-20% of student population	0-20% of student population	A
20-40% of student population	20-40% of student population	B
40-60% of student population	40-60% of student population	C
60-80% of student population	60-80% of student population	D
80-100% of student population	80-100% of student population	

To improve visibility of HOLC zones, map does not include entire metro area. See Box 1 for information on measures.

increased between-district segregation (Frankenberg 2009), which, as discussed above, is the type of segregation that has the strongest implications for school finance.

(Note that the Birmingham City School District was established before—and was never a part of—the Jefferson County School District, and the former therefore does not represent an example of secession as in these other cases.)

The legacy of these secessions, as well as that of the covenants and redlining that preceded most of them, is clear in the composition map in Figure 11. The rather severe and somewhat chaotic appearance of this map's boundaries is due in part to the district secessions, and a few districts in the map appear in seemingly non-contiguous sections (to help keep track of this, three districts, Birmingham City, Jefferson County, and Vestavia Hills, are labeled twice in the map).

The overwhelming majority of C- and D-graded HOLC-graded zones are found entirely within the boundaries of the Birmingham City School District. The city district has long been home to a large Black population, but its students were about half white in 1968; that share has since declined to less than 1-2 percent. Birmingham City serves 14 percent of the area's students but almost one-third of its Black and Hispanic students.

Similarly, the handful of districts, most notably Tarrant (north of Birmingham) and Fairfield (west of Birmingham), that contain a substantial number of low-rated HOLC zones but seceded prior to the *Brown* decision (Tarrant and Fairfield in the late 1800s and early 1900s) serve heavily Black student populations today. In Tarrant's case, however, the nonwhite student share has grown dramatically over the past 20 years; the district's students were over 80 percent white in the late 1980s (Frankenberg and Taylor 2017).

On its southern side, the Birmingham City district wraps around the eastern edge of a non-contiguous portion of Jefferson County Schools. Further to the west of that county section but still flanked by Birmingham City to the south are the "seceder" districts of Mountain Brook, Vestavia Hills, and Homewood. Every one of the area's A-graded HOLC zones are at least partially located in Mountain Brook, which seceded from Jefferson County in 1959, in the wake of the *Brown* decision. This district has served an overwhelmingly white student population from the outset (its students are 97 percent white today).

Most all of the area's B-graded zones, with the exception of a few scattered throughout Birmingham City, are in Homewood (seceded in 1970), though the latter also contains a roughly equal land area consisting of zones that received C and D grades. Homewood was around 90 percent white when it seceded. This started to change during the 1980s, but the district still remains approximately 60 percent white today (Frankenberg and Taylor 2017).

Mountain Brook and Homewood were generally white areas when the HOLC grades were assigned in the late 1930s, and, perhaps aided by discriminatory federal loan insurance programs (and violence and the threat of violence), managed to remain mostly racially isolated, despite their proximity to the city. After the *Brown* decision, rather than face desegregation with the rest of Jefferson County's schools, these jurisdictions (along with others, such as Vestavia Hills to their south, which serves an 80 percent white student body) simply left the countywide district. Even more recently, during the 1980s through the 2000s, three majority-white districts at least partially visible in the map—Hoover, Leeds, and Trussville—followed suit, seceding from Jefferson County Public Schools. In no small part as a result, the Birmingham metro area's students, particularly its white and Black students, are hypersegregated between districts.

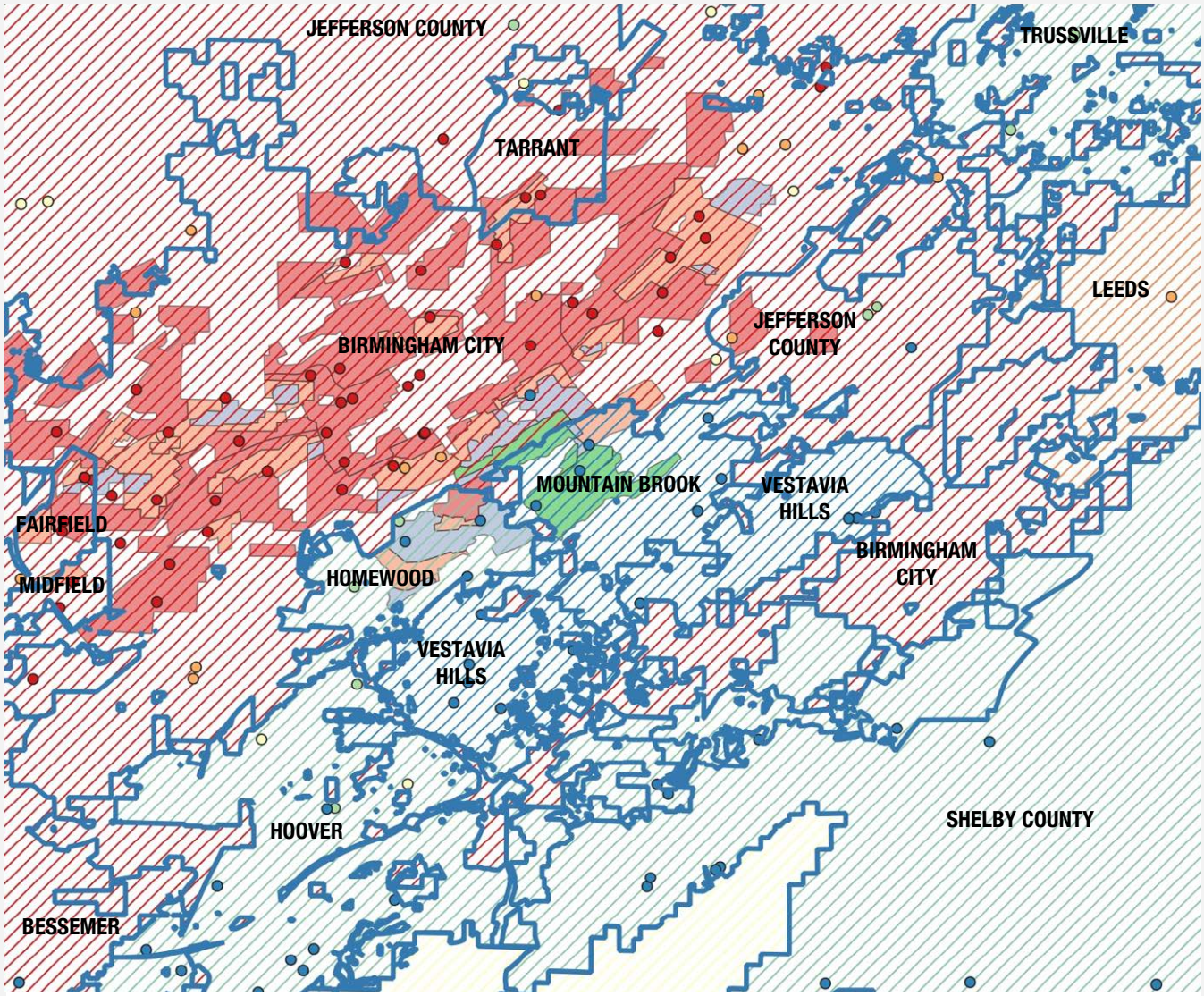
No less striking is the funding map of the Birmingham area presented in Figure 12. First, schools with lower-poverty surrounding areas (blue and green dots) are, predictably, concentrated in Mountain Brook, Homewood, and Vestavia Hills, whereas Birmingham City's schools are mostly lower income (red and orange dots). And the contrasts here are stark: Not only do the school poverty ratios correspond quite well with the HOLC zone ratings (and district secessions), but most schools' neighborhoods are either "rich" or "poor" (red or blue dots, respectively), with relatively few in the middle categories. Severely

unequal educational opportunity is driven by very high economic inequality and segregation, with discrimination and racial/ethnic segregation at their roots.

The geographical distribution of adequate funding gaps in Figure 12 is likewise conspicuous. Alabama is a generally low-spending state, as well as one that is relatively high in child poverty. Thus, the costs

Figure 12

SCHOOL DISTRICT FUNDING ADEQUACY MAP, BIRMINGHAM METRO AREA, 2018



LEGEND

DISTRICT BORDERS

SCHOOL NEIGHBORHOOD POVERTY	DISTRICT FUNDING ADEQUACY	HOLC GRADE
Highest poverty (0-185% inc-to-pov ratio)	More than $5,000 PP below adequate	A
High poverty (185-242% ratio)	$1,000-5,000 PP below adequate	B
Medium poverty (242-303% ratio)	Between -$1,000 and +$1,000 PP	C
Low poverty (303-406% ratio)	$1,000-5,000 PP above adequate	D
Lowest poverty (ratio of 406% or higher)	More than $5,000 PP above adequate	

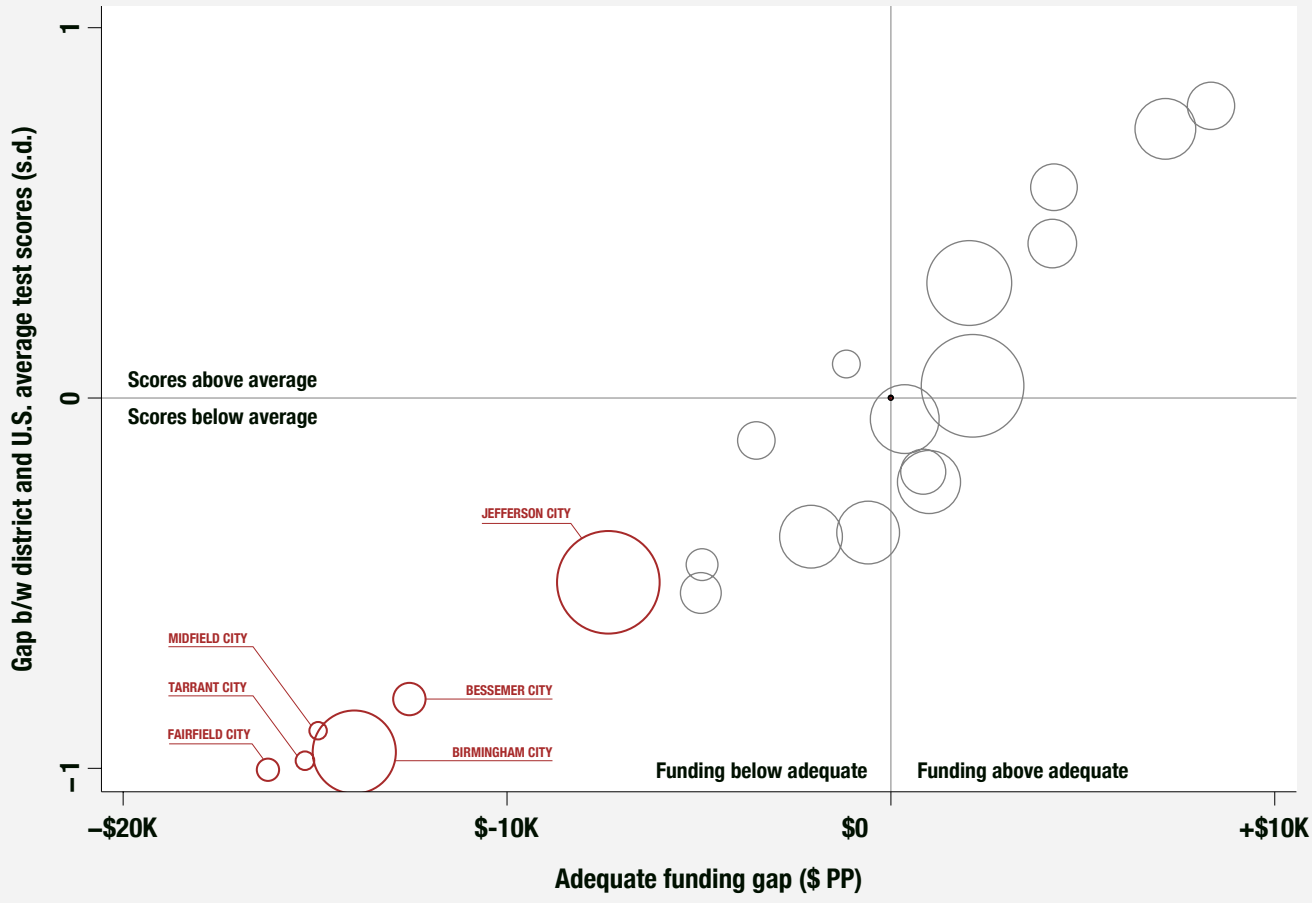
To improve visibility of HOLC zones, map does not include entire metro area. See Box 1 for information on measures.

of achieving national average outcomes in many Alabama districts are quite high, and spending is far from meeting those costs (Baker, Di Carlo, Reist et al. 2021). This is particularly true, for example, of Birmingham City, which in 2018 spent about $11,000 per pupil, but was estimated to need to spend closer to $25,000 per pupil to achieve national average outcomes, given the student population it serves. By contrast, Mountain Brook, for example, spent over $13,000 per pupil despite cost estimates well below that level.

Overall, in the Birmingham metro area, the districts with C-/D-graded areas and/or heavily Black districts (Birmingham City, as well as the "early seceders" such as Tarrant and Fairfield) spend well below cost estimates. In contrast, almost all the post-*Brown* "carved out" districts with higher HOLC ratings

Figure 13

STUDENT OUTCOME GAPS BY ADEQUATE FUNDING GAPS, BIRMINGHAM METRO AREA DISTRICTS, 2018



Red markers with labels are majority–Black/Hispanic districts

ALBERT SHANKER INSTITUTE

Data source: School Finance Indicators Database; Stanford Education Data Archive

Note: Markers weighted by student enrollment. Outcome gaps (y-axis) are the difference in average math and reading scores (in standard deviations) between each district and the U.S. average. Funding gaps (x-axis) are the difference between actual spending per pupil and estimated spending required to achieve national average test scores.

and/or majority white populations, most notably Homewood, Mountain Brook, Trussville, and Vestavia Hills, not only spend more adequately than the area overall, but actually spend above adequate levels by large margins. They are, in fact, the four most adequately funded districts in the entire state.

We can only speculate about what the situation today would look like had these six post-*Brown* secessions not occurred, as the separations spurred movement of families across borders and other unobserved counterfactual outcomes. But it's certainly defensible to argue that the secessions increased between-district segregation of both students and resources. As an extremely simplistic illustration, if we folded these districts into Jefferson County today (including the inadequately funded Leeds and Midfield districts), it would cut the Jefferson County School District's inadequate funding gap in half.

In Figure 13, we present the relationship between funding adequacy and outcomes, with district racial/ethnic composition (i.e., majority-Black/Hispanic schools) highlighted. Every single district in the Birmingham area that is majority Black/Hispanic, which in the plot are denoted with red circles and district name labels, is located in the lower left quadrant (spending is below estimated adequate levels and average outcomes are below the U.S. mean). That is, no majority-Black/Hispanic district has sufficient funding to achieve national average outcomes, and none meets or exceeds that modest outcome goal. None, in fact, is even close on either score.

Conversely, there are 15 districts in the Birmingham area that are not majority-Black/Hispanic (i.e., the gray circles), all of which are majority-white districts. Nine of these 15 districts exhibit adequate funding (they are to the right of the vertical line in the plot). These nine are actually among the only 21 in the entire state of Alabama (130 districts in total) that spend above estimated adequate levels. Almost half of the 15 score about the U.S. average on math and reading tests (they are above the horizontal line in the plot). Yet every single one of these 15 majority-white districts exhibits more adequate (or less inadequate) funding and lower U.S. mean-relative outcomes than does every single majority-Black/Hispanic district.

It bears mentioning, finally, that four of the six districts in the upper right quadrant are city districts that seceded in 1970 or later. Conversely, among the five majority-Black/Hispanic districts located in the bottom left corner (funding severely below adequate and scores far below average), four are city districts established before the 1954 *Brown* decision (most decades before).

HARTFORD METRO AREA

State: Connecticut
Census Designation: Hartford-East Hartford-Middletown, CT

Connecticut has a reputation for being one of the nation's most segregated states, racially and economically. While the state prohibited school segregation by law in 1868 (Marcin 1971), residential—and thus school—segregation not only persisted but actually increased throughout much of the 20th century.

The metro area is divided into a large number of small districts, a situation that tends to be accompanied by greater segregation. And, as shown in Table 3, the degree of racial/ethnic segregation between districts in the Hartford area is extremely high, both between white and Black and white and Hispanic students. To illustrate, suppose, for example, our goal is to shift students around such that every school in the Hartford metro area has the same percentages of white, Black, and Hispanic students as the area overall (the diversity of the area is perfectly distributed across schools). In order to accomplish this goal, over 90 percent of our task—in a sense, 90 percent of the students we would have to move—would switch districts and not just schools.

This is due mostly to the concentration of the area's Black and Hispanic students in a small group of districts (though it is also, in part, a result of somewhat low segregation within many of the area's [mostly small] districts). And that happened over time. Hartford in particular went through phases of discriminatory development that parallel many of the other cities and metropolitan areas in this report. In 1924, West Hartford became the first Connecticut town to enact zoning regulations that essentially barred the construction of multifamily homes. This effectively prevented Black and Hispanic families, largely unable to afford single-family homes, from moving to the area, keeping it white (Putterman 2021).

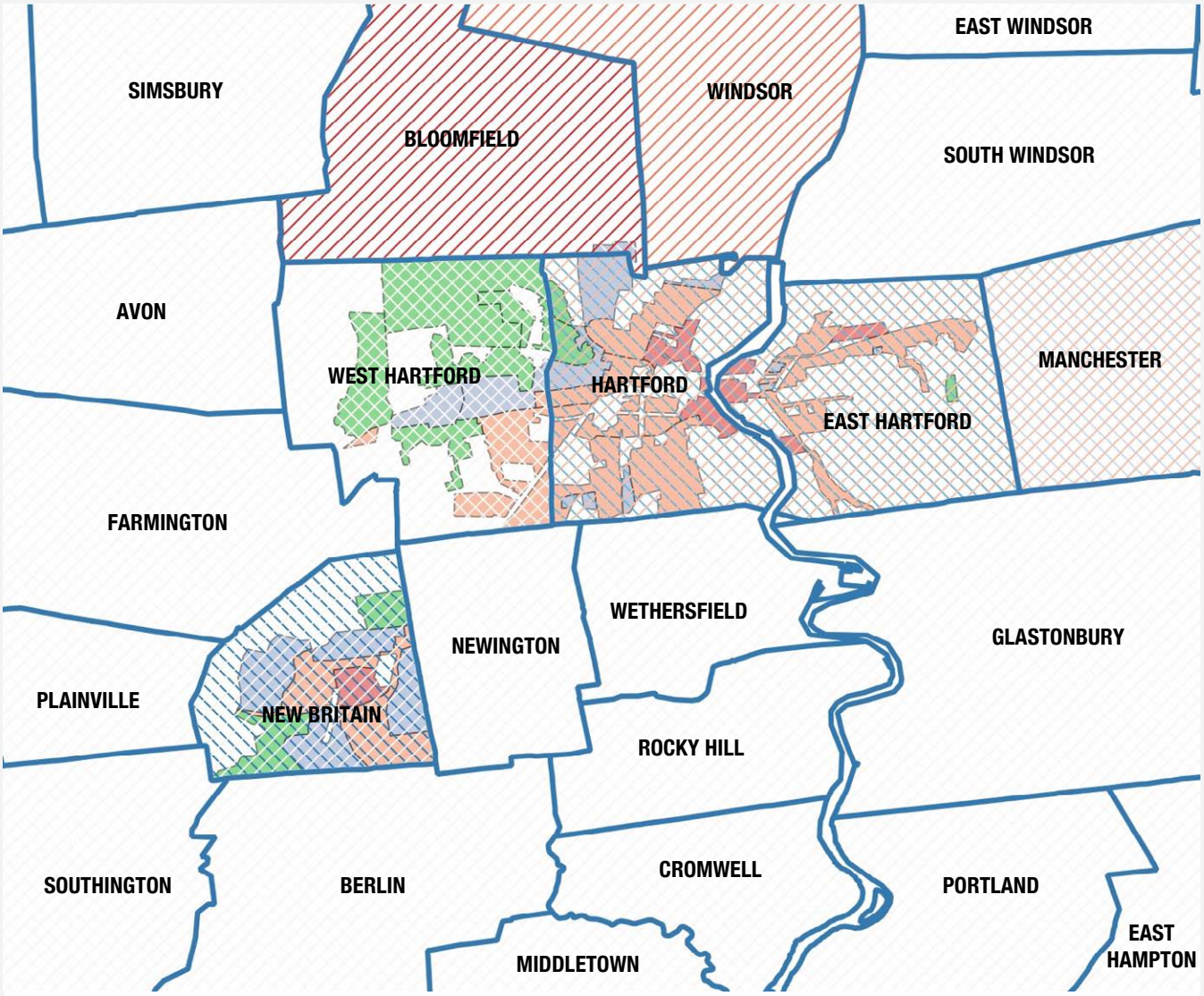
Throughout the 1930s and 1940s, federal lending discrimination built on this foundation of a mostly white West Hartford and a mostly Black central and East Hartford. Private covenants were also used during the early 1940s to further mitigate any risk of Black and Hispanic families moving in (with the exception, of course, of domestic servants) (Dougherty 2021; Wilson 2018). Federally sponsored suburbanization during the middle decades of the 20th century, helped by the construction of highways for commuters (that also displaced many families of color), created all-white neighborhoods in the cities' suburbs, while segregated federal housing projects (which also displaced many families) ensured that the Black and growing Puerto Rican populations were confined to certain areas (Eaton 2020).

In addition, a variety of forces remain at play in Connecticut today, reinforcing Black/white and Hispanic/white segregation across Connecticut communities, including the usual suspects of ongoing steering, discriminatory sales and renting, mortgage lending discrimination, and ostensibly neutral zoning policies that reinforce racial segregation (Eaton 2020). As mentioned earlier in this report, recent housing audit reports from the Connecticut Fair Housing Center reveal the extent of ongoing mortgage lending discrimination and steering in the state (Connecticut Fair Housing Center 2017).

Figure 14 presents the composition map for the part of the metro area surrounding the three "Hartford districts"—West Hartford, Hartford, and East Hartford—which immediately jump out. The tri-city area, while geographically small compared with the metro area as a whole, serves about one in four of its public school students, but roughly half of its Black and Hispanic students. The delineation of the three Hartford cities/districts maps quite neatly onto the HOLC-graded areas, with all of the high-risk D-graded zones and most of the C-graded zones located in East Hartford and Hartford proper, and most of the A-/B-graded zones in West Hartford. The HOLC notes indicate that the exceptional C-graded zones in the south of West Hartford were assigned due to an "infiltration of mixed foreign" families (Dougherty 2021).

Figure 14

SCHOOL DISTRICT STUDENT RACIAL/ETHNIC COMPOSITION MAP, HARTFORD METRO AREA, 2018



To improve visibility of HOLC zones, map does not include entire metro area. See Box 1 for information on measures.

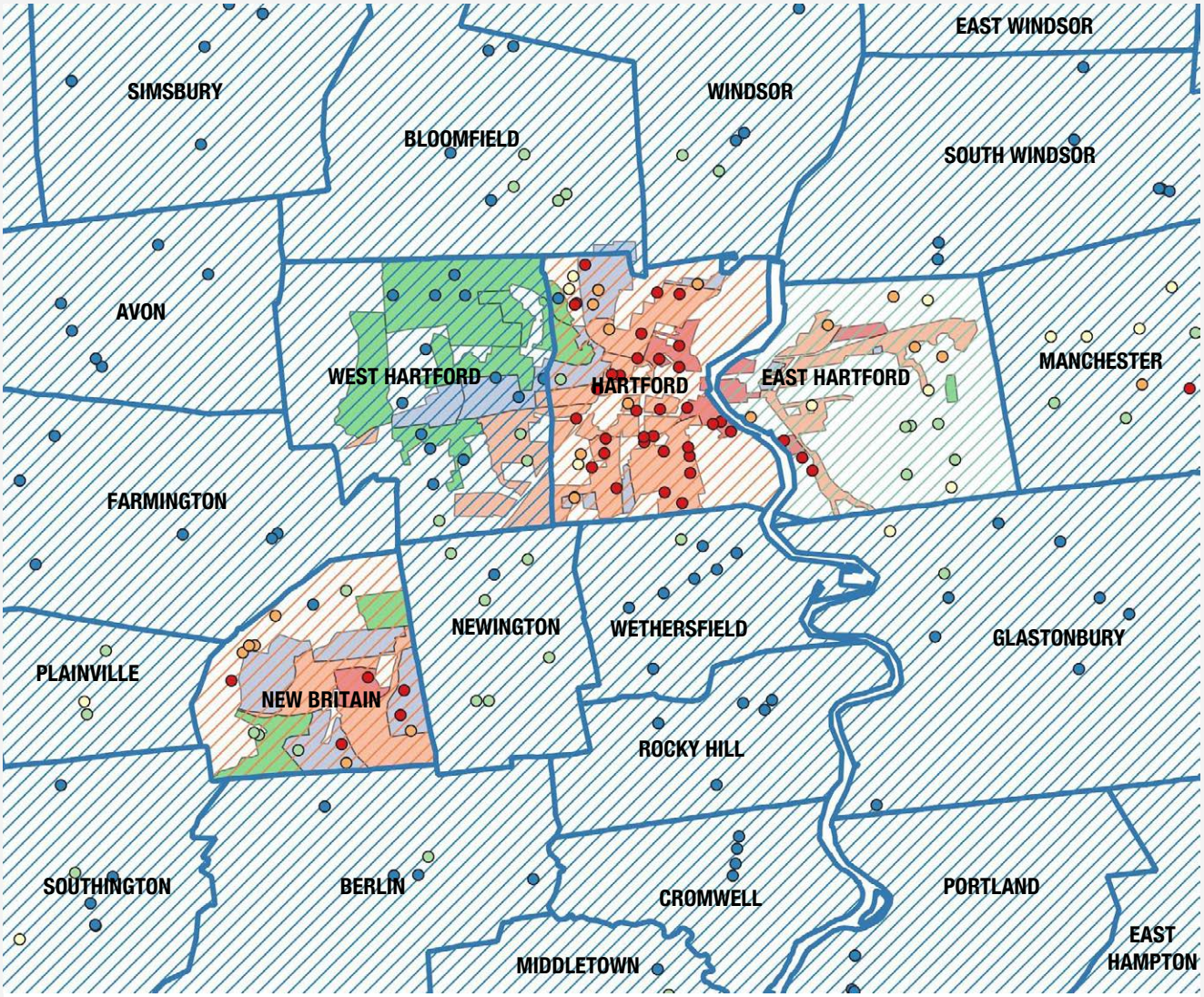
Yet Hartford (proper) was an almost exclusively (95 percent) white city in 1940, with its Black population concentrated in just 2-3 Census tracts (all of which, like the D-graded zones in the map, were in the eastern part of the city). Yet even mostly white neighborhoods were potentially subject to lower grades due, for example, to small groups of Black families confined to a street or two. Redlining, steering, and other tactics in subsequent decades spurred compositional change, with the white share of the city's population falling to approximately 85 percent in 1960, 71 percent in 1970, and 44 percent in 1980 (Dougherty 2021).

Today, predictably, Hartford and East Hartford both serve student populations that are roughly 80 percent Black and Hispanic, compared with around 25 percent in West Hartford. The efforts that began toward the beginning of the 20th century have, 100 years later, played out largely as intended.

There is one additional district in the area with significant coverage of neighborhoods that received HOLC grades: New Britain, directly to the southwest of West Hartford. New Britain's HOLC zones are a mix of A-D grades. Like Hartford's, its residents were virtually all white until 1960, a proportion that declined steadily over subsequent decades.

Figure 15

SCHOOL DISTRICT FUNDING ADEQUACY MAP, HARTFORD METRO AREA, 2018



LEGEND Grayed out categories do not appear in map

DISTRICT BORDERS

SCHOOL NEIGHBORHOOD POVERTY	DISTRICT FUNDING ADEQUACY	HOLC GRADE
Highest poverty (0-185% inc-to-pov ratio)	More than $5,000 PP below adequate	A
High poverty (185-242% ratio)	$1,000-5,000 PP below adequate	B
Medium poverty (242-303% ratio)	Between -$1,000 and +$1,000 PP	C
Low poverty (303-406% ratio)	$1,000-5,000 PP above adequate	D
Lowest poverty (ratio of 406% or higher)	More than $5,000 PP above adequate	

To improve visibility of HOLC zones, map does not include entire metro area. See Box 1 for information on measures.

Today (in 2019), the district's student population is 64 percent Hispanic and 11 percent Black.

The rest of the area's districts, including those not shown in the map, were ungraded in 1935-40 and are quite sparse in terms of Black and Hispanic students today, with only three exceptions to the latter statement—Bloomfield and Windsor directly to the north of Hartford, and Manchester directly to the east. In general, throughout this area of Connecticut, HOLC zones do a decent job predicting student racial composition today.

Some of the compositional patterns in the non-graded areas can be attributed, at least in part, to the blockbusting and steering that were also prevalent throughout the latter half of the 20th century. One noteworthy example is the aforementioned Bloomfield. This area remained undeveloped through the 1940s (and thus did not receive HOLC ratings); today it is the state's only majority-Black school district. Bloomfield was 94 percent white in 1960, but this declined to 70 percent white by 1980 (Dougherty 2021; Putterman 2021). The district was deliberately targeted by blockbusting and steering, with the goal of making it into a suburban escape for Hartford's middle-class Black families, while excluding these upwardly mobile families from West Hartford and other suburbs (Dougherty 2012).

This residential segregation, due to both current and past forces, including court decisions such as *Sheff v. O'Neill* (1996), also contributes to—and is reinforced by—striking racial and ethnic disparities in school funding adequacy in the Hartford metro area. Figure 15 presents the area's funding map. When viewing the map, bear in mind that Connecticut is a relatively high-spending state with relatively low poverty (i.e., low costs) overall, and the vast majority of public school districts spend well more than is needed to achieve the (modest) goal of national average test scores in reading and math (Baker, Di Carlo, Reist et al. 2021). This is quite clear in the map, which is dominated by districts in which spending exceeds estimated adequate levels (green and blue striped patterns).

Educational opportunity, however, remains extremely unequal and is geographically distributed by race and ethnicity. There are two districts in the entire metro (including those outside of the area in the map) in which spending is below estimated adequate levels: Hartford (with a negative gap of -$3,059 per pupil) and New Britain (-$1,668). Every other district in the entire metro area spends at least $5,000 per pupil above adequate levels, with one (predictable) exception: East Hartford (positive funding gap of approximately $1,800). The only three districts in the metro area with any D-graded areas are also those with the least adequate funding.

And, on a related note, the same basic conclusions apply to the distribution of school-level poverty. Schools within Hartford, for instance, are invariably higher poverty (red or orange dots), standing in stark contrast with schools in West Hartford, which are mostly those in lower-poverty neighborhoods. All but one of the highest-poverty schools (red dots) are found in the three districts (Hartford, East Hartford, and New Britain) that were home to D-graded HOLC zones in 1935-40. The geographical distribution of poverty that depresses local revenue and drives up costs was set in motion almost a century ago.

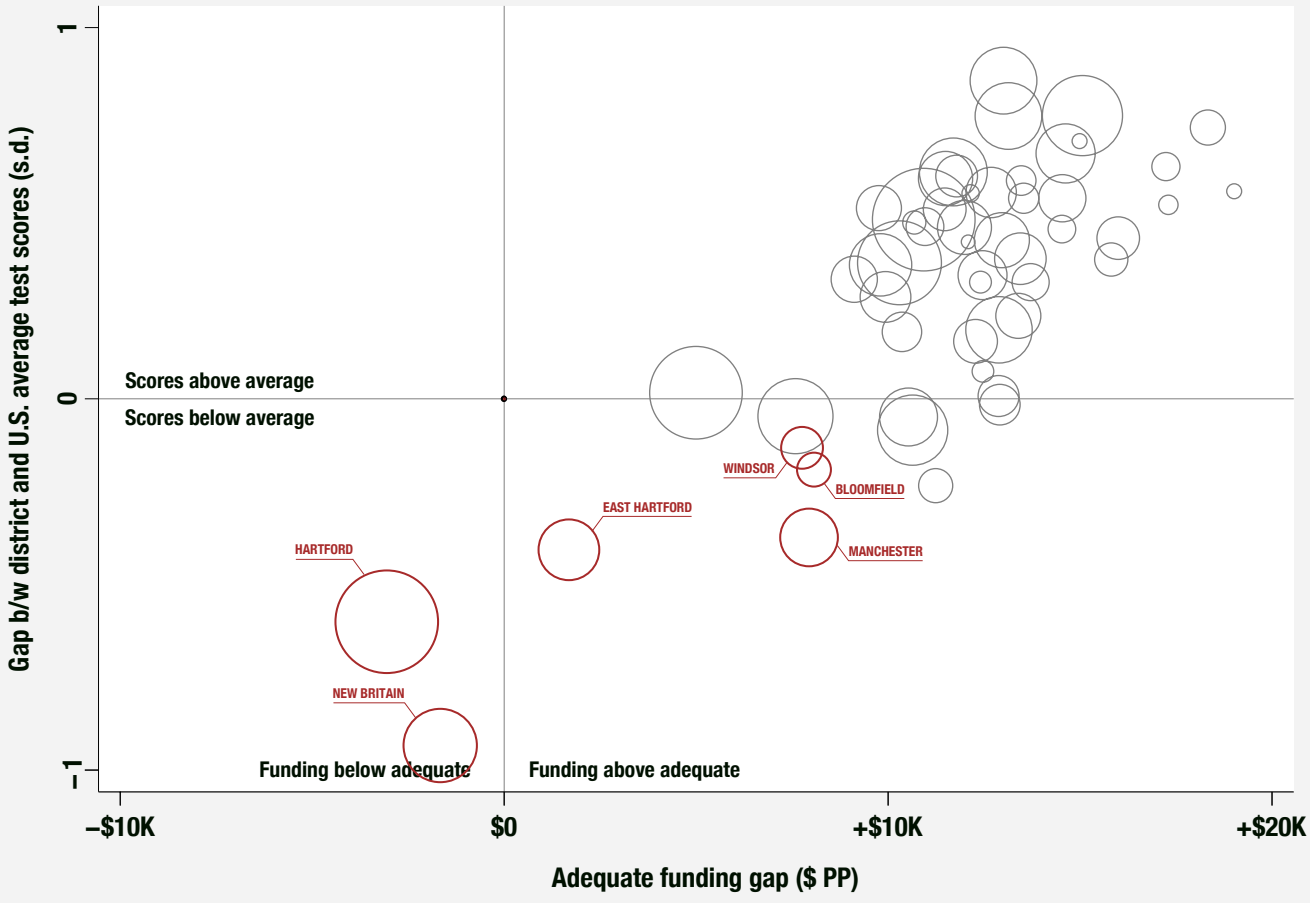
Finally, Figure 16 presents the relationship between funding gaps (horizontal axis) and outcome gaps (vertical axis) for all school districts in the Hartford metro area. To reiterate, most of the districts in the area, as in Connecticut overall, spend enough to meet our estimates of costs required to achieve national average outcomes (and are therefore located to the right of the vertical line indicating zero difference between spending and estimated costs). Relatively few still fall short of those outcome goals (they are located below the horizontal line representing no difference in average scores between the district and the U.S. average). [10]

10 In general, the comparison of adequacy estimates from the NECM with student outcome gaps produces intuitive results: Adequate funding is associated with above-average scores, and vice versa. Deviation from this trend, as is somewhat the case with these Hartford area districts, may be due to some combination of the following: (1) imprecision in our variables (finance or testing data); (2) the models cannot control for everything (i.e., "omitted variable bias"); or (3) "real" differences in efficiency. For more discussion, see Baker et al. (2021).

Most important for our purposes here, however, is the general pattern of the circles (i.e., districts) by district racial/ethnic composition (with majority-minority districts indicated with red circles and labels). Specifically, the majority-Black/Hispanic districts in the Hartford metropolitan area are those with the least adequate funding (they are located further to the left of the plot) as well as the lowest student outcomes (located furthest down in the plot). This is unequal educational opportunity by race and ethnicity, created and sustained by segregation.

Figure 16

STUDENT OUTCOME GAPS BY ADEQUATE FUNDING GAPS, HARTFORD METRO AREA DISTRICTS, 2018



Red markers with labels are majority–Black/Hispanic districts

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Data source: School Finance Indicators Database; Stanford Education Data Archive

Note: Markers weighted by student enrollment. Outcome gaps (y-axis) are the difference in average math and reading scores (in standard deviations) between each district and the U.S. average. Funding gaps (x-axis) are the difference between actual spending per pupil and estimated spending required to achieve national average test scores.

KANSAS CITY METRO AREA

State(s): Missouri and Kansas
Census Designation: Kansas City, MO-KS

The Kansas City metropolitan area has a well-documented history of segregation, and a couple of the major segregation strategies discussed in this report were refined in Kansas City. The area spans two states (Missouri and Kansas), with the two districts bearing the city's name—Kansas City Unified in Kansas (also known as Kansas City Kansas Public Schools) and Kansas City 33 in Missouri—separated by a street that is also the state border. These two districts serve about 10 percent of the metro area's students but roughly 30 percent of its Black and Hispanic students (who are roughly equal in number across the area).

As a result of this concentration of Black and Hispanic students in a small number of districts, between-district segregation in the Kansas City area is extremely high, and total segregation is driven mostly by the separation of students between districts, rather than between schools within districts (Table 3). This happened by design.

Kansas City 33 (Kansas City, Missouri) was segregated internally from its founding immediately after the Civil War. Moreover, prior to the *Brown v. Board* decision in 1954, there were essentially no secondary schools for Black students to attend anywhere in the area except for Lincoln High School in Kansas City (and elementary school options were extremely limited as well). This forced Black families with children into the city.

The composition map for the area surrounding Kansas City is presented in Figure 17. Note that, in this map, the red border running north to south represents both district and state borders, with Kansas to the west/south and Missouri to the east/north (the curvy northern portion of the state/district border is the Missouri River). The between-district segregation around Kansas City is immediately apparent in the map, with large shares of Black/Hispanic students in the two Kansas City districts and a handful of suburbs to the south of each, with the rest of the districts serving mostly white students.

The higher (assessed) risk C- and D-graded HOLC zones are located mostly within Kansas City Unified and Kansas City 33, which, again, serve almost one in three of the area's Black and Hispanic students. Conversely, a large share of the lower-risk A/B HOLC zones are found spanning the state/district boundary between the southwest area of the Kansas City 33 district (MO) and the Shawnee Mission district (KS). This area reflects the legacy of Kansas City developer J. C. Nichols. Nichols began developing his "Country Club District" in the early 1900s as a model for developers in other U.S. cities to build beautiful residential refuges for families seeking an alternative to crowded urban neighborhoods. Yet his legacy today is defined by blatant discrimination. Nichols was among the pioneers in using zoning and especially covenants (between homeowners and homeowners associations, which Nichols was also a pioneer in seeing the discriminatory uses of) to ensure that only white families would be allowed to buy homes in his suburban oases (Gotham 2002c; Stevens 2018). He was also instrumental in creating the FHA (Weiss 1987). Subsequent exclusionary zoning and blockbusting reinforced these racial boundaries.

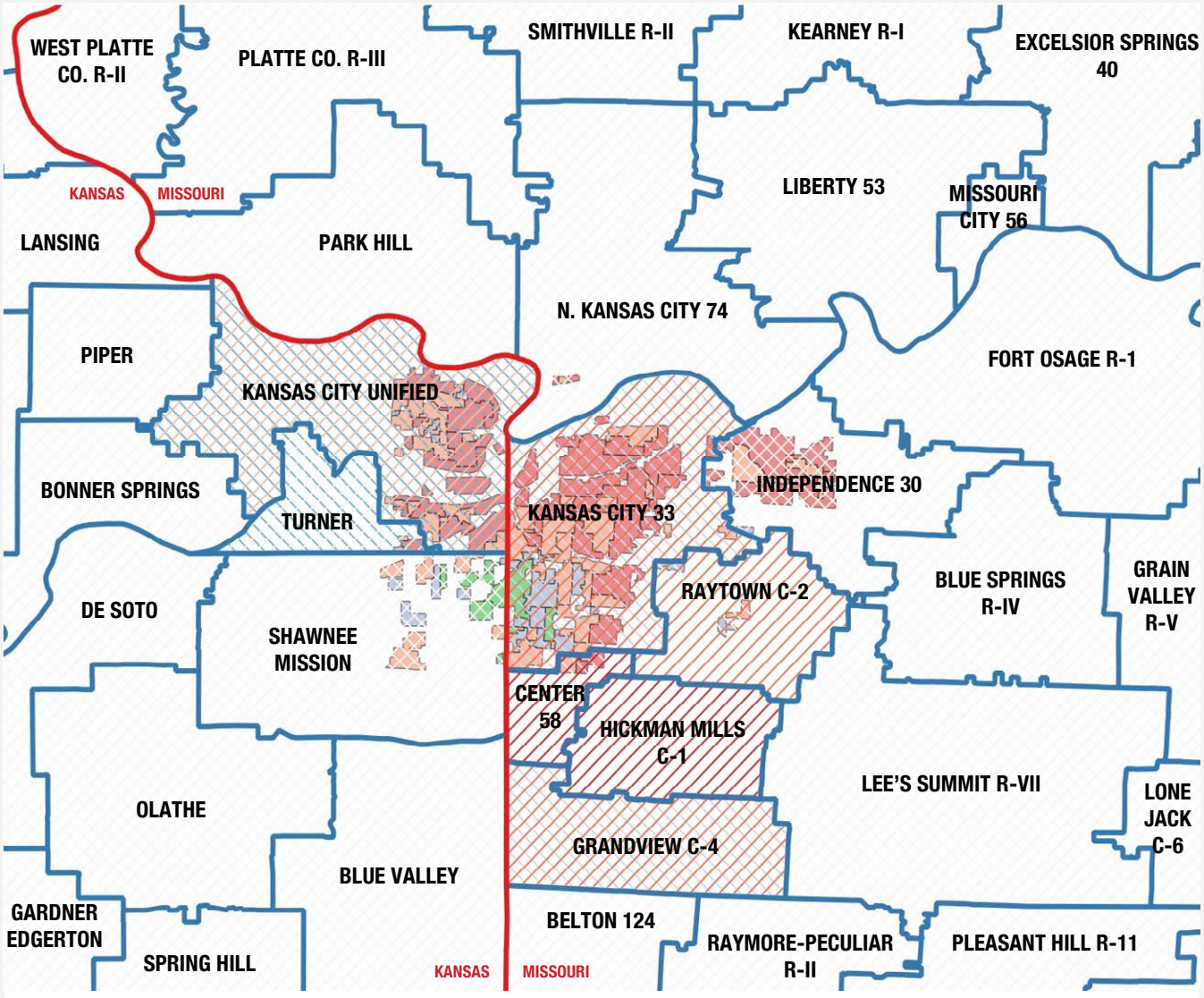
Immediately after the *Brown* decision, Kansas City (on the Missouri side) replaced its racial school attendance zones with neighborhood attendance zones. For the next 20 years, the school board shifted these borders frequently, but Troost Avenue, a major commercial road running north/south parallel and near to the border with Kansas, was a persistent dividing line between the city's white and Black populations; it was sometimes called the "Troost Wall." Between 1950 and 1970, due in no small part to predatory "blockbusting," the white population east of Troost declined rapidly, replaced by an equal number of Black residents (Gotham 2002b).

The impact on the Kansas City area of racially restrictive covenants, which were crafted and enforced throughout much of the 20th century, including the decades prior to the FHA loan program, are quite evident in other areas of the map. In addition to

Shawnee Mission and Blue Valley, the rest of Johnson County (on the Kansas side of the red border in the southern portion of the map) includes De Soto, Gardner, Olathe, and Spring Hill. These districts, like Shawnee Mission, serve overwhelmingly white student populations, and this is no accident. According to professor Kevin Fox Gotham, 148 of 154 subdivisions built in Johnson County until 1947 included racial restrictions, or 96 percent of subdivisions covering 97 percent of the county's acreage. The last restrictive covenants were recorded in the county in 1962, 14 years after they were deemed unenforceable in the *Shelley* decision (Gotham 2000b). And Johnson County (KS) schools remain remarkably white

Figure 17

SCHOOL DISTRICT STUDENT RACIAL/ETHNIC COMPOSITION MAP, KANSAS CITY METRO AREA, 2018



To improve visibility of HOLC zones, map does not include entire metro area. See Box 1 for information on measures.

compared with school districts both to the east across the single street that separates Kansas and Missouri and to the north across 47th Street (which divides Johnson County from its northern neighbor, Wyandotte, Kansas, home to Kansas City Unified).

Similarly, north of the river in Clay County, Missouri (the northern area of the map in Figure 17), we find the heavily white districts of Excelsior Springs, Liberty, and North Kansas City. Approximately 87 percent of Clay County acreage was covered by restrictive covenants, while 74 percent of new subdivisions in Platte County (home to the mostly white districts Park Hill, Platte, and West Platte in the map) were covenanted. The legacy of these private agreements, which restricted access of minority families to these areas, is clear even 60-80 years later (Gotham 2000b).

In fact, as recently as November 2021, there is reporting of homeowners finding covenants signed many decades ago, which are "in effect" today. One example from Prairie Village (Kansas), which is located in the Shawnee Mission district and was developed in the 1940s by J. C. Nichols, reads: "None of said land may be conveyed to, used, owned, or occupied by negroes as owners or tenants" (Thompson et al. 2021).

The Independence 30 district, to the east of Kansas City 33, stands out as an exception in the map. The district was also home to several relatively large C- and D-graded HOLC neighborhoods, but it serves a majority white student population today (roughly 57 percent in 2018). This may have been due in part to the migration of white families from the city to the suburbs, or at least to the non-C/D-graded areas of Independence (Euston 2020), though note that the white share of students in the Independence 30 district declined from about 74 percent in 1989 to 55 percent in 2019 (that is, a fair amount of the racial/ethnic compositional change is more recent).

Blockbusting was also a major factor in creating the current distribution of students by race and ethnicity even outside of the city. The neighborhoods to the south and east of Kansas City 33 (e.g., the Center 58, Hickman Mills, and Raytown districts) were for decades largely white areas, but they became more diverse and some majority-Black from the 1970s through the 1990s. The Center 58 School District was carved out of the Kansas City city limits in 1956 following the *Brown* decision, originally serving a largely middle-class Jewish population (which was also excluded from access to many Kansas subdivisions). But large portions of these districts were, during the 1970s and 1980s, aggressively blockbusted. White people moved to the Kansas side or north of the river and out further to Lee's Summit, leaving Center, Hickman Mills, and Raytown with the substantial Black populations denoted in the map (Gotham 2002a).

The Kansas City area's funding map, presented in Figure 18, shows how the pattern of both neighborhood poverty and funding adequacy corresponds quite well with the HOLC zones (and, thus, with the racial compositions depicted in Figure 17).

Once again, the C- and D-graded HOLC zones, the vast majority of which are located in Kansas City Unified, Kansas City 33, and Independence, are today home to high-poverty neighborhoods. Moreover, two of these three districts—Kansas City Unified and Kansas 33—exhibit massive negative funding gaps (around -$8,000 per pupil), while in the third (Independence), spending is barely adequate.

The five other districts serving majority Black/Hispanic populations—Center 58, Grandview, Hickman Mills, and Raytown to the south of Kansas 33 on the Missouri side of the border, and Turner to the west of Kansas City Unified on the Kansas side—are also funded below estimated adequate levels. In contrast, funding is generally adequate—and school neighborhood poverty generally lower—in most of the remaining surrounding suburbs, including the majority-white districts to the north, east, and southeast of the city in Missouri, as well as those to the southwest of the city in Kansas (e.g., Shawnee Mission, Blue Valley).

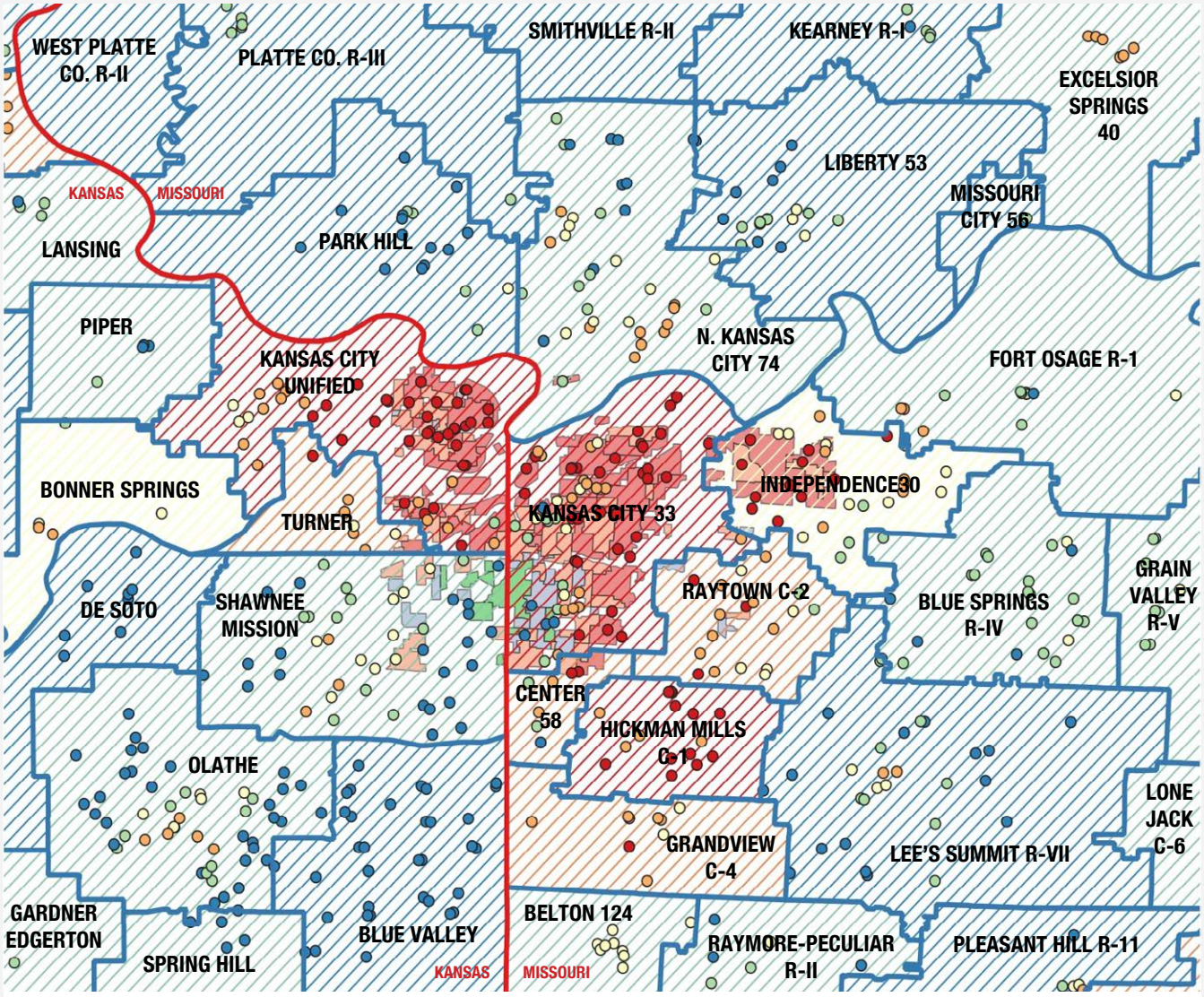
For decades, on the Missouri side of the border in Kansas City, schools benefited from a significant infusion of additional revenue to finance desegregation remedies, but those remedies were significantly curtailed by the Supreme Court's *Missouri v. Jenkins* decision in 1995 (*Missouri v. Jenkins* 1995). Over the decade that followed, court oversight was dissolved altogether (*Jenkins v. School Dist. of Kan. City, Mo.* 2003). Much of the remedy

funding had actually come from a significant increase to local property taxes in Kansas City 33, which continued to have a relatively strong tax base (largely because of Nichols' Country Club District and Country Club Plaza in its southwest area, along with other commercial development). But, over time and lacking court oversight, that temporary burst in funding faded (Green and Baker 2006).

As a more recent—and particularly blatant—example of building new school funding inequities on past racial discrimination, in 2005, Kansas state Sen. John Vratil would successfully advance a change to the Kansas school funding formula that provided

Figure 18

SCHOOL DISTRICT FUNDING ADEQUACY MAP, KANSAS CITY METRO AREA, 2018



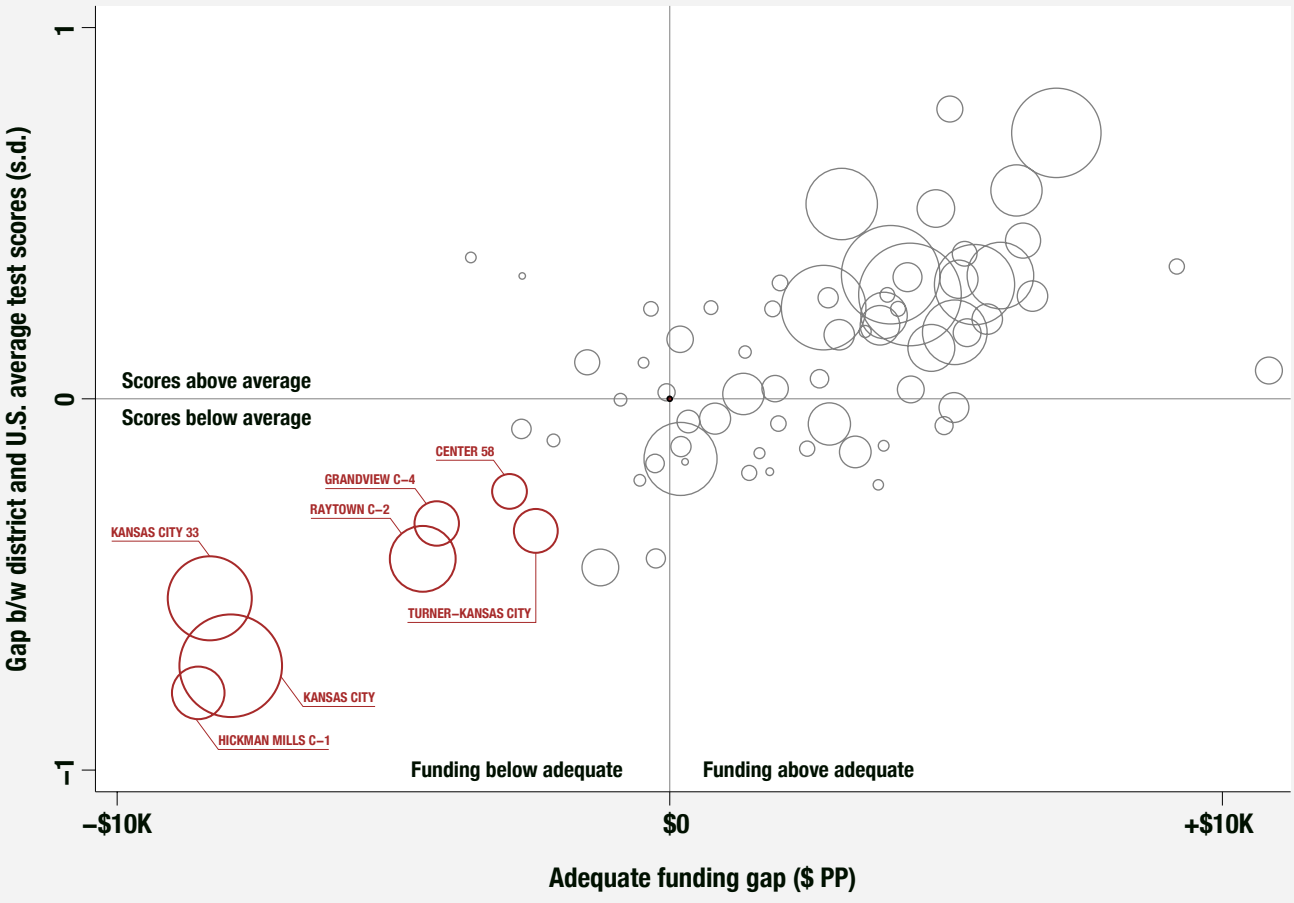
To improve visibility of HOLC zones, map does not include entire metro area. See Box 1 for information on measures.

additional taxing authority to raise additional local revenues in districts that had higher-priced housing. These additional funds were characterized as "cost of living adjustments" (Ortega 2005). They were implemented almost exclusively in white areas. Figure 19 presents a scatterplot of the relationship between funding gaps and testing outcome gaps for districts in the Kansas City metropolitan area in 2018, including those on both sides of the state line.

In the entire Kansas City metro area, which consists of 75 districts in two states, there is not a single majority-Black and -Hispanic district in the upper right quadrant (spending above estimated adequate levels and average test scores exceeding the U.S. mean).

Figure 19

STUDENT OUTCOME GAPS BY ADEQUATE FUNDING GAPS, KANSAS CITY METRO AREA DISTRICTS, 2018



Red markers with labels are majority–Black/Hispanic districts

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Data source: School Finance Indicators Database; Stanford Education Data Archive

Note: Markers weighted by student enrollment. Outcome gaps (y-axis) are the difference in average math and reading scores (in standard deviations) between each district and the U.S. average. Funding gaps (x-axis) are the difference between actual spending per pupil and estimated spending required to achieve national average test scores.

All fall in the lower left quadrant (inadequate funding and below-average student outcomes).

These seven districts all serve Black/Hispanic student shares that are at least 20 percentage points higher than the overall metro area's percentage (i.e., Black and Hispanic students are disproportionately concentrated in these districts). In all but two of them (Raytown and Turner), the gap is larger than 40 percentage points. There are precisely three other districts in the metro area serving students that are disproportionately Black/Hispanic, and the gap is less than five percentage points in all three.

This reflects the extremely strong level of between-district segregation that we saw in Table 3—these seven districts, which serve about 19 percent of the area's students, are home to almost half its Black and Hispanic students. And they are also the least adequately funded districts in the area.

A Kansas City postscript: In the spring of 2021, after years of public protest, monuments to J. C. Nichols were removed from Kansas City's Country Club Plaza, with much media coverage and fanfare (Mahoney 2020).

SAN ANTONIO METRO AREA

State: Texas
Census Designation: San Antonio-New Braunfels, TX

Whereas most of the metro areas examined in this report were home to historical discrimination focused largely on isolating Black residents, San Antonio provides the clearest example of residential discrimination against Hispanic residents, specifically Mexican Americans, contributing to striking modern-day disparities in school funding.

There is research detailing the use of redlining and restrictive covenants targeting Mexican Americans in the San Antonio area, particularly during the earlier half of the 20th century. The purpose, as usual, was to reinforce and further develop the racially divided landscape, relegating Mexican Americans to older, decaying neighborhoods and preserving northside suburbs for middle-class white families (Garcia 2000; Ramos 2001; Regalado, Rodriguez, and Torres 2021; Rosales 2020). During this same time, school district boundaries were drawn to preserve and exacerbate segregation (Drennon 2006).

These common practices, used primarily in other parts of the country to isolate and segregate Black communities, were used with equal effectiveness at isolating Hispanic communities in San Antonio, despite their long being the majority population (the area is the only one of our seven areas that serves a majority-Hispanic student population—around 67 percent). Today, in the San Antonio area, unlike most other areas throughout the United States, the between-district segregation of white and Hispanic students is as extensive as that between the area's white and Black students, though the latter is somewhat less pronounced than it is in our other case study areas (see Table 3).

Along with racial/ethnic segregation—and in part because of it—San Antonio is among the most economically segregated metropolitan areas in the United States, and those economic disparities fall sharply and predictably along racial/ethnic lines (Regalado et al. 2021). Figure 20 presents the composition map for the San Antonio metropolitan area.

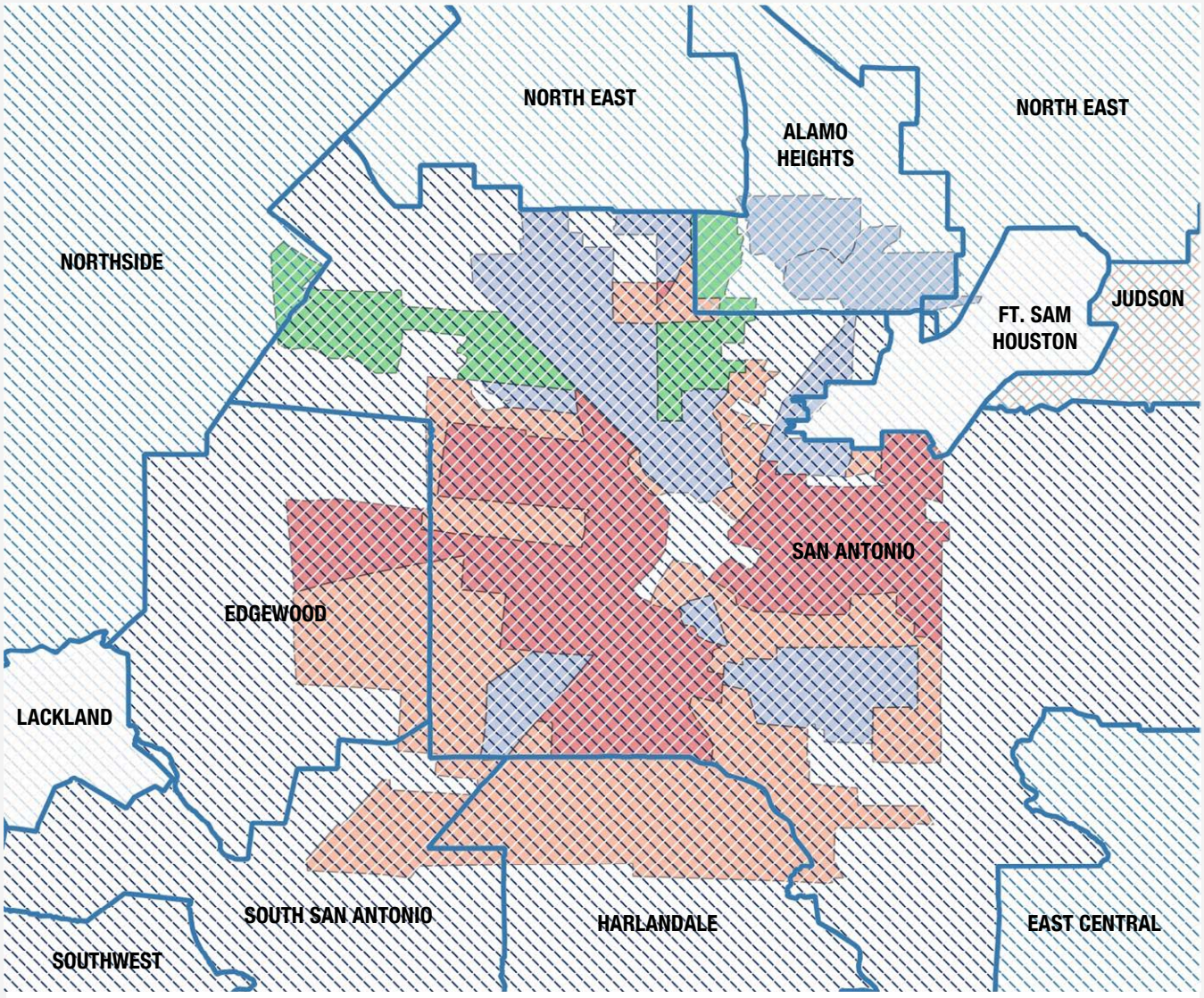
Throughout most of the metro area, school district enrollments are majority Hispanic (backward-leaning striped patterns in darker blue shades). But the Hispanic shares are particularly high (80-100 percent) in the four districts (Edgewood, Harlandale, San Antonio, and South San Antonio) that are home to virtually every square mile of the C- and D-graded HOLC areas. About four in five of the area's Black students, comparatively small as a group, are in four districts (Judson, North East, Northside, and San Antonio).

Although it is not evident in Figure 20, which presents districtwide racial composition, San Antonio's white population, as noted above, is concentrated in its northern neighborhoods, corresponding quite well with the group of highly rated A/B (green- and blue-shaded) HOLC areas. This area of the city has for generations been seen as the home of its more affluent Anglo population (Garcia 2000), while Mexican American families have populated the western neighborhoods of the city since at least 1910 (Walter et al. 2017), "spilling" over into the Edgewood district. Most of the remaining A- and B-rated HOLC zones in the map are found in Alamo Heights, which, while still heavily Hispanic by national standards, is among the relatively few in the area that serves a majority-white student population. The Alamo Heights district's neighborhoods, first developed during the 1910s and 1920s, were built with instructions "not to be sold or leased to one not of the Caucasian race" (Pettaway and Torralva 2020).

The San Antonio Independent School District and the Edgewood Independent School District (directly to the west of San Antonio) are well known to scholars of school finance and educational law as districts that brought major constitutional challenges to Texas' state school finance system—specifically arguing that the state's heavy dependence on local property taxes and local decisions on property taxation deprive children in districts like Edgewood and San Antonio of an equitable and minimally adequate education. San Antonio ISD famously brought its case against

Figure 20

SCHOOL DISTRICT STUDENT RACIAL/ETHNIC COMPOSITION MAP, SAN ANTONIO METRO AREA, 2018



To improve visibility of HOLC zones, map does not include entire metro area. See Box 1 for information on measures.

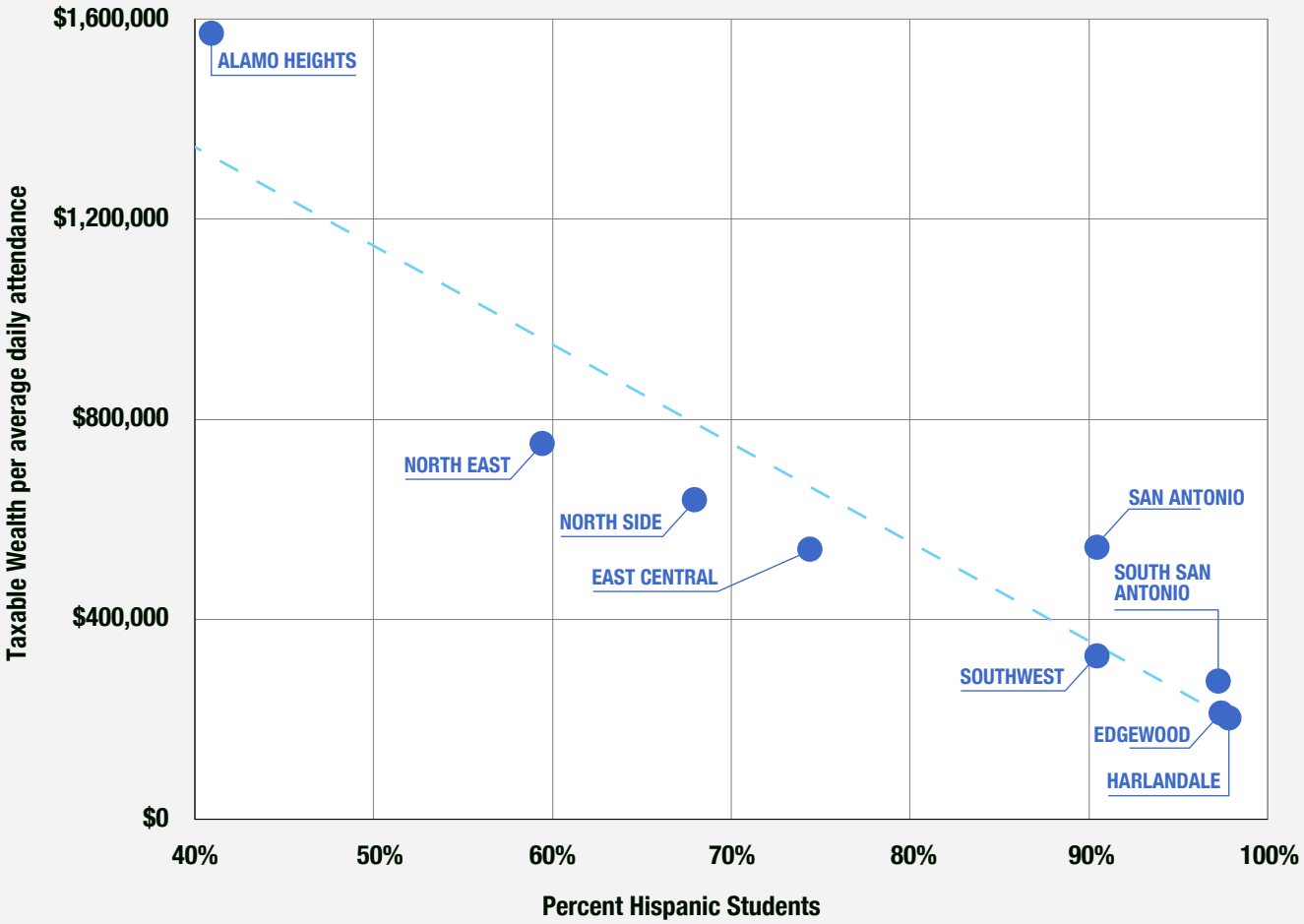
the state in federal court, arguing that strict scrutiny should be applied because the disparities resulted in deprivation of a fundamental right to education, and that wealth was a suspect class similar to classifications based on race or ethnicity. The Supreme Court, however, denied both arguments in 1973 (*San Antonio Indep. Sch. Dist. v. Rodriguez* 1973). Applying the more lenient rational basis standard, the Court ruled that the reliance on local property taxation was rationally related to the goal of local control of education, and thus did not violate the Fourteenth Amendment.

The scatterplot in Figure 21 provides a counterpoint of sorts to this decision. It shows the relationship between 2022 district racial composition (percent Hispanic students) and local tax bases (taxable wealth per student) of the districts that directly border San Antonio proper in the map (with the exception of Fort Sam Houston, which is an army base).

The two variables are nearly perfectly correlated (r = 0.93), with districts serving larger Hispanic populations (the horizontal axis) exhibiting lower taxable wealth per student (the vertical axis). And those racial/ethnic disparities are directly derivative of the carefully orchestrated segregation of Mexican American immigrants, relegating them to older east and south side neighborhoods and largely excluding them from communities like Alamo Heights (although, again, Alamo Heights today serves a student population that is 40 percent Hispanic).

Figure 21

TAXABLE WEALTH PER STUDENT BY PERCENT HISPANIC STUDENTS, SELECTED SAN ANTONIO DISTRICTS, 2022



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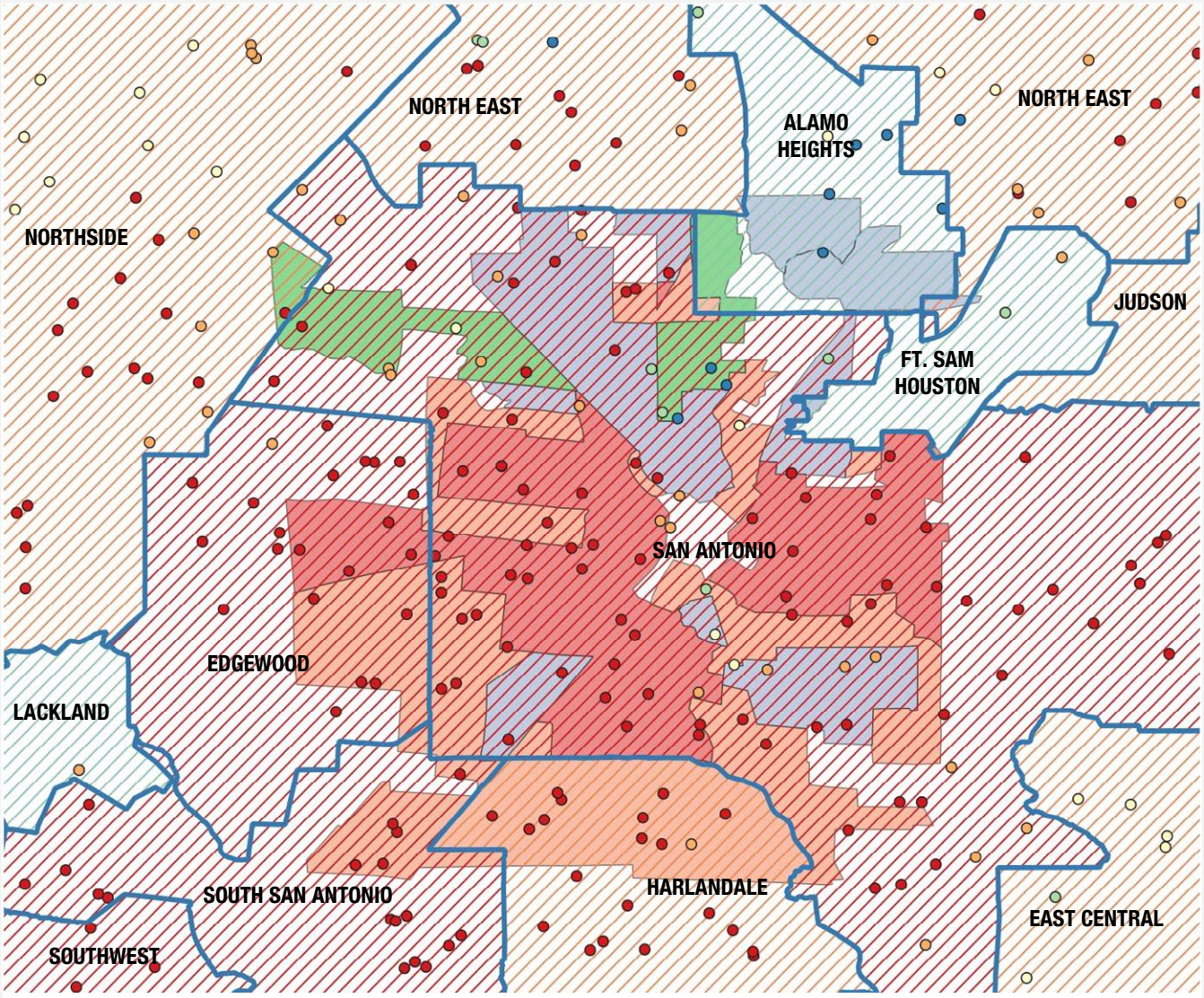
Data source: Texas Education Agency; National Center for Education Statistics

Note: Plot includes only districts in the immediate vicinity of San Antonio. Dashed line is best fit line.

The implications of these racial and ethnic disparities for the adequacy of K-12 resources are clear in Figure 22, which presents the funding map for the San Antonio area. Much of the area in the map, including virtually all of the schools within the C- and D-graded HOLC zones, is home to schools in very high-poverty neighborhoods (red dots), whereas the majority of schools surrounded by lower-poverty neighborhoods (green and blue dots) are located in the A-/B-graded HOLC zones in northern San Antonio and Alamo Heights.

Figure 22

SCHOOL DISTRICT FUNDING ADEQUACY MAP, SAN ANTONIO METRO AREA, 2018



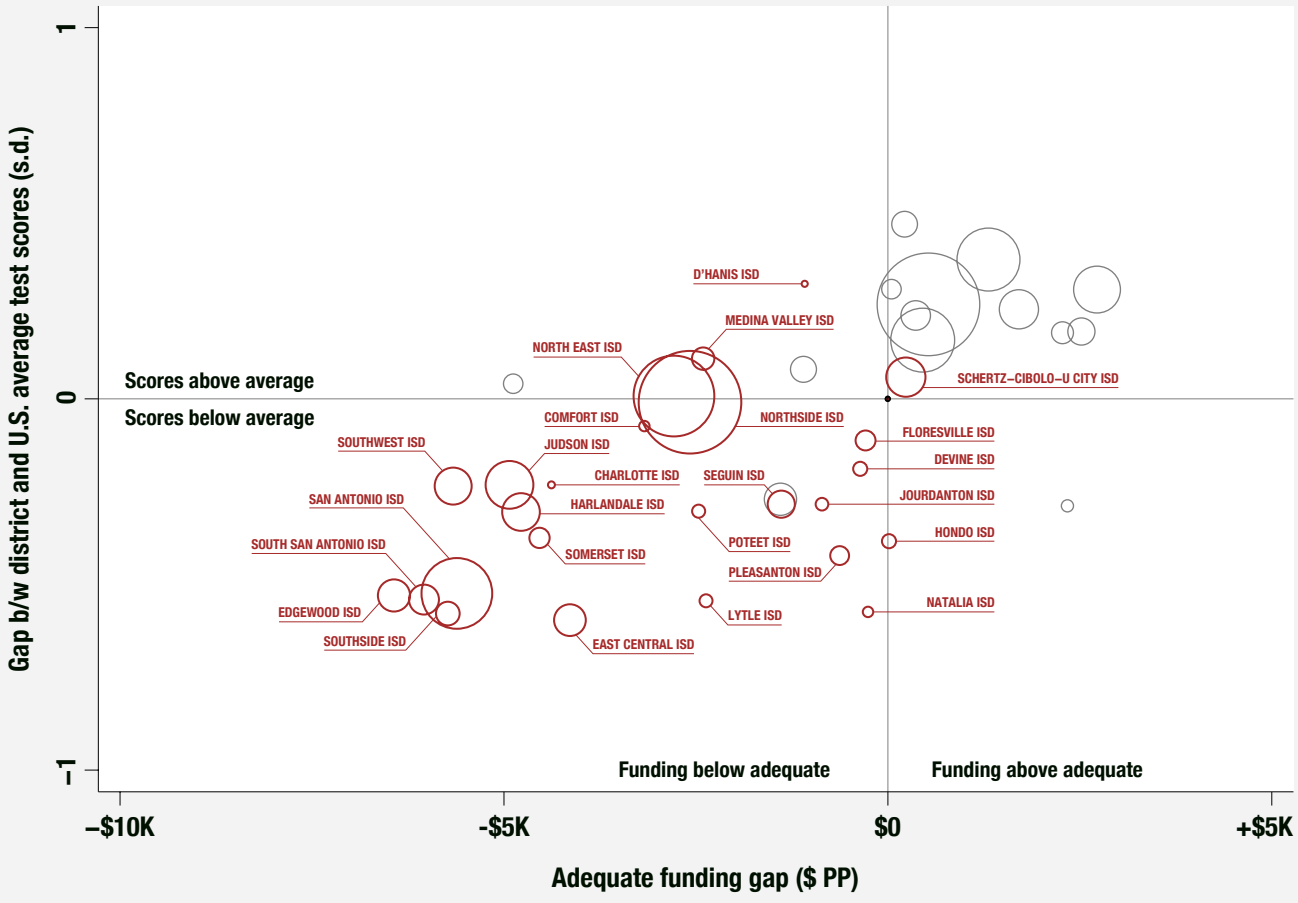
To improve visibility of HOLC zones, map does not include entire metro area. See Box 1 for information on measures.

Regarding adequacy, the San Antonio metro area, like the vast majority of Texas districts statewide (Baker, Di Carlo, Reist et al. 2021), exhibits spending below estimated adequate levels. The three exceptions in Figure 22—Alamo Heights, Lackland, and Fort Sam Houston—are, not coincidentally, the only districts in the map that do not serve majority-Hispanic student populations (again, Fort Sam Houston, created in 1951, is located entirely on an army post and serves the children of military families). Moreover, virtually all of the districts that were ungraded by the HOLC spend below estimated adequate levels, but less so than their redlined, more heavily-Black/Hispanic counterparts in the map.

Figure 23 shows the relationship between funding gaps (horizontal axis) and outcome gaps (vertical axis), with districts that are majority Black or Hispanic

Figure 23

STUDENT OUTCOME GAPS BY ADEQUATE FUNDING GAPS, SAN ANTONIO METRO AREA DISTRICTS, 2018



Red markers with labels are majority–Black/Hispanic districts

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Data source: School Finance Indicators Database; Stanford Education Data Archive

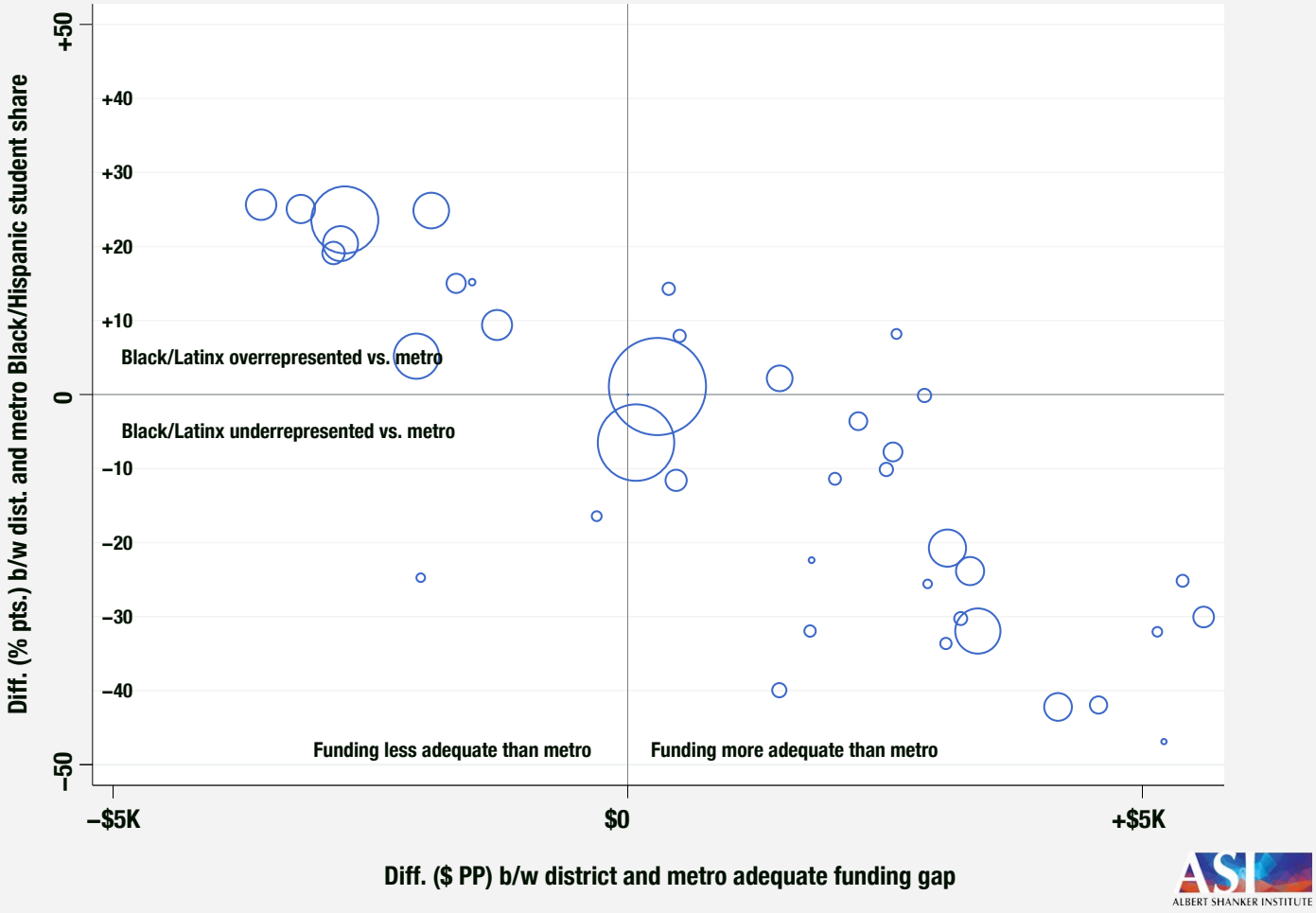
Note: Markers weighted by student enrollment. Outcome gaps (y-axis) are the difference in average math and reading scores (in standard deviations) between each district and the U.S. average. Funding gaps (x-axis) are the difference between actual spending per pupil and estimated spending required to achieve national average test scores.

indicated with red circles and district name labels. Again, districts in the lower left are those estimated to have insufficient funding to achieve national average outcomes and testing outcomes that fall below the national average.

The San Antonio metro area is somewhat unusual among our seven areas in that the vast majority of its districts are majority Black/Hispanic. Even so, the association here is quite apparent: all but three of these districts are in the lower left quadrant (below-adequate funding and below-average outcomes), whereas, with only a few (very low-enrollment) exceptions, all mostly white districts are located in the upper right quadrant (i.e., they spend enough to achieve national average outcomes and meet or exceed those outcomes).

Figure 24

RELATIVE BLACK/HISPANIC STUDENT SHARE BY RELATIVE ADEQUATE FUNDING GAP, SAN ANTONIO METRO AREA, 2018



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Data source: School Finance Indicators Database

Note: Markers weighted by student enrollment. Relative Black/Hispanic share (y-axis) is the difference (percentage points) between each district's Black/Hispanic student share and that of its metro area overall. Funding gaps (x-axis) are the difference between districts and their metro areas in the gap between actual spending per pupil and estimated spending required to achieve national average test scores. Plot includes districts with non-missing adequacy estimates in the metro area.

Given the fact that Hispanic students are so dominant in the area (and funding in the area/state is generally below adequate levels), we present an additional scatterplot in Figure 24. This additional plot, which was also presented for the Bay Area, above, defines racial/ethnic composition and funding adequacy relative to the metro area overall (note that Figure 24 has a smaller range of values on its x-axis than does its counterpart in the Bay Area case study).

The pattern of the circles here is a bit messy, with a few small districts fanning out, but it is still clearly a downward slope. In the top left quadrant there are six districts near or above the +20 percentage points line—i.e., the shares of Black and (mostly) Hispanic students in these districts are at least 20 percentage points higher than the Black/Hispanic share of all students in the San Antonio metro area (since that latter share is about 75 percent, these districts serve essentially all-Black/Hispanic student populations). And these districts are not only funded less adequately than the metro area overall, five of them are the least adequately funded districts in the area.

Conversely, with one exception (Stockdale ISD, which serves just over 800 students), every district in which the percentage of non-Black/Hispanic students is at least 20 percentage points below the areawide average (mostly white districts) spends above estimated adequate levels, including the 12 most adequately funded districts in the San Antonio metro area. In other words, even in a metro area where two in three students are Hispanic, the districts that serve 85-95 percent Black and Hispanic students are funded substantially less adequately than the districts in which the share is 50-60 percent, all in an area that forcibly segregated Mexican Americans for decades.

TWIN CITIES METRO AREA

State(s): Minnesota and Wisconsin
Census Designation: Minneapolis-St. Paul-Bloomington, MN-WI

The story of racially divided development in the Minneapolis/St. Paul area (or simply the Twin Cities area) is quite similar to that of Kansas City, though with somewhat different interstate dynamics. Like Kansas City, the Twin Cities area serves a majority-white student population (about 63 percent) with substantial between-district segregation of these white students from their Black and Hispanic peers (see Table 3).

Early residential development in the Twin Cities area, largely within the two cities' boundaries (particularly Minneapolis), occurred during the 1910s through 1950s. Subsequently, like many cities in landlocked middle America, Minneapolis experienced rapid, federal loan insurance-fueled suburban expansion through the middle part of the 20th century.

As in Kansas City and elsewhere, racially restrictive covenants dominated the Twin Cities area's residential landscape prior to (and after) the suburbanization that started in the 1940s. Thanks to researchers at the University of Minnesota, who have compiled a database of covenants in Hennepin County (home to Minneapolis), there is a great deal of documentation of the prevalence of these discriminatory contracts in the county (Ehrman-Solberg et al. 2020). At the peak of covenants' proliferation in the area, as many as one in five homes in all of Hennepin County were covenanted when they were first sold (Sood, Speagle, and Ehrman-Solberg 2019).

Real estate developers continued to introduce these restrictions even after the 1948 *Shelley* ruling that precluded their judicial enforcement, prompting the Minnesota Legislature to outlaw recording any new covenants in 1953; the state later outlawed covenants entirely in 1962. Recent empirical analyses have exploited the Hennepin County dataset and found persistent effects of those covenants on segregation and housing values today. One study, for example, found that covenanted houses (i.e., those forbidden to be sold to nonwhite buyers) are, on average, 15 percent higher in value than non-covenanted houses, and that a 1 percent increase in the share of covenanted lots on a given Census block is associated with a decrease of 14 percent in Black residency and a decrease of 19 percent in Black homeownership (Sood et al. 2019). Presently, Minneapolis is home to one of the largest Black-white home ownership gaps in the country (Freemark et al. 2021).

And, like elsewhere in the United States, various forms of housing and mortgage lending discrimination persist in the Twin Cities area. One recent analysis found disproportionately high foreclosure rates in north Minneapolis (which, as we'll see below, consists primarily of Black and Hispanic residents), and also that communities of color generally experience higher foreclosure rates citywide (Chin, Hollingshead, and Phillips 2011).

The intensity of residential housing segregation in Minneapolis ultimately led to the *Hollman v. Cisneros* lawsuit, which was settled by a consent decree in 1995 *(Hollman v. Cisneros* 1995). The decree attempted, among other things, to promote relocation of low-income families concentrated in certain neighborhoods, with the goal of integrating family public housing. But, like many similar policies, the settlement achieved only limited success (Goetz 2004). Figure 25 presents the composition map for the Twin Cities metro area districts surrounding Minneapolis and St. Paul. By the time the HOLC's redlining maps were drawn up in 1935-40, residential development remained primarily within Minneapolis and St. Paul, as is evident in the fact that all but one of the HOLC zones are at least partially located within those two modern-day districts, and the correspondence of their borders is unusually tight.

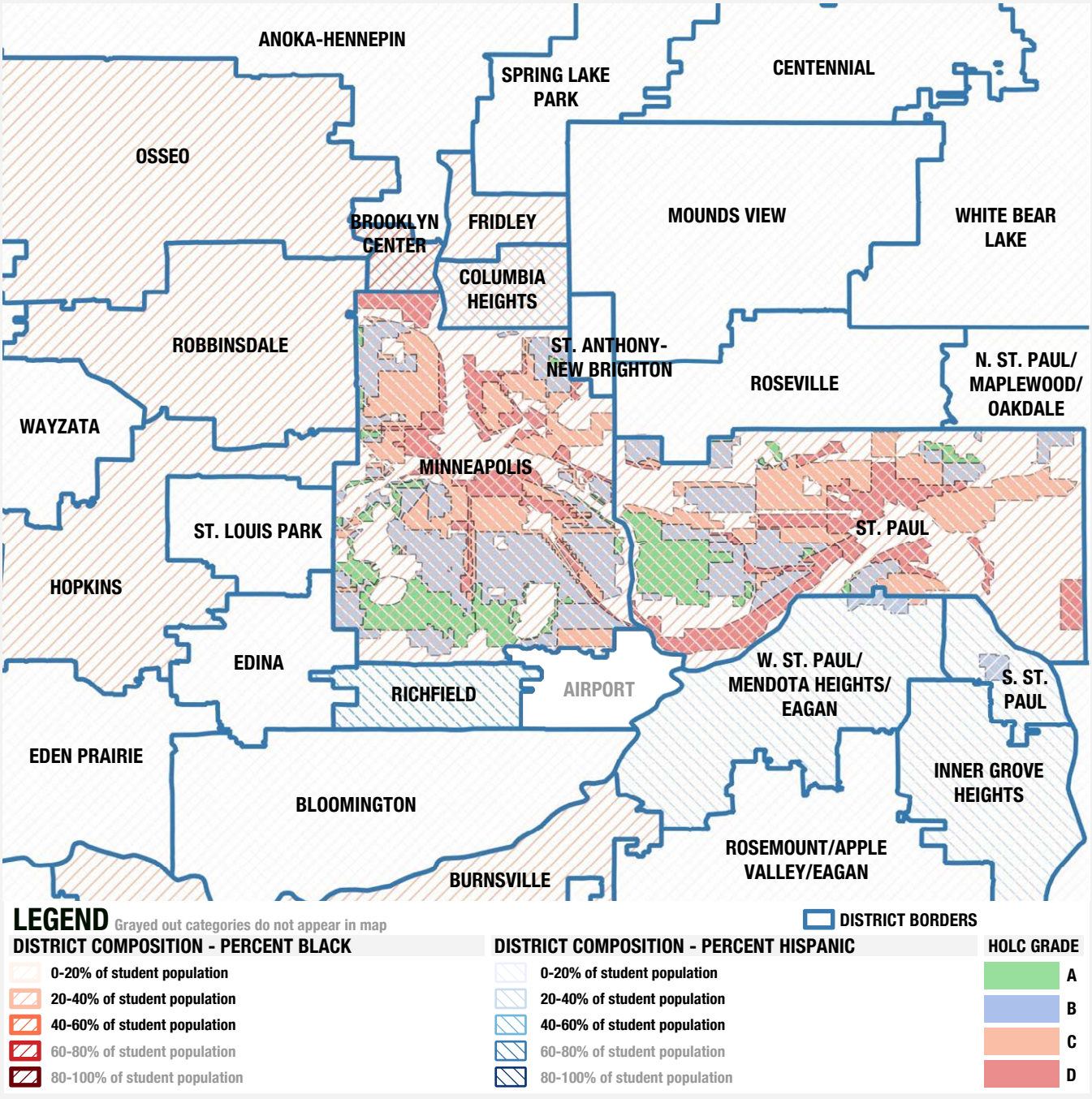
It follows, of course, that the C- and D-graded areas in the HOLC maps are located entirely within today's Minneapolis and St. Paul school districts, which are today among the handful in the area that serve substantial proportions of Black and Hispanic students (in 2018, the shares in Minneapolis and St. Paul were 54 and 41 percent, respectively). As elsewhere, HOLC risk assessment in these cities was quite decisively based on the characteristics of residents (and not

always strictly race and ethnicity). One D-graded area in Minneapolis, for instance, is described in the HOLC notes as "badly in need of rehabilitation," with "most of the population today ... of the poorer class of Jew and colored people" (Nelson et al. 2022).

The neighborhoods surrounding the Minneapolis Public School District on its southern and western borders were extensively covenanted (Ehrman-Solberg et al. 2020), keeping them white for decades, but the racial/ethnic composition in the area has changed a great deal in more recent decades. Specifically, in 1980, the nonwhite resident population of the area in the

Figure 25

SCHOOL DISTRICT STUDENT RACIAL/ETHNIC COMPOSITION MAP, TWIN CITIES METRO AREA, 2018



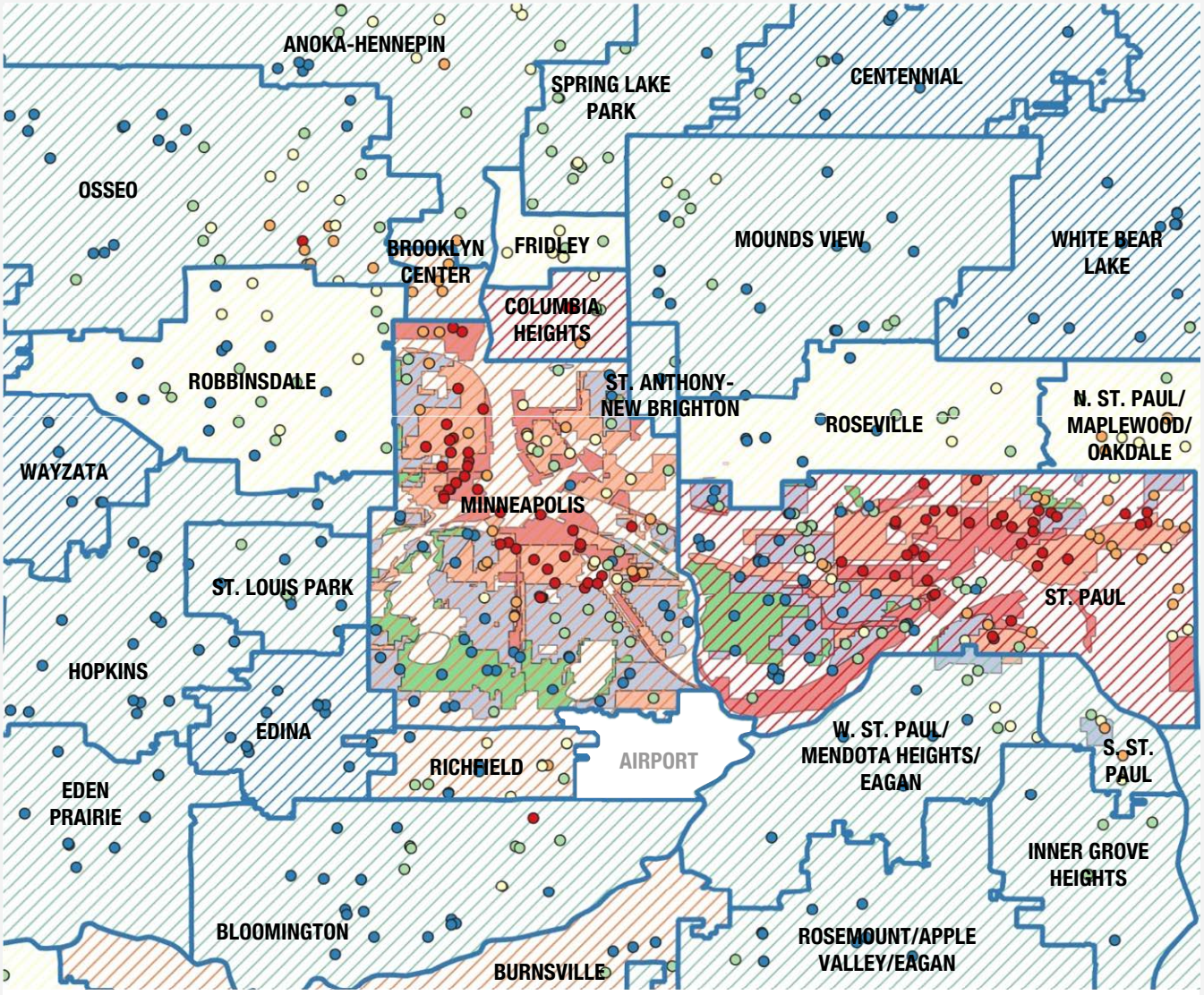
To improve visibility of HOLC zones, map does not include entire metro area. See Box 1 for information on measures.

map was concentrated almost exclusively within the Minneapolis and St. Paul districts (Orfield and Stancil 2017). By 2018, Columbia Heights and Brooklyn Center (directly above Minneapolis to the north) and Richfield (to the south) all served majority-Black/Hispanic students, while a few geographically large districts to the west, such as Hopkins, Osseo, and Robbinsdale, all served sub-majority but still relatively large minority student populations (30-45 percent).

This may be explained in part by efforts in the area to use public housing to promote integration of the suburbs during the 1970s and 1980s, which may have been a factor in creating the significant Black shares

Figure 26

SCHOOL DISTRICT FUNDING ADEQUACY MAP, TWIN CITIES METRO AREA, 2018



To improve visibility of HOLC zones, map does not include entire metro area. See Box 1 for information on measures.

of enrollment in the map's northwest areas, even if the erosion of these efforts, combined with an increase in the area's Hispanic population, have stemmed the integrative tide. Orfield and Stancil (2017) argue that the "poverty housing industry" in Minneapolis serves to perpetuate segregation in the area today.

Note also that the districts in the map serve just over half the metro area's students but over 80 percent of its Black and Hispanic students; the over 60 districts outside the map, while comparatively small in terms of enrollment, serve disproportionately white students. In other words, while the limited integration of the suburbs in the vicinity of the Twin Cities likely attenuated between-district segregation, it remains very strong areawide.

The area's funding map, presented in Figure 26, shows, first, that lower-income school neighborhoods are concentrated almost exclusively in areas that were rated C or D over 80 years ago, whereas the higher-rated A/B HOLC zones (green- and blue-shaded areas) in the southern portion of Minneapolis and the western area of St. Paul are almost entirely home to schools in lower-poverty neighborhoods.

Similarly, to reiterate, every single C- and D-graded area is located entirely within Minneapolis and St. Paul, which, not coincidentally, are among the only districts in the area with substantial negative (i.e., inadequate) funding gaps. In general, K-12 funding throughout Minnesota is more generous (relative to costs) than it is in most other states, and state and local revenue, on average, is progressive—i.e., higher-poverty districts receive more funding (Baker, Di Carlo, Reist et al. 2021). Yet every one of the state's majority-Black/Hispanic school districts, half of which are located in the Twin Cities metro area (Brooklyn Center, Columbia Heights, Minneapolis, and Richfield), are funded below estimated adequate levels (St. Paul, also funded below adequate levels, is just over 40 percent Black and Hispanic). In contrast, the rest of the metro area's districts are adequately funded, most by large margins.

A more systematic visualization of the relationship between composition/segregation and adequacy, as well as its implications of this connection for student outcomes, is presented in Figure 27. All four of the majority-Black/Hispanic districts listed above have below-average testing outcomes to match their inadequate funding levels, and they are therefore located in the bottom left quadrant of the plot. The large gray circle that is also relatively far to the bottom left of the plot is St. Paul.

In contrast, the vast majority of the area's remaining districts (68 of 86) are located in the upper right quadrant, with funding above adequate levels and testing outcomes that exceed the U.S. mean. Almost all of these are majority-white districts. Among the 56 districts in the area that serve a white student share of 75 percent or greater, 50 are located in the upper right quadrant, and only two are in the lower left.

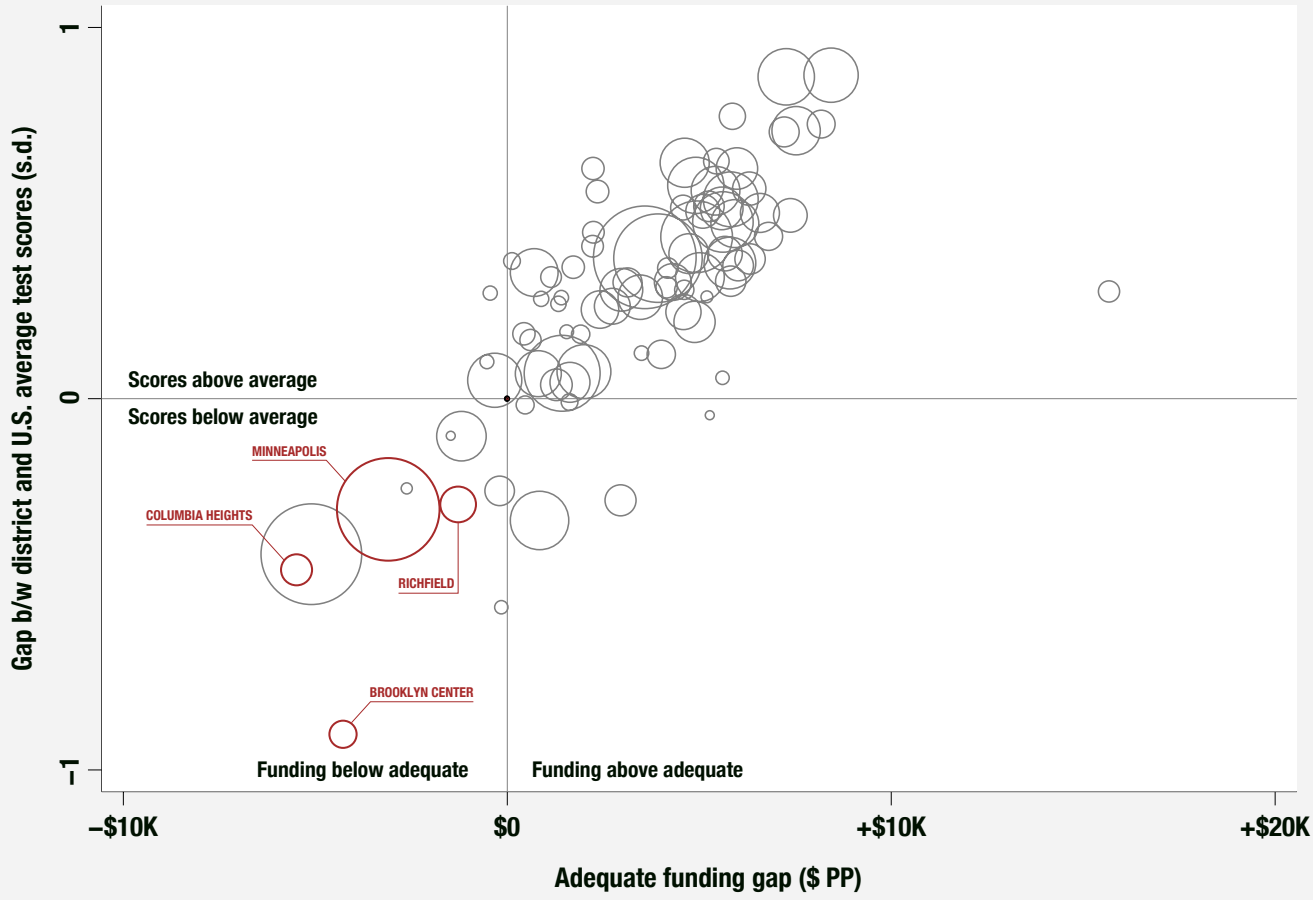
Given that the share of the white student population across the Twin Cities metro area is almost three times that of the combined Black and Hispanic share, we once again present the same alternative plot as we did for the Bay Area and San Antonio metro areas. Like its counterparts, Figure 28 defines racial/ethnic composition not in absolute terms (majority or percent Black/Hispanic) but rather relative to the metro area (i.e., the difference, in percentage points, between each district's Black/Hispanic percentage and that of the metro area overall). Districts with either higher positive or lower negative values on the vertical axis (markers toward the top or bottom of the plot) are those that contribute to between-district segregation in the area and serve more racially/ethnically isolated student populations.

Similarly, on the horizontal axis, funding gaps are also presented relative to the metro, with adequacy defined as the difference (in dollars per pupil) between each district's funding gap and the overall metro area gap. Once again, this visualizes the relationship between segregation and equal opportunity in a manner that "controls for" the fact that metro areas vary in their racial/ethnic composition as well as their overall funding adequacy.

The alternative plot does a slightly better job visualizing the relationship between segregation and funding adequacy in the Twin Cities area. And one thing that jumps out from the plot is that the segregation/adequacy relationship, expressed relatively, is not as consistent as it is elsewhere in the bottom half of the plot. Specifically, the districts in which Black/Hispanic students are underrepresented,

Figure 27

STUDENT OUTCOME GAPS BY ADEQUATE FUNDING GAPS, TWIN CITIES METRO AREA DISTRICTS, 2018



Red markers with labels are majority–Black/Hispanic districts

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Data source: School Finance Indicators Database; Stanford Education Data Archive

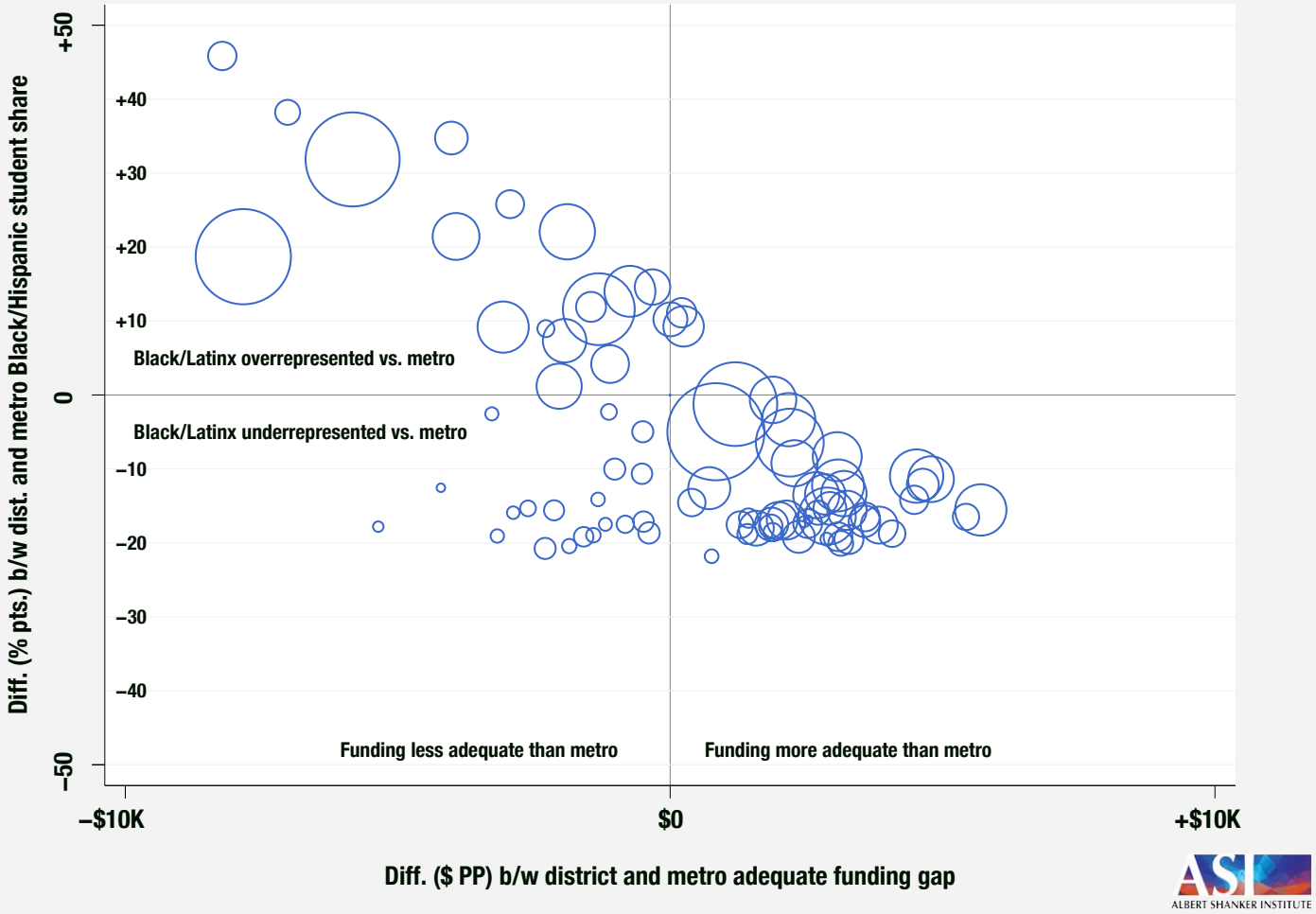
Note: Markers weighted by student enrollment. Outcome gaps (y-axis) are the difference in average math and reading scores (in standard deviations) between each district and the U.S. average. Funding gaps (x-axis) are the difference between actual spending per pupil and estimated spending required to achieve national average test scores.

which in the Twin Cities area means they generally serve extremely large shares of white students, are a slightly mixed bag in terms of relative adequacy. There are a group of around 20 (mostly smaller) districts in which Black and Hispanic students are underrepresented by at least 10 percentage points but funding is less adequate than that of the area's typical district (these are the circles in the bottom left quadrant of Figure 28).

In fact, across the over 350 districts in all seven of our case study metro areas, only about 50 meet these criteria (underrepresentation of Black/Hispanic students by at least 10 points and inadequate funding); 17 of them are in the Twin Cities area. Two of these districts—Isle and especially Onamia—serve large shares of Native American students and have higher Census child poverty rates. And several others are 85-90 percent white but still have high poverty rates

Figure 28

RELATIVE BLACK/HISPANIC STUDENT SHARE BY RELATIVE ADEQUATE FUNDING GAP, TWIN CITIES METRO AREA, 2018



Data source: School Finance Indicators Database

Note: Markers weighted by student enrollment. Relative Black/Hispanic share (y-axis) is the difference (percentage points) between each district's Black/Hispanic student share and that of its metro area overall. Funding gaps (x-axis) are the difference between districts and their metro areas in the gap between actual spending per pupil and estimated spending required to achieve national average test scores. Plot includes districts with non-missing adequacy estimates in the metro area.

relative to other districts in the area with similarly large white population shares. In any case, it's telling that merely finding a small group of districts that are disproportionately white but funded less adequately than the area is cause for further investigation (and, by the way, all but three of these districts spend above our estimated adequate levels in absolute terms).

That said, Figure 28 still paints a very clear picture: Every district in which the Black/Hispanic student share is at least 15-20 points higher than that of the metro area is funded less adequately than the area overall. In fact, every district in which Black/Hispanic students are overrepresented to any extent—i.e., all districts in the top half of the plot—is funded either less adequately or comparably to the metro area. And, conversely, districts in which Black/Hispanic students are underrepresented are generally more adequately funded than the metro, a handful of exceptions aside.

DISCUSSION

THE CASE STUDIES IN NATIONAL CONTEXT

In the executive summary, above, we review our major observations regarding the association between composition/funding today and the HOLC redlining maps from 1935-40 in our case study areas. We will not repeat that summary here. We would, however, like to synthesize the case study findings on the relationship between contemporary (2018) district racial/ethnic composition and school funding inequity (and student outcomes), as well as, perhaps more importantly, present some national data suggesting that our case studies are not exceptional in their illustration of this relationship.

To review, we found that districts serving majority-Black/Hispanic student populations in all seven of our case study metro areas are overwhelmingly likely to be funded inadequately (and to have relatively poor student outcomes to match). In Figure 29, we combine the outcome/adequacy plots presented in each case study into a single plot, with majority-Black/Hispanic districts (which were indicated by red circles and district name labels in the case studies) represented here by red circles. Unlike those in the case studies, the markers (circles) in Figure 29 are not weighted by student enrollment.

The concentration of red markers (circles) in the lower left quadrant of the plot is unmistakable—85 percent of majority-Black/Hispanic districts in our seven metro areas have funding below estimated adequate levels and scores below the U.S. average on math and reading tests, compared with just 6 percent of majority-white districts (note that about 15 percent of the districts in the plot that are not majority-Black/Hispanic [gray markers] are not majority-white districts, most of them Bay Area districts that serve large shares of Asian students).

Conversely, out of the roughly 200 districts with funding above adequate levels and testing outcomes above the U.S. average (the circles in the upper right quadrant of the plot), precisely one serves a majority-Black/Hispanic student population (and just barely so). Interestingly, the sole exception—Schertz-Cibolo-Universal City ISD in the San Antonio metro area—also has the lowest Census child poverty rate in its area (about 7 percent).

In addition, focusing solely on adequacy, 90 percent of majority-Black/Hispanic districts spend below estimated adequate levels, compared with just 12 percent of majority-white districts. Four of the seven majority-Black/Hispanic districts with above-adequate funding are in the Hartford area, where all but two districts spend above our cost targets.

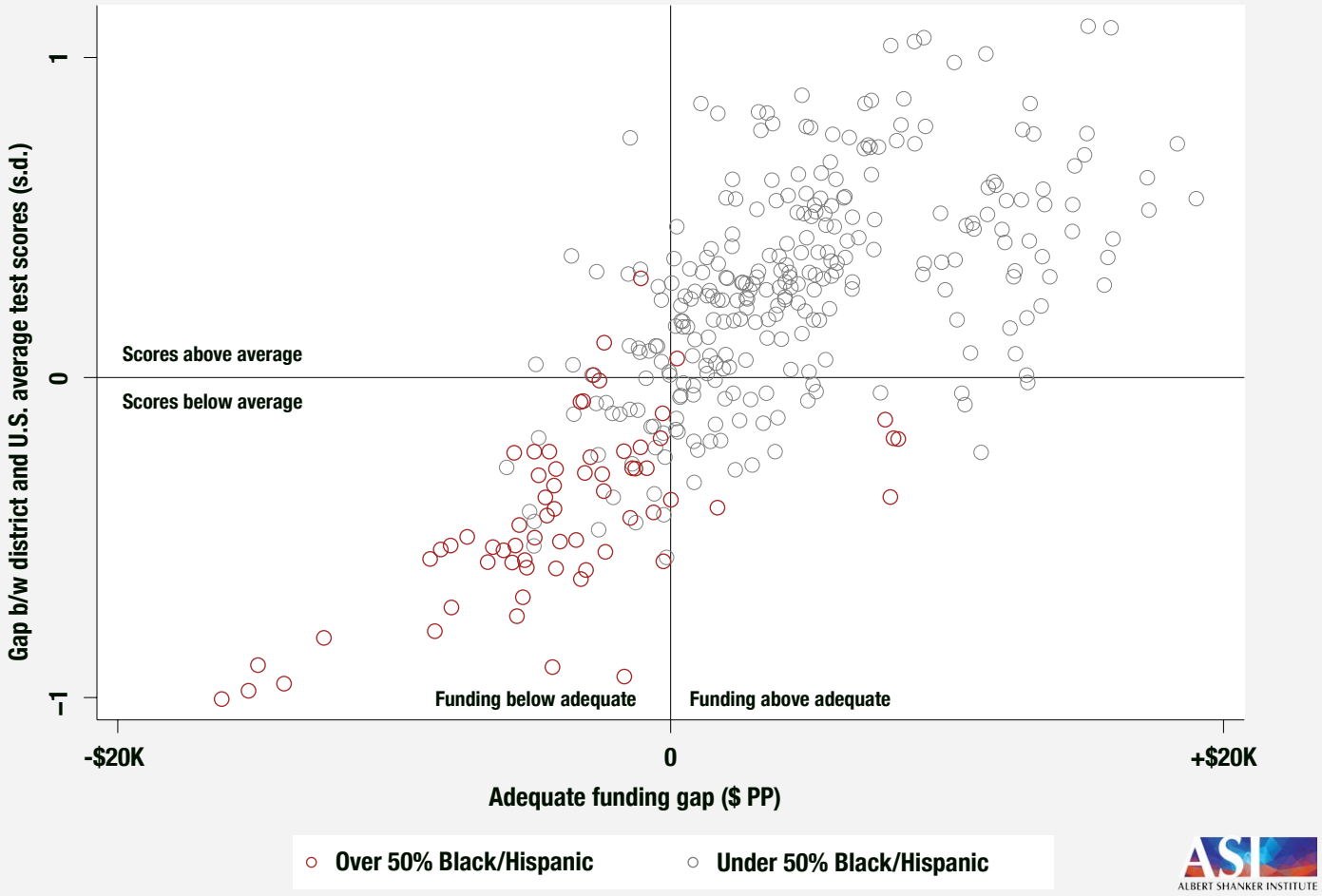
And our seven case study districts are the rule, not the exception. Figure 30 is the same as Figure 29, except the former includes all U.S. school districts located in metropolitan areas (note also that the range of the vertical y-axis of Figure 30 is larger than that of Figure 29).

Although the large number of districts in Figure 30 makes for a somewhat crowded plot, the pattern is clear: the vast majority (76 percent) of mostly-Black/Hispanic districts (again represented by red markers) are located in the lower left quadrant (funding below adequate, test scores below average), compared with just 14 percent of majority-white districts.

Among these over 1,300 majority-Black/Hispanic districts, about 82 percent have funding below estimated adequate levels, compared with just 22 percent of majority-white districts. Of the nearly 3,200 districts with above-adequate funding and above-average scores (upper right quadrant), just 80 (2 percent) are majority-Black/Hispanic districts.

Figure 29

STUDENT OUTCOME GAPS BY ADEQUATE FUNDING GAPS (SEVEN METRO AREAS), 2018



Data source: School Finance Indicators Database; Stanford Education Data Archive

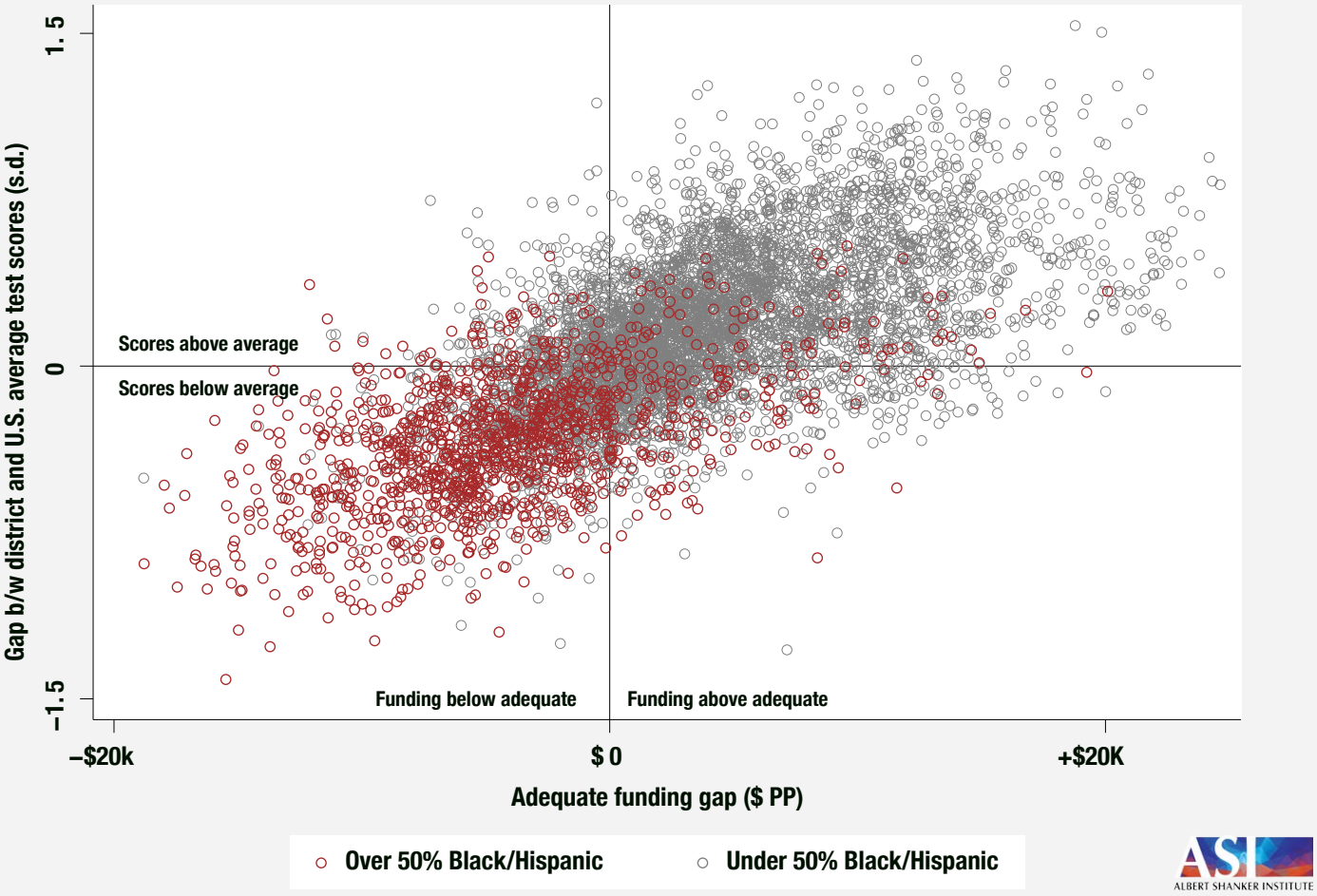
Note: Outcome gaps (y-axis) are the difference in average math and reading scores (in standard deviations) between each district and the U.S. average. Funding gaps (x-axis) are the difference between actual spending per pupil and estimated spending required to achieve national average test scores. Plot includes districts (n=345) with non-missing adequacy and outcome estimates in our seven "case study" metro areas (the Baltimore, Bay Area, Birmingham, Hartford, Kansas City, San Antonio, and Twin Cities metro areas).

Yet, as discussed briefly in a few of the case studies, it's important to note that metro areas might be segregated even if none of their districts is majority Black/Hispanic, and that majority-Black/Hispanic districts do not necessarily reflect segregation. In a hypothetical metro area serving a student population that is, say, 10 percent Black/Hispanic, every single one of those students might be in a single district (perfect between-district segregation), but that district still may not be majority-Black/Hispanic.

For instance, only four of the 86 districts in the Twin Cities metro area are majority-Black/Hispanic. This is not because the area is relatively integrated (it is quite segregated), but rather because only around one-quarter of the area's students are Black or Hispanic (see Table 3). Several districts, including St. Paul, serve disproportionately large Black/Hispanic populations (35-49 percent) that do not cross the 50 percent threshold. Conversely, in a metro area that is 80 percent Black/Hispanic, most districts will inevitably

Figure 30

STUDENT OUTCOME GAPS BY ADEQUATE FUNDING GAPS (U.S. METROPOLITAN DISTRICTS), 2018



Data source: School Finance Indicators Database; Stanford Education Data Archive

Note: Outcome gaps (y-axis) are the difference in average math and reading scores (in standard deviations) between each district and the U.S. average. Funding gaps (x-axis) are the difference between actual spending per pupil and estimated spending required to achieve national average test scores. Plot includes districts (n=6,434) that are located in metropolitan CBSAs and have non-missing adequacy and outcome estimates. To maintain plot range, a small group of districts (n=31) with positive funding gaps larger than $25,000 are excluded.

be majority-Black/Hispanic, even if the metro area's Black/Hispanic students are spread out evenly between districts.[11]

Similarly, on the finance side of the equation, one must pay attention to the fact that school funding is more generous in some places than others. Race- and ethnicity-based opportunity gaps in a given metro area might be present—and quite possibly severe—even if the typical Black or Hispanic student's district spends above estimated adequate levels (i.e., if the typical white student's district spends even further above adequate levels). In the Hartford area, for instance, the average funding gap for Black and Hispanic students is positive (around $3,000-4,000 per pupil), but the average white student's district spends

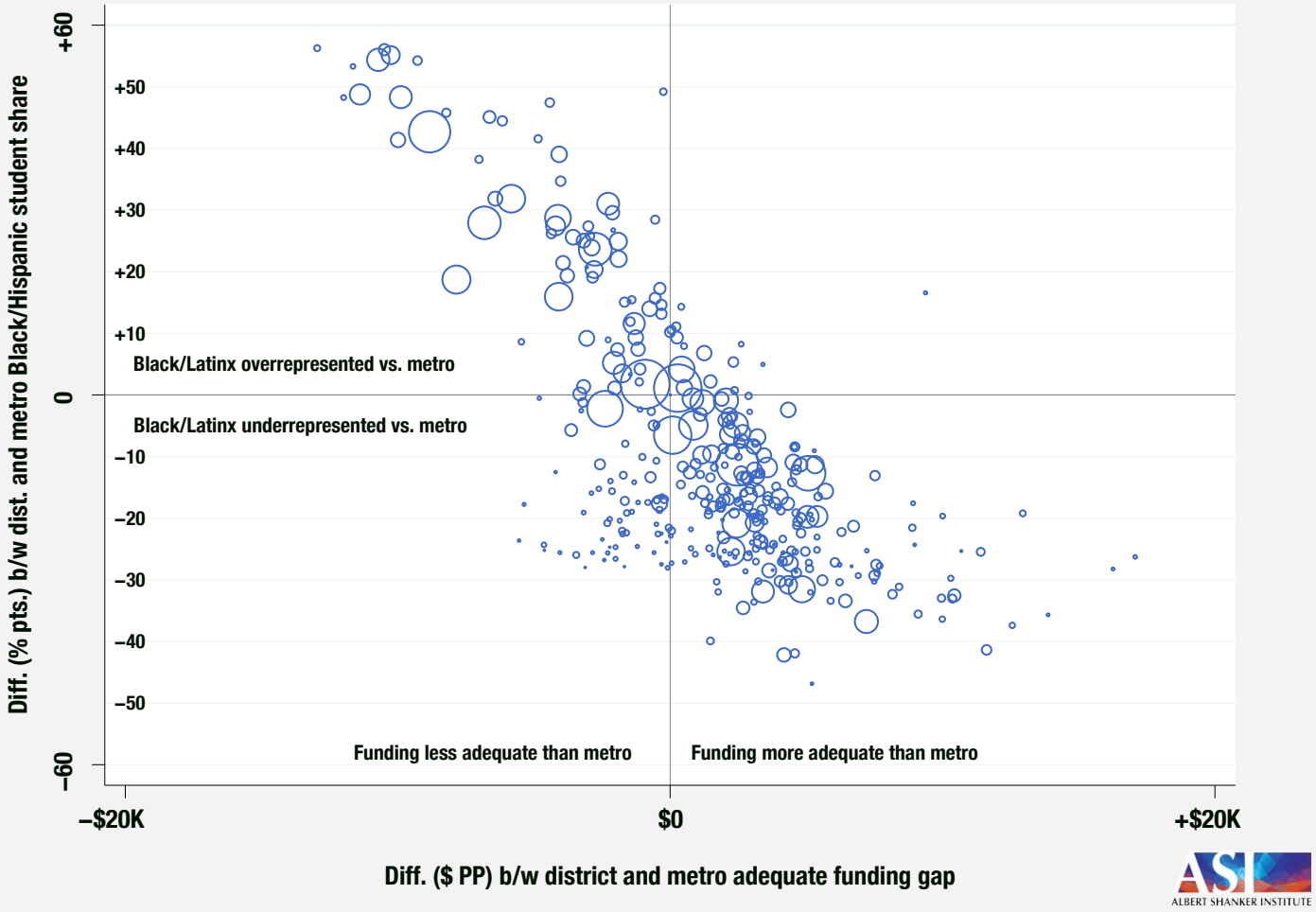
11 This is essentially the distinction between "exposure/isolation" and "evenness" measures of segregation. The former type (exposure/isolation) focuses on the potential for interaction between groups (in our case, races and ethnicities) and is strongly influenced by composition. Evenness measures, in contrast, concentrate on how well distributed students of different groups are across units (e.g., districts), regardless of overall composition. Both types of measures are useful in segregation analyses (Massey and Denton 1988).

over $10,000 above adequate levels (see Figure 3). One can generally eyeball relative adequacy in a plot that does not contain too many districts (as in our case studies), but across multiple states the above/below adequate criterion can be a problem when trying to visualize the relationships.

One very simple way to address these issues, which are particularly salient when combining different metro areas, is to examine districts' racial/ethnic composition and funding adequacy *relative to their metro areas overall* (as we did in the Bay Area, San Antonio, and Twin Cities case studies). In other words, are districts that serve larger shares of their metro area's Black/Hispanic students funded less adequately than the typical district in the same area? This is, in a sense, measuring each district's "contribution" to segregation in its metro area

Figure 31

RELATIVE BLACK/HISPANIC STUDENT SHARE BY RELATIVE ADEQUATE FUNDING GAP (SEVEN METRO AREAS), 2018



Data source: School Finance Indicators Database

Note: Markers weighted by student enrollment. Relative Black/Hispanic share (y-axis) is the difference (percentage points) between each district's Black/Hispanic student share and that of its metro area overall. Funding gaps (x-axis) are the difference between districts and their metro areas in the gap between actual spending per pupil and estimated spending required to achieve national average test scores. Plot includes districts (n=357) with non-missing adequacy estimates in our seven "case study" metro areas (the Baltimore, Bay Area, Birmingham, Hartford, Kansas City, San Antonio, and Twin Cities metro areas).

(Monarrez, Kisida, and Chingos 2019), or, put differently, the degree to which the area's Black and Hispanic (or non-Black/Hispanic) students are concentrated disproportionately within each district's borders.

Figure 31 presents a scatterplot of "relative composition" by "relative adequacy" in our seven focus areas. Once again, each district is represented by a circle (larger circles are larger districts). The vertical y-axis represents the difference (in percentage points) between each district's Black/Hispanic share and that of its metro area overall (positive values mean the district serves a larger percentage of Black/Hispanic students than the area overall). If, for instance, a district serves a student population that is 60 percent Black/Hispanic and the metro area in which it is located is 30 percent Black/Hispanic, that district will appear in Figure 31 as +30 percentage points (above the horizontal line in the middle of the plot). And the same goes for funding adequacy—if a district spends $5,000 per pupil above estimated costs but the metro area overall spends $2,000 above, that district will show up as +$3,000 in the plot (to the right of the vertical line).

The relationship here is rather tight, and the downward slope of the circles shows that it is a negative correlation (the enrollment-weighted correlation coefficient is -0.89). The association is a bit less consistent in the bottom part of the plot. It seems that among districts in which Black and Hispanic students are underrepresented—which in most cases means districts that serve large shares of white students—there is slightly more variation in relative funding adequacy (a horizontal "spread" of circles), particularly among smaller districts. We saw this in Figure 28 for the Twin Cities metro area, but it also occurs in the Kansas City metro area (four out of five districts with relative Black/Hispanic shares of -10 points or lower and inadequate relative funding are in one of these two metro areas). In most cases, these are small districts serving 80-95 percent white students with unusually high Census child poverty rates given their student populations.

That said, the association is very consistent overall across our metro areas: Districts that serve larger shares of their metro areas' Black and Hispanic students tend quite consistently to have less adequate funding compared with other districts in the same area. For example, every one of the 41 districts in which the percentage of Black/Hispanic students is at least 20 percentage points higher than its metro area Black/Hispanic share is also funded less adequately than its metro area overall. Among the 60 districts in which the Black/Hispanic share is at least 10 percentage points higher, 55 (92 percent) are funded less adequately than the typical district in the area.

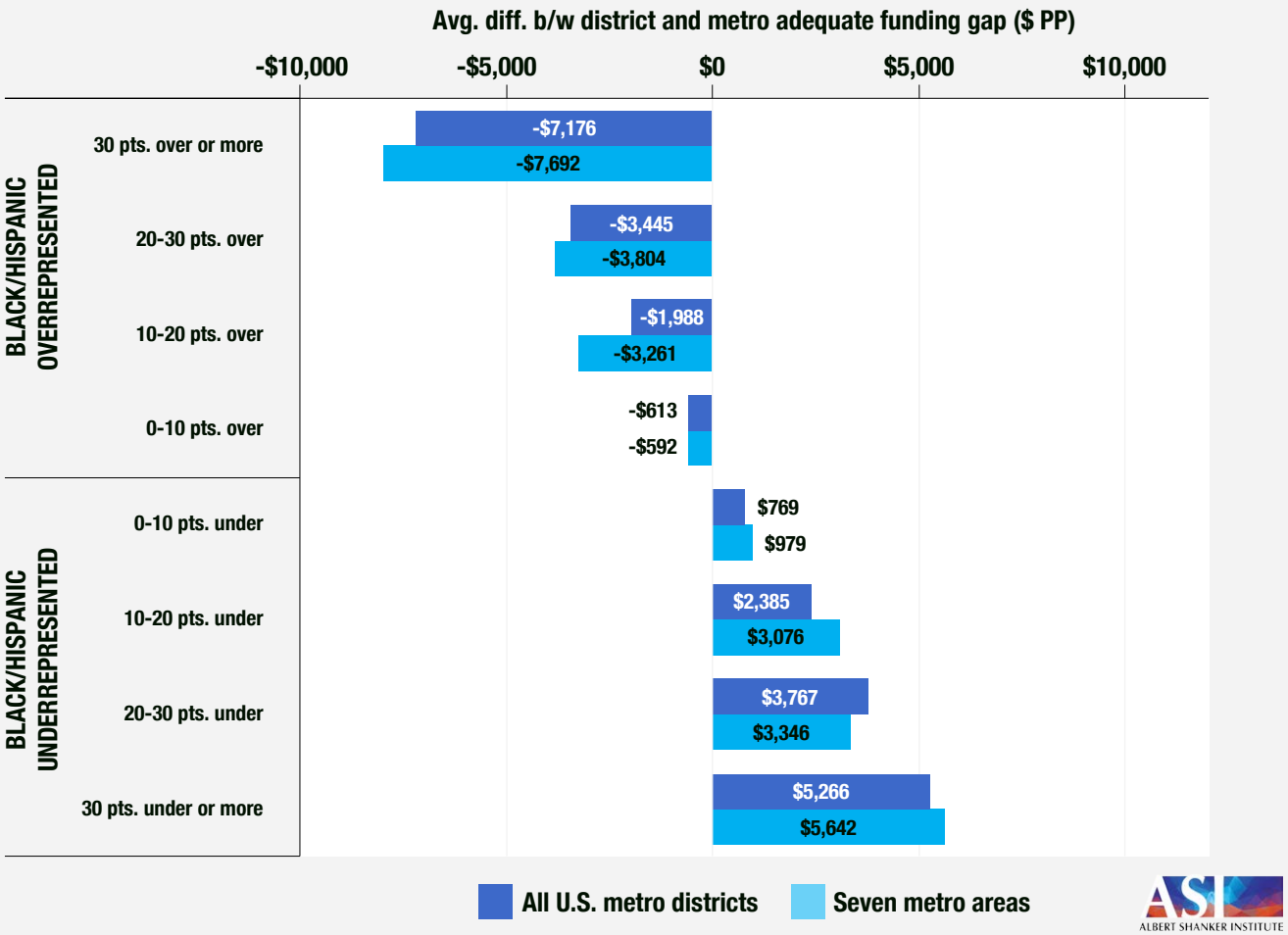
And, once again, this situation holds across all U.S. districts located in metro areas (the correlation is -0.80). For instance, 89 percent of all metropolitan districts with Black/Hispanic shares at least 10 points higher than their host metro areas (994 out of 1,116) receive less adequate funding than their metro areas overall. Among districts at least 20 points above, 94 percent are funded less adequately than their metro areas overall. On the whole, a 10 percentage point increase in a district's share of its area's Black and Hispanic students is associated with a decrease in relative funding adequacy of over $1,500 per pupil.

In order to get a sense of the magnitudes here, both nationally and for our seven case study metro areas, Figure 32 presents the average (enrollment-weighted) relative funding gaps for different categorical levels of relative Black/Hispanic student shares. For example, nationally, there are about 400 metropolitan districts that serve Black/Hispanic student populations at least 30 percentage points higher than their metro areas' Black/Hispanic student populations (the absolute Black/Hispanic shares in these districts varies, but the median is about 85 percent). The typical student's district in this group has an adequate funding gap that is $7,176 per pupil lower than its overall metro area's gap. Limiting the sample to only our seven metro areas, the figure is very similar, $7,962 per pupil.

At the other end of the spectrum—districts in which Black/Hispanic students are *underrepresented* relative to their metro areas by 30 percentage points or more—we find *positive* relative funding gaps in the range of over $5,000 per pupil. That is, districts serving *smaller* shares of their area's non-Black/Hispanic students are funded far more adequately than their metro areas overall. Moreover, all the bars are quite similar between our seven metro areas and the U.S. overall, suggesting that our case studies are not exceptional in terms of this relationship.

Figure 32

AVERAGE RELATIVE ADEQUATE FUNDING GAP BY RELATIVE BLACK/HISPANIC STUDENT SHARE (NATIONAL AND SEVEN METRO AREAS), 2018



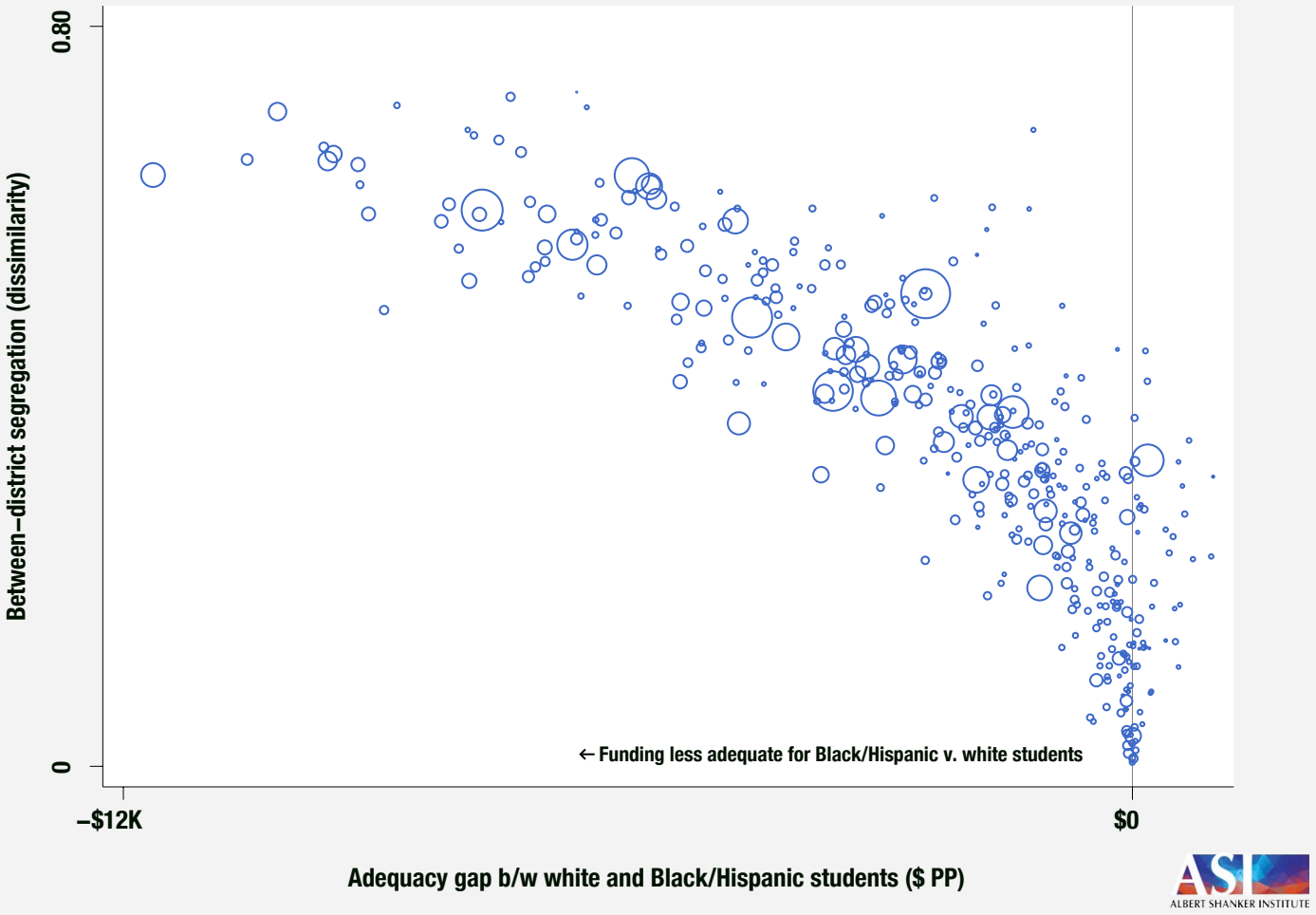
Data source: School Finance Indicators Database

Note: Estimates are enrollment-weighted averages in the difference between districts and their metro areas in the gap between actual spending per pupil and estimated spending required to achieve national average test scores, by relative Black/Hispanic share, which is the difference (percentage points) between each district's Black/Hispanic student share and that of its metro area overall. Estimates for seven metro areas include districts (n=357) with non-missing adequacy estimates in our seven "case study" metro areas (the Baltimore, Bay Area, Birmingham, Hartford, Kansas City, San Antonio, and Twin Cities metro areas). National estimates include districts (n=6,727) that are located in metropolitan CBSAs and have non-missing adequacy estimates.

Finally, Figure 33 examines whether metro areas with greater between-district dissimilarity index values (see Table 3) also tend to have larger adequate funding gaps between their white and Black/Hispanic students. In other words, is segregation associated with unequal educational opportunity? Each circle in Figure 33 is a metro area. When metro areas contain multiple states, we calculate and plot dissimilarity and funding gaps for each combination of area and state (approximately 100 of the 400 metro areas for which we have estimates are multistate metros, about two-thirds of which are two-state metros). Since we're measuring segregation between districts, metro areas with only one district are excluded. The circles are again weighted by enrollment.

Figure 33

BETWEEN-DISTRICT SEGREGATION BY RACIAL/ETHNIC ADEQUATE FUNDING GAPS, U.S. METROPOLITAN AREAS, 2018



Data source: School Finance Indicators Database

Note: Markers weighted by student enrollment. Between-district segregation (y-axis) is the dissimilarity index between districts in each metro/state. Funding gaps (x-axis) are the difference between the adequacy gap for the typical Black/Hispanic student and that for the typical white student within each metro/state, with adequacy gaps defined as the difference between actual spending per pupil and estimated spending required to achieve national average test scores. Markers represent either single-state metro areas or metro/state combinations in areas that span multiple states (total n=397). Single-district metro areas are excluded.

Note, first, that there are very few metros to the right of the zero difference line—i.e., there are very few metro areas in which funding is more adequate for Black/Hispanic students than for white students. And the exceptions are almost all smaller metro areas with small gaps.

In general, most of the metro areas located toward the very bottom of the plot have only a handful of districts within their borders (and, partially as a result, less pronounced between-district segregation). For instance, 51 of the 89 metro area/state combinations with between-district segregation (dissimilarity) of lower than 0.20 consist of between 2-4 districts.

Overall, the relationship is nonlinear, with metro area funding gaps declining more rapidly at the lower segregation levels. Nevertheless, the association is

visibly negative: Metro areas in which there is greater separation of white and Black/Hispanic students across district boundaries tend to exhibit larger equal opportunity gaps between those groups.

For example, the metro area all the way to left of the plot is the Pennsylvania part of the Philadelphia-Camden-Wilmington metro area, which is home to just over 60 regular public school districts. All but a dozen of these are majority-white (mostly suburban) districts with generally large positive adequate funding gaps. At the other end of the spectrum are six districts, including Philadelphia City, that together serve about 35 percent of the students in this metro/state combination, but 70 percent of its Black and Hispanic students. These districts all exhibit large negative funding gaps.

In general, with virtually no exceptions, the metro areas in which educational opportunity is the most unequal between races/ethnicities are those with very high between-district segregation rates (the upper left part of the plot), and there are very few metro areas with low segregation rates and large negative opportunity gaps. This relationship is not surprising, but it illustrates the fact that racial and ethnic disparities in the adequacy of K-12 funding are both cause and effect of segregation.

CONCLUSION

Any analysis—or even discussion—of the connection between segregation and school funding is a daunting task. Both are exceedingly complex on their own, and it's difficult to understand their relationship without understanding each separately. That is why, for example, a relatively large proportion of this report's front end consists of a review of the major "tools" used to segregate metropolitan areas in the United States. since 1900.

But another reason is that any denial of the importance of segregation for school funding equity requires one to ignore this history completely. It is, perhaps, more palatable to view unequal educational opportunity as a side effect of income and wealth segregation than it is to see it as the end result of racism and discrimination. Yet the reality is that economic segregation, while interdependent with racial/ethnic segregation today, has its roots in generations of institutional policies and practices to keep people separate based solely on their race or ethnicity. Racism built the machine, even if economic inequality helps keep it running now.

In part one of our analysis, we established that, both nationally and in all seven metro areas upon which we focus in this report, Black and Hispanic homeowners, relative to their white counterparts, own homes of lower value and pay higher effective property tax rates. We then showed how these discrepancies—due to interdependent economic and racial/ethnic segregation—translate into not only lower local revenue for the typical Black and Hispanic student compared with their white peers, but also higher costs. The end result is severely unequal educational opportunity, which at each juncture is created and perpetuated by racial discrimination.

In part two—the "case studies" of our seven metro areas—we examined how these stark racial/ethnic disparities in K-12 funding adequacy arise between districts within the same metropolitan area, districts that often share boundaries. Our seven areas vary widely in terms of location, development timelines, and many other factors. Indeed, they were selected in part for this diversity. Yet, while each has its own unique story, as a group they are quite consistent in terms of how they illustrate the relationship between historical and contemporary residential segregation and present-day school funding disparities. For example, in all seven areas, as well as nationally, districts serving large absolute or relative shares of Black/Hispanic students are dramatically more likely than disproportionately white districts to be funded inadequately. And our national results suggest that these metro areas are not unique in this respect. In addition, in every case study, we found a rather consistent correspondence between school funding inequity today and 1935-40 redlining maps that were used to keep Black and Hispanic families isolated during the era of suburbanization that built our modern segregation regime.

And this is because segregation by race and ethnicity—and thus its impact on school finance—was a long-term national project. It didn't happen quickly, and it was not due to some random confluence of local events or micro-level preferences for racial homogeneity or higher property values. The same basic "tools" were widely employed throughout the United States for over 100 years, and several persist to this day. During most of this time, these efforts served one purpose: keeping white and nonwhite families living apart. Court decisions and legislation during the second half of the 20th century stemmed the segregative tide and even led to some improvement (though much of it was within rather than between districts), but these changes were small relative to the baseline. Segregation is self-reinforcing and persistent.

The effects of this segregation, past and present, are almost difficult to get one's head around; residence has dramatic and wide-ranging effects, direct and indirect, on virtually all important social and economic outcomes, including health, earnings, family status, social networks, and many others. School finance is but one of these areas, but it's an important one.

K-12 funding disparities by race and ethnicity have endured despite 60 years of legislation and litigation.

This is due in no small part to legislation and litigation during the previous 60 years, which created and entrenched our modern segregation regime, as well as to the more subtle (but no less virulent) forms of discrimination that persist today. Breaking the cycle of segregation and K-12 funding inequity will require equally deliberate, large-scale intervention on both the housing and school finance sides of the equation. But the first steps, perhaps, are to acknowledge that racial/ethnic segregation and unequal educational opportunity are inextricably connected, and to understand the history of how that came to be.

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