School Racial and Economic Segregation

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Introduction

The U.S. educational system is built on the promise that all children have equal opportunities to learn. Has that promise been kept? Or do children face different barriers and opportunities depending on their racial/ethnic background or on how much money their family earns? One measure of unequal opportunities is segregation—the degree to which students from different racial/ethnic backgrounds or with different family incomes attend different schools. Policies have aimed to integrate schools since the 1954 *Brown v. Board of Education of Topeka* decision of the U.S. Supreme Court. Prior to 1954, many states legally operated separate school systems for black and white students. The *Brown* decision declared that "separate educational facilities are inherently unequal"—as long as black and white students were educated in separate schools, black students would receive an inferior education. Despite over 60 years of policies aimed at integrating schools and research showing the negative consequences of segregation for students' educational success, today, minority and low-income children still attend school with a greater proportion of minority and low-income peers than white students do.

This chapter describes segregation by race and by income between schools and school districts in the U.S. This chapter addresses the key questions: What is segregation, and how do researchers measure it? How has segregation by race and income between schools and school districts changed over time? What factors contribute to segregation? Is segregation harmful for students' educational outcomes? What policies have been put into place to address segregation?

Key Points

- Both minority and white students attend school with more minority peers (particularly Hispanic) because there are fewer white and more minority students than ever before
- Taking this change in student racial composition into account, school racial segregation has declined since the 1980s
- Economic segregation between schools and school districts increased in the 1990s and 2000s
- Minority (black and Hispanic) students attend school with more low-income students than white students do
- Segregation between school districts, not just schools, is an important source of inequality
- Racial and economic segregation between neighborhoods is a key contributor to school segregation
- School segregation contributes to educational achievement gaps

Intellectual Roots

Free public schools were established in the U.S. in the late 19th century to prepare students for the workforce, to socialize students, particularly new European immigrants, into American norms, and to exert social control over youth. Progressive ideals are reflected in the intended goals of the public education system: the public school system was established to be an equalizing force. All students, regardless of their social background, would have equal access to educational opportunities, which would help them compete on a level playing field for future economic opportunities. The ideal of equal opportunity is tied to values of fairness, self-reliance, and the American Dream—anyone can succeed in the U.S., regardless of their background, if they work hard enough. But the educational system has never truly provided equal opportunities for all. Blacks and other racial/ethnic minorities were initially excluded from schools serving white students, especially in the South, and low-income students attended schools with worse funding, supplies, and lower-quality teachers than high-income students. School segregation

on the basis of race/ethnicity or family income violates the ideal of equal opportunity because students' social background determines their access to quality schooling.

The study of school segregation relates to the broader fields of social stratification and inequality. Scholars of stratification study the causes and consequences of inequality in our society. These scholars often investigate social mobility—whether a child moves up or down the social or economic ladder as they become an adult. Segregated schooling limits upward mobility by providing unequal opportunities to students depending on their social background, maintaining inequality by race and by income. Minority and low-income students lag behind higher-status students in childhood, and they have fewer opportunities to get ahead as they grow up.

Studies of segregation also have their roots in policy studies. Researchers have carefully documented segregation over the past 60 years to trace progress following the *Brown* decision. Did the policies adopted by segregated districts successfully integrate schools? What new aspects of segregation have arisen as the student body population has become more racially diverse? While *Brown* focused on racial segregation, how has economic segregation changed? Concerns about inequality and its solutions have motivated researchers to examine segregation, and this chapter summarizes what they have found.

Research Methods

Segregation measures the degree to which students from different racial/ethnic backgrounds or with different family incomes attend different schools. Researchers use two main types of segregation measures: exposure indices and evenness indices. Exposure indices measure the average makeup of a school attended by a student from a particular racial/ethnic or economic group—the other students he or she is exposed to. For example, researchers might say that a black student in the U.S. attends a school where, on average, 49% of students were also black, or that the average poor student attends a school where 67% of students were also poor, as was the case in 2013. When researchers measure the exposure of a student to other members of his own racial/ethnic or economic group, they call it an isolation index.

The second set of measures, evenness indices, estimate how evenly students are represented in schools or districts, relative to the composition of the population. For example, if a school district's student body is 50% white, 15% black, 25% Hispanic, 5% Asian, and 5% other race students, evenness indices measure how much schools deviate from that composition. If there were no segregation (and thus complete integration), every school would have this same makeup. One common evenness measure is called the dissimilarity index. It is measured on a scale from 0 to 1 and can be interpreted as measuring what proportion of students of the minority group would have to be redistributed to achieve total integration. For example, if the white-black dissimilarity was 0.68, it means that 68% of black students would have to be redistributed across schools to achieve integration—so that each school's composition matched the racial/ethnic makeup of the district.

Researchers measure segregation at several different geographic or administrative levels. Segregation is measured between schools and also between school districts. Segregation can be measured within states, cities, metropolitan areas, or, in the case of school segregation, within districts. For example, a researcher could examine how segregated students were by race between districts in the state of California or how segregated students were by race between schools in the Los Angeles Unified School District.

To measure segregation, researchers rely on data collected by the U.S. Department of Education. Schools report information about the racial/ethnic and economic characteristics of their students each year. The classification of students' racial/ethnic background has changed over time as the U.S. has become more racially and ethnically diverse. Today, students are identified as non-Hispanic white, non-Hispanic black, Hispanic, Asian, Hawaiian Native/Pacific Islander, American Indian/Alaska Native, and two or more races. Segregation can be calculated between two groups, such as between blacks and whites, or among many or even all groups.

The only economic information schools report about students is whether or not they are eligible to receive free or reduced-price lunch. Eligibility is based on their family income; families with income less than 130% of the poverty threshold for their family size qualify for free lunch, and families with income less than 185% of the poverty threshold qualify for reduced-price lunch. For example, in 2016, the poverty threshold for a family of four was determined by the federal government to be $24,300, so students whose family income was less than $24,300 x 130% = $31,590 qualified for free lunch. Researchers can also measure segregation between school districts using data collected by the Census Bureau. The Census Bureau collects data on family income in 16 categories, so researchers can examine segregation between, for example, the very rich and the middle class.

Key Empirical Findings

Racial Segregation

In the first years after the *Brown* decision in 1954, school segregation was slow to change. *Brown* abolished *de jure* segregation—segregation established by law; in this case, separate school systems for whites and minorities. It did little to address *de facto* segregation—segregation in existence "by fact" but not supported or mandated by law. The court ruling did not require districts to implement strong policies for achieving integration, instead merely creating the option for black students to move to white schools. Schools remained segregated *de facto* because blacks and whites lived in separate neighborhoods and because whites did not want to send their children to school with black children. As a result, segregation changed little from 1954 to the late 1960s. The majority of black students, especially in the South, continued to attend schools where virtually all students were black.

Beginning in 1968, several subsequent Supreme Court cases required segregated school districts to undertake desegregation orders and put school assignment policies into place to achieve racial mix. Many other districts voluntarily developed desegregation plans. The policies varied; some common examples were to combine formerly all black and all white schools at the elementary, middle, and high school levels or to consider student race when determining which students enrolled in which schools. As a result, school segregation began to decline. Nationwide, in 1968, blacks attended school where 22% of students were white, and this increased to 33% by 1972. In 1968, over 50% of black students attended schools that were 90-100% black; by 1980, only one-third of black students attended such hyper-segregated schools. The black-white dissimilarity index declined from .81 in 1968 to .48 in 1990. Racial segregation declined substantially from 1968 through the mid-1970s and continued to decline, at a slower rate, through the 1980s.

Although considerable desegregation progress was made following *Brown*, it did not come easily. In the late 1950s, the National Association for the Advancement of Colored People (NAACP) helped register black students in white schools in the South, but these students faced fierce opposition to their attendance. One famous case was that of Ruby Bridges, a black kindergartener who enrolled in a formerly all-white

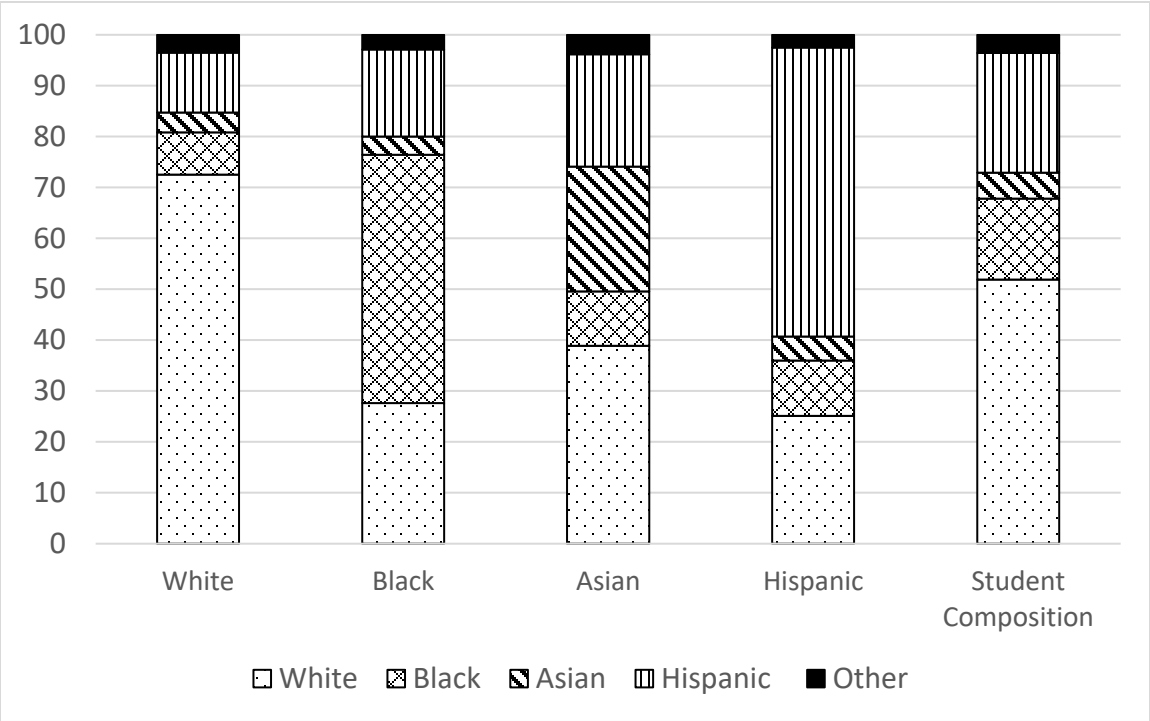
school in New Orleans. An angry white mob met this five-year-old girl with racial slurs and thrown objects, and when she did make her way inside, both teachers and parents boycotted the school, refusing to teach or send their children there. Another famous case was the Little Rock Nine, nine black students who were physically blocked from entering their white Little Rock high school by the Arkansas National Guard—called up by the state's governor—as well as white students and parents.

There was also fierce opposition to school integration plans in many cities, mainly by white parents and students. In Boston in the mid-1970s, white activists led marches and protests against the plan to bus white students to schools in black neighborhoods and vice versa. Some of the opposition turned violent, including white teenagers attacking a black civil rights attorney, creating a memorable image of the youths hitting him with an American flag. White parents also protested the school integration plans by sending their children to private schools or moving out of districts undergoing integration to avoid sending their child to a racially integrated school. In the South, private schools known as "segregation academies" were created specifically so parents had such an option, since *Brown* does not apply to private schools. Often, state laws helped parents create these schools at minimal cost, using state grants to cover tuition.

Conclusions about school segregation since the 1980s depend on what measure is used. Measured with exposure indices, segregation has increased. Figure 1 shows the average composition of schools attended by students of different races in 2011-12. The far right bar in Figure 1 shows the racial composition of the U.S. public school student body, so if there were no segregation, the average school composition for students of each race should match this bar. As Figure 1 shows, this is not the case, though Asian students attend schools that look most similar to the overall student population, on average. In the 2011-12 school year, the average black student attended a school that was 28% white, compared to 36% in 1988 and 32% in 1970. The average Hispanic student attended a school that was 25% white in 2012, compared to 30% in 1990 and 44% in 1970. The proportion of black and Hispanic students attending schools that are 90-100% minority (black or Hispanic) also increased in the 2000s (for Hispanic students, this has been steadily increasing since 1968). Overall, exposure measures indicate that, since the mid-1980s (or earlier, for Hispanics), school segregation has been increasing. Minority students attend school with fewer white and more minority students today than in the past.

Why do black and Hispanic students attend school with fewer white students today than in the mid-1980s? Demographic changes are the key reason. Over time, the U.S. population, particularly the public school population, has become more racially diverse. The proportion of white schoolchildren declined from 80% in 1970 to 50% in 2013. In contrast, the proportion of Hispanic school children increased fivefold, from 5% in 1970 to 25% in 2013. The Asian population also increased from less than 1% to over 5% during this time while the black population remained stable at about 15%. Because the Hispanic student population has increased and the white population has declined substantially, it is not surprising that black and Hispanic students attend school with fewer white and more minority students. White students also attend school with fewer white and more minority students than in the past.

Figure 1. 2011-12 Average School Composition Experienced by Students of Different Races, Compared to Composition of All Students



Data Source: Orfield and Frankenberg 2014, Digest of Education Statistics 2012, table 44.

While exposure indices indicate that segregation has increased since the mid-1980s, evenness measures do not. Remember that evenness measures compare school or district composition to the composition of the broader population. Therefore, evenness measures take the dramatic change in student body racial composition into account and examine whether students are sorted across schools more unevenly than in the past. Dissimilarity indices and other evenness measures show that racial segregation did not increase from the mid-1980s through the 2010s. Students have become slightly more evenly distributed across schools—segregation has declined slightly in large metropolitan areas. This is true of black-white segregation as well as segregation between white and all non-white students and segregation among non-white students—black, Hispanic, and Asian students have become more integrated with each other. Although segregation has declined, it remains fairly high—the dissimilarity index was about 0.66 in 2012.

Evenness indices can measure segregation between schools within the same district or between districts in the same city, region, or state. As desegregation orders or voluntary integration plans were put into place in districts in the late 1960s, some white parents chose to move out of their school district to avoid school integration. This "white flight" contributed to rising segregation between school districts—school districts were becoming homogenously white or homogenously minority, often reflecting city-suburban divides. In 1974, the Supreme Court ruled in *Milliken v. Bradley* that school desegregation orders did not apply across districts—states are not required to enroll students in schools outside their own district to achieve integration. In the 2000s, racial segregation between school districts in large metropolitan areas has declined slightly, but segregation between districts contributes more to overall school segregation today than in the past. That is, racially homogenous districts are a key reason that many schools are racially

homogenous. For example, the Los Angeles Unified School District is about 75% Hispanic, while the Beverly Hills Unified Schools District is nearly 75% white. Even if there was no segregation between schools within the Los Angeles district—if all schools had the same racial composition—each school would be 75% Hispanic.

Economic Segregation

Estimates of economic segregation between schools have only been available since around 1990. Exposure and evenness measures support the same conclusion: since 1990, economic segregation has increased between schools and between school districts. Measured with an evenness index, I estimated that segregation between schools on the basis of free lunch eligibility increased by 40% from 1991 to 2012 in the 100 largest districts, with a sharp increase following the Great Recession in 2008. In 1993, the average free lunch eligible student attended school where 52% of students were also eligible for free lunch. By 2013, that figure increased to 67%--the average free lunch eligible student attended a school where over 2/3 of his or her classmates were also low income.

My research shows that income segregation also increased between school districts from 1990 to 2010 in the 100 largest metropolitan areas, by over 15%. For school districts, income data are available beyond free lunch eligibility, so we can examine whether rich, middle-income, or poor families are the most segregated. From 1990 to 2010, high-income families were the most segregated from all others—students from high-income families were most likely to enroll in districts with peers from families like theirs. Like racial segregation, economic segregation between schools is driven in large part by economic segregation between districts. Many large urban school districts enroll a majority low-income student body. Without integration between richer and poorer districts, economically diverse schools are hard to achieve.

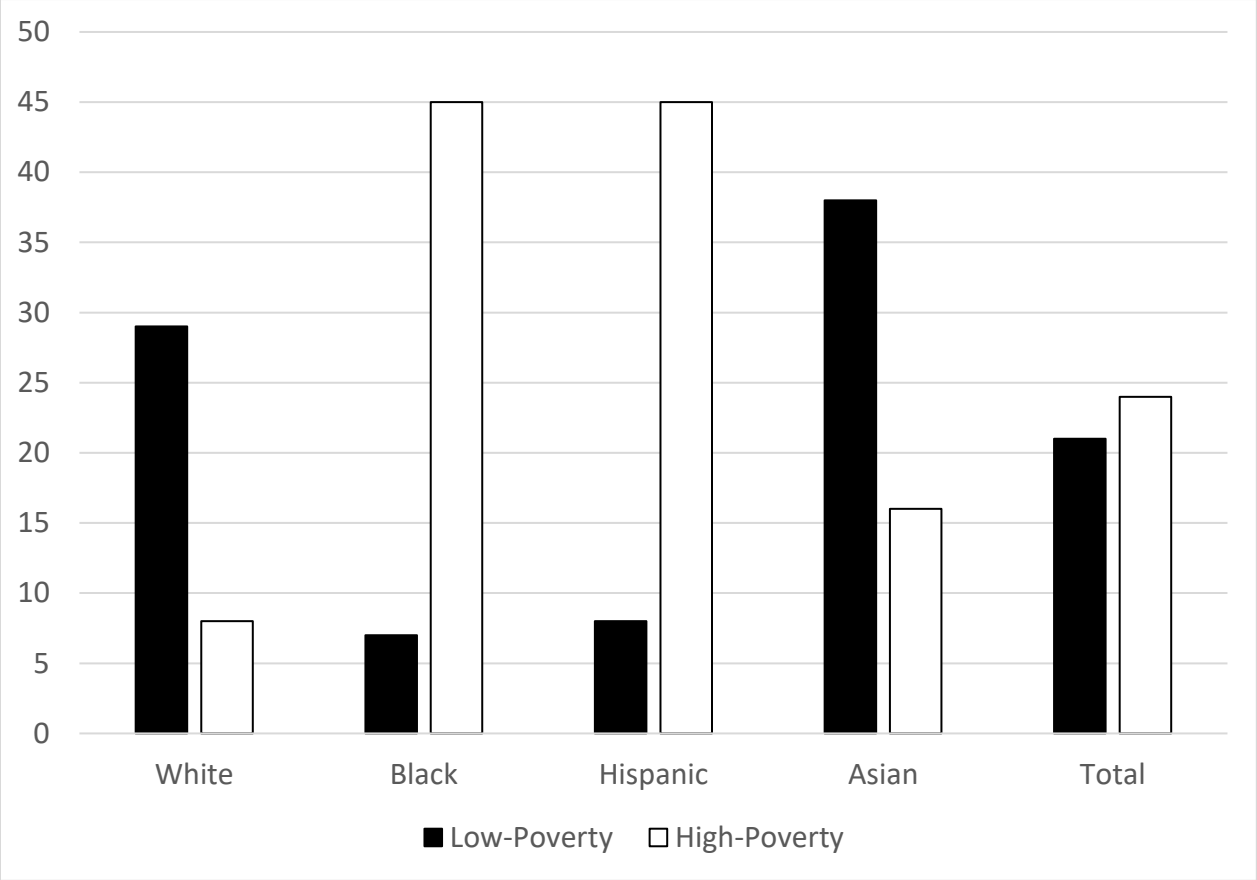
Overall, rising income segregation between schools and between school districts means that, since 1990, low-income students attend school with more low-income peers and high-income students attend school with more high-income peers. No Supreme Court decision requires school districts to adopt economic integration plans, though a growing number have created voluntary student assignment policies aimed at socioeconomic integration. In 2007, the Supreme Court ruled in the *Parents Involved in Community Schools (PICS) v. Seattle School District No. 1* that districts voluntarily using school integration plans (not districts under desegregation orders resulting from *Brown*) cannot assign students to schools on the basis of individual students' racial/ethnic background. Considering students' socioeconomic background is permitted, so many districts have changed their policies as a result. For example, in Cambridge, MA, students do not simply attend their neighborhood school. Instead, parents and students rank their school choices, but the student assignment procedure balances these preferences with the district's goal of enrolling an equal proportion of students who are free lunch eligible at each school.

The Connection between Race and Income

Because black and Hispanic families in the U.S. tend to have lower incomes, on average, than white or Asian families, the high levels of racial segregation experienced by black and Hispanic students means they attend school with more low-income peers than white or Asian students. As Figure 2 shows, in 2012, nearly 30% of white students and 40% of Asian students attended low-poverty schools—where 25% of students or fewer are eligible for free or reduced-price lunch. In contrast, only 7% of black students and 8% of Hispanic students attend low-poverty schools. Black and Hispanic students are overrepresented in high-poverty schools, where more than 75% of students qualify for free or reduced-price lunch. The white bar on the far right of Figure 2 indicates that, nationwide, 24% of all students attended high-poverty

schools. Nearly twice that figure, 45%, of both black and Hispanic students attended high-poverty schools, compared to 8% of white and 16% of Asian students.

Figure 2. Percentage of Students attending Low-Poverty and High-Poverty Schools, 2012-13



Data Source: Digest of Education Statistics 2014, table 216.60.

The poverty composition of Hispanic and, particularly, black students' schools has increased more than that of white or Asian students. From 2003 to 2013, the poverty rate (the proportion of students eligible for free or reduced-price lunch) in the average white student's school increased 13 points, from 27 to 40%, while the poverty rate in the average black student's school increased 15 points, from 53 to 68%. Overall, black and Hispanic students attend school with more poor students than white students.

Factors Contributing to School Segregation

Why are schools and districts so segregated? A key reason is because neighborhoods in the U.S. are also very segregated by race and by income. In most places, public school attendance is determined by where a child lives; most schools' attendance zones or catchment areas serve the local community. Over time, this link between where a family lives and where a child goes to school has been weakened. In recent years, some districts have adopted open enrollment policies, allowing students to attend any school in

the district, and some districts include magnet schools or charter schools, which typically do not serve specific geographic attendance zones. However, in the late 2000s, 75% of public schoolchildren still attended their neighborhood school. Neighborhood residence remains very tightly linked to district enrollment; less than 1% of public schoolchildren attended school in a different district than the one serving their neighborhood. Therefore, segregated schools reflect segregated neighborhoods. And, in turn, school options contribute to neighborhood segregation because many parents take schools into account when deciding where to live.

Parents' enrollment choices also contribute to school segregation. Some parents may choose to enroll their child in a private school, magnet school, or charter school if they consider their neighborhood school unsatisfactory. White and higher-income parents are particularly likely to make this choice, meaning that public neighborhood schools have higher poverty and minority composition than the surrounding area. Parents often (consciously or unconsciously) associate minority students with low test scores or lack of school safety, citing these non-race reasons for preferring one school over another. Explicitly racial preferences also exist, and recent research shows that, accounting for school characteristics like test scores to compare similar schools, white parents avoid enrolling their child in a school with larger minority populations. Parents often (unconsciously or consciously) substitute other school characteristics These decisions reduce the number of higher-income and white students in public neighborhood schools, limiting minority and lower-income students' exposure to white or higher-income students. School integration remains a controversial topic, and student assignment policies that aim directly or indirectly to mix students by race are often met with fierce parental opposition. For example, New York City officials recently proposed rezoning school attendance boundaries so students living in a public housing development would be integrated into predominantly affluent, white schools, setting off months of protests, petitions, and heated hearings, mainly among high-income, white parents. In addition to opposition to changes in the school composition and community, some also note potential damage to housing values if test scores in the local school decline.

Magnet schools were created in the 1970s as a tool for reducing racial segregation. Magnet schools are public schools, but they enroll students from across geographic boundaries—they are one effort to overcome neighborhood segregation being replicated in schools. Magnet schools often have special curricula (e.g., math and science or the arts), and they often aim to draw high-income, white, and/or suburban students into urban schools. Evidence on the role of magnet schools in reducing segregation is mixed. On one hand, magnet schools tend to be more diverse than traditional public schools, so they provide minority students with exposure to more white students. On the other hand, magnet schools may attract nearly all the higher-income or white students, or students with highly-educated, involved parents, in a district, pulling these students out of schools in the rest of the district.

Research Frontiers

New technology and data availability allow researchers to investigate links between neighborhoods, school attendance boundaries, and district boundary lines. Advances in collecting geospatial data permit researchers to understand how neighborhoods are connected to schools and districts so they can answer questions about the relationship between neighborhood and school segregation, or about how school options affect parents' residential choices. National data on students' test scores at the school- and district-level are also becoming available due to the continued use of accountability tests, and researchers are taking advantage of these data to track inequalities on the basis of race and income.

Researchers continue to investigate the consequences of school segregation for children's educational outcomes. *Why* segregation is harmful for low-income and minority peers is particularly of interest. What role does unequal school funding play? Does interacting with higher-income peers make a difference? How are white and high-income students affected by segregation, if at all?

Researchers also continue to study what types of policies are effective at creating integrated schools. Many of the desegregation orders that were put into place in the early 1970s are now ending, and researchers are monitoring what happens in these school districts. Preliminary evidence suggests that schools are re-segregating now that no policy is in place that requires integration. For example, in Charlotte-Mecklenburg, NC, white parents objected to the race-based school choice plan, which was abolished in 2002. Since then, the black-white dissimilarity index has increased by about 30% and economic segregation has also increased. This re-segregation has increased achievement gaps between black and white students. Court-ordered desegregation ended in Nashville, TN, in 1999, resulting in increased segregation. However, achievement gaps between black and white children have not increased there, perhaps because Nashville provided extra resources to high-poverty, minority schools. This raises the important question: Is integration necessary, or can policymakers instead increase resources in majority-minority, high-poverty schools?

Evaluating socioeconomic integration policies is of particular interest, given that economic segregation has been rapidly rising, that school poverty rate seems to be a key reason why racial segregation is detrimental for minority students, and that the 2007 Supreme Court ruling in the *PICS* case permits student assignment plans only on the basis of socioeconomic status, not race. In 2016, the Stronger Together bill was introduced in Congress to provide funding to districts to develop socioeconomic integration plans, and researchers will continue to monitor these developments.

Finally, the concept of school segregation will continue to change as the U.S. population becomes more racially diverse. In the 1950s, whites were the predominant racial group and black Americans were the only sizeable minority group, so most research focused on black-white segregation. As of 2013, the majority of U.S. schoolchildren were non-white, with Hispanics comprising the largest and fastest growing group. By 2024, the population of U.S. schoolchildren is projected to be 46% white, 29% Hispanic, 15% white, and 6% Asian. Concepts of segregation must change to accommodate this diverse population.

Implications

Why does school segregation matter? School segregation contributes to inequality in educational outcomes between white and minority students and between high- and low-income students. Black high school students that attended integrated schools in the 1960s and 1970s were more likely to graduate from high school, attend college, and find good employment as adults, compared to black high school students that attended segregated schools. Integrating schools was beneficial to black students while not affecting the outcomes of white students, so integration narrowed the black-white educational attainment gap. Poor students who attend schools with higher-income peers perform better on achievement tests, earning higher math and reading scores, compared to poor students who attend schools with many other poor students. The test score gap between high- and low-income students was reduced by 30% when low-income students attended school with higher-income peers. School poverty also contributes to the racial achievement gap. Minority students attend school with more poor classmates, and students in high-poverty schools tend to have lower test scores. Integrated schools are beneficial not only for minority and low-income students, but also for white and high-income students. White and high-income students develop better critical thinking skills, benefit from better classroom

discussion, are more likely to have interracial friendships, and develop cross-cultural competency, all key skills in our increasingly diverse society.

More than 60 years after the landmark *Brown v. Board of Education* decision, school segregation by both race and income remains troublingly high. The Supreme Court ruled that "'separate but equal' has no place" and that integration was necessary for providing equal opportunity. Decades of research document large achievement gaps between white and minority and between high- and low-income students, due in part to their education in often very separate contexts. To truly provide equal opportunity for all students, regardless of where they are born or who their parents are, policymakers must consider strategies for promoting integration. Researchers can support policymakers by continuing to study why segregation matters and the most effective policies for creating diverse schools. Alternatively, researchers can also investigate what policies can help students achieve even if they attend a high-poverty, hyper-segregated school. Because segregation has roots in broader economic inequality and neighborhood segregation, policymakers in other arenas, like housing, welfare, and the labor market, must join forces with educational policymakers. School inequalities are shaped by the larger social context. In turn, school inequalities today shape inequalities in society in the next generation. Without policy changes, the future success and social mobility of minority and low-income students will be in doubt.

Discussion Questions

1. Think about your own elementary or high school. Did you attend school with students from a similar background as you? How do you think your school's composition affected your learning experience?
2. What do you think the most effective policies are to reduce school racial/ethnic or economic segregation? How can these plans avoid resistance from parents, teachers, and students?
3. What is the difference between exposure and evenness measures of segregation? Does one capture inequality better than another? Would you say racial segregation has increased or decreased since the 1980s?
4. Do you think racial/ethnic or economic school segregation is a more pressing issue? Why?

Additional Resources

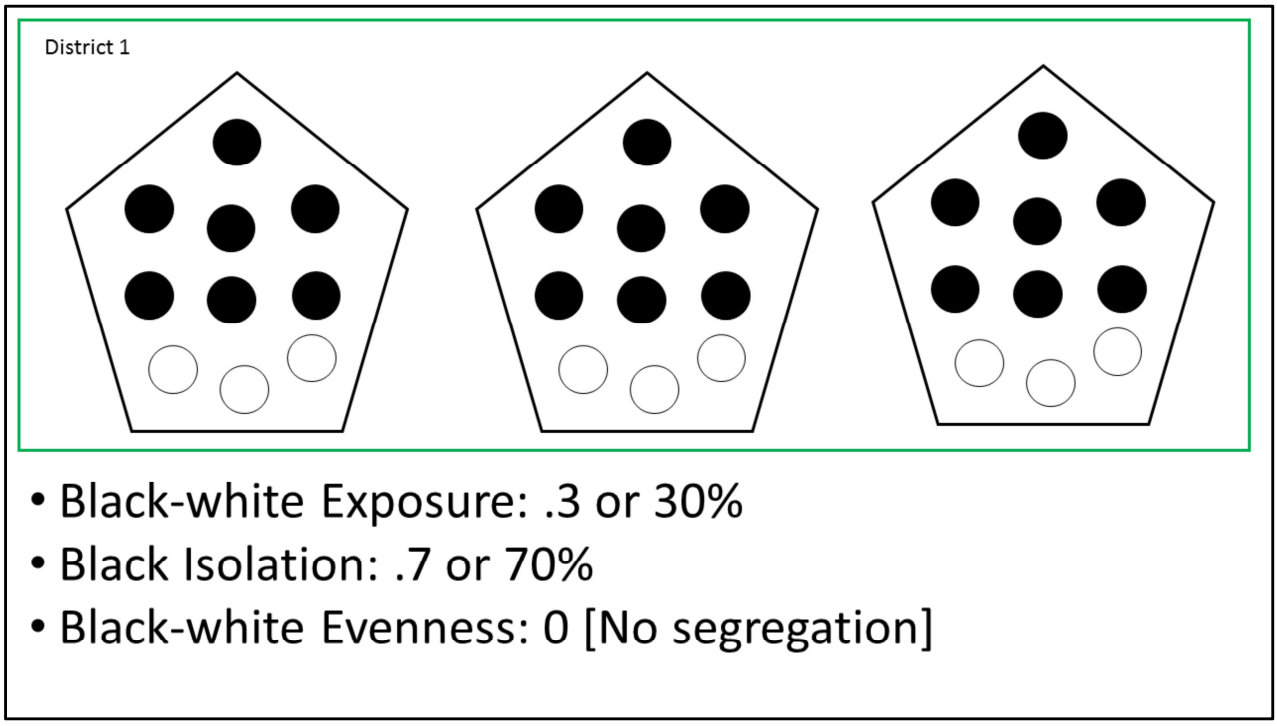
- Reardon, Sean F. and Ann Owens. 2014. "60 Years after Brown: Trends and Consequences of School Segregation." *Annual Review of Sociology* 40: 199-218. http://www.annualreviews.org/doi/abs/10.1146/annurev-soc-071913-043152
- The Civil Rights Project at UCLA tracks school segregation trends and produces reports https://civilrightsproject.ucla.edu/research/k-12-education/integration-and-diversity
- The U.S. Government Accountability Office's 2016 report on school segregation http://www.gao.gov/products/GAO-16-345
- The radio show "This American Life" produced a two-part series on school segregation http://www.thisamericanlife.org/radio-archives/episode/562/the-problem-we-all-live-with

Cited Data Sources

Orfield, Gary, and Erica Frankenberg. 2014. *Brown at 60: Great Progress, a Long Retreat, and an Uncertain Future.* Los Angeles, CA: The Civil Rights Project/Proyecto Derechos Civiles. https://civilrightsproject.ucla.edu/research/k-12-education/integration-and-diversity/brown-at-60-great-progress-a-long-retreat-and-an-uncertain-future

U.S. Department of Education, National Center for Education Statistics. 2012. *Digest of Education Statistics*. Table 44. Washington, DC: U.S. Department of Education. https://nces.ed.gov/programs/digest/d12/tables/dt12_044.asp

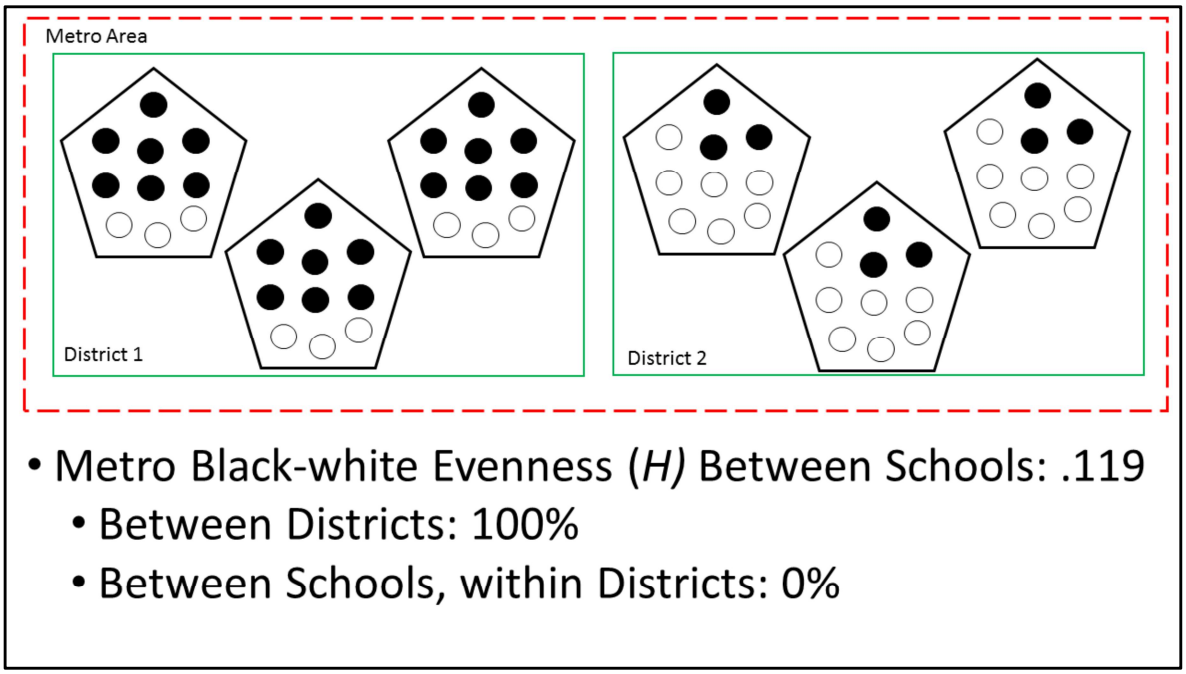
U.S. Department of Education, National Center for Education Statistics. 2014. *Digest of Education Statistics*. Table 216.60. Washington, DC: U.S. Department of Education. https://nces.ed.gov/programs/digest/d14/tables/dt14_216.60.asp



This figure demonstrates the different ways to measure segregation. The box represents one school district with three schools. Each school has 10 students represented by circles; 7 are black and 3 are white.

The black-white **exposure** index is .3: the average black student attends a 30% white school. The black **isolation** index is .7: the average black student attends a 70% black school.

However, the three schools have identical racial compositions, and therefore racial composition identical to the district. The district would have an **evenness** index of 0: there is no segregation in terms of uneven distribution of students.



This figure demonstrates segregation between and within districts. The dashed box represents a metropolitan area, with 2 districts outlined by solid lines. Each district has 3 schools, each with 10 students represented by circles.

We can estimate an evenness measure, the Information Theory index *(H),* to capture how much the average school composition deviates from the metro area composition. It ranges from a scale of 0 to 1, and in this case, H = .119.

The takeaway point is that H can be broken down into its between-district and within-district components. In this case, within districts, there is no segregation. District 1 and District 2 each include 3 schools that have the same compositions as one another—all schools in District 1 are 30% white; all schools in District 2 are 70% white. The schools have identical composition to the district—there is no segregation (unevenness) between schools within the district. Students are distributed perfectly evenly across schools with respect to the district composition.

But there is segregation between schools within the larger metro area. In this metro area, there are 30 black and 30 white students. If the metro area were perfectly integrated, every school should be 50% black and 50% white. That's not the case. There is segregation between schools; it is just all occurring because of segregation between districts—District 1 is 70% black, District 2 is 70% white.

Considering the level of geography/administrative unit (i.e., metros, districts, schools) is important when interpreting segregation. Considering the racial composition of a place is also important. This metro area is 50% white and 50% black, so if each school was 50% white and 50% black, that would indicate no segregation (unevenness). In another metro area that was, say, 90% black and 10% white, a 50% white school would indicate segregation—uneven sorting in comparison to the metro's composition. Exposure measures do not distinguish between these two situations; evenness measures do.